Weather Data for Simplified Energy Calculation Methods

**Volume IV. United States:
WYEC Data**

August 1984

**Prepared for the U.S. Department of Energy
under Contract DE-AC06-76RLO 1830**

**Pacific Northwest Laboratory
Operated for the U.S. Department of Energy
by Battelle Memorial Institute**

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PACIFIC NORTHWEST LABORATORY
operated by
BATTELLE
for the
UNITED STATES DEPARTMENT OF ENERGY
under Contract DE-AC06-76RLO 1830

Printed in the United States of America
Available from
National Technical Information Service
United States Department of Commerce
5285 Port Royal Road
Springfield, Virginia 22161

NTIS Price Codes
Microfiche A01

Printed Copy	
Pages	Price Codes
001-025	A02
026-050	A03
051-075	A04
076-100	A05
101-125	A06
126-150	A07
151-175	A08
176-200	A09
201-225	A010
226-250	A011
251-275	A012
276-300	A013

WEATHER DATA FOR SIMPLIFIED
ENERGY CALCULATION METHODS

VOLUME IV: UNITED STATES: WYEC DATA

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ACKNOWLEDGMENTS

This work has required the support and encouragement of Ray Reilly, Technical Leader Building Energy Conservation, who kept us going when we became momentarily sidetracked. Fred Buhl, LBL, provided expert advice on the processing of TRY and WYEC weather data, especially on solar radiation calculations. At various points in the project Gary Trauger, Terrie Hargrow, Lori DesCamp, Amy Brix, Dave Gibby, Tom Bander, Jim McIntyre and Janis Littlefield of PNL contributed their computing skills. Without the skill and dedication of Sharon Popp, who typed and produced the report, all our other efforts would be lost. Of course, all errors and omissions remain the authors' responsibility.

CONTENTS

1.0	INTRODUCTION.	1.1
2.0	PRIMARY WEATHER DATA SOURCES	2.1
2.1	TRY WEATHER DATA	2.1
2.2	TMY WEATHER DATA	2.2
2.3	WYEC WEATHER DATA.	2.3
2.4	TRY DATA REPRESENTATIVENESS.	2.4
3.0	WEATHER SUMMARIES FOR INCLUDED CITIES.	3.1
	Albuquerque, NM	3.2
	Bismarck, ND.	3.12
	Boise, ID	3.22
	Boston, MA	3.32
	Brownsville, TX	3.42
	Charleston, SC	3.52
	Chicago, IL	3.62
	Cleveland, OH	3.72
	Dayton, OH	3.82
	El Paso, TX	3.92
	Fort Worth, TX	3.102
	Lake Charles, LA	3.112
	Las Vegas, NV	3.122
	Los Angeles, CA	3.132
	Madison, WI	3.142
	Medford, OR	3.152
	Miami, FL	3.162
	Nashville, TN	3.172

New York, NY	.	.	.	.	.	.	.	.	.	.	.	3.182
Omaha, NB	.	.	.	.	.	.	.	.	.	.	.	3.192
Seattle, WA	.	.	.	.	.	.	.	.	.	.	.	3.202
Tallahassee, FL	.	.	.	.	.	.	.	.	.	.	.	3.212
Washington, DC	.	.	.	.	.	.	.	.	.	.	.	3.222
4.0 REFERENCES	.	.	.	.	.	.	.	.	.	.	.	4.1
APPENDIX A. COMPUTATION PROCEDURES USED FOR WEATHER SUMMARIES.	.	.	.	.	.	.	.	.	.	.	.	A.1

FIGURES

1.1	Cities with TRY and WYEC Weather Data	1.3
2.1	Comparison of TRY and NOAA 30-year Normals for Heating Degree Hours at Base 60°F	2.5
2.2	Comparison of TRY and NOAA 30-year Normals for Heating and Cooling Degree Hours at Selected Degree Bases for Albuquerque, NM	2.6
2.3	Comparison of TRY and NOAA 30-year Normals for Heating and Cooling Degree Hours at Selected Degree Bases for Cleveland, OH	2.6
2.4	Comparison of TRY and NOAA 30-year Normals for Heating and Cooling Degree Hours at Selected Degree Bases for El Paso, TX	2.7
2.5	Comparison of TRY and NOAA 30-year Normals for Heating and Cooling Degree Hours at Selected Degree Bases for Los Angeles, CA	2.7
2.6	Comparison of TRY and NOAA 30-year Normals for Heating and Cooling Degree Hours at Selected Degree Bases for Louisville, KY	2.8
2.7	Comparison of TRY and NOAA 30-year Normals for Heating and Cooling Degree Hours at Selected Degree Bases for Memphis, TN	2.8
2.8	Comparison of TRY and NOAA 30-year Normals for Heating and Cooling Degree Hours at Selected Degree Bases for Minneapolis, MN	2.9
2.9	Comparison of TRY and NOAA 30-year Normals for Heating and Cooling Degree Hours at Selected Degree Bases for Portland, OR	2.9
2.10	Comparison of TRY and NOAA 30-year Normals for Heating and Cooling Degree Hours at Selected Degree Bases for San Francisco, CA	2.10
2.11	Comparison of TRY and NOAA 30-year Normals for Heating and Cooling Degree Hours at Selected Degree Bases for Tampa, FL	2.10

TABLES

1.1	Cities with Weather Summaries in Each Volume	1.4
1.2	Weather Data Summaries for Each City	1.5

WEATHER DATA FOR SIMPLIFIED ENERGY CALCULATION METHODS

1.0 INTRODUCTION

The objective of this report is to provide a source of weather data for direct use with a number of simplified energy calculation methods available today. Complete weather data for a number of cities in the United States are provided for use in the following methods:

- . Degree hour
- . Modified degree hour
- . Bin
- . Modified bin
- . Variable degree day

This report contains sets of weather data for 60 cities in the continental United States using Test Reference Year (TRY) source weather data, and 23 cities using Weather Year for Energy Calculations (WYEC) source weather data (Figure 1.1). Considerable overlap is present in cities (21) covered by both the TRY and WYEC data.

The report has been organized in five volumes. Four of these five volumes contain the weather summaries for the cities given in Table 1.1. For ease of reference, each volume includes the same introductory material about the derivation, extent and limits of the data. Volumes based on TRY data have some cities occurring in more than one volume for user's convenience. Volume V contains example uses of the data with simplified methods, as well as a detailed description of computational algorithms for generating the weather data summaries. Computer program listings are also given for the algorithms.

The weather data at each city has been summarized in a number of ways to provide differing levels of detail necessary for alternative simplified energy calculation methods. Weather variables summarized include dry bulb and wet bulb temperature, percent relative humidity, humidity ratio, wind speed, percent possible sunshine, percent diffuse solar radiation, total solar

radiation on horizontal and vertical surfaces, and solar heat gain through standard DSA glass. Monthly and annual summaries, in some cases by time of day, are available. These summaries are produced in a series of nine computer generated tables (Table 1.2).

FIGURE 1.1 Cities with TRY and WYEC Data

TABLE 1.1 Cities with Weather Summaries in Each Volume

TRY Data			WYEC Data
Volume I	Volume II	Volume III	Volume IV
Albany, NY	Atlanta, GA	Albuquerque, NM	Albuquerque, NM
Atlanta, GA	Birmingham, AL	Amarillo, TX	Bismarck, ND
Birmingham, AL	Bismarck, ND	Bismarck, ND	Boise, ID
Boston, MA	Chicago, IL	Boise, ID	Boston, MA
Buffalo, NY	Cincinnati, OH	Brownsville, TX	Brownsville, TX
Burlington, VT	Cleveland, OH	Cheyenne, WY	Charleston, SC
Charleston, SC	Columbia, MO	El Paso, TX	Chicago, IL
Cincinnati, OH	Detroit, MI	Fresno, CA	Cleveland, OH
Cleveland, OH	Dodge City, KS	Fort Worth, TX	Dayton, OH
Jacksonville, FL	Indianapolis, IN	Great Falls, MT	El Paso, TX
Louisville, KY	Jackson, MS	Houston, TX	Fort Worth, TX
Madison, WI	Kansas City, MO	Lake Charles, LA	Lake Charles, LA
Miami, FL	Lake Charles, LA	Los Angeles, CA	Las Vegas, NV
Nashville, TN	Louisville, KY	Lubbock, TX	Los Angeles, CA
New York, NY	Memphis, TN	Medford, OR	Madison, WI
Norfolk, VA	Minneapolis, MN	New Orleans, LA	Medford, OR
Philadelphia, PA	Nashville, TN	Phoenix, AZ	Miami, FL
Pittsburgh, PA	New Orleans, LA	Portland, OR	Nashville, TN
Portland, ME	Oklahoma City, OK	Sacramento, CA	New York, NY
Raleigh, NC	Omaha, NB	Salt Lake City, UT	Omaha, NB
Richmond, VA	St. Louis, MO	San Antonio, TX	Seattle, WA
Tampa, FL	Tulsa, OK	San Diego, CA	Tallahassee, FL
Washington, DC		San Francisco, CA	Washington, DC
		Seattle-Tacoma, WA	

TABLE 1.2 Weather Data Summaries for Each City

TABLE A. MONTHLY DRY BULB TEMPERATURE FREQUENCIES WITH MEAN COINCIDENT WET BULB TEMPERATURE (MCWB): (5°F/3-hr Bins)

- . Monthly Dry Bulb Temperature Frequencies (with Mean Coincident Wet Bulb Temperature) in 5°F temperature bins for 3-hour intervals
- . Monthly Heating and Cooling Degree Hours and Number of Hours Above and Below the Base Temperature

TABLE B. ANNUAL DRY BULB TEMPERATURE FREQUENCIES WITH MEAN COINCIDENT WET BULB TEMPERATURE (5°F/3-hr Bins)

TABLE C. ANNUAL AND MONTHLY TEMPERATURE, HUMIDITY AND WIND SPEED SUMMARY

- . Dry Bulb Temperature Monthly Averages, Monthly Maximums and Minimums and Monthly Average Daily Maximums and Minimums
- . Wet Bulb Temperature Monthly Average
- . Percent Relative Humidity and Humidity Ratio, Monthly Averages at 6-hour Intervals
- . Average Monthly Wind Speed

TABLE D. ANNUAL HEATING AND COOLING DEGREE HOUR SUMMARY FOR ALL DEGREE BASES

- . Annual Heating and Cooling Degree Hours and hours above base at all degree bases in 1°F intervals for six daily periods (7-9 am, 10-12 am, 1-3 pm, 4-6 pm, 7-9 pm, and 10 pm-6 am)
- . Annual Heating and Cooling Degree Hours and number of hours above and below base at all degree bases in 1° intervals

TABLE E. ANNUAL COOLING WET BULB DEGREE HOUR SUMMARY

- . Annual Wet Bulb Hours above base and Annual Wet Bulb Degree Hours above base in 3°F intervals

TABLE F. ANNUAL HUMIDIFICATION/DEHUMIDIFICATION REQUIREMENTS AT VARIOUS INDOOR CONDITIONS AND DEGREE DAY BASES

- . Heating and Cooling Humidity Ratio Hours at 5°F and 1 thousandth of a pound of moisture per pound of dry air

TABLE G. PERCENT DIFFUSE SOLAR RADIATION AND PERCENT POSSIBLE SUNSHINE

- . Percent Diffuse Solar Radiation on a horizontal surface and vertical surface with north, west, south, east orientations
- . Monthly Percent Possible Sunshine

TABLE H. AVERAGE DAILY SOLAR RADIATION ON VERTICAL AND HORIZONTAL SURFACES

- . Monthly average daily solar radiation on vertical and horizontal surfaces for 16 orientations both for clear skies and as corrected for cloud cover
- . Observed daily averages for solar radiation on a horizontal surface (WYEC data only)

TABLE I. AVERAGE DAILY SOLAR HEAT GAIN THROUGH SINGLE PANE GLASS ON VERTICAL SURFACES

- . Monthly averages for Daily Solar Heat Gain through a single pane of glass (Solar Heat Gain Factors) under clear skies and corrected for cloud cover for 16 orientations

2.0 PRIMARY WEATHER DATA SOURCES

Selection of weather data for energy calculation procedures depends on the specific objectives of each project. Usually weather data that is in some sense "typical" of the conditions at a city is desired. An explicit meaning for "typical" depends on the objectives of a project. Hourly weather data is necessary to produce the summaries required for some of the simplified energy calculation procedures. Three alternative hourly data sets that are "typical" are generally available: they are referred to as TRY, TMY and WYEC.

This report only includes weather summaries based on TRY and WYEC data. Both are available in the same format, which simplified the development of data processing routines. This report is also a product related to climate selection research efforts as part of the Department of Energy Commercial Building Energy Research Program where TRY and WYEC data were used (Bowen, Moreno and Olsen, 1982). The discussion of the TMY selection process is included for comparative purposes.

2.1 TRY WEATHER DATA

Test Reference Year (TRY) data are the joint product of the National Bureau of Standards (NBS), the National Oceanic Atmospheric Administration (NOAA), the Federal Energy Administration and ASHRAE (National Climatic Center, 1976). TRY consists of hourly weather values for a selected reference year that are intended to be used by architects and engineers to compare different heating and air conditioning systems in the same building or in different buildings. An ASHRAE approved procedure is the basis for selecting a Test Reference Year. Starting with an official period of record, the selection procedure is the continuous elimination of years that contain months with extremely high or low mean temperatures until only one year remains in the period. The period of record examined for 59 locations is 1948-1975. The 60th location, Portland, Oregon, has a period of record of 1949-1975. The TRY data, then contains a continuous year's worth of data from the single one year that best meets the selection criteria.

The selection procedure is as follows. Extreme months are arranged in order of importance for energy comparisons. Hot Julys and cold Januarys are

assumed to be the most important. All months are ranked by alternating between the warm half (May to October) and the cold half (November to April) of the year, with the months closest to late July or late January given priority. The resulting order is given in the center column below. If, in addition, it is assumed that hot summer months or cold winter months are more important than cool summer or mild winter months then the order of extreme months will be down the first column below from "Hottest July" to "Coolest April" and then down the last column from "Coolest July" to "Warmest April."

Hottest	July	Coolest
Coldest	January	Mildest
Hottest	August	Coolest
Coldest	February	Mildest
Hottest	June	Coolest
Coldest	December	Mildest
Hottest	September	Coolest
Coldest	March	Mildest
Warmest	May	Coolest
Coolest	November	Warmest
Warmest	October	Coolest
Coolest	April	Warmest

The first step in the selection process is to mark all 24 extreme months. For the years remaining without any marked month, continue marking months starting with next-to-the-hottest July, then next-to-the-coldest January and so on down the first column and then down the second column above until only one year remains without any marked month. The remaining year is the Test Reference Year.

The TRY weather data has been a standard used by ASHRAE for comparison of heating and cooling systems. It is not considered sufficiently typical to yield reliable estimates of average energy requirements over several years. More recently ASHRAE has adopted the WYEC weather data as a more representative weather indicator for comparison of heating and cooling systems.

2.2 TMY WEATHER DATA

Typical Meteorological Year (TMY) weather data are the result of a procedure defined by Sandia Laboratories (National Climatic Center, 1981b). The approach adopted for selecting a TMY for a given city is as follows:

a typical month for each of the 12 calendar months from the long term period of record (23 years for most locations) is chosen and then these 12 months are concatenated to form the TMY. The data set generated to form the basis for selection of a typical month consists of 13 daily indices calculated from the hourly values of dry bulb temperature, dew point temperature, wind velocity and solar radiation. Month/year combinations which have statistics that are "close" to the long term statistics are candidates for typical months. Final selection of a typical month includes consideration of persistence of the weather patterns. The TMY data differ from the TRY data in that the TRY data are from one calendar year that is most typical, whereas the TMY typical year has been constructed from the most typical months throughout the period of record.

2.3 WYEC WEATHER DATA

Weather Year for Energy Calculations (WYEC) weather data were developed by Loren Crow for ASHRAE (Crow, 1980). Their development is similar in concept to the TMY procedure. The initial selection of representative historical months for dry bulb temperature values focuses on the one or two historical months having monthly averages closest to the published 30-year normals for the period 1941-1970. After the initial selection, individual days and hours are adjusted through replacement by data values from the same month in other years to improve the monthly match to the 30-year dry bulb temperature normal. The selection process also considers whether monthly precipitation amount and solar radiation measurements are near long term normal values. Adjustments for various individual measured weather parameters such as station pressure, dew point and relative humidity are made at the "edge" hours of substitute days and months to avoid abrupt changes which would not be typical of nighttime conditions. In theory, then, the WYEC typical years should be the most typical.

The WYEC hourly solar data are based on the SOLMET data base which include rehabilitated global solar data as developed by NOAA's Environmental Data and Information Services, National Climate Center (SOLMET, 1981). The solar data values for WYEC purposes are chosen from the SOLMET data so that monthly averages match the best estimates of long term monthly averages.

For additional information on WYEC weather data see Crow (1981). WYEC data for additional cities is being prepared, but was not available for inclusion in this volume.

2.4 TRY DATA REPRESENTATIVENESS

Test Reference Year (TRY) data is representative of the climate conditions for a single year only. However, a procedure was devised to select a single year with data that would be reasonably representative of the average annual climate conditions which might be experienced at the location. The representativeness of the data was evaluated by comparing TRY and NOAA 30-year normals for heating degree hours at base 60°F (see Figure 2.1).

The TRY data show a good correspondence with long term data in spite of being data for a single year. Figures 2.2 through 2.11 compare TRY and long term NOAA heating and cooling hour distributions for 10 selected cities. Note that TRY and NOAA distributions track one another very closely. Comparisons with long term data for other locations can be performed with data contained in NOAA's publication "Annual Degree Days to Selected Bases" (National Climatic Center, 1981a).

FIGURE 2.1. Comparison of TRY and NOAA 30-year Normals for Heating Degree Hours at Base 60°F

FIGURE 2.2. Comparison of TRY and NOAA 30-year Normals for Heating and Cooling Degree Hours at Selected Degree Bases for Albuquerque, NM

FIGURE 2.3. Comparison of TRY and NOAA 30-year Normals for Heating and Cooling Degree Hours at Selected Degree Bases for Cleveland, OH

FIGURE 2.4. Comparison of TRY and NOAA 30-year Normals for Heating and Cooling Degree Hours at Selected Degree Bases for El Paso, TX

FIGURE 2.5. Comparison of TRY and NOAA 30-year Normals for Heating and Cooling Degree Hours at Selected Degree Bases for Los Angeles, CA

FIGURE 2.6. Comparison of TRY and NOAA 30-year Normals for Heating and Cooling Degree Hours at Selected Degree Bases for Louisville, KY

FIGURE 2.7. Comparison of TRY and NOAA 30-year Normals for Heating and Cooling Degree Hours at Selected Degree Bases for Memphis, TN

FIGURE 2.8. Comparison of TRY and NOAA 30-year Normals for Heating and Cooling Degree Hours at Selected Degree Bases for Minneapolis, MN

FIGURE 2.9. Comparison of TRY and NOAA 30-year Normals for Heating and Cooling Degree Hours at Selected Degree Bases for Portland, OR

FIGURE 2.10. Comparison of TRY and NOAA 30-year Normals for Heating and Cooling Degree Hours at Selected Degree Bases for San Francisco, CA

FIGURE 2.11. Comparison of TRY and NOAA 30-year Normals for Heating and Cooling Degree Hours at Selected Degree Bases for Tampa, FL

3.0 WEATHER SUMMARIES FOR INCLUDED CITIES

ALBUQUERQUE, NEW MEXICO
 WBAN 25050
 TABLE A:

WYEC Data

Latitude 35.10 N
 Longitude 106.60 E

Monthly Dry Bulb Temperature Frequencies With Mean
 Coincident Wet Bulb Temperature (MCWB): First Quarter
 (5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Jan															
55 to 59	0	0	0	0	1	2	0	0	3	40.7	742	17086	2	2	
50 to 54	0	0	0	0	12	12	0	0	24	38.6	733	13390	11	26	
45 to 49	0	0	0	8	35	20	5	0	68	35.7	702	9793	42	149	
40 to 44	0	1	1	24	25	30	16	2	99	33.7	615	6491	129	367	
35 to 39	19	6	13	32	8	15	49	42	184	31.4	486	3694	258	1490	
30 to 34	40	32	25	16	12	10	9	29	173	27.9	291	1749	433	3265	
25 to 29	16	34	29	10	0	3	10	9	111	23.7	152	672	592	5908	
20 to 24	12	14	14	1	0	1	4	8	54	20.0	48	192	696	9148	
15 to 19	6	6	8	2	0	0	0	3	25	13.4	19	36	725	12712	
10 to 14	0	0	3	0	0	0	0	0	3	10.7	2	2	742	16398	
Feb															
70 to 74	0	0	0	0	1	1	0	0	2	48.5	672	22033	0	0	
65 to 69	0	0	0	0	8	7	0	0	15	47.9	664	18685	8	12	
60 to 64	0	0	0	3	11	11	1	0	26	45.0	646	15409	26	96	
55 to 59	0	0	0	10	17	15	7	0	49	42.5	607	12259	65	306	
50 to 54	1	1	1	13	13	15	14	5	63	40.1	556	9334	116	741	
45 to 49	9	4	6	18	8	7	18	19	89	38.0	481	6730	191	1497	
40 to 44	14	12	16	14	8	9	12	14	99	35.8	373	4564	299	2691	
35 to 39	17	12	15	7	6	5	10	13	85	32.5	288	2889	384	4376	
30 to 34	12	15	13	6	6	7	11	18	88	29.0	205	1639	467	6486	
25 to 29	20	19	17	5	1	3	5	6	76	25.1	126	818	546	9025	
20 to 24	2	11	5	4	2	1	0	2	27	20.5	68	363	606	11930	
15 to 19	8	3	7	4	3	3	6	6	40	15.1	39	99	633	15026	
10 to 14	1	7	4	0	0	0	0	1	13	11.9	4	3	668	18290	
Mar															
70 to 74	0	0	0	0	1	4	0	0	5	46.2	744	20092	0	0	
65 to 69	0	0	0	1	12	11	0	0	24	44.3	736	16386	8	14	
60 to 64	0	0	0	8	27	25	7	0	67	42.0	698	12789	46	137	
55 to 59	0	0	1	17	16	15	17	6	72	39.7	628	9489	116	557	
50 to 54	8	1	3	13	13	16	19	11	86	37.3	543	6562	201	1350	
45 to 49	14	13	13	22	14	13	22	21	132	35.3	437	4088	307	2596	
40 to 44	26	12	23	16	5	4	16	27	129	32.8	320	2214	424	4442	
35 to 39	24	33	22	11	2	2	6	19	119	29.8	180	979	364	6927	
30 to 34	12	15	19	1	3	2	3	3	58	26.3	79	361	665	10029	
25 to 29	7	16	10	2	0	1	3	6	45	23.9	33	76	711	13464	
20 to 24	2	3	2	0	0	0	0	0	7	21.9	2	3	742	17111	

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

ALBUQUERQUE, NEW MEXICO
 #BAN 23090
 TABLE A:

WYEC Data

Latitude 35.10 N
 Longitude 106.60 E

Monthly Dry Bulb Temperature Frequencies With Mean
 Coincident Wet Bulb Temperature (MCWB): Second Quarter
 (3 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Apr														
80 to 84	0	0	0	0	13	11	0	0	24	49.6	716	18334	4	2
75 to 79	0	0	0	9	20	21	0	0	30	48.4	684	14836	36	104
70 to 74	0	0	0	18	22	24	14	0	78	46.0	611	11575	109	443
65 to 69	0	0	6	20	13	9	23	4	75	44.7	542	8691	178	1159
60 to 64	4	0	16	13	6	9	12	14	74	42.0	471	6173	249	2241
55 to 59	10	4	16	15	10	7	15	23	100	39.9	382	4035	338	3703
50 to 54	21	11	18	7	2	7	10	17	93	38.7	285	2371	435	5639
45 to 49	18	28	15	2	4	2	13	16	98	35.8	181	1184	539	8052
40 to 44	16	13	9	6	0	0	3	11	58	33.8	102	487	618	10955
35 to 39	19	22	10	0	0	0	0	5	56	30.4	43	126	677	14194
30 to 34	2	11	0	0	0	0	0	0	13	25.6	0	11	712	17679
25 to 29	0	1	0	0	0	0	0	0	1	24.0	0	0	720	21268
May														
90 to 94	0	0	0	0	2	0	0	0	2	56.0	744	20008	0	0
85 to 89	0	0	0	1	6	11	0	0	18	52.8	738	16297	6	9
80 to 84	0	0	0	5	23	22	5	0	55	51.7	707	12666	37	98
75 to 79	0	0	0	19	22	17	16	1	75	50.1	639	9285	105	437
70 to 74	2	0	9	31	23	21	30	10	126	49.0	541	6298	203	1170
65 to 69	2	0	22	21	10	15	15	23	108	47.9	425	3883	319	2479
60 to 64	28	16	27	13	6	4	14	32	140	46.5	298	2035	446	4347
55 to 59	36	31	19	3	1	1	10	17	118	44.9	156	887	568	6919
50 to 54	11	29	12	0	0	1	1	5	59	42.7	73	316	671	10068
45 to 49	12	8	3	0	0	1	2	5	31	39.3	26	81	718	13553
40 to 44	2	9	1	0	0	0	0	0	12	34.6	6	8	738	17200
Jun														
95 to 99	0	0	0	0	9	12	1	0	22	59.4	715	16253	5	3
90 to 94	0	0	0	7	21	26	6	0	60	57.4	673	12741	47	111
85 to 89	0	0	0	16	38	26	17	0	89	56.1	613	9513	107	483
80 to 84	0	0	7	29	20	16	24	9	105	54.5	516	6693	204	1263
75 to 79	9	0	15	24	6	3	19	24	100	53.2	416	4388	304	2558
70 to 74	14	6	30	9	0	4	12	23	98	52.1	305	2594	415	4364
65 to 69	20	20	23	2	4	2	8	14	95	50.3	209	1319	511	6689
60 to 64	28	30	9	1	0	1	3	14	86	46.7	112	516	608	9466
55 to 59	10	25	3	2	0	0	0	5	45	45.6	41	145	679	12715
50 to 54	9	6	1	0	0	0	0	1	17	41.8	14	28	706	16198
45 to 49	0	3	0	0	0	0	0	0	3	42.0	2	5	718	19775

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

ALBUQUERQUE, NEW MEXICO
 MSAN 23050
 TABLE A:

WYEC Data

Latitude 35.10 N
 Longitude 106.60 E

Monthly Dry Bulb Temperature Frequencies With Mean
 Coincident Wet Bulb Temperature (MCWB): Third Quarter
 (5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Jul														
100 to 104	0	0	0	0	1	0	0	0	1	68.0	744	16391	0	0
95 to 99	0	0	0	0	14	13	0	0	27	63.2	737	14679	7	8
90 to 94	0	0	0	11	29	27	7	0	74	63.1	691	11089	53	138
85 to 89	0	0	1	26	28	24	19	6	104	62.4	606	7842	138	611
80 to 84	6	0	11	30	10	13	26	11	107	62.0	500	5083	244	1572
75 to 79	13	6	25	16	7	9	20	29	127	60.7	385	2871	361	3080
70 to 74	33	20	31	8	4	2	11	29	138	59.8	260	1280	484	5209
65 to 69	30	42	20	2	0	4	3	11	112	58.3	118	367	626	8016
60 to 64	11	23	5	0	0	1	7	7	54	58.6	30	36	714	11407
Aug														
95 to 99	0	0	0	0	3	2	0	0	5	64.4	744	16195	0	0
90 to 94	0	0	0	4	22	22	1	0	49	63.1	731	12495	13	20
85 to 89	0	0	0	23	36	32	6	0	97	62.7	659	9004	85	249
80 to 84	2	0	7	30	23	26	23	6	117	61.5	551	5987	193	952
75 to 79	10	3	17	26	5	3	34	25	123	60.7	442	3520	302	2205
70 to 74	25	20	37	8	4	8	16	34	152	59.9	254	1679	450	4084
65 to 69	37	34	24	2	0	0	12	21	150	58.6	165	363	581	6688
60 to 64	13	28	7	0	0	0	1	7	56	53.9	43	107	701	9952
55 to 59	6	6	1	0	0	0	0	0	15	49.9	4	2	740	13567
Sep														
90 to 94	0	0	0	0	5	1	0	0	6	59.5	720	15379	0	0
85 to 89	0	0	0	2	23	13	0	0	40	57.8	706	12803	14	24
80 to 84	0	0	0	16	40	39	6	0	101	55.7	643	9401	77	222
75 to 79	0	0	1	32	14	25	27	1	100	54.1	535	6469	185	890
70 to 74	7	0	9	22	7	8	37	30	120	53.0	434	4046	286	2067
65 to 69	22	7	18	14	1	2	16	34	114	51.4	313	2187	407	3808
60 to 64	35	35	29	4	0	0	3	24	130	50.0	193	916	537	6137
55 to 59	21	21	19	0	0	0	1	1	63	45.5	62	294	638	9115
50 to 54	5	26	12	0	0	0	0	0	43	43.3	22	37	698	12498
45 to 49	0	1	2	0	0	0	0	0	3	42.0	0	0	720	16021

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

ALBUQUERQUE, NEW MEXICO
 WBAN 23050
 TABLE A:

WVEC Data

Latitude 35.10 N
 Longitude 106.66 E

Monthly Dry Bulb Temperature Frequencies With Mean
 Coincident Wet Bulb Temperature (MCWB): Fourth Quarter
 (5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degrees hours	hours above	degrees hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Oct														
80 to 84	0	0	0	0	1	1	0	0	2	56.0	744	18494	0	0
75 to 79	0	0	0	1	22	19	0	0	42	54.1	725	14796	19	22
70 to 74	0	0	0	14	13	18	1	0	46	53.0	683	11274	61	220
65 to 69	0	0	1	18	26	17	14	1	77	51.9	628	7983	116	649
60 to 64	2	0	9	25	23	22	28	12	121	50.1	535	5074	209	1460
55 to 59	20	16	24	20	8	13	26	36	163	49.8	400	2713	344	2819
50 to 54	36	13	23	15	0	3	20	27	137	45.6	237	1148	507	4974
45 to 49	22	43	29	0	0	0	4	15	113	42.9	105	307	639	7833
40 to 44	13	20	6	0	0	0	0	2	41	39.7	21	30	723	11296
35 to 39	0	1	1	0	0	0	0	0	2	36.5	0	0	744	14986
Nov														
70 to 74	0	0	0	0	16	8	0	0	24	47.3	717	20406	3	2
65 to 69	0	0	0	5	19	11	0	0	35	45.7	677	16910	43	106
60 to 64	0	0	0	25	12	20	5	0	62	43.7	635	13610	85	406
55 to 59	1	0	6	10	6	10	9	2	44	41.9	583	10576	137	912
50 to 54	4	1	5	8	14	8	14	7	61	38.9	534	7779	186	1775
45 to 49	8	5	16	9	10	15	21	24	108	36.1	447	5292	273	2888
40 to 44	24	18	13	12	7	5	8	15	102	33.3	339	3327	381	4523
35 to 39	14	20	14	12	6	9	14	7	96	30.1	244	1858	476	6654
30 to 34	15	16	15	8	0	3	10	15	82	27.6	158	877	562	9273
25 to 29	14	12	9	1	0	1	9	17	63	24.5	77	309	643	12303
20 to 24	9	14	9	0	0	0	0	3	35	20.9	24	67	696	15663
15 to 19	1	3	3	0	0	0	0	0	7	16.4	4	9	716	19203
10 to 14	0	1	0	0	0	0	0	0	1	13.0	0	0	720	22796
Dec														
55 to 59	0	0	0	0	2	2	0	0	4	41.5	744	16318	0	0
50 to 54	0	0	0	0	35	19	0	0	54	39.6	727	12624	17	26
45 to 49	1	0	0	19	26	23	3	3	75	37.8	659	9153	85	275
40 to 44	7	4	5	33	13	28	32	14	138	36.4	572	6062	172	904
35 to 39	19	12	19	17	4	7	28	28	134	32.5	413	3616	331	2178
30 to 34	36	30	27	5	6	5	11	26	146	28.4	274	1881	470	4163
25 to 29	17	27	26	9	5	6	10	10	110	23.9	145	840	599	6842
20 to 24	2	8	4	6	2	1	7	7	37	19.9	65	358	679	10080
15 to 19	7	6	7	2	0	2	2	3	29	15.8	31	116	713	13558
10 to 14	3	5	5	0	0	0	0	1	14	12.1	9	21	735	17183
5 to 9	1	1	0	0	0	0	0	1	3	8.7	0	0	744	20882

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

ALBUQUERQUE, NEW MEXICO
WBAN 23050
TABLE B:

WYEC Data

Latitude 35.10 N
Longitude 106.60 E

Annual Dry Bulb Temperature Frequencies
With Mean Coincident Wet Bulb Temperature
(5 Degrees(F)/3Hr Bins)

Dry Bulb range(F)	Number of Hours of Occurrence In time period									Mean Coincident Wet Bulb Temperature (F)								
	Hour of day									Hour of day								
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year
100 to 104	0	0	0	0	1	0	0	0	1	0.0	0.0	0.0	0.0	68.0	0.0	0.0	0.0	68.0
95 to 99	0	0	0	0	26	27	1	0	54	0.0	0.0	0.0	0.0	62.4	61.3	58.0	0.0	61.6
90 to 94	0	0	0	22	79	76	14	0	191	0.0	0.0	0.0	62.5	61.1	60.8	60.4	0.0	61.1
85 to 89	0	0	1	68	123	108	42	6	348	0.0	0.0	61.0	61.6	60.2	58.8	56.6	60.7	59.9
80 to 84	8	0	25	110	130	128	84	26	511	59.5	0.0	60.8	59.6	57.8	55.5	56.2	59.3	57.4
75 to 79	32	11	58	127	96	97	116	80	617	58.8	58.5	59.6	59.6	55.5	52.6	55.6	57.8	55.7
70 to 74	81	46	116	110	91	98	121	126	789	57.3	59.2	57.0	52.8	50.2	50.6	51.6	54.9	53.9
65 to 69	111	103	116	85	93	78	91	108	785	55.1	56.5	53.4	49.2	48.1	48.8	50.0	51.3	51.8
60 to 64	121	132	102	92	85	93	81	110	816	48.7	51.2	48.8	46.0	45.8	45.2	47.6	47.8	47.9
55 to 59	104	105	89	77	61	65	85	90	676	46.1	45.5	45.7	43.8	42.1	42.8	44.0	45.2	44.6
50 to 54	95	88	75	58	89	81	78	73	637	41.7	45.1	42.3	41.3	39.0	39.3	40.3	40.8	41.0
45 to 49	84	105	84	78	97	81	88	103	720	37.6	38.8	39.3	36.6	36.9	36.3	36.9	37.6	37.5
40 to 44	102	89	74	107	58	76	87	85	678	34.7	34.9	34.9	35.2	34.5	34.7	34.6	34.1	34.7
35 to 39	112	106	94	79	26	38	107	114	676	30.9	31.2	31.6	31.4	31.0	31.1	31.4	31.0	31.2
30 to 34	117	119	99	36	27	27	44	91	560	28.0	27.9	28.1	27.8	27.1	27.6	27.6	28.5	28.8
25 to 29	74	109	91	27	6	14	37	48	406	24.6	24.2	24.2	24.0	23.3	24.0	23.8	24.2	24.2
20 to 24	27	50	34	11	4	3	11	20	160	20.4	20.5	20.8	19.0	20.8	20.3	20.1	19.9	20.3
15 to 19	22	18	25	8	3	5	8	12	101	15.5	15.1	15.4	15.8	16.3	15.2	15.4	16.1	15.5
10 to 14	4	13	12	0	0	0	0	2	31	12.5	11.9	11.5	0.0	0.0	0.0	0.0	13.5	11.9
5 to 9	1	1	0	0	0	0	0	1	3	8.0	9.0	0.0	0.0	0.0	0.0	0.0	9.0	8.7

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Dry Bulb Temperature (F)						Wet Bulb	Percent Relative Humidity					Average Humidity Ratio (lb moisture/lb dry air)					Average wind
Month	Daily		Ave	Wet Bulb		Ave	Average					4AM	10AM	4PM	10PM	Day	MPH
	Max	Min		Max	Min		4AM	10AM	4PM	10PM	Day						
Jan	34.5	59	11	45	25	29.0	67	62	42	56	59	0.0024	0.0026	0.0028	0.0027	0.0026	7.1
Feb	39.7	71	11	53	28	32.8	73	60	39	51	58	0.0030	0.0034	0.0032	0.0032	0.0032	7.8
Mar	43.5	70	20	59	33	34.1	48	38	21	32	37	0.0022	0.0025	0.0019	0.0022	0.0022	10.6
Apr	57.0	83	29	72	41	40.0	39	25	14	21	26	0.0025	0.0027	0.0018	0.0023	0.0024	10.7
May	63.6	91	40	78	52	47.0	43	25	18	23	29	0.0043	0.0048	0.0031	0.0034	0.0039	11.5
Jun	75.0	98	45	89	60	52.2	36	23	15	22	25	0.0048	0.0052	0.0042	0.0049	0.0048	10.9
Jul	77.8	101	60	90	66	60.8	59	41	30	39	44	0.0102	0.0105	0.0094	0.0093	0.0099	8.5
Aug	75.7	95	57	88	64	60.0	61	45	29	42	46	0.0101	0.0108	0.0090	0.0095	0.0099	6.5
Sep	69.8	92	48	84	58	51.8	47	35	19	26	34	0.0060	0.0065	0.0051	0.0050	0.0058	7.2
Oct	57.6	81	38	70	47	48.1	71	56	40	54	57	0.0063	0.0068	0.0065	0.0065	0.0065	6.8
Nov	44.2	73	14	60	31	34.0	59	42	26	42	44	0.0026	0.0029	0.0025	0.0026	0.0026	7.4
Dec	35.8	57	8	47	25	30.5	76	66	44	63	64	0.0030	0.0033	0.0032	0.0031	0.0031	6.1
Year	56.6	101	8	70	44	43.4	57	43	28	39	44	0.0048	0.0051	0.0044	0.0046	0.0048	8.4

ALBUQUERQUE, NEW MEXICO

WYEC Data

Latitude 35.10 N

WBAN 23050

Longitude 106.60 E

TABLE D:

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																24 HOUR SUMMARY			
	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**		HEATING				COOLING			
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg
	Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Below		Above		Below		Above	
	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	100s*	Base	100s*	Base	100s*	Base	100s*
102	0	563	0	0	449	0	0	378	0	0	390	0	0	476	0	0	1722	0	8760	3979
101	0	552	0	0	438	0	0	367	0	0	379	0	0	465	0	0	1689	0	8759	3891
100	0	541	0	0	428	0	1	356	0	0	368	0	0	454	0	0	1656	0	8759	3803
99	0	530	0	0	417	0	1	345	0	0	358	0	0	443	0	0	1623	0	8758	3716
98	0	519	0	0	406	0	4	334	0	3	347	0	0	432	0	0	1591	0	8753	3628
97	0	508	0	0	395	0	9	323	0	10	336	0	0	421	0	0	1558	0	8740	3541
96	0	497	0	0	384	0	15	313	0	17	325	0	0	410	0	0	1525	0	8728	3453
95	0	486	0	0	373	0	22	302	0	23	314	0	0	399	0	0	1492	0	8714	3366
94	0	475	0	0	362	0	34	291	1	29	303	1	2	388	0	0	1459	0	8694	3279
93	0	464	0	2	351	0	48	281	1	40	293	1	3	377	0	0	1426	0	8665	3192
92	0	453	0	6	340	0	61	270	2	57	282	1	5	366	0	0	1394	0	8630	3106
91	0	443	0	9	329	0	77	260	2	74	272	2	9	356	0	0	1361	0	8590	3020
90	0	432	0	17	318	0	96	250	3	93	262	3	13	345	0	0	1328	0	8540	2934
89	0	421	0	25	308	0	116	240	4	109	252	4	17	334	0	0	1295	0	8492	2849
88	0	410	0	34	297	1	135	230	5	126	242	5	23	323	1	1	1262	0	8440	2764
87	0	399	0	45	286	1	160	221	7	146	233	7	31	312	1	2	1229	0	8374	2680
86	0	388	0	57	276	2	189	212	9	167	223	8	39	302	1	3	1196	0	8303	2597
85	0	377	0	77	266	2	215	203	11	195	214	10	50	291	2	4	1164	0	8217	2514
84	2	366	0	100	256	3	241	194	13	221	205	12	61	281	2	6	1131	0	8127	2432
83	5	355	0	118	246	4	267	185	16	243	197	14	72	271	3	9	1098	0	8045	2351
82	9	344	0	137	236	6	293	177	18	269	188	17	85	260	4	15	1065	0	7950	2271
81	13	333	0	163	227	7	317	169	21	298	180	20	106	250	5	25	1033	1	7836	2192
80	21	322	0	188	217	9	344	162	25	326	172	23	131	241	6	35	1000	1	7713	2115
79	28	312	1	213	208	11	367	154	28	347	165	26	151	231	7	44	968	1	7608	2038
78	38	301	1	237	200	13	387	147	32	365	157	30	170	222	9	56	935	2	7505	1963
77	51	291	1	261	191	16	410	140	36	388	150	34	195	213	11	75	903	2	7379	1888
76	62	280	2	287	183	18	429	134	40	408	143	38	223	204	13	103	871	3	7246	1815
75	76	270	3	313	175	21	446	127	45	426	136	42	246	195	15	141	840	4	7110	1743
74	95	260	4	336	167	25	461	121	49	446	130	46	267	187	18	180	808	6	6973	1673
73	112	250	5	358	160	28	482	114	54	467	123	51	289	179	20	222	777	8	6828	1604
72	131	240	6	382	153	32	504	108	59	485	117	55	313	171	23	273	747	10	6669	1536
71	157	231	7	403	146	36	522	102	64	502	111	60	336	163	27	325	717	13	6514	1470
70	184	221	9	424	139	40	538	97	69	523	105	65	363	156	30	383	688	17	6343	1406
69	210	212	11	446	132	44	553	91	75	543	100	71	387	148	34	443	659	21	6177	1343
68	229	204	13	464	126	49	570	86	80	559	94	76	406	141	38	497	631	26	6034	1282
67	249	195	15	480	120	53	590	81	86	577	89	82	424	135	42	555	603	31	5884	1223
66	274	187	18	496	114	58	610	76	92	595	84	88	444	128	46	619	576	37	5721	1165
65	302	179	21	513	108	63	629	71	98	607	79	94	462	122	51	695	550	43	5551	1108
64	326	171	24	532	102	69	647	67	105	619	74	100	479	115	56	778	525	51	5378	1054
63	346	163	27	552	96	74	663	62	111	634	70	106	498	109	61	850	500	59	5216	1001
62	364	156	31	567	91	80	680	58	118	653	65	113	515	103	66	924	476	68	5055	949
61	384	149	35	583	86	85	695	54	125	675	61	119	527	98	71	1000	453	78	4896	900
60	406	142	39	604	81	91	712	50	132	695	57	126	540	92	76	1068	430	88	4734	851
59	428	135	43	620	76	97	732	46	139	713	53	133	558	87	82	1128	408	99	4579	805
58	446	128	47	636	71	104	746	43	147	728	49	140	574	81	87	1188	387	110	4439	760
57	461	122	52	654	67	110	760	39	154	741	45	148	590	76	93	1251	366	123	4302	716

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 565 x 100 = 56500 Deg Hrs)

** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

ALBUQUERQUE, NEW MEXICO
WBAN 23050

WYEC Data

Latitude 35.10 N
Longitude 106.60 E

TABLE 0: Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY														24 HOUR SUMMARY			
	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**		HEATING		COOLING		Below Base	Above Base
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg	Hrs	Deg		
	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Below Base 100s*	Deg	Above Base 100s*	Deg		
56	476	116	57	667	62	117	772	36	162	751	42	155	605	71	99	1310	346	135
55	495	110	61	682	58	124	781	33	169	762	39	163	623	66	105	1370	327	149
54	515	104	66	698	54	130	794	30	177	776	35	171	641	62	112	1426	308	163
53	531	98	72	711	50	137	809	27	185	792	32	178	655	57	118	1475	290	177
52	548	93	77	723	47	145	825	24	194	807	29	186	668	53	125	1525	272	192
51	563	87	83	735	43	152	845	21	202	821	26	194	684	49	131	1580	255	208
50	575	82	88	745	39	159	864	19	210	840	24	203	704	45	138	1632	238	224
49	594	77	94	755	36	167	885	17	219	860	21	211	725	41	146	1683	222	241
48	616	72	100	769	33	174	905	15	228	878	19	220	747	37	153	1736	206	258
47	630	67	106	784	29	182	923	13	237	892	17	229	766	34	160	1793	191	275
46	644	63	113	799	26	190	940	11	247	906	15	238	781	31	168	1853	176	294
45	659	58	119	817	23	198	959	10	256	923	13	247	793	28	176	1915	162	312
44	672	54	126	839	21	206	978	9	266	939	12	256	810	25	184	1979	149	332
43	685	50	133	861	18	215	992	8	276	955	10	266	825	22	192	2032	136	352
42	702	46	140	886	16	224	1003	7	286	972	9	275	841	19	201	2076	123	372
41	718	42	147	908	14	233	1012	6	296	986	8	285	859	17	209	2126	112	393
40	733	38	154	924	12	242	1023	5	306	1000	7	295	877	15	218	2189	100	415
39	751	35	161	942	11	251	1031	4	316	1012	6	305	903	13	227	2259	90	437
38	770	31	169	957	9	261	1038	4	326	1018	5	315	929	11	236	2327	80	460
37	785	28	177	972	8	270	1044	3	337	1027	4	326	954	9	245	2394	71	484
36	798	25	185	992	7	280	1047	3	347	1037	4	336	974	8	255	2450	62	508
35	818	22	193	1008	6	290	1052	2	358	1044	3	346	988	7	265	2514	54	533
34	843	20	201	1017	5	300	1059	2	368	1050	3	357	1002	6	275	2592	47	558
33	860	17	210	1026	4	311	1065	2	379	1057	2	367	1012	5	285	2666	40	585
32	881	15	218	1034	4	321	1069	1	390	1062	2	378	1021	4	295	2733	34	612
31	900	13	227	1041	3	331	1072	1	400	1066	2	389	1030	4	305	2794	29	639
30	919	11	236	1047	3	342	1078	1	411	1070	1	399	1036	3	316	2854	24	668
29	939	9	246	1052	2	352	1082	1	422	1076	1	410	1043	2	326	2909	20	696
28	951	8	255	1058	2	363	1083	1	433	1080	1	421	1051	2	336	2962	17	726
27	968	6	265	1063	1	373	1084	0	444	1081	1	432	1059	2	347	3010	14	756
26	990	5	275	1068	1	384	1086	0	455	1083	1	442	1067	1	358	3053	11	786
25	1013	4	285	1073	1	395	1087	0	465	1085	0	453	1073	1	368	3094	9	817
24	1029	4	295	1077	1	405	1089	0	476	1087	0	464	1078	1	379	3130	8	848
23	1038	3	305	1078	1	416	1091	0	487	1088	0	475	1080	1	390	3160	6	879
22	1046	3	316	1080	0	427	1092	0	498	1089	0	486	1081	0	401	3180	5	911
21	1053	2	326	1083	0	438	1092	0	509	1089	0	497	1084	0	411	3195	4	943
20	1057	2	337	1085	0	449	1092	0	520	1089	0	508	1086	0	422	3206	3	975
19	1061	1	347	1088	0	460	1093	0	531	1090	0	519	1087	0	433	3216	3	1007
18	1065	1	358	1090	0	470	1095	0	542	1091	0	529	1088	0	444	3227	2	1039
17	1070	1	369	1093	0	481	1095	0	553	1092	0	540	1090	0	455	3237	1	1072
16	1075	1	379	1095	0	492	1095	0	564	1093	0	551	1093	0	466	3246	1	1104
15	1080	0	390	1095	0	503	1095	0	575	1094	0	562	1095	0	477	3257	1	1136
14	1084	0	401	1095	0	514	1095	0	586	1095	0	573	1095	0	488	3267	0	1169
13	1087	0	412	1095	0	525	1095	0	597	1095	0	584	1095	0	499	3274	0	1202
12	1089	0	423	1095	0	536	1095	0	608	1095	0	595	1095	0	510	3278	0	1235
11	1092	0	434	1095	0	547	1095	0	618	1095	0	606	1095	0	521	3280	0	1267

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (e.g. 565 x 100 = 56500 Deg Hrs)
** The Hours Below the Base Temp for any X-Hr per! re calculated by subtracting the Hrs Above from X times 365

ALBUQUERQUE, NEW MEXICO
 WBAN 23030
 TABLE 0:

WYEC Data

Latitude 35.10 N
 Longitude 106.60 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BY TIME OF DAY													24 HOUR SUMMARY				
BASE	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**		HEATING		COOLING		
TEMP Hrs	Deg-Hrs		Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg	Hrs	Deg	
(F)	Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Below Hrs		Above Hrs		
	Base	Heat Cool	Base	Heat Cool	Base	Heat Cool	Base	Heat Cool	Base	Heat Cool	Base	Heat Cool	Base 100s*		Base 100s*		
10 1095	0	444	1095	0	558	1095	0	629	1095	0	617	1095	0	532	3281	0	1300
9 1095	0	455	1095	0	569	1095	0	640	1095	0	628	1095	0	543	3283	0	1333
8 1095	0	466	1095	0	580	1095	0	651	1095	0	639	1095	0	553	3284	0	1366
7 1095	0	477	1095	0	591	1095	0	662	1095	0	650	1095	0	564	3285	0	1399

FOOTNOTES: * Heating and Cooling Degree Hrs are In Hundreds (eg. 565 x 100 = 56500 Deg Hrs)

** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

ALBUQUERQUE, NEW MEXICO
 WBAN 23050
 TABLE E:

WYEC Data

Latitude 35.10 N
 Longitude 106.60 E

Annual COOLING Wet Bulb Degree Hour Summary

Wet Bulb Temperature (F) Base:	50	55	56	59	62	65	68	71	74	77	80
Annual Wet Bulb hours ABOVE base:	3079	2437	1801	1266	644	216	22	0	0	0	0
Annual Wet Bulb Cooling deg-hrs:	25149.	16552.	9894.	5023.	1860.	411.	26.	0.	0.	0.	0.

TABLE F:

Annual Humidification/Dehumidification Requirements
 At various Indoor Conditions and Degree Day Bases
 (Pounds of Moisture)

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS ** Heating Degree Base												COOLING HUMIDITY RATIO HOURS ** Cooling Degree Base												Maintained Indoor Humidity Ratio*
	30	35	40	45	50	55	60	65	70	75	80		30	35	40	45	50	55	60	65	70	75	80		
.001	0	0	0	0	0	0	0	0	0	0	0		28	27	26	25	24	22	20	16	12	8	5		.001
.002	0	0	1	1	1	1	1	1	1	2	2		21	21	21	20	19	18	16	13	10	7	4		.002
.003	1	1	2	3	3	3	4	4	5	5	5		16	16	16	16	15	14	13	11	8	6	4		.003
.004	2	3	4	5	6	7	7	8	9	9	10		13	13	13	12	12	11	10	9	7	4	3		.004
.005	2	4	6	7	9	10	11	13	13	14	15		9	9	9	9	9	9	8	7	5	3	2		.005
.006	3	5	6	10	12	14	15	17	18	20	21		7	7	7	7	7	6	6	5	4	2	1		.006
.007	4	6	10	12	15	18	20	22	24	26	27		5	5	5	5	5	5	4	4	3	2	1		.007
.008	4	8	11	15	19	22	24	27	29	32	33		3	3	3	3	3	3	3	2	2	1	1		.008
.009	5	9	13	18	22	26	29	32	35	38	40		2	2	2	2	2	2	2	2	1	1	0		.009
.010	6	10	15	20	25	29	33	38	41	45	47		1	1	1	1	1	1	1	1	1	0	0		.010
.011	7	11	17	23	29	33	38	43	47	51	54		1	1	1	1	1	1	1	1	0	0	0		.011
.012	7	13	19	25	32	37	43	49	53	58	62		0	0	0	0	0	0	0	0	0	0	0		.012
.013	8	14	21	28	35	41	47	54	60	65	69		0	0	0	0	0	0	0	0	0	0	0		.013
.014	9	15	23	31	39	45	52	60	66	72	77		0	0	0	0	0	0	0	0	0	0	0		.014
.015	9	17	25	33	42	49	57	65	72	79	85		0	0	0	0	0	0	0	0	0	0	0		.015
.016	10	18	27	36	45	53	61	70	78	86	92		0	0	0	0	0	0	0	0	0	0	0		.016
.017	11	19	29	39	49	57	66	76	85	93	100		0	0	0	0	0	0	0	0	0	0	0		.017
.018	11	20	31	41	52	61	71	81	91	100	107		0	0	0	0	0	0	0	0	0	0	0		.018

FOOTNOTES: * Indoor Humidity Level is measured in pounds of moisture per pound of dry air. Indoor wet points of 72 deg(F)-30%RH and 78 deg(F)-50%RH yield humidity ratios of .005 and .010 respectively.
 ** Heating (Cooling) Humidity Ratio Hours are defined as the summation of the differences between the maintained indoor humidity ratio and the observed outdoor humidity ratio when both the hourly dry bulb temperature and the humidity ratio are above (below) the base levels.

TABLE G:

Percent Diffuse Solar Radiation*
 and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
% Diffuse on surface													
HORIZONTAL	28	29	27	34	40	25	33	31	30	22	26	23	30
VERTICAL													
NORTH	100	100	100	96	91	78	88	96	100	100	100	100	93
WEST	42	49	46	59	66	48	60	56	47	37	42	33	51
SOUTH	24	30	36	61	74	71	72	59	44	26	24	20	42
EAST	42	41	42	53	54	45	52	50	47	39	39	36	46
% Possible Sun	73	73	74	77	80	83	76	76	80	79	77	72	77

FOOTNOTES: * Corrected For Cloud Cover.
 ** Source: NOAA, Comparative Climatic Data for the United States Through 1978.

ALBUQUERQUE, NEW MEXICO
 WBAN 23050
 TABLE H:

WYEC Data

Latitude 35.10 N
 Longitude 106.60 E

Average Daily Solar Radiation on Vertical and Horizontal Surfaces
 (BTU/DAY.SQFT)

Month	Under Clear Sky Assumption*										Corrected For Cloud Cover**										obs		
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S-45 horiz ***	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S-45 horiz ***			
Jan	1982	1837	1489	1171	741	398	220	178	178	2148	1170	1295	1214	1002	804	533	320	209	182	182	1375	800	1014
Feb	1960	1845	1583	1337	946	588	343	231	220	2352	1498	1277	1247	1101	950	697	466	312	240	232	1490	1003	1328
Mar	1695	1694	1546	1433	1152	829	552	354	286	2450	1939	1411	1410	1330	1237	1008	752	538	390	344	1899	1534	1766
Apr	1252	1363	1427	1465	1330	1069	814	564	384	2360	2311	1138	1227	1266	1287	1185	1013	819	641	511	1782	1791	2175
May	926	1113	1285	1413	1401	1247	1014	757	541	2211	2534	926	1080	1202	1292	1278	1158	984	793	618	1662	1920	2508
Jun	801	1004	1223	1393	1439	1337	1121	867	660	2129	2624	781	960	1139	1278	1313	1224	1039	825	643	1809	2201	2655
Jul	853	1047	1240	1392	1408	1289	1067	815	611	2144	2565	829	972	1103	1206	1209	1115	947	763	590	1685	1975	2517
Aug	1094	1235	1340	1419	1337	1140	894	647	453	2243	2359	981	1090	1155	1199	1124	969	787	610	472	1738	1823	2291
Sep	1489	1505	1469	1417	1199	917	649	457	351	2343	2028	1278	1287	1257	1212	1040	824	623	466	390	1845	1637	1974
Oct	1827	1723	1514	1325	979	640	400	269	250	2324	1617	1430	1345	1183	1038	784	534	361	265	250	1774	1259	1346
Nov	1959	1828	1511	1219	808	455	262	195	194	2164	1255	1296	1238	1038	853	587	359	251	187	186	1422	861	1134
Dec	1950	1812	1460	1125	698	357	201	168	168	2060	1075	1388	1297	1057	826	528	293	185	161	160	1452	788	919
Year	1480	1495	1423	1342	1120	858	630	458	357	2245	1916	1169	1196	1153	1099	941	753	588	461	382	1664	1468	1821

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
 ** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.
 *** South exposure tilt 45 degrees.

TABLE I: Average Daily Solar Heat Gain Through Single Pane Glass on Vertical and Horizontal Surfaces
 (BTU/DAY.SQFT)

Month	Under Clear Sky*									Corrected For Cloud Cover**									N
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	
Jan	1711	1557	1230	974	597	299	165	145	145	1110	1025	839	667	431	246	162	149	148	
Feb	1655	1546	1324	1120	777	458	236	183	179	1073	1046	921	794	571	367	240	193	189	
Mar	1344	1355	1282	1197	951	666	422	268	233	1130	1161	1105	1032	831	604	418	304	280	
Apr	905	1064	1164	1213	1101	892	647	430	301	863	974	1035	1063	980	851	658	504	410	
May	627	816	1023	1164	1157	1029	813	586	401	686	825	966	1063	1053	954	795	626	481	
Jun	539	714	956	1143	1187	1102	905	681	484	552	699	896	1048	1082	1007	841	651	483	
Jul	579	758	980	1143	1165	1062	861	679	452	601	728	879	989	998	916	767	605	458	
Aug	775	947	1089	1174	1109	939	715	500	350	725	852	940	988	928	795	631	479	376	
Sep	1151	1221	1213	1180	992	744	508	334	269	999	1048	1039	1008	860	670	493	365	318	
Oct	1519	1435	1264	1103	801	506	302	213	204	1188	1117	985	865	642	426	278	211	204	
Nov	1678	1542	1265	1018	653	351	193	159	158	1105	1036	869	712	474	277	176	152	152	
Dec	1689	1543	1225	938	558	270	151	137	137	1197	1101	886	687	424	225	142	131	131	
Year	1179	1206	1169	1114	921	694	496	357	277	935	967	947	910	774	611	468	365	303	

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
 ** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.

BISMARCK, NORTH DAKOTA
 WMAN 24011
 TABLE A:

WYEC Data

Latitude 46.80 N
 Longitude 100.80 E

Monthly Dry Bulb Temperature Frequencies With Mean
 Coincident Wet Bulb Temperature (MCWB): First Quarter
 (5 Degrees(F)/3Mr Bins)

Dry Bulb Range (F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp (F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Jan														
45 to 49	0	0	0	0	4	3	0	0	7	39.4	743	28945	1	1
40 to 44	0	3	3	5	3	6	0	0	20	36.5	730	25258	14	34
35 to 39	3	0	1	3	9	6	12	4	38	33.2	709	21664	35	160
30 to 34	4	6	3	7	7	4	4	8	43	29.3	661	18240	83	456
25 to 29	17	12	13	6	5	10	10	14	87	25.1	596	15048	148	984
20 to 24	6	6	3	6	6	3	4	5	39	20.3	536	12250	208	1906
15 to 19	9	11	10	7	7	6	5	3	58	16.1	480	9692	264	3068
10 to 14	2	3	8	6	5	11	7	4	46	9.6	445	7392	299	4488
5 to 9	4	8	12	15	13	7	8	9	76	5.7	381	5322	363	6138
0 to 4	14	7	3	0	1	5	8	6	46	1.3	306	3618	438	8154
-5 to -1	5	9	6	9	15	10	6	11	71	-3.6	263	2180	481	10436
-10 to -6	11	7	4	12	16	18	10	5	83	-7.9	183	1082	561	13058
-15 to -11	9	12	15	12	2	4	18	16	88	-12.8	91	404	653	16100
-20 to -16	6	0	6	4	0	0	1	5	22	-18.4	34	131	710	19547
-25 to -21	3	9	4	1	0	0	0	1	18	-22.5	9	16	735	23152
-30 to -26	0	0	2	0	0	0	0	0	2	-26.0	0	0	744	26856
Feb														
40 to 44	3	0	0	0	2	4	3	3	15	37.5	667	19495	5	7
35 to 39	0	2	0	1	8	6	3	3	23	33.9	652	16197	20	69
30 to 34	9	6	6	13	11	8	9	8	70	30.6	600	13029	72	261
25 to 29	13	16	10	10	7	12	10	8	86	26.2	528	10190	144	782
20 to 24	5	6	9	4	7	8	9	9	57	21.7	446	7754	226	1706
15 to 19	0	1	8	7	10	12	7	4	49	15.4	402	5642	270	2954
10 to 14	9	6	5	9	18	16	15	14	92	10.3	341	3769	331	4441
5 to 9	11	9	7	13	13	12	12	7	84	5.8	251	2298	421	6330
0 to 4	19	15	14	14	5	3	8	18	96	1.4	151	1282	521	8674
-5 to -1	3	11	7	8	3	3	4	2	41	-3.3	81	717	591	11469
-10 to -6	3	2	8	3	0	0	1	3	20	-8.1	50	395	622	14507
-15 to -11	3	4	4	2	0	0	2	1	16	-12.6	29	193	643	17665
-20 to -16	2	3	2	0	0	0	1	2	10	-18.9	21	68	651	20900
-25 to -21	4	3	4	0	0	0	0	2	13	-21.5	1	1	671	24193
Mar														
55 to 59	0	0	0	0	2	4	0	0	6	43.7	743	24682	1	1
50 to 54	0	0	0	2	9	9	1	0	21	40.5	732	20986	12	25
45 to 49	0	0	0	2	12	9	5	2	30	37.8	705	17393	39	152
40 to 44	1	0	0	11	10	12	8	4	44	33.8	667	13951	77	430
35 to 39	4	3	2	9	9	8	10	6	51	31.2	628	10713	116	912
30 to 34	11	5	10	16	10	9	18	12	91	27.2	571	7717	173	1636
25 to 29	18	16	19	16	17	21	12	18	137	23.7	448	5155	296	2794
20 to 24	10	18	15	11	7	9	16	13	99	19.5	322	3269	422	4628
15 to 19	20	21	18	12	10	4	12	16	113	15.3	211	1903	533	6982
10 to 14	7	4	8	6	6	8	6	8	53	9.9	136	1082	608	9881
5 to 9	12	9	8	6	1	0	3	7	46	5.7	82	543	662	13062
0 to 4	4	11	8	2	0	0	3	2	30	1.4	38	249	706	16488
-5 to -1	1	0	2	0	0	0	1	3	7	-3.7	20	122	724	30081
-10 to -6	4	2	2	0	0	0	0	2	10	-8.1	12	38	732	23717
-15 to -11	1	4	1	0	0	0	0	0	6	-12.3	3	2	741	27401

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

...SNARCK, NORTH DAKOTA
WGAN 24011
TABLE A:

WYEC Data

Latitude 46.80 N
Longitude 100.80 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Second Quarter
(5 Degrees(F)/1Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period Hour of Day								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Apr														
80 to 84	0	0	0	0	0	2	0	0	2	56.5	720	28279	0	0
75 to 79	0	0	0	0	4	1	0	0	5	57.0	716	24686	4	7
70 to 74	0	0	0	2	2	3	1	0	8	56.6	712	21118	8	39
65 to 69	0	0	0	4	13	12	1	0	30	50.6	695	17591	25	112
60 to 64	0	0	1	9	6	8	6	1	31	48.7	660	14197	60	318
55 to 59	5	3	4	14	9	10	9	2	56	46.7	616	10986	104	707
50 to 54	2	3	6	8	18	13	16	12	78	44.1	553	8044	167	1365
45 to 49	7	4	8	10	7	13	16	15	80	41.3	486	5459	234	2180
40 to 44	15	12	16	14	12	14	16	16	115	37.8	373	3273	347	3794
35 to 39	24	13	14	18	11	7	13	16	116	33.7	269	1648	451	5769
30 to 34	19	30	28	8	6	4	6	16	117	30.7	132	619	588	8340
25 to 29	12	12	10	3	2	3	6	12	60	26.0	53	169	667	11490
20 to 24	6	13	3	0	0	0	0	0	22	21.5	11	12	709	14933
May														
90 to 94	0	0	0	0	0	2	0	0	2	70.0	744	28120	0	0
85 to 89	0	0	0	0	1	1	0	0	2	69.0	742	24407	2	7
80 to 84	0	0	0	2	13	8	4	0	27	63.1	734	20711	10	31
75 to 79	0	0	0	10	14	16	4	0	44	59.9	699	17124	45	164
70 to 74	0	0	2	12	6	13	13	1	47	57.0	652	13752	92	512
65 to 69	2	0	6	8	10	9	12	6	53	53.6	604	10619	140	1099
60 to 64	5	2	10	11	15	13	7	13	76	50.6	542	7744	202	1944
55 to 59	7	5	10	15	13	12	19	8	89	48.4	463	5235	281	3155
50 to 54	15	12	13	15	8	12	14	19	108	45.7	372	3152	372	4792
45 to 49	20	22	22	7	8	4	12	21	116	43.0	251	1600	493	6960
40 to 44	26	23	24	11	2	0	4	18	108	38.7	138	643	606	9723
35 to 39	13	14	4	2	1	2	1	3	40	34.0	57	209	687	13009
30 to 34	4	11	2	0	2	1	3	4	27	31.1	12	33	712	16553
25 to 29	1	4	0	0	0	0	0	0	5	27.8	0	0	744	20240
Jun														
85 to 89	0	0	0	0	5	7	0	0	12	67.5	719	16972	1	1
80 to 84	0	0	0	5	9	7	5	0	26	65.2	703	13420	17	49
75 to 79	0	0	1	18	19	21	10	1	70	60.6	666	9988	54	217
70 to 74	2	0	9	16	22	19	14	5	86	59.1	584	6863	136	692
65 to 69	8	6	19	24	21	29	24	11	142	56.8	483	4173	237	1602
60 to 64	24	20	23	24	11	4	27	25	158	55.5	321	2143	399	3172
55 to 59	14	14	24	3	3	4	9	34	105	52.1	188	910	512	5547
50 to 54	32	32	13	0	0	0	1	12	90	48.6	76	261	644	8490
45 to 49	8	13	1	0	0	0	0	2	24	44.5	15	50	705	11879
40 to 44	2	4	0	0	0	0	0	0	6	40.0	4	7	716	15436
35 to 39	0	1	0	0	0	0	0	0	1	37.0	0	0	720	19029

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

BISMARCK, NORTH DAKOTA
WBAN 24011
TABLE A:

WYEC Data

Latitude 46.80 N
Longitude 100.80 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Third Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period Hour of Day								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Jul														
95 to 99	0	0	0	0	0	2	0	0	2	73.0	744	19456	0	0
90 to 94	0	0	0	2	15	17	1	0	35	69.5	734	15750	10	14
85 to 89	0	0	0	11	26	29	6	0	72	68.4	680	12199	64	183
80 to 84	0	0	1	22	22	16	23	0	84	66.4	600	8973	144	677
75 to 79	1	0	9	28	12	13	22	8	93	64.6	511	6184	233	1606
70 to 74	5	0	21	15	9	7	17	24	98	62.2	429	3840	315	2984
65 to 69	31	20	31	10	6	5	16	24	143	61.7	303	1986	441	4050
60 to 64	20	30	19	5	3	4	8	26	115	58.6	162	821	582	7405
55 to 59	26	24	10	0	0	0	0	8	68	54.3	69	260	675	10564
50 to 54	9	13	2	0	0	0	0	3	27	49.9	21	50	723	14074
45 to 49	1	6	0	0	0	0	0	0	7	46.4	2	1	742	17745
Aug														
95 to 99	0	0	0	0	3	3	0	0	6	67.7	744	21236	0	0
90 to 94	0	0	0	0	7	9	1	0	17	70.0	738	17538	6	22
85 to 89	0	0	0	6	19	20	4	0	49	67.7	705	13921	39	125
80 to 84	0	0	0	18	24	21	14	0	77	65.1	643	10532	101	456
75 to 79	1	0	5	19	13	14	13	3	68	63.8	562	7504	182	1148
70 to 74	9	6	14	28	20	20	26	14	137	62.3	478	4857	266	2221
65 to 69	15	15	27	16	7	4	20	30	134	60.9	337	2816	407	3900
60 to 64	27	20	19	6	0	2	10	23	107	58.0	214	1465	530	6269
55 to 59	18	15	19	0	0	0	5	12	69	54.1	116	650	628	9174
50 to 54	16	21	6	0	0	0	0	9	52	50.1	56	220	688	12464
45 to 49	7	10	3	0	0	0	0	2	22	46.1	17	46	727	16010
40 to 44	0	6	0	0	0	0	0	0	6	42.3	2	3	742	19687
Sep														
95 to 99	0	0	0	0	1	2	0	0	3	67.3	720	39124	0	0
90 to 94	0	0	0	1	6	7	0	0	14	67.2	711	25542	9	18
85 to 89	0	0	0	5	12	11	2	0	30	63.2	693	22025	27	101
80 to 84	0	0	1	6	10	7	5	0	29	62.4	664	18632	56	306
75 to 79	1	0	2	5	1	6	5	4	24	61.3	639	18394	81	670
70 to 74	5	1	4	8	9	13	7	4	51	59.8	604	12282	116	1158
65 to 69	4	5	4	11	17	6	9	9	85	56.7	542	9411	178	1887
60 to 64	10	4	7	15	11	11	12	8	78	53.6	471	6876	249	2952
55 to 59	7	12	9	14	7	15	10	7	81	50.6	390	4714	330	4390
50 to 54	11	10	12	9	4	2	18	11	77	47.6	320	2932	400	6288
45 to 49	8	7	16	8	9	4	10	21	83	43.0	233	1552	487	8428
40 to 44	28	25	21	7	3	6	10	19	119	39.5	149	591	571	11067
35 to 39	9	14	9	1	0	0	2	7	42	35.1	50	163	670	14239
30 to 34	7	9	5	0	0	0	0	0	21	31.4	10	22	710	17698
25 to 29	0	3	0	0	0	0	0	0	3	28.0	0	0	720	21276

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

MISMARCK, NORTH DAKOTA
WBAN 24011
TABLE A:

WYEC Data

Latitude 46.80 N
Longitude 100.80 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Fourth Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Oct															
85 to 89	0	0	0	0	4	4	0	0	8	56.6	742	29947	2	2	
80 to 84	0	0	0	1	3	3	0	0	7	56.7	736	26256	8	31	
75 to 79	0	0	0	1	9	6	0	0	16	54.3	724	22608	20	103	
70 to 74	0	0	0	6	7	8	1	0	22	52.2	705	19040	39	255	
65 to 69	0	0	0	7	3	6	4	0	20	50.3	683	15576	61	511	
60 to 64	0	0	1	10	21	16	9	3	60	47.3	653	12219	91	874	
55 to 59	5	1	2	12	18	17	11	3	69	44.4	583	9120	161	1495	
50 to 54	6	11	15	15	6	10	19	22	104	42.4	504	6385	240	2480	
45 to 49	20	11	14	15	6	6	16	15	103	39.2	396	4133	340	3948	
40 to 44	25	25	14	6	9	10	11	18	118	37.3	286	2420	458	5955	
35 to 39	14	10	16	17	4	2	12	18	93	33.0	181	1253	563	8508	
30 to 34	14	21	17	0	3	5	3	5	68	28.3	86	590	658	11565	
25 to 29	3	3	7	2	0	0	6	6	27	24.2	43	284	701	14979	
20 to 24	3	8	4	1	0	0	1	1	18	20.1	20	126	724	18541	
15 to 19	0	0	1	0	0	0	0	2	3	15.7	10	60	734	22195	
10 to 14	3	1	1	0	0	0	0	0	5	11.0	6	20	738	25875	
5 to 9	0	2	1	0	0	0	0	0	3	7.0	2	3	742	29578	
Nov															
70 to 74	0	0	0	0	1	0	0	0	1	50.0	720	31692	0	0	
65 to 69	0	0	0	0	2	1	0	0	3	48.0	718	28096	2	4	
60 to 64	0	0	0	0	4	3	0	0	7	42.3	716	28932	4	40	
55 to 59	0	0	0	4	15	6	1	0	26	40.2	698	17383	22	91	
50 to 54	0	0	0	9	10	10	2	0	31	37.3	671	13960	49	268	
45 to 49	4	1	1	11	15	19	12	4	67	34.0	630	10694	90	602	
40 to 44	9	9	7	15	15	20	15	13	103	31.4	548	7726	172	1234	
35 to 39	22	21	20	16	4	8	20	23	134	28.3	428	5269	292	2377	
30 to 34	15	13	19	16	7	4	13	15	102	24.3	308	3460	412	4168	
25 to 29	15	16	14	5	6	7	7	11	81	19.8	214	2163	506	6471	
20 to 24	11	10	8	3	2	4	8	7	53	15.2	144	1278	576	9186	
15 to 19	7	8	10	5	6	3	6	9	54	11.1	89	691	631	12199	
10 to 14	2	6	5	2	2	3	0	3	23	6.9	41	381	679	15489	
5 to 9	2	3	3	1	1	2	2	2	16	1.0	28	201	692	18909	
0 to 4	0	0	0	1	0	0	4	1	6	-3.2	17	95	703	22403	
-5 to -1	2	3	1	2	0	0	0	1	9	-8.6	11	26	709	25934	
-10 to -6	1	0	2	0	0	0	0	1	4	-11.3	0	0	720	29508	
-15 to -11															
Dec															
45 to 49	0	0	0	0	3	0	0	0	3	38.3	742	23248	2	1	
40 to 44	0	0	0	1	3	2	0	0	6	36.2	737	19546	7	19	
35 to 39	2	3	1	4	8	9	4	1	32	31.8	728	15874	16	67	
30 to 34	3	3	2	5	13	12	11	6	55	28.1	685	12342	59	255	
25 to 29	16	6	7	12	15	12	7	14	89	23.9	625	9062	119	695	
20 to 24	13	18	13	15	8	16	15	10	108	20.0	515	6214	229	1567	
15 to 19	10	13	21	23	18	12	13	13	123	15.5	410	3896	334	2969	
10 to 14	18	23	19	16	13	14	19	19	141	11.5	251	2190	493	4983	
5 to 9	13	9	11	5	6	7	12	11	74	6.1	150	1211	594	7724	
0 to 4	8	9	9	5	4	9	6	8	58	1.0	82	614	662	10847	
-5 to -1	1	1	2	3	2	0	6	5	20	-3.4	44	302	700	14255	
-10 to -6	4	2	2	2	0	0	0	6	16	-7.7	26	120	718	17793	
-15 to -11	5	6	3	2	0	0	0	0	16	-12.7	9	24	735	21417	
-20 to -16	0	0	3	0	0	0	0	0	3	-16.3	0	0	744	25113	

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

BISMARCK, NORTH DAKOTA
WBAN 24011
TABLE B:

WYEC Data

Latitude 46.80 N
Longitude 100.80 E

Annual Dry Bulb Temperature Frequencies
With Mean Coincident Wet Bulb Temperature
(5 Degree(F)/3Hr Bins)

Dry Bulb range(F)	Number of Hours of Occurrence in time period									Mean Coincident Wet Bulb Temperature (F)								
	Hour of day									Hour of day								
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year
95 to 99	0	0	0	0	4	7	0	0	11	0.0	0.0	0.0	0.0	67.8	69.0	0.0	0.0	68.5
90 to 94	0	0	0	3	28	35	2	0	68	0.0	0.0	0.0	70.7	69.4	69.0	67.0	0.0	69.2
85 to 89	0	0	0	22	67	72	12	0	173	0.0	0.0	0.0	69.1	66.7	65.9	66.8	0.0	66.7
80 to 84	0	0	2	54	81	64	51	0	252	0.0	0.0	68.5	66.1	64.0	63.2	66.1	0.0	64.7
75 to 79	3	0	17	81	72	77	54	16	320	64.7	0.0	65.3	63.4	60.0	59.7	64.1	64.5	62.0
70 to 74	21	7	50	87	76	82	79	48	450	62.4	63.4	63.1	60.3	58.4	57.9	59.5	63.8	60.2
65 to 69	60	46	87	80	79	72	86	80	590	61.2	61.3	60.2	56.5	54.3	54.3	57.9	60.3	58.0
60 to 64	86	76	80	80	67	58	79	99	625	56.9	58.0	56.0	52.2	50.3	50.1	53.8	56.6	54.5
55 to 59	82	74	78	58	56	65	63	74	550	52.8	53.1	52.3	47.6	45.2	46.1	48.4	52.0	50.1
50 to 54	91	102	67	53	60	52	70	88	583	48.6	48.7	46.9	43.7	42.5	41.9	43.7	45.9	45.8
45 to 49	71	73	64	51	59	49	61	78	506	42.4	44.0	43.0	39.8	38.7	39.2	40.9	42.2	41.5
40 to 44	104	99	79	66	59	73	62	82	624	38.6	38.9	38.2	36.7	35.6	35.5	36.8	38.1	37.5
35 to 39	78	69	54	70	65	60	72	71	539	33.4	33.7	33.4	32.5	32.0	32.3	32.8	33.0	32.9
30 to 34	93	112	93	65	56	51	74	82	626	29.4	29.8	29.8	28.6	28.1	28.3	28.9	29.1	29.1
25 to 29	95	85	85	65	53	62	64	87	596	24.6	25.5	25.3	23.9	24.0	24.2	24.4	25.0	24.7
20 to 24	58	85	61	42	34	43	52	49	424	20.7	20.7	20.5	19.9	19.2	19.4	19.7	20.3	20.2
15 to 19	50	56	66	52	47	38	45	45	399	15.9	15.8	15.7	15.6	15.5	14.8	15.1	15.1	15.5
10 to 14	46	45	51	42	48	52	53	54	391	10.8	10.8	11.1	10.9	10.5	10.4	10.6	10.7	10.7
5 to 9	42	43	44	41	35	29	35	37	306	5.8	6.0	5.9	5.7	5.4	6.4	5.8	6.5	5.9
0 to 4	47	45	37	22	11	19	27	38	246	1.5	1.4	1.2	0.8	1.2	0.0	1.1	1.3	1.2
-5 to -1	10	21	17	21	20	13	21	22	145	-2.8	-3.5	-3.8	-3.2	-3.9	-4.2	-3.2	-3.3	-3.5
-10 to -6	24	16	17	19	16	18	11	17	138	-7.9	-8.6	-7.6	-7.7	-7.5	-8.3	-8.5	-7.8	-8.0
-15 to -11	19	26	25	16	2	4	20	18	130	-11.8	-12.9	-13.4	-12.4	-12.0	-11.8	-13.1	-12.6	-12.7
-20 to -16	8	3	11	4	0	0	2	7	35	-19.5	-19.0	-17.8	-18.0	0.0	0.0	-17.0	-18.1	-18.3
-25 to -21	7	12	8	1	0	0	0	3	31	-21.4	-22.2	-22.6	-22.0	0.0	0.0	0.0	-22.0	-22.1
-30 to -26	0	0	2	0	0	0	0	0	2	0.0	0.0	-26.0	0.0	0.0	0.0	0.0	0.0	-26.0

TABLE C: Annual and Monthly Temperature, Humidity and Windspeed Summary

Month	Dry Bulb Temperature (F)				Wet Bulb		Percent Relative Humidity					Average Humidity Ratio (lb moisture/lb dry air)					Average wind
	Daily Ave				Ave		Average					Day					MPH
	Ave	Max	Min	Max	Min	Ave	4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	8.6	48	-26	18	-2	7.3	86	86	74	84	84	0.0011	0.0011	0.0014	0.0013	0.0013	12.5
Feb	13.5	44	-23	23	5	12.4	89	87	74	81	83	0.0015	0.0014	0.0018	0.0017	0.0016	11.4
Mar	24.3	58	-13	37	13	20.6	75	64	46	64	64	0.0015	0.0017	0.0019	0.0019	0.0017	11.1
Apr	43.2	80	20	55	32	37.7	83	64	47	62	67	0.0038	0.0042	0.0038	0.0041	0.0039	10.7
May	54.7	91	28	67	42	46.7	78	59	43	52	61	0.0050	0.0062	0.0059	0.0058	0.0056	13.1
Jun	63.9	88	39	74	53	55.4	78	55	47	56	62	0.0075	0.0084	0.0082	0.0083	0.0081	12.1
Jul	71.3	96	47	84	58	62.0	83	58	44	58	64	0.0098	0.0112	0.0107	0.0113	0.0107	9.7
Aug	69.0	97	40	83	55	60.2	84	61	43	61	65	0.0093	0.0107	0.0101	0.0105	0.0100	8.0
Sep	57.0	96	28	72	44	49.3	83	65	40	60	65	0.0061	0.0072	0.0064	0.0066	0.0066	9.4
Oct	47.3	89	6	61	32	38.6	63	52	34	50	52	0.0032	0.0037	0.0037	0.0035	0.0034	10.5
Nov	28.5	71	-12	41	18	24.3	75	68	46	63	65	0.0019	0.0021	0.0022	0.0020	0.0020	11.0
Dec	16.3	46	-17	26	6	14.5	82	80	67	75	77	0.0013	0.0013	0.0017	0.0015	0.0014	11.6
Year	41.6	97	-26	54	30	35.9	80	67	50	64	67	0.0044	0.0050	0.0048	0.0049	0.0047	10.9

BISMARCK, NORTH DAKOTA

WBAN 24011

TABLE D:

WYEC Data

Latitude 46.80 N

Longitude 100.80 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**		24 HOUR SUMMARY			
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	HEATING		COOLING	
	Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Hrs	Deg	Hrs	Deg
	Base Heat Cool		Base Heat Cool		Base Heat Cool		Base Heat Cool		Base Heat Cool		Base Heat Cool		Below Base 100s*		Above Base 100s*	
98	0	674	0	0	581	0	0	521	0	0	596	0	0	2045	0	0
97	0	663	0	0	570	0	0	510	0	0	585	0	0	2012	0	0
96	0	652	0	0	559	0	1	499	0	4	500	0	0	1979	0	0
95	0	641	0	0	549	0	3	488	0	6	489	0	0	1947	0	0
94	0	630	0	0	538	0	6	477	0	9	478	0	0	1914	0	0
93	0	619	0	0	527	0	9	466	0	13	467	0	0	1881	0	0
92	0	608	0	0	516	0	13	455	0	18	456	0	0	1848	0	0
91	0	597	0	1	505	0	20	445	0	26	445	1	1	1815	0	0
90	0	586	0	2	494	0	28	434	1	37	435	1	1	1782	0	0
89	0	575	0	5	483	0	38	423	1	47	424	1	2	1749	0	0
88	0	564	0	9	472	0	49	413	1	59	414	2	4	1717	0	0
87	0	554	0	12	461	0	57	402	2	69	404	3	6	1684	0	0
86	0	543	0	18	450	0	70	392	3	82	393	3	8	1651	0	0
85	0	532	0	23	440	1	89	382	3	102	383	4	11	1618	0	0
84	0	521	0	29	429	1	105	372	4	118	373	5	17	1585	0	0
83	0	510	0	38	418	1	119	362	5	128	364	7	26	1552	0	0
82	0	499	0	45	408	2	138	352	7	142	354	8	36	1520	0	0
81	1	488	0	57	397	2	155	343	8	157	345	9	44	1487	0	0
80	2	477	0	72	387	3	171	334	10	171	335	11	56	1454	0	0
79	2	466	0	86	377	4	184	324	12	185	326	13	69	1421	0	0
78	4	455	0	99	367	4	196	315	14	204	317	15	77	1388	0	0
77	7	444	0	114	357	6	214	306	16	220	308	17	85	1355	0	0
76	10	433	0	130	347	7	232	298	18	230	300	19	97	1323	0	0
75	15	422	0	149	338	8	246	289	20	245	291	22	112	1290	0	0
74	24	412	1	170	328	10	258	281	23	261	283	24	125	1257	1	0
73	33	401	1	187	319	12	273	272	25	278	274	27	136	1225	1	0
72	41	390	1	201	310	13	290	264	28	298	266	30	150	1192	1	0
71	51	380	2	217	301	16	306	256	31	316	258	33	168	1160	2	0
70	63	370	2	236	293	18	321	249	34	330	251	36	188	1127	2	0
69	77	359	3	254	284	20	334	241	38	341	243	39	206	1096	3	0
68	91	349	4	268	276	23	349	233	41	356	236	43	225	1064	4	0
67	106	339	5	284	268	26	366	226	45	374	228	46	243	1033	6	0
66	127	329	6	299	260	29	384	219	48	389	221	50	256	1002	8	0
65	148	320	7	317	252	32	400	212	52	402	214	54	273	971	10	0
64	163	310	9	337	244	35	416	205	56	414	207	58	296	941	13	0
63	178	301	11	353	236	38	433	198	61	425	201	63	315	911	16	0
62	195	292	12	369	229	42	450	192	65	436	194	67	330	882	20	0
61	216	283	14	387	222	46	461	185	70	447	188	71	342	854	24	0
60	231	275	17	401	215	50	468	179	74	460	181	76	354	826	29	0
59	245	266	19	415	208	54	477	173	79	475	175	80	369	798	34	0
58	263	258	22	429	201	58	488	167	84	489	169	85	384	771	40	0
57	278	249	24	440	195	62	501	161	89	499	163	90	398	745	46	0
56	290	241	27	449	188	67	511	155	94	512	157	95	409	719	53	0
55	305	233	30	459	182	71	523	149	99	526	151	100	421	693	60	0
54	321	225	33	469	176	76	534	143	104	538	145	106	433	668	68	0
53	334	218	37	478	169	81	546	138	110	549	140	111	447	643	76	0
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FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 565 x 100 = 56500 Deg Hrs)

** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

BISMARCK, NORTH DAKOTA
WBAN 24011
TABLE D1:

WYEC Data

Latitude 46.00 N
Longitude 100.80 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	7-9AM**			10-12AM**			1-3PM**			4-6PM**			7-9PM**			10PM-5AM**			24 HOUR SUMMARY	
	Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		HEATING	COOLING
	Above	(100s)*		Above	(100s)*		Above	(100s)*		Above	(100s)*		Above	(100s)*		Above	(100s)*		Hrs	Deg
	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Below	Above
																			Base	Base
																			100s*	100s*
52	348	210	40	488	163	86	561	132	115	558	134	117	461	166	74	906	619	85	5436	1425
51	362	203	44	502	157	91	575	127	121	568	129	122	475	159	78	959	596	94	5318	1371
50	374	196	47	513	151	96	585	122	127	579	124	128	489	153	83	1021	573	104	5196	1319
49	386	188	51	522	146	101	594	117	133	588	119	134	503	147	88	1079	550	115	5085	1267
48	400	181	55	529	140	106	606	112	139	598	114	140	516	141	93	1126	529	126	4983	1217
47	416	175	59	539	134	111	621	107	145	609	109	146	528	136	98	1165	507	137	4881	1168
46	430	168	63	553	129	117	634	102	151	618	104	152	540	130	104	1209	486	149	4775	1119
45	440	161	68	564	123	122	644	98	157	628	99	158	551	125	109	1255	466	162	4676	1072
44	449	155	72	575	118	128	653	93	164	642	95	165	564	119	115	1302	446	174	4572	1026
43	462	148	77	589	113	134	666	89	170	660	90	171	577	114	120	1357	426	188	4448	981
42	477	142	81	603	108	140	680	85	177	673	86	178	590	109	126	1416	407	201	4319	937
41	494	136	86	617	103	146	688	81	184	684	82	185	603	104	132	1469	389	216	4203	894
40	514	130	91	629	99	152	700	77	191	698	78	192	614	99	138	1525	371	231	4079	853
39	527	124	96	639	94	159	712	73	198	712	74	199	628	94	145	1578	353	246	3962	813
38	536	119	102	651	89	165	725	69	205	723	70	206	642	90	151	1613	337	262	3869	774
37	549	113	107	666	85	172	740	65	213	737	67	213	653	85	157	1651	320	279	3763	735
36	561	108	113	681	81	178	755	62	220	751	63	221	667	81	164	1697	304	295	3647	698
35	572	103	118	697	77	185	768	59	228	761	60	228	682	77	171	1749	288	313	3529	662
34	592	97	124	711	73	192	778	55	235	771	56	236	698	73	178	1814	273	330	3394	628
33	620	92	130	725	69	199	789	52	243	778	53	244	710	69	185	1884	259	349	3252	595
32	639	88	137	738	65	207	797	49	251	788	50	251	726	65	192	1942	245	368	3128	563
31	652	83	143	751	62	214	807	46	259	800	47	259	745	61	199	1987	232	388	3015	532
30	666	79	150	764	59	222	821	43	267	811	44	267	759	58	207	2037	219	408	2901	502
29	680	75	156	775	55	230	835	41	276	824	41	276	770	55	214	2090	207	429	2784	474
28	698	71	163	785	52	237	847	38	284	838	39	284	783	51	222	2144	195	450	2663	447
27	715	67	170	795	49	245	857	36	293	852	36	292	798	48	230	2197	184	471	2544	421
26	733	63	178	807	46	253	867	34	301	866	34	301	812	46	238	2248	174	494	2425	396
25	750	60	185	825	43	261	877	31	310	875	32	310	824	43	246	2303	163	516	2305	372
24	763	56	193	841	41	270	886	29	319	886	29	318	833	40	255	2351	154	540	2198	350
23	776	53	200	850	38	278	893	27	328	895	27	327	841	38	263	2397	145	563	2106	328
22	787	50	208	858	36	287	898	25	337	900	25	336	852	35	271	2440	136	588	2025	308
21	799	47	216	865	34	295	903	23	346	909	24	345	863	33	280	2470	128	612	1949	288
20	812	44	224	873	31	304	911	21	355	918	22	354	874	30	289	2503	120	637	1868	269
19	824	41	232	882	29	313	921	20	364	925	20	364	883	28	297	2545	112	662	1778	250
18	836	39	241	893	27	322	932	18	373	932	18	373	892	26	306	2579	105	688	1695	233
17	849	36	249	903	25	331	941	16	382	939	17	382	902	24	315	2604	98	714	1621	216
16	863	34	258	914	23	340	950	15	392	945	15	392	911	22	324	2628	91	740	1547	201
15	876	31	266	925	21	349	959	13	401	954	14	401	921	21	334	2658	85	766	1466	185
14	890	29	275	934	20	358	969	12	411	965	12	411	930	19	343	2685	79	793	1385	171
13	901	27	284	944	18	368	979	11	421	974	11	421	939	17	352	2713	73	820	1307	150
12	911	25	293	953	17	377	989	10	431	986	10	430	949	16	362	2745	67	847	1226	145
11	920	24	302	959	15	387	999	9	441	999	9	440	961	14	371	2773	62	875	1147	133
10	929	22	312	967	14	396	1007	8	451	1007	8	450	973	13	381	2804	57	903	1071	122
9	937	20	321	974	13	406	1015	7	461	1017	7	460	982	12	391	2832	53	931	1001	112
8	944	19	330	982	12	416	1022	6	471	1027	7	471	988	11	400	2857	48	960	938	102
7	952	17	340	989	11	426	1027	6	481	1034	6	481	995	10	410	2880	44	988	861	93

NOTES: * Heating and Cooling Degree Hrs are in Hundreds (565 x 100 = 56500 Deg Hrs)
 ** The Hours Below the Base Temp for any X-Hr period calculated by subtracting the Hrs Above from X times 365

BISMARCK, NORTH DAKOTA
WBAN 24011
TABLE D:

WYEC Data

Latitude 46.80 N
Longitude 100.80 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BY TIME OF DAY												24 HOUR SUMMARY									
7-9AM**			10-12AM**			1-3PM**			4-6PM**			7-9PM**			10PM-6AM**			HEATING		COOLING	
TEMP	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg	Hrs	Deg	
(F)	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Below	Hrs	Above	Hrs	
	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	100s*	Base	100s*	
6	963	16	349	998	10	436	1032	5	492	1037	5	491	1004	9	420	2902	40	1017	823	84	
5	974	15	359	1007	9	446	1040	4	502	1039	5	502	1012	8	430	2928	36	1046	758	77	
4	982	13	369	1014	8	456	1047	4	512	1043	4	512	1018	7	441	2960	33	1076	695	69	
3	990	12	379	1019	7	466	1049	3	523	1047	4	523	1023	6	451	2995	30	1106	634	63	
2	998	11	389	1022	6	476	1052	3	533	1051	3	533	1027	6	461	3021	27	1136	587	57	
1	1004	10	399	1026	6	486	1055	2	544	1053	3	544	1033	5	471	3038	25	1166	550	51	
0	1011	10	409	1031	5	497	1056	2	554	1057	2	554	1038	4	482	3059	22	1196	506	46	
-1	1017	9	419	1036	4	507	1058	2	565	1060	2	565	1044	4	492	3076	20	1227	467	41	
-2	1020	8	429	1041	4	517	1061	1	576	1062	2	575	1049	3	503	3086	18	1258	439	36	
-3	1021	7	439	1046	3	520	1065	1	586	1065	1	586	1054	3	513	3099	16	1289	409	32	
-4	1022	6	449	1051	3	530	1071	1	597	1067	1	597	1057	3	524	3112	14	1320	378	28	
-5	1028	6	460	1054	2	549	1076	1	608	1070	1	607	1060	2	534	3121	13	1351	349	24	
-6	1034	5	470	1057	2	559	1079	0	618	1073	1	618	1063	2	545	3131	11	1382	322	21	
-7	1039	5	480	1061	2	570	1082	0	629	1076	0	629	1064	2	556	3141	10	1414	295	18	
-8	1043	4	491	1067	1	581	1087	0	640	1081	0	640	1066	1	566	3150	8	1445	265	15	
-9	1045	4	501	1071	1	591	1091	0	651	1085	0	650	1068	1	577	3164	7	1477	234	13	
-10	1048	3	512	1073	1	602	1092	0	662	1089	0	661	1070	1	588	3178	6	1508	208	11	
-11	1051	3	522	1076	1	613	1093	0	673	1092	0	672	1073	1	598	3191	5	1540	182	9	
-12	1056	2	533	1080	0	624	1094	0	684	1093	0	683	1078	0	609	3209	4	1572	149	7	
-13	1059	2	543	1085	0	634	1094	0	695	1094	0	694	1083	0	620	3223	3	1604	120	6	
-14	1062	1	554	1088	0	645	1095	0	706	1095	0	705	1087	0	631	3234	3	1637	98	4	
-15	1069	1	565	1089	0	656	1095	0	717	1095	0	716	1091	0	642	3241	2	1669	78	4	
-16	1075	1	575	1090	0	667	1095	0	728	1095	0	727	1093	0	653	3245	2	1702	66	3	
-17	1078	1	586	1091	0	678	1095	0	738	1095	0	738	1094	0	663	3246	1	1734	60	2	
-18	1081	1	597	1092	0	689	1095	0	749	1095	0	749	1095	0	674	3250	1	1767	52	2	
-19	1082	0	608	1092	0	700	1095	0	760	1095	0	760	1095	0	685	3253	1	1799	47	1	
-20	1083	0	618	1093	0	711	1095	0	771	1095	0	771	1095	0	696	3259	0	1832	39	1	
-21	1084	0	629	1094	0	722	1095	0	782	1095	0	782	1095	0	707	3267	0	1864	28	0	
-22	1088	0	640	1094	0	733	1095	0	793	1095	0	793	1095	0	718	3276	0	1897	16	0	
-23	1090	0	651	1095	0	744	1095	0	804	1095	0	804	1095	0	729	3282	0	1930	8	0	
-24	1091	0	662	1095	0	755	1095	0	815	1095	0	814	1095	0	740	3284	0	1963	4	0	
-25	1092	0	673	1095	0	766	1095	0	826	1095	0	825	1095	0	751	3285	0	1995	2	0	
-26	1094	0	684	1095	0	776	1095	0	837	1095	0	836	1095	0	762	3285	0	2028	1	0	
-27	1095	0	695	1095	0	787	1095	0	848	1095	0	847	1095	0	773	3285	0	2061	0	0	

FOOTNOTES: * Heating and Cooling Degree Bases are in Hundreds (eg. 565 x 100 = 56500 Deg Hrs)

** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

BISMARCK, NORTH DAKOTA
WBAN 24011
TABLE E:

WYEC Data

Latitude 46.80 N
Longitude 100.80 E

Annual COOLING Wet Bulb Degree Hour Summary

Wet Bulb Temperature (F) Base:	50	53	56	59	62	65	68	71	74	77	80
Annual Wet Bulb hours ABOVE base:	2796	2338	1945	1460	1003	550	261	88	7	0	0
Annual Wet Bulb Cooling deg-hrs:	28459.	20544.	13904.	8528.	4589.	2084.	763.	170.	10.	0.	0.

TABLE F:

Annual Humidification/Dehumidification Requirements
At various Indoor Conditions and Degree Day Bases
(Pounds of Moisture)

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **											COOLING HUMIDITY RATIO HOURS **											Maintained Indoor Humidity Ratio
	Heating Degree Base											Cooling Degree Base											
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80	
.001	1	1	1	1	1	1	1	1	1	1	1	29	28	27	25	24	21	18	14	10	6	4	.001
.002	4	4	4	4	4	4	4	4	4	4	4	23	23	22	21	20	18	16	12	8	6	3	.002
.003	6	7	7	7	7	8	8	8	8	8	8	18	18	18	18	17	15	14	10	7	5	3	.003
.004	9	10	11	12	12	12	12	12	12	12	12	14	14	14	14	14	13	11	9	6	4	3	.004
.005	12	14	15	16	17	17	17	18	18	18	18	11	11	11	11	11	10	9	7	5	3	2	.005
.006	15	17	19	21	22	22	23	23	24	24	24	8	8	8	8	8	8	7	6	4	3	2	.006
.007	18	21	23	25	27	28	29	29	30	30	30	6	6	6	6	6	6	5	4	3	2	1	.007
.008	21	24	27	30	32	34	35	36	36	37	37	4	4	4	4	4	4	4	3	2	2	1	.008
.009	23	28	31	35	37	39	41	42	43	44	44	3	3	3	3	3	3	3	2	2	1	1	.009
.010	26	31	35	39	42	45	47	49	50	51	52	2	2	2	2	2	2	2	1	1	1	1	.010
.011	29	35	39	44	47	51	53	56	57	59	59	1	1	1	1	1	1	1	1	1	0	0	.011
.012	32	38	43	48	52	57	60	63	65	66	67	0	0	0	0	0	0	0	0	0	0	0	.012
.013	35	42	47	53	58	62	66	69	72	74	75	0	0	0	0	0	0	0	0	0	0	0	.013
.014	38	45	51	58	63	68	72	76	80	82	84	0	0	0	0	0	0	0	0	0	0	0	.014
.015	41	48	55	62	68	74	79	83	87	90	92	0	0	0	0	0	0	0	0	0	0	0	.015
.016	43	52	59	67	73	79	85	90	95	98	100	0	0	0	0	0	0	0	0	0	0	0	.016
.017	46	55	63	72	78	85	91	97	102	106	108	0	0	0	0	0	0	0	0	0	0	0	.017
.018	49	59	67	76	83	91	97	104	110	114	117	0	0	0	0	0	0	0	0	0	0	0	.018

FOOTNOTES: * Indoor Humidity Level is measured in pounds of moisture per pound of dry air. Indoor set points of 72 deg(F)-30%RH and 78 deg(F)-50%RH yield humidity ratios of .005 and .010 respectively.
** Heating (Cooling) Humidity Ratio Hours are defined as the summation of the differences between the maintained indoor humidity ratio and the observed outdoor humidity ratio when both the hourly dry bulb temperature and the humidity ratio are above (below) the base levels.

TABLE G:

Percent Diffuse Solar Radiation*
and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
% Diffuse on surface													
HORIZONTAL	44	37	48	66	58	48	41	40	36	40	51	50	47
VERTICAL													
NORTH	100	100	100	99	95	88	89	95	100	100	100	100	95
WEST	51	44	60	78	70	66	57	57	49	51	54	55	60
SOUTH	28	29	47	75	76	74	66	57	40	34	35	31	51
EAST	49	51	52	72	73	59	57	51	49	50	53	55	58
% Possible Sun	55	55	60	58	63	65	76	73	66	59	45	47	62

FOOTNOTES: * Corrected For Cloud Cover.

** Source: NOAA, Comparative Climatic Data for the United States Through 1978.

BISMARCK, NORTH DAKOTA
WBAN 24011
TABLE B:

WYEC Data

Latitude 46.80 N
Longitude 100.80 E

Average Daily Solar Radiation on Vertical and Horizontal Surfaces
(BTU/DAY.SQFT)

Month	Under Clear Sky Assumption*										Corrected For Cloud Cover**									
	S	SSE/SSW	SE/SW	ESE/WSW	E/W	ENE/NNW	NE/NN	NNE/NNW	N	S-45 horiz***	S	SSE/SSW	SE/SW	ESE/WSW	E/W	ENE/NNW	NE/NN	NNE/NNW	N	S-45 horiz***
Jan	1733	1606	1265	915	505	225	121	112	112	1647	814	763	618	466	286	164	118	113	113	766
Feb	1960	1827	1500	1179	753	403	227	162	161	2046	925	846	690	540	360	224	164	145	144	957
Mar	1940	1854	1641	1433	1060	694	436	285	240	2384	881	877	810	737	590	437	328	260	237	1012
Apr	1642	1684	1630	1573	1325	1016	727	493	355	2506	983	1009	981	937	822	697	592	511	462	1189
May	1352	1476	1558	1607	1484	1255	975	710	521	2486	1064	1090	1094	1088	1010	900	779	672	606	1467
Jun	1227	1372	1510	1608	1549	1365	1097	829	642	2457	1046	1143	1216	1264	1217	1096	932	773	658	1613
Jul	1272	1406	1516	1596	1510	1308	1039	777	592	2447	1127	1201	1253	1288	1210	1079	905	742	628	1794
Aug	1488	1565	1570	1556	1367	1100	825	586	428	2436	1146	1214	1220	1208	1081	907	729	575	468	1649
Sep	1781	1736	1593	1439	1118	790	532	358	289	2353	1110	1084	1001	909	722	539	402	311	278	1369
Oct	1905	1784	1499	1227	810	490	280	203	194	2099	1025	972	836	761	502	343	245	201	196	1095
Nov	1780	1655	1318	991	567	280	150	129	129	1739	699	653	536	423	279	181	131	121	120	668
Dec	1616	1498	1174	833	434	185	102	100	100	1501	596	557	449	333	197	116	89	87	87	549
Year	1639	1620	1481	1330	1042	761	545	397	314	2175	952	952	893	826	693	559	453	377	334	1179

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.
*** South exposure tilt 45 degrees.

TABLE I: Average Daily Solar Heat Gain Through Single Pane Glass on Vertical and Horizontal Surfaces
(BTU/DAY.SQFT)

Month	Under Clear Sky*									Corrected For Cloud Cover**								
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N
Jan	1503	1376	1059	756	393	162	94	91	91	697	647	514	384	226	125	94	92	92
Feb	1680	1549	1257	986	605	310	167	131	131	786	710	570	445	288	175	130	117	117
Mar	1605	1547	1371	1196	860	554	333	217	195	721	727	674	614	485	352	258	205	193
Apr	1288	1366	1353	1309	1097	828	574	379	279	789	822	804	770	674	567	478	410	373
May	1005	1148	1266	1331	1228	1028	780	552	391	835	868	886	889	825	732	628	539	482
Jun	887	1040	1210	1328	1280	1121	884	651	478	804	898	984	1041	1002	897	754	616	515
Jul	935	1082	1228	1321	1250	1076	838	610	445	861	944	1017	1061	1003	884	733	592	491
Aug	1147	1252	1292	1292	1132	900	657	455	332	897	977	1005	1002	895	743	586	454	371
Sep	1448	1441	1325	1280	924	638	413	274	234	902	898	830	754	595	436	316	245	226
Oct	1617	1502	1253	1020	669	378	215	162	158	861	812	694	580	411	271	190	162	159
Nov	1540	1413	1107	819	454	205	115	105	105	594	549	446	349	227	140	103	98	98
Dec	1406	1290	984	685	337	130	82	81	81	511	474	373	273	156	89	72	71	71
Year	1336	1332	1225	1104	854	612	431	310	244	772	778	734	682	567	453	363	301	266

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.

BOISE, IDAHO
WBAN 24131
TABLE A:

WYEC Data

Latitude 43.50 N
Longitude 116.20 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): First Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Jan															
55 to 59	0	0	0	0	3	1	0	0	4	46.5	744	21331	0	0	
50 to 54	2	4	6	6	3	7	5	3	36	43.9	729	17631	15	20	
45 to 49	5	5	5	14	23	19	7	9	87	40.6	664	14102	80	211	
40 to 44	16	17	8	12	17	13	15	13	113	37.4	577	10975	167	604	
35 to 39	20	18	21	19	11	14	23	25	151	33.8	449	8409	295	1958	
30 to 34	8	10	14	5	0	3	6	9	55	29.9	317	6552	427	3821	
25 to 29	3	3	3	1	0	0	1	0	11	24.3	293	5042	451	6031	
20 to 24	1	0	0	1	4	2	0	0	8	18.9	285	3600	459	8309	
15 to 19	1	0	2	0	19	17	6	3	56	14.9	257	2216	487	10645	
10 to 14	12	12	8	14	11	14	11	14	96	10.3	198	1069	546	13218	
5 to 9	17	9	13	11	2	3	9	11	75	6.2	90	372	654	16241	
0 to 4	3	13	7	2	0	0	7	6	38	1.6	30	90	714	19679	
-5 to -1	3	2	6	0	0	0	3	0	14	-3.1	6	9	738	23318	
Feb															
50 to 54	0	0	0	0	5	2	0	0	7	44.3	672	11721	0	0	
45 to 49	2	5	2	8	15	19	11	9	71	40.2	651	8396	21	35	
40 to 44	14	9	13	20	17	25	10	11	119	37.2	539	5375	133	374	
35 to 39	20	20	17	21	33	24	29	19	183	33.2	394	2967	278	1326	
30 to 34	21	20	20	23	8	7	23	26	148	29.4	216	1436	456	3155	
25 to 29	14	13	14	6	4	6	5	10	72	24.8	112	647	560	5726	
20 to 24	4	10	12	3	2	1	3	6	41	20.0	56	249	616	8688	
15 to 19	7	4	2	2	0	0	3	3	21	16.2	16	67	656	11866	
10 to 14	2	2	2	1	0	0	0	0	7	11.4	6	17	666	15176	
5 to 9	0	1	2	0	0	0	0	0	3	8.0	0	0	672	18519	
Mar															
60 to 64	0	0	0	0	1	2	0	0	3	51.7	744	16203	0	0	
55 to 59	0	0	0	3	11	10	0	0	24	45.4	739	12495	5	12	
50 to 54	0	0	0	8	23	29	11	4	75	43.2	694	8895	50	132	
45 to 49	9	8	4	27	25	23	25	10	123	40.4	595	5647	149	604	
40 to 44	27	25	30	27	12	11	30	33	195	37.9	427	3041	317	1718	
35 to 39	22	31	26	17	16	17	13	24	166	33.2	250	1325	494	3722	
30 to 34	20	17	20	9	5	1	13	15	100	28.1	115	454	629	6571	
25 to 29	13	13	9	2	0	0	1	7	45	24.5	34	87	710	9924	
20 to 24	2	7	4	0	0	0	0	0	13	19.2	3	6	741	13563	

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

BOISE, IDAHO
WBAN 24131
TABLE A:

MYEC Data

Latitude 43.50 N
Longitude 116.20 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Second Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Apr														
75 to 79	0	0	0	0	2	5	0	0	7	56.4	718	20483	2	1
70 to 74	0	0	0	1	8	10	1	0	20	54.9	705	16916	15	34
65 to 69	0	0	0	3	13	15	8	0	39	52.3	675	13452	45	170
60 to 64	1	0	0	15	19	13	13	2	63	48.3	627	10182	93	500
55 to 59	4	0	5	19	13	15	13	10	79	44.9	565	7205	155	1123
50 to 54	14	8	17	19	16	16	17	14	121	42.5	474	4597	246	2115
45 to 49	17	23	23	16	13	10	19	23	144	40.0	330	2584	390	3702
40 to 44	18	10	22	12	6	5	12	17	102	37.2	201	1274	519	5992
35 to 39	15	24	14	4	0	1	5	13	76	34.0	108	500	612	8818
30 to 34	15	19	8	1	0	0	2	10	55	29.5	42	122	678	12040
25 to 29	6	3	0	0	0	0	0	1	10	25.9	11	25	709	15543
20 to 24	0	3	1	0	0	0	0	0	4	21.8	1	1	719	19119
May														
90 to 94	0	0	0	0	2	3	1	0	6	58.7	744	25924	0	0
85 to 89	0	0	0	0	3	3	1	0	7	58.1	737	22224	7	20
80 to 84	2	0	0	2	9	11	2	3	29	56.1	722	18568	22	84
75 to 79	1	0	1	8	12	10	7	0	39	54.7	690	15036	54	272
70 to 74	1	3	5	10	11	10	8	3	51	53.8	649	11693	95	649
65 to 69	2	0	3	12	24	24	15	5	85	51.3	581	8605	163	1281
60 to 64	8	5	11	19	13	13	16	11	96	49.4	491	5928	253	2324
55 to 59	14	10	16	17	4	6	21	16	104	48.1	404	3720	340	3836
50 to 54	17	20	20	14	7	7	11	20	116	45.0	280	2020	464	5856
45 to 49	19	16	18	6	8	6	7	17	97	41.9	171	913	573	8469
40 to 44	22	18	13	4	0	0	4	15	76	38.6	81	280	663	11556
35 to 39	5	17	5	1	0	0	0	3	31	35.5	20	44	724	15040
30 to 34	2	4	1	0	0	0	0	0	7	31.7	2	4	742	18720
Jun														
90 to 94	0	0	0	0	6	7	0	0	13	62.7	716	19936	4	3
85 to 89	0	0	0	1	9	17	7	0	34	60.8	699	16391	21	58
80 to 84	0	0	0	9	19	12	12	0	52	59.0	654	13004	66	271
75 to 79	0	0	1	13	15	13	12	1	55	57.6	598	9866	122	733
70 to 74	1	0	4	22	10	11	18	11	77	54.7	539	7016	181	1483
65 to 69	8	0	20	16	14	16	17	26	117	53.4	457	4523	263	2590
60 to 64	32	17	26	12	12	10	13	13	135	51.0	323	2586	397	4253
55 to 59	12	32	16	13	5	4	7	20	109	48.5	195	1310	525	6577
50 to 54	18	10	11	4	0	0	4	12	59	44.0	105	603	615	9470
45 to 49	9	15	9	0	0	0	0	6	39	42.4	50	217	670	12684
40 to 44	10	11	3	0	0	0	0	1	25	38.1	22	44	698	16111
35 to 39	0	5	0	0	0	0	0	0	5	36.8	1	1	719	19668

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

BOISE, IDAHO
NOAN 24131
TABLE A:

WYEC Data

Latitude 43.50 N
Longitude 116.20 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB); Third Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Jul															
100 to 104	0	0	0	0	0	2	0	0	2	65.0	744	20836	0	0	
95 to 99	0	0	0	0	7	11	1	0	19	64.1	738	17123	6	7	
90 to 94	0	0	0	3	24	32	8	0	67	64.4	707	13504	37	108	
85 to 89	0	0	0	17	31	18	18	1	85	63.2	615	10180	129	504	
80 to 84	0	0	4	30	19	19	31	3	106	61.8	524	7301	220	1343	
75 to 79	7	3	13	18	6	5	18	19	89	59.7	426	4928	318	2692	
70 to 74	11	7	20	14	3	5	8	27	95	57.9	333	3020	411	4504	
65 to 69	24	9	23	8	3	1	6	26	100	55.6	242	1572	502	6716	
60 to 64	31	36	23	3	0	0	3	12	108	53.2	141	616	603	9540	
55 to 59	14	25	9	0	0	0	0	5	53	50.5	54	172	690	12816	
50 to 54	6	9	1	0	0	0	0	0	16	48.6	14	36	730	16400	
45 to 49	0	3	0	0	0	0	0	0	3	42.0	3	8	741	20092	
40 to 44	0	1	0	0	0	0	0	0	1	40.0	0	0	744	23804	
Aug															
100 to 104	0	0	0	0	3	2	0	0	5	64.4	744	22199	0	0	
95 to 99	0	0	0	0	5	12	1	0	18	64.1	736	18500	8	21	
90 to 94	0	0	0	2	17	18	7	0	44	62.5	707	14886	37	127	
85 to 89	0	0	0	14	23	28	14	0	79	61.3	649	11462	95	443	
80 to 84	1	0	1	19	19	12	23	9	84	59.1	563	8453	181	1134	
75 to 79	10	2	8	15	12	11	17	14	89	57.2	472	5853	272	2254	
70 to 74	8	6	20	23	7	2	13	23	107	54.7	386	3698	358	3819	
65 to 69	24	16	18	13	7	7	7	19	111	52.9	269	2051	476	5892	
60 to 64	26	23	24	5	0	1	7	14	100	50.8	172	939	572	8500	
55 to 59	12	29	13	2	0	0	4	11	71	48.6	75	339	669	11620	
50 to 54	9	9	6	0	0	0	0	3	27	45.5	29	101	715	15102	
45 to 49	3	8	3	0	0	0	0	0	14	42.1	10	14	734	18735	
Sep															
95 to 99	0	0	0	0	2	1	0	0	3	62.0	719	25006	1	1	
90 to 94	0	0	0	0	3	4	0	0	7	64.3	716	21420	4	15	
85 to 89	0	0	0	1	9	16	0	0	26	62.7	703	17868	17	63	
80 to 84	0	0	0	9	16	11	7	0	43	60.3	663	14440	57	235	
75 to 79	1	0	3	12	12	10	13	6	57	57.3	620	11223	100	618	
70 to 74	5	4	4	16	23	19	14	7	92	54.9	551	8280	169	1275	
65 to 69	8	4	10	15	11	13	11	8	80	52.7	466	5756	254	2351	
60 to 64	14	10	12	17	5	7	17	16	98	50.9	370	3659	350	3854	
55 to 59	17	15	19	9	4	5	16	18	103	47.2	273	2054	447	5849	
50 to 54	23	19	18	6	4	4	9	27	110	43.9	165	947	555	8342	
45 to 49	15	21	12	4	1	0	2	5	60	41.8	74	368	646	11363	
40 to 44	4	12	8	1	0	0	1	0	26	38.7	33	123	687	14718	
35 to 39	2	5	3	0	0	0	0	3	13	34.1	10	22	710	16217	
30 to 34	1	0	1	0	0	0	0	0	2	32.0	0	0	720	21795	

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

BOISE, IDAHO
WBAN 24131
TABLE A:

WYEC Data

Latitude 43.50 N
Longitude 116.20 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Fourth Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day		16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Oct														
85 to 89	0	0	0	0	1	0	0	0	1	58.0	744	27000	0	0
80 to 84	0	0	0	1	3	2	0	0	6	57.5	742	23283	2	3
75 to 79	0	0	0	3	6	6	0	0	15	54.7	731	19601	13	41
70 to 74	0	0	2	5	13	9	1	0	30	53.4	716	15985	28	145
65 to 69	1	2	1	9	12	14	3	1	43	51.5	677	12510	67	390
60 to 64	6	1	4	9	11	12	9	9	61	48.6	625	9236	119	836
55 to 59	6	2	1	16	17	23	15	6	86	46.1	552	6280	192	1600
50 to 54	17	17	14	20	24	13	26	18	149	44.3	435	3776	309	2816
45 to 49	14	18	25	21	6	12	17	25	138	42.0	290	1958	454	4718
40 to 44	26	20	23	9	0	2	18	19	117	38.0	172	817	572	7297
35 to 39	15	18	12	0	0	0	4	11	60	34.1	75	251	669	10451
30 to 34	8	12	10	0	0	0	0	4	34	30.5	19	36	725	13956
25 to 29	0	3	1	0	0	0	0	0	4	27.0	1	1	743	17641
Nov														
60 to 64	2	1	0	2	8	5	1	0	19	50.3	717	16387	3	3
55 to 59	1	1	3	6	16	12	4	3	46	47.7	685	12878	35	94
50 to 54	6	4	1	11	19	17	11	11	80	44.8	635	9579	85	395
45 to 49	14	12	15	19	14	16	16	8	114	41.5	532	6650	188	1066
40 to 44	23	24	19	18	7	12	21	27	151	38.4	389	4308	331	2324
35 to 39	7	7	13	5	14	13	5	3	67	33.5	282	2655	438	4271
30 to 34	6	10	8	13	10	11	15	14	87	29.0	205	1425	515	6641
25 to 29	19	10	8	12	2	4	8	12	75	24.7	122	608	598	9424
20 to 24	5	15	17	3	0	0	9	7	56	20.9	51	179	669	12595
15 to 19	7	4	6	1	0	0	0	5	23	15.9	13	31	707	16047
10 to 14	0	2	0	0	0	0	0	0	2	13.0	0	0	720	19616
Dec														
50 to 54	0	0	0	0	1	0	0	0	1	45.0	744	15475	0	0
45 to 49	6	2	0	5	13	11	6	7	50	40.8	731	11769	13	14
40 to 44	4	11	9	12	14	16	7	3	76	37.8	668	8274	76	239
35 to 39	16	9	15	14	23	23	16	14	130	34.5	563	5139	181	824
30 to 34	16	22	14	23	24	21	30	23	173	30.3	413	2668	331	2073
25 to 29	44	35	34	28	12	15	22	30	220	26.5	217	1059	527	4184
20 to 24	1	9	14	4	3	4	6	10	51	22.1	63	457	681	7302
15 to 19	1	2	3	5	3	2	1	0	17	17.6	32	228	712	10793
10 to 14	3	1	1	1	0	1	2	3	12	12.4	20	95	724	14380
5 to 9	2	1	0	1	0	0	3	3	10	7.0	11	23	733	18028
0 to 4	0	1	3	0	0	0	0	0	4	3.7	0	0	744	21725

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

BOISE, IDAHO
WBAN 24131
TABLE B:

WYEC Data

Latitude 43.50 N
Longitude 116.20 E

Annual Dry Bulb Temperature Frequencies
With Mean Coincident Wet Bulb Temperature
(5 Degrees(F)/3Hr Bins)

Dry Bulb range(F)	Number of Hours of Occurrence in time period									Mean Coincident Wet Bulb Temperature (F)								
	Hour of day									Hour of day								
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year
100 to 104	0	0	0	0	3	4	0	0	7	0.0	0.0	0.0	0.0	64.3	64.8	0.0	0.0	64.6
95 to 99	0	0	0	0	14	24	2	0	40	0.0	0.0	0.0	0.0	63.4	64.1	64.5	0.0	63.9
90 to 94	0	0	0	5	52	64	16	0	137	0.0	0.0	0.0	63.0	63.8	63.1	63.3	0.0	63.4
85 to 89	0	0	0	33	76	82	40	1	232	0.0	0.0	0.0	62.5	62.3	60.9	63.0	65.0	62.0
80 to 84	3	0	5	70	85	67	75	15	320	57.0	0.0	61.2	60.9	59.3	58.6	60.5	59.5	59.8
75 to 79	19	5	26	69	65	60	67	40	351	57.7	56.2	59.3	58.3	56.4	56.0	58.1	58.2	57.5
70 to 74	26	20	55	91	75	66	63	71	467	56.2	55.7	56.2	55.5	54.3	54.2	55.1	55.7	55.2
65 to 69	67	31	75	76	84	90	67	85	575	53.4	53.1	54.3	53.6	52.2	51.7	53.0	53.8	53.1
60 to 64	120	93	100	82	69	63	79	77	683	51.6	51.4	51.6	50.1	48.6	49.3	49.7	50.4	50.6
55 to 59	80	114	82	85	73	76	80	89	679	47.8	49.2	48.7	46.9	45.8	45.7	47.2	47.7	47.5
50 to 54	112	100	94	88	102	95	94	112	797	44.7	44.8	44.3	44.3	42.9	42.8	44.1	44.4	44.1
45 to 49	113	128	116	120	118	116	110	119	940	42.0	41.5	41.3	40.7	40.1	40.7	40.8	41.6	41.1
40 to 44	166	158	148	115	73	84	118	139	1001	38.3	38.5	38.1	37.8	36.2	36.6	37.6	38.0	37.8
35 to 39	122	154	126	81	97	92	95	115	882	34.4	34.6	34.3	33.5	32.5	32.3	33.7	34.1	33.8
30 to 34	97	114	96	74	47	43	89	101	661	30.1	30.0	30.1	28.8	28.8	29.2	29.1	29.3	29.5
25 to 29	99	80	69	49	18	25	37	60	437	25.5	25.5	25.2	25.6	26.1	26.2	26.1	25.8	25.6
20 to 24	13	44	48	11	9	7	18	23	173	21.1	20.9	20.9	20.2	19.6	20.0	20.6	21.5	20.8
15 to 19	16	10	13	16	22	19	10	11	117	15.9	16.2	15.8	15.6	15.3	15.5	16.5	15.4	15.7
10 to 14	17	17	11	16	11	15	13	17	117	11.0	11.0	11.3	10.8	9.8	10.5	10.3	10.4	10.7
5 to 9	19	11	15	12	2	3	12	14	88	6.6	6.7	6.1	5.9	7.5	5.7	7.0	6.0	6.4
0 to 4	3	14	10	2	0	0	7	6	42	1.3	1.7	2.0	2.5	0.0	0.0	2.3	1.2	1.8
-5 to -1	3	2	6	0	0	0	3	0	14	-3.3	-5.0	-2.5	0.0	0.0	0.0	-3.0	0.0	-3.1

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Dry Bulb Temperature (F)					Wet Bulb		Percent Relative Humidity					Average Humidity Ratio (lb moisture/lb dry air)					Average
Month	Ave	Max	Min	Daily		Ave	Average					4AM	10AM	4PM	10PM	Day	MPH
				Max	Min		4AM	10AM	4PM	10PM	Day						
Jan	28.8	56	-5	35	23	25.5	74	72	65	75	71	0.0027	0.0028	0.0029	0.0028	0.0028	8.4
Feb	35.1	52	8	42	29	31.3	74	71	58	71	70	0.0030	0.0031	0.0033	0.0033	0.0032	8.8
Mar	40.7	62	20	49	33	35.6	77	64	50	60	65	0.0037	0.0038	0.0038	0.0038	0.0037	9.5
Apr	49.1	78	22	61	37	40.8	72	52	35	49	55	0.0040	0.0043	0.0041	0.0044	0.0042	9.0
May	57.7	92	30	70	44	46.9	66	53	33	44	52	0.0050	0.0057	0.0049	0.0052	0.0052	9.3
Jun	64.8	94	37	78	52	51.6	63	45	30	35	46	0.0060	0.0066	0.0059	0.0062	0.0061	8.6
Jul	74.5	100	43	90	59	58.3	58	42	25	36	43	0.0074	0.0085	0.0074	0.0085	0.0080	7.5
Aug	72.7	102	45	87	57	55.0	47	39	22	31	36	0.0058	0.0069	0.0061	0.0068	0.0063	7.9
Sep	62.8	98	33	77	49	50.0	58	44	30	43	46	0.0054	0.0059	0.0059	0.0063	0.0058	7.6
Oct	51.2	85	27	64	40	43.0	67	54	40	59	57	0.0043	0.0047	0.0050	0.0050	0.0047	7.0
Nov	39.7	64	13	49	31	35.3	76	73	54	71	70	0.0037	0.0040	0.0041	0.0040	0.0039	8.6
Dec	31.7	50	3	38	26	29.8	91	86	75	85	85	0.0034	0.0032	0.0035	0.0034	0.0034	8.5
Year	50.8	102	-5	62	40	42.0	69	58	43	55	58	0.0045	0.0050	0.0048	0.0050	0.0048	8.4

BOISE, IDAHO
WBAN 24131
TABLE C:

WYEC Data

Latitude 43.50 N
Longitude 116.20 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY												24 HOUR SUMMARY						
	7-9AM**			10-12AM**			1-3PM**			4-6PM**			7-9PM**			HEATING		COOLING	
	Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg	Hrs	Deg
	Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*			Below	Above	Below	Above
	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	100s*	Base	100s*
103	0	630	0	0	542	0	0	480	0	0	478	0	0	546	0	0	1895	0	0
102	0	619	0	0	531	0	1	469	0	0	467	0	0	535	0	0	1862	0	0
101	0	608	0	0	520	0	2	458	0	1	456	0	0	524	0	0	1829	0	0
100	0	597	0	0	509	0	2	447	0	2	445	0	0	513	0	0	1797	0	0
99	0	586	0	0	498	0	3	436	0	4	434	0	0	502	0	0	1764	0	0
98	0	575	0	0	487	0	6	426	0	5	424	0	0	491	0	0	1731	0	0
97	0	564	0	0	476	0	9	415	0	12	413	0	0	480	0	0	1698	0	0
96	0	553	0	0	465	0	12	404	0	19	402	0	0	469	0	0	1665	0	0
95	0	542	0	0	454	0	15	393	0	25	391	1	1	458	0	0	1632	0	0
94	0	531	0	0	443	0	20	382	1	33	380	1	2	447	0	0	1600	0	0
93	0	520	0	1	433	0	26	372	1	42	370	1	4	437	0	0	1567	0	0
92	0	509	0	2	422	0	35	361	1	52	359	2	6	426	0	0	1534	0	0
91	0	498	0	3	411	0	45	350	2	67	349	2	9	415	0	0	1501	0	0
90	0	487	0	4	400	0	60	340	2	83	339	3	14	404	0	0	1468	0	0
89	0	476	0	7	389	0	77	330	3	99	329	4	21	393	0	0	1435	0	0
88	0	465	0	12	378	0	92	320	4	114	319	5	28	382	1	0	1402	0	0
87	0	454	0	18	367	0	107	310	5	127	309	6	35	372	1	0	1370	0	0
86	0	443	0	26	356	1	123	300	6	147	300	8	45	361	1	0	1337	0	0
85	0	432	0	35	346	1	138	290	7	167	290	9	55	351	2	0	1304	0	0
84	0	422	0	45	335	1	155	281	8	178	281	11	66	340	3	2	1271	0	0
83	0	411	0	54	325	2	176	271	10	193	272	13	83	330	3	5	1238	0	0
82	1	400	0	67	314	2	195	262	12	210	263	15	97	320	4	9	1205	0	0
81	1	389	0	83	304	3	210	253	14	223	254	17	108	310	5	13	1173	0	0
80	3	378	0	100	294	4	223	245	16	235	246	19	125	301	6	17	1140	0	0
79	9	367	0	114	284	5	235	236	19	249	237	22	141	291	8	23	1107	1	0
78	15	356	0	127	275	6	249	227	27	263	229	24	155	281	9	35	1075	1	0
77	18	345	0	140	265	8	265	219	24	272	220	27	170	272	11	50	1042	1	0
76	24	334	1	156	256	9	280	211	26	280	212	30	183	263	13	63	1010	2	0
75	30	324	1	170	246	11	291	203	29	293	204	33	193	254	14	75	978	3	0
74	35	313	1	184	237	13	303	195	32	303	196	36	208	245	16	93	946	3	0
73	44	303	2	199	228	14	318	187	35	313	188	39	223	236	19	114	914	4	0
72	56	292	2	218	219	17	333	179	38	330	181	42	235	227	21	140	882	6	0
71	68	282	3	238	210	19	346	172	42	347	173	45	244	219	23	166	851	7	0
70	80	272	3	258	202	21	360	164	45	360	166	49	255	210	26	188	820	9	0
69	91	262	4	273	194	24	375	157	49	378	158	52	268	202	28	218	789	11	0
68	105	252	5	285	186	27	389	150	53	398	151	56	281	194	31	232	759	13	0
67	120	242	6	301	178	30	406	143	57	416	144	60	297	186	34	264	729	16	0
66	132	232	8	319	170	33	425	136	61	430	138	65	313	178	37	319	699	19	0
65	150	223	9	336	162	36	445	129	65	446	131	69	325	170	40	360	669	22	0
64	169	213	11	355	154	40	461	123	70	464	125	74	339	163	44	410	640	26	0
63	189	204	12	372	147	43	476	117	75	478	118	78	355	155	47	459	612	31	0
62	209	195	14	388	140	47	493	111	79	492	112	83	370	148	51	519	584	35	0
61	228	186	17	404	133	51	509	105	84	507	106	88	387	141	55	584	556	41	0
60	249	176	19	420	126	55	519	99	90	517	101	93	402	134	58	643	530	47	0
59	270	169	22	437	120	59	526	93	95	528	95	98	416	127	63	698	504	54	0
58	287	161	24	457	113	64	537	88	100	542	89	104	431	120	67	745	478	61	0

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 565 x 100 = 56500 Deg Hrs)
** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

BOISE, IDAHO
WBAN 24131
TABLE 0:

WYEC Date

Latitude 43.50 N
Longitude 116.20 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY												24 HOUR SUMMARY									
	7-9AM**			10-12AM**			1-3PM**			4-6PM**			7-9PM**			10PM-6AM**			HEATING		COOLING	
	Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg	Hrs	Deg
	Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*			Below Base 100s*		Above Base 100s*	
	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool				
57	304	153	27	476	107	68	553	82	106	553	84	109	447	113	71	797	453	69	5628	992	3132	451
56	319	145	30	494	101	73	572	77	111	567	78	115	463	107	76	865	428	77	5478	937	3282	483
55	334	138	34	506	95	78	589	72	117	586	73	121	479	101	80	929	404	86	5335	882	3425	516
54	351	130	37	523	89	83	603	67	123	604	68	127	498	95	85	989	381	96	5191	830	3569	551
53	366	123	41	544	83	89	620	62	129	620	63	133	514	89	90	1049	358	106	5045	779	3715	588
52	383	116	44	564	78	94	638	57	135	640	59	139	533	83	96	1112	336	117	4889	729	3871	625
51	402	109	48	579	73	100	660	53	142	660	54	146	555	78	101	1173	315	128	4729	681	4031	665
50	424	102	53	591	68	106	686	48	149	680	50	152	574	72	107	1240	294	140	4564	634	4196	706
49	441	95	57	611	63	112	713	44	156	707	46	159	588	67	113	1320	274	153	4378	590	4382	749
48	458	89	61	634	58	118	745	41	163	735	42	166	602	62	118	1391	255	166	4193	547	4567	794
47	481	82	66	656	53	125	773	37	170	758	39	174	628	57	125	1454	236	181	4008	506	4752	840
46	504	76	71	680	49	131	790	34	178	775	36	182	655	53	131	1522	218	196	3832	467	4928	889
45	535	71	76	705	45	138	806	31	186	794	32	189	680	49	138	1599	201	211	3640	429	5120	939
44	563	65	82	737	41	145	825	29	194	815	30	197	706	45	145	1689	185	228	3423	394	5337	991
43	585	60	87	768	38	153	841	26	203	834	27	206	735	41	152	1785	169	245	3211	361	5549	1045
42	613	55	93	789	35	161	854	23	211	849	24	214	761	37	159	1870	155	263	3021	330	5739	1102
41	643	50	100	806	32	169	864	21	220	863	22	223	782	34	167	1950	141	282	2850	300	5910	1160
40	678	46	106	823	29	177	879	19	229	881	20	231	801	31	175	2047	128	302	2649	273	6111	1220
39	717	42	113	843	26	185	903	17	237	900	18	240	821	28	183	2143	116	323	2432	247	6328	1282
38	741	38	121	861	24	194	926	15	247	921	16	249	840	26	191	2226	105	345	2243	224	6517	1347
37	766	35	128	877	22	202	944	13	256	940	14	259	858	23	200	2322	95	368	2052	202	6708	1413
36	793	32	136	893	20	211	962	12	265	958	13	268	877	21	209	2402	86	392	1873	183	6887	1481
35	815	29	144	909	18	220	979	11	275	976	11	278	897	19	217	2461	77	416	1721	165	7039	1551
34	840	26	152	924	16	229	993	10	285	990	10	288	919	17	226	2528	69	441	1564	148	7196	1622
33	862	24	161	941	14	239	1005	9	295	1001	9	298	942	15	236	2602	62	466	1404	134	7356	1694
32	882	22	169	955	13	248	1014	8	305	1010	8	308	961	14	245	2675	56	493	1261	120	7499	1769
31	900	20	178	969	12	258	1021	7	315	1017	8	318	979	13	255	2732	50	520	1139	108	7621	1844
30	916	18	187	982	10	268	1029	6	326	1023	7	328	991	12	265	2781	45	547	1036	98	7724	1921
29	926	16	197	996	9	278	1035	6	336	1030	6	338	999	11	275	2828	40	576	944	88	7816	1999
28	937	14	206	1010	8	288	1040	5	346	1038	6	349	1008	10	285	2879	35	604	845	79	7915	2077
27	955	13	215	1021	8	298	1046	5	357	1045	5	359	1016	9	295	2938	32	633	737	71	8023	2157
26	969	12	225	1028	7	308	1049	4	367	1049	5	370	1024	8	305	2991	29	663	649	64	8111	2238
25	982	10	235	1034	6	318	1050	4	378	1050	4	380	1030	7	316	3029	26	693	582	58	8178	2319
24	998	9	245	1039	6	329	1051	3	388	1051	4	391	1033	7	326	3059	23	723	527	52	8233	2402
23	1011	8	255	1041	5	339	1052	3	399	1053	3	401	1035	6	336	3084	21	754	481	47	8279	2484
22	1022	8	265	1044	5	350	1054	3	409	1054	3	412	1040	6	347	3101	19	785	444	43	8316	2567
21	1029	7	275	1045	4	360	1055	2	420	1054	2	422	1046	5	357	3110	18	816	418	38	8342	2650
20	1036	6	286	1047	4	370	1058	2	430	1056	2	433	1049	5	367	3120	16	847	392	34	8368	2734
19	1042	6	296	1050	3	381	1063	1	441	1062	2	443	1052	4	378	3129	14	879	361	30	8399	2818
18	1044	5	306	1054	3	391	1068	1	452	1067	1	454	1055	4	389	3139	13	910	331	27	8429	2902
17	1045	5	317	1057	2	402	1073	1	462	1070	1	465	1057	3	399	3147	11	941	310	24	8450	2986
16	1046	4	327	1059	2	413	1076	1	473	1073	1	475	1059	3	410	3153	10	973	292	21	8468	3071
15	1050	4	338	1062	2	423	1080	0	484	1075	1	486	1060	3	420	3160	9	1004	271	18	8489	3156
14	1054	3	348	1066	1	434	1082	0	495	1079	0	497	1060	2	431	3165	8	1036	252	15	8508	3241
13	1056	3	359	1070	1	445	1084	0	506	1082	0	508	1061	2	441	3173	6	1068	233	13	8527	3326
12	1056	3	369	1074	1	455	1087	0	516	1085	0	518	1063	2	452	3184	5	1099	209	11	8551	3411

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 565 x 100 = 56500 Deg Hrs)
** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

BOISE, IDAHO

WGAN 24131

TABLE D:

WYEC Data

Latitude 43.50 N

Longitude 116.20 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BY TIME OF DAY																24 HOUR SUMMARY							
BASE		7-9AM**			10-12AM**			1-3PM**			4-6PM**			7-9PM**			10PM-6AM**			HEATING		COOLING	
TEMP	Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg	Hrs	Deg	
(F)	Above	(100s)*		Above	(100s)*		Above	(100s)*		Above	(100s)*		Above	(100s)*		Above	(100s)*		Below	Hrs	Above	Hrs	
	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	100s*	Base	100s*	
11	1060	2	380	1078	1	466	1089	0	527	1088	0	529	1067	1	463	3198	4	1131	179	9	8581	3497	
10	1063	2	391	1080	0	477	1091	0	538	1090	0	540	1072	1	473	3209	4	1163	194	7	8606	3583	
9	1065	2	401	1082	0	488	1094	0	549	1092	0	551	1075	1	484	3218	3	1196	152	6	8628	3669	
8	1069	1	412	1084	0	498	1095	0	560	1093	0	562	1078	1	495	3229	2	1228	111	4	8649	3755	
7	1072	1	423	1087	0	509	1095	0	571	1093	0	573	1081	1	506	3241	2	1260	89	3	8671	3842	
6	1075	1	433	1091	0	520	1095	0	582	1094	0	584	1083	0	517	3250	1	1293	71	3	8689	3929	
5	1078	1	444	1093	0	531	1095	0	593	1094	0	595	1084	0	527	3255	1	1325	60	2	8700	4016	
4	1081	0	455	1093	0	542	1095	0	604	1095	0	606	1087	0	538	3260	1	1358	48	1	8712	4103	
3	1084	0	466	1094	0	553	1095	0	615	1095	0	617	1089	0	549	3266	1	1390	35	1	8725	4190	
2	1085	0	477	1095	0	564	1095	0	626	1095	0	628	1091	0	560	3272	0	1423	27	1	8733	4277	
1	1086	0	487	1095	0	575	1095	0	637	1095	0	639	1092	0	571	3276	0	1456	20	1	8740	4365	
0	1088	0	498	1095	0	586	1095	0	648	1095	0	650	1092	0	582	3279	0	1489	15	0	8745	4452	
-1	1091	0	509	1095	0	597	1095	0	659	1095	0	661	1092	0	593	3280	0	1521	11	0	8749	4539	
-2	1093	0	520	1095	0	608	1095	0	670	1095	0	672	1093	0	604	3281	0	1554	7	0	8753	4627	
-3	1094	0	531	1095	0	619	1095	0	681	1095	0	683	1094	0	615	3281	0	1587	5	0	8755	4715	
-4	1095	0	542	1095	0	630	1095	0	691	1095	0	693	1094	0	626	3282	0	1620	3	0	8757	4802	
-5	1095	0	553	1095	0	641	1095	0	702	1095	0	704	1095	0	637	3284	0	1653	0	0	8760	4890	
-6	1095	0	564	1095	0	652	1095	0	713	1095	0	715	1095	0	648	3285	0	1685	0	0	8760	4977	

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 565 x 100 = 56500 Deg Hrs)

** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

BOISE, IDAHO
WBAN 24131

WYEC Data

Latitude 43.50 N
Longitude 116.20 E

TABLE E:

Annual COOLING Wet Bulb Degree Hour Summary

Wet Bulb Temperature (F) Base:	50	53	56	59	62	65	68	71	74	77	80
Annual Wet Bulb hours ABOVE base:	2689	2004	1346	837	428	141	16	0	0	0	0
Annual Wet Bulb Cooling deg-hrs:	19572	12149	6845	3344	1266	281	24	0	0	0	0

TABLE F:

Annual Humidification/Dehumidification Requirements
At various Indoor Conditions and Degree Day Bases
(Pounds of Moisture)

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **										COOLING HUMIDITY RATIO HOURS **										Maintained Indoor Humidity Ratio		
	Heating Degree Base										Cooling Degree Base												
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80	
.001	0	0	0	0	0	0	0	0	0	0	0	28	27	25	22	19	16	14	11	8	6	4	.001
.002	1	1	1	1	1	1	1	1	1	1	1	21	20	19	17	15	13	11	9	6	5	3	.002
.003	2	2	2	2	2	3	3	3	3	3	3	14	14	13	12	11	10	8	7	5	4	3	.003
.004	3	4	4	5	5	6	6	6	6	6	6	9	9	9	8	8	7	6	5	4	3	2	.004
.005	4	5	7	8	9	10	10	11	11	11	11	5	5	5	5	5	4	4	3	2	2	1	.005
.006	5	7	9	12	13	15	16	16	17	17	17	3	3	3	3	3	3	2	2	1	1	1	.006
.007	6	9	12	15	18	20	21	22	23	24	24	1	1	1	1	1	1	1	1	1	1	0	.007
.008	7	10	14	19	22	25	27	29	30	31	32	1	1	1	1	1	1	1	0	0	0	0	.008
.009	8	12	17	22	27	30	33	36	37	39	40	0	0	0	0	0	0	0	0	0	0	0	.009
.010	9	13	20	26	31	36	39	42	45	46	48	0	0	0	0	0	0	0	0	0	0	0	.010
.011	9	15	22	29	36	41	45	49	52	54	56	0	0	0	0	0	0	0	0	0	0	0	.011
.012	10	17	25	33	40	46	51	55	59	62	64	0	0	0	0	0	0	0	0	0	0	0	.012
.013	11	18	27	36	45	51	57	62	66	69	72	0	0	0	0	0	0	0	0	0	0	0	.013
.014	12	20	30	40	49	57	63	69	73	77	80	0	0	0	0	0	0	0	0	0	0	0	.014
.015	13	22	32	43	54	62	69	75	81	85	88	0	0	0	0	0	0	0	0	0	0	0	.015
.016	14	23	35	47	58	67	75	82	88	92	96	0	0	0	0	0	0	0	0	0	0	0	.016
.017	15	25	37	50	63	73	81	89	95	100	104	0	0	0	0	0	0	0	0	0	0	0	.017
.018	16	27	40	54	67	78	87	95	102	106	112	0	0	0	0	0	0	0	0	0	0	0	.018

FOOTNOTES: * Indoor Humidity Level is measured in pounds of moisture per pound of dry air. Indoor set points of 72 deg(F)-50%RH and 78 deg(F)-50%RH yield humidity ratios of .005 and .010 respectively.
** Heating (Cooling) Humidity Ratio Hours are defined as the summation of the differences between the maintained indoor humidity ratio and the observed outdoor humidity ratio when both the hourly dry bulb temperature and the humidity ratio are above (below) the base levels.

TABLE G:

Percent Diffuse Solar Radiation*
and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
% Diffuse on surface													
HORIZONTAL	60	49	51	48	40	42	21	33	31	33	42	56	57
VERTICAL													
NORTH	100	100	100	98	93	88	82	94	100	100	100	100	95
WEST	65	62	64	62	61	59	43	52	49	45	51	65	55
SOUTH	44	42	52	61	64	71	51	53	39	31	31	39	49
EAST	68	57	58	60	57	61	41	48	45	47	53	62	53
% Possible Sun	41	51	63	67	71	75	88	85	82	68	45	40	67

FOOTNOTES: * Corrected For Cloud Cover.
** Source: NOAA, Comparative Climatic Data for the United States Through 1978.

BOISE, IDAHO
WBAN 24131
TABLE H:

WYEC Data
Average Daily Solar Radiation on Vertical and Horizontal Surfaces
(BTU/DAY.SQFT)

Latitude 43.50 N
Longitude 116.20 E

Month	Under Clear Sky Assumption*										Corrected For Cloud Cover**										obs		
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNN	N	S-45 ***	horiz	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNN	N		S-45 ***	horiz
Jan	1776	1649	1309	968	561	267	147	130	130	1752	795	553	515	423	328	219	146	122	117	529	318	482	
Feb	1947	1817	1509	1212	802	449	258	181	178	2109	1152	742	713	616	514	372	255	193	166	164	772	510	826
Mar	1872	1799	1615	1435	1087	733	467	305	293	2402	1679	854	830	791	722	583	442	340	278	258	993	779	1291
Apr	1551	1610	1591	1354	1335	1044	755	512	364	2500	2202	1074	1098	1073	1033	904	748	607	496	436	1443	1344	1846
May	1255	1400	1514	1587	1495	1284	1005	734	528	2474	2569	1088	1160	1199	1216	1137	998	832	677	566	1740	1818	2270
Jun	1128	1300	1467	1590	1557	1388	1118	844	644	2456	2744	1032	1096	1159	1204	1165	1058	906	761	659	1731	1918	2494
Jul	1185	1346	1490	1595	1539	1351	1076	804	601	2471	2678	1138	1277	1396	1481	1428	1260	1019	782	599	2225	2407	2628
Aug	1423	1517	1550	1562	1398	1142	860	610	436	2481	2354	1244	1330	1354	1358	1250	1036	826	639	508	1939	1885	2185
Sep	1749	1719	1598	1468	1166	839	570	381	302	2423	1868	1346	1345	1260	1162	942	709	522	394	341	1757	1408	1712
Oct	1922	1804	1536	1280	878	542	325	223	211	2204	1354	1117	1050	902	762	546	372	262	207	200	1248	806	1116
Nov	1854	1725	1385	1064	635	330	177	148	148	1880	908	855	797	650	510	329	207	150	138	138	847	474	625
Dec	1717	1589	1252	911	504	233	127	120	120	1653	709	564	532	438	335	212	135	108	106	106	535	299	454
Year	1613	1605	1484	1353	1081	802	576	417	327	2234	1752	968	981	940	888	758	616	492	398	342	1316	1168	1496

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.
*** South exposure tilt 45 degrees.

TABLE I: Average Daily Solar Heat Gain Through Single Pane Glass on Vertical and Horizontal Surfaces (BTU/DAY.SQFT)

Month	Under Clear Sky*										Corrected For Cloud Cover**									
	S	SSE/SSW	SE/SW	ESE/WSW	E/W	ENE/WNW	NE/NN	NNE/NNW	N		S	SSE/SSW	SE/SW	ESE/WSW	E/W	ENE/WNW	NE/NN	NNE/NNW	N	
Jan	1542	1411	1098	805	442	196	112	106	106		470	433	350	269	174	116	98	96	96	
Feb	1666	1536	1267	1017	649	349	191	146	145		625	598	513	427	302	204	152	135	134	
Mar	1540	1498	1349	1199	893	586	358	233	206		697	704	657	599	479	357	269	222	210	
Apr	1197	1297	1314	1294	1106	850	595	392	288		851	893	884	853	743	607	483	395	351	
May	910	1074	1225	1317	1239	1055	807	571	396		831	911	970	1001	934	815	670	538	446	
Jun	796	968	1171	1315	1290	1144	907	666	479		781	849	931	988	957	867	736	611	514	
Jul	849	1016	1200	1322	1276	1114	872	633	451		829	974	1126	1226	1182	1038	826	619	457	
Aug	1073	1203	1274	1299	1159	935	686	471	338		959	1062	1112	1126	1018	850	664	503	402	
Sep	1408	1420	1329	1225	965	680	444	292	246		1089	1111	1045	967	777	574	412	309	278	
Oct	1630	1520	1288	1068	722	423	243	178	173		940	879	751	631	447	296	204	167	163	
Nov	1604	1469	1165	883	512	245	136	121	121		731	673	542	421	266	160	119	113	112	
Dec	1494	1363	1051	755	396	167	101	98	98		482	452	365	275	169	106	88	86	86	
Year	1307	1314	1227	1125	889	647	456	327	254		774	796	772	734	625	501	395	317	271	

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.

BOSTON, MASSACHUSETTS
WBAN 14739

WYEC Data

Latitude 42.40 N
Longitude 71.00 E

TABLE A:

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): First Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Jan														
50 to 54	0	0	0	0	6	3	0	0	9	45.6	742	17567	2	3
45 to 49	1	0	0	7	4	6	6	0	24	41.6	730	13886	14	42
40 to 44	4	1	4	7	14	8	6	10	54	38.2	695	10320	49	106
35 to 39	14	9	7	21	19	26	22	16	134	32.9	635	6999	109	595
30 to 34	27	34	33	10	16	14	16	21	179	30.2	432	4272	312	1588
25 to 29	11	16	16	9	15	16	17	14	114	24.4	306	2467	438	3503
20 to 24	10	7	4	15	14	14	12	18	102	18.8	196	1240	548	9996
15 to 19	3	9	14	10	2	3	11	6	58	14.6	98	542	646	9018
10 to 14	10	11	10	6	3	1	0	4	45	10.0	52	170	692	12366
5 to 9	5	6	5	0	0	2	3	4	25	5.4	13	23	731	15939
Feb														
50 to 54	0	0	0	0	3	2	0	0	5	53.6	670	21441	2	3
45 to 49	0	0	0	0	1	2	0	0	3	43.0	667	16101	5	23
40 to 44	0	0	0	2	6	5	2	0	15	43.5	658	14781	14	63
35 to 39	0	0	0	4	2	2	6	4	18	39.8	641	11531	31	173
30 to 34	6	3	4	10	16	14	7	5	65	35.9	614	8375	58	377
25 to 29	18	21	21	21	20	22	30	22	179	34.0	497	5525	175	867
20 to 24	23	18	18	16	14	10	5	19	123	29.0	347	3450	325	2172
15 to 19	6	6	8	15	14	18	23	13	103	24.2	229	2043	443	4125
10 to 14	21	21	14	9	2	3	5	14	89	20.3	128	1147	544	6589
5 to 9	1	6	10	1	0	3	0	1	22	15.4	63	715	609	9517
0 to 4	1	0	1	0	4	1	3	0	10	8.5	51	432	621	12594
-5 to -1	4	2	1	3	2	2	1	3	18	4.8	37	204	635	15726
	1	4	4	3	0	0	2	1	15	0.9	17	66	655	18948
	3	3	3	0	0	0	0	2	11	-4.2	8	7	664	22249
Mar														
70 to 74	0	0	0	0	2	0	0	0	2	55.0	744	25607	0	0
65 to 69	0	0	0	2	0	0	0	0	2	54.0	741	21895	3	8
60 to 64	0	0	0	0	1	0	0	0	1	50.0	740	18193	4	26
55 to 59	0	0	1	4	4	6	3	1	19	53.3	733	14502	11	59
50 to 54	0	1	5	8	5	3	3	5	30	46.9	710	10895	34	168
45 to 49	8	5	2	9	22	15	6	3	70	40.5	673	7423	71	418
40 to 44	13	11	16	32	27	34	21	15	169	36.2	561	4308	183	1021
35 to 39	24	24	30	18	17	21	38	35	207	33.5	360	1955	384	2388
30 to 34	35	31	26	11	12	11	18	24	168	29.1	181	641	563	4794
25 to 29	8	12	7	7	3	3	4	8	52	25.2	41	346	703	6019
20 to 24	5	8	5	2	0	0	0	2	22	20.6	9	20	733	11613
15 to 19	0	1	1	0	0	0	0	0	2	18.5	0	0	744	15313

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

BOSTON, MASSACHUSETTS

MYEC Data

Latitude 42.40 N

WGAN 14759

Longitude 71.00 E

TABLE A:

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Second Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day 10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Apr														
75 to 79	0	0	0	0	1	0	0	0	1	54.0	720	21229	0	0
70 to 74	0	0	0	3	7	1	0	0	11	53.7	717	17634	3	5
65 to 69	0	0	1	9	6	2	0	0	18	53.6	703	14086	17	57
60 to 64	0	0	4	5	7	13	9	2	40	50.1	680	10623	40	194
55 to 59	10	7	9	7	12	16	6	10	77	48.2	620	7362	100	533
50 to 54	4	10	12	15	24	18	22	6	110	44.7	537	4447	183	1210
45 to 49	23	11	19	27	13	17	17	25	151	42.2	397	2068	323	2439
40 to 44	39	46	40	23	20	25	33	41	287	39.0	220	476	500	4449
35 to 39	14	10	6	0	0	0	3	6	39	33.2	24	51	696	7622
30 to 34	0	6	0	0	0	0	0	0	6	30.2	0	0	720	11171
May														
90 to 94	0	0	0	0	1	0	0	0	1	71.0	744	25945	0	0
85 to 89	0	0	0	2	3	4	0	0	9	71.3	739	22233	5	5
80 to 84	0	0	0	5	8	4	0	0	17	66.9	732	18556	12	51
75 to 79	0	0	2	12	6	9	2	0	31	61.3	706	14959	38	174
70 to 74	2	0	7	6	7	10	9	5	46	59.3	688	11512	76	447
65 to 69	4	4	12	11	15	7	13	9	75	56.5	623	8283	121	938
60 to 64	12	11	11	17	14	11	13	13	102	52.3	537	5410	207	1785
55 to 59	23	23	27	16	22	25	18	19	173	50.1	388	3050	356	3145
50 to 54	16	16	13	11	8	12	23	21	120	45.8	238	1920	506	5535
45 to 49	21	19	9	3	0	4	6	15	77	41.4	133	599	611	8134
40 to 44	15	20	12	10	9	7	9	11	93	40.4	69	102	675	11357
Jun														
90 to 94	0	0	0	0	1	0	0	0	1	68.0	720	18378	0	0
85 to 89	0	0	0	2	10	4	0	0	16	67.7	715	14785	5	7
80 to 84	0	0	0	15	13	17	1	0	48	65.1	687	11267	33	89
75 to 79	0	0	8	26	13	16	13	0	76	63.2	634	7951	86	373
70 to 74	5	1	22	15	21	17	26	19	126	62.0	531	5016	189	1038
65 to 69	21	24	27	14	11	13	18	18	144	60.7	391	2675	329	2297
60 to 64	29	27	17	7	13	10	16	30	149	57.0	259	1070	461	4292
55 to 59	28	30	12	8	6	12	15	20	131	54.3	88	207	632	7029
50 to 54	7	8	4	3	0	1	3	3	29	52.1	3	2	717	10424

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

BOSTON, MASSACHUSETTS
 WBAN 14739
 TABLE A:

WYEC Data

Latitude 42.40 N
 Longitude 71.00 E

Monthly Dry Bulb Temperature Frequencies With Mean
 Coincident Wet Bulb Temperature (MCWB): Third Quarter
 (5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Jul														
95 to 99	0	0	0	2	5	0	0	0	7	74.4	744	18251	0	0
90 to 94	0	0	1	8	6	5	0	0	20	73.6	731	14564	13	33
85 to 89	0	0	3	9	17	16	3	6	48	69.3	705	10971	39	160
80 to 84	0	0	8	14	23	21	17	4	87	68.2	637	7603	107	512
75 to 79	14	8	15	23	10	13	16	20	119	67.6	545	4657	199	1286
70 to 74	18	17	28	16	21	22	23	24	171	64.2	393	2272	351	2621
65 to 69	30	34	27	16	11	14	28	26	188	61.4	213	731	531	4800
60 to 64	29	27	10	1	0	2	6	19	94	57.7	40	92	704	7881
55 to 59	2	7	1	0	0	0	0	0	10	50.9	5	8	739	11517
Aug														
90 to 94	0	0	0	1	5	1	0	0	7	75.3	744	15800	0	0
85 to 89	0	0	0	3	17	9	0	0	29	72.4	733	12189	11	29
80 to 84	0	0	5	28	18	23	1	0	81	70.0	675	8959	69	199
75 to 79	7	6	17	19	15	22	25	10	121	68.3	584	5393	160	753
70 to 74	14	11	22	19	20	17	26	30	159	64.3	456	2804	288	1884
65 to 69	43	39	27	15	13	13	19	31	200	62.3	258	990	486	3790
60 to 64	26	27	28	8	5	8	16	22	132	58.7	87	138	657	6678
55 to 59	3	10	2	0	0	0	0	0	15	53.2	4	6	740	10246
Sep														
90 to 94	0	0	0	0	3	2	0	0	5	74.6	719	20493	1	1
85 to 89	0	0	0	2	6	5	0	0	13	71.2	710	16915	10	23
80 to 84	0	0	0	10	6	4	2	0	22	67.9	694	13394	26	102
75 to 79	0	0	2	10	14	9	5	2	42	64.4	670	9981	50	289
70 to 74	7	4	13	10	7	19	13	6	81	63.1	604	6772	116	680
65 to 69	12	14	14	18	22	15	27	20	142	60.4	516	3961	204	1469
60 to 64	19	15	26	24	19	15	11	29	154	57.2	363	1777	357	2885
55 to 59	43	36	26	14	13	19	26	31	210	54.3	165	390	355	5098
50 to 54	7	20	9	2	0	2	6	4	50	51.2	7	14	713	8322
45 to 49	0	1	0	0	0	0	0	0	1	47.0	0	0	720	11908

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

BOSTON, MASSACHUSETTS
WBAN 14739
TABLE A:

WYEC Data

Latitude 42.40 N
Longitude 71.00 E

Monthly Dry Bulb Temperature Frequencies with Mean
Coincident Wet Bulb Temperature (MCWB): Fourth Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Oct														
75 to 79	0	0	0	1	4	1	0	0	6	58.8	744	17508	0	0
70 to 74	0	0	0	4	8	4	0	0	16	56.7	730	13816	14	28
65 to 69	0	0	1	12	17	10	6	1	47	56.6	711	10206	33	138
60 to 64	6	8	14	22	20	22	14	8	114	55.2	642	6799	102	451
55 to 59	31	17	23	32	50	30	30	33	226	52.9	492	3928	252	1300
50 to 54	13	20	22	7	3	11	21	19	116	47.5	277	2080	467	3172
45 to 49	22	23	17	5	3	7	10	16	103	42.1	183	956	561	5748
40 to 44	12	13	6	8	8	8	12	9	76	36.3	87	284	657	8816
35 to 39	9	12	10	2	0	0	0	7	40	33.1	21	22	723	12274
Nov														
75 to 79	0	0	0	0	2	0	0	0	2	65.0	720	23380	0	0
70 to 74	0	0	0	2	4	2	0	0	8	63.6	716	19788	4	8
65 to 69	0	0	0	4	0	4	3	2	13	61.8	705	16233	15	53
60 to 64	5	4	7	9	9	3	5	5	47	56.6	685	12745	33	165
55 to 59	9	12	9	8	9	10	6	6	71	54.8	620	9462	100	482
50 to 54	13	11	14	12	21	17	8	4	100	47.4	543	6537	177	1157
45 to 49	10	7	7	17	9	17	27	20	114	43.2	436	4088	284	2308
40 to 44	13	12	10	11	24	16	12	21	119	37.7	338	2193	382	4013
35 to 39	16	19	26	19	6	12	14	11	123	33.4	188	595	532	6315
30 to 34	19	22	13	7	6	9	13	15	104	28.6	80	226	640	9246
25 to 29	3	3	4	1	0	0	2	4	17	23.9	2	55	718	12675
20 to 24	2	0	0	0	0	0	0	0	2	0.0	2	5	718	30625
Dec														
55 to 59	0	0	2	3	0	0	0	0	5	51.8	744	18138	0	0
50 to 54	2	3	2	3	0	0	0	0	10	48.0	739	14438	9	20
45 to 49	3	3	3	3	18	6	1	3	40	40.6	724	10787	20	89
40 to 44	5	5	11	20	23	24	19	11	118	37.3	658	7303	86	325
35 to 39	22	15	9	15	14	25	27	24	149	34.0	511	4359	253	1101
30 to 34	28	30	25	25	24	18	15	23	186	29.8	341	2211	403	2673
25 to 29	17	19	26	13	6	12	22	26	135	24.6	189	930	555	5112
20 to 24	9	11	5	7	8	7	6	4	57	19.6	72	312	672	8214
15 to 19	4	6	7	4	0	1	3	6	31	15.4	26	76	718	11698
10 to 14	3	3	3	0	0	0	0	2	11	10.5	7	4	737	15346

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

BOSTON, MASSACHUSETTS
WBAN 14739
TABLE B:

WYEC Data

Latitude 42.40 N
Longitude 71.00 E

Annual Dry Bulb Temperature Frequencies
With Mean Coincident Wet Bulb Temperature
(5 Degrees[F]/3Mr Bins)

Dry Bulb range[F]	Number of Hours of Occurrence in time period									Mean Coincident Wet Bulb Temperature (F)								
	Hour of day									Hour of day								
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year
95 to 99	0	0	0	2	5	0	0	0	7	0.0	0.0	0.0	74.0	74.6	0.0	0.0	0.0	74.4
90 to 94	0	0	1	9	16	8	0	0	34	0.0	0.0	13.0	74.3	73.9	73.1	0.0	0.0	73.8
85 to 89	0	0	3	18	53	38	3	0	115	0.0	0.0	72.7	70.6	69.6	70.8	70.0	0.0	70.7
80 to 84	0	0	13	72	70	69	27	4	255	0.0	0.0	70.7	67.8	66.9	67.8	70.8	71.5	68.1
75 to 79	21	14	44	91	65	70	61	32	398	71.0	70.8	67.5	64.1	62.6	64.4	67.8	70.5	66.0
70 to 74	46	33	92	77	97	92	97	66	620	66.2	67.4	63.9	60.4	59.9	60.9	63.3	65.9	62.9
65 to 69	110	115	109	103	95	78	112	107	829	62.9	62.9	59.7	57.2	57.9	60.0	60.3	61.7	60.4
60 to 64	126	119	109	93	91	86	90	124	838	57.5	57.8	56.1	54.9	54.2	54.8	56.2	56.8	56.2
55 to 59	151	142	112	92	97	120	104	122	940	53.3	53.4	52.6	51.7	50.7	51.3	53.4	53.6	52.6
50 to 54	62	89	61	64	73	70	88	62	589	48.8	49.1	47.5	44.9	44.7	45.9	47.0	47.8	47.0
45 to 49	88	69	56	75	71	74	79	86	598	42.7	43.5	41.9	41.2	39.7	41.1	41.9	42.7	41.9
40 to 44	107	111	103	121	141	136	119	123	961	38.9	38.8	38.5	36.9	36.6	36.7	37.9	38.9	37.8
35 to 39	117	108	109	96	76	106	134	121	867	34.0	33.9	33.6	33.3	33.4	33.7	33.2	33.4	33.4
30 to 34	132	141	115	77	72	62	67	102	768	29.0	29.7	30.0	29.6	29.1	28.9	29.6	29.4	29.4
25 to 29	43	56	61	45	36	49	68	59	421	24.8	24.8	24.4	24.7	23.5	24.4	24.8	24.8	24.6
20 to 24	53	47	28	33	24	24	23	38	270	20.2	19.8	20.1	18.5	19.4	18.5	19.0	20.3	19.6
15 to 19	8	22	32	15	2	7	14	13	113	16.4	15.9	15.3	14.5	14.5	13.7	14.4	14.0	15.0
10 to 14	14	14	14	6	7	2	3	6	66	10.0	10.6	9.6	9.0	8.6	8.0	9.3	11.2	9.8
5 to 9	9	8	6	3	2	4	4	7	43	4.9	5.1	5.5	4.7	5.5	6.0	5.0	5.1	5.2
0 to 4	3	4	4	3	0	0	2	1	17	0.7	1.2	0.5	1.0	0.0	0.0	1.5	-1.0	0.8
-5 to -1	3	3	3	0	0	0	0	2	11	-4.7	-4.7	-3.7	0.0	0.0	0.0	0.0	-3.5	-4.2

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Dry Bulb Temperature (f)						Wet Bulb	Percent Relative Humidity					Average Humidity Ratio (lb moisture/lb dry air)					Average
Month	Ave	Max	Min	Daily Ave		Ave	Average					4AM	10AM	4PM	10PM	Day	Mph
				Max	Min		4AM	10AM	4PM	10PM	Day						
Jan	28.9	54	5	36	23	26.1	76	70	62	69	70	0.0022	0.0023	0.0024	0.0024	0.0023	14.6
Feb	30.6	64	-4	38	24	27.4	72	70	63	66	69	0.0022	0.0023	0.0027	0.0023	0.0024	12.3
Mar	38.1	71	19	45	32	33.9	74	63	60	68	67	0.0030	0.0031	0.0033	0.0032	0.0032	13.8
Apr	48.0	75	33	56	41	42.4	75	58	56	66	66	0.0045	0.0043	0.0046	0.0046	0.0045	11.9
May	57.6	90	40	67	50	50.0	72	55	53	64	62	0.0059	0.0061	0.0062	0.0065	0.0061	13.6
Jun	67.0	90	52	76	59	59.4	80	58	55	68	67	0.0091	0.0090	0.0090	0.0094	0.0092	12.6
Jul	73.0	97	55	82	65	64.2	80	57	52	65	65	0.0112	0.0108	0.0109	0.0114	0.0110	12.5
Aug	71.3	92	55	80	64	64.2	80	63	60	72	70	0.0110	0.0112	0.0116	0.0118	0.0114	10.4
Sep	64.0	93	49	71	58	58.3	84	66	65	76	74	0.0091	0.0089	0.0096	0.0095	0.0092	11.5
Oct	54.0	77	35	62	47	48.5	78	64	58	70	69	0.0061	0.0061	0.0062	0.0065	0.0062	11.1
Nov	45.0	76	0	51	38	41.2	78	68	66	74	73	0.0049	0.0048	0.0050	0.0049	0.0049	14.3
Dec	33.1	56	12	39	28	30.2	78	70	66	75	73	0.0028	0.0028	0.0028	0.0029	0.0028	15.6
Year	51.0	97	-4	59	44	45.6	77	63	60	70	69	0.0060	0.0060	0.0062	0.0063	0.0061	12.8

BOSTON, MASSACHUSETTS
 #BAN 14739
 TABLE D:

MYEC Data

Latitude 42.40 N
 Longitude 71.00 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																24 HOUR SUMMARY			
	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**		HEATING				COOLING			
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg	Below	Hrs	Hrs	Deg	Below	
	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Base 100s*	Base 100s*	Above (100s)*	Base 100s*	Above (100s)*	Base 100s*
98	0	536	0	0	482	0	0	475	0	0	511	0	0	1656	0	8760	4118	0	0	
97	0	525	0	0	471	0	1	447	0	0	464	0	0	1623	0	8758	4030	2	0	
96	0	514	0	1	450	0	3	436	0	0	453	0	0	1591	0	8755	3943	5	0	
95	0	503	0	2	449	0	4	425	0	0	442	0	0	1558	0	8752	3855	7	0	
94	0	492	0	3	438	0	5	414	0	0	431	0	0	1525	0	8751	3768	9	0	
93	0	481	0	4	427	0	7	403	0	0	420	0	0	1492	0	8748	3680	12	0	
92	0	470	0	6	416	0	11	392	0	0	410	0	0	1459	0	8742	3593	18	0	
91	0	459	0	7	405	0	14	381	0	3	399	0	0	1426	0	8734	3505	26	1	
90	1	448	0	9	395	0	18	371	1	6	388	0	0	1393	0	8724	3418	36	1	
89	1	437	0	11	384	0	24	360	1	12	377	0	0	1361	0	8710	3331	50	1	
88	1	426	0	13	373	1	30	349	1	19	366	0	0	1328	0	8696	3244	64	2	
87	2	415	0	16	362	1	39	339	1	26	355	1	0	1295	0	8676	3157	84	3	
86	3	404	0	20	351	1	50	328	2	32	345	1	0	1262	0	8654	3070	106	4	
85	4	394	0	25	341	1	64	318	2	39	334	1	1	1229	0	8625	2984	135	5	
84	4	383	0	36	330	1	81	307	3	52	324	2	5	1196	0	8581	2898	179	6	
83	6	372	0	48	319	2	97	297	4	63	313	2	8	1163	0	8536	2812	224	8	
82	10	361	0	60	309	2	113	288	5	76	303	3	14	1131	0	8486	2727	274	11	
81	13	350	0	75	299	3	123	278	6	91	293	4	22	1098	0	8433	2642	327	14	
80	15	339	1	92	289	4	135	268	8	107	283	5	27	1065	0	8378	2558	382	17	
79	20	328	1	109	279	5	148	259	9	122	273	6	35	1032	0	8320	2475	440	21	
78	25	318	1	127	269	6	158	249	10	136	263	7	44	999	0	8259	2392	501	26	
77	34	307	1	144	259	7	172	240	12	151	254	9	55	967	0	8183	2310	577	31	
76	44	297	2	159	250	9	188	231	14	165	244	10	66	934	1	8097	2228	663	38	
75	54	286	2	180	241	11	202	222	16	178	235	12	81	902	1	8002	2148	758	45	
74	66	276	3	199	232	12	217	213	18	191	226	14	102	870	2	7899	2068	861	53	
73	82	265	3	215	223	15	235	204	20	208	217	16	125	838	3	7783	1990	977	62	
72	104	255	4	231	214	17	257	196	23	227	208	18	142	806	4	7658	1913	1102	72	
71	122	246	6	246	205	19	278	187	25	245	200	20	155	775	6	7545	1837	1215	84	
70	141	236	7	261	197	22	296	179	28	266	191	23	175	744	7	7412	1762	1348	97	
69	164	227	8	276	189	24	315	171	31	286	183	26	197	713	10	7251	1688	1509	111	
68	186	217	10	294	181	27	327	164	35	301	175	29	216	683	13	7096	1617	1664	127	
67	204	208	12	315	173	30	340	156	38	313	167	32	242	654	16	6937	1546	1823	144	
66	223	200	14	334	165	34	362	149	41	329	160	35	271	626	21	6767	1478	1993	163	
65	249	191	17	357	158	37	387	141	45	346	152	38	292	598	26	6591	1411	2169	184	
64	274	183	19	381	150	41	408	134	49	363	145	42	312	571	32	6424	1346	2336	207	
63	295	175	22	396	143	45	421	128	53	381	137	45	332	544	38	6269	1283	2491	231	
62	313	167	25	412	136	49	438	121	58	398	130	49	347	519	45	6112	1221	2648	256	
61	333	159	28	434	130	53	461	115	62	415	123	53	366	493	53	5935	1160	2825	284	
60	358	151	32	455	123	57	483	108	67	432	117	58	383	469	61	5730	1102	3010	313	
59	382	144	35	474	117	62	504	102	72	450	110	62	400	446	71	5565	1045	3199	344	
58	405	137	39	491	111	67	526	97	77	477	104	67	421	423	81	5368	991	3392	377	
57	429	130	44	510	105	72	548	91	82	507	98	72	441	401	92	5178	938	3582	412	
56	448	124	48	531	99	77	567	86	88	529	92	77	463	380	104	5000	887	3760	448	
55	470	117	53	549	93	82	581	80	94	550	87	82	485	360	116	4818	838	3942	487	
54	495	111	57	564	88	88	595	75	99	569	81	88	505	341	130	4649	791	4111	527	
53	513	105	62	579	83	94	605	70	105	583	76	94	529	322	144	4312	745	4248	569	

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (e.g. 565 x 100 = 56500 Deg Hrs)
 ** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

BOSTON, MASSACHUSETTS

WBAH 14739

TABLE D:

WYEC Data

Latitude 42.40 N

Longitude 71.00 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY												24 HOUR SUMMARY									
	7-9AM**			10-12AM**			1-3PM**			4-6PM**			7-9PM**			10PM-6AM**		HEATING		COOLING		
	Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs	Hrs	Deg	Hrs	Deg	
	Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*		Below	Hrs	Above	Hrs	
	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Base	100s*	Base	100s*	
52	524	100	68	590	78	100	619	66	112	592	71	99	547	85	75	1480	504	159	4405	701	4355	612
51	536	94	73	600	73	106	638	61	118	604	66	103	561	77	81	1514	286	174	4305	657	4453	656
50	554	89	78	613	68	112	656	56	124	621	61	112	576	72	87	1547	268	189	4192	614	4568	701
49	568	83	84	628	63	118	667	52	131	637	57	118	589	67	92	1587	251	205	4083	573	4677	748
48	580	78	90	644	59	124	674	48	138	649	52	124	600	62	98	1637	234	221	3974	533	4786	795
47	593	73	96	660	54	131	687	44	144	668	48	131	615	57	104	1689	218	237	3847	494	4913	843
46	604	68	102	672	50	137	707	40	151	684	43	138	634	52	111	1734	202	254	3724	456	5036	893
45	615	63	108	687	46	144	725	36	159	696	39	145	651	48	117	1781	187	272	3603	419	5157	944
44	628	58	114	703	42	151	742	32	166	716	36	152	672	44	124	1833	172	290	3464	384	5296	996
43	643	54	120	721	38	158	763	29	173	738	32	159	691	39	131	1885	158	309	3317	350	5443	1050
42	662	49	127	744	34	166	795	26	181	761	28	166	710	35	138	1955	144	328	3131	317	5629	1109
41	686	45	133	768	31	173	828	23	189	790	25	174	736	32	145	2034	132	348	2916	287	5844	1162
40	710	41	140	798	28	181	857	20	198	823	22	182	766	28	152	2110	119	368	2694	259	6066	1222
39	735	37	148	829	25	189	879	18	206	851	20	191	794	25	160	2179	108	390	2492	233	6268	1284
38	755	34	155	851	22	197	892	16	215	870	17	199	820	22	168	2248	97	412	2322	209	6438	1347
37	777	31	163	870	20	206	911	14	224	894	15	208	845	20	176	2320	87	435	2142	187	6618	1413
36	799	28	171	886	18	215	929	12	234	917	13	217	869	17	185	2384	78	458	1975	166	6785	1480
35	820	25	179	903	16	224	943	11	243	936	12	226	897	15	194	2455	69	483	1805	147	6955	1548
34	842	22	187	920	14	233	958	9	252	953	10	236	925	13	203	2529	61	508	1623	130	7137	1619
33	869	20	196	948	13	242	973	8	262	965	9	245	941	12	212	2603	54	533	1459	115	7301	1691
32	903	18	205	958	11	252	986	7	272	977	8	255	950	10	222	2681	48	560	1303	101	7437	1765
31	928	16	214	967	10	262	1001	6	282	990	6	265	962	9	231	2764	42	587	1146	89	7614	1840
30	941	14	223	980	9	271	1015	5	292	1003	6	273	976	8	241	2839	37	615	1003	78	7757	1917
29	952	13	233	996	7	281	1026	4	302	1013	5	285	989	6	251	2887	33	644	896	69	7864	1995
28	962	11	242	1000	7	291	1033	4	312	1022	4	293	1004	5	261	2920	29	673	809	60	7931	2074
27	972	10	252	1017	6	301	1039	3	323	1033	3	303	1016	5	271	2950	26	702	732	53	8028	2154
26	984	9	262	1024	5	312	1045	2	333	1045	3	316	1029	4	281	2978	23	732	654	46	8106	2235
25	1000	8	271	1031	4	322	1054	2	344	1054	2	326	1043	3	292	3011	20	762	566	39	8194	2316
24	1011	7	282	1037	4	332	1062	2	354	1060	2	337	1051	3	302	3048	17	792	490	34	8270	2399
23	1016	6	292	1040	3	343	1069	1	365	1065	2	348	1054	2	313	3078	15	823	433	30	8327	2482
22	1024	6	302	1048	3	353	1078	1	376	1069	1	358	1059	2	323	3106	13	853	373	26	8387	2565
21	1036	5	312	1056	2	363	1082	1	386	1074	1	369	1066	2	334	3133	11	885	317	22	8443	2650
20	1034	4	323	1063	2	374	1083	1	397	1080	1	380	1070	1	344	3156	10	916	272	19	8488	2734
19	1040	4	333	1069	2	385	1084	1	408	1084	1	391	1073	1	355	3177	9	948	232	17	8528	2819
18	1047	3	343	1074	1	395	1085	1	419	1086	1	401	1077	1	366	3189	8	980	201	15	8559	2905
17	1053	3	354	1077	1	406	1086	1	430	1086	1	412	1081	1	377	3195	7	1012	180	13	8580	2990
16	1060	2	364	1078	1	417	1086	0	441	1086	0	423	1084	1	388	3202	6	1044	163	11	8597	3076
15	1066	2	375	1081	1	428	1086	0	452	1087	0	434	1085	1	398	3208	5	1076	145	9	8615	3162
14	1068	2	386	1083	1	439	1086	0	462	1089	0	445	1086	1	409	3216	5	1108	130	8	8630	3249
13	1070	1	396	1084	1	449	1087	0	473	1089	0	456	1087	0	420	3225	4	1140	118	7	8642	3335
12	1074	1	407	1085	1	460	1088	0	484	1089	0	467	1088	0	431	3233	3	1172	102	6	8658	3421
11	1078	1	418	1085	0	471	1090	0	495	1089	0	478	1088	0	442	3241	3	1205	88	5	8672	3508
10	1081	1	429	1087	0	482	1092	0	506	1090	0	488	1088	0	453	3244	2	1237	77	4	8683	3595
9	1083	1	440	1089	0	493	1093	0	517	1092	0	499	1089	0	464	3248	2	1269	65	3	8695	3682
8	1084	1	450	1089	0	504	1094	0	528	1094	0	510	1089	0	475	3252	2	1302	56	3	8704	3769
7	1085	1	461	1090	0	515	1095	0	539	1095	0	521	1091	0	485	3254	1	1335	50	2	8710	3856

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 565 x 100 = 56500 Deg Hrs)

** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

BOSTON, MASSACHUSETTS
WBAN 14739
TABLE D:

WYEC Data

Latitude 42.40 N
Longitude 71.00 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE	BY TIME OF DAY																24 HOUR SUMMARY														
	7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**				10PM-6AM**				HEATING		COOLING				
	Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg		Hrs		Deg				
	(F)	Above	(100s)*		(F)	Above	(100s)*		(F)	Above	(100s)*		(F)	Above	(100s)*		(F)	Above	(100s)*		(F)	Above	(100s)*		(F)	Above	(100s)*		(F)	Above	(100s)*
	Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool
6	1085	0	472	1091	0	526	1095	0	550	1095	0	532	1092	0	496	3259	1	1367			42	2	8718	3943							
5	1087	0	483	1092	0	537	1095	0	561	1095	0	543	1093	0	507	3266	1	1400			32	1	8728	4030							
4	1088	0	494	1092	0	547	1095	0	572	1095	0	554	1093	0	518	3270	1	1432			25	1	8735	4118							
3	1089	0	505	1093	0	558	1095	0	583	1095	0	565	1094	0	529	3272	1	1465			21	1	8739	4205							
2	1089	0	516	1094	0	569	1095	0	594	1095	0	576	1095	0	540	3273	0	1498			17	1	8743	4292							
1	1091	0	526	1095	0	580	1095	0	604	1095	0	587	1095	0	551	3274	0	1531			14	0	8746	4380							
0	1092	0	537	1095	0	591	1095	0	615	1095	0	598	1095	0	562	3276	0	1563			12	0	8748	4467							
-1	1092	0	548	1095	0	602	1095	0	626	1095	0	609	1095	0	573	3277	0	1596			10	0	8750	4555							
-2	1092	0	559	1095	0	613	1095	0	637	1095	0	620	1095	0	584	3278	0	1629			9	0	8751	4642							
-3	1094	0	570	1095	0	624	1095	0	648	1095	0	631	1095	0	595	3280	0	1662			5	0	8755	4730							
-4	1095	0	581	1095	0	635	1095	0	659	1095	0	642	1095	0	606	3283	0	1694			1	0	8759	4817							
-5	1095	0	592	1095	0	646	1095	0	670	1095	0	653	1095	0	617	3285	0	1727			0	0	8760	4905							

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 565 x 100 = 56500 Deg Hrs)
** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

BOSTON, MASSACHUSETTS

WBAN 14739

TABLE E:

NYEC Data

Latitude 42.40 N

Longitude 71.00 E

Annual COOLING Wet Bulb Degree Hour Summary

Wet Bulb Temperature (F) Base:	50	55	60	65	70	75	80
Annual Wet Bulb hours ABOVE base:	3963	3502	2858	2126	1521	1047	543
Annual Wet Bulb Cooling deg-hrs:	43698	32714	22424	14474	8767	4670	2011

TABLE F:

Annual Humidification/Dehumidification Requirements
At various Indoor Conditions and Degree Day Bases
(Pounds of Moisture)

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **										COOLING HUMIDITY RATIO HOURS **										Maintained Indoor Humidity Ratio*	
	Heating Degree Base										Cooling Degree Base											
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80
.001	0	0	0	0	0	0	0	0	0	0	41	40	38	36	34	31	25	19	12	7	3	.001
.002	1	1	1	1	1	1	1	1	1	1	33	33	32	31	29	27	22	17	11	7	3	.002
.003	2	3	3	3	4	4	4	4	4	4	27	27	27	26	25	23	19	15	10	6	3	.003
.004	3	4	5	6	7	7	7	7	7	7	22	22	21	21	21	20	17	13	8	5	3	.004
.005	4	6	8	10	10	11	11	11	11	11	17	17	17	17	17	16	14	11	7	4	2	.005
.006	5	8	11	13	14	15	16	16	16	16	13	13	13	13	13	13	11	9	6	4	2	.006
.007	6	9	13	17	19	20	21	21	21	22	10	10	10	10	10	10	9	7	5	3	2	.007
.008	7	11	16	20	23	24	26	26	27	27	7	7	7	7	7	7	6	6	4	2	1	.008
.009	8	13	18	24	27	29	31	32	33	34	5	5	5	5	5	5	5	4	3	2	1	.009
.010	8	15	21	27	31	34	37	39	40	41	3	3	3	3	3	3	3	3	2	1	1	.010
.011	9	16	23	31	35	39	42	45	47	49	2	2	2	2	2	2	2	2	1	1	1	.011
.012	10	18	26	34	39	43	48	52	54	55	1	1	1	1	1	1	1	1	1	1	0	.012
.013	11	20	29	38	43	48	54	58	61	63	0	0	0	0	0	0	0	0	0	0	0	.013
.014	12	21	31	41	47	53	59	64	68	71	0	0	0	0	0	0	0	0	0	0	0	.014
.015	13	23	34	45	52	57	65	71	76	79	0	0	0	0	0	0	0	0	0	0	0	.015
.016	14	25	36	49	56	62	71	78	85	87	0	0	0	0	0	0	0	0	0	0	0	.016
.017	15	26	39	52	60	67	76	84	90	95	0	0	0	0	0	0	0	0	0	0	0	.017
.018	16	28	42	56	64	72	82	91	98	103	0	0	0	0	0	0	0	0	0	0	0	.018

FOOTNOTES: * Indoor Humidity Level is measured in pounds of moisture per pound of dry air. Indoor set points of 72 deg(F)-50%RH and 78 deg(F)-50%RH yield humidity ratios of .009 and .010 respectively.

** Heating (Cooling) Humidity Ratio Hours are defined as the summation of the differences between the maintained indoor humidity ratio and the observed outdoor humidity ratio when both the hourly dry bulb temperature and the humidity ratio are above (below) the base levels.

TABLE G:

Percent Diffuse Solar Radiation*
and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
% Diffuse on surface													
HORIZONTAL	40	39	42	52	49	55	50	50	47	50	45	43	47
VERTICAL													
NORTH	100	100	100	99	93	92	92	97	100	100	100	100	96
WEST	46	47	57	69	67	73	66	64	60	42	59	52	62
SOUTH	29	32	46	65	73	81	76	67	55	30	34	29	52
EAST	49	50	52	66	63	67	67	67	63	45	49	49	60
% Possible Sun	54	56	58	57	59	63	66	66	64	61	51	52	60

FOOTNOTES: * Corrected For Cloud Cover.

** Source: NOAA, Comparative Climatic Data for the United States Through 1978.

BOSTON, MASSACHUSETTS
WBAN 14739
TABLE H:

WYEC Data

Latitude 42.40 N
Longitude 71.00 E

Average Daily Solar Radiation on Vertical and Horizontal Surfaces
(BTU/DAY.SQFT)

Month	Under Clear Sky Assumption*										Corrected For Cloud Cover**										obs		
	S	SSE/ SSW	SE/ SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S-45 horiz ***	S	SSE/ SSW	SE/ SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S-45 horiz ***			
Jan	1811	1683	1341	1008	589	286	158	137	137	1808	842	820	760	615	475	308	183	130	121	121	809	432	419
Feb	1941	1812	1511	1222	817	463	268	187	184	2130	1196	977	911	754	625	441	287	207	174	173	1030	621	707
Mar	1814	1746	1577	1409	1077	734	472	309	257	2339	1679	977	911	754	625	441	287	207	174	173	1030	621	707
Apr	1468	1530	1522	1494	1295	1021	746	510	365	2401	2148	1030	1000	1025	985	866	729	604	505	446	1377	1309	1317
May	1172	1315	1432	1510	1431	1240	978	721	523	2335	2460	977	1000	1124	1154	1096	981	832	692	590	1531	1653	1620
Jun	1046	1211	1375	1498	1475	1325	1077	822	634	2288	2590	977	1000	1069	1116	1087	995	865	736	640	1420	1605	1615
Jul	1095	1249	1391	1494	1453	1286	1034	783	593	2280	2516	977	999	1046	1078	1036	937	807	685	599	1466	1615	1754
Aug	1319	1411	1451	1470	1327	1095	834	600	435	2318	2236	1034	1062	1055	1040	945	814	681	568	500	1463	1459	1489
Sep	1645	1622	1516	1402	1125	819	565	383	305	2306	1813	1017	999	956	866	720	577	465	366	349	1281	1106	1251
Oct	1850	1739	1489	1250	869	545	332	229	216	2147	1330	1067	1001	866	737	535	366	254	197	188	1220	803	884
Nov	1835	1707	1375	1064	644	341	186	134	154	1883	936	776	751	638	520	345	211	147	135	134	776	446	501
Dec	1747	1619	1280	942	530	251	136	126	126	1701	752	786	740	604	466	288	169	121	116	116	755	393	402
Year	1559	1552	1438	1313	1054	786	567	413	328	2163	1710	946	945	889	826	697	569	460	386	345	1196	1036	1106

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.
*** South exposure tilt 45 degrees.

TABLE I: Average Daily Solar Heat Gain Through Single Pane Glass on Vertical and Horizontal Surfaces
(BTU/DAY.SQFT)

Month	Under Clear Sky*									Corrected For Cloud Cover**									N
	S	SSE/SSW	SE/SW	ESE/WSW	E/W	ENE/WNW	NE/NN	NNE/NNW	N	S	SSE/SSW	SE/SW	ESE/WSW	E/W	ENE/WNW	NE/NN	NNE/NNW	N	
Jan	1554	1433	1120	830	464	210	119	111	111	699	638	509	392	245	141	102	98	98	
Feb	1654	1528	1264	1022	659	359	197	150	149	827	761	633	518	356	227	161	141	141	
Mar	1480	1446	1310	1172	881	584	361	236	208	806	811	757	695	558	415	303	239	223	
Apr	1123	1226	1291	1240	1070	830	586	390	288	816	851	837	807	708	591	484	402	360	
May	842	1001	1152	1247	1182	1014	783	560	391	761	842	908	946	898	799	678	550	463	
Jun	734	896	1091	1231	1216	1087	870	647	472	708	784	860	913	890	813	699	588	504	
Jul	779	936	1113	1252	1199	1056	835	615	444	720	783	843	882	848	764	653	548	471	
Aug	987	1112	1187	1217	1096	893	664	463	337	808	850	860	853	774	661	546	433	400	
Sep	1314	1331	1254	1164	927	661	438	292	247	816	815	767	711	588	467	371	306	283	
Oct	1559	1458	1242	1039	712	425	246	162	176	892	835	717	609	438	289	196	157	153	
Nov	1578	1442	1151	879	518	292	141	125	125	658	633	534	431	277	162	116	109	109	
Dec	1510	1380	1068	773	416	180	107	102	102	671	625	503	383	228	128	97	94	94	
Year	1258	1264	1163	1087	862	631	447	324	255	765	769	728	679	569	456	368	308	276	

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.

BROWNSVILLE, TEXAS
WBAN 12919
TABLE A:

MYEC Data

Latitude 25.90 N
Longitude 97.40 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): First Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Jan															
80 to 84	0	0	0	1	5	5	0	0	11	67.3	742	17064	2	1	
75 to 79	0	0	0	7	20	6	0	0	33	66.9	718	13396	26	53	
70 to 74	3	3	3	23	26	26	9	3	92	65.7	674	9889	70	266	
65 to 69	18	16	20	21	16	24	29	24	168	62.4	557	6778	187	875	
60 to 64	11	10	11	10	8	11	20	14	95	57.0	402	4439	342	2252	
55 to 59	22	17	14	9	4	8	12	23	109	52.2	305	2673	439	4210	
50 to 54	15	20	15	10	10	9	7	5	91	46.9	198	1429	546	6686	
45 to 49	7	8	12	7	4	3	14	15	70	42.7	120	671	624	9648	
40 to 44	7	7	9	4	0	1	5	3	36	37.8	54	244	690	12941	
35 to 39	10	9	6	1	0	0	1	6	33	33.4	20	49	724	16466	
30 to 34	0	3	3	0	0	0	0	0	6	31.2	1	1	743	20138	
Feb															
80 to 84	0	0	0	1	2	0	0	0	3	71.7	672	13175	0	0	
75 to 79	0	0	0	13	37	16	0	0	66	68.5	653	9839	19	24	
70 to 74	8	5	10	32	20	30	18	14	135	66.5	562	6783	110	328	
65 to 69	26	29	25	14	8	13	18	18	151	64.2	391	4366	281	1271	
60 to 64	14	11	11	9	6	12	21	15	99	57.8	269	2706	383	2971	
55 to 59	5	7	7	3	2	4	10	12	50	53.1	199	1540	473	3165	
50 to 54	16	18	16	6	6	6	12	14	94	50.4	126	780	546	7685	
45 to 49	8	7	5	5	2	3	5	5	40	44.9	60	263	612	10608	
40 to 44	6	4	7	1	1	0	0	6	25	40.0	23	61	649	13766	
35 to 39	1	5	3	0	0	0	0	0	9	36.7	2	1	670	17066	
Mar															
90 to 94	0	0	0	0	1	0	0	0	1	60.0	744	18405	0	0	
85 to 89	0	0	0	2	5	2	0	0	9	60.4	737	14692	7	7	
80 to 84	0	0	0	5	15	4	0	0	24	69.8	732	11018	12	53	
75 to 79	0	0	1	26	30	26	0	0	83	67.3	684	7454	60	209	
70 to 74	22	16	23	39	28	35	30	28	221	66.3	579	4281	165	756	
65 to 69	27	25	31	17	8	19	38	22	187	62.5	504	2088	440	2283	
60 to 64	18	23	25	5	6	6	15	21	115	57.0	152	937	592	4832	
55 to 59	12	13	5	1	0	1	10	10	52	53.3	78	589	666	8024	
50 to 54	9	10	4	0	0	0	2	12	37	47.5	35	111	709	11466	
45 to 49	5	6	3	0	0	0	0	0	14	43.1	7	10	737	15085	
40 to 44	0	0	1	0	0	0	0	0	1	42.0	0	0	744	18795	

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

BROWNSVILLE, TEXAS
WGAN 12919
TABLE A:

WYEC Data

Latitude 25.90 N
Longitude 97.40 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Second Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day 10-12 13-15		16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Apr														
85 to 89	0	0	0	11	21	5	0	0	37	72.4	116	10097	4	3
80 to 84	0	0	5	29	35	26	0	0	95	70.5	652	6652	68	158
75 to 79	15	11	28	39	27	36	24	15	195	70.8	525	5678	195	784
70 to 74	39	41	35	8	3	17	43	40	226	69.5	289	1587	431	2293
65 to 69	21	20	12	0	4	3	15	21	96	65.0	99	665	621	4971
60 to 64	6	6	4	2	0	3	7	8	36	58.4	54	291	666	8197
55 to 59	5	9	4	1	0	0	1	4	24	51.4	25	103	695	11609
50 to 54	2	1	2	0	0	0	0	2	7	47.1	8	23	712	15129
45 to 49	2	2	0	0	0	0	0	0	4	43.0	1	1	719	18707
May														
90 to 94	0	0	0	0	6	0	0	0	6	75.5	744	10404	0	0
85 to 89	0	0	0	39	51	28	0	0	118	74.9	714	6721	30	37
80 to 84	0	0	31	41	28	51	19	0	170	74.0	543	3539	201	575
75 to 79	48	23	45	8	3	11	65	74	277	73.5	370	1215	374	1971
70 to 74	39	61	15	4	4	3	9	19	154	71.1	64	140	680	4616
65 to 69	6	9	2	1	1	0	0	0	19	67.2	1	1	743	8197
Jun														
95 to 99	0	0	0	0	2	0	0	0	2	80.0	720	11065	0	0
90 to 94	0	0	0	19	36	31	0	0	66	80.3	709	7477	11	12
85 to 89	0	0	14	57	41	63	7	0	182	78.5	573	4193	147	328
80 to 84	34	19	51	8	5	8	64	45	234	78.4	411	1759	309	1494
75 to 79	45	38	22	3	5	7	17	43	180	75.5	155	404	563	3739
70 to 74	11	33	3	3	1	1	2	2	56	72.5	12	10	708	6945

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

BROWNSVILLE, TEXAS
WBAN 12919
TABLE A:

WYEC Data

Latitude 25.90 N
Longitude 97.40 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Third Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day 10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Jul														
95 to 99	0	0	0	0	4	0	0	0	4	76.5	744	10328	0	0
90 to 94	0	0	0	56	71	48	0	0	175	76.8	699	8653	45	45
85 to 89	0	0	30	31	12	36	26	0	135	76.7	510	3677	226	789
80 to 84	30	11	38	3	3	6	59	61	211	76.9	374	1433	370	3265
75 to 79	59	72	25	3	1	3	7	30	200	75.1	117	202	627	4754
70 to 74	4	10	0	0	2	0	1	2	19	71.5	0	0	744	8272
Avg														
95 to 99	0	0	0	0	5	0	0	0	5	77.6	744	10289	0	0
90 to 94	0	0	0	52	72	33	0	0	157	78.6	698	8611	46	42
85 to 89	0	0	25	30	7	42	19	0	128	78.1	532	3580	212	731
80 to 84	52	16	42	6	6	8	64	73	267	77.9	375	1256	369	2127
75 to 79	38	69	21	2	3	5	10	19	167	76.1	82	149	662	4740
70 to 74	3	8	5	3	0	0	0	1	20	72.5	2	1	742	8312
Sep														
90 to 94	0	0	0	18	38	14	0	0	70	77.0	700	8533	20	16
85 to 89	0	0	14	49	36	49	8	0	156	76.3	591	5265	129	348
80 to 84	16	10	26	11	8	14	30	34	169	75.5	430	2703	290	1386
75 to 79	46	35	23	6	5	9	22	36	182	73.4	255	1000	465	3283
70 to 74	22	33	20	6	3	4	10	18	116	69.5	78	190	642	6073
65 to 69	6	10	7	0	0	0	0	2	25	65.8	6	15	714	9498
60 to 64	0	2	0	0	0	0	0	0	2	61.0	0	0	720	13083

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

BROWNSVILLE, TEXAS
WBAN 12919
TABLE A:

WYEC Data

Latitude 25.90 N
Longitude 97.40 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB); Fourth Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Oct														
90 to 94	0	0	0	1	1	0	0	0	7	75.9	744	13117	0	0
85 to 89	0	0	0	37	44	17	0	0	94	74.3	719	9430	25	33
80 to 84	5	3	26	27	24	39	20	10	154	73.7	593	6148	151	471
75 to 79	33	30	23	12	6	29	37	33	194	72.3	385	3656	359	1699
70 to 74	18	14	15	5	8	5	16	19	100	66.6	248	2105	496	3868
65 to 69	17	23	8	2	0	3	10	18	81	63.8	155	1098	589	6581
60 to 64	11	12	11	4	4	2	1	5	52	56.6	89	510	655	9713
55 to 59	6	6	6	5	1	6	4	3	39	51.8	46	176	598	15099
50 to 54	3	2	4	0	1	1	5	5	20	47.8	12	26	732	18669
45 to 49	0	3	0	0	0	0	0	0	3	44.0	0	0	744	20363
Nov														
85 to 89	0	0	0	0	2	0	0	0	2	75.0	720	14640	0	0
80 to 84	0	0	1	18	32	13	0	0	64	74.3	702	11058	18	18
75 to 79	9	10	12	28	20	50	15	13	137	72.8	609	7755	111	315
70 to 74	6	5	9	15	9	15	18	9	86	68.8	487	5065	233	1225
65 to 69	21	19	21	12	13	12	32	33	163	65.1	382	2876	338	2536
60 to 64	32	25	26	5	4	11	10	20	133	60.9	206	1430	514	4790
55 to 59	10	20	9	3	4	2	6	5	59	55.4	102	691	618	7651
50 to 54	6	5	7	3	5	5	0	1	34	50.5	64	287	656	10847
45 to 49	4	2	2	4	1	2	9	9	33	45.3	20	58	700	14218
40 to 44	2	4	3	0	0	0	0	0	9	40.3	0	0	720	17760
Dec														
80 to 84	0	0	0	0	3	2	0	0	5	70.2	742	15029	2	1
75 to 79	0	0	0	8	23	8	0	0	39	65.1	735	11332	9	24
70 to 74	6	7	10	38	35	37	18	6	149	65.2	640	7822	104	234
65 to 69	13	14	18	19	22	20	24	17	147	61.7	493	5001	251	1133
60 to 64	17	12	12	13	9	24	26	22	135	57.2	338	2894	406	2746
55 to 59	19	17	13	14	1	2	22	19	107	53.1	332	1485	512	5057
50 to 54	20	19	22	1	0	0	9	21	92	48.7	126	620	618	7912
45 to 49	11	12	9	0	0	0	1	5	38	44.7	52	204	692	11216
40 to 44	5	9	8	0	0	0	1	3	26	39.2	15	37	729	14769
35 to 39	2	3	1	0	0	0	0	0	6	34.5	1	3	743	18455

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

BROWNSVILLE, TEXAS
WQAH 12919
TABLE B:

WYEC Data

Latitude 25.90 N
Longitude 97.40 E

Annual Dry Bulb Temperature Frequencies
With Mean Coincident Wet Bulb Temperature
(5 Degrees(F)/3Hr Bins)

Dry Bulb range(F)	Number of Hours of Occurrence in time period										Mean Coincident Wet Bulb Temperature (F)									
	Hour of day										Hour of day									
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year		1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	
95 to 99	0	0	0	0	11	0	0	0	11		0.0	0.0	0.0	0.0	77.6	0.0	0.0	0.0	77.6	
90 to 94	0	0	0	146	230	106	0	0	482		0.0	0.0	0.0	78.1	77.9	77.5	0.0	0.0	77.9	
85 to 89	0	0	83	256	215	247	60	0	861		0.0	0.0	78.2	76.4	75.0	76.6	77.6	0.0	76.3	
80 to 84	137	39	220	150	166	176	276	223	1407		78.0	78.1	76.9	73.0	71.8	73.0	76.9	77.7	75.7	
75 to 79	293	288	200	155	180	177	197	263	1753		74.7	75.2	74.2	69.9	67.8	69.7	73.2	74.1	72.8	
70 to 74	181	234	148	176	139	173	162	161	1374		70.2	70.9	69.4	65.4	63.7	65.2	68.9	69.5	68.1	
65 to 69	155	165	144	86	72	94	166	155	1037		65.3	65.9	65.1	59.6	57.6	58.8	63.8	63.1	63.5	
60 to 64	109	101	100	46	39	69	98	105	667		60.6	60.3	59.7	53.6	52.4	54.3	57.1	59.6	56.1	
55 to 59	79	89	58	36	14	23	63	76	440		54.1	54.8	53.8	51.3	49.7	48.2	51.4	53.2	53.0	
50 to 54	71	75	70	22	21	21	35	60	375		48.8	49.3	49.1	46.2	47.6	48.0	48.7	48.0	46.5	
45 to 49	37	40	31	16	7	8	29	34	202		43.8	43.9	44.3	43.7	41.0	43.4	43.9	44.8	44.0	
40 to 44	20	24	26	5	1	1	6	12	97		40.0	39.2	39.5	36.6	43.0	34.0	34.8	39.0	39.0	
35 to 39	13	17	10	1	0	0	1	6	48		34.2	34.5	34.4	33.0	0.0	0.0	33.0	33.0	34.1	
30 to 34	0	3	3	0	0	0	0	0	6		0.0	31.3	31.0	0.0	0.0	0.0	0.0	0.0	31.2	

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Month	Dry Bulb Temperature (F)					Wet Bulb		Percent Relative Humidity					Average Humidity Ratio (lb moisture/lb dry air)					Average wind MPH	
	Daily					Ave		Average					Day						
	Ave	Max	Min	Max	Min	Ave		4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day		
Jan	59.6	83	32	70	51	54.4		84	70	53	77	73	0.0082	0.0086	0.0082	0.0087	0.0084	12.1	
Feb	62.9	81	37	72	55	59.6		93	78	64	83	81	0.0101	0.0107	0.0106	0.0104	0.0102	12.7	
Mar	67.0	90	44	76	59	61.9		85	64	59	78	74	0.0108	0.0107	0.0106	0.0112	0.0108	13.4	
Apr	73.5	89	47	82	67	68.0		89	67	62	83	78	0.0139	0.0136	0.0131	0.0139	0.0138	15.0	
May	78.5	91	67	86	73	73.2		93	69	63	85	79	0.0166	0.0160	0.0156	0.0168	0.0164	13.7	
Jun	82.1	95	70	89	76	77.4		96	73	67	84	82	0.0193	0.0193	0.0191	0.0194	0.0194	12.2	
Jul	83.6	96	73	92	76	76.2		91	62	55	76	74	0.0185	0.0174	0.0166	0.0182	0.0178	12.5	
Aug	83.7	95	72	92	77	77.5		93	66	62	81	78	0.0194	0.0186	0.0182	0.0194	0.0190	10.3	
Sep	80.7	94	64	89	73	74.0		89	66	59	77	75	0.0167	0.0167	0.0162	0.0171	0.0167	11.7	
Oct	74.9	91	49	83	68	68.2		84	64	60	75	73	0.0136	0.0140	0.0134	0.0140	0.0138	13.5	
Nov	67.2	85	43	76	61	64.4		95	82	72	92	87	0.0119	0.0133	0.0129	0.0132	0.0128	9.4	
Dec	62.3	83	35	73	55	57.0		87	69	56	77	74	0.0088	0.0094	0.0091	0.0093	0.0091	9.8	
Year	73.1	96	32	82	66	67.6		90	69	61	81	77	0.0140	0.0140	0.0136	0.0143	0.0140	12.4	

BROWNSVILLE, TEXAS
W8AM 12919
TABLE D:

NYEC Data

Latitude 25.90 N
Longitude 97.40 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																24 HOUR SUMMARY																			
	7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**																			
	Hrs Deg-Hrs				Hrs Deg-Hrs				Hrs Deg-Hrs				Hrs Deg-Hrs				Hrs Deg-Hrs																			
	Above (100s)* Base Heat Cool				Above (100s)* Base Heat Cool				Above (100s)* Base Heat Cool				Above (100s)* Base Heat Cool				Above (100s)* Base Heat Cool																			
																	HEATING		COOLING																	
																	Hrs	Deg	Hrs	Deg																
																	Below	Above	Below	Above																
																	Base	Base	Base	Base																
																	100s*	100s*	100s*	100s*																
97	0	290	0	0	208	0	0	187	0	0	211	0	0	272	0	0	830	0	0	0																
96	0	279	0	0	197	0	0	171	0	0	200	0	0	261	0	0	897	0	0	0																
95	0	266	0	0	186	0	0	160	0	0	189	0	0	250	0	0	865	0	0	0																
94	0	257	0	0	175	0	0	150	0	0	178	0	0	239	0	0	832	0	0	0																
93	0	246	0	0	164	0	0	139	0	0	167	0	0	228	0	0	799	0	0	0																
92	0	239	0	0	155	0	0	129	1	15	156	0	0	217	0	0	766	0	0	0																
91	0	224	0	0	143	1	175	120	5	42	146	0	0	206	0	0	733	0	0	0																
90	0	213	0	0	133	2	217	111	5	83	139	1	0	195	0	0	700	0	0	0																
89	0	202	0	0	123	5	259	102	7	130	129	2	0	184	0	0	666	0	0	0																
88	2	192	0	0	114	5	302	94	10	180	116	4	0	173	0	0	635	0	0	0																
87	14	181	0	0	108	8	350	86	13	230	107	6	0	162	0	0	602	0	0	0																
86	36	170	0	0	98	11	392	79	17	280	99	8	4	151	0	0	569	0	0	0																
85	66	160	1	373	90	14	434	72	21	329	91	11	33	140	0	0	536	0	0	0																
84	102	149	2	420	83	18	475	66	26	375	83	15	80	130	1	3	503	0	0	0																
83	144	140	3	456	77	25	510	60	31	412	76	19	135	120	2	15	470	0	0	0																
82	189	130	5	489	71	27	538	54	36	444	70	25	208	111	3	71	438	0	0	0																
81	229	122	7	517	65	32	567	49	41	475	63	28	268	102	6	192	406	1	0	0																
80	276	113	9	541	59	38	603	43	47	511	57	32	312	94	9	342	376	4	0	0																
79	326	103	12	573	54	43	640	39	54	547	52	38	358	87	12	512	347	8	0	0																
78	366	98	16	606	49	49	680	34	60	581	46	43	401	80	16	677	321	14	0	0																
77	405	91	19	633	44	55	718	30	67	612	41	49	445	73	20	825	293	22	0	0																
76	443	84	24	665	39	62	751	27	74	646	37	56	486	67	25	988	271	31	0	0																
75	483	78	26	694	35	69	784	24	82	687	32	62	519	61	30	1169	249	42	0	0																
74	519	72	33	726	31	76	816	21	90	725	29	69	546	55	35	1331	229	54	0	0																
73	553	66	39	761	28	83	851	18	98	764	25	77	572	50	41	1467	210	68	0	0																
72	584	61	44	793	25	91	886	16	107	800	22	85	606	45	47	1592	193	84	0	0																
71	608	56	50	831	22	99	909	14	118	830	19	93	643	40	53	1702	176	100	0	0																
70	635	51	57	866	19	108	930	12	125	861	17	101	677	36	60	1797	161	118	0	0																
69	666	47	63	899	17	116	952	11	135	892	14	110	711	32	66	1890	147	136	0	0																
68	701	43	70	919	15	125	972	9	144	916	13	119	745	28	74	1995	133	155	0	0																
67	734	39	77	937	14	133	985	8	154	937	11	128	780	25	81	2089	121	178	0	0																
66	761	35	85	953	12	144	998	7	164	953	9	138	814	22	89	2175	109	197	0	0																
65	785	32	92	965	11	154	1009	6	174	966	8	147	846	19	98	2268	99	219	0	0																
64	806	29	100	973	10	163	1020	5	184	978	7	157	872	17	106	2351	89	243	0	0																
63	829	26	109	983	9	173	1031	3	195	994	6	167	893	15	115	2422	80	266	0	0																
62	853	24	117	993	8	183	1038	4	205	1012	5	177	910	13	124	2480	72	291	0	0																
61	873	22	126	1002	7	193	1047	4	215	1027	4	187	932	11	133	2550	64	316	0	0																
60	888	19	134	1011	6	203	1052	3	226	1038	3	198	952	9	143	2605	57	342	0	0																
59	899	17	143	1023	5	213	1054	3	236	1044	3	206	967	8	152	2655	50	368	0	0																
58	909	15	152	1037	4	224	1058	2	247	1049	2	219	981	7	162	2699	44	395	0	0																
57	920	14	162	1044	4	234	1060	2	258	1053	2	229	992	6	172	2743	39	422	0	0																
56	932	12	171	1048	3	243	1063	2	268	1055	2	240	1006	5	182	2799	34	450	0	0																
55	946	10	180	1051	3	253	1065	1	279	1061	1	250	1019	4	192	2850	29	478	0	0																
54	962	9	190	1052	2	266	1068	1	290	1069	1	261	1031	3	202	2891	25	507	0	0																
53	975	8	199	1056	2	278	1072	1	300	1075	1	272	1043	3	213	2932	21	536	0	0																
52	987	7	209	1061	2	287	1077	1	311	1079	1	282	1050	2	223	2974	18	566	0	0																

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 565 x 100 = 56500 Deg Hrs)
** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

BROWNSVILLE, TEXAS
WBAN 12919
TABLE D:

WYEC Data

Latitude 25.90 N
Longitude 97.40 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	7-9AM**			10-12AM**			1-3PM**			BY TIME OF DAY 4-6PM**			7-9PM**			10PM-6AM**			24 HOUR SUMMARY			
	Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		HEATING		COOLING	
	Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*			Hrs	Deg	Hrs	Deg
	Base Heat Cool			Base Heat Cool			Base Heat Cool			Base Heat Cool			Base Heat Cool			Base Heat Cool			Below Base 100s*		Above Base 100s*	
51 1002	6	219	1064	1	297	1082	0	322	1082	0	293	1053	2	234	3013	15	396		462	24	8298	1961
50 1016	5	229	1060	1	308	1086	0	333	1084	0	304	1056	1	244	3056	12	626		392	20	8368	2044
49 1028	4	240	1075	1	319	1088	0	343	1087	0	315	1063	1	253	3092	10	657		325	16	8435	2128
48 1035	3	250	1080	1	329	1089	0	354	1089	0	326	1071	1	266	3115	8	688		278	13	8482	2213
47 1039	3	260	1082	0	340	1090	0	365	1091	0	337	1078	1	276	3135	7	719		243	11	8517	2298
46 1044	2	271	1084	0	351	1091	0	376	1093	0	348	1081	0	287	3156	5	751		210	9	8550	2383
45 1050	2	281	1087	0	362	1093	0	387	1094	0	358	1085	0	298	3178	4	782		173	7	8587	2469
44 1060	1	292	1090	0	373	1094	0	398	1094	0	369	1089	0	309	3198	3	814		134	5	8626	2555
43 1069	1	302	1091	0	384	1095	0	409	1094	0	380	1090	0	320	3215	3	846		104	4	8656	2641
42 1074	1	313	1092	0	395	1095	0	420	1095	0	391	1091	0	331	3228	2	878		83	3	8675	2728
41 1078	1	324	1093	0	406	1095	0	431	1095	0	402	1092	0	342	3235	1	911		71	2	8689	2815
40 1081	1	335	1094	0	417	1095	0	442	1095	0	413	1093	0	352	3242	1	943		59	2	8701	2902
39 1083	0	345	1094	0	427	1095	0	453	1095	0	424	1094	0	363	3253	1	976		44	1	8716	2989
38 1085	0	356	1095	0	438	1095	0	464	1095	0	435	1095	0	374	3266	0	1008		28	1	8732	3076
37 1086	0	367	1095	0	449	1095	0	475	1095	0	446	1095	0	385	3273	0	1041		21	0	8739	3163
36 1087	0	378	1095	0	460	1095	0	486	1095	0	457	1095	0	396	3276	0	1074		16	0	8744	3251
35 1090	0	389	1095	0	471	1095	0	497	1095	0	468	1095	0	407	3280	0	1106		9	0	8751	3338
34 1092	0	400	1095	0	482	1095	0	508	1095	0	479	1095	0	418	3283	0	1139		4	0	8756	3426
33 1093	0	411	1095	0	493	1095	0	518	1095	0	490	1095	0	429	3285	0	1172		1	0	8759	3513
32 1094	0	422	1095	0	504	1095	0	529	1095	0	501	1095	0	440	3285	0	1205		0	0	8760	3601
31 1095	0	433	1095	0	515	1095	0	540	1095	0	512	1095	0	451	3285	0	1238		0	0	8760	3689

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 365 x 100 = 36500 Deg Hrs)
** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

BROWNSVILLE, TEXAS
WBAN 12919
TABLE E:

WYEC Data

Latitude 25.90 N
Longitude 97.40 E

Annual COOLING Wet Bulb Degree Hour Summary

Wet Bulb Temperature (F) Base:	50	55	56	59	62	65	68	71	74	77	80
Annual Wet Bulb hours ABOVE base:	8065	7748	7450	7105	6671	6130	5395	4450	3302	1761	247
Annual Wet Bulb Cooling deg-hrs:	166928.	143038.	120091.	98075.	77204.	57653.	39979.	24690.	12388.	3837.	360.

TABLE F: Annual Humidification/Dehumidification Requirements
At various Indoor Conditions and Degree Day Bases
(Pounds of Moisture)

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **												COOLING HUMIDITY RATIO HOURS **												Maintained Indoor Humidity Ratio*
	Heating Degree Base												Cooling Degree Base												
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80			
.001	0	0	0	0	0	0	0	0	0	0	0	110	110	110	109	108	106	103	97	85	66	39	.001		
.002	0	0	0	0	0	0	0	0	0	0	0	101	101	101	101	100	98	96	90	80	62	36	.002		
.003	0	0	0	0	0	0	0	0	0	0	0	92	92	92	92	92	90	88	84	74	56	34	.003		
.004	0	0	0	0	0	0	0	0	0	0	0	84	84	84	84	83	83	81	77	68	53	32	.004		
.005	0	0	0	0	0	1	1	1	1	1	1	76	76	76	76	75	75	74	70	63	49	29	.005		
.006	0	0	0	0	1	1	1	1	1	2	2	68	68	68	68	67	67	66	64	57	45	27	.006		
.007	0	0	0	1	1	1	2	2	2	2	3	60	60	60	60	60	60	59	57	52	41	24	.007		
.008	0	0	0	1	1	2	3	3	4	4	4	52	52	52	52	52	52	52	51	46	37	22	.008		
.009	0	0	0	1	2	3	4	4	5	5	5	45	45	45	45	45	45	45	44	41	33	20	.009		
.010	0	0	0	1	2	4	5	6	7	7	7	38	38	38	38	38	38	38	38	35	29	17	.010		
.011	0	0	0	1	2	4	6	8	9	9	9	32	32	32	32	32	32	32	32	30	25	15	.011		
.012	0	0	1	1	3	5	7	9	11	12	12	26	26	26	26	26	26	26	26	25	21	13	.012		
.013	0	0	1	1	3	6	8	11	13	14	15	20	20	20	20	20	20	20	20	20	17	10	.013		
.014	0	0	1	2	3	7	10	13	16	18	18	15	15	15	15	15	15	15	15	15	13	8	.014		
.015	0	0	1	2	4	7	11	15	19	21	22	11	11	11	11	11	11	11	11	11	10	6	.015		
.016	0	0	1	2	4	8	12	17	21	25	27	7	7	7	7	7	7	7	7	7	7	4	.016		
.017	0	0	1	2	5	9	13	18	24	29	32	4	4	4	4	4	4	4	4	4	4	3	.017		
.018	0	0	1	2	5	9	14	20	27	34	37	2	2	2	2	2	2	2	2	2	2	1	.018		

FOOTNOTES: * Indoor Humidity Level is measured in pounds of moisture per pound of dry air. Indoor set points of 72 deg(F)-30%RH and 78 deg(F)-50%RH yield humidity ratios of .005 and .010 respectively.
** Heating (Cooling) Humidity Ratio Hours are defined as the summation of the differences between the maintained indoor humidity ratio and the observed outdoor humidity ratio when both the hourly dry bulb temperature and the humidity ratio are above (below) the base levels.

TABLE G: Percent Diffuse Solar Radiation*
and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
\$ Diffuse on surface													
HORIZONTAL	49	51	57	46	54	53	49	56	42	41	49	49	50
VERTICAL													
NORTH	100	100	100	99	89	86	86	96	100	100	100	100	94
WEST	62	66	69	63	66	70	66	73	61	56	63	63	66
SOUTH	47	55	67	76	94	97	95	67	64	50	50	45	67
EAST	66	63	73	72	69	69	64	69	56	54	62	58	65
\$ Possible Sun	43	50	52	57	66	73	81	76	68	66	52	45	61

FOOTNOTES: * Corrected for Cloud Cover.
** Source: NOAA, Comparative Climatic Data for the United States Through 1976.

BROWNSVILLE, TEXAS
 WBAN 12919
 TABLE H:

MYEC Data

Latitude 25.90 N
 Longitude 97.40 E

Average Daily Solar Radiation on Vertical and Horizontal Surfaces
 (BTU/DAY,SQFT)

Month	Under Clear Sky Assumption*										Corrected For Cloud Cover**										obs		
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S-45 ***	horiz	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N		S-45 ***	horiz
Jan	1753	1629	1367	1145	796	484	290	220	218	2104	1366	862	604	687	585	439	320	253	229	228	960	708	907
Feb	1624	1555	1377	1233	945	630	406	270	252	2179	1614	969	936	859	781	636	490	388	328	318	1159	968	1134
Mar	1292	1310	1304	1260	1104	859	609	400	306	2149	1930	974	954	920	881	776	656	548	468	434	1274	1218	1435
Apr	863	1019	1148	1247	1196	1050	825	596	401	1981	2176	799	835	869	896	851	770	662	561	487	1325	1460	1752
May	605	820	1037	1212	1270	1210	1026	805	591	1610	2322	731	835	950	1046	1077	1041	938	814	711	1312	1647	1913
Jun	526	736	982	1187	1291	1273	1120	915	725	1729	2363	688	794	925	1039	1096	1082	991	877	782	1309	1710	2116
Jul	564	777	1010	1202	1285	1246	1084	873	673	1770	2367	703	827	973	1099	1152	1126	1018	882	761	1375	1780	2211
Aug	756	940	1103	1234	1228	1119	915	691	487	1912	2248	801	892	971	1038	1026	960	845	720	610	1328	1556	2031
Sep	1132	1193	1236	1256	1125	918	666	476	351	2082	2031	926	987	1013	1021	933	796	645	506	420	1434	1456	1689
Oct	1519	1461	1354	1253	1004	719	480	316	263	2177	1739	1087	1075	1019	955	797	619	470	368	543	1412	1206	1425
Nov	1729	1632	1405	1201	873	557	336	238	234	2143	1455	829	795	705	616	478	332	271	237	234	954	735	1056
Dec	1773	1662	1380	1137	773	462	269	212	211	2075	1303	818	787	685	591	441	310	228	202	202	894	630	865
Year	1176	1225	1224	1215	1075	879	672	502	395	2008	1915	848	876	882	880	810	711	606	517	462	1228	1256	1548

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
 ** Derived according to DOE-2.1 LOADS Algorithms and MYEC cloud cover data.
 *** South exposure tilt 45 degrees.

TABLE I: Average Daily Solar Heat Gain Through Single Pane Glass on Vertical and Horizontal Surfaces
 (BTU/DAY,SQFT)

Month	Under Clear Sky*									Corrected For Cloud Cover**								
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N
Jan	1479	1350	1135	946	643	372	213	178	177	719	660	563	478	354	253	200	186	185
Feb	1522	1257	1136	1021	770	504	303	212	204	787	765	704	642	518	393	305	264	258
Mar	955	1040	1065	1060	908	669	467	299	247	765	768	747	719	630	527	436	373	352
Apr	575	760	918	1020	987	853	653	451	312	595	652	697	726	693	621	529	443	391
May	415	576	806	985	1047	991	824	622	427	567	642	756	853	885	855	761	650	547
Jun	393	512	752	961	1064	1047	903	713	515	544	606	732	844	899	887	805	700	601
Jul	406	543	778	974	1057	1025	672	678	483	547	625	770	894	946	925	826	702	501
Aug	506	688	877	1009	1015	915	731	531	369	611	694	783	848	843	785	683	573	483
Sep	886	932	1083	1034	929	743	535	359	285	693	784	827	842	770	646	512	594	340
Oct	1203	1186	1114	1037	821	571	362	245	230	861	875	838	790	693	497	367	290	278
Nov	1450	1352	1185	1001	711	431	250	192	190	687	655	581	509	389	279	213	192	190
Dec	1587	1584	1146	941	627	351	201	172	171	685	651	568	489	359	243	179	164	164
Year	916	964	990	995	882	709	527	389	301	671	698	714	720	662	577	486	412	365

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
 ** Derived according to DOE-2.1 LOADS Algorithms and MYEC cloud cover data.

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CHARLESTON, SOUTH CAROLINA
WBAN 13880

NYEC Data

Latitude 32.90 N
Longitude 80.00 E

TABLE A:

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): First Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Jan														
70 to 74	0	0	0	3	6	2	0	0	11	60.8	744	18477	0	0
65 to 69	3	0	0	5	18	10	1	2	39	58.6	722	14800	22	43
60 to 64	3	6	7	15	25	19	11	9	95	55.9	648	11324	96	287
55 to 59	6	2	3	15	10	19	8	1	64	49.9	577	8276	167	959
50 to 54	11	14	12	16	9	11	17	13	103	47.9	495	5574	249	1977
45 to 49	17	9	10	11	15	19	27	26	134	42.8	378	3365	366	3488
40 to 44	21	30	23	16	5	6	12	10	131	38.6	251	1804	493	5647
35 to 39	12	8	14	9	5	5	8	11	72	33.9	133	880	611	8443
30 to 34	11	12	13	3	0	2	6	4	51	29.5	72	378	672	11661
25 to 29	5	5	5	0	0	0	3	0	26	24.7	33	128	711	15131
20 to 24	4	6	6	0	0	0	0	1	17	20.8	11	19	733	18742
15 to 19	0	1	0	0	0	0	0	0	1	19.0	0	0	744	22443
Feb														
75 to 79	0	0	0	0	4	4	0	0	8	62.6	666	18630	6	7
70 to 74	0	0	0	4	15	3	3	0	25	59.5	660	13310	12	47
65 to 69	4	1	2	9	18	19	3	6	62	56.1	616	12699	56	196
60 to 64	4	8	9	26	17	20	6	0	90	53.1	543	9190	129	647
55 to 59	8	8	11	12	6	10	22	16	93	51.8	447	6707	225	1524
50 to 54	12	9	7	8	1	6	14	14	71	48.4	355	4697	317	2874
45 to 49	17	11	13	0	2	2	11	17	73	43.4	303	3049	369	4586
40 to 44	10	16	13	3	13	10	4	3	74	37.5	213	1759	459	6656
35 to 39	6	4	8	13	0	10	10	8	67	31.6	149	852	523	9109
30 to 34	12	14	10	8	0	0	11	12	67	26.8	71	299	601	11916
25 to 29	10	10	6	1	0	0	0	6	33	24.2	24	61	648	15038
20 to 24	1	3	5	0	0	0	0	0	9	20.1	3	2	669	18339
Mar														
75 to 79	0	0	0	4	8	3	0	0	15	64.3	739	15717	5	4
70 to 74	0	0	0	12	26	18	1	0	57	62.0	710	12074	34	81
65 to 69	3	0	4	28	19	18	8	3	85	58.9	647	8676	97	403
60 to 64	9	11	20	18	22	31	26	14	151	56.1	534	5703	210	1150
55 to 59	24	15	15	13	10	10	25	23	135	52.5	372	3431	372	2598
50 to 54	17	21	20	8	5	5	11	26	113	47.8	256	1849	488	4736
45 to 49	20	17	16	10	3	5	14	13	98	43.4	146	838	598	7445
40 to 44	9	10	10	0	0	2	6	7	44	37.4	74	338	670	10665
35 to 39	10	11	6	0	0	1	2	7	37	35.2	28	87	716	14134
30 to 34	1	7	2	0	0	0	0	0	10	30.2	7	12	737	17779
25 to 29	0	1	0	0	0	0	0	0	1	26.0	0	0	744	21487

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

CHARLESTON, SOUTH CAROLINA
WBAN 13880
TABLE A:

WYEC Data

Latitude 32.90 N
Longitude 80.00 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Second Quarter
(5 Degree(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Apr														
85 to 89	0	0	0	0	5	0	0	0	3	69.7	720	16459	0	0
80 to 84	0	0	0	5	20	5	0	0	30	67.6	714	12873	6	14
75 to 79	0	0	2	36	29	19	3	0	89	66.6	657	9424	63	165
70 to 74	1	0	14	21	16	38	8	3	101	64.0	555	6389	165	730
65 to 69	29	20	29	11	10	14	43	33	189	63.1	424	3881	296	1822
60 to 64	14	19	14	7	6	9	17	20	106	58.8	244	2240	476	3781
55 to 59	16	16	13	4	3	2	11	10	75	54.3	167	1203	553	6344
50 to 54	13	11	9	2	1	1	4	14	55	50.1	97	542	623	9283
45 to 49	12	12	2	4	2	2	4	9	47	45.7	53	160	667	12501
40 to 44	5	12	7	0	0	0	0	1	25	42.2	7	7	713	15948
May														
90 to 94	0	0	0	2	5	2	0	0	9	73.9	743	15867	1	2
85 to 89	0	0	0	11	19	9	0	0	39	72.4	723	12190	21	45
80 to 84	0	0	6	23	25	24	4	0	82	70.1	672	8692	72	267
75 to 79	5	4	11	25	19	18	20	9	111	68.8	574	5362	170	857
70 to 74	22	11	37	21	18	30	26	22	187	65.6	429	3812	315	2027
65 to 69	32	40	20	10	7	10	32	39	190	63.4	236	1329	508	4064
60 to 64	16	15	10	1	0	0	8	10	60	58.5	99	569	645	7024
55 to 59	7	9	7	0	0	0	3	9	35	52.9	52	212	692	10387
50 to 54	11	10	2	0	0	0	0	4	27	49.5	16	40	728	15335
45 to 49	0	3	0	0	0	0	0	0	3	47.0	1	4	743	17619
40 to 44	0	1	0	0	0	0	0	0	1	43.0	0	0	744	21335
Jun														
95 to 99	0	0	0	0	1	0	0	0	1	82.0	720	15127	0	0
90 to 94	0	0	0	3	13	2	0	0	18	78.9	714	11534	6	7
85 to 89	0	0	2	29	34	18	0	0	83	76.3	671	8633	49	106
80 to 84	1	0	19	36	27	36	11	3	133	74.3	573	4905	147	578
75 to 79	12	10	35	19	8	23	45	16	168	73.1	418	2413	302	1686
70 to 74	32	38	25	3	6	8	29	54	215	70.6	211	781	509	3654
65 to 69	19	33	7	0	1	3	5	14	82	66.9	37	180	683	6653
60 to 64	2	3	2	0	0	0	0	3	10	59.7	16	63	704	10136
55 to 59	4	6	0	0	0	0	0	0	10	55.6	5	8	715	13681

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

CHARLESTON, SOUTH CAROLINA
WBAN 13880
TABLE A:

WYEC Data

Latitude 32.90 N
Longitude 80.00 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Third Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degrees hours	hours above	degrees hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Jul														
95 to 99	0	0	0	0	0	1	0	0	1	79.0	744	13861	0	0
90 to 94	0	0	0	11	29	14	0	0	54	77.0	728	10154	16	13
85 to 89	0	0	3	34	35	27	5	0	104	75.0	646	6684	98	263
80 to 84	2	0	30	39	18	27	34	9	159	74.4	526	3723	218	1022
75 to 79	36	22	42	6	9	19	41	48	223	72.7	359	1500	385	2519
70 to 74	46	56	14	2	2	5	13	30	168	69.6	118	309	626	5048
65 to 69	9	14	4	1	0	0	0	6	34	65.4	15	27	729	6485
60 to 64	0	1	0	0	0	0	0	0	1	62.0	0	0	744	12179
Aug														
95 to 99	0	0	0	0	2	0	0	0	2	82.5	744	14188	0	0
90 to 94	0	0	0	4	14	7	0	0	25	79.1	739	10478	5	10
85 to 89	0	0	2	38	39	21	4	0	104	76.8	687	6882	57	134
80 to 84	3	0	27	41	27	41	23	7	169	74.6	557	3757	187	729
75 to 79	42	31	41	8	7	23	52	51	255	73.9	350	1460	394	2152
70 to 74	33	35	19	2	4	1	14	27	135	70.6	117	343	627	4755
65 to 69	13	26	4	0	0	0	0	8	53	65.8	26	23	724	8155
60 to 64	0	1	0	0	0	0	0	0	1	60.0	0	0	744	11852
Sep														
90 to 94	0	0	0	0	2	0	0	0	2	74.5	720	12805	0	0
85 to 89	0	0	1	14	36	12	0	0	63	75.1	706	9221	14	16
80 to 84	3	3	11	40	27	41	12	9	148	73.7	606	5906	114	301
75 to 79	12	8	18	21	20	26	33	18	156	70.8	450	3281	270	1276
70 to 74	37	33	30	9	2	8	30	54	183	69.6	272	1441	448	3056
65 to 69	23	23	20	4	0	0	10	20	100	64.2	121	487	599	5682
60 to 64	7	17	10	2	3	3	5	8	55	60.0	33	99	687	8894
55 to 59	6	4	0	0	0	0	0	1	11	55.6	5	12	715	12407
50 to 54	0	2	0	0	0	0	0	0	2	52.5	0	0	720	15995

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

CHARLESTON, SOUTH CAROLINA
 WBAN 13880
 TABLE A:

WYEC Data

Latitude 32.90 N
 Longitude 80.00 E

Monthly Dry Bulb Temperature Frequencies With Mean
 Coincident Wet Bulb Temperature (MCWB): Fourth Quarter
 (5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Oct															
85 to 89	0	0	0	3	7	4	0	0	14	72.7	740	16460	4	2	
80 to 84	0	0	0	16	30	14	0	0	60	71.3	709	12814	35	76	
75 to 79	0	0	2	20	20	22	7	3	74	68.1	643	9430	101	412	
70 to 74	15	9	19	27	17	19	26	18	150	66.5	548	6410	196	1112	
65 to 69	17	18	24	12	10	14	24	24	143	63.1	403	4672	341	2494	
60 to 64	28	22	18	5	2	7	12	21	115	58.4	258	2465	486	4607	
55 to 59	10	20	10	6	7	9	3	9	74	52.0	149	1460	595	7322	
50 to 54	8	4	7	2	0	3	12	4	40	48.7	96	853	648	10435	
45 to 49	2	5	5	2	0	1	6	4	25	42.2	63	467	681	13769	
40 to 44	5	3	4	0	0	0	3	7	22	40.2	43	205	701	17227	
35 to 39	8	6	2	0	0	0	0	3	21	34.7	23	50	721	20792	
30 to 34	0	4	2	0	0	0	0	0	6	31.3	0	0	744	24462	
Nov															
80 to 84	0	0	0	3	13	1	0	0	17	66.3	716	19281	4	3	
75 to 79	0	0	0	11	4	5	0	0	20	66.4	693	15732	27	74	
70 to 74	0	0	2	12	19	10	3	0	46	63.4	671	12310	49	252	
65 to 69	6	9	8	17	22	23	10	5	100	59.7	614	9093	106	635	
60 to 64	9	7	12	14	18	22	17	14	113	56.5	498	6328	222	1470	
55 to 59	9	6	11	13	11	17	13	18	100	51.3	388	4138	332	2680	
50 to 54	21	16	12	13	3	6	18	11	100	47.3	293	2457	425	4799	
45 to 49	6	10	19	4	0	5	13	9	68	42.0	199	1260	521	7202	
40 to 44	20	21	12	1	0	1	11	23	89	39.6	117	461	693	10003	
35 to 39	17	15	11	0	0	0	3	9	55	34.6	35	93	685	13235	
30 to 34	2	6	3	0	0	0	0	1	12	30.8	8	13	712	16755	
Dec															
70 to 74	0	0	0	1	3	1	0	0	5	64.4	744	17722	0	0	
65 to 69	3	3	3	7	22	8	1	3	50	61.2	728	14026	16	24	
60 to 64	3	3	5	14	21	20	11	6	83	57.1	638	10534	86	272	
55 to 59	10	6	5	21	15	20	10	7	94	50.6	572	7482	172	920	
50 to 54	6	7	7	17	17	18	15	10	97	46.6	478	4676	266	2034	
45 to 49	11	9	18	16	9	14	20	17	114	43.0	373	2753	371	3631	
40 to 44	26	21	20	13	6	12	26	21	145	38.7	244	1197	500	5799	
35 to 39	20	23	21	4	0	0	10	26	104	34.9	92	353	632	8671	
30 to 34	12	17	12	0	0	0	0	3	44	30.6	28	56	716	12094	
25 to 29	2	4	2	0	0	0	0	0	8	26.1	3	4	741	15762	

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

CHARLESTON, SOUTH CAROLINA
WBAW 13880
TABLE B:

WYEC Data

Latitude 32.90 N
Longitude 80.00 E

Annual Dry Bulb Temperature Frequencies
With Mean Coincident Wet Bulb Temperature
(5 Degrees(F)/5Hr Bins)

Dry Bulb range(F)	Number of Hours of Occurrence in time period									Mean Coincident Wet Bulb Temperature (F)								
	Hour of day									Hour of day								
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year
95 to 99	0	0	0	0	3	1	0	0	4	0.0	0.0	0.0	0.0	82.3	79.0	0.0	0.0	81.5
90 to 94	0	0	0	20	63	25	0	0	108	0.0	0.0	0.0	77.7	77.4	77.7	0.0	0.0	77.5
85 to 89	0	0	8	129	173	91	9	0	410	0.0	0.0	77.5	75.9	74.7	75.5	78.0	0.0	75.4
80 to 84	11	3	93	203	187	189	84	28	798	75.4	75.3	75.1	72.7	71.1	73.1	75.6	76.0	73.2
75 to 79	107	75	151	150	128	162	201	145	1119	74.0	74.2	72.8	68.2	66.7	69.2	72.7	73.9	71.3
70 to 74	206	182	160	117	134	143	153	188	1283	70.0	70.4	68.4	63.7	61.6	64.5	68.6	70.8	67.6
65 to 69	163	187	129	104	127	119	137	163	1125	65.1	65.6	63.9	59.0	57.1	58.4	63.2	64.7	62.6
60 to 64	95	113	107	102	114	131	113	105	880	60.2	60.9	59.3	54.3	52.4	53.9	58.3	59.4	57.2
55 to 59	180	92	75	86	62	87	95	94	691	55.1	55.2	54.1	49.1	45.6	48.2	52.2	54.1	52.0
50 to 54	99	94	76	66	36	50	91	96	608	49.9	50.5	49.4	44.3	43.7	44.6	46.9	49.4	48.0
45 to 49	85	76	83	47	31	48	97	95	562	43.9	44.4	43.6	41.0	41.2	41.8	43.3	43.5	43.2
40 to 44	96	114	89	33	24	31	62	82	531	39.6	39.9	39.2	37.1	33.9	35.4	38.6	39.3	38.0
35 to 39	73	69	62	26	13	16	33	64	356	34.8	34.9	34.3	32.2	30.5	30.6	33.1	34.6	34.0
30 to 34	38	60	42	11	0	2	17	20	190	30.5	30.3	29.8	26.4	0.0	27.5	27.5	29.5	29.6
25 to 29	17	20	13	1	0	0	3	14	68	24.4	24.6	24.5	22.0	0.0	0.0	24.3	25.1	24.6
20 to 24	5	9	11	0	0	0	0	1	26	21.4	20.4	20.2	0.0	0.0	0.0	0.0	22.0	20.6
15 to 19	0	1	0	0	0	0	0	0	1	0.0	19.0	0.0	0.0	0.0	0.0	0.0	0.0	19.0

TABLE C: Annual and Monthly Temperature, Humidity and Windspeed Summary

Dry Bulb Temperature (F)					Wet Bulb Ave	Percent Relative Humidity					Average Humidity Ratio (lb moisture/lb dry air)					Average wind MPH	
Month	Ave	Max	Min	Daily Ave		Ave	Average					4AM	10AM	4PM	10PM		Day
				Max	Min		4AM	10AM	4PM	10PM	Day						
Jan	47.7	72	19	60	37	43.2	86	78	52	73	72	0.0052	0.0054	0.0052	0.0055	0.0052	8.8
Feb	49.8	79	22	62	39	44.3	78	62	47	67	66	0.0050	0.0055	0.0054	0.0056	0.0054	8.8
Mar	56.4	79	29	67	46	50.9	84	63	54	70	71	0.0066	0.0074	0.0071	0.0070	0.0070	10.2
Apr	64.6	87	41	75	54	59.5	96	65	57	78	77	0.0099	0.0101	0.0099	0.0102	0.0100	9.3
May	71.2	94	44	82	62	64.6	88	60	56	77	73	0.0115	0.0117	0.0116	0.0122	0.0118	9.7
Jun	76.5	95	55	87	69	72.0	96	72	71	86	82	0.0153	0.0162	0.0165	0.0161	0.0160	7.9
Jul	78.9	95	64	89	71	72.7	90	67	62	80	76	0.0154	0.0161	0.0156	0.0167	0.0159	7.3
Aug	78.4	97	64	87	71	73.5	93	70	68	85	81	0.0162	0.0164	0.0170	0.0175	0.0167	7.7
Sep	74.7	90	53	84	67	69.4	91	70	64	83	79	0.0141	0.0144	0.0147	0.0149	0.0145	8.6
Oct	69.4	88	33	77	56	60.1	90	67	56	83	76	0.0098	0.0109	0.0106	0.0110	0.0105	7.8
Nov	59.8	84	30	69	44	50.3	84	64	49	76	71	0.0063	0.0075	0.0072	0.0071	0.0069	7.7
Dec	48.7	72	26	60	39	44.5	83	69	56	78	73	0.0051	0.0056	0.0059	0.0059	0.0055	9.3
Year	64.1	97	19	75	55	58.8	88	67	58	78	75	0.0101	0.0106	0.0106	0.0108	0.0105	8.6

CHARLESTON, SOUTH CAROLINA
WBAN 13880

WYEC Data

Latitude 32.90 N
Longitude 80.00 E

TABLE D:

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**		24 HOUR SUMMARY				
													HEATING		COOLING		
													Hrs	Deg	Hrs	Deg	
													Below	Above	Below	Above	
Base Heat Cool		Base Heat Cool		Base Heat Cool		Base Heat Cool		Base Heat Cool		Base Heat Cool		Base 100s*		Base 100s*		Base 100s*	
98	0	407	0	0	311	0	0	309	0	0	378	0	0	1293	0	8760	2972
97	0	396	0	0	300	0	0	298	0	0	367	0	0	1261	0	8759	2885
96	0	385	0	0	289	0	0	287	0	0	356	0	0	1228	0	8758	2797
95	0	374	0	0	276	0	0	276	0	0	345	0	0	1195	0	8757	2709
94	0	363	0	0	267	0	0	265	0	0	334	0	0	1162	0	8753	2622
93	0	352	0	0	256	0	0	254	0	0	323	0	0	1129	0	8741	2534
92	0	341	0	0	245	0	0	243	0	0	312	0	0	1096	0	8725	2447
91	0	331	0	0	234	0	0	232	0	0	301	0	0	1063	0	8704	2360
90	0	320	0	0	223	0	0	221	0	0	290	0	0	1031	0	8668	2273
89	0	309	0	0	213	0	0	211	0	0	279	0	0	998	0	8617	2186
88	0	298	0	0	202	0	0	200	0	0	269	0	0	965	0	8551	2101
87	0	287	0	0	192	0	0	190	0	0	258	0	0	932	0	8476	2015
86	2	276	0	0	181	2	0	179	2	0	247	0	0	899	0	8390	1931
85	5	265	0	0	172	3	0	170	3	0	236	0	0	866	0	8292	1848
84	10	254	0	0	162	5	0	160	4	0	225	0	0	833	0	8174	1765
83	18	243	0	0	153	7	0	150	6	0	214	0	0	801	0	8043	1684
82	34	232	0	0	144	9	0	141	8	0	203	0	0	768	0	7896	1604
81	56	222	0	0	136	12	0	132	10	0	193	0	0	735	0	7723	1526
80	85	212	0	0	128	15	0	124	13	0	182	0	0	702	0	7537	1450
79	116	202	0	0	121	18	0	116	16	0	172	0	0	670	0	7341	1375
78	144	192	0	0	114	22	0	109	19	0	163	0	0	638	0	7139	1303
77	176	183	0	0	107	26	0	102	23	0	154	0	0	606	0	6932	1233
76	207	174	0	0	100	31	0	95	27	0	145	0	0	575	0	6714	1164
75	235	165	0	0	94	35	0	88	32	0	136	0	0	545	0	6461	1098
74	270	157	0	0	88	40	0	82	38	0	128	0	0	516	0	6187	1035
73	306	148	0	0	83	46	0	76	41	0	121	0	0	488	0	5916	975
72	337	141	0	0	77	51	0	70	47	0	113	0	0	461	0	5658	917
71	366	133	0	0	72	57	0	65	52	0	106	0	0	435	0	5417	861
70	397	126	0	0	67	63	0	58	58	0	100	0	0	410	0	5167	809
69	424	119	0	0	62	69	0	53	64	0	93	0	0	387	0	4934	758
68	448	113	0	0	58	75	0	50	70	0	87	0	0	364	0	4707	710
67	476	106	0	0	53	82	0	46	77	0	81	0	0	343	0	4460	664
66	502	100	0	0	49	89	0	42	84	0	76	0	0	323	0	4229	621
65	524	95	0	0	45	96	0	38	91	0	70	0	0	304	0	4017	579
64	552	89	0	0	41	103	0	35	98	0	65	0	0	286	0	3820	540
63	577	84	0	0	38	110	0	31	106	0	60	0	0	268	0	3629	503
62	596	79	0	0	35	118	0	28	114	0	56	0	0	251	0	3443	468
61	613	74	0	0	32	126	0	25	122	0	51	0	0	235	0	3277	434
60	634	69	0	0	29	134	0	22	130	0	47	0	0	219	0	3114	402
59	654	65	0	0	26	142	0	19	139	0	43	0	0	204	0	2960	372
58	674	60	0	0	23	151	0	16	148	0	39	0	0	189	0	2811	343
57	692	56	0	0	21	159	0	14	156	0	36	0	0	175	0	2664	316
56	704	52	0	0	19	168	0	12	166	0	32	0	0	162	0	2536	290
55	714	48	0	0	17	177	0	10	175	0	29	0	0	149	0	2410	265
54	726	45	0	0	15	186	0	9	184	0	26	0	0	137	0	2278	241
53	742	41	0	0	13	195	0	7	194	0	23	0	0	125	0	2151	219

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 565 x 100 = 56500 Deg Hrs)

** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

CHARLESTON, SOUTH CAROLINA
 WBAH 13880
 TABLE D:

WYEC Data

Latitude 32.90 N
 Longitude 80.00 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																24 HOUR SUMMARY					
	7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**					
	10PM-6AM**				HEATING				COOLING													
	Hrs	Deg-Hrs	Above (100s)*	Base Heat Cool	Hrs	Deg-Hrs	Above (100s)*	Base Heat Cool	Hrs	Deg-Hrs	Above (100s)*	Base Heat Cool	Hrs	Deg-Hrs	Above (100s)*	Base Heat Cool	Hrs	Deg-Hrs	Above (100s)*	Base Heat Cool		
52	754	37	134	948	12	205	1003	6	235	969	8	204	835	26	146	2217	114	332	2031	198	6729	1256
51	769	34	142	960	10	214	1011	5	245	979	7	213	851	18	154	2274	104	355	1915	179	6845	1324
50	787	31	149	971	9	224	1021	4	256	990	6	223	870	15	163	2325	94	378	1794	160	6966	1393
49	800	28	157	986	8	234	1030	4	266	1006	5	233	892	13	172	2364	85	401	1680	143	7080	1463
48	814	25	165	998	7	244	1037	3	276	1020	4	243	913	11	181	2405	76	425	1571	127	7189	1534
47	834	22	174	1006	6	254	1044	3	287	1030	4	254	935	10	190	2456	67	449	1454	111	7306	1607
46	852	20	182	1016	5	264	1049	2	297	1039	3	264	956	8	199	2514	59	474	1333	97	7427	1680
45	869	18	191	1022	4	274	1054	2	308	1044	2	274	974	7	209	2573	52	500	1223	85	7537	1755
44	887	15	199	1027	4	284	1060	1	318	1050	2	283	987	6	219	2634	45	526	1113	73	7647	1831
43	906	13	208	1033	3	295	1066	1	329	1056	2	295	1003	5	229	2693	39	552	1001	62	7759	1908
42	924	12	218	1041	2	305	1071	1	339	1061	1	306	1018	4	239	2754	33	579	890	53	7870	1986
41	940	10	227	1049	2	315	1074	1	350	1065	1	317	1028	3	249	2814	28	607	787	45	7973	2066
40	957	8	236	1055	2	326	1079	0	361	1072	1	327	1037	3	260	2866	24	636	692	37	8068	2146
39	975	7	246	1061	1	337	1084	0	372	1080	0	338	1046	2	270	2924	20	665	588	31	8172	2227
38	991	6	256	1068	1	347	1087	0	383	1084	0	349	1055	2	281	2975	17	694	497	25	8263	2309
37	1006	5	266	1074	1	358	1091	0	394	1084	0	360	1063	1	291	3018	14	724	422	21	8358	2392
36	1017	4	276	1080	0	369	1093	0	404	1087	0	371	1067	1	302	3053	11	755	361	17	8459	2476
35	1025	4	286	1083	0	380	1094	0	415	1091	0	381	1072	1	312	3082	9	785	311	14	8449	2560
34	1033	3	297	1084	0	390	1095	0	426	1093	0	392	1078	0	323	3118	7	816	255	11	8505	2645
33	1045	2	307	1088	0	401	1095	0	437	1093	0	403	1083	0	334	3149	6	848	205	9	8555	2730
32	1052	2	317	1090	0	412	1095	0	448	1094	0	414	1086	0	345	3175	4	879	166	7	8594	2816
31	1059	2	328	1091	0	423	1095	0	459	1095	0	425	1089	0	356	3194	3	911	135	5	8625	2902
30	1067	1	339	1093	0	434	1095	0	470	1095	0	436	1091	0	367	3209	3	945	109	4	8631	2980
29	1073	1	349	1094	0	445	1095	0	481	1095	0	447	1092	0	378	3225	2	975	85	3	8675	3075
28	1077	1	360	1094	0	456	1095	0	492	1095	0	458	1093	0	389	3237	1	1008	68	2	8692	3162
27	1080	1	371	1094	0	467	1095	0	503	1095	0	469	1094	0	399	3246	1	1040	55	2	8705	3249
26	1081	0	382	1095	0	478	1095	0	514	1095	0	480	1094	0	410	3256	1	1073	43	1	8717	3336
25	1083	0	392	1095	0	489	1095	0	525	1095	0	491	1093	0	421	3265	0	1105	31	1	8729	3423
24	1084	0	403	1095	0	500	1095	0	536	1095	0	502	1095	0	432	3271	0	1138	24	0	8736	3511
23	1087	0	414	1095	0	511	1095	0	547	1095	0	513	1095	0	443	3275	0	1171	18	0	8742	3598
22	1091	0	425	1095	0	522	1095	0	558	1095	0	524	1095	0	454	3278	0	1203	10	0	8750	3686
21	1093	0	436	1095	0	532	1095	0	569	1095	0	535	1095	0	465	3281	0	1236	6	0	8754	3773
20	1094	0	447	1095	0	543	1095	0	580	1095	0	546	1095	0	476	3283	0	1269	3	0	8757	3861
19	1095	0	458	1095	0	554	1095	0	591	1095	0	557	1095	0	487	3284	0	1302	0	0	8760	3948
18	1095	0	469	1095	0	565	1095	0	602	1095	0	567	1095	0	498	3285	0	1335	0	0	8760	4036

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 365 x 100 = 36500 Deg Hrs)
 ** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

CHARLESTON, SOUTH CAROLINA
WBAN 13880
TABLE E:

WYEC Data

Latitude 32.90 N
Longitude 80.00 E

Annual COOLING Wet Bulb Degree Hour Summary

Wet Bulb Temperature (F) Base:	50	53	56	59	62	65	68	71	74	77	80
Annual Wet Bulb hours ABOVE base:	6355	5903	5495	5049	4520	3643	3085	2198	1271	427	46
Annual Wet Bulb Cooling deg-hrs:	108243	89690	72342	56286	41614	28706	17926	9496	3764	843	78

TABLE F:
Annual Humidification/Dehumidification Requirements
At various Indoor Conditions and Degree Day Bases
(Pounds of Moisture)

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **												COOLING HUMIDITY RATIO HOURS **												Maintained Indoor Humidity Ratio*
	Heating Degree Base												Cooling Degree Base												
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80			
.001	0	0	0	0	0	0	0	0	0	0	0	79	78	78	76	74	71	67	59	47	31	16	.001		
.002	0	0	0	0	0	0	0	0	0	0	0	70	70	70	69	67	65	61	55	44	29	15	.002		
.003	0	0	1	1	1	1	1	1	1	1	1	62	62	62	61	60	59	56	50	40	27	14	.003		
.004	0	1	1	1	2	2	2	2	2	2	2	55	55	55	54	54	52	50	45	37	24	13	.004		
.005	0	1	2	2	3	3	4	4	4	4	4	48	48	48	48	47	46	45	41	33	22	12	.005		
.006	0	1	2	4	4	5	6	6	6	6	6	41	41	41	41	41	41	39	36	30	20	11	.006		
.007	1	1	3	5	6	7	8	9	9	9	9	35	35	35	35	35	35	34	32	27	18	10	.007		
.008	1	2	4	6	8	9	11	11	12	12	12	30	30	30	30	30	30	29	28	23	16	9	.008		
.009	1	2	4	7	10	12	13	13	15	16	16	24	24	24	24	24	24	24	23	20	14	7	.009		
.010	1	2	5	8	11	14	16	18	19	20	20	20	20	20	20	20	20	20	19	17	12	6	.010		
.011	1	3	6	9	13	16	19	22	23	24	24	15	15	15	15	15	15	15	15	14	10	5	.011		
.012	1	3	6	11	15	19	22	25	27	29	29	12	12	12	12	12	12	12	12	11	8	4	.012		
.013	1	3	7	12	17	21	25	29	32	34	34	9	9	9	9	9	9	9	9	8	5	3	.013		
.014	1	3	7	13	18	23	28	33	37	39	40	6	6	6	6	6	6	6	6	6	4	2	.014		
.015	1	4	8	14	20	26	31	37	42	45	46	4	4	4	4	4	4	4	4	4	3	2	.015		
.016	1	4	9	15	22	28	35	41	47	51	53	2	2	2	2	2	2	2	2	2	2	1	.016		
.017	1	4	9	16	23	30	38	45	52	57	60	1	1	1	1	1	1	1	1	1	1	1	.017		
.018	2	5	10	18	25	33	41	49	57	63	67	0	0	0	0	0	0	0	0	0	0	0	.018		

FOOTNOTES: * Indoor Humidity Level is measured in pounds of moisture per pound of dry air. Indoor set points of 72 deg(F)-30%RH and 78 deg(F)-50%RH yield humidity ratios of .005 and .010 respectively.
** Heating (Cooling) Humidity Ratio Hours are defined as the summation of the differences between the maintained indoor humidity ratio and the observed outdoor humidity ratio when both the hourly dry bulb temperature and the humidity ratio are above (below) the base levels.

TABLE G:
Percent Diffuse Solar Radiation*
and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
% Diffuse on surface													
HORIZONTAL	41	33	39	50	51	58	57	57	47	39	28	38	47
VERTICAL													
NORTH	100	100	100	99	93	91	92	97	100	100	100	100	96
WEST	54	50	57	69	68	76	74	72	64	54	42	51	64
SOUTH	36	35	48	69	83	90	90	81	61	42	26	32	56
EAST	56	46	55	65	67	72	69	72	59	53	42	52	61
% Possible Sun	58	61	66	71	71	67	68	65	62	67	65	59	65

FOOTNOTES: * Corrected For Cloud Cover.
** Source: NOAA, Comparative Climatic Data for the United States Through 1978.

CHARLESTON, SOUTH CAROLINA
WBAN 13880
TABLE H:

WYEC Data

Latitude 32.90 N
Longitude 80.00 E

Average Daily Solar Radiation on Vertical and Horizontal Surfaces (BTU/DAY.SQFT)

Month	Under Clear Sky Assumption*										Corrected For Cloud Cover**										obs		
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S-45 horiz ***	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S-45 horiz ***			
Jan	1880	1750	1427	1143	736	414	252	187	187	2089	1197	944	881	734	602	420	283	207	188	187	1012	664	738
Feb	1836	1725	1490	1278	916	503	354	237	227	2259	1498	1129	1083	961	841	635	445	311	243	236	1324	942	997
Mar	1557	1531	1451	1363	1112	815	554	361	289	2318	1892	1161	1145	1078	1004	834	650	499	396	361	1536	1314	1343
Apr	1127	1245	1326	1379	1268	1058	808	556	387	2205	2221	953	1005	1028	1037	958	833	699	574	490	1424	1467	1741
May	828	1018	1196	1339	1341	1220	998	755	548	2055	2422	829	921	1003	1070	1058	983	858	727	614	1403	1631	1858
Jun	718	918	1134	1389	1360	1286	1086	857	662	1976	2498	838	925	1024	1109	1126	1078	969	846	752	1405	1716	1876
Jul	767	961	1159	1322	1350	1261	1053	822	621	1997	2451	842	942	1042	1128	1135	1077	957	823	711	1391	1674	1781
Aug	989	1135	1254	1346	1283	1121	889	654	463	2099	2269	895	951	989	1016	968	879	764	653	563	1347	1482	1583
Sep	1385	1385	1367	1332	1142	886	639	438	335	2212	1975	1042	1070	1056	1026	902	743	596	481	424	1436	1355	1396
Oct	1703	1618	1438	1235	967	652	415	279	258	2724	1607	1169	1123	1009	899	785	515	380	307	296	1413	1083	1197
Nov	1861	1738	1452	1186	889	475	277	209	204	2124	1278	1204	1131	958	795	561	351	231	191	190	1346	849	947
Dec	1870	1733	1401	1099	694	375	213	179	178	2023	1113	977	918	762	614	418	267	191	172	172	1029	632	716
Year	1373	1394	1340	1281	1082	847	628	463	364	2131	1870	997	1007	970	928	811	676	556	468	417	1338	1235	1349

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.
*** South exposure tilt 45 degrees.

TABLE I: Average Daily Solar Heat Gain Through Single Pane Glass on Vertical and Horizontal Surfaces (BTU/DAY.SQFT)

Month	Under Clear Sky*									Corrected For Cloud Cover**									N
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	
Jan	1612	1472	1193	947	596	311	173	152	152	799	734	607	495	340	220	164	133	153	
Feb	1536	1434	1240	1063	750	456	262	189	184	939	901	798	699	521	351	239	195	192	
Mar	1216	1246	1198	1136	920	658	426	273	235	925	934	886	830	686	525	393	312	293	
Apr	800	962	1076	1139	1051	855	639	431	304	730	800	836	851	787	678	560	455	395	
May	557	738	948	1096	1107	1000	802	587	406	628	712	805	873	868	803	694	579	483	
Jun	489	649	885	1069	1125	1057	879	670	484	648	716	820	903	924	883	788	680	592	
Jul	322	689	912	1081	1118	1037	852	642	438	651	731	839	924	939	883	778	658	599	
Aug	689	859	1011	1108	1065	918	711	505	356	689	752	802	832	796	718	618	522	452	
Sep	1034	1111	1121	1104	943	719	499	333	272	813	867	867	847	742	603	474	380	344	
Oct	1402	1339	1196	1062	791	514	313	219	210	962	927	836	746	576	410	296	246	241	
Nov	1586	1458	1211	990	653	365	207	167	166	1020	945	798	663	453	271	178	136	155	
Dec	1607	1461	1168	908	556	279	160	145	145	829	768	631	504	336	207	149	140	140	
Year	1085	1116	1096	1058	890	683	495	360	281	802	815	793	764	664	547	445	374	334	

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.

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CHICAGO, ILLINOIS
WGAN 14819
TABLE A:

MYEC Data

Latitude 41.80 N
Longitude 87.90 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): First Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Jan															
40 to 44	0	0	0	0	2	0	0	0	2	34.5	744	12076	0	0	
35 to 39	4	2	2	12	20	15	11	3	69	32.8	730	8376	14	20	
30 to 34	35	29	33	39	38	39	32	42	287	30.6	526	5050	218	414	
25 to 29	13	23	19	15	17	17	20	12	136	25.8	318	3004	426	2068	
20 to 24	11	3	6	11	5	8	9	10	63	20.7	219	1690	525	4494	
15 to 19	21	24	16	6	5	7	11	17	107	15.9	153	734	591	7258	
10 to 14	3	6	12	9	6	6	5	3	50	11.1	63	244	681	19480	
5 to 9	3	3	2	1	0	1	5	6	21	6.8	21	57	723	14021	
0 to 4	3	3	3	0	0	0	0	0	9	2.2	5	7	739	17691	
Feb															
55 to 59	2	0	0	0	2	2	0	1	7	52.1	670	20438	2	2	
50 to 54	1	0	0	3	7	5	2	1	19	48.0	661	17108	11	32	
45 to 49	2	5	5	5	4	5	7	4	37	42.9	639	13861	33	145	
40 to 44	6	4	4	3	6	8	4	7	42	38.1	594	10785	78	429	
35 to 39	5	5	6	15	14	13	13	7	80	33.4	543	7934	129	938	
30 to 34	12	13	12	15	13	12	14	16	108	28.7	450	5445	222	1809	
25 to 29	11	10	10	8	18	16	19	10	104	24.5	344	3482	328	3206	
20 to 24	16	22	19	20	6	6	9	20	120	20.7	219	2064	453	5148	
15 to 19	16	9	7	2	2	6	6	5	53	15.4	126	1218	544	7662	
10 to 14	7	7	10	5	4	1	1	4	39	10.4	86	692	586	10496	
5 to 9	0	2	1	3	3	5	5	3	22	5.1	32	350	620	13514	
0 to 4	3	2	2	2	3	3	4	6	25	0.5	33	135	639	16659	
-5 to -1	3	3	3	2	0	0	0	0	11	-3.7	12	34	660	19918	
-10 to -6	0	2	3	0	0	0	0	0	5	-7.6	2	3	670	23247	
Mar															
65 to 69	0	0	0	0	4	3	0	0	7	50.1	744	23802	0	0	
60 to 64	0	0	0	1	3	5	1	0	10	49.7	732	20112	12	30	
55 to 59	0	0	0	5	2	0	2	0	9	47.4	723	16474	21	112	
50 to 54	1	0	3	8	7	1	3	4	29	44.7	710	12889	34	247	
45 to 49	5	7	6	6	8	7	5	7	51	42.7	667	9428	77	506	
40 to 44	4	4	5	5	12	16	11	9	66	36.4	623	6219	121	1017	
35 to 39	16	8	12	30	35	31	21	20	171	33.0	498	3334	246	1852	
30 to 34	44	50	39	31	18	19	31	30	262	29.5	282	1266	462	3504	
25 to 29	10	6	17	6	4	11	13	12	79	25.2	98	405	646	6363	
20 to 24	12	13	9	1	0	0	4	11	50	20.5	35	82	709	9760	
15 to 19	1	7	2	0	0	0	0	0	10	16.7	3	4	741	13402	

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

CHICAGO, ILLINOIS

WBAN 14019

TABLE A:

WYEC Data

Latitude 41.80 N

Longitude 87.90 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Second Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24			hours below	degrees hours	hours above	degrees hours
Apr														
85 to 89	0	0	0	2	7	3	0	0	12	63.4	717	27799	3	2
80 to 84	0	0	0	9	3	6	1	0	19	61.0	699	24257	21	60
75 to 79	0	0	4	1	3	3	4	0	15	58.1	682	20802	38	205
70 to 74	1	0	3	3	1	2	6	5	23	58.9	666	17430	54	433
65 to 69	5	10	6	5	8	4	3	6	47	58.8	637	14137	83	760
60 to 64	10	3	4	3	3	4	1	4	32	51.9	593	11099	127	1302
55 to 59	2	5	4	7	14	11	5	3	51	47.8	558	8220	162	2023
50 to 54	3	0	5	6	12	10	14	7	57	45.0	505	5584	215	2987
45 to 49	8	7	11	26	18	17	8	13	108	40.7	434	3216	286	4219
40 to 44	28	27	29	15	16	21	23	23	182	37.6	283	1573	437	5976
35 to 39	19	20	12	11	5	9	20	21	117	32.7	114	412	606	8615
30 to 34	9	13	12	0	0	0	5	8	47	29.2	35	76	685	11879
25 to 29	5	5	0	0	0	0	0	0	10	25.3	2	1	718	12404
May														
85 to 89	0	0	0	0	2	0	0	0	2	66.0	744	20537	0	0
80 to 84	0	0	0	9	13	5	0	0	27	62.0	737	16826	7	9
75 to 79	0	0	4	17	18	22	6	0	67	62.3	689	13248	55	151
70 to 74	0	0	13	18	14	12	18	4	79	60.9	622	9963	122	586
65 to 69	9	8	21	9	4	9	12	18	90	58.6	532	7079	212	1422
60 to 64	17	16	14	6	2	5	11	15	86	55.3	442	4638	302	2701
55 to 59	22	22	14	12	14	8	11	16	119	51.1	346	2635	398	4438
50 to 54	22	21	12	9	12	10	12	18	116	48.1	221	1219	523	6722
45 to 49	12	16	12	12	11	14	15	16	108	43.4	118	368	626	9591
40 to 44	8	9	3	1	3	8	5	6	43	37.6	26	50	718	12993
35 to 39	3	1	0	0	0	0	3	0	7	35.0	0	0	744	16663
Jun														
90 to 94	0	0	0	3	17	15	1	0	38	71.6	713	16026	7	7
85 to 89	0	0	1	13	18	6	6	0	44	69.3	672	12586	48	167
80 to 84	0	0	9	23	15	13	11	6	77	66.5	608	9374	112	355
75 to 79	8	3	12	13	7	14	10	10	77	65.1	540	6501	180	1282
70 to 74	8	12	20	15	18	17	22	15	127	63.0	428	4042	292	2423
65 to 69	24	17	20	7	6	12	12	22	120	60.3	312	2211	408	4192
60 to 64	19	24	9	10	9	9	13	12	105	55.0	199	970	521	6551
55 to 59	22	20	17	4	0	4	15	21	103	52.1	97	236	623	9417
50 to 54	8	11	2	0	0	0	0	4	25	48.5	8	19	712	12800
45 to 49	1	3	0	0	0	0	0	0	4	45.3	0	0	720	16381

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

CHICAGO, ILLINOIS
WBAN 14819
TABLE A:

WYEC Data

Latitude 41.80 N
Longitude 87.90 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Third Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Jul														
90 to 94	0	0	0	0	5	4	0	0	9	71.6	744	13450	0	0
85 to 89	0	0	0	18	36	26	3	0	83	59.2	715	9776	29	46
80 to 84	0	0	9	37	26	29	20	2	125	66.8	613	6441	131	431
75 to 79	3	0	28	14	9	15	31	21	121	66.0	476	3727	268	1432
70 to 74	35	27	36	16	11	16	26	43	212	65.3	328	1646	416	3076
65 to 69	35	35	16	6	4	0	9	18	123	61.7	131	533	613	3683
60 to 64	17	22	4	0	0	3	4	7	57	57.6	43	117	701	8987
55 to 59	3	7	0	0	0	0	0	2	12	54.3	6	13	738	12603
50 to 54	0	2	0	0	0	0	0	0	2	52.0	0	0	744	16310
Aug														
90 to 94	0	0	0	3	13	5	0	0	21	73.3	734	13946	10	11
85 to 89	0	0	1	20	20	18	2	0	61	69.9	710	10329	34	114
80 to 84	0	0	9	19	16	18	12	3	77	68.8	634	6970	110	475
75 to 79	9	9	20	25	26	26	23	17	155	67.3	534	4005	210	1230
70 to 74	35	22	36	18	11	22	35	36	209	65.3	393	1767	391	2712
65 to 69	26	33	24	7	7	4	19	29	151	61.9	158	540	586	3203
60 to 64	18	23	6	1	0	0	2	7	59	58.0	34	105	710	8490
55 to 59	3	4	1	0	0	0	0	1	9	53.8	8	17	736	12122
50 to 54	0	2	0	0	0	0	0	0	2	52.5	0	0	744	15825
Sep														
90 to 94	0	0	0	7	15	7	0	0	29	73.3	719	19238	1	1
85 to 89	0	0	0	9	5	6	0	0	20	70.9	687	13746	33	111
80 to 84	0	0	3	6	8	4	5	0	30	68.6	658	12373	62	338
75 to 79	1	0	8	4	11	15	10	8	57	65.5	619	9165	101	728
70 to 74	16	12	11	14	15	13	23	18	122	64.5	538	6239	182	1402
65 to 69	15	13	13	14	6	13	8	18	92	61.0	413	3855	307	2618
60 to 64	23	22	24	22	18	13	17	21	160	56.8	291	2020	429	4383
55 to 59	12	14	13	10	12	16	21	17	115	51.3	168	891	532	6854
50 to 54	11	12	11	2	0	3	3	11	53	47.5	70	320	650	9883
45 to 49	9	12	5	0	0	0	3	5	34	43.8	33	72	687	13235
40 to 44	3	5	0	0	0	0	0	0	8	41.4	2	2	718	16765

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

CHICAGO, ILLINOIS
WBAN 14819
TABLE A:

WYEC Data

Latitude 41.80 N
Longitude 87.90 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Fourth Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence In time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day				22-24			hours below	degree hours	hours above	degree hours
Oct														
80 to 84	0	0	0	1	5	1	0	0	7	68.1	743	20561	1	1
75 to 79	0	0	0	7	10	3	0	0	20	64.3	726	16874	18	34
70 to 74	0	0	0	7	13	12	1	0	33	60.4	707	13287	37	167
65 to 69	3	0	5	11	7	9	14	8	57	59.5	661	9855	83	455
60 to 64	14	8	9	16	11	14	13	14	99	55.6	585	6713	159	1033
55 to 59	14	18	19	22	31	21	12	14	151	50.7	466	4029	278	2069
50 to 54	25	23	23	17	7	20	25	22	162	46.5	301	2087	443	3847
45 to 49	16	13	19	8	7	5	17	19	104	41.4	176	912	568	6392
40 to 44	13	15	9	4	2	6	7	11	67	37.8	72	289	672	9489
35 to 39	8	14	8	0	0	2	4	5	41	32.8	29	47	715	12967
30 to 34	0	2	1	0	0	0	0	0	3	29.0	0	0	744	16640
Nov														
60 to 64	0	0	0	0	6	1	0	0	7	51.7	720	15796	0	0
55 to 59	2	2	3	10	6	6	4	2	35	51.3	708	12222	12	26
50 to 54	10	10	9	17	22	20	16	10	114	48.1	626	8817	94	221
45 to 49	14	7	13	15	20	13	10	16	108	42.0	533	5942	187	946
40 to 44	20	19	12	14	13	26	27	20	151	37.5	396	3596	324	2200
35 to 39	7	13	20	19	10	7	10	12	98	33.2	255	1993	465	4197
30 to 34	17	13	16	8	9	12	10	13	98	28.5	173	917	547	6721
25 to 29	14	20	12	4	1	2	10	13	76	24.4	82	307	638	9711
20 to 24	6	3	2	0	3	3	3	3	23	19.7	26	79	694	13083
15 to 19	0	3	1	3	0	0	0	1	8	16.0	6	12	714	16616
10 to 14	0	0	2	0	0	0	0	0	2	11.5	1	1	719	20205
Dec														
55 to 59	0	0	0	1	5	3	2	0	11	47.7	744	20986	0	0
50 to 54	0	0	0	3	1	0	1	1	6	43.8	730	17308	14	42
45 to 49	3	2	3	3	3	3	3	3	23	42.4	722	13674	22	128
40 to 44	7	6	5	9	13	12	11	12	75	39.3	686	10138	58	312
35 to 39	18	18	18	18	19	17	15	14	137	35.3	572	6968	172	862
30 to 34	19	21	16	20	15	20	20	21	152	29.7	447	4426	297	2040
25 to 29	15	9	14	11	12	9	17	19	106	25.3	289	2617	455	3951
20 to 24	12	16	16	12	15	15	6	6	98	20.7	185	1409	559	6463
15 to 19	7	7	8	9	7	9	11	7	65	14.9	112	683	632	9457
10 to 14	9	7	2	3	0	2	4	7	34	10.4	55	284	689	12778
5 to 9	0	4	7	4	3	3	1	1	23	5.0	30	83	714	16297
0 to 4	3	3	4	0	0	0	2	2	14	2.0	3	2	741	19936

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

CHICAGO, ILLINOIS
WGAN 14819
TABLE B:

WYEC Data

Latitude 41.80 N
Longitude 87.90 E

Annual Dry Bulb Temperature Frequencies
With Mean Coincident Wet Bulb Temperature
(5 Degrees(F)/3Hr Bins)

Dry Bulb range(F)	Number of Hours of Occurrence In time period									Mean Coincident Wet Bulb Temperature (F)								
	Hour of day									Hour of day								
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year
90 to 94	0	0	0	15	50	31	1	0	97	0.0	0.0	0.0	73.9	72.5	71.9	70.0	0.0	72.5
85 to 89	0	0	2	62	88	59	11	0	222	0.0	0.0	72.0	70.7	68.1	69.0	70.8	0.0	69.2
80 to 84	0	0	32	106	88	76	49	11	362	0.0	0.0	70.2	68.9	65.0	66.0	69.6	69.8	66.7
75 to 79	21	12	76	81	84	98	84	56	512	69.7	70.1	66.4	63.5	63.5	64.3	65.8	68.6	65.4
70 to 74	95	73	113	95	83	94	131	121	809	66.3	66.3	63.9	62.3	61.7	62.8	63.7	65.3	64.0
65 to 69	119	116	105	59	46	54	77	111	687	62.0	62.5	60.5	59.5	57.4	58.2	59.6	60.3	60.5
60 to 64	118	118	72	59	52	54	62	80	615	56.9	57.7	55.9	53.9	52.3	52.9	55.6	57.2	58.8
55 to 59	82	92	71	71	86	71	72	77	622	52.0	52.6	51.9	49.0	46.9	50.1	51.1	51.7	51.0
50 to 54	81	81	65	65	68	69	78	78	585	48.0	48.7	46.8	45.7	46.7	46.7	46.6	47.6	47.2
45 to 49	70	72	74	75	71	64	68	83	577	43.5	43.8	43.0	41.1	39.3	41.4	42.6	42.8	42.2
40 to 44	69	69	67	51	61	97	88	88	636	38.1	39.0	37.9	36.6	36.5	37.2	37.6	38.2	37.7
35 to 39	80	79	60	105	103	94	97	82	720	34.0	34.3	33.7	33.1	32.9	33.1	33.4	33.7	33.5
30 to 34	136	141	129	114	93	102	112	130	957	30.0	29.6	29.8	29.3	29.3	29.3	29.9	29.8	29.7
25 to 29	68	73	72	44	52	57	79	66	511	25.4	25.5	25.5	25.1	24.5	24.7	25.0	25.3	25.1
20 to 24	57	57	52	44	31	32	31	50	354	20.7	20.9	20.8	19.9	19.9	20.8	20.5	20.9	20.6
15 to 19	45	50	34	20	14	22	28	30	243	15.7	15.9	15.8	15.4	14.7	14.8	15.4	16.0	15.6
10 to 14	19	20	26	17	10	9	10	14	125	10.9	10.9	11.3	9.9	10.4	9.8	10.7	10.9	10.7
5 to 9	3	9	10	8	6	9	11	10	66	6.7	6.2	5.7	4.9	5.7	5.6	5.5	5.2	5.6
0 to 4	9	8	9	2	3	3	6	8	48	2.1	1.2	1.9	-0.5	0.7	0.3	1.0	0.9	1.3
-5 to -1	3	3	3	2	0	0	0	0	11	-3.0	-4.3	-3.7	-4.0	0.0	0.0	0.0	0.0	-3.7
-10 to -6	0	2	3	0	0	0	0	0	5	0.0	-6.5	-8.3	0.0	0.0	0.0	0.0	0.0	-7.6

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Dry Bulb Temperature (F)						Wet Bulb Ave	Percent Relative Humidity					Average Humidity Ratio (lb moisture/lb dry air)					Average wind MPH
Month	Ave	Max	Min	Daily			Average					4AM	10AM	4PM	10PM	Day	
				Max	Min		4AM	10AM	4PM	10PM	Day						
Jan	26.3	41	1	31	21	24.7	88	81	75	85	83	0.0023	0.0024	0.0025	0.0025	0.0024	11.4
Feb	27.1	59	-9	35	20	24.6	77	72	66	74	73	0.0021	0.0022	0.0027	0.0026	0.0024	12.0
Mar	35.5	67	16	44	29	31.9	80	68	62	71	71	0.0029	0.0030	0.0031	0.0032	0.0030	11.9
Apr	48.9	88	27	59	40	42.0	72	56	49	60	61	0.0045	0.0048	0.0044	0.0044	0.0046	11.7
May	59.9	85	39	70	50	52.5	76	58	57	64	65	0.0071	0.0075	0.0072	0.0071	0.0072	10.3
Jun	70.3	94	48	81	59	60.7	77	55	49	60	61	0.0093	0.0102	0.0099	0.0097	0.0097	9.4
Jul	74.4	92	54	84	65	64.8	81	54	47	60	63	0.0114	0.0111	0.0109	0.0113	0.0113	8.6
Aug	73.8	94	53	83	65	65.3	79	58	53	69	66	0.0116	0.0118	0.0120	0.0124	0.0118	8.0
Sep	65.8	93	41	75	57	58.5	78	61	55	70	68	0.0089	0.0097	0.0095	0.0098	0.0095	9.2
Oct	54.9	83	33	64	47	48.5	73	59	54	69	63	0.0058	0.0063	0.0065	0.0066	0.0063	10.1
Nov	40.6	62	12	40	33	36.6	81	67	60	68	70	0.0041	0.0039	0.0039	0.0039	0.0039	11.1
Dec	29.3	57	2	36	23	27.2	80	77	75	79	78	0.0026	0.0027	0.0036	0.0030	0.0028	11.0
Year	50.7	94	-9	59	43	44.9	79	64	58	69	69	0.0061	0.0063	0.0063	0.0064	0.0063	10.4

CHICAGO, ILLINOIS
WDAH 14819
TABLE 0:

WVEC Data

Latitude 41.80 N
Longitude 87.90 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																24 HOUR SUMMARY					
	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**		HEATING				COOLING		Base	100s*		
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg	Below	Deg	Hrs	Deg				
	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Below	Deg	Base 100s*	Above	Deg	Base 100s*				
95	0	509	0	0	446	0	0	420	0	0	442	0	0	484	0	0	1582	0	8760	3885	0	0
94	0	498	0	0	435	0	0	409	0	0	431	0	0	473	0	0	1549	0	8755	3795	0	0
93	0	487	0	0	424	0	0	398	0	0	420	0	0	462	0	0	1516	0	8746	3707	14	0
92	0	476	0	2	413	0	22	387	0	10	409	0	0	451	0	0	1483	0	8729	3620	35	0
91	0	465	0	7	402	0	37	377	1	18	399	0	0	440	0	0	1451	0	8697	3533	63	1
90	0	454	0	12	391	0	46	366	1	26	388	0	0	429	0	0	1418	0	8674	3446	86	2
89	0	443	0	19	380	0	53	356	1	32	377	1	1	418	0	0	1385	0	8653	3359	107	2
88	0	432	0	26	370	1	64	345	2	38	367	1	3	407	0	0	1352	0	8628	3273	132	4
87	0	421	0	37	359	1	76	335	3	48	356	1	6	397	0	0	1319	0	8590	3187	170	5
86	0	410	0	53	348	1	95	325	4	64	346	2	8	386	0	0	1286	0	8559	3101	221	7
85	1	399	0	69	338	2	123	315	5	80	336	3	10	375	0	0	1253	0	8475	3016	269	10
84	3	388	0	85	328	3	145	306	6	97	325	4	13	364	0	0	1221	0	8414	2932	346	13
83	8	377	0	104	318	4	161	296	8	112	316	5	21	353	1	0	1188	0	8352	2848	408	16
82	15	366	0	124	308	5	178	287	9	126	306	6	29	342	1	2	1155	0	8284	2765	476	21
81	22	356	0	142	298	6	198	278	11	140	296	7	40	332	1	4	1122	0	8213	2682	547	26
80	30	345	1	168	289	8	217	269	13	157	287	9	53	321	2	8	1089	0	8126	2600	634	32
79	40	334	1	191	280	9	233	260	15	176	277	10	68	311	2	13	1057	0	8038	2520	722	39
78	55	324	1	207	271	11	250	252	18	197	268	12	85	301	3	21	1024	0	7944	2440	816	46
77	71	314	2	223	262	14	269	243	20	215	259	14	102	291	4	34	991	1	7844	2361	916	53
76	85	303	3	239	254	16	285	235	23	233	251	17	117	281	5	56	959	1	7744	2283	1016	65
75	100	293	4	256	245	18	301	227	26	254	242	19	134	271	6	85	927	2	7629	2206	1131	75
74	121	283	5	273	237	21	319	219	29	275	234	22	157	262	8	115	895	3	7498	2130	1262	87
73	147	274	6	295	229	24	336	212	33	300	226	24	183	253	9	150	863	4	7347	2058	1413	101
72	174	264	8	318	221	27	351	204	36	321	218	28	208	244	11	205	832	6	7182	1983	1578	115
71	196	255	10	333	213	30	366	197	40	337	210	31	233	235	14	278	802	8	7014	1912	1746	132
70	215	247	12	349	206	34	383	190	43	351	203	34	261	226	16	352	772	11	6846	1845	1914	150
69	235	238	14	367	198	37	398	183	47	364	195	38	286	218	19	424	743	15	6684	1775	2076	170
68	258	229	16	381	191	41	409	176	51	375	188	42	305	210	22	494	715	20	6537	1709	2225	192
67	281	221	19	394	184	45	416	169	55	388	181	45	322	202	25	566	687	25	6392	1645	2368	215
66	304	213	22	406	177	49	422	162	60	400	174	49	336	195	28	639	660	31	6251	1581	2509	239
65	321	205	25	414	170	53	433	155	64	408	167	53	347	187	32	705	634	38	6138	1519	2638	265
64	337	198	29	422	163	57	445	149	68	419	160	58	357	180	35	767	609	45	6011	1459	2749	292
63	355	190	32	430	157	61	458	142	73	431	154	62	371	172	39	840	584	53	5873	1399	2887	320
62	371	183	36	440	150	66	467	136	77	441	147	66	387	165	43	909	560	62	5744	1341	3016	350
61	383	176	39	453	144	70	475	130	82	450	141	71	399	158	46	961	536	71	5637	1284	3123	380
60	394	169	43	469	137	75	485	124	87	460	134	75	410	151	51	1018	513	81	5523	1229	3237	412
59	407	162	47	481	131	80	499	118	92	472	128	80	418	145	55	1074	491	92	5408	1174	3352	445
58	420	155	51	491	125	84	514	112	97	486	122	85	428	138	59	1122	469	103	5297	1120	3463	479
57	434	148	56	506	119	89	532	106	102	502	116	90	440	131	63	1174	448	114	5170	1068	3590	514
56	446	142	60	522	113	95	552	101	108	518	110	95	457	125	68	1219	427	126	5044	1017	3716	551
55	461	135	65	539	108	100	568	95	113	531	104	100	477	118	72	1270	407	139	4912	967	3848	589
54	476	129	69	555	102	105	583	90	119	544	99	105	493	112	77	1328	387	152	4777	919	3983	628
53	489	123	74	569	97	111	597	85	125	560	93	111	508	106	82	1389	367	165	4646	872	4114	668
52	499	117	79	583	92	117	611	80	131	576	88	117	523	101	87	1441	349	179	4526	826	4234	710
51	511	111	84	596	86	123	625	75	137	589	83	127	537	95	93	1475	331	194	4424	781	4336	753
50	527	105	89	607	82	129	638	71	143	600	78	128	555	89	98	1517	313	209	4313	737	4447	797

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (e.g. 565 x 100 = 56500 Deg Hrs)
** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

CHICAGO, ILLINOIS
WDAN 14819
TABLE D:

WYEC Data

Latitude 41.80 N
Longitude 87.90 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																		24 HOUR SUMMARY			
	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**		HEATING		COOLING							
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg	Hrs	Deg						
	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Below	Base 100s*	Above	Base 100s*						
49	540	100	95	616	77	135	649	68	150	612	73	134	567	84	104	1559	295	224	4214	695	4546	842
48	549	94	100	631	72	141	659	62	156	624	68	141	577	79	110	1597	278	240	4120	653	4640	888
47	566	89	106	651	67	147	672	57	163	634	64	147	595	74	115	1638	261	236	4003	612	4757	935
46	585	83	111	669	63	154	688	53	170	646	59	153	611	69	121	1680	245	273	3880	573	4880	983
45	601	78	117	682	59	161	706	49	177	662	55	160	625	64	128	1735	229	290	3747	535	5013	1032
44	614	74	124	692	55	168	723	46	184	682	50	166	637	60	134	1794	214	308	3617	498	5143	1063
43	626	69	130	703	51	175	737	42	191	706	46	173	649	55	140	1845	200	326	3492	462	5268	1135
42	645	64	136	714	47	182	749	39	199	727	42	181	669	51	147	1894	185	344	3361	428	5399	1188
41	661	60	143	722	43	189	759	35	206	747	39	188	691	46	154	1944	172	364	3234	395	5526	1243
40	672	56	149	731	40	196	773	32	214	762	36	196	712	43	161	2002	159	383	3106	363	5634	1299
39	685	51	156	748	36	204	794	29	222	776	32	203	733	39	168	2065	146	404	2956	333	5804	1356
38	702	47	163	768	33	211	818	26	230	797	29	211	753	35	175	2113	134	425	2807	304	5953	1415
37	719	44	170	789	29	219	841	23	238	817	26	219	770	32	183	2146	123	446	2675	277	6085	1475
36	732	40	177	810	27	227	858	21	247	835	24	227	786	29	191	2190	111	468	2547	251	6213	1537
35	747	36	185	832	24	235	875	18	255	853	21	236	806	26	199	2243	101	490	2402	226	6358	1599
34	770	33	192	856	21	244	890	16	264	869	19	244	829	23	207	2314	91	513	2231	203	6529	1664
33	797	30	200	881	19	252	905	14	273	885	17	253	856	21	215	2405	81	536	2027	181	6733	1730
32	825	27	208	903	17	261	931	12	282	905	15	262	884	18	224	2501	73	561	1810	162	6950	1799
31	851	24	217	926	15	270	957	11	292	927	13	271	899	16	233	2580	66	586	1618	145	7142	1869
30	875	22	225	949	14	280	973	10	301	950	11	281	918	14	242	2640	59	612	1446	130	7314	1941
29	893	20	234	963	12	289	984	8	311	973	10	290	937	13	251	2706	53	639	1302	116	7498	2015
28	911	18	243	972	11	299	997	7	321	987	9	300	954	11	261	2751	47	666	1187	104	7573	2091
27	928	16	252	978	10	309	1009	7	331	997	8	310	970	10	270	2793	42	694	1084	92	7676	2167
26	940	15	262	986	9	319	1017	6	341	1007	7	320	986	9	280	2836	38	722	987	82	7773	2244
25	951	13	271	997	8	328	1025	5	351	1016	6	330	1001	8	290	2873	33	751	895	73	7865	2322
24	962	12	281	1006	7	338	1034	4	362	1026	5	340	1013	7	300	2911	29	780	805	64	7955	2401
23	973	11	290	1015	6	349	1041	4	372	1036	5	351	1020	6	310	2952	26	809	721	57	8039	2481
22	984	9	300	1023	5	359	1047	3	383	1043	4	361	1025	5	321	2982	23	839	654	50	8106	2562
21	995	8	310	1032	4	369	1052	3	393	1047	4	372	1032	5	331	3009	20	869	591	44	8169	2643
20	1005	7	320	1041	4	379	1059	2	404	1050	3	382	1037	4	341	3038	17	899	528	38	8232	2725
19	1014	7	330	1048	3	390	1063	2	414	1054	3	393	1044	4	352	3062	15	929	473	33	8287	2808
18	1022	6	340	1054	3	400	1066	2	425	1058	2	403	1050	3	362	3084	13	960	425	29	8335	2891
17	1029	5	351	1058	3	411	1070	2	436	1063	2	414	1052	3	373	3112	11	991	374	24	8386	2975
16	1036	4	361	1060	2	422	1074	1	446	1067	2	424	1056	2	383	3143	9	1022	322	21	8438	3059
15	1042	4	371	1064	2	432	1075	1	457	1071	1	435	1053	2	394	3167	8	1054	275	18	8484	3144
14	1048	3	382	1067	2	443	1076	1	468	1074	1	446	1070	2	405	3182	7	1086	241	15	8519	3229
13	1053	3	392	1070	1	454	1079	1	479	1076	1	457	1072	1	415	3193	6	1118	216	13	8544	3314
12	1058	3	403	1073	1	464	1082	1	489	1077	1	467	1073	1	426	3207	5	1150	189	11	8571	3399
11	1063	2	413	1076	1	475	1084	0	500	1077	1	478	1074	1	437	3220	4	1182	163	9	8597	3485
10	1068	2	424	1080	1	486	1085	0	511	1080	0	489	1076	1	447	3227	4	1214	141	8	8619	3571
9	1071	2	435	1083	1	497	1086	0	522	1084	0	500	1079	1	458	3231	3	1246	124	7	8636	3658
8	1073	1	446	1085	0	507	1089	0	533	1087	0	511	1081	0	469	3234	3	1279	111	5	8649	3744
7	1075	1	456	1086	0	518	1091	0	544	1089	0	522	1083	0	480	3240	2	1311	95	4	8665	3831
6	1077	1	467	1089	0	529	1092	0	555	1089	0	532	1085	0	491	3246	2	1343	79	4	8681	3917
5	1079	1	478	1091	0	540	1092	0	566	1091	0	543	1088	0	502	3250	1	1376	68	3	8692	4004
4	1081	1	489	1091	0	551	1092	0	576	1092	0	554	1090	0	512	3255	1	1408	58	2	8702	4091

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds 565 x 100 = 56500 Deg Hrs)
** The Hours Below the Base Temp for any X-Hr period * calculated by subtracting the Hrs Above from X times 365

CHICAGO, ILLINOIS
WGAN 14819
TABLE D:

WYEC Data

Latitude 41.80 N
Longitude 87.90 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE (F)	BY TIME OF DAY												24 HOUR SUMMARY									
	7-9AM**			10-12AM**			1-3PM**			4-6PM**			7-9PM**			10PM-6AM**			HEATING		COOLING	
	Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg	Hrs	Deg
	Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*			Below Base 100s*		Above Base 100s*	
	Base Heat	Heat	Cool	Base Heat	Heat	Cool	Base Heat	Heat	Cool	Base Heat	Heat	Cool	Base Heat	Heat	Cool	Base Heat	Heat	Cool				
3 1084	1	499	1091	0	562	1093	0	587	1092	0	565	1092	0	523	3261	1	1441	46	2	8714	4178	
2 1086	0	510	1091	0	573	1094	0	598	1093	0	576	1092	0	534	3267	1	1474	36	1	8724	4286	
1 1088	0	521	1091	0	584	1094	0	609	1094	0	587	1093	0	545	3272	0	1506	25	1	8735	4353	
0 1089	0	532	1092	0	595	1095	0	620	1095	0	598	1095	0	556	3276	0	1539	17	1	8743	4440	
-1 1089	0	543	1093	0	606	1095	0	631	1095	0	609	1095	0	567	3277	0	1572	15	1	8745	4528	
-2 1089	0	554	1093	0	616	1095	0	642	1095	0	620	1095	0	578	3278	0	1605	13	0	8747	4615	
-3 1090	0	565	1094	0	627	1095	0	653	1095	0	631	1095	0	589	3280	0	1637	10	0	8750	4703	
-4 1091	0	576	1094	0	638	1095	0	664	1095	0	642	1095	0	600	3282	0	1670	7	0	8753	4790	
-5 1092	0	587	1095	0	649	1095	0	675	1095	0	653	1095	0	611	3282	0	1703	5	0	8755	4878	
-6 1092	0	598	1095	0	660	1095	0	686	1095	0	664	1095	0	622	3283	0	1736	4	0	8756	4965	
-7 1092	0	608	1095	0	671	1095	0	697	1095	0	675	1095	0	633	3284	0	1769	3	0	8757	5053	
-8 1093	0	619	1095	0	682	1095	0	708	1095	0	686	1095	0	644	3285	0	1802	2	0	8758	5140	
-9 1094	0	630	1095	0	693	1095	0	719	1095	0	697	1095	0	655	3285	0	1834	1	0	8759	5228	
-10 1095	0	641	1095	0	704	1095	0	730	1095	0	708	1095	0	666	3285	0	1867	0	0	8760	5315	

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 565 x 100 = 56500 Deg Hrs)

** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

CHICAGO, ILLINOIS
WBAN 14819
TABLE E:

WYEC Data

Latitude 41.80 N
Longitude 87.90 E

Annual COOLING Wet Bulb Degree Hour Summary

Wet Bulb Temperature (F) Base:	50	55	60	65	70	75	80	85	90	95	100
Annual Wet Bulb hours ABOVE base:	3783	3369	2982	2507	1926	1379	819	370	88	8	0
Annual Wet Bulb Cooling deg-hrs:	47827	36902	27156	18619	11682	6471	2962	944	155	9	0

TABLE F:

Annual Humidification/Dehumidification Requirements
At various Indoor Conditions and Degree Day Bases
(Pounds of Moisture)

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **												COOLING HUMIDITY RATIO HOURS **												Maintained Indoor Humidity Ratio
	Heating Degree Base												Cooling Degree Base												
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80			
.001	0	0	0	0	0	0	0	0	0	0	0	41	40	39	37	35	32	29	25	18	11	6	.001		
.002	1	1	1	1	1	1	1	1	1	1	1	34	34	33	32	31	29	26	22	16	10	5	.002		
.003	3	3	4	4	4	4	4	4	4	4	4	28	28	28	27	26	25	23	20	14	9	5	.003		
.004	4	5	6	7	7	7	7	7	7	7	7	23	23	23	23	22	21	20	17	13	7	4	.004		
.005	5	6	9	10	11	11	12	12	12	12	12	18	18	18	18	18	18	17	15	11	6	4	.005		
.006	7	10	12	14	15	16	16	16	16	16	17	15	15	15	15	15	14	14	12	9	5	3	.006		
.007	8	12	16	18	19	20	21	22	22	22	22	11	11	11	11	11	11	11	10	8	4	3	.007		
.008	9	15	19	22	24	25	26	27	27	28	28	8	8	8	8	8	8	8	8	6	4	2	.008		
.009	11	17	22	25	28	30	32	33	33	34	34	6	6	6	6	6	6	6	6	5	3	2	.009		
.010	12	19	25	29	32	35	37	39	39	40	41	4	4	4	4	4	4	4	4	3	2	1	.010		
.011	13	22	28	33	36	40	43	45	45	47	48	3	3	3	3	3	3	3	3	2	1	1	.011		
.012	15	24	31	36	41	45	48	51	52	54	55	2	2	2	2	2	2	2	2	2	1	0	.012		
.013	16	26	34	40	45	49	54	57	59	61	63	1	1	1	1	1	1	1	1	1	1	0	.013		
.014	18	29	37	44	49	54	59	63	66	69	70	0	0	0	0	0	0	0	0	0	0	0	.014		
.015	19	31	40	47	53	59	65	69	73	76	78	0	0	0	0	0	0	0	0	0	0	0	.015		
.016	20	33	43	51	58	64	70	73	79	84	86	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	22	36	46	55	62	69	75	81	86	91	94	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	23	38	49	58	66	74	81	87	93	99	102	0	0	0	0	0	0	0	0	0	0	0	.018		

FOOTNOTES: * Indoor Humidity Level is measured in pounds of moisture per pound of dry air. Indoor set points of 72 deg(F)-50%RH and 78 deg(F)-50%RH yield humidity ratios of .005 and .010 respectively.
** Heating (Cooling) Humidity Ratio Hours are defined as the summation of the differences between the maintained indoor humidity ratio and the observed outdoor humidity ratio when both the hourly dry bulb temperature and the humidity ratio are above (below) the base levels.

TABLE G:

Percent Diffuse Solar Radiation*
and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
% Diffuse on surface													
HORIZONTAL	45	40	49	48	52	49	39	49	38	28	47	45	45
VERTICAL													
NORTH	100	100	100	98	94	90	87	96	100	100	100	100	99
WEST	54	50	64	64	67	68	59	66	54	43	57	48	60
SOUTH	31	34	52	65	74	78	70	68	47	27	36	31	52
EAST	31	30	56	60	66	63	55	60	53	41	54	58	57
% Possible Sun	44	47	51	54	61	67	70	68	63	61	41	38	57

FOOTNOTES: * Corrected For Cloud Cover.

** Source: NOAA, Comparative Climatic Data for the United States Through 1978.

CHICAGO, ILLINOIS
WBAN 14819
TABLE H:

WYEC Data

Latitude 41.80 N
Longitude 87.90 E

Average Daily Solar Radiation on Vertical and Horizontal Surfaces
(BTU/DAY.SQFT)

Month	Under Clear Sky Assumption*										Corrected For Cloud Cover**										Obs
	S	SSE/SSW	SE/SW	ESE/WSW	E/W	ENE/NNW	NE/NNW	N	S-45 horiz***		S	SSE/SSW	SE/SW	ESE/WSW	E/W	ENE/NNW	NE/NNW	N	S-45 horiz***		
Jan	1793	1665	1328	997	589	286	161	140	1803	855	744	703	580	453	293	176	127	119	728	393	603
Feb	1913	1786	1494	1212	816	471	270	191	186	2113	1197	878	828	705	585	419	279	200	167	154	965
Mar	1776	1712	1549	1388	1067	734	475	310	258	2327	1674	881	888	831	764	622	476	366	294	271	1231
Apr	1431	1496	1493	1472	1281	1014	742	511	364	2361	2130	979	1025	1020	1000	893	753	616	502	428	1543
May	1139	1283	1403	1486	1418	1232	973	720	525	2294	2432	941	992	1026	1048	996	892	762	642	551	1829
Jun	1019	1183	1350	1476	1465	1320	1079	828	639	2247	2560	912	989	1054	1101	1075	982	852	721	625	1951
Jul	1066	1220	1364	1474	1439	1276	1033	784	595	2249	2488	949	1056	1143	1208	1174	1057	893	727	596	2160
Aug	1287	1381	1423	1447	1309	1082	825	596	435	2280	2215	1002	1070	1090	1094	1002	863	712	582	494	1690
Sep	1610	1592	1497	1391	1125	825	571	388	308	2274	1806	1071	1060	993	918	753	583	450	358	319	1434
Oct	1821	1711	1465	1233	865	541	334	231	219	2127	1334	1060	1016	887	759	546	360	242	183	176	1094
Nov	1814	1694	1388	1064	654	349	193	157	157	1875	948	730	692	379	467	314	202	146	135	135	562
Dec	1733	1606	1271	933	534	253	140	130	130	1700	766	689	627	495	369	234	147	112	106	106	487
Year	1331	1526	1417	1298	1048	783	568	417	330	2137	1703	905	912	868	815	695	566	458	379	333	1294

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.
*** South exposure tilt 45 degrees.

TABLE I: Average Daily Solar Heat Gain Through Single Pane Glass on Vertical and Horizontal Surfaces (BTU/DAY.SQFT)

Month	Under Clear Sky*										Corrected For Cloud Cover**									
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ NNW	NE/ NW	NNE/ NNW	N	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ NNW	NE/ NW	NNE/ NNW	N		
Jan	1590	1418	1110	824	465	212	121	113	113	655	594	483	374	234	135	100	97	97		
Feb	1627	1504	1248	1013	660	363	201	153	151	739	691	585	485	338	220	156	134	133		
Mar	1448	1417	1288	1156	875	584	362	237	210	715	732	688	633	509	383	288	233	220		
Apr	1091	1196	1226	1220	1057	823	584	389	287	764	824	834	822	732	611	493	396	343		
May	818	977	1131	1228	1172	1010	783	562	395	726	783	832	861	818	729	616	512	437		
Jun	714	875	1073	1217	1209	1087	873	652	475	695	769	847	902	861	803	689	576	491		
Jul	759	917	1093	1216	1189	1052	835	618	447	714	817	922	994	967	868	724	579	465		
Aug	961	1088	1164	1198	1082	885	659	462	338	779	858	894	904	826	705	573	462	394		
Sep	1286	1308	1239	1157	927	666	445	298	250	860	869	819	757	617	471	357	284	259		
Oct	1333	1433	1223	1026	706	424	249	184	178	889	850	741	631	445	284	185	147	143		
Nov	1561	1434	1146	881	524	260	145	128	127	619	380	482	385	253	156	116	110	109		
Dec	1501	1372	1062	773	419	184	110	105	105	589	527	407	302	186	114	90	88	88		
Year	1235	1245	1166	1076	858	630	449	326	237	727	741	712	672	569	458	367	302	266		

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.

CLEVELAND, OHIO
MOAN 14828
TABLE A:

MYEC Data

Latitude 41.40 N
Longitude 81.90 E

Monthly Dry Bulb Temperature Frequencies With Moon
Coincident Wet Bulb Temperature (MCWB): First Quarter
(5 Degrees(F)/SHr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Jan															
55 to 59	0	0	0	1	0	0	2	1	4	51.0	744	22857	0	0	
50 to 54	2	3	3	2	3	3	2	1	19	47.4	734	19155	10	18	
45 to 49	5	2	0	2	3	4	7	8	31	43.0	713	15539	31	122	
40 to 44	4	2	2	7	18	13	7	7	60	38.5	671	12067	73	370	
35 to 39	14	18	14	18	13	13	8	10	108	34.1	590	8897	154	920	
30 to 34	20	14	22	22	18	21	25	20	162	30.4	431	6258	313	2001	
25 to 29	10	14	10	4	2	3	7	11	61	25.5	328	4387	416	3850	
20 to 24	8	9	5	8	19	15	5	4	73	20.0	268	2865	476	6068	
15 to 19	3	6	11	15	18	15	17	4	81	15.4	193	1714	551	8517	
10 to 14	15	12	14	5	1	0	7	18	72	11.1	108	930	636	11573	
5 to 9	5	1	0	3	0	7	3	6	28	5.4	65	545	679	14888	
0 to 4	4	7	6	0	6	1	0	0	24	1.1	46	267	698	18330	
-5 to -1	1	2	1	5	0	3	3	3	18	-3.9	24	98	720	21881	
-10 to -6	2	1	2	1	0	0	0	0	6	-8.2	8	31	736	25534	
-15 to -11	0	2	3	0	0	0	0	0	5	-13.0	3	3	741	29226	
Feb															
60 to 64	0	0	0	0	0	2	0	0	2	57.0	672	22901	0	0	
55 to 59	0	0	0	1	3	1	3	1	9	55.2	665	19551	7	10	
50 to 54	0	0	2	3	3	1	0	2	11	48.8	660	16240	12	39	
45 to 49	3	3	1	3	3	3	2	0	20	43.3	640	12987	32	166	
40 to 44	2	0	5	7	13	6	7	4	44	37.7	612	9842	60	381	
35 to 39	16	15	8	14	13	20	18	13	116	33.2	355	6906	117	805	
30 to 34	15	21	22	14	12	7	6	15	112	29.8	396	4497	276	1756	
25 to 29	9	6	6	16	17	20	15	13	102	24.2	322	2690	350	3309	
20 to 24	19	12	10	14	15	15	22	21	128	19.8	195	1361	477	5340	
15 to 19	11	10	12	6	0	2	4	4	49	15.3	111	652	561	7991	
10 to 14	3	11	12	5	6	5	5	3	52	11.1	55	240	617	10939	
5 to 9	2	3	4	1	0	0	2	3	15	5.6	22	83	650	14142	
0 to 4	4	3	2	0	0	0	0	3	12	1.7	6	8	666	17421	
Mar															
55 to 59	2	3	1	0	0	0	0	0	6	56.2	742	16530	2	1	
50 to 54	1	0	0	1	3	0	2	5	12	50.1	734	12840	10	31	
45 to 49	0	0	1	10	11	9	3	0	34	40.3	725	9199	19	110	
40 to 44	1	0	8	13	15	21	13	6	77	37.4	658	5718	86	349	
35 to 39	23	17	22	31	42	41	32	29	237	34.0	538	2648	206	999	
30 to 34	33	38	40	32	19	18	36	44	292	30.3	254	638	490	2701	
25 to 29	12	23	21	6	3	4	7	9	85	26.2	22	31	722	5822	
20 to 24	1	8	0	0	0	0	0	0	1	22.0	0	0	744	9511	

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

CLEVELAND, OHIO
MDAM 14826
TABLE A:

WYEC Data

Latitude 41.40 N
Longitude 81.90 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Second Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Apr														
80 to 84	0	0	0	0	3	1	0	0	4	63.5	720	24422	0	0
75 to 79	0	0	0	3	3	5	0	0	11	63.7	713	20837	7	15
70 to 74	0	0	1	5	5	1	3	0	15	62.5	699	17305	21	83
65 to 69	2	0	4	6	8	4	8	5	37	59.7	677	13855	43	233
60 to 64	7	9	7	13	14	16	2	6	76	52.4	631	10565	89	543
55 to 59	15	7	10	8	6	12	16	8	82	50.0	547	7827	173	1205
50 to 54	6	10	12	10	15	14	10	10	87	43.3	472	5099	248	2277
45 to 49	4	5	8	17	12	16	12	9	83	40.0	381	2993	339	3771
40 to 44	16	8	19	13	18	15	27	25	141	37.0	280	1342	440	5720
35 to 39	32	31	22	12	6	4	7	20	134	34.3	110	356	610	8334
30 to 34	8	15	7	3	0	2	5	5	45	29.9	28	51	692	11629
25 to 29	0	5	0	0	0	0	0	0	5	27.0	0	0	720	15176
May														
80 to 84	0	0	0	2	3	2	0	0	7	66.1	743	17900	1	1
75 to 79	0	0	0	9	19	14	0	0	42	62.4	733	14208	11	29
70 to 74	0	0	5	18	18	24	9	0	74	59.7	670	10692	74	253
65 to 69	3	1	11	19	13	12	22	4	85	58.6	587	7543	157	804
60 to 64	3	2	22	12	12	19	23	16	109	55.6	495	4836	251	1617
55 to 59	28	23	21	11	10	7	18	38	156	52.8	366	2639	378	3340
50 to 54	36	35	11	7	7	6	6	17	125	48.8	201	1193	543	5614
45 to 49	11	14	17	13	9	9	13	8	94	45.3	102	439	642	8580
40 to 44	4	7	5	2	2	0	2	9	31	39.9	51	134	713	11995
35 to 39	8	9	1	0	0	0	0	1	19	36.0	12	22	732	15603
30 to 34	0	2	0	0	0	0	0	0	2	33.5	0	0	744	19361
Jun														
90 to 94	0	0	0	0	0	1	0	0	1	72.0	720	17314	0	0
85 to 89	0	0	0	4	15	5	1	0	25	70.7	715	13722	5	8
80 to 84	0	0	1	22	21	22	10	2	78	69.5	664	10246	56	132
75 to 79	2	0	12	23	15	16	15	2	85	68.5	590	7115	130	601
70 to 74	4	5	29	14	14	23	26	15	130	64.6	488	4412	232	1498
65 to 69	25	20	18	12	12	10	14	29	140	62.1	348	2338	372	3024
60 to 64	28	31	15	8	3	4	13	19	121	58.9	200	968	520	5254
55 to 59	16	21	15	7	10	9	9	15	102	54.7	71	241	649	8127
50 to 54	15	10	0	0	0	0	2	8	35	50.9	18	31	702	11517
45 to 49	0	3	0	0	0	0	0	0	3	47.7	0	0	720	15086

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

CLEVELAND, OHIO
WBAN 14820
TABLE A:

MYEC Data

Latitude 41.40 N
Longitude 81.90 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Third Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Jul														
90 to 94	0	0	0	0	6	4	0	0	10	74.7	744	15451	0	0
85 to 89	0	0	0	13	21	20	4	0	58	72.2	715	11774	29	43
80 to 84	0	0	7	32	22	21	21	1	104	69.6	644	8366	100	355
75 to 79	5	0	18	15	19	19	21	16	113	66.8	529	5451	215	1160
70 to 74	19	15	27	17	13	19	27	29	166	65.6	407	3096	337	2525
65 to 69	31	24	17	15	12	10	13	21	143	61.1	233	1527	511	4676
60 to 64	19	29	17	1	0	0	6	14	86	58.0	104	693	640	7562
55 to 59	6	9	3	0	0	0	1	4	23	53.4	53	331	691	10920
50 to 54	6	5	4	0	0	0	0	7	22	48.8	31	121	715	14430
45 to 49	3	10	0	0	0	0	0	1	18	45.2	12	15	732	18044
40 to 44	0	1	0	0	0	0	0	0	1	43.0	0	0	744	21749
Aug														
90 to 94	0	0	0	0	2	3	0	0	5	73.4	744	16324	0	0
85 to 89	0	0	0	6	18	10	1	0	35	70.9	725	12631	19	27
80 to 84	0	0	0	29	20	29	9	0	87	68.9	666	9109	78	225
75 to 79	2	0	12	24	25	12	19	9	103	67.7	588	5981	156	817
70 to 74	19	11	29	23	22	30	25	24	183	65.4	436	3378	308	1934
65 to 69	17	25	30	7	5	9	29	22	144	62.4	259	1639	485	3915
60 to 64	33	26	15	4	1	0	8	27	114	58.9	144	630	600	6626
55 to 59	16	19	6	0	0	0	2	6	49	55.4	46	181	698	9897
50 to 54	4	6	1	0	0	0	0	5	16	51.1	11	39	733	15475
45 to 49	2	6	0	0	0	0	0	0	8	47.3	2	1	742	17157
Sep														
90 to 94	0	0	0	1	6	2	0	0	9	68.6	720	20660	0	0
85 to 89	0	0	0	5	7	7	0	0	19	69.3	705	17095	15	35
80 to 84	0	0	0	6	8	10	3	0	27	68.3	686	13622	34	162
75 to 79	0	0	4	9	11	7	7	0	38	64.6	654	10282	66	422
70 to 74	2	0	5	20	16	18	17	14	92	62.7	597	7133	123	873
65 to 69	27	20	19	19	17	18	20	21	161	60.6	473	4405	249	1745
60 to 64	18	20	23	12	8	10	12	18	121	57.6	316	2455	404	3395
55 to 59	13	17	16	15	17	18	15	12	123	51.4	207	1156	513	5696
50 to 54	20	14	11	3	0	0	15	18	81	48.4	96	414	624	8554
45 to 49	5	10	9	0	0	0	1	7	32	45.7	27	127	693	11867
40 to 44	5	6	2	0	0	0	0	0	13	40.8	15	31	705	15371
35 to 39	0	3	1	0	0	0	0	0	4	38.0	0	0	720	18940

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

CLEVELAND, OHIO
WBAN 14820
TABLE A:

NYEC Data

Latitude 41.40 N
Longitude 81.90 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Fourth Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Oct															
75 to 79	0	0	0	0	6	3	0	0	9	63.4	744	17464	0	0	
70 to 74	0	0	0	9	8	8	5	1	31	62.4	727	13799	17	35	
65 to 69	5	1	4	9	7	6	6	6	46	59.3	690	10258	54	214	
60 to 64	12	13	8	13	25	15	14	14	114	56.2	633	6951	111	627	
55 to 59	11	10	13	30	28	24	9	16	139	52.3	501	4147	243	1543	
50 to 54	18	16	31	24	13	27	32	16	177	49.1	312	2032	432	3148	
45 to 49	22	26	22	5	3	5	18	23	122	44.1	173	828	571	5664	
40 to 44	18	13	10	5	3	3	8	14	74	38.9	77	219	673	8775	
35 to 39	6	14	6	0	0	0	1	3	30	35.5	14	22	730	12298	
30 to 34	1	0	1	0	0	0	0	0	2	32.5	0	0	744	15996	
Nov															
60 to 64	0	0	0	1	3	3	1	0	8	51.6	716	15144	4	5	
55 to 59	0	0	2	5	8	2	2	3	22	50.6	707	11581	13	42	
50 to 54	9	9	11	19	17	19	13	6	103	48.6	662	8127	58	188	
45 to 49	18	21	16	16	28	23	24	26	172	43.8	522	5152	198	813	
40 to 44	33	20	26	30	22	27	22	30	210	39.0	343	3003	377	2264	
35 to 39	11	16	11	8	5	4	14	8	75	34.3	175	1781	345	4642	
30 to 34	6	12	12	2	0	2	3	3	40	29.4	115	1074	605	7333	
25 to 29	3	3	3	0	0	2	3	8	24	25.5	80	594	640	10653	
20 to 24	2	1	0	4	6	3	3	0	21	20.3	55	262	665	13923	
15 to 19	6	8	9	5	3	3	3	3	44	15.8	28	38	692	17299	
10 to 14	0	0	0	0	0	0	0	1	1	13.0	0	0	720	20861	
Dec															
60 to 64	0	0	0	1	4	0	0	0	5	50.8	744	23739	0	0	
55 to 59	0	1	3	3	2	4	3	3	19	51.6	732	20837	12	18	
50 to 54	3	2	0	5	8	2	0	0	20	45.5	712	16424	32	125	
45 to 49	2	0	3	6	7	8	3	4	35	40.9	692	12911	52	332	
40 to 44	4	10	9	9	6	10	11	5	64	37.6	646	9359	96	700	
35 to 39	21	15	7	8	16	16	19	17	121	33.2	361	6496	163	1337	
30 to 34	19	13	24	23	19	17	12	21	144	28.3	434	3978	310	2559	
25 to 29	17	20	20	20	16	21	26	17	159	23.9	267	2203	477	4504	
20 to 24	12	11	7	8	3	3	4	10	60	19.3	144	1214	600	7235	
15 to 19	8	10	10	4	2	4	3	6	47	14.9	92	620	652	10361	
10 to 14	5	4	2	2	3	6	10	7	41	10.2	49	260	695	13721	
5 to 9	3	4	5	3	1	0	0	2	18	5.8	20	93	724	17276	
0 to 4	1	0	3	1	0	0	0	1	6	0.3	9	32	733	20933	
-5 to -1	2	3	0	0	0	0	0	0	5	-3.4	3	2	741	24623	

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

CLEVELAND, OHIO
 WBAN 14820
 TABLE B:

WYEC Data

Latitude 41.40 N
 Longitude 81.90 E

Annual Dry Bulb Temperature Frequencies
 With Mean Coincident Wet Bulb Temperature
 (5 Degrees(F)/3HR Bins)

Dry Bulb range(F)	Number of Hours of Occurrence in time period									Mean Coincident Wet Bulb Temperature (F)								
	Hour of day									Hour of day								
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year
90 to 94	0	0	0	1	14	10	0	0	25	0.0	0.0	0.0	69.0	72.1	72.5	0.0	0.0	72.1
85 to 89	0	0	0	28	61	42	6	0	137	0.0	0.0	0.0	71.0	71.2	71.1	72.3	0.0	71.2
80 to 84	0	0	0	91	77	85	43	3	307	0.0	0.0	72.0	70.1	68.4	68.5	68.9	69.3	69.1
75 to 79	9	0	46	83	98	76	62	27	401	69.8	0.0	69.0	66.0	64.6	64.6	67.1	68.3	66.1
70 to 74	44	31	96	106	96	123	112	83	691	67.5	67.4	65.4	62.7	62.7	62.4	64.0	66.0	64.1
65 to 69	110	91	102	87	74	71	112	108	756	62.4	63.6	61.6	59.6	58.8	58.8	60.2	61.8	61.0
60 to 64	120	130	107	65	70	69	79	116	756	58.6	59.2	58.2	55.2	55.2	55.6	55.6	57.4	56.9
55 to 59	107	110	86	61	64	77	80	107	734	53.5	53.9	52.8	51.4	51.9	51.7	51.7	53.0	52.6
50 to 54	120	110	86	74	69	72	82	95	708	49.1	49.4	48.6	47.3	46.4	46.8	47.8	48.6	48.2
45 to 49	79	100	77	70	76	79	85	86	652	44.4	45.2	44.4	42.5	42.0	41.4	43.1	43.6	43.4
40 to 44	87	67	86	86	97	95	97	100	715	38.9	38.9	38.8	38.2	37.5	38.1	37.6	38.4	38.3
35 to 39	131	138	92	81	94	98	99	101	844	34.2	34.6	34.4	34.1	33.4	33.2	33.8	33.9	34.0
30 to 34	118	127	128	96	88	67	87	108	799	30.1	30.1	30.1	29.8	29.8	29.3	29.7	29.9	29.8
25 to 29	53	71	60	46	40	50	58	58	436	24.9	25.4	25.3	24.0	24.7	24.8	24.2	24.6	24.8
20 to 24	42	33	27	34	43	40	34	35	283	20.0	19.9	20.4	19.5	19.8	19.8	20.0	19.7	19.9
15 to 19	28	34	42	30	15	24	29	19	221	15.4	15.6	15.4	15.4	15.7	15.4	14.6	15.4	15.3
10 to 14	23	27	28	12	12	11	22	31	166	10.7	10.9	11.7	10.5	10.2	10.3	10.3	11.3	10.9
5 to 9	10	8	9	7	1	2	5	11	53	5.9	5.1	6.0	6.4	6.0	5.5	4.2	5.6	5.6
0 to 4	9	10	11	1	6	1	0	4	42	1.7	1.4	1.2	3.0	-0.2	2.0	0.0	0.7	1.2
-5 to -1	3	5	1	5	0	3	3	3	23	-4.0	-3.0	-4.0	-5.0	0.0	-2.7	-4.3	-3.7	-3.8
-10 to -6	2	1	2	1	0	0	0	0	6	-8.0	-10.0	-7.0	-9.0	0.0	0.0	0.0	0.0	-8.2
-15 to -11	0	2	3	0	0	0	0	0	5	0.0	-12.5	-13.3	0.0	0.0	0.0	0.0	0.0	-13.0

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Month	Dry Bulb Temperature (F)					Max Bulb	Percent Relative Humidity					Average Humidity Ratio (lb moisture/lb dry air)					Average wind MPH
	Ave	Max	Min	Daily Ave			4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
				Max	Min												
Jan	26.8	57	-14	35	19	24.7	81	78	73	77	78	0.0024	0.0024	0.0027	0.0028	0.0026	13.1
Feb	28.4	61	0	35	21	25.7	75	76	69	71	73	0.0022	0.0024	0.0027	0.0025	0.0024	10.7
Mar	35.3	58	24	41	31	32.7	84	78	69	79	79	0.0034	0.0034	0.0032	0.0035	0.0034	13.1
Apr	48.6	81	28	58	39	42.5	73	60	52	60	63	0.0045	0.0050	0.0048	0.0048	0.0048	11.6
May	58.4	83	34	68	49	52.6	85	68	57	67	71	0.0070	0.0081	0.0078	0.0073	0.0076	9.6
Jun	68.5	90	49	77	59	62.0	96	66	61	67	72	0.0101	0.0115	0.0114	0.0107	0.0109	9.4
Jul	71.7	92	44	81	61	63.9	84	61	53	62	68	0.0108	0.0123	0.0117	0.0113	0.0116	9.5
Aug	70.6	91	47	80	60	63.7	87	64	55	71	72	0.0110	0.0123	0.0118	0.0118	0.0116	8.0
Sep	63.8	92	38	73	55	57.2	80	66	56	70	70	0.0084	0.0095	0.0093	0.0092	0.0090	8.9
Oct	54.0	77	34	62	46	49.8	85	72	65	78	76	0.0067	0.0071	0.0073	0.0072	0.0070	9.6
Nov	41.5	64	13	47	36	38.5	81	80	74	78	78	0.0044	0.0047	0.0049	0.0045	0.0046	12.5
Dec	30.6	60	-3	37	23	27.2	71	71	63	65	67	0.0025	0.0028	0.0027	0.0026	0.0026	12.5
Year	50.0	92	-14	58	42	45.1	81	70	62	70	72	0.0061	0.0068	0.0067	0.0066	0.0065	10.7

CLEVELAND, OHIO
 WBAN 14820
 TABLE D:

MYEC Data

Latitude 41.40 N
 Longitude 81.90 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																24 HOUR SUMMARY					
	7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**					
	Hrs Deg-Hrs				Hrs Deg-Hrs				Hrs Deg-Hrs				Hrs Deg-Hrs				Hrs Deg-Hrs					
	Above (100s)*				Above (100s)*				Above (100s)*				Above (100s)*				Above (100s)*					
	Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool			
93	0	458	0	0	435	0	0	411	0	0	421	0	0	462	0	0	1544	0	8760	3771	0	0
92	0	487	0	0	424	0	1	400	0	0	410	0	0	451	0	0	1511	0	8758	3683	2	0
91	0	476	0	0	413	0	4	389	0	2	399	0	0	440	0	0	1478	0	8753	3595	7	0
90	0	465	0	0	402	0	9	378	0	7	388	0	0	429	0	0	1445	0	8743	3508	17	0
89	0	454	0	1	391	0	18	367	0	12	377	0	0	418	0	0	1413	0	8728	3421	32	0
88	0	443	0	4	380	0	30	357	0	18	366	0	0	407	0	0	1380	0	8706	3333	54	1
87	0	432	0	9	369	0	42	346	1	28	356	1	1	397	0	0	1347	0	8679	3246	81	1
86	0	421	0	16	358	0	53	336	1	39	345	1	2	386	0	0	1314	0	8649	3160	111	2
85	0	410	0	25	348	0	68	325	2	47	335	1	5	375	0	0	1281	0	8614	3073	146	4
84	0	399	0	38	337	1	83	315	3	58	324	2	6	364	0	0	1248	0	8573	2987	187	5
83	0	388	0	54	327	1	100	305	4	75	314	2	10	353	0	0	1215	0	8520	2902	240	7
82	1	377	0	73	316	2	116	295	5	96	304	3	17	342	0	0	1183	0	8455	2817	305	19
81	4	366	0	99	306	3	132	285	6	114	294	4	25	331	1	0	1150	0	8388	2733	372	14
80	6	355	0	112	296	4	145	276	7	130	284	6	39	321	1	2	1117	0	8324	2649	436	18
79	13	345	0	130	287	5	156	266	9	140	275	7	54	310	1	3	1084	0	8261	2566	499	22
78	20	334	0	147	277	6	168	257	10	152	265	8	64	300	2	4	1051	0	8203	2484	557	28
77	27	323	1	161	268	8	184	248	12	165	256	10	76	290	3	9	1018	0	8135	2402	625	33
76	36	312	1	175	258	10	207	239	14	181	246	12	90	280	3	19	986	0	8049	2321	711	40
75	47	302	1	192	249	11	235	230	16	202	237	14	103	270	4	32	953	1	7946	2241	814	48
74	63	292	2	214	240	13	269	222	19	226	229	16	119	260	6	49	921	1	7826	2162	934	56
73	80	281	3	233	232	16	284	213	22	255	220	18	135	250	7	68	888	2	7705	2085	1055	66
72	97	271	3	253	223	18	307	205	25	277	212	21	153	241	8	95	856	2	7573	2008	1187	77
71	115	261	5	276	215	21	325	198	28	300	204	24	180	231	10	135	825	3	7427	1933	1333	90
70	137	252	6	297	207	24	340	190	31	324	196	27	208	222	12	176	793	5	7277	1860	1483	104
69	159	242	7	315	199	27	358	183	34	346	188	30	232	214	14	226	762	7	7124	1788	1636	120
68	176	233	9	330	191	30	376	175	38	366	181	34	254	205	17	288	732	10	6969	1717	1791	137
67	195	224	11	351	183	33	391	168	42	381	174	38	277	197	19	349	703	13	6814	1648	1946	153
66	215	215	13	371	176	37	402	161	46	394	167	41	299	189	22	406	673	16	6671	1581	2089	176
65	239	206	15	388	169	41	414	154	50	403	160	45	322	181	25	470	645	21	6523	1515	2231	197
64	267	198	18	405	162	45	423	148	54	413	153	49	344	173	29	542	617	26	6361	1451	2399	220
63	294	190	20	419	155	49	435	141	59	426	146	54	360	166	32	613	590	32	6210	1388	2550	245
62	319	182	24	429	149	53	444	134	63	439	139	58	374	159	36	689	564	38	6063	1326	2697	271
61	340	174	27	441	142	57	458	128	67	453	133	62	390	151	40	761	538	45	5915	1267	2845	299
60	355	167	30	454	135	62	478	122	72	468	127	67	406	144	44	831	513	53	5766	1208	2994	328
59	369	159	34	466	129	66	501	116	77	484	120	72	421	138	48	901	489	62	5620	1151	3140	359
58	385	152	38	481	123	71	519	110	82	501	114	77	436	131	52	968	466	71	5467	1096	3293	391
57	405	145	42	497	117	76	529	104	87	515	109	82	455	124	56	1030	443	81	5327	1042	3433	425
56	416	138	46	511	111	81	540	98	93	528	103	87	469	118	61	1089	420	92	5204	989	3556	460
55	435	132	50	530	105	86	561	93	98	544	97	92	483	112	66	1161	399	103	5044	938	3716	496
54	458	125	54	550	100	92	581	88	104	561	92	98	504	106	71	1235	378	115	4870	888	3890	534
53	478	119	59	563	94	97	596	83	110	576	87	104	519	100	76	1312	358	128	4715	840	4045	574
52	493	113	64	581	89	103	610	78	116	591	81	110	534	94	81	1380	339	141	4569	794	4191	613
51	514	107	69	599	84	109	624	73	122	606	76	115	552	89	87	1439	320	156	4425	749	4335	658
50	531	101	74	611	79	115	636	68	128	620	72	122	567	84	92	1494	302	170	4299	705	4461	702
49	542	96	80	620	74	121	649	64	135	631	67	128	585	78	98	1552	284	185	4179	663	4581	747
48	558	90	85	633	70	127	660	59	141	644	82	134	603	73	104	1608	267	201	4051	622	4709	793

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 365 x 100 = 36500 Deg Hrs)

** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

CLEVELAND, OHIO
WBAN 14020
TABLE 0:

WYEC Data

Latitude 41.40 N
Longitude 81.90 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-5AM**		24 HOUR SUMMARY									
	Hrs Above (100s)* Base Heat Cool	Deg-Hrs (100s)* Heat Cool	Hrs Above (100s)* Base Heat Cool	Deg-Hrs (100s)* Heat Cool	Hrs Above (100s)* Base Heat Cool	Deg-Hrs (100s)* Heat Cool	Hrs Above (100s)* Base Heat Cool	Deg-Hrs (100s)* Heat Cool	Hrs Above (100s)* Base Heat Cool	Deg-Hrs (100s)* Heat Cool	Hrs Above (100s)* Base Heat Cool	Deg-Hrs (100s)* Heat Cool	HEATING		COOLING							
													Hrs Below Base 100s*	Deg Hrs Above Base 100s*	Hrs Above Base 100s*	Deg Hrs Above Base 100s*						
47	576	85	91	849	65	734	672	55	148	662	58	141	619	69	110	1664	250	218	3915	582	4845	841
46	592	80	97	663	61	140	688	51	159	682	54	148	638	64	116	1714	235	235	3781	544	4979	890
45	605	75	103	677	56	147	707	47	162	698	50	154	655	59	123	1760	219	252	3657	506	5103	941
44	617	70	109	694	52	154	729	43	169	716	46	161	669	55	129	1806	204	270	3527	470	5233	992
43	629	65	115	710	48	161	751	40	176	741	42	169	685	51	136	1849	189	288	3394	436	5366	1045
42	642	61	121	728	45	168	773	36	184	765	39	176	703	47	143	1890	175	307	3258	402	5502	1100
41	661	56	128	747	41	176	793	33	192	780	36	184	727	43	150	1932	162	326	3119	371	5641	1155
40	684	52	135	763	38	183	809	30	200	792	32	192	749	39	158	1998	148	345	2963	340	5797	1212
39	705	48	142	783	34	191	822	26	208	806	29	200	767	36	165	2077	136	366	2798	311	5962	1271
38	722	44	149	802	31	199	839	25	216	822	27	208	784	33	173	2143	124	387	2647	284	6113	1332
37	740	40	156	819	29	207	855	22	225	841	24	216	801	30	181	2211	113	409	2491	258	6269	1393
36	755	37	163	837	26	215	872	20	233	860	22	225	822	27	189	2295	103	431	2317	234	6443	1457
35	775	34	171	854	23	224	896	18	242	883	19	234	845	24	197	2375	93	455	2130	212	6630	1522
34	800	31	179	873	21	232	918	16	251	906	17	243	865	22	206	2453	84	479	1944	192	6816	1590
33	831	28	187	900	19	241	934	14	261	924	15	252	883	20	215	2530	77	504	1756	173	7004	1659
32	863	25	196	926	17	250	948	13	270	937	14	261	902	18	224	2603	69	529	1580	157	7180	1730
31	884	23	204	942	16	260	959	12	280	947	12	270	919	16	233	2670	63	556	1438	142	7322	1802
30	905	21	213	954	14	269	971	10	289	959	11	280	936	14	242	2730	57	583	1304	128	7456	1876
29	925	19	222	962	13	279	984	9	299	971	10	290	949	13	251	2783	52	610	1184	115	7576	1951
28	941	18	232	972	11	288	995	8	309	985	9	299	961	11	261	2829	47	638	1076	104	7684	2028
27	953	16	241	983	10	298	1006	7	319	996	7	309	974	10	271	2868	43	667	977	94	7783	2105
26	962	15	251	992	9	308	1012	6	329	1005	7	319	986	9	280	2895	39	696	906	85	7854	2183
25	972	14	261	1000	8	318	1015	5	339	1011	6	329	997	8	290	2926	35	725	838	76	7922	2262
24	981	12	270	1008	7	328	1022	5	349	1019	5	340	1008	7	300	2956	31	754	765	68	7995	2342
23	987	11	280	1014	7	338	1033	4	360	1030	4	350	1018	6	310	2980	28	784	696	61	8064	2422
22	991	10	290	1020	6	348	1044	5	370	1039	4	360	1024	5	321	3007	25	814	634	54	8126	2503
21	995	9	300	1026	5	359	1051	5	380	1046	5	371	1029	5	331	3031	23	844	583	48	8177	2584
20	996	8	310	1034	4	369	1057	5	391	1052	5	381	1033	4	341	3048	20	874	537	42	8223	2666
19	1002	7	320	1041	4	379	1063	2	402	1057	2	392	1036	4	352	3065	18	905	494	37	8266	2749
18	1011	6	330	1047	5	390	1067	2	412	1063	2	402	1039	5	362	3084	16	936	448	32	8312	2832
17	1020	6	340	1055	5	400	1071	2	423	1068	2	413	1045	2	372	3099	14	967	401	28	8359	2915
16	1029	5	350	1062	2	411	1074	1	434	1073	1	424	1051	2	383	3115	12	998	355	24	8405	2999
15	1037	4	361	1067	2	421	1076	1	444	1076	1	434	1060	2	393	3130	11	1029	313	21	8447	3083
14	1045	4	371	1069	2	432	1077	1	455	1079	1	445	1068	1	404	3147	9	1060	273	18	8487	3168
13	1054	3	382	1071	2	443	1080	1	466	1080	1	456	1073	1	415	3169	8	1092	231	16	8529	3253
12	1060	3	392	1074	1	453	1083	1	477	1083	1	467	1078	1	426	3186	7	1124	193	13	8567	3338
11	1064	3	403	1078	1	464	1086	1	488	1087	1	478	1083	1	436	3201	6	1156	159	12	8601	3424
10	1067	2	413	1080	1	475	1087	1	499	1089	1	488	1086	1	447	3213	5	1188	136	10	8624	3510
9	1070	2	424	1082	1	486	1088	0	509	1089	0	499	1087	1	458	3218	4	1220	124	9	8636	3597
8	1073	2	435	1084	1	497	1089	0	520	1089	0	510	1087	0	469	3224	4	1252	113	8	8647	3683
7	1074	2	446	1085	1	508	1089	0	531	1089	0	521	1088	0	480	3232	3	1284	102	7	8658	3770
6	1075	1	456	1086	1	518	1089	0	542	1089	0	532	1088	0	491	3239	3	1317	92	6	8668	3856
5	1077	1	467	1087	1	529	1089	0	553	1090	0	543	1090	0	502	3244	2	1349	81	5	8679	3943
4	1078	1	478	1088	1	540	1089	0	564	1091	0	554	1092	0	513	3247	2	1382	74	4	8686	4030
3	1079	1	489	1089	0	551	1089	0	575	1092	0	565	1092	0	523	3251	2	1414	66	3	8694	4117
2	1081	1	500	1089	0	562	1090	0	586	1092	0	576	1092	0	534	3258	1	1447	57	3	8703	4204

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 565 x 100 = 56500 Deg Hrs)
** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

CLEVELAND, OHIO
 W8AN 14820
 TABLE 0:

WYEC Data

Latitude 41.40 N
 Longitude 81.90 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY														24 HOUR SUMMARY			
	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**				HEATING		COOLING	
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg	Hrs	Deg
	Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*				Below		Above	
	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	100s*	Base	100s*
1 1084	1	510	1089	0	573	1091	0	597	1092	0	587	1092	0	545	3263	1	1479	4291
0 1086	1	521	1089	0	584	1093	0	607	1092	0	598	1092	0	556	3267	1	1512	4378
-1 1089	1	532	1089	0	595	1095	0	618	1092	0	608	1092	0	567	3269	1	1545	4465
-2 1089	0	543	1089	0	605	1095	0	629	1094	0	619	1092	0	578	3271	0	1577	4553
-3 1089	0	554	1090	0	616	1095	0	640	1095	0	630	1093	0	589	3276	0	1610	4640
-4 1089	0	565	1091	0	627	1095	0	651	1095	0	641	1094	0	600	3279	0	1643	4727
-5 1090	0	576	1093	0	638	1095	0	662	1095	0	652	1095	0	611	3280	0	1676	4815
-6 1090	0	587	1094	0	649	1095	0	673	1095	0	663	1095	0	622	3280	0	1708	4902
-7 1091	0	597	1094	0	660	1095	0	684	1095	0	674	1095	0	633	3280	0	1741	4990
-8 1092	0	608	1094	0	671	1095	0	695	1095	0	685	1095	0	644	3281	0	1774	5077
-9 1092	0	619	1095	0	682	1095	0	706	1095	0	696	1095	0	655	3281	0	1807	5165
-10 1092	0	630	1095	0	693	1095	0	717	1095	0	707	1095	0	666	3282	0	1840	5252
-11 1092	0	641	1095	0	704	1095	0	728	1095	0	718	1095	0	677	3283	0	1873	5340
-12 1092	0	652	1095	0	715	1095	0	739	1095	0	729	1095	0	688	3283	0	1905	5427
-13 1093	0	663	1095	0	726	1095	0	750	1095	0	740	1095	0	698	3284	0	1938	5515
-14 1094	0	674	1095	0	737	1095	0	761	1095	0	751	1095	0	709	3285	0	1971	5603
-15 1095	0	685	1095	0	748	1095	0	772	1095	0	762	1095	0	720	3285	0	2004	5690

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 565 x 100 = 56500 Deg Hrs)
 ** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

CLEVELAND, OHIO
WBAN 14820
TABLE E:

WYEC Data

Latitude 41.40 N
Longitude 81.90 E

Annual COOLING Wet Bulb Degree Hour Summary

Wet Bulb Temperature (F) Base:	50	53	56	59	62	65	68	71	74	77	80
Annual Wet Bulb Hours ABOVE base:	5900	3406	2903	2392	1787	1169	691	274	74	7	0
Annual Wet Bulb Cooling deg-hrs:	45760.	34532.	24853.	16652.	10067.	5331.	2331.	715.	139.	7.	0.

TABLE F:

Annual Humidification/Dehumidification Requirements
At various Indoor Conditions and Degree Day Bases
(Pounds of Moisture)

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **												COOLING HUMIDITY RATIO HOURS **												Maintained Indoor Humidity Ratio*
	Heating Degree Base												Cooling Degree Base												
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80			
.001	0	0	0	0	0	0	0	0	0	0	0	44	43	41	39	36	32	28	22	15	6	5	.001		
.002	1	1	1	1	1	1	1	1	1	1	1	37	36	35	34	32	29	25	20	14	8	4	.002		
.003	2	3	3	3	3	3	3	3	3	3	3	30	30	30	29	28	25	22	17	12	7	4	.003		
.004	4	5	6	6	6	7	7	7	7	7	7	24	24	24	24	23	22	19	15	11	6	3	.004		
.005	5	7	9	10	10	10	10	11	11	11	11	20	20	20	20	19	18	16	13	9	5	3	.005		
.006	6	9	12	13	14	15	15	15	15	15	15	15	15	15	15	15	13	11	8	5	3		.006		
.007	7	11	14	17	18	19	20	20	20	20	20	12	12	12	12	12	11	11	9	7	4	2		.007	
.008	9	13	17	20	23	24	25	25	26	26	26	9	9	9	9	9	9	8	7	5	3	2		.008	
.009	10	15	20	24	27	29	30	31	32	32	32	6	6	6	6	6	6	6	5	4	2	1		.009	
.010	11	17	23	28	31	34	36	37	38	39	39	4	4	4	4	4	4	4	4	3	2	1		.010	
.011	12	19	26	31	35	39	42	44	45	46	46	3	3	3	3	3	3	3	3	2	1	1		.011	
.012	14	21	29	35	40	44	47	50	52	53	53	2	2	2	2	2	2	2	1	1	1	1		.012	
.013	15	23	32	38	44	49	53	56	59	60	61	1	1	1	1	1	1	1	1	1	0	0		.013	
.014	16	25	35	42	48	54	59	63	66	68	69	0	0	0	0	0	0	0	0	0	0	0		.014	
.015	17	27	38	46	52	59	64	69	73	76	77	0	0	0	0	0	0	0	0	0	0	0		.015	
.016	19	29	40	49	57	64	70	76	80	84	86	0	0	0	0	0	0	0	0	0	0	0		.016	
.017	20	31	43	53	61	69	76	82	88	92	94	0	0	0	0	0	0	0	0	0	0	0		.017	
.018	21	33	46	56	65	74	82	89	95	100	102	0	0	0	0	0	0	0	0	0	0	0		.018	

FOOTNOTES: * Indoor Humidity Level is measured in pounds of moisture per pound of dry air. Indoor set points of 72 deg(F)-30%RH and 78 deg(F)-50%RH yield humidity ratios of .005 and .010 respectively.

** Heating (Cooling) Humidity Ratio Hours are defined as the summation of the differences between the maintained indoor humidity ratio and the observed outdoor humidity ratio when both the hourly dry bulb temperature and the humidity ratio are above (below) the base levels.

TABLE G:

Percent Diffuse Solar Radiation*
and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
* Diffuse on surface													
HORIZONTAL	71	54	55	56	50	48	48	45	47	37	60	65	50
VERTICAL													
NORTH	100	100	100	98	94	91	90	97	100	100	100	100	96
WEST	71	67	64	64	67	63	66	61	59	53	65	72	64
SOUTH	57	49	55	70	74	77	76	64	56	36	50	51	61
EAST	71	64	70	69	66	69	61	60	63	53	72	72	65
* Possible Sun													
	31	38	44	53	59	65	67	64	60	54	31	27	52

FOOTNOTES: * Corrected For Cloud Cover.

** Source: NOAA, Comparative Climatic Data for the United States Through 1976.

CLEVELAND, OHIO
WBAN 14820
TABLE H:

MYEC Data
Average Daily Solar Radiation on Vertical and Horizontal Surfaces
(BTU/DAY.SQFT)

Latitude 41.40 N
Longitude 81.90 E

Month	Under Clear Sky Assumption*										Corrected for Cloud Cover**										obs		
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S-45 horiz ***	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S-45 horiz ***			
Jan	1747	1629	1306	997	593	306	168	143	143	1759	845	489	462	391	323	236	172	141	132	132	467	316	394
Feb	1827	1708	1423	1164	727	454	265	188	186	2027	1165	685	654	568	482	354	253	199	178	176	722	511	604
Mar	1705	1644	1495	1342	1032	714	470	310	259	2238	1624	802	759	682	608	488	383	313	274	260	945	772	919
Apr	1373	1436	1440	1422	1240	986	729	508	367	2263	2059	954	957	943	920	828	711	601	508	448	1268	1237	1351
May	1099	1238	1352	1434	1359	1183	943	702	520	2200	2350	927	986	1027	1034	998	896	771	649	558	1432	1552	1684
Jun	984	1141	1302	1431	1408	1278	1031	810	623	2156	2471	906	963	1022	1068	1034	951	828	707	628	1507	1715	1872
Jul	1033	1181	1319	1424	1380	1254	1003	766	583	2158	2404	951	1047	1126	1185	1148	1048	898	746	625	1536	1720	1850
Aug	1240	1335	1387	1409	1277	1067	824	599	440	2192	2150	976	1025	1039	1035	942	810	670	545	461	1441	1442	1583
Sep	1547	1526	1428	1325	1076	795	555	382	309	2186	1751	1007	979	917	853	719	581	469	389	352	1279	1116	1249
Oct	1753	1653	1425	1201	858	545	336	235	221	2052	1302	872	825	714	603	443	307	225	188	183	994	682	858
Nov	1745	1618	1309	1015	630	334	193	159	159	1808	928	565	524	436	353	251	178	147	139	139	565	376	464
Dec	1681	1566	1245	933	537	263	149	133	133	1653	757	472	445	371	296	200	141	118	113	113	450	289	320
Year	1475	1471	1369	1258	1015	765	559	413	329	2058	1653	801	803	771	733	638	538	450	382	340	1052	980	1096

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
** Derived according to DOE-2.1 LOADS Algorithms and MYEC cloud cover data.
*** South exposure tilt 45 degrees.

TABLE I:
Average Daily Solar Heat Gain Through Single Pane Glass on Vertical
and Horizontal Surfaces
(BTU/DAY.SQFT)

Month	Under Clear Sky*									Corrected For Cloud Cover**									obs
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	
Jan	1506	1383	1092	824	474	226	128	116	116	409	382	322	266	191	137	112	107	107	
Feb	1555	1436	1192	968	629	350	195	153	151	573	544	471	397	286	201	157	144	143	
Mar	1385	1359	1240	1116	849	523	360	236	210	655	620	557	497	396	308	250	219	211	
Apr	1044	1147	1182	1181	1029	807	577	390	290	749	770	778	757	681	581	484	405	360	
May	789	942	1088	1182	1127	971	756	547	391	713	775	829	861	819	732	623	519	441	
Jun	691	846	1034	1173	1167	1050	848	638	467	687	750	819	870	846	774	668	566	495	
Jul	732	885	1053	1170	1142	1012	808	601	438	724	816	909	974	947	860	727	595	489	
Aug	926	1050	1131	1169	1061	873	657	465	345	757	820	848	854	777	661	538	433	369	
Sep	1232	1250	1184	1106	889	642	432	293	250	804	797	753	704	591	472	375	309	286	
Oct	1474	1384	1188	1003	700	426	254	186	180	729	686	590	498	358	242	176	152	149	
Nov	1498	1369	1094	839	503	250	145	129	129	475	435	358	288	201	141	118	113	113	
Dec	1453	1335	1042	768	426	192	114	108	108	397	371	307	241	160	111	95	92	92	
Year	1188	1197	1126	1042	834	616	441	323	257	639	648	628	601	523	436	361	305	272	

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
** Derived according to DOE-2.1 LOADS Algorithms and MYEC cloud cover data.

DAYTON, OHIO
WBAN 93815
TABLE A:

WYEC Data

Latitude 39.90 N
Longitude 84.20 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): First Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Jan															
60 to 64	0	0	0	0	0	0	2	0	2	55.5	744	25475	0	0	
55 to 59	0	0	0	0	1	5	1	0	7	54.0	744	21761	3	6	
50 to 54	0	1	3	2	7	3	1	0	17	48.9	733	18078	11	43	
45 to 49	6	3	2	3	6	12	12	8	52	43.5	694	14484	50	169	
40 to 44	15	6	6	10	24	14	9	12	104	38.3	631	11144	113	549	
35 to 39	18	26	21	17	9	11	17	21	140	34.3	495	8286	249	1411	
30 to 34	3	1	9	13	12	13	6	6	63	29.4	396	6083	348	2928	
25 to 29	8	14	10	4	4	5	9	6	60	25.3	331	4252	413	4817	
20 to 24	9	3	4	4	15	13	15	13	76	19.9	277	2725	467	7010	
15 to 19	16	20	17	23	9	10	4	10	109	15.6	168	1563	576	9588	
10 to 14	9	9	10	2	7	4	8	8	51	10.9	86	967	658	12692	
5 to 9	0	2	2	1	1	0	6	3	15	5.6	58	628	686	16073	
0 to 4	3	2	3	1	1	0	0	3	13	1.5	41	378	703	19543	
-5 to -1	3	3	0	4	3	2	0	0	15	-4.8	32	196	712	25081	
-10 to -6	0	0	3	1	0	1	3	1	9	-8.3	16	79	728	26684	
-15 to -11	2	2	3	0	0	0	0	2	9	-13.9	8	20	736	30345	
-20 to -16	1	1	0	0	0	0	0	0	2	-16.0	0	0	744	34045	
Feb															
55 to 59	0	0	0	0	3	4	0	0	7	47.3	672	18317	0	0	
50 to 54	5	3	1	2	7	9	4	2	33	43.3	657	14987	15	30	
45 to 49	2	1	2	4	9	7	6	6	37	40.6	621	11793	51	196	
40 to 44	8	9	4	12	13	9	9	8	72	36.7	566	8807	106	570	
35 to 39	0	2	6	16	11	9	13	5	62	33.9	494	6160	178	1283	
30 to 34	12	13	19	14	7	12	11	14	102	29.5	413	3849	259	2332	
25 to 29	27	21	16	12	13	14	18	26	149	24.6	300	2024	372	3867	
20 to 24	13	16	14	11	19	16	9	8	106	20.1	176	870	496	6073	
15 to 19	8	12	11	12	2	4	13	10	72	15.9	72	262	600	8825	
10 to 14	9	2	7	1	0	0	1	5	25	11.2	21	39	651	11978	
5 to 9	0	5	2	0	0	0	0	0	7	6.9	4	3	666	15286	
Mar															
70 to 74	0	0	0	0	3	3	0	0	6	58.0	743	24985	1	1	
65 to 69	0	0	0	1	2	5	1	0	9	50.4	733	21291	11	27	
60 to 64	0	0	0	4	6	7	3	0	20	46.7	725	17645	19	101	
55 to 59	3	4	3	3	7	7	7	6	40	50.8	703	14077	41	253	
50 to 54	9	2	6	7	7	5	12	6	54	46.1	637	10725	107	621	
45 to 49	10	10	5	10	13	5	6	16	73	41.6	596	7631	148	1247	
40 to 44	14	12	13	15	16	20	15	12	117	37.3	498	4680	246	2216	
35 to 39	6	14	16	15	23	26	19	11	134	33.1	375	2699	369	3755	
30 to 34	23	15	18	18	13	11	19	25	142	29.5	227	1169	517	5945	
25 to 29	22	14	12	13	5	4	10	14	94	25.4	100	363	644	8859	
20 to 24	6	18	16	3	0	0	1	3	47	21.5	23	59	721	12275	
15 to 19	0	4	4	0	0	0	0	0	8	17.0	3	3	741	15939	

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

DAYTON, OHIO
NBAH 93B13
TABLE A:

WYEC Data

Latitude 39.90 N
Longitude 84.20 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Second Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Apr														
75 to 79	0	0	0	0	7	6	0	0	13	59.2	720	18997	0	0
70 to 74	0	0	0	2	10	9	5	0	26	56.3	698	15447	22	50
65 to 69	2	0	1	15	15	11	6	4	54	53.8	662	12032	58	235
60 to 64	7	5	7	17	9	13	11	9	79	52.8	599	8867	121	670
55 to 59	9	9	10	8	5	10	17	11	79	49.8	520	6076	200	1479
50 to 54	7	8	19	9	10	14	13	17	105	45.9	423	3691	297	2694
45 to 49	23	19	14	21	19	17	20	16	149	42.4	292	1858	428	4461
40 to 44	21	14	17	14	5	9	15	22	117	38.0	170	715	550	6918
35 to 39	17	26	17	2	2	1	3	11	79	33.9	63	156	657	9959
30 to 34	4	8	5	2	0	0	0	0	19	29.6	5	8	715	13411
May														
85 to 89	0	0	0	0	0	1	0	0	1	68.0	744	19069	0	0
80 to 84	0	0	0	3	10	4	0	0	17	66.3	740	15355	4	6
75 to 79	0	0	1	7	15	23	4	0	50	62.9	714	11711	30	62
70 to 74	0	0	4	15	32	29	23	5	108	58.4	645	8306	99	397
65 to 69	6	3	10	31	22	23	28	22	143	57.5	519	5390	225	1201
60 to 64	28	22	27	21	4	4	21	24	151	55.7	356	3192	388	2723
55 to 59	22	18	19	5	1	0	6	25	96	50.3	230	1760	514	5011
50 to 54	20	23	16	2	1	6	2	5	75	46.4	147	833	597	7804
45 to 49	10	12	7	6	5	1	5	6	52	43.7	69	293	675	10984
40 to 44	7	14	8	3	3	2	4	6	47	39.7	27	43	717	14454
35 to 39	0	1	1	0	0	0	0	0	2	37.0	0	0	744	18131
Jun														
90 to 94	0	0	0	0	4	5	0	0	9	71.6	719	15077	1	2
85 to 89	0	0	0	6	15	19	6	0	46	68.1	704	11515	16	38
80 to 84	0	0	0	29	34	30	11	0	104	67.6	619	8171	101	296
75 to 79	0	0	12	25	16	16	31	7	107	65.8	525	5306	195	1031
70 to 74	11	4	28	13	7	10	25	40	138	63.0	413	2967	307	2292
65 to 69	46	36	27	11	12	5	10	26	173	62.2	236	1312	484	4237
60 to 64	17	26	13	6	2	4	4	10	82	58.2	105	494	615	7019
55 to 59	9	13	8	0	0	1	3	5	39	53.7	44	143	676	10268
50 to 54	7	10	2	0	0	0	0	2	21	50.4	10	17	710	13742
45 to 49	0	1	0	0	0	0	0	0	1	48.0	0	0	720	17325

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

DAYTON, OHIO
WBAN 93815
TABLE A:

WYEC Data

Latitude 39.90 N
Longitude 84.20 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Third Quarter
(5 Degree(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Jul														
90 to 94	0	0	0	1	2	0	0	0	3	75.0	744	13681	0	0
85 to 89	0	0	0	4	24	20	4	0	52	69.1	734	9973	10	12
80 to 84	0	0	2	29	46	42	22	1	142	67.4	642	6497	102	256
75 to 79	1	0	14	39	15	17	31	21	138	66.7	487	3688	257	1167
70 to 74	41	28	35	17	6	12	29	46	214	67.4	330	1599	414	2798
65 to 69	36	28	29	2	0	2	7	23	127	62.4	132	506	612	5425
60 to 64	13	26	10	1	0	0	0	2	52	57.8	38	107	706	8746
55 to 59	2	11	3	0	0	0	0	0	16	54.7	9	4	739	12363
Aug														
95 to 99	0	0	0	0	2	3	0	0	5	72.4	744	18179	0	0
90 to 94	0	0	0	1	2	2	1	0	6	73.2	730	14477	6	18
85 to 89	0	0	0	6	22	23	6	0	57	69.1	711	10826	35	87
80 to 84	0	0	1	23	34	37	22	3	120	68.4	626	7441	118	422
75 to 79	8	0	6	27	23	17	30	21	134	66.5	500	4610	244	1311
70 to 74	23	20	26	24	6	10	22	27	158	65.9	359	2436	585	2857
65 to 69	25	22	30	8	4	1	11	31	132	62.9	203	1039	541	5180
60 to 64	32	32	21	4	0	0	1	7	97	58.9	92	310	652	8171
55 to 59	2	14	6	0	0	0	0	4	26	55.8	17	69	727	11650
50 to 54	3	3	1	0	0	0	0	0	7	50.7	7	17	737	15318
45 to 49	0	2	0	0	0	0	0	0	2	47.0	0	0	744	19021
Sep														
90 to 94	0	0	0	0	2	2	0	0	4	71.0	720	16983	0	0
85 to 89	0	0	0	5	6	10	2	0	25	69.8	708	15404	12	21
80 to 84	0	0	1	6	14	12	4	1	38	67.2	682	11930	38	147
75 to 79	4	0	2	13	15	13	13	5	65	66.0	631	8635	89	452
70 to 74	17	13	16	17	21	24	15	22	145	64.3	534	5677	186	1094
65 to 69	18	23	20	26	15	17	24	11	154	61.1	361	3402	359	2419
60 to 64	13	7	11	15	14	7	15	21	103	54.6	250	1888	470	4505
55 to 59	14	17	17	6	1	5	10	12	82	52.0	148	907	572	7124
50 to 54	12	17	12	2	0	0	6	13	62	47.8	77	351	643	10168
45 to 49	8	6	6	0	0	0	1	4	25	42.3	30	103	690	13520
40 to 44	4	7	5	0	0	0	0	1	17	39.2	7	14	713	17031

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

DAYTON, OHIO
WGAN 93615
TABLE A:

WYEC Data

Latitude 39.90 N
Longitude 84.20 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Fourth Quarter
(5 Degrees(F)/3Hr Bins)

	Dry Bulb Range(F)	Number of Hours of Occurrence In Time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
		1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Oct															
	75 to 79	0	0	0	2	15	12	0	0	29	61.3	738	16686	6	6
	70 to 74	0	0	0	0	16	13	3	0	41	59.7	697	13096	47	136
	65 to 69	1	0	0	16	7	15	11	2	52	58.3	651	9709	93	469
	60 to 64	13	5	12	12	21	16	20	30	119	55.4	581	6590	163	1070
	55 to 59	17	10	18	13	12	12	16	18	125	51.0	453	4003	291	2203
	50 to 54	27	22	20	20	11	15	21	22	158	47.6	328	2051	416	3971
	45 to 49	14	19	18	17	10	7	13	19	117	43.6	166	836	578	6476
	40 to 44	14	19	18	4	1	3	8	8	75	39.9	68	292	676	9612
	35 to 39	3	5	5	0	0	0	1	3	17	35.6	21	69	723	13149
	30 to 34	4	4	2	0	0	0	0	1	11	30.7	4	5	740	18805
Nov															
	75 to 79	0	0	0	0	2	3	0	0	5	65.2	720	25526	0	0
	70 to 74	1	2	3	1	1	0	3	1	12	62.1	712	21944	8	16
	65 to 69	2	1	0	1	0	0	0	2	8	61.3	697	18419	23	93
	60 to 64	0	0	4	3	9	5	0	0	21	56.2	692	14938	28	212
	55 to 59	9	12	4	10	12	6	6	6	65	53.3	652	11555	68	429
	50 to 54	0	3	4	10	11	16	12	12	76	47.9	576	8456	144	930
	45 to 49	10	13	13	13	20	23	17	9	118	43.1	492	5770	228	1844
	40 to 44	12	6	8	14	10	11	9	13	85	38.1	383	3594	337	3268
	35 to 39	9	11	15	18	19	15	16	11	112	33.2	292	1874	428	5146
	30 to 34	21	15	15	17	3	8	23	24	126	29.9	169	718	551	7592
	25 to 29	12	23	20	2	3	3	1	9	73	25.6	64	173	656	10647
	20 to 24	6	4	5	1	0	0	3	3	22	21.5	12	17	708	14091
	15 to 19	0	0	1	0	0	0	0	0	1	18.0	0	0	720	17674
Dec															
	60 to 64	0	0	0	0	2	1	2	1	6	64.3	743	23676	1	1
	55 to 59	0	0	0	2	5	5	1	2	15	61.7	729	19864	15	29
	50 to 54	6	4	3	7	5	9	8	4	46	48.1	711	16372	33	132
	45 to 49	5	3	8	4	3	0	2	5	32	43.1	665	12961	79	446
	40 to 44	7	9	8	11	13	4	2	4	58	39.3	624	9726	120	931
	35 to 39	6	6	5	13	14	23	13	8	88	35.7	558	6766	186	1691
	30 to 34	19	9	11	15	13	11	23	25	126	29.1	456	4221	288	2866
	25 to 29	23	27	16	9	15	14	12	15	131	23.9	336	2292	408	4657
	20 to 24	10	12	21	17	19	20	16	15	130	20.5	172	1012	572	7097
	15 to 19	4	6	8	11	4	4	12	4	55	15.7	81	407	663	10212
	10 to 14	12	10	6	4	0	2	2	9	45	10.9	38	98	706	13623
	5 to 9	1	5	7	0	0	0	0	1	14	7.0	3	3	741	17248

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

DAYTON, OHIO
WBAW 93815
TABLE B:

WYEC Data

Latitude 39.90 N
Longitude 84.20 E

Annual Dry Bulb Temperature Frequencies
With Mean Coincident Wet Bulb Temperature
(5 Degrees(F)/3Hr Bins)

Dry Bulb range(F)	Number of Hours of Occurrence in time period									Mean Coincident Wet Bulb Temperature (F)								
	Hour of day									Hour of day								
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year
95 to 99	0	0	0	0	2	3	0	0	5	0.0	0.0	0.0	0.0	73.5	71.7	0.0	0.0	72.4
90 to 94	0	0	0	2	10	9	1	0	22	0.0	0.0	0.0	73.0	72.8	71.8	72.0	0.0	72.4
85 to 89	0	0	0	21	69	73	18	0	181	0.0	0.0	0.0	70.8	69.0	68.2	69.5	0.0	68.9
80 to 84	0	0	4	90	138	125	59	5	421	0.0	0.0	69.8	68.2	67.3	67.4	68.0	69.4	67.7
75 to 79	13	0	37	113	108	107	109	54	541	68.2	0.0	67.8	66.3	63.8	63.6	66.2	68.0	65.6
70 to 74	93	67	112	98	102	110	125	141	840	67.4	68.0	66.3	63.1	59.3	60.6	64.5	65.5	64.2
65 to 69	136	113	117	111	77	79	98	121	852	62.6	64.1	62.8	58.3	55.7	55.4	59.3	61.6	60.4
60 to 64	123	124	105	83	67	57	79	94	732	58.6	58.6	57.8	53.2	51.4	51.2	53.6	56.6	55.8
55 to 59	87	117	88	47	47	53	67	89	597	52.1	54.1	52.3	48.7	48.4	49.8	51.3	51.1	51.6
50 to 54	104	96	67	61	67	77	79	83	654	47.8	47.9	48.4	45.6	45.8	46.6	46.4	48.1	47.2
45 to 49	88	91	75	78	83	72	82	89	658	43.8	44.1	43.2	42.8	41.4	41.3	42.6	42.8	42.8
40 to 44	102	96	87	91	85	72	71	86	690	38.2	39.1	39.0	37.8	37.2	37.2	36.5	38.8	38.3
35 to 39	59	91	84	85	78	85	82	70	634	34.3	34.6	34.6	33.5	33.1	32.9	33.3	33.5	33.7
30 to 34	86	65	79	79	48	55	82	95	589	29.4	29.4	29.8	29.7	29.3	29.4	29.5	29.8	29.5
25 to 29	92	99	76	40	40	40	50	70	507	24.6	24.8	25.4	24.4	24.4	24.9	24.8	24.7	24.8
20 to 24	44	53	60	36	33	49	44	42	381	20.7	21.1	21.1	20.0	19.9	19.8	20.3	20.7	20.5
15 to 19	28	42	41	46	15	18	29	24	243	15.5	16.0	15.9	15.8	16.3	16.1	16.0	15.5	15.9
10 to 14	30	21	23	7	1	6	11	22	121	11.0	11.0	11.1	11.6	7.0	9.3	10.5	11.5	11.0
5 to 9	1	12	11	1	1	0	6	4	36	8.0	6.4	7.2	5.0	4.0	0.0	6.2	5.0	6.4
0 to 4	3	2	3	1	1	0	0	3	13	2.0	0.5	2.0	0.0	2.0	0.0	0.0	1.3	1.5
-5 to -1	3	3	0	4	3	2	0	0	15	-3.3	-5.3	0.0	-5.3	-5.0	-5.0	0.0	0.0	-4.8
-10 to -6	0	0	3	1	0	1	3	1	9	0.0	0.0	-7.3	-9.0	0.0	-8.0	-8.7	-10.0	-8.3
-15 to -11	2	2	3	0	0	0	0	2	9	-14.5	-15.0	-14.0	0.0	0.0	0.0	0.0	-12.0	-13.9
-20 to -16	1	1	0	0	0	0	0	0	2	-16.0	-16.0	0.0	0.0	0.0	0.0	0.0	0.0	-16.0

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Dry Bulb Temperature (F)						Wet Bulb Ave	Percent Relative Humidity						Average Humidity Ratio (lb moisture/lb dry air)					Average wind MPH
Month	Ave	Max	Min	Daily Max	Daily Min		4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day		
Jan	28.3	60	-16	36	20	26.0	82	80	69	75	77	0.0026	0.0028	0.0031	0.0030	0.0028	11.7	
Feb	30.2	57	6	39	22	27.5	76	77	66	73	74	0.0024	0.0025	0.0028	0.0026	0.0028	12.6	
Mar	38.9	73	16	49	30	34.7	79	70	59	68	70	0.0035	0.0032	0.0035	0.0037	0.0035	13.3	
Apr	51.1	77	30	61	42	44.6	74	60	49	63	63	0.0050	0.0050	0.0050	0.0054	0.0051	11.4	
May	61.9	85	39	72	52	53.7	76	58	45	59	62	0.0073	0.0074	0.0072	0.0080	0.0075	10.3	
Jun	71.6	94	49	82	61	63.3	84	63	51	62	67	0.0106	0.0115	0.0112	0.0114	0.0111	8.3	
Jul	74.1	90	56	84	65	65.6	83	64	50	64	67	0.0122	0.0126	0.0116	0.0125	0.0122	8.1	
Aug	73.1	97	48	84	62	64.8	85	66	47	62	68	0.0114	0.0122	0.0116	0.0121	0.0118	7.6	
Sep	66.1	91	40	76	57	58.6	80	64	46	64	66	0.0096	0.0098	0.0089	0.0096	0.0096	9.1	
Oct	55.1	79	30	65	46	49.5	82	71	52	69	70	0.0065	0.0069	0.0066	0.0068	0.0067	9.2	
Nov	42.0	76	19	50	34	38.7	84	77	62	74	76	0.0046	0.0047	0.0047	0.0046	0.0046	10.2	
Dec	30.7	63	6	38	24	28.8	77	79	69	72	74	0.0026	0.0029	0.0031	0.0029	0.0028	12.3	
Year	52.0	97	-16	61	43	46.3	80	69	55	67	69	0.0066	0.0068	0.0066	0.0069	0.0067	10.5	

DAYTON, OHIO
WBAN 93815
TABLE D:

WYEC Data

Latitude 39.90 N
Longitude 84.20 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																24 HOUR SUMMARY											
	7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**				10PM-6AM**				HEATING		COOLING	
	Hrs	Deg-Hrs	Above (100s)*		Hrs	Deg-Hrs	Above (100s)*		Hrs	Deg-Hrs	Above (100s)*		Hrs	Deg-Hrs	Above (100s)*		Hrs	Deg-Hrs	Above (100s)*		Hrs	Deg-Hrs	Above (100s)*		Hrs	Deg-Hrs	Above (100s)*	
	Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool	
98	0	550	0	0	479	0	0	434	0	0	436	0	0	485	0	0	1643	0	0	8760	4026	0	0					
97	0	539	0	0	468	0	0	423	0	0	425	0	0	474	0	0	1610	0	0	8759	3939	1	0					
96	0	528	0	0	457	0	1	412	0	1	414	0	0	463	0	0	1578	0	0	8757	3851	3	0					
95	0	517	0	0	446	0	2	401	0	2	403	0	0	452	0	0	1545	0	0	8756	3763	4	0					
94	0	506	0	0	435	0	2	390	0	3	392	0	0	441	0	0	1512	0	0	8754	3676	6	0					
93	0	495	0	0	424	0	2	379	0	4	381	0	0	430	0	0	1479	0	0	8753	3588	7	0					
92	0	484	0	0	413	0	3	368	0	4	370	0	0	419	0	0	1446	0	0	8751	3501	9	0					
91	0	473	0	1	402	0	4	357	0	6	360	0	0	408	0	0	1413	0	0	8748	3413	12	0					
90	0	462	0	1	391	0	8	346	0	10	349	0	1	397	0	0	1380	0	0	8739	3326	21	0					
89	0	451	0	2	380	0	17	335	0	17	338	0	1	386	0	0	1348	0	0	8722	3239	38	1					
88	0	440	0	3	369	0	27	325	1	27	327	1	1	376	0	0	1315	0	0	8700	3151	60	1					
87	0	429	0	5	358	0	43	314	1	41	316	1	2	365	0	0	1282	0	0	8668	3065	92	2					
86	0	418	0	12	348	0	58	304	1	58	306	1	7	354	0	0	1249	0	0	8624	2978	136	3					
85	0	407	0	20	337	0	72	293	2	76	296	2	15	343	0	0	1216	0	0	8576	2892	184	5					
84	0	396	0	27	326	1	94	283	3	98	286	3	19	332	0	0	1183	0	0	8520	2807	240	7					
83	0	385	0	42	315	1	125	273	4	126	276	4	22	321	1	0	1151	0	0	8442	2722	318	9					
82	1	375	0	58	305	1	155	264	5	154	266	5	32	311	1	1	1118	0	0	8357	2638	403	13					
81	1	364	0	74	295	2	183	254	7	178	257	7	49	300	1	1	1085	0	0	8272	2555	488	18					
80	3	353	0	98	285	3	208	245	9	199	248	9	68	290	2	3	1052	0	0	8179	2472	581	23					
79	5	342	0	125	275	4	226	237	11	222	239	11	90	280	3	7	1019	0	0	8083	2391	677	29					
78	8	331	0	152	265	5	245	228	14	242	230	13	113	270	4	12	986	0	0	7987	2311	773	36					
77	13	320	0	175	256	7	266	220	16	260	222	16	134	260	5	21	954	0	0	7888	2231	872	45					
76	20	309	0	196	247	9	289	211	19	284	214	19	153	250	6	36	921	1	1	7780	2153	980	54					
75	32	299	1	217	238	11	314	204	22	307	206	22	174	241	8	58	889	1	1	7656	2076	1104	64					
74	49	288	1	235	229	13	341	196	25	329	198	25	198	232	10	90	857	2	2	7516	2000	1244	76					
73	68	278	2	254	221	16	364	188	29	352	190	28	225	223	12	130	825	3	3	7366	1925	1394	89					
72	88	267	2	272	212	18	381	181	32	374	183	32	258	215	14	186	794	4	4	7199	1852	1561	104					
71	113	257	3	293	204	21	398	174	36	395	176	36	285	206	17	258	763	7	7	7018	1781	1742	120					
70	140	248	5	314	196	24	418	167	40	415	169	40	302	198	20	334	733	10	10	6835	1712	1925	139					
69	165	238	6	333	189	27	435	161	45	439	162	44	324	191	23	414	704	13	13	6649	1645	2111	159					
68	193	229	8	355	181	31	451	154	49	458	156	49	345	183	26	501	676	18	18	6455	1579	2305	181					
67	217	220	10	379	174	35	469	148	54	472	150	53	362	176	30	579	648	23	23	6280	1515	2480	205					
66	235	212	12	400	167	38	485	142	58	486	144	58	380	168	34	641	621	29	29	6132	1453	2628	230					
65	257	203	15	423	160	43	499	136	63	499	138	63	400	161	38	707	595	36	36	5974	1393	2786	257					
64	282	195	17	446	153	47	510	130	68	510	132	68	418	154	42	778	570	44	44	5814	1334	2946	286					
63	304	187	20	464	147	51	523	124	74	519	126	73	433	148	46	848	545	52	52	5667	1277	3093	316					
62	325	179	24	480	141	56	537	118	79	528	120	78	452	141	50	912	521	61	61	5524	1221	3236	348					
61	344	171	27	495	135	61	551	113	84	539	115	84	472	135	55	981	498	70	70	5376	1166	3384	381					
60	363	164	30	510	129	66	566	107	90	554	109	89	484	129	60	1052	475	80	80	5229	1113	3531	416					
59	384	157	34	521	123	71	575	102	96	569	104	95	495	123	65	1117	453	91	91	5098	1061	3662	452					
58	399	150	38	532	117	77	581	97	101	579	99	101	511	117	70	1181	432	102	102	4976	1011	3784	489					
57	414	143	42	542	112	82	590	92	107	587	93	106	528	111	75	1244	411	115	115	4852	962	3908	527					
56	432	136	46	550	106	87	601	87	113	598	88	112	538	105	80	1297	391	127	127	4743	914	4017	567					
55	452	130	51	559	101	93	614	82	119	611	83	118	549	100	86	1346	371	141	141	4628	867	4132	608					
54	472	123	55	571	96	99	625	77	126	627	79	125	565	94	91	1407	352	154	154	4491	821	4269	650					
53	491	117	60	584	90	104	634	73	132	643	74	131	581	89	97	1463	334	169	169	4364	777	4396	693					

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 565 x 100 = 56500 Deg Hrs)

** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

DAYTON, OHIO
WBAN 93815

MYEC Data

Latitude 39.90 N
Longitude 84.20 E

TABLE D: Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BY TIME OF DAY																			24 HOUR SUMMARY								
7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**				10PM-6AM**				HEATING		COOLING	
BASE	TEMP	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg	Hrs	Deg	Hrs	Deg		
(F)	Above	(100s)*		Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Below	Hrs	Above	Hrs	Base	100s*	Base	100s*		
	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	100s*	Base	100s*	Base	100s*			
52	508	111	65	594	85	110	647	68	138	658	70	137	598	84	103	1516	316	184	4238	734	4522	738					
51	526	105	70	602	80	116	664	64	145	673	65	144	613	79	109	1573	298	199	4107	693	4653	784					
50	543	100	76	616	75	122	679	59	152	687	61	151	627	75	115	1631	282	215	3975	652	4785	831					
49	557	94	81	636	71	129	694	55	158	704	57	158	646	70	122	1687	265	232	3833	613	4927	879					
48	572	89	87	653	66	135	711	51	165	720	53	165	666	66	128	1744	250	249	3692	573	5068	929					
47	584	84	93	666	62	142	726	48	173	734	50	172	680	61	135	1797	234	267	3571	539	5189	981					
46	598	79	99	681	58	148	742	44	180	746	46	180	692	57	142	1852	220	285	3447	504	5313	1033					
45	616	74	105	696	54	155	761	41	187	759	43	187	708	53	149	1905	206	304	3313	470	5447	1087					
44	634	69	111	712	50	162	780	37	195	774	39	195	725	50	156	1954	192	323	3180	438	5580	1142					
43	651	65	117	727	46	170	801	34	203	788	36	203	742	46	163	2007	179	343	3042	407	5718	1198					
42	669	60	124	742	42	177	820	31	211	804	33	211	757	42	171	2060	167	363	2906	377	5854	1256					
41	686	56	131	762	39	184	836	29	219	820	31	219	769	39	178	2111	155	384	2775	348	5985	1315					
40	703	52	138	784	36	192	850	26	228	833	28	227	780	36	186	2174	143	405	2635	321	6125	1376					
39	723	48	145	805	33	200	866	24	236	846	25	235	794	33	194	2235	132	427	2489	296	6271	1438					
38	742	45	152	824	30	208	884	22	245	861	23	244	812	30	202	2277	122	450	2359	272	6401	1501					
37	756	41	160	840	27	217	897	20	254	877	21	253	830	27	210	2317	112	473	2242	249	6518	1566					
36	772	38	167	855	25	225	910	18	263	897	18	261	845	25	219	2359	103	496	2121	227	6639	1632					
35	789	35	175	871	23	234	925	16	272	916	17	271	862	22	227	2407	94	520	1990	206	6770	1699					
34	803	32	183	888	20	242	938	14	282	931	15	280	882	20	236	2451	85	544	1865	187	6895	1767					
33	818	29	191	906	18	251	948	13	291	943	13	289	905	18	245	2500	77	569	1738	169	7022	1837					
32	834	26	199	925	17	261	958	11	301	954	12	299	919	16	254	2562	70	594	1606	152	7154	1908					
31	851	24	208	942	15	270	968	10	310	965	11	308	930	14	263	2615	63	620	1487	137	7273	1980					
30	867	22	216	954	14	279	977	9	320	975	9	318	944	13	273	2657	56	647	1384	122	7376	2053					
29	884	19	225	961	12	289	986	8	330	986	8	328	957	11	282	2697	50	673	1286	109	7474	2127					
28	904	17	234	969	11	299	996	7	340	997	7	338	967	10	292	2741	44	701	1183	97	7577	2202					
27	919	16	243	978	10	308	1005	6	350	1004	6	348	979	9	301	2793	39	728	1081	85	7679	2279					
26	930	14	253	986	9	318	1011	5	360	1010	5	358	988	8	311	2851	35	757	982	75	7778	2356					
25	944	12	262	994	8	328	1017	4	370	1016	4	368	996	7	321	2911	31	785	880	66	7880	2434					
24	962	11	271	1004	7	338	1025	3	380	1023	4	378	1008	6	331	2955	27	815	781	57	7979	2514					
23	980	10	281	1012	6	348	1035	3	390	1033	3	388	1018	5	341	2984	24	844	696	50	8064	2594					
22	992	9	291	1016	5	358	1046	2	401	1042	2	399	1026	4	352	3013	21	874	623	44	8137	2675					
21	999	8	301	1020	4	369	1057	2	411	1054	2	409	1035	4	362	3040	19	905	553	38	8207	2757					
20	1007	7	311	1029	3	379	1067	1	422	1064	2	420	1043	3	372	3065	16	935	484	32	8276	2839					
19	1015	6	321	1040	3	389	1075	1	433	1072	1	430	1051	3	383	3090	14	966	415	28	8345	2922					
18	1024	5	331	1052	2	400	1081	1	444	1078	1	441	1060	2	393	3111	12	997	353	24	8407	3006					
17	1034	4	342	1061	2	410	1086	1	454	1081	1	452	1065	2	404	3130	11	1028	302	21	8458	3090					
16	1043	4	352	1068	2	421	1088	1	465	1082	1	463	1070	2	415	3148	9	1060	259	18	8501	3175					
15	1050	3	362	1076	1	431	1089	1	476	1084	1	474	1074	1	425	3164	8	1091	222	16	8538	3260					
14	1054	3	373	1081	1	442	1089	1	487	1086	1	485	1076	1	436	3182	7	1123	190	14	8570	3346					
13	1060	3	384	1084	1	453	1089	1	498	1087	1	495	1079	1	447	3200	6	1155	160	12	8600	3432					
12	1065	2	394	1086	1	464	1089	1	509	1088	1	506	1082	1	458	3218	5	1187	131	10	8629	3518					
11	1068	2	405	1086	1	475	1089	1	520	1089	1	517	1084	1	468	3232	5	1219	111	9	8649	3604					
10	1072	2	416	1087	1	486	1089	1	531	1091	0	528	1085	1	479	3240	4	1252	94	8	8666	3691					
9	1076	1	426	1088	1	497	1090	0	542	1092	0	539	1087	1	490	3247	4	1284	79	7	8681	3778					
8	1080	1	437	1088	1	507	1090	0	552	1092	0	550	1089	1	501	3251	3	1317	70	7	8690	3864					
7	1084	1	448	1088	1	518	1090	0	563	1092	0	561	1089	0	512	3254	3	1349	61	6	8699	3951					

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds / 365 x 100 = 36500 Deg Hrs)
 ** The Hours Below the Base Temp for any X-Hr period is calculated by subtracting the Hrs Above from X times 363

DAYTON, OHIO
WGAN 93813

WYEC Data

Latitude 39.90 N
Longitude 84.20 E

TABLE D:

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BY TIME OF DAY														24 HOUR SUMMARY														
BASE	7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**				10PM-6AM**				HEATING		COOLING	
TEMP	Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg	Hrs	Deg				
(F)	Above (100s)*				Above (100s)*				Above (100s)*				Above (100s)*				Above (100s)*				Above (100s)*				Below	Hrs	Above	Hrs
	Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	100s*	Base	100s*				
6 1086	1	459	1088	1	529	1090	0	574	1092	0	572	1091	0	523	3257	3	1362				54	5	8766	4038				
5 1086	1	470	1089	1	540	1091	0	585	1092	0	583	1092	0	534	3260	2	1414				49	5	8711	4126				
4 1086	1	480	1089	0	551	1091	0	596	1092	0	594	1092	0	549	3262	2	1447				47	4	8713	4213				
3 1087	1	491	1089	0	562	1092	0	607	1092	0	605	1092	0	556	3264	2	1479				43	4	8717	4300				
2 1087	1	502	1089	0	573	1092	0	618	1092	0	615	1092	0	567	3267	2	1512				40	4	8720	4387				
1 1088	1	513	1089	0	584	1092	0	629	1092	0	626	1092	0	577	3268	2	1545				37	3	8723	4474				
0 1089	1	524	1090	0	595	1092	0	640	1092	0	637	1092	0	586	3269	1	1577				35	3	8725	4561				
-1 1089	1	535	1090	0	605	1092	0	651	1092	0	648	1092	0	599	3270	1	1610				35	2	8725	4649				
-2 1089	0	546	1090	0	616	1092	0	662	1092	0	659	1092	0	610	3271	1	1643				33	2	8727	4736				
-3 1089	0	557	1091	0	627	1092	0	672	1092	0	670	1092	0	621	3273	1	1676				30	2	8730	4823				
-4 1089	0	568	1091	0	638	1093	0	683	1093	0	681	1092	0	632	3274	1	1708				27	2	8733	4911				
-5 1089	0	578	1092	0	649	1093	0	694	1093	0	692	1092	0	643	3275	1	1741				23	1	8737	4998				
-6 1090	0	589	1094	0	660	1093	0	705	1094	0	703	1092	0	654	3276	1	1774				19	1	8741	5085				
-7 1091	0	600	1094	0	671	1095	0	716	1094	0	714	1092	0	665	3276	1	1807				17	1	8743	5173				
-8 1092	0	611	1094	0	682	1095	0	727	1095	0	725	1092	0	676	3276	1	1839				15	1	8745	5260				
-9 1092	0	622	1095	0	693	1095	0	738	1095	0	736	1094	0	687	3276	0	1872				13	1	8747	5348				
-10 1092	0	633	1095	0	704	1095	0	749	1095	0	747	1095	0	698	3276	0	1905				11	0	8749	5435				
-11 1092	0	644	1095	0	715	1095	0	760	1095	0	758	1095	0	709	3277	0	1938				10	0	8750	5523				
-12 1093	0	655	1095	0	726	1095	0	771	1095	0	769	1095	0	720	3278	0	1970				9	0	8751	5610				
-13 1093	0	666	1095	0	737	1095	0	782	1095	0	779	1095	0	730	3279	0	2003				8	0	8752	5698				
-14 1093	0	677	1095	0	748	1095	0	793	1095	0	790	1095	0	741	3279	0	2036				7	0	8753	5785				
-15 1094	0	688	1095	0	759	1095	0	804	1095	0	801	1095	0	752	3281	0	2069				4	0	8756	5873				
-16 1095	0	699	1095	0	770	1095	0	815	1095	0	812	1095	0	763	3284	0	2102				1	0	8759	5960				
-17 1095	0	710	1095	0	780	1095	0	826	1095	0	823	1095	0	774	3285	0	2134				0	0	8760	6048				

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 563 x 100 = 56300 Deg Hrs)

** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 563

DAYTON, OHIO
WRAH 93815
TABLE E:

WYEC Data

Latitude 39.90 N
Longitude 84.20 E

Annual COOLING Wet Bulb Degree Hour Summary

Wet Bulb Temperature (F) Base:	50	53	56	59	62	65	68	71	74	77	80
Annual Wet Bulb hours ABOVE base:	4113	3633	3170	2680	2121	1550	798	299	52	1	0
Annual Wet Bulb Cooling deg-hrs:	51172	39307	28898	19789	12291	6502	2561	668	87	1	0

TABLE F: Annual Humidification/Dehumidification Requirements
At various Indoor Conditions and Degree Day Bases
(Pounds of Moisture)

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **												COOLING HUMIDITY RATIO HOURS **												Maintained Indoor Humidity Ratio*
	Heating Degree Base												Cooling Degree Base												
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80			
.001	0	0	0	0	0	0	0	0	0	0	0	45	45	43	41	39	36	32	27	19	11	5	.001		
.002	1	1	1	1	1	1	1	1	1	1	1	38	38	37	36	34	32	29	24	17	10	5	.002		
.003	2	3	3	3	3	3	4	4	4	4	4	32	32	31	31	29	28	25	21	15	9	4	.003		
.004	4	5	6	6	6	6	7	7	7	7	7	26	26	26	26	25	24	22	18	13	8	4	.004		
.005	5	7	8	9	10	10	10	10	10	10	10	21	21	21	21	21	20	19	16	12	6	3	.005		
.006	6	9	11	12	13	14	14	15	15	15	15	17	17	17	17	17	16	15	13	10	5	3	.006		
.007	8	11	13	16	17	18	19	19	20	20	20	13	13	13	13	13	13	12	11	8	4	2	.007		
.008	9	13	16	19	21	23	24	24	25	25	25	10	10	10	10	10	10	9	6	3	2		.008		
.009	10	14	18	22	25	27	29	30	31	31	31	7	7	7	7	7	7	7	7	5	3	1	.009		
.010	12	16	21	25	29	32	34	35	37	37	38	5	5	5	5	5	5	5	5	4	2	1	.010		
.011	13	18	23	29	33	36	39	41	43	44	45	3	3	3	3	3	3	3	3	3	1	1	.011		
.012	14	20	26	32	37	41	44	47	49	51	52	2	2	2	2	2	2	2	2	2	1	0	.012		
.013	16	22	29	35	41	45	49	53	56	58	59	1	1	1	1	1	1	1	1	1	0	0	.013		
.014	17	24	31	38	45	50	54	59	63	65	67	1	1	1	1	1	1	1	1	0	0	0	.014		
.015	18	26	34	42	48	55	60	65	69	73	75	0	0	0	0	0	0	0	0	0	0	0	.015		
.016	20	28	36	45	52	59	65	71	76	80	83	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	21	30	39	48	56	64	70	77	83	88	91	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	22	32	41	51	60	68	75	82	89	95	99	0	0	0	0	0	0	0	0	0	0	0	.018		

FOOTNOTES: * Indoor Humidity Level is measured in pounds of moisture per pound of dry air. Indoor set points of 72 deg(F)-50%RH and 78 deg(F)-50%RH yield Humidity ratios of .005 and .010 respectively.

** Heating (Cooling) Humidity Ratio Hours are defined as the summation of the differences between the maintained indoor humidity ratio and the observed outdoor humidity ratio when both the hourly dry bulb temperature and the humidity ratio are above (below) the base levels.

TABLE G: Percent Diffuse Solar Radiation* and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
% Diffuse on surface													
HORIZONTAL	53	45	56	59	58	55	55	47	44	39	48	54	52
VERTICAL													
NORTH	100	100	100	99	94	90	92	96	100	100	100	100	96
WEST	61	55	70	72	72	73	75	61	61	51	62	65	67
SOUTH	40	41	60	73	82	84	82	68	52	39	39	40	60
EAST	57	59	63	73	72	65	67	60	58	52	56	58	64
% Possible Sun	42	46	49	54	60	67	68	70	66	62	42	37	57

FOOTNOTES: * Corrected For Cloud Cover.

** Source: NOAA, Comparative Climatic Data for the United States Through 1978.

DAYTON, OHIO
 WBAN 93815
 TABLE H:

WYEC Data

Latitude 39.80 N
 Longitude 84.20 E

Average Daily Solar Radiation on Vertical and Horizontal Surfaces
 (BTU/DAY.SQFT)

Month	Under Clear Sky Assumption*										Corrected For Cloud Cover**										obs		
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S-45 horiz ***	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S-45 horiz ***			
Jan	1806	1688	1360	1043	637	529	182	151	151	1851	918	686	652	546	444	308	203	152	139	139	680	414	491
Feb	1872	1749	1467	1209	823	481	284	197	195	2114	1245	828	773	660	555	406	284	218	186	186	899	617	725
Mar	1706	1652	1512	1370	1067	743	488	322	265	2291	1697	907	909	854	792	659	522	416	345	318	1068	907	1034
Apr	1549	1421	1436	1427	1257	1010	748	518	371	2292	2121	947	964	947	920	829	718	613	524	468	1250	1242	1399
May	1062	1213	1343	1438	1576	1211	966	719	525	2208	2398	942	999	1044	1076	1031	943	822	706	623	1395	1554	1704
Jun	941	1111	1285	1423	1414	1291	1060	817	626	2154	2511	889	997	1094	1169	1158	1079	940	795	673	1416	1653	1907
Jul	991	1152	1306	1423	1399	1257	1022	781	590	2162	2447	890	974	1047	1103	1082	999	869	739	624	1393	1586	1792
Aug	1209	1312	1375	1406	1291	1064	837	609	442	2210	2201	1005	1072	1101	1110	1027	894	742	605	509	1497	1336	1666
Sep	1540	1526	1440	1347	1100	819	573	393	314	2229	1818	1091	1081	1016	946	791	627	496	404	365	1414	1221	1508
Oct	1777	1678	1455	1239	889	572	356	244	228	2120	1376	947	897	793	691	527	381	280	225	215	1087	780	957
Nov	1802	1674	1358	1065	666	363	203	166	167	1901	1004	770	739	629	516	357	233	172	157	157	787	495	559
Dec	1760	1637	1306	986	576	290	160	141	141	1759	831	634	608	511	410	270	172	130	124	124	618	362	402
Year	1482	1483	1386	1281	1042	789	515	423	335	2107	1716	878	889	854	812	705	590	489	414	368	1126	1035	1164

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
 ** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.
 *** South exposure tilt 45 degrees.

TABLE I:
 Average Daily Solar Heat Gain Through Single Pane Glass on Vertical and Horizontal Surfaces
 (BTU/DAY.SQFT)

Month	Under Clear Sky*									Corrected For Cloud Cover**								
	S	SSE/SSW	SE/SW	ESE/WSW	E/W	ENE/NNW	NE/NNE	NNE/NNW	N	S	SSE/SSW	SE/SW	ESE/WSW	E/W	ENE/NNW	NE/NNE	NNE/NNW	N
Jan	1557	1432	1136	865	506	245	137	123	123	581	548	455	368	248	159	120	113	113
Feb	1587	1466	1225	1005	664	374	209	159	158	692	640	545	456	327	227	171	152	151
Mar	1380	1362	1253	1138	875	395	375	245	215	732	745	702	653	540	422	331	273	258
Apr	1015	1129	1177	1185	1040	821	569	396	293	748	775	770	753	676	584	494	419	378
May	731	913	1077	1184	1140	992	776	560	393	729	788	844	880	846	769	665	566	493
Jun	655	816	1018	1168	1171	1062	859	644	468	685	777	882	961	955	886	765	637	529
Jul	697	857	1041	1172	1157	1033	827	615	443	686	760	844	905	891	819	707	594	494
Aug	893	1027	1121	1168	1069	886	668	471	344	776	857	901	918	847	731	598	480	405
Sep	1218	1247	1192	1122	910	662	446	300	254	874	882	836	781	650	508	394	320	296
Oct	1488	1402	1212	1032	729	448	267	193	185	785	743	655	572	432	304	219	180	175
Nov	1548	1414	1136	881	536	271	154	136	136	652	620	523	426	287	181	136	128	127
Dec	1519	1393	1091	813	459	212	123	115	115	537	511	425	337	216	133	104	100	100
Year	1190	1203	1139	1061	856	635	454	331	281	706	721	699	668	578	478	393	331	294

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
 ** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.

EL PASO, TEXAS
WBAN 23044
TABLE A:

WYEC Data

Latitude 31.80 N
Longitude 106.40 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCHB): First Quarter
(5 Degrees(F)/3Hr Bias)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period										Month Total	4 1st	HEATING*		COOLING*	
	1-3	4-6	7-9	10-12	13	14-16	17-19	20-24	hours below	degree hours			hours above	degree hours		
Jan																
65 to 69	0	0	0	1		5	0	0	4	65	65	743	17920	1	1	
60 to 64	0	0	0	4		21	5	0	12	42	42	721	14243	23	44	
55 to 59	1	2	2	12		17	7	6	17	52	52	634	10795	90	316	
50 to 54	8	6	5	22		17	11	7	27	91	91	572	7719	172	960	
45 to 49	12	8	12	17		9	14	10	35	95	95	478	5117	266	2078	
40 to 44	9	6	8	15		11	13	10	42	101	101	367	3600	377	3681	
35 to 39	23	20	27	19		8	12	15	39	170	170	253	1414	491	5615	
30 to 34	22	14	16	3				17	61	101	101	116	527	628	8648	
25 to 29	17	21	15	0				3	56	101	101	50	121	674	11962	
20 to 24	1	8	8	0		6	4	0	17	43	43	5	8	339	15569	
Feb																
75 to 79	0	0	0	0		1	0	0	4	18.0	18.0	671	19119	1	1	
70 to 74	0	0	0	1		3	1	0	6	17.3	17.3	667	15776	5	18	
65 to 69	0	0	0	1		17	4	3	42	46.2	46.2	650	12466	22	68	
60 to 64	3	1	0	16		27	39	9	90	144.0	144.0	596	9347	76	309	
55 to 59	13	9	8	18		20	15	21	113	142.3	142.3	493	6638	179	960	
50 to 54	7	4	8	24		9	9	13	68	139.2	139.2	361	4465	291	2147	
45 to 49	9	10	13	14		5	7	19	82	138.3	138.3	296	2778	376	3820	
40 to 44	16	11	20	6		2	15	16	88	122.0	122.0	205	1530	467	5932	
35 to 39	13	16	17	4		0	5	19	74	109.2	109.2	127	703	545	8465	
30 to 34	17	20	11	0		0	1	5	54	109.3	109.3	54	247	618	11369	
25 to 29	4	6	4	0		0	0	1	15	111.1	111.1	20	76	652	14558	
20 to 24	2	6	2	0		0	0	0	10	109.3	109.3	5	13	667	17855	
15 to 19	0	1	1	0		0	0	0	2	101.3	101.3	0	0	672	21207	
Mar																
80 to 84	0	0	0	0		1	0	0	1	10.0	10.0	744	20535	0	0	
75 to 79	0	0	0	2		15	12	0	29	59.2	59.2	733	16827	11	12	
70 to 74	0	0	0	6		21	18	4	51	47.4	47.4	696	13246	48	151	
65 to 69	3	0	2	18		4	20	18	4	74	45.1	635	9895	109	520	
60 to 64	4	5	5	16		22	21	26	19	118	43.3	540	6918	204	1263	
55 to 59	18	5	12	18		7	5	17	23	103	41.2	424	4506	320	2573	
50 to 54	16	17	18	16		9	11	16	16	119	38.8	323	2640	421	4425	
45 to 49	24	21	24	10		7	3	6	11	106	36.6	196	1338	548	6843	
40 to 44	12	16	12	7		2	3	3	10	67	32.6	103	603	641	9828	
35 to 39	10	13	14	0		0	0	3	8	48	29.3	56	210	688	13155	
30 to 34	6	10	4	0		0	0	0	20	25.0	25.0	15	40	729	16705	
25 to 29	0	4	2	0		0	0	0	6	22.2	22.2	1	2	743	20387	

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

EL PASO, TEXAS
WBAN 23044
TABLE A:

WYEC Data

Latitude 31.80 N
Longitude 106.40 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Second Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day 10-12 13-15		16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Apr														
85 to 89	0	0	0	2	6	5	0	0	13	55.0	717	16175	3	3
80 to 84	0	0	0	2	22	25	4	0	53	52.8	695	12629	25	57
75 to 79	0	0	1	18	26	25	17	4	91	49.9	624	9324	96	352
70 to 74	6	1	4	29	19	20	26	19	124	47.7	515	6457	205	1085
65 to 69	21	7	13	17	5	5	19	18	105	46.1	393	4183	327	2411
60 to 64	15	8	25	11	7	4	14	21	105	43.3	295	2466	425	4294
55 to 59	17	22	25	5	4	5	5	15	98	40.8	205	1239	515	6667
50 to 54	10	24	9	4	0	1	3	7	58	38.9	101	500	619	9528
45 to 49	16	18	11	1	1	0	2	6	55	36.9	40	126	680	12754
40 to 44	5	9	2	1	0	0	0	0	17	32.3	11	18	709	16246
35 to 39	0	1	0	0	0	0	0	0	1	33.0	0	0	720	19828
May														
95 to 99	0	0	0	0	3	2	0	0	5	58.0	744	17868	0	0
90 to 94	0	0	0	5	14	15	0	0	34	56.6	728	14172	16	24
85 to 89	0	0	0	11	36	39	8	1	95	55.5	665	10649	79	221
80 to 84	1	0	5	34	23	20	36	5	124	53.3	562	7553	182	845
75 to 79	11	0	15	23	4	5	23	27	108	52.0	449	5038	295	2050
70 to 74	23	9	25	7	4	3	9	28	108	51.8	339	3081	405	3813
65 to 69	26	31	23	5	5	3	7	16	116	51.6	212	1693	532	6145
60 to 64	15	26	11	4	4	2	3	2	67	49.0	116	864	628	9036
55 to 59	4	10	7	2	0	4	4	6	37	44.5	73	405	671	12297
50 to 54	9	7	3	1	0	0	3	8	31	41.9	38	130	706	15742
45 to 49	3	7	4	1	0	0	0	0	15	41.9	10	19	734	19351
40 to 44	1	3	0	0	0	0	0	0	4	38.8	0	0	744	23052
Jun														
100 to 104	0	0	0	0	4	3	0	0	7	62.6	720	15372	0	0
95 to 99	0	0	0	1	25	33	2	0	61	62.9	705	11806	15	34
90 to 94	0	0	0	26	45	40	14	0	125	61.5	605	8506	115	334
85 to 89	1	0	4	38	4	5	34	8	94	60.4	495	5788	225	1216
80 to 84	11	1	25	14	7	4	19	31	112	59.2	383	3580	337	2608
75 to 79	25	7	30	5	2	3	9	24	105	58.7	290	1902	430	4530
70 to 74	25	34	19	5	3	2	11	15	114	58.6	164	763	556	6991
65 to 69	21	34	11	1	0	0	1	10	78	58.3	57	201	663	10029
60 to 64	6	10	1	0	0	0	0	2	19	48.6	13	52	707	13480
55 to 59	0	3	0	0	0	0	0	0	3	38.3	5	14	715	17042
50 to 54	1	1	0	0	0	0	0	0	2	36.5	0	0	720	20628

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

EL PASO, TEXAS
WBAN 23044
TABLE A:

WYEC Data

Latitude 31.80 N
Longitude 106.40 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Third Quarter
(5 Degrees(F)/3hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Jul														
100 to 104	0	0	0	0	2	0	0	0	2	744	14995	0	0	
95 to 99	0	0	0	1	26	26	0	0	53	706	11286	8	11	
90 to 94	0	0	0	20	39	39	13	0	111	685	7795	91	238	
85 to 89	0	0	3	43	16	19	41	13	137	326	4847	219	1012	
80 to 84	8	0	32	22	3	4	29	40	138	507	2560	357	2445	
75 to 79	50	25	39	5	1	4	8	34	166	253	930	491	4555	
70 to 74	30	58	19	2	2	1	2	5	119	71	358	673	7483	
65 to 69	5	10	0	0	2	0	0	1	18	0	0	736	11053	
Aug														
100 to 104	0	0	0	0	0	1	0	0	1	744	16421	0	0	
95 to 99	0	0	0	0	16	17	0	0	33	759	12708	5	7	
90 to 94	0	0	0	14	40	32	7	0	93	682	9145	62	164	
85 to 89	0	0	2	36	19	17	26	7	107	576	5991	168	730	
80 to 84	7	1	18	31	14	20	34	24	149	653	3406	291	1865	
75 to 79	34	5	40	8	5	6	23	42	161	300	1514	444	3683	
70 to 74	40	51	24	4	1	0	3	18	141	159	418	594	6317	
65 to 69	12	34	9	0	0	0	0	2	57	27	36	717	9655	
60 to 64	0	2	0	0	0	0	0	0	2	0	0	744	13339	
Sep														
90 to 94	0	0	0	0	10	6	0	0	16	720	13233	0	0	
85 to 89	0	0	0	10	33	31	2	0	76	660	9702	37	69	
80 to 84	0	0	2	28	28	30	12	6	111	587	6505	133	472	
75 to 79	13	4	15	30	15	13	32	25	152	404	3867	256	1434	
70 to 74	23	13	28	14	3	0	16	24	129	410	1956	410	3123	
65 to 69	29	31	26	7	1	4	13	23	134	177	712	543	5479	
60 to 64	23	29	15	1	0	0	3	12	83	59	145	661	8512	
55 to 59	2	10	4	0	0	0	0	0	16	9	17	711	11984	
50 to 54	0	3	0	0	0	0	0	0	3	0	0	720	15567	

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb range.

EL PASO, TEXAS
WBAN 23044
TABLE A:

WYEC Data

Latitude 31.80 N
Longitude 106.40 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Fourth Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day 10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Oct														
85 to 89	0	0	0	0	11	7	0	0	18	57.3	742	17317	2	1
80 to 84	0	0	0	9	17	15	0	0	41	57.6	719	13675	25	79
75 to 79	0	0	0	21	31	24	7	1	84	56.8	652	10235	92	359
70 to 74	8	0	6	25	12	18	23	12	104	54.5	568	7182	176	1026
65 to 69	16	4	18	17	15	12	16	20	118	53.1	452	4617	292	2181
60 to 64	12	14	24	13	7	13	24	16	123	51.3	314	2673	430	3957
55 to 59	16	21	21	6	0	4	10	20	98	48.6	220	1341	524	6345
50 to 54	29	25	13	2	0	0	12	14	95	45.3	110	505	634	9229
45 to 49	8	20	8	0	0	0	1	10	47	42.5	40	138	704	12582
40 to 44	3	6	2	0	0	0	0	0	11	39.7	10	32	734	16196
35 to 39	1	3	1	0	0	0	0	0	5	32.4	3	4	741	19888
Nov														
75 to 79	0	0	0	0	1	1	0	0	2	53.0	720	18461	0	0
70 to 74	0	0	0	3	26	17	0	0	46	50.8	703	14879	15	18
65 to 69	0	0	0	14	16	17	9	0	56	48.0	654	11488	66	227
60 to 64	2	0	4	20	21	17	13	10	87	46.2	579	8386	141	725
55 to 59	13	10	11	23	11	22	23	15	128	44.5	480	5712	240	1651
50 to 54	11	10	13	8	12	11	17	18	100	40.9	364	3627	356	3166
45 to 49	22	12	18	15	3	3	15	19	107	38.6	260	2062	460	5201
40 to 44	20	22	20	6	0	2	5	13	88	35.1	152	1032	568	7771
35 to 39	7	17	12	1	0	0	8	3	48	31.4	84	453	636	10792
30 to 34	11	8	8	0	0	0	0	12	39	27.7	40	144	680	14083
25 to 29	4	10	3	0	0	0	0	0	17	23.3	13	23	707	17562
20 to 24	0	1	1	0	0	0	0	0	2	22.5	0	0	720	21139
Dec														
65 to 69	0	0	0	1	14	12	2	0	29	49.8	734	16956	10	5
60 to 64	3	0	1	11	23	19	16	5	78	47.7	688	13368	58	137
55 to 59	4	8	5	14	11	16	5	13	76	45.1	601	10140	143	629
50 to 54	12	5	8	18	12	14	13	8	90	41.7	528	7311	216	1520
45 to 49	5	9	9	13	15	10	14	15	90	38.4	435	4907	309	2836
40 to 44	19	11	12	14	7	14	17	9	103	35.3	345	2967	399	4616
35 to 39	19	12	10	13	8	5	16	24	107	32.7	235	1526	509	6895
30 to 34	17	32	32	7	0	3	8	13	112	28.9	123	612	621	9701
25 to 29	7	7	9	2	3	0	2	1	31	23.3	45	231	699	13040
20 to 24	6	4	4	0	0	0	0	5	19	16.3	20	83	724	16612
15 to 19	1	3	1	0	0	0	0	0	5	12.0	6	22	738	20271
10 to 14	0	2	2	0	0	0	0	0	4	8.7	1	1	743	23970

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

EL PASO, TEXAS
 NBAN 25044
 TABLE B:

WYEC Data

Latitude 31.80 N
 Longitude 106.40 E

Annual Dry Bulb Temperature Frequencies
 With Mean Coincident Wet Bulb Temperature
 (5 Degrees(F)/3Hr Bins)

Dry Bulb range(F)	Number of Hours of Occurrence in time period									Mean Coincident Wet Bulb Temperature (F)								
	Hour of day									Hour of day								
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year
100 to 104	0	0	0	0	6	4	0	0	10	60.0	60.0	60.0	60.0	64.7	63.3	60.0	60.0	64.1
95 to 99	0	0	0	2	70	78	2	0	152	0.0	0.0	0.0	65.5	64.9	64.1	61.0	60.0	64.4
90 to 94	0	0	0	65	148	132	54	0	379	0.0	0.0	0.0	64.1	63.8	62.5	63.2	60.0	63.3
85 to 89	1	0	9	140	127	123	111	29	540	60.0	60.0	63.8	63.7	61.8	60.8	61.7	61.4	62.0
80 to 84	27	2	82	140	115	118	139	106	729	59.0	58.0	62.6	62.1	59.0	58.8	59.2	60.8	60.3
75 to 79	135	41	140	112	101	94	124	157	902	60.6	61.5	62.2	58.2	54.9	55.5	58.4	59.6	58.9
70 to 74	155	166	125	96	82	88	97	123	942	58.8	60.3	59.3	54.5	51.0	50.6	54.5	55.5	56.3
65 to 69	133	151	102	82	89	93	89	97	836	54.5	57.2	55.1	50.1	48.8	48.1	48.9	53.4	52.6
60 to 64	83	95	85	96	134	128	111	91	824	50.1	51.4	49.5	45.9	45.2	46.3	46.3	46.8	47.3
55 to 59	88	100	95	98	76	90	97	109	753	45.4	45.4	44.7	43.1	42.7	43.0	43.8	43.7	43.8
50 to 54	103	102	77	95	53	62	99	94	685	41.4	41.4	41.2	40.7	40.0	38.9	40.9	41.4	41.0
45 to 49	99	105	99	71	40	52	64	87	597	39.1	39.3	38.9	37.4	36.3	35.3	36.6	38.5	38.2
40 to 44	85	86	76	49	28	38	54	66	482	34.5	34.8	34.3	33.2	33.2	34.4	33.4	33.6	34.1
35 to 39	73	90	81	57	13	11	55	79	439	30.6	31.1	30.6	31.3	35.0	30.9	32.1	30.8	31.2
30 to 34	73	84	71	10	0	4	17	47	306	27.4	27.5	27.8	29.4	0.0	26.0	26.1	27.4	27.5
25 to 29	32	48	33	2	3	0	2	3	125	23.4	23.1	23.3	25.5	26.3	0.0	19.0	22.6	23.3
20 to 24	9	19	15	0	0	0	0	5	48	16.4	19.1	19.4	0.0	0.0	0.0	0.0	14.8	18.2
15 to 19	1	4	2	0	0	0	0	0	7	11.0	12.5	14.0	0.0	0.0	0.0	0.0	0.0	12.7
10 to 14	0	2	2	0	0	0	0	0	4	0.0	0.0	9.5	0.0	0.0	0.0	0.0	0.0	8.7

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Dry Bulb Temperature (F)					Wet Bulb		Percent Relative Humidity					Average Humidity Ratio (lb moisture/lb dry air)					Average
Month	Daily				Ave	Ave	Average					Day					MPH
	Ave	Max	Min	Max			Min	4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	
Jan	43.4	68	20	55	33	35.1	63	48	32	46	50	0.0030	0.0031	0.0029	0.0031	0.0030	10.9
Feb	49.1	78	18	62	33	36.6	40	32	22	29	32	0.0023	0.0026	0.0026	0.0026	0.0025	8.5
Mar	54.9	80	26	67	42	39.6	38	27	17	23	28	0.0026	0.0027	0.0023	0.0025	0.0025	12.1
Apr	65.0	89	39	77	51	44.7	28	22	13	15	20	0.0025	0.0031	0.0026	0.0023	0.0026	11.8
May	73.5	95	43	85	60	51.5	40	24	14	20	26	0.0033	0.0048	0.0034	0.0036	0.0043	12.9
Jun	81.2	102	53	94	67	59.4	44	33	19	27	32	0.0078	0.0087	0.0067	0.0070	0.0076	7.4
Jul	82.5	101	65	94	72	64.7	59	43	29	37	43	0.0117	0.0118	0.0099	0.0105	0.0110	11.5
Aug	80.4	100	63	92	69	64.0	61	45	31	40	46	0.0111	0.0117	0.0102	0.0103	0.0109	6.6
Sep	74.1	92	53	85	63	60.2	63	48	35	45	49	0.0097	0.0104	0.0095	0.0094	0.0097	7.0
Oct	64.2	88	36	77	51	51.2	64	45	29	43	46	0.0065	0.0072	0.0059	0.0060	0.0063	9.8
Nov	51.9	75	24	65	39	40.3	54	41	27	38	42	0.0034	0.0039	0.0037	0.0035	0.0036	7.3
Dec	44.7	68	12	55	34	36.7	62	53	38	49	52	0.0034	0.0036	0.0036	0.0037	0.0036	7.7
Year	63.8	102	12	76	51	48.8	51	39	26	34	39	0.0058	0.0062	0.0053	0.0054	0.0057	9.5

EL PASO, TEXAS
WSAN 23044
TABLE D:

WYEC Data

Latitude 31.80 N
Longitude 106.40 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY												24 HOUR SUMMARY						
	7-9AM**			10-12AM**			1-3PM**			4-6PM**			7-9PM**			HEATING		COOLING	
	Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg	Hrs	Deg
	Above (100s)*	(100s)*	Base	Above (100s)*	(100s)*	Base	Above (100s)*	(100s)*	Base	Above (100s)*	(100s)*	Base	Above (100s)*	(100s)*	Base	Below	Above	Below	Above
	Heat	Cool		Heat	Cool		Heat	Cool		Heat	Cool		Heat	Cool		Base 100s*	Base 100s*	Base 100s*	Base 100s*
57	586	76	84	777	30	150	930	14	199	906	16	193	745	35	134	1723	220	227	3091
56	604	71	90	796	27	156	943	13	209	923	14	202	767	32	142	1783	205	245	2943
55	626	66	96	818	24	166	953	11	218	941	12	211	791	29	150	1849	190	263	2780
54	647	62	103	838	22	174	963	10	228	955	11	221	813	26	158	1925	176	282	2617
53	662	57	109	855	19	183	973	9	237	970	10	231	831	23	166	1988	163	301	2479
52	677	53	116	876	17	191	982	8	247	980	8	240	851	21	174	2042	150	322	2351
51	691	49	123	897	15	200	994	6	257	988	7	250	870	18	183	2098	138	342	2220
50	706	45	130	917	13	209	1005	6	267	1002	6	260	890	16	192	2156	127	364	2082
49	729	41	137	936	11	219	1014	5	277	1011	5	270	913	14	201	2213	116	385	1942
48	751	38	145	952	10	228	1022	4	287	1014	5	280	929	13	210	2275	105	406	1815
47	769	34	152	965	8	238	1030	3	298	1019	4	290	944	11	219	2342	96	431	1688
46	792	31	160	979	7	247	1039	3	308	1027	3	301	957	10	229	2401	86	455	1564
45	810	28	168	991	6	257	1047	2	318	1036	2	311	963	8	238	2452	76	479	1459
44	825	25	176	1003	5	267	1056	2	329	1048	2	321	973	7	248	2503	70	504	1351
43	845	23	184	1014	4	277	1064	1	339	1056	2	332	985	6	258	2554	62	529	1242
42	858	20	193	1021	3	287	1070	1	350	1062	1	343	997	5	268	2605	55	555	1145
41	871	18	202	1028	3	298	1074	1	361	1070	1	353	1005	4	278	2652	49	561	1059
40	883	16	210	1039	2	308	1077	1	372	1077	1	364	1015	3	288	2693	42	608	975
39	896	14	219	1052	2	318	1081	0	382	1082	1	375	1030	2	298	2729	37	635	889
38	909	12	228	1060	1	329	1086	0	393	1085	0	386	1046	2	309	2769	31	662	803
37	925	10	238	1065	1	340	1090	0	404	1086	0	396	1058	1	319	2816	26	690	718
36	943	9	247	1072	1	350	1091	0	415	1088	0	407	1068	1	330	2860	22	719	636
35	963	7	256	1080	0	361	1092	0	426	1090	0	418	1074	1	340	2919	18	748	542
34	980	6	266	1084	0	372	1092	0	437	1091	0	429	1078	0	351	2977	15	777	456
33	996	5	276	1088	0	383	1092	0	448	1092	0	440	1081	0	362	3024	12	807	365
32	1010	4	286	1091	0	394	1092	0	459	1092	0	451	1085	0	373	3068	9	838	322
31	1024	3	296	1091	0	405	1092	0	470	1092	0	462	1088	0	384	3103	7	868	268
30	1038	3	307	1092	0	416	1092	0	481	1093	0	473	1091	0	395	3140	6	900	212
29	1047	2	317	1093	0	426	1092	0	491	1095	0	484	1093	0	406	3168	5	931	171
28	1054	2	327	1093	0	437	1092	0	502	1095	0	495	1093	0	416	3188	4	963	145
27	1059	1	336	1094	0	448	1094	0	513	1095	0	506	1094	0	427	3210	3	995	115
26	1067	1	349	1095	0	459	1095	0	524	1095	0	517	1094	0	438	3229	2	1027	84
25	1073	1	359	1095	0	470	1095	0	535	1095	0	528	1095	0	449	3241	2	1060	65
24	1079	0	370	1095	0	481	1095	0	546	1095	0	538	1095	0	460	3251	1	1092	50
23	1084	0	381	1095	0	492	1095	0	557	1095	0	549	1095	0	471	3280	1	1125	35
22	1088	0	392	1095	0	503	1095	0	568	1095	0	560	1095	0	482	3284	1	1157	27
21	1089	0	403	1095	0	514	1095	0	579	1095	0	571	1095	0	493	3268	0	1190	22
20	1090	0	414	1095	0	525	1095	0	590	1095	0	582	1095	0	504	3274	0	1223	15
19	1092	0	425	1095	0	536	1095	0	601	1095	0	593	1095	0	515	3279	0	1255	9
18	1093	0	435	1095	0	547	1095	0	612	1095	0	604	1095	0	526	3280	0	1288	6
17	1093	0	446	1095	0	558	1095	0	623	1095	0	615	1095	0	537	3281	0	1321	6
16	1093	0	457	1095	0	569	1095	0	634	1095	0	626	1095	0	548	3281	0	1354	5
15	1093	0	468	1095	0	580	1095	0	645	1095	0	637	1095	0	559	3282	0	1387	4
14	1093	0	479	1095	0	591	1095	0	656	1095	0	648	1095	0	570	3283	0	1419	3
13	1094	0	490	1095	0	602	1095	0	667	1095	0	659	1095	0	581	3283	0	1452	2
12	1095	0	501	1095	0	613	1095	0	678	1095	0	670	1095	0	592	3284	0	1485	0
11	1095	0	512	1095	0	624	1095	0	688	1095	0	681	1095	0	603	3285	0	1518	0

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (x 565 x 100 = 56500 Deg Hrs)
** The Hours Below the Base Temp for any X-Hr period calculated by subtracting the Hrs Above from X times 365

EL PASO, TEXAS
WBAN 23044
TABLE E:

WYEC Data

Latitude 31.80 N
Longitude 106.40 E

Annual COOLING Wet Bulb Degree Hour Summary

Wet Bulb Temperature (F) Base:	50	53	56	59	62	65	68	71	74	77	80
Annual Wet Bulb hours ABOVE base:	4138	3567	3044	2571	1996	1052	150	5	0	0	0
Annual Wet Bulb Cooling deg-hrs:	45269.	33438.	23258.	14627.	7447.	2299.	209.	6.	0.	0.	0.

TABLE F:

Annual Humidification/Dehumidification Requirements
At various Indoor Conditions and Degree Day Bases
(Pounds of Moisture)

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **												COOLING HUMIDITY RATIO HOURS **												Maintained Indoor Humidity Ratio
	Heating Degree Base												Cooling Degree Base												
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80			
.001	0	0	0	0	0	0	0	0	0	0	0	37	36	36	35	34	32	30	27	23	16	10	.001		
.002	0	0	0	1	1	1	1	1	1	1	2	29	29	29	29	28	27	26	23	19	14	9	.002		
.003	0	1	1	2	2	2	3	3	4	4	4	24	24	24	24	23	22	22	20	17	12	8	.003		
.004	1	1	2	3	4	5	5	6	7	8	8	19	19	19	19	19	18	18	17	14	10	6	.004		
.005	1	2	3	4	5	7	8	10	11	12	13	15	15	15	15	15	15	15	14	11	8	5	.005		
.006	1	2	4	6	7	9	11	14	15	16	17	12	12	12	12	12	12	11	11	9	6	4	.006		
.007	1	3	5	7	9	12	15	17	19	21	23	9	9	9	9	9	9	9	8	7	5	3	.007		
.008	1	3	6	8	11	15	18	22	24	26	28	6	6	6	6	6	6	6	6	5	3	2	.008		
.009	1	4	7	10	13	17	22	26	29	32	34	4	4	4	4	4	4	4	4	3	2	1	.009		
.010	2	4	7	11	15	20	25	30	34	37	40	2	2	2	2	2	2	2	2	2	1	0	.010		
.011	2	5	8	13	17	23	28	34	39	42	46	1	1	1	1	1	1	1	1	1	0	0	.011		
.012	2	5	9	14	19	25	32	38	43	48	52	1	1	1	1	1	1	1	1	0	0	0	.012		
.013	2	6	10	15	21	28	35	43	49	54	59	0	0	0	0	0	0	0	0	0	0	0	.013		
.014	2	6	11	17	23	31	39	47	54	60	66	0	0	0	0	0	0	0	0	0	0	0	.014		
.015	3	7	12	18	25	34	42	51	59	66	73	0	0	0	0	0	0	0	0	0	0	0	.015		
.016	3	7	13	20	27	36	46	56	64	72	79	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	3	8	14	21	29	39	49	60	69	78	86	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	3	8	15	22	31	42	53	64	74	84	93	0	0	0	0	0	0	0	0	0	0	0	.018		

FOOTNOTES: * Indoor Humidity Level is measured in pounds of moisture per pound of dry air. Indoor set points of 72 deg(F)-30%RH and 78 deg(F)-50%RH yield humidity ratios of .005 and .010 respectively.
** Heating (Cooling) Humidity Ratio Hours are defined as the summation of the differences between the maintained indoor humidity ratio and the observed outdoor humidity ratio when both the hourly dry bulb temperature and the humidity ratio are above (below) the base levels.

TABLE G:

Percent Diffuse Solar Radiation*
and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
% Diffuse on surface													
HORIZONTAL	27	32	27	28	28	30	32	37	30	23	24	24	29
VERTICAL													
NORTH	100	100	100	97	87	84	86	95	100	100	100	100	93
WEST	42	48	48	48	50	55	55	60	50	40	39	43	49
SOUTH	25	34	39	55	70	79	78	69	46	29	24	22	43
EAST	41	47	44	48	49	52	53	57	50	39	38	39	48
% Possible Sun	78	82	85	87	89	89	79	80	82	84	83	78	83

FOOTNOTES: * Corrected For Cloud Cover.
** Source: NOAA, Comparative Climatic Data for the United States Through 1978.

EL PASO, TEXAS
WBAN 23044
TABLE H:

MYEC Data

Latitude 31.80 N
Longitude 106.40 E

Average Daily Solar Radiation on Vertical and Horizontal Surfaces
(BTU/DAY.SQFT)

Month	Under Clear Sky Assumption*										Corrected For Cloud Cover**										obs		
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S-45 ***	horiz	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N		S-45 ***	horiz
Jan	2001	1865	1534	1234	813	459	255	196	195	2250	1304	1324	1242	1038	850	585	365	237	198	198	1459	895	1127
Feb	1923	1816	1582	1362	993	637	381	249	234	2405	1616	1267	1206	1064	926	697	485	340	269	262	1501	1064	1506
Mar	1602	1578	1505	1423	1170	861	582	374	297	2439	2016	1381	1377	1308	1230	1022	782	574	426	370	1951	1658	1898
Apr	1134	1269	1364	1429	1328	1107	844	588	393	2299	2346	1086	1188	1256	1302	1219	1044	838	638	483	1943	2016	2382
May	809	1014	1210	1357	1375	1248	1028	773	550	2117	2528	849	1012	1163	1277	1287	1180	999	792	610	1848	2189	2650
Jun	691	906	1142	1330	1401	1326	1123	884	674	2023	2598	713	860	1014	1137	1177	1113	962	791	638	1675	2083	2643
Jul	741	950	1166	1333	1380	1288	1077	836	625	2045	2549	740	886	1023	1127	1148	1073	919	749	603	1628	1977	2461
Aug	980	1143	1277	1378	1328	1156	919	671	463	2171	2377	913	1014	1087	1143	1099	977	820	658	523	1632	1793	2261
Sep	1391	1428	1421	1400	1212	947	680	459	341	2316	2091	1148	1161	1135	1101	956	768	591	451	380	1738	1598	1971
Oct	1770	1677	1500	1335	1015	684	435	289	264	2353	1720	1465	1401	1258	1120	859	596	404	297	280	1874	1385	1651
Nov	1958	1825	1524	1256	856	498	291	212	211	2269	1384	1483	1403	1192	999	704	437	280	219	218	1676	1060	1254
Dec	1993	1856	1512	1193	771	415	235	187	186	2182	1214	1364	1294	1075	854	562	325	213	182	181	1482	865	1022
Year	1413	1442	1393	1335	1137	887	656	478	370	2238	1980	1144	1170	1135	1090	944	763	600	474	396	1701	1551	1904

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
** Derived according to DOE-2.1 LOADS Algorithms and MYEC cloud cover data.
*** South exposure tilt 45 degrees.

TABLE I: Average Daily Solar Heat Gain Through Single Pane Glass on Vertical and Horizontal Surfaces
(BTU/DAY.SQFT)

Month	Under Clear Sky*									Corrected For Cloud Cover**								
	S	SSE/SSW	SE/SW	ESE/WSW	E/W	ENE/WNW	NE/NN	NNE/NNW	N	S	SSE/SSW	SE/SW	ESE/WSW	E/W	ENE/WNW	NE/NN	NNE/NNW	N
Jan	1713	1566	1279	1025	656	346	190	159	159	1127	1039	864	704	474	281	182	161	161
Feb	1608	1513	1318	1141	816	498	282	196	191	1056	1001	884	770	571	383	262	217	213
Mar	1243	1280	1241	1183	964	692	446	282	241	1088	1120	1076	1018	839	629	448	331	301
Apr	793	975	1107	1180	1098	909	669	447	307	791	924	1020	1073	1006	856	670	496	384
May	537	728	953	1114	1132	1025	823	597	404	602	751	923	1047	1058	968	803	620	464
Jun	471	638	890	1092	1158	1095	912	693	491	515	631	796	928	966	912	779	624	487
Jul	499	674	910	1090	1136	1056	868	650	457	534	657	807	920	941	875	739	587	462
Aug	675	861	1031	1138	1101	952	736	518	356	676	786	880	940	906	802	660	520	415
Sep	1047	1144	1170	1163	1002	769	533	349	277	886	935	931	909	785	622	468	354	310
Oct	1449	1384	1244	1109	829	540	327	226	215	1203	1158	1043	929	701	472	309	235	228
Nov	1669	1532	1274	1047	693	386	214	173	172	1259	1176	997	833	572	342	212	179	178
Dec	1717	1569	1266	997	620	316	175	152	152	1169	1095	898	710	451	252	163	148	148
Year	1116	1153	1139	1106	934	716	516	371	286	908	939	927	899	773	617	476	374	313

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
** Derived according to DOE-2.1 LOADS Algorithms and MYEC cloud cover data.

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Fort Worth, Texas

WBAN 3927

TABLE A:

NYEC Data

Latitude 32.90 N

Longitude 97.03 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): First Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence In time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day 10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Jan														
65 to 69	0	0	0	0	1	2	0	0	3	53.7	744	17268	0	0
60 to 64	0	2	0	0	12	10	0	0	24	49.8	739	13558	5	10
55 to 59	2	1	3	13	22	20	4	3	68	48.3	692	9958	52	130
50 to 54	5	3	3	20	24	27	25	9	116	46.7	605	6687	139	579
45 to 49	20	11	10	19	21	21	30	21	153	42.9	464	5965	280	1577
40 to 44	15	16	17	25	9	9	18	32	141	38.4	332	2001	412	3333
35 to 39	30	30	29	13	4	1	11	19	137	34.5	177	732	567	5784
30 to 34	17	24	23	3	0	3	5	8	83	30.0	61	166	683	8938
25 to 29	4	4	6	0	0	0	0	1	15	25.7	10	27	734	12519
20 to 24	0	2	2	0	0	0	0	0	4	20.0	1	1	743	16213
Feb														
75 to 79	0	0	0	0	9	7	0	0	16	59.5	669	19691	3	3
70 to 74	0	0	0	2	15	17	0	0	34	59.4	645	16399	27	71
65 to 69	0	0	0	11	6	9	11	3	40	58.7	608	13263	64	295
60 to 64	9	6	7	13	4	3	16	12	70	57.1	562	10343	110	735
55 to 59	10	7	7	6	5	6	7	13	61	51.1	488	7739	184	1491
50 to 54	9	8	5	4	11	10	6	3	56	45.8	430	5443	242	2555
45 to 49	4	8	11	10	13	14	12	11	83	42.5	363	3442	309	3914
40 to 44	15	14	12	15	9	8	19	21	113	39.4	255	1858	417	5690
35 to 39	22	12	10	12	7	4	3	9	79	34.5	171	806	501	7998
30 to 34	11	24	27	11	5	6	10	9	103	31.3	75	170	597	10722
25 to 29	4	2	4	0	0	0	0	3	13	24.9	10	24	662	13936
20 to 24	0	3	1	0	0	0	0	0	4	21.3	1	1	671	17273
Mar														
80 to 84	0	0	0	0	5	4	0	0	9	59.8	744	20604	0	0
75 to 79	0	0	0	2	6	8	2	0	18	58.7	729	16923	15	39
70 to 74	0	0	0	6	13	15	7	1	42	57.5	709	13328	35	164
65 to 69	4	5	4	12	20	16	13	12	86	56.8	643	9936	101	492
60 to 64	12	4	8	20	20	21	13	12	110	52.4	540	6960	204	1236
55 to 59	9	13	16	19	10	11	25	13	116	49.1	434	4526	310	2522
50 to 54	24	17	18	16	9	9	14	23	130	46.0	320	2642	424	4358
45 to 49	16	17	17	7	7	6	13	16	99	41.6	192	1381	552	6817
40 to 44	14	20	12	7	0	0	1	10	64	37.3	107	647	637	9803
35 to 39	6	5	11	1	0	0	2	1	26	32.9	59	252	685	13128
30 to 34	8	10	6	3	3	3	3	5	41	30.6	20	36	724	16632
25 to 29	0	2	1	0	0	0	0	0	3	26.7	1	1	743	20317

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

Fort Worth, Texas
WBAN 3927
TABLE A:

WYEC Data

Latitude 32.90 N
Longitude 97.03 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Second Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Apr														
85 to 89	0	0	0	0	6	9	0	0	15	66.9	720	16005	0	0
80 to 84	0	0	0	6	21	19	5	0	51	66.6	689	12468	31	63
75 to 79	1	0	1	23	15	11	14	5	70	65.6	636	9164	84	359
70 to 74	9	5	11	16	16	19	13	14	103	64.2	545	6198	175	993
65 to 69	11	10	17	17	18	18	21	21	133	59.7	435	3745	285	2140
60 to 64	36	29	29	11	3	5	20	23	156	57.4	278	1956	442	3951
55 to 59	12	24	14	11	11	9	9	12	102	51.3	145	919	575	6514
50 to 54	7	4	8	6	0	0	5	8	38	46.6	70	419	650	9614
45 to 49	11	13	7	0	0	0	2	4	37	41.6	41	149	679	12944
40 to 44	1	2	2	0	0	0	1	3	9	36.0	10	37	710	16432
35 to 39	2	3	1	0	0	0	0	0	6	33.0	3	5	717	20000
May														
90 to 94	0	0	0	0	7	7	0	0	14	70.4	743	14916	1	1
85 to 89	0	0	0	6	19	21	4	0	50	70.9	709	11267	35	72
80 to 84	0	0	1	20	27	27	25	6	106	69.6	643	7853	101	378
75 to 79	15	4	20	24	17	11	21	28	140	68.7	524	4930	220	1175
70 to 74	24	23	21	22	14	20	14	19	157	64.7	359	2681	385	2646
65 to 69	19	21	24	16	9	7	19	16	131	62.1	234	1201	510	4886
60 to 64	21	23	19	5	0	0	10	16	94	58.3	84	407	660	7812
55 to 59	10	12	6	0	0	0	0	8	36	51.9	40	111	704	11236
50 to 54	4	10	2	0	0	0	0	0	16	49.3	6	12	738	14857
Jun														
100 to 104	0	0	0	0	2	2	0	0	4	74.5	720	16018	0	0
95 to 99	0	0	0	2	7	9	0	0	18	75.2	714	12432	6	14
90 to 94	0	0	0	6	30	26	6	0	68	75.0	677	8933	43	115
85 to 89	0	0	5	34	28	27	28	5	127	74.0	581	5764	139	546
80 to 84	11	1	16	26	11	18	24	33	140	72.7	453	3176	267	1558
75 to 79	42	31	37	16	7	8	23	23	187	71.8	291	1290	429	3272
70 to 74	22	35	24	6	5	0	9	28	129	69.4	102	326	618	5908
65 to 69	14	19	8	0	0	0	0	1	42	65.3	27	40	693	9222
60 to 64	1	4	0	0	0	0	0	0	5	61.2	0	0	720	12782

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

Fort Worth, Texas
WBAN 3927
TABLE A:

WYEC Data

Latitude 32.90 N
Longitude 97.03 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Third Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Jul														
100 to 104	0	0	0	0	4	6	0	0	10	75.6	744	13829	0	0
95 to 99	0	0	0	7	32	30	5	0	74	76.2	714	10166	30	57
90 to 94	0	0	0	27	30	27	21	0	105	75.6	620	6819	124	430
85 to 89	1	0	16	36	15	11	29	26	134	74.7	498	3997	246	1328
80 to 84	41	8	31	17	3	14	16	29	159	74.0	356	1831	388	2882
75 to 79	35	61	34	4	7	5	21	32	199	72.8	176	451	568	5222
70 to 74	16	24	12	2	2	0	1	6	63	70.6	17	20	727	8511
Aug														
100 to 104	0	0	0	0	5	8	0	0	13	74.9	743	13445	1	1
95 to 99	0	0	0	8	49	35	4	0	96	74.6	703	9792	41	68
90 to 94	0	0	0	36	16	19	24	1	96	74.3	599	6549	145	545
85 to 89	4	1	12	27	11	17	28	25	125	73.4	491	3810	253	1526
80 to 84	36	18	33	14	10	11	22	37	181	73.1	345	1702	399	3138
75 to 79	42	51	37	8	2	3	15	27	185	72.6	157	437	587	5593
70 to 74	9	18	10	0	0	0	0	3	40	68.7	18	62	726	8938
65 to 69	2	4	1	0	0	0	0	0	7	63.3	5	11	739	12607
60 to 64	0	1	0	0	0	0	0	0	1	61.0	0	0	744	16316
Sep														
95 to 99	0	0	0	0	11	11	0	0	22	74.6	718	14564	2	1
90 to 94	0	0	0	12	25	26	5	0	68	74.0	676	11059	44	96
85 to 89	0	0	1	21	18	16	20	8	84	73.1	594	7861	126	498
80 to 84	8	6	14	20	8	6	23	21	106	72.2	511	5102	209	1339
75 to 79	35	21	28	13	16	18	11	27	169	70.5	390	2833	330	2670
70 to 74	22	38	22	11	12	12	14	9	140	66.2	195	1385	525	4822
65 to 69	4	4	8	11	0	1	14	8	50	59.9	112	656	608	7693
60 to 64	12	6	8	2	0	0	3	16	47	55.9	66	225	654	10862
55 to 59	9	15	9	0	0	0	0	1	34	53.2	17	27	703	14264

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

Fort Worth, Texas
WBAN 3927
TABLE A:

MYEC Data

Latitude 32.90 N
Longitude 97.03 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Fourth Quarter
(5 Degrees(F)/3Hr Blns)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day 10-12 13-15		16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Oct														
85 to 89	0	0	0	0	1	1	0	0	2	70.5	744	15153	0	0
80 to 84	0	0	0	5	22	21	0	0	48	69.1	735	11446	9	13
75 to 79	0	0	1	23	34	30	16	1	105	67.1	656	7938	88	225
70 to 74	21	17	21	31	23	29	30	27	199	65.3	508	4958	236	965
65 to 69	16	18	15	18	9	7	19	19	121	60.5	343	2899	401	2626
60 to 64	17	10	19	12	2	4	22	18	104	54.9	234	1496	510	4943
55 to 59	22	12	18	1	2	1	3	22	81	51.3	137	592	607	7759
50 to 54	14	28	15	3	0	0	3	5	68	48.6	44	127	700	11014
45 to 49	3	6	3	0	0	0	0	1	13	44.3	7	18	737	14625
40 to 44	0	2	1	0	0	0	0	0	3	42.0	0	0	744	18327
Nov														
80 to 84	0	0	0	0	2	2	0	0	4	59.5	719	19400	1	1
75 to 79	0	0	0	0	6	5	0	0	11	58.9	715	15815	5	16
70 to 74	0	0	0	5	16	13	3	0	37	56.9	692	12286	28	87
65 to 69	4	0	1	14	19	17	7	6	68	56.3	643	8931	77	332
60 to 64	12	11	10	23	24	21	24	15	140	56.2	557	5907	163	908
55 to 59	14	12	17	24	11	16	25	21	140	52.2	399	3534	321	2135
50 to 54	21	14	15	11	0	4	12	19	96	48.2	273	1870	447	4071
45 to 49	21	30	27	5	7	8	16	14	128	43.9	191	710	529	6511
40 to 44	15	14	16	8	5	4	3	15	80	40.3	50	125	670	9526
35 to 39	3	9	4	0	0	0	0	0	16	36.1	7	6	713	13007
Dec														
70 to 74	0	0	0	0	2	1	0	0	3	58.0	744	19084	0	0
65 to 69	0	0	0	1	11	12	0	0	24	55.4	735	15378	9	14
60 to 64	3	3	2	10	27	20	7	3	75	55.9	694	11779	50	135
55 to 59	12	12	12	24	12	18	19	14	123	52.9	586	8560	158	636
50 to 54	9	9	8	13	12	11	23	10	95	46.8	483	5908	261	1704
45 to 49	18	2	8	12	10	14	11	27	102	43.4	392	3732	352	3248
40 to 44	15	26	25	15	4	3	15	10	113	40.3	269	2067	475	5303
35 to 39	22	12	12	8	12	8	9	17	100	34.5	178	983	566	7939
30 to 34	8	20	17	6	0	2	3	6	62	30.6	66	386	678	11062
25 to 29	0	3	4	3	3	4	6	3	26	22.3	37	140	707	14536
20 to 24	6	6	5	1	0	0	0	3	21	18.3	12	14	732	18130

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

Fort Worth, Texas
 WBAN 3927
 TABLE B:

WYEC Data

Latitude 32.90 N
 Longitude 97.03 E

Annual Dry Bulb Temperature Frequencies
 With Mean Coincident Wet Bulb Temperature
 (5 Degrees(F)/3Hr Bins)

Dry Bulb range(F)	Number of Hours of Occurrence in time period									Mean Coincident Wet Bulb Temperature (F)								
	Hour of day									Hour of day								
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year
100 to 104	0	0	0	0	11	16	0	0	27	0.0	0.0	0.0	0.0	75.5	74.9	0.0	0.0	75.1
95 to 99	0	0	0	17	99	85	9	0	210	0.0	0.0	0.0	76.2	75.5	74.8	74.3	0.0	75.2
90 to 94	0	0	0	81	108	105	56	1	351	0.0	0.0	0.0	75.6	74.8	74.0	74.1	71.0	74.6
85 to 89	5	1	34	124	98	102	109	64	537	71.8	71.0	75.0	74.4	72.6	72.4	73.5	73.6	73.4
80 to 84	96	33	95	108	109	122	115	126	804	73.1	73.3	74.0	72.2	69.0	69.5	71.7	72.9	71.8
75 to 79	170	168	158	113	119	106	123	143	1100	72.1	72.4	72.2	68.3	65.7	65.4	70.3	71.4	70.1
70 to 74	123	160	121	101	118	126	91	107	947	68.6	69.2	68.1	63.3	60.3	59.8	64.5	67.6	65.4
65 to 69	74	81	78	100	93	89	104	86	705	63.2	64.1	63.1	58.3	55.8	56.3	59.0	60.3	59.8
60 to 64	123	99	102	96	92	84	115	115	826	57.5	58.9	57.9	54.6	52.5	52.7	55.0	56.9	55.9
55 to 59	100	108	102	98	73	81	92	107	761	52.7	53.3	52.7	50.3	49.0	48.1	50.8	51.4	51.2
50 to 54	93	93	74	73	56	61	88	77	615	47.8	48.8	48.6	46.3	44.0	44.7	46.2	47.6	47.0
45 to 49	93	87	83	53	58	63	84	94	615	43.5	43.9	43.7	41.8	41.7	41.9	42.5	42.9	42.9
40 to 44	75	94	85	70	27	24	57	91	523	39.4	39.8	39.7	38.6	39.3	39.0	38.1	38.9	39.2
35 to 39	85	71	67	34	23	13	25	46	364	34.8	34.9	34.7	33.6	32.6	33.5	34.3	34.4	34.4
30 to 34	44	78	73	23	8	14	21	28	289	30.6	30.6	30.7	29.5	31.4	31.7	31.0	31.0	30.7
25 to 29	8	11	15	3	3	4	6	7	57	24.0	27.1	25.4	21.3	21.7	21.5	21.0	22.6	24.0
20 to 24	6	11	8	1	0	0	0	3	29	19.0	19.1	18.7	18.0	0.0	0.0	0.0	19.3	19.0

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Month	Dry Bulb Temperature (F)				Wet Bulb		Percent Relative Humidity					Average Humidity Ratio (lb moisture/lb dry air)					Average
	Ave	Max	Min	Daily Ave		Ave	Average					4AM	10AM	4PM	10PM	Day	MPH
				Max	Min		4AM	10AM	4PM	10PM	Day						
Jan	44.3	66	22	55	35	39.9	81	73	53	71	71	0.0042	0.0044	0.0046	0.0047	0.0044	11.8
Feb	48.2	79	22	59	39	43.7	85	77	54	72	74	0.0052	0.0055	0.0054	0.0059	0.0055	12.7
Mar	54.8	82	27	65	45	47.1	72	63	43	54	60	0.0053	0.0059	0.0054	0.0055	0.0055	14.6
Apr	65.3	86	35	75	56	57.7	79	64	50	63	66	0.0088	0.0094	0.0092	0.0091	0.0090	13.9
May	72.5	93	50	82	63	64.5	81	66	52	64	68	0.0112	0.0117	0.0117	0.0119	0.0117	13.9
Jun	80.3	101	64	90	71	71.9	85	67	50	65	70	0.0153	0.0155	0.0147	0.0153	0.0153	11.9
Jul	83.9	102	70	94	75	74.0	82	63	50	62	66	0.0165	0.0166	0.0156	0.0161	0.0162	11.8
Aug	84.4	103	64	95	75	73.1	76	60	44	57	62	0.0155	0.0160	0.0142	0.0151	0.0153	10.2
Sep	77.3	98	55	87	68	68.2	82	64	46	61	66	0.0137	0.0137	0.0129	0.0131	0.0133	15.3
Oct	67.1	85	43	77	58	60.1	82	67	49	67	68	0.0098	0.0104	0.0100	0.0104	0.0101	12.7
Nov	55.6	83	36	65	47	50.1	82	71	55	72	72	0.0065	0.0067	0.0067	0.0070	0.0067	10.9
Dec	46.8	71	20	57	38	42.9	85	77	58	72	75	0.0052	0.0055	0.0055	0.0055	0.0054	11.4
Year	65.1	103	20	75	56	57.8	81	68	50	65	68	0.0098	0.0101	0.0097	0.0100	0.0099	12.6

Fort Worth, Texas
 WBAN 3927
 TABLE D:

WYEC Data

Latitude 32.90 N
 Longitude 97.03 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																24 HOUR SUMMARY					
	7-9AM**		10-12AM**		1-3PM**		4-5PM**		7-9PM**		10PM-6AM**		HEATING		COOLING							
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg	Hrs	Deg						
	Above Base	(100s)* Heat Cool	Above Base	(100s)* Heat Cool	Above Base	(100s)* Heat Cool	Above Base	(100s)* Heat Cool	Above Base	(100s)* Heat Cool	Above Base	(100s)* Heat Cool	Below Base	100s*	Above Base	100s*						
104	0	482	0	0	396	0	0	340	0	0	343	0	0	408	0	0	1436	0	8760	3406	0	0
103	0	471	0	0	385	0	0	329	0	0	332	0	0	397	0	0	1403	0	8759	3318	1	0
102	0	460	0	0	374	0	2	318	0	0	321	0	0	386	0	0	1370	0	8757	3230	3	0
101	0	449	0	0	363	0	4	308	0	4	310	0	0	375	0	0	1337	0	8751	3143	9	0
100	0	438	0	0	352	0	8	297	0	12	299	0	0	364	0	0	1304	0	8739	3055	21	0
99	0	428	0	0	342	0	19	286	0	21	288	0	0	353	0	0	1272	0	8719	2968	41	0
98	0	417	0	0	331	0	33	275	0	33	278	1	0	342	0	0	1239	0	8693	2881	67	1
97	0	406	0	1	320	0	48	265	1	51	267	1	1	331	0	0	1206	0	8658	2794	102	2
96	0	395	0	5	309	0	71	254	1	70	257	2	2	321	0	0	1173	0	8611	2708	149	3
95	0	384	0	12	298	0	97	244	2	90	246	2	6	310	0	0	1140	0	8554	2622	206	5
94	0	373	0	22	287	0	119	234	3	110	237	3	13	299	0	0	1107	0	8493	2537	265	7
93	0	362	0	35	276	1	139	225	5	130	227	5	21	288	0	0	1074	0	8435	2452	325	10
92	0	351	0	50	266	1	158	215	6	151	217	6	31	277	1	0	1042	0	8369	2368	391	14
91	0	340	0	69	255	2	176	206	8	170	208	8	45	267	1	0	1009	0	8299	2285	461	18
90	0	329	0	88	245	2	201	197	10	192	199	9	59	256	1	0	976	0	8218	2202	542	23
89	0	318	0	110	235	3	229	188	12	220	190	11	78	246	2	4	943	0	8118	2120	642	29
88	3	307	0	136	226	5	251	179	14	244	181	14	102	236	3	11	910	0	8012	2040	748	36
87	8	296	0	160	216	6	270	171	17	264	173	16	121	226	4	21	878	0	7914	1960	848	44
86	14	285	0	185	207	8	288	163	20	282	165	19	144	216	5	36	845	1	7810	1881	950	53
85	26	275	0	211	198	10	306	155	23	299	157	22	166	207	7	57	813	1	7694	1804	1066	63
84	43	264	1	231	189	12	327	147	26	321	149	25	187	198	9	88	780	2	7561	1727	1199	74
83	59	254	1	253	181	14	346	140	29	344	141	28	211	189	11	126	749	3	7421	1653	1339	87
82	73	243	2	273	172	17	366	132	33	364	134	32	233	180	13	168	717	4	7282	1579	1478	101
81	91	233	3	294	164	20	393	125	37	386	127	36	258	172	15	222	686	6	7115	1507	1645	116
80	115	223	4	318	156	23	416	118	41	414	120	40	280	163	18	290	656	9	6926	1437	1834	134
79	141	214	5	342	149	26	436	111	45	436	113	44	305	155	21	361	626	12	6737	1368	2023	153
78	170	204	7	362	141	30	461	103	49	455	106	48	334	148	24	441	598	16	6537	1302	2223	174
77	204	195	8	381	134	33	486	99	54	479	100	55	359	140	28	532	570	21	6317	1238	2443	197
76	237	186	11	404	127	37	510	93	59	502	94	58	379	133	31	636	545	27	6091	1176	2669	223
75	270	178	13	429	120	42	532	87	64	524	88	63	399	126	35	749	517	33	5855	1116	2905	251
74	300	170	16	453	114	46	560	82	70	549	85	68	421	119	39	859	492	41	5616	1059	3146	281
73	327	162	19	474	107	51	590	76	75	574	77	74	442	112	44	961	468	51	5389	1004	3371	314
72	351	154	23	499	101	55	612	71	82	599	72	80	462	106	48	1046	445	61	5189	951	3571	348
71	374	147	26	517	96	61	632	67	88	623	67	86	477	100	53	1112	423	72	5023	900	3737	385
70	397	140	30	533	90	66	653	62	94	647	63	92	494	94	58	1169	402	83	4865	850	3895	423
69	416	133	34	554	84	71	671	58	101	671	58	99	509	88	63	1219	381	95	4719	802	4041	463
68	431	126	38	572	79	77	688	54	108	697	54	106	527	82	68	1258	361	107	4591	756	4169	504
67	450	120	43	590	74	83	706	50	115	712	50	113	554	76	73	1309	340	120	4437	711	4323	546
66	468	114	47	610	69	89	726	46	122	730	47	120	577	71	79	1363	321	134	4284	667	4476	590
65	480	107	52	632	64	93	746	42	129	744	43	127	596	66	85	1410	302	147	4151	625	4609	636
64	495	101	57	653	60	101	764	39	137	758	40	135	622	61	91	1474	284	162	3992	584	4788	683
63	515	95	62	674	55	108	780	36	144	774	36	143	649	57	97	1538	266	177	3829	543	4931	731
62	537	90	67	694	51	115	796	33	152	791	33	150	671	52	104	1604	249	192	3665	508	5095	781
61	557	84	73	715	47	122	823	30	160	812	30	158	690	48	111	1678	232	209	3483	472	5277	833
60	577	79	78	733	44	129	843	27	169	829	28	167	711	44	118	1744	216	226	3321	438	5439	867
59	598	74	84	748	40	137	857	25	177	843	25	175	733	40	125	1802	201	244	3177	403	5583	942

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 565 x 100 = 56500 Deg Hrs)
 ** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

Fort Worth, Texas
WBAN 3927
TABLE D:

WYEC Data

Latitude 32.90 N
Longitude 97.03 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY												24 HOUR SUMMARY									
	7-9AM**			10-12AM**			1-3PM**			4-6PM**			7-9PM**			10PM-6AM**			HEATING		COOLING	
	Hrs	Deg-Hrs	Above (100s)*	Hrs	Deg-Hrs	Above (100s)*	Hrs	Deg-Hrs	Above (100s)*	Hrs	Deg-Hrs	Above (100s)*	Hrs	Deg-Hrs	Above (100s)*	Hrs	Deg	Below Base	Hrs	Deg	Above Base	
	Base	Heat		Cool	Base		Heat	Cool		Base	Heat		Cool	Base		Heat	Cool		Base	Heat		Cool
58	616	69	90	769	37	144	873	22	186	862	23	184	757	37	132	1862	187	262	3019	374	5741	998
57	631	64	97	791	34	152	888	20	195	880	20	192	779	34	140	1934	173	281	2856	345	5904	1057
56	649	60	103	807	31	160	901	18	204	893	18	201	794	31	148	2007	160	301	2708	317	6052	1117
55	674	55	110	826	28	168	913	16	213	907	16	210	807	28	156	2065	147	321	2567	291	6193	1178
54	694	51	116	851	25	176	923	15	222	921	14	219	820	25	164	2121	135	342	2428	266	6332	1240
53	710	47	123	870	23	185	936	13	231	933	13	229	833	22	172	2178	124	364	2298	242	6462	1304
52	731	44	131	881	21	194	949	11	241	950	11	238	851	20	181	2223	113	386	2175	220	6585	1370
51	743	40	138	892	19	203	958	10	250	962	10	248	870	17	189	2265	103	408	2067	199	6693	1436
50	756	37	146	904	17	212	969	9	260	971	9	257	891	15	198	2321	93	431	1946	179	6814	1503
49	772	33	153	915	15	221	980	8	270	981	7	267	910	13	207	2383	84	455	1818	160	6942	1572
48	787	30	161	923	13	230	993	6	279	991	6	277	927	11	216	2432	75	479	1704	142	7056	1642
47	805	27	169	935	11	239	1008	6	289	1005	5	287	945	10	226	2474	67	503	1587	126	7173	1713
46	822	24	177	949	10	249	1019	5	300	1022	5	297	960	8	235	2525	59	528	1461	110	7299	1786
45	838	22	185	959	8	258	1029	4	310	1035	4	307	977	7	245	2591	51	554	1329	96	7431	1859
44	854	19	194	971	7	268	1040	3	320	1045	3	318	991	6	255	2656	45	580	1201	84	7559	1934
43	869	17	202	987	6	278	1050	3	331	1052	3	328	1004	5	265	2714	39	607	1082	72	7678	2011
42	885	15	211	1003	5	288	1055	3	341	1057	2	339	1017	4	275	2768	33	634	972	62	7788	2088
41	905	13	220	1015	4	298	1058	2	352	1061	2	349	1028	4	285	2820	28	662	871	53	7889	2166
40	925	11	229	1027	3	308	1060	2	362	1063	2	360	1038	3	296	2866	24	691	779	45	7981	2246
39	937	9	239	1037	3	318	1063	1	373	1065	2	371	1046	2	306	2910	20	720	700	37	8060	2326
38	952	8	248	1042	2	329	1067	1	384	1067	1	381	1051	2	317	2950	17	749	628	31	8132	2407
37	969	6	258	1047	2	339	1070	1	394	1071	1	392	1058	2	327	2994	13	779	549	25	8211	2489
36	980	5	268	1055	1	350	1073	1	405	1075	1	403	1065	1	338	3040	11	809	471	20	8289	2571
35	992	4	277	1064	1	360	1079	0	416	1077	1	413	1067	1	348	3073	8	839	406	15	8354	2654
34	1010	3	287	1070	1	371	1084	0	427	1080	0	424	1072	1	359	3105	7	870	337	12	8423	2738
33	1027	2	298	1076	0	382	1086	0	437	1086	0	435	1080	0	370	3144	5	901	260	9	8500	2823
32	1040	2	308	1082	0	392	1089	0	448	1089	0	446	1086	0	381	3183	4	933	189	6	8571	2908
31	1055	1	318	1087	0	403	1091	0	459	1091	0	457	1088	0	392	3211	3	965	136	5	8624	2994
30	1067	1	329	1090	0	414	1091	0	470	1091	0	468	1088	0	402	3230	2	997	100	4	8660	3081
29	1075	1	340	1091	0	425	1092	0	481	1091	0	479	1089	0	413	3243	2	1030	77	3	8683	3167
28	1078	1	350	1092	0	436	1093	0	492	1092	0	490	1090	0	424	3250	1	1062	63	2	8697	3254
27	1081	0	361	1092	0	447	1094	0	503	1093	0	500	1091	0	435	3255	1	1095	52	2	8708	3341
26	1085	0	372	1092	0	458	1095	0	514	1094	0	511	1092	0	446	3258	1	1127	43	1	8717	3428
25	1087	0	383	1093	0	469	1095	0	525	1094	0	522	1093	0	457	3262	1	1160	34	1	8726	3516
24	1088	0	394	1094	0	480	1095	0	536	1095	0	533	1095	0	468	3266	0	1193	27	0	8733	3603
23	1090	0	405	1094	0	491	1095	0	547	1095	0	544	1095	0	479	3270	0	1225	19	0	8741	3690
22	1092	0	416	1095	0	502	1095	0	558	1095	0	555	1095	0	490	3278	0	1258	9	0	8751	3778
21	1093	0	427	1095	0	513	1095	0	569	1095	0	566	1095	0	501	3283	0	1291	4	0	8756	3865
20	1094	0	438	1095	0	524	1095	0	579	1095	0	577	1095	0	512	3284	0	1324	1	0	8759	3953
19	1095	0	448	1095	0	534	1095	0	590	1095	0	588	1095	0	523	3285	0	1356	0	0	8760	4041

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 565 x 100 = 56500 Deg Hrs)
** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

Fort Worth, Texas
 WBAN 3927
 TABLE E:

WYEC Data

Latitude 32.90 N
 Longitude 97.03 E

Annual COOLING Wet Bulb Degree Hour Summary

Wet Bulb Temperature (F) Bases:	50	53	56	59	62	65	68	71	74	77	80
Annual Wet Bulb hours ABOVE bases:	6086	9594	5035	4510	3988	3568	3141	2464	1291	187	4
Annual Wet Bulb Cooling deg-hrs:	101453.	83721.	67504.	52920.	39911.	28379.	18054.	9243.	2860.	275.	9.

TABLE F:

Annual Humidification/Dehumidification Requirements
 At various Indoor Conditions and Degree Day Bases
 (Pounds of Moisture)

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **												COOLING HUMIDITY RATIO HOURS **												Maintained Indoor Humidity Ratio*
	Heating Degree Base												Cooling Degree Base												
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80			
.001	0	0	0	0	0	0	0	0	0	0	0	74	73	72	70	68	65	61	55	49	37	23	.001		
.002	0	0	0	0	0	0	0	0	0	0	0	65	65	64	63	61	59	56	51	45	34	21	.002		
.003	0	0	0	1	1	1	1	1	1	1	1	57	57	57	56	55	53	50	46	41	32	20	.003		
.004	0	1	1	1	1	2	2	2	2	2	2	49	49	49	49	48	47	45	42	38	29	18	.004		
.005	0	1	2	2	3	3	3	4	4	4	4	42	42	42	42	42	41	40	37	34	26	16	.005		
.006	0	1	2	4	5	5	6	6	6	6	6	36	36	36	36	36	36	35	33	30	23	15	.006		
.007	1	2	3	5	6	8	8	9	9	10	10	31	31	31	31	31	31	30	29	26	21	13	.007		
.008	1	2	4	6	8	10	11	12	13	13	13	26	26	26	26	26	26	26	25	23	18	11	.008		
.009	1	3	5	7	10	12	14	16	17	17	18	21	21	21	21	21	21	21	21	19	15	9	.009		
.010	1	3	5	9	12	15	18	20	21	22	22	17	17	17	17	17	17	17	17	16	13	8	.010		
.011	1	3	6	10	14	17	21	24	25	26	27	13	13	13	13	13	13	13	13	13	10	6	.011		
.012	1	4	7	11	16	20	24	28	30	31	32	10	10	10	10	10	10	10	10	10	8	5	.012		
.013	1	4	8	12	18	22	27	32	34	36	37	7	7	7	7	7	7	7	7	7	5	3	.013		
.014	1	4	8	14	20	25	31	36	39	42	43	4	4	4	4	4	4	4	4	4	4	2	.014		
.015	1	5	9	15	21	27	34	40	44	47	49	2	2	2	2	2	2	2	2	2	2	1	.015		
.016	1	5	10	16	23	30	37	44	49	53	55	1	1	1	1	1	1	1	1	1	1	0	.016		
.017	1	6	11	17	25	32	40	48	54	59	62	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	1	6	11	19	27	35	44	52	58	64	68	0	0	0	0	0	0	0	0	0	0	0	.018		

FOOTNOTES: * Indoor Humidity Level is measured in pounds of moisture per pound of dry air. Indoor set points of 72 deg(F)-30%RH and 78 deg(F)-50%RH yield humidity ratios of .005 and .010 respectively.
 ** Heating (Cooling) Humidity Ratio Hours are defined as the summation of the differences between the maintained indoor humidity ratio and the observed outdoor humidity ratio when both the hourly dry bulb temperature and the humidity ratio are above (below) the base levels.

TABLE G:

Percent Diffuse Solar Radiation*
 and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
% Diffuse on surface													
HORIZONTAL	40	39	45	49	52	42	43	40	39	34	36	34	42
VERTICAL													
NORTH	100	100	100	99	93	86	88	95	100	100	100	100	95
WEST	94	94	99	84	66	59	61	80	95	47	52	46	58
SOUTH	35	40	55	70	84	85	83	69	55	39	34	29	54
EAST	51	55	63	66	72	65	64	57	37	53	48	51	60
% Possible Sun	43	53	61	63	63	76	84	73	70	72	63	61	66

FOOTNOTES: * Corrected for Cloud Cover.
 ** Source: NOAA, Comparative Climatic Data for the United States Through 1978.

Fort Worth, Texas
 NBAM 3927
 TABLE H:

WYEC Data

Latitude 32.90 N
 Longitude 97.03 E

Average Daily Solar Radiation on Vertical and Horizontal Surfaces
 (BTU/DAY.SQFT)

Month	Under Clear Sky Assumption*											Corrected For Cloud Cover**											
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S-45 horiz ***	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S-45 horiz ***	obs		
Jan	1902	1777	1453	1167	757	425	238	188	187	2112	1208	1039	984	852	694	487	320	227	201	200	1108	715	816
Feb	1852	1732	1494	1280	917	575	350	256	227	2280	1511	1059	1000	878	763	575	408	306	259	249	1234	903	1060
Mar	1569	1546	1467	1380	1128	828	561	364	290	2337	1907	1113	1075	1010	942	795	637	511	424	391	1453	1287	1386
Apr	1134	1251	1332	1382	1266	1062	808	565	388	2223	2238	934	993	1013	1019	941	825	693	573	492	1438	1489	1602
May	832	1024	1205	1354	1353	1236	1009	764	552	2073	2442	851	919	988	1048	1033	964	849	730	642	1442	1685	1881
Jun	722	923	1142	1324	1373	1302	1102	867	665	1992	2517	756	851	959	1052	1068	1019	903	771	683	1484	1836	2151
Jul	769	964	1164	1333	1360	1272	1063	829	622	2011	2468	784	885	992	1086	1094	1034	908	766	651	1491	1800	2165
Aug	993	1140	1261	1350	1284	1124	888	653	463	2115	2285	914	1010	1079	1128	1074	960	801	647	521	1572	1711	2004
Sep	1374	1392	1372	1334	1139	884	636	435	335	2230	1989	1096	1098	1071	1033	897	733	583	465	408	1570	1462	1621
Oct	1720	1637	1459	1292	982	665	425	282	258	2245	1621	1171	1097	978	872	691	513	362	300	284	1456	1129	1279
Nov	1871	1748	1458	1190	808	475	274	205	203	2138	1287	1074	1023	881	744	541	363	252	210	208	1189	792	935
Dec	1885	1750	1412	1111	697	379	211	179	178	2041	1122	1067	978	794	631	418	266	190	174	174	1129	684	765
Year	1383	1405	1351	1291	1090	854	632	465	365	2149	1884	990	993	937	918	802	672	552	461	410	1381	1293	1474

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
 ** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.
 *** South exposure tilt 45 degrees.

TABLE I:
 Average Daily Solar Heat Gain Through Single Pane Glass on Vertical
 and Horizontal Surfaces
 (BTU/DAT.SQFT)

Month	Under Clear Sky*									Corrected For Cloud Cover**								
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N
Jan	1627	1493	1213	986	610	320	177	153	152	878	820	692	574	394	249	177	163	163
Feb	1547	1438	1240	1061	746	451	258	188	184	878	826	725	627	465	325	239	205	202
Mar	1223	1254	1208	1146	929	664	430	274	235	881	870	824	773	649	515	405	336	317
Apr	802	964	1077	1138	1048	863	636	428	304	727	786	820	833	771	670	559	454	395
May	558	740	955	1105	1117	1010	811	592	408	644	712	791	851	843	783	685	582	505
Jun	488	649	889	1077	1134	1069	888	677	484	565	644	759	854	875	831	729	613	526
Jul	521	689	914	1086	1123	1043	857	646	457	585	671	790	884	897	845	734	609	503
Aug	690	861	1013	1110	1064	918	709	503	356	681	785	872	925	865	785	645	510	412
Sep	1036	1112	1121	1102	938	713	493	329	270	846	882	873	848	734	591	460	365	330
Oct	1409	1351	1210	1076	804	524	318	220	210	955	897	804	720	564	410	297	239	231
Nov	1592	1464	1214	990	653	362	205	166	165	903	831	731	618	439	284	196	170	169
Dec	1618	1474	1179	917	560	281	160	143	145	907	816	657	516	335	205	149	141	141
Year	1090	1122	1102	1064	894	686	496	361	281	787	797	779	752	655	542	440	367	325

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
 ** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.

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LAKE CHARLES, LOUISIANA

WBAN 3937

TABLE A:

MYEC Data

Latitude 30.10 N

Longitude 93.20 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): First Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence In time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day 10-12 13-15		16-18	19-21	22-24	hours below			degree hours	hours above	degree hours	
Jan															
75 to 79	0	0	0	2	8	1	0	0	11	69.4	744	19516	0	0	
70 to 74	0	0	0	7	11	12	0	0	30	66.8	724	15836	20	40	
65 to 69	7	6	6	16	11	7	12	9	74	63.8	684	12307	60	231	
60 to 64	11	9	11	9	12	14	8	9	83	58.9	584	9127	160	771	
55 to 59	3	3	6	12	19	17	3	3	66	51.7	518	6372	226	1736	
50 to 54	14	18	19	14	11	15	24	12	127	48.8	422	3969	322	3053	
45 to 49	19	15	9	15	12	16	16	24	126	43.3	301	2145	443	4949	
40 to 44	14	8	14	13	6	7	22	17	101	37.4	200	915	544	7439	
35 to 39	18	26	18	5	3	4	8	19	101	35.2	91	199	653	10443	
30 to 34	7	8	10	0	0	0	0	0	25	31.2	6	3	738	13967	
Feb															
80 to 84	0	0	0	0	1	0	0	0	1	69.0	672	18986	0	0	
75 to 79	0	0	0	6	6	0	0	0	12	66.8	671	15629	1	3	
70 to 74	0	0	1	13	22	12	0	0	48	66.1	643	12328	29	62	
65 to 69	15	8	9	11	14	24	12	12	105	63.2	580	9251	92	345	
60 to 64	3	10	10	13	9	10	19	9	83	57.9	469	6656	203	1110	
55 to 59	10	6	11	10	15	11	6	11	80	52.1	393	4500	279	2314	
50 to 54	7	12	15	9	6	14	11	9	83	48.0	306	2738	366	3912	
45 to 49	14	6	5	10	11	11	22	19	98	41.7	221	1401	451	5935	
40 to 44	19	20	17	11	0	2	8	15	92	37.7	121	532	551	8426	
35 to 39	10	16	12	1	0	0	6	5	50	34.0	44	139	628	11393	
30 to 34	6	5	3	0	0	0	0	4	18	30.3	11	19	661	14633	
25 to 29	0	1	1	0	0	0	0	0	2	28.5	0	0	672	17974	
Mar															
75 to 79	0	0	0	6	21	7	0	0	34	65.6	739	13340	5	3	
70 to 74	0	0	2	23	16	20	3	1	65	64.6	688	9764	56	147	
65 to 69	12	9	13	20	27	30	15	11	137	62.1	600	6512	144	615	
60 to 64	19	16	22	15	16	17	36	25	166	57.4	424	3929	320	1752	
55 to 59	19	23	21	16	11	17	11	20	138	51.8	282	2174	462	3717	
50 to 54	16	17	12	12	2	2	16	14	91	47.9	163	1078	581	6341	
45 to 49	11	5	12	1	0	0	10	12	51	40.6	94	471	650	9454	
40 to 44	11	14	7	0	0	0	2	10	44	37.9	41	141	703	12844	
35 to 39	5	5	2	0	0	0	0	0	12	34.3	11	29	733	16452	
30 to 34	0	4	2	0	0	0	0	0	6	30.3	0	0	744	20143	

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

LAKE CHARLES, LOUISIANA
WBAN 3937
TABLE A:

WYEC Data

Latitude 30.10 N
Longitude 93.20 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Second Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence In time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day 10-12 13-15		16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Apr														
85 to 89	0	0	0	0	1	0	0	0	1	72.0	720	13448	0	0
80 to 84	0	0	0	10	14	5	0	0	29	71.6	712	9857	8	9
75 to 79	0	0	10	38	35	30	2	0	115	69.6	652	6394	68	146
70 to 74	31	28	37	20	25	35	37	29	242	68.2	494	3495	226	847
65 to 69	21	17	16	14	9	18	35	25	155	63.7	255	1670	465	2622
60 to 64	19	24	14	6	6	2	8	19	98	57.9	135	714	585	5266
55 to 59	9	6	8	2	0	0	7	13	45	52.2	61	255	659	8407
50 to 54	8	9	4	0	0	0	1	4	26	48.7	22	60	698	11812
45 to 49	2	6	1	0	0	0	0	0	9	43.9	6	8	714	15360
May														
90 to 94	0	0	0	0	3	1	0	0	4	73.5	744	12968	0	0
85 to 89	0	0	1	32	43	19	0	0	95	74.2	724	9273	20	25
80 to 84	0	0	23	30	27	42	13	2	137	72.9	591	5980	153	452
75 to 79	17	18	28	17	11	15	37	20	163	71.3	455	3356	289	1548
70 to 74	33	10	20	6	4	13	24	37	147	68.9	283	1519	461	3431
65 to 69	28	37	14	7	5	3	18	26	138	65.5	135	465	609	6097
60 to 64	9	20	6	1	0	0	1	6	43	60.3	35	113	709	9465
55 to 59	6	7	1	0	0	0	0	2	16	55.3	8	12	736	13084
50 to 54	0	1	0	0	0	0	0	0	1	52.0	0	0	744	16792
Jun														
90 to 94	0	0	0	8	25	10	0	0	43	77.2	714	9246	6	6
85 to 89	0	0	8	51	32	38	5	0	134	75.3	631	5853	89	213
80 to 84	0	1	44	21	23	31	33	4	157	75.3	477	3072	243	1032
75 to 79	43	28	29	8	6	7	42	64	227	73.9	325	1060	395	2620
70 to 74	45	57	9	2	4	4	10	22	153	71.4	67	97	653	5257
65 to 69	2	4	0	0	0	0	0	0	6	64.7	2	2	718	8762

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

LAKE CHARLES, LOUISIANA

WBAW 3937

TABLE A:

WYEC Data

Latitude 30.10 N

Longitude 93.20 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Third Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day		16-18	19-21	22-24	hours below			degree hours	hours above	degree hours	
Jul															
90 to 94	0	0	0	17	45	15	0	0	77	78.5	733	8236	11	7	
85 to 89	0	0	15	59	31	47	6	0	158	78.0	601	4853	143	344	
80 to 84	5	0	47	12	9	18	55	22	168	77.2	446	2259	298	1470	
75 to 79	64	64	28	5	6	12	27	59	265	75.3	209	500	535	3431	
70 to 74	24	29	3	0	2	1	5	12	76	72.1	9	7	735	6658	
Aug															
90 to 94	0	0	0	20	42	13	0	0	75	78.3	743	8844	1	1	
85 to 89	0	0	13	45	24	47	2	0	131	77.4	613	5436	131	313	
80 to 84	4	2	29	18	16	23	40	15	147	75.9	494	2679	250	1276	
75 to 79	71	58	38	8	11	10	47	68	311	74.3	259	667	485	2984	
70 to 74	13	25	8	1	0	0	4	9	60	69.2	41	113	703	6150	
65 to 69	5	8	5	1	0	0	0	1	20	64.8	2	1	742	9758	
Sep															
95 to 99	0	0	0	0	1	1	0	0	2	78.0	720	14462	0	0	
90 to 94	0	0	0	9	23	13	0	0	45	76.8	704	10880	16	18	
85 to 89	0	0	2	32	34	31	1	0	100	75.7	635	7501	85	239	
80 to 84	0	0	17	27	18	25	12	1	100	73.3	535	4577	185	915	
75 to 79	35	29	37	10	6	9	50	53	229	73.3	417	2169	303	2107	
70 to 74	34	40	19	9	5	8	15	18	148	70.2	142	778	578	4316	
65 to 69	11	7	12	3	3	3	12	16	67	63.2	79	258	641	7396	
60 to 64	7	11	3	0	0	0	0	2	23	58.6	19	46	701	10784	
55 to 59	3	3	0	0	0	0	0	0	6	54.0	3	4	717	14342	

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

LAKE CHARLES, LOUISIANA
 MEAN 3937
 TABLE A:

WYEC Data

Latitude 30.10 N
 Longitude 93.20 E

Monthly Dry Bulb Temperature Frequencies With Mean
 Coincident Wet Bulb Temperature (MOWB): Fourth Quarter
 (5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence In Time period								Month Total	MOWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Oct														
90 to 94	0	0	0	1	1	0	0	0	2	80.0	744	17292	0	0
85 to 89	0	0	1	12	21	7	0	0	41	76.7	739	13579	5	7
80 to 84	0	0	9	20	19	22	0	0	70	74.6	672	10037	72	165
75 to 79	14	7	11	20	21	18	25	19	135	72.2	584	6869	160	737
70 to 74	20	27	20	15	15	18	17	17	149	69.1	419	4332	325	1920
65 to 69	14	10	13	9	11	15	24	14	110	62.2	303	2526	441	3834
60 to 64	14	9	10	11	5	11	13	20	93	57.9	198	1270	546	6298
55 to 59	16	21	16	5	0	2	9	11	80	54.7	104	507	640	9255
50 to 54	9	9	9	0	0	0	5	9	41	49.4	46	152	698	12620
45 to 49	5	10	4	0	0	0	0	3	23	45.3	15	16	729	16204
Nov														
85 to 89	0	0	0	1	3	0	0	0	4	62.3	720	19902	0	0
80 to 84	0	0	0	2	5	3	0	0	10	62.7	715	16315	5	13
75 to 79	0	0	1	21	23	12	0	1	58	69.0	686	12787	34	85
70 to 74	8	7	8	8	10	14	12	8	75	67.2	623	9514	97	412
65 to 69	3	2	12	15	24	23	19	9	107	59.5	540	6607	180	1105
60 to 64	24	20	14	16	10	17	16	19	136	56.7	418	4211	302	2309
55 to 59	17	16	18	12	9	10	16	17	115	52.3	277	2482	443	4180
50 to 54	11	11	6	10	3	5	12	9	67	46.7	175	1346	545	6644
45 to 49	8	9	17	5	3	5	11	15	74	42.5	115	600	605	9498
40 to 44	12	12	8	0	0	1	3	8	44	39.3	54	196	666	12694
35 to 39	7	10	5	0	0	0	1	3	26	35.8	12	30	708	16128
30 to 34	0	3	1	0	0	0	0	0	4	30.8	4	3	716	19701
Dec														
75 to 79	0	0	0	1	10	1	0	0	12	69.8	744	17634	0	0
70 to 74	0	0	0	19	19	10	1	0	49	66.9	716	13967	28	53
65 to 69	9	13	15	8	9	18	13	11	96	64.0	648	10529	98	335
60 to 64	9	5	10	15	15	13	13	13	91	59.7	551	7545	193	1071
55 to 59	16	12	8	13	17	15	15	15	111	53.7	443	3023	301	2269
50 to 54	13	14	13	11	13	19	16	10	111	48.5	336	3060	408	4026
45 to 49	13	13	16	13	1	7	12	13	98	44.0	229	1649	515	6335
40 to 44	15	14	7	8	8	10	16	14	92	38.6	140	699	604	9105
35 to 39	13	9	12	6	1	0	2	13	61	34.2	61	199	683	12525
30 to 34	5	12	9	1	0	0	0	2	29	30.0	15	16	729	15862
25 to 29	0	1	1	0	0	0	0	0	2	27.5	0	0	744	19566

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

LAKE CHARLES, LOUISIANA
WBAN 3937
TABLE B:

WYEC Data

Latitude 30.10 N
Longitude 93.20 E

Annual Dry Bulb Temperature Frequencies
With Mean Coincident Wet Bulb Temperature
(5 Degrees(F)/3Hr Bins)

Dry Bulb range(F)	Number of Hours of Occurrence in time period									Mean Coincident Wet Bulb Temperature (F)								
	Hour of day									Hour of day								
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year
95 to 99	0	0	0	0	1	1	0	0	2	0.0	0.0	0.0	0.0	78.0	78.0	0.0	0.0	78.0
90 to 94	0	0	0	55	139	52	0	0	246	0.0	0.0	0.0	76.9	77.8	76.9	0.0	0.0	77.8
85 to 89	0	0	40	232	189	189	14	0	664	0.0	0.0	78.7	76.4	75.4	76.4	76.4	0.0	76.3
80 to 84	9	5	169	140	132	169	153	44	819	77.8	77.3	76.5	73.8	72.0	73.9	76.2	77.1	74.8
75 to 79	244	204	182	142	164	122	230	284	1572	74.8	74.0	73.9	69.1	68.6	69.5	73.8	74.4	72.9
70 to 74	208	223	127	123	133	147	128	153	1242	71.1	71.3	69.3	65.6	65.2	66.2	69.1	70.3	68.9
65 to 69	127	121	115	104	113	141	160	134	1015	65.3	65.9	64.2	61.5	58.0	60.5	63.9	65.0	63.1
60 to 64	115	124	100	84	73	84	114	122	816	60.1	60.6	59.9	54.6	52.3	54.2	56.7	59.8	58.0
55 to 59	99	97	89	70	71	72	67	92	657	55.0	55.3	54.0	49.9	47.4	48.7	53.5	55.1	52.7
50 to 54	78	91	80	56	35	35	65	67	547	50.0	50.5	49.5	44.7	44.3	46.2	47.7	49.1	48.3
45 to 49	73	64	64	44	27	39	71	69	471	45.8	44.6	43.3	41.1	40.2	40.3	42.4	43.5	42.6
40 to 44	71	66	53	32	14	20	51	64	373	38.5	38.8	37.4	36.3	36.6	36.5	38.2	38.6	38.0
35 to 39	53	66	49	12	4	4	22	40	250	35.1	34.9	34.6	34.2	36.0	35.8	33.7	34.9	34.7
30 to 34	18	32	25	1	0	0	0	6	82	30.5	30.3	30.7	31.0	0.0	0.0	0.0	30.7	30.5
25 to 29	0	2	2	0	0	0	0	0	4	0.0	27.5	28.5	0.0	0.0	0.0	0.0	0.0	28.0

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Month	Dry Bulb Temperature (F)			Daily Ave		Wet Bulb Ave	Percent Relative Humidity Average					Average Humidity Ratio (lb moisture/lb dry air)					Average wind MPH
	Ave	Max	Min	Max	Min		4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	51.3	77	32	61	43	47.8	86	76	64	82	78	0.0064	0.0070	0.0072	0.0069	0.0067	8.6
Feb	54.2	80	29	65	44	49.8	83	88	57	77	74	0.0068	0.0075	0.0074	0.0074	0.0072	11.9
Mar	59.6	78	33	69	51	54.2	82	83	55	77	72	0.0078	0.0080	0.0083	0.0085	0.0081	9.5
Apr	68.8	85	46	77	61	64.2	89	71	66	83	79	0.0118	0.0122	0.0119	0.0123	0.0121	11.4
May	75.1	91	54	84	66	69.4	93	65	61	82	76	0.0138	0.0142	0.0141	0.0140	0.0143	9.9
Jun	79.7	94	66	88	73	74.1	94	69	62	82	79	0.0168	0.0168	0.0163	0.0173	0.0169	7.0
Jul	81.4	94	71	90	75	76.3	94	70	68	86	81	0.0182	0.0185	0.0182	0.0188	0.0184	7.2
Aug	80.6	93	67	89	74	74.9	89	70	63	83	78	0.0171	0.0178	0.0172	0.0177	0.0174	5.7
Sep	77.4	95	56	87	70	71.7	91	70	60	83	78	0.0153	0.0159	0.0154	0.0160	0.0156	7.3
Oct	69.3	90	45	79	61	64.9	94	71	62	86	81	0.0125	0.0130	0.0124	0.0130	0.0127	9.2
Nov	59.9	86	31	70	50	54.3	85	63	52	76	72	0.0080	0.0083	0.0079	0.0086	0.0082	9.8
Dec	53.8	77	29	63	46	50.5	87	78	66	82	80	0.0071	0.0079	0.0081	0.0076	0.0076	9.8
Year	67.7	95	29	77	60	62.7	89	70	61	82	77	0.0116	0.0123	0.0121	0.0124	0.0121	8.9

LAKE CHARLES, LOUISIANA

WBAN 3937

NYEC Data

Latitude 30.10 N

Longitude 93.20 E

TABLE D:

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**				10PM-6AM**				24 HOUR SUMMARY			
	Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		HEATING		COOLING	
	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool
96	0	336	0	0	257	0	0	228	0	0	255	0	0	322	0	0	1086	0	0	8760	2483	0	0	0	0	0	0	0
95	0	325	0	0	246	0	0	217	0	0	244	0	0	311	0	0	1053	0	0	8759	2396	1	0	0	0	0	0	0
94	0	314	0	0	235	0	0	206	0	1	233	0	0	300	0	0	1020	0	0	8753	2308	7	0	0	0	0	0	0
93	0	303	0	0	224	0	19	195	0	3	222	0	0	289	0	0	987	0	0	8737	2221	23	0	0	0	0	0	0
92	0	292	0	6	213	0	44	185	0	9	212	0	0	278	0	0	954	0	0	8700	2133	60	0	0	0	0	0	0
91	0	281	0	19	202	0	81	174	1	20	201	0	0	267	0	0	922	0	0	8638	2047	127	1	0	0	0	0	0
90	0	270	0	42	192	0	120	164	2	40	190	0	0	256	0	0	889	0	0	8557	1960	203	3	0	0	0	0	0
89	0	259	0	75	181	1	161	155	3	69	180	1	0	245	0	0	856	0	0	8494	1875	306	5	0	0	0	0	0
88	0	248	0	110	171	2	202	146	5	105	170	2	0	234	0	0	823	0	0	8342	1791	418	9	0	0	0	0	0
87	6	237	0	152	162	3	245	137	7	143	160	3	0	223	0	0	790	0	0	8213	1709	547	14	0	0	0	0	0
86	16	226	0	204	152	5	283	129	10	183	151	3	3	212	0	0	757	0	0	8068	1627	692	20	0	0	0	0	0
85	33	216	0	258	144	7	314	121	13	223	142	7	10	201	0	0	724	0	0	7922	1547	838	28	0	0	0	0	0
84	56	205	1	307	136	10	344	113	16	261	133	9	23	190	0	0	692	0	0	7768	1469	992	37	0	0	0	0	0
83	83	195	2	344	128	13	375	106	20	297	123	12	42	180	1	0	659	0	0	7617	1392	1143	47	0	0	0	0	0
82	114	185	2	371	121	17	401	99	24	333	117	15	66	169	1	0	626	0	0	7473	1316	1287	60	0	0	0	0	0
81	148	175	4	390	113	21	423	92	28	367	110	19	100	159	2	4	593	0	0	7325	1242	1435	73	0	0	0	0	0
80	186	166	5	413	107	25	448	85	32	397	103	22	143	149	3	32	560	0	0	7139	1170	1621	88	0	0	0	0	0
79	225	157	6	438	100	29	475	78	37	421	96	27	191	140	5	97	528	1	0	6912	1100	1848	106	0	0	0	0	0
78	264	149	10	461	93	34	504	73	42	442	89	31	245	133	7	202	497	2	0	6640	1032	2120	125	0	0	0	0	0
77	303	140	13	489	87	38	535	67	47	464	83	35	303	123	10	351	466	3	0	6311	967	2449	148	0	0	0	0	0
76	342	133	16	523	81	43	571	62	53	488	76	40	348	116	13	521	438	9	0	5965	905	2793	174	0	0	0	0	0
75	376	125	20	555	76	49	608	57	59	517	71	45	381	108	17	697	411	15	0	5629	847	3135	204	0	0	0	0	0
74	408	118	24	582	70	54	640	52	65	550	65	51	411	101	21	880	386	23	0	5287	793	3473	237	0	0	0	0	0
73	439	112	28	608	65	60	669	47	71	578	60	56	439	95	25	1042	363	33	0	4983	742	3777	273	0	0	0	0	0
72	468	105	32	633	61	67	693	43	78	605	53	62	462	88	29	1161	341	44	0	4736	693	4024	312	0	0	0	0	0
71	492	99	37	657	56	73	715	39	85	637	50	68	482	82	34	1253	320	36	0	4522	647	4238	354	0	0	0	0	0
70	510	93	42	680	52	80	742	36	92	667	45	75	508	76	39	1334	301	69	0	4317	803	4443	397	0	0	0	0	0
69	527	87	47	701	48	87	768	32	100	695	41	82	536	70	44	1412	281	83	0	4119	561	4641	443	0	0	0	0	0
68	543	82	53	722	44	94	793	29	108	729	37	89	564	65	50	1484	263	97	0	3923	520	4835	490	0	0	0	0	0
67	566	76	58	748	40	101	816	26	116	756	34	96	602	60	56	1557	245	112	0	3719	482	5045	539	0	0	0	0	0
66	592	71	64	769	37	109	838	24	124	785	31	104	641	55	62	1640	229	128	0	3494	446	5266	591	0	0	0	0	0
65	619	66	70	787	34	117	861	21	133	809	28	112	672	50	68	1718	213	145	0	3292	412	5468	645	0	0	0	0	0
64	647	62	76	804	31	124	880	19	141	829	25	120	697	46	75	1802	197	163	0	3099	380	5661	700	0	0	0	0	0
63	669	57	83	820	28	133	896	17	150	849	22	128	717	42	82	1892	183	181	0	2916	350	5844	758	0	0	0	0	0
62	686	53	90	836	25	141	908	15	159	865	20	137	740	39	90	1968	169	201	0	2734	322	6006	817	0	0	0	0	0
61	707	49	97	851	23	149	923	13	168	879	18	146	764	35	97	2032	157	221	0	2603	295	6157	878	0	0	0	0	0
60	725	45	104	869	21	158	937	12	178	896	16	155	786	32	105	2088	144	241	0	2437	270	6303	940	0	0	0	0	0
59	746	42	111	887	18	167	953	10	187	911	14	164	805	29	113	2150	133	262	0	2307	246	6453	1004	0	0	0	0	0
58	766	38	119	901	16	176	970	9	197	925	12	173	819	26	121	2218	122	284	0	2159	224	6601	1069	0	0	0	0	0
57	780	35	127	915	15	185	985	8	207	940	10	182	833	24	129	2278	111	307	0	2027	203	6733	1136	0	0	0	0	0
56	796	32	135	929	13	194	998	7	217	954	9	192	847	21	138	2332	102	330	0	1903	183	6857	1204	0	0	0	0	0
55	813	29	143	943	11	203	1010	6	227	969	8	201	860	19	146	2380	92	393	0	1783	165	6977	1273	0	0	0	0	0
54	833	27	151	956	10	213	1017	5	237	985	6	211	873	16	155	2425	83	377	0	1669	147	7091	1344	0	0	0	0	0
53	851	24	159	970	8	222	1025	4	247	999	5	221	891	14	164	2482	75	402	0	1541	131	7219	1415	0	0	0	0	0
52	865	22	168	984	7	232	1034	3	257	1012	5	231	906	12	173	2545	67	427	0	1412	117	7348	1488	0	0	0	0	0
51	878	19	177	996	6	242	1040	3	268	1024	4	241	922	11	182	2591	60	453	0	1308	103	7452	1561	0	0	0	0	0

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 365 x 100 = 36500 Deg Hrs)

** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

LAKE CHARLES, LOUISIANA
WBAN 3937
TABLE D:

WYEC Data

Latitude 30.10 N
Longitude 93.20 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE (F)	2-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-5AM**		24 HOUR SUMMARY			
													HEATING		COOLING	
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg	Hrs	Deg
	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Below Base 100s*	Hrs	Above Base 100s*	Hrs
50	893	17 185	1003	5 252	1046	2 278	1030	3 252	941	9 191	2623	53 479	1221	91	7539	1637
49	905	15 194	1010	4 262	1054	2 289	1036	3 262	957	7 201	2698	47 505	1136	79	7624	1713
48	917	14 203	1021	4 272	1065	2 299	1049	2 272	971	6 210	2793	41 532	1036	66	7724	1789
47	934	12 213	1032	3 283	1066	1 310	1056	2 283	985	5 220	2754	35 559	931	58	7829	1867
46	947	10 222	1039	2 293	1071	1 320	1063	1 295	999	4 230	2799	30 587	840	49	7920	1946
45	959	9 232	1045	2 303	1075	1 331	1069	1 304	1014	3 240	2842	26 615	754	41	8006	2026
44	968	8 241	1053	1 314	1078	1 342	1072	1 315	1027	2 250	2883	21 644	678	34	8082	2106
43	977	6 251	1061	1 324	1081	0 353	1075	0 326	1041	2 261	2923	18 673	601	28	8159	2187
42	989	5 261	1069	1 335	1084	0 364	1080	0 336	1053	1 271	2963	14 702	520	22	8240	2269
41	1000	4 271	1076	0 346	1087	0 374	1085	0 347	1059	1 282	3007	11 732	444	17	8316	2352
40	1012	3 281	1081	0 357	1090	0 385	1089	0 358	1067	1 292	3050	9 763	370	13	8390	2436
39	1024	3 291	1083	0 367	1091	0 396	1091	0 369	1076	0 303	3088	7 793	306	10	8454	2520
38	1034	2 301	1088	0 378	1092	0 407	1094	0 380	1080	0 314	3126	5 824	247	7	8513	2605
37	1044	1 312	1091	0 389	1094	0 418	1093	0 391	1086	0 325	3159	3 856	191	5	8569	2690
36	1055	1 322	1093	0 400	1095	0 429	1095	0 402	1092	0 335	3167	2 887	143	3	8617	2776
35	1064	1 333	1094	0 411	1095	0 440	1095	0 413	1094	0 346	3213	1 919	104	2	8656	2862
34	1073	0 344	1094	0 422	1095	0 451	1095	0 424	1093	0 357	3236	1 952	70	1	8690	2949
33	1082	0 354	1095	0 433	1095	0 462	1095	0 435	1093	0 368	3252	0 984	43	1	8715	3036
32	1088	0 365	1095	0 444	1095	0 473	1095	0 446	1095	0 379	3267	0 1017	24	0	8736	3123
31	1091	0 376	1095	0 455	1095	0 484	1095	0 456	1095	0 390	3279	0 1050	9	0	8751	3211
30	1092	0 387	1095	0 466	1095	0 495	1095	0 467	1095	0 401	3282	0 1082	5	0	8755	3298
29	1094	0 398	1095	0 477	1095	0 506	1095	0 478	1095	0 412	3284	0 1115	2	0	8758	3386
28	1095	0 409	1095	0 488	1095	0 517	1095	0 489	1095	0 423	3285	0 1148	0	0	8760	3474

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 585 x 100 = 58500 Deg Hrs)
** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

LAKE CHARLES, LOUISIANA
WBAN 3937
TABLE E:

WYEC Date

Latitude 30.10 N
Longitude 93.20 E

Annual COOLING Wet Bulb Degree Hour Summary

Wet Bulb Temperature (F) Base:	50	53	56	59	62	65	68	71	74	77	80
Annual Wet Bulb hours ABOVE base:	7058	6702	6343	5893	5562	4759	4125	3410	2589	954	108
Annual Wet Bulb Cooling deg-hrs:	134193	113355	93613	74994	57827	42306	28682	16928	7568	1929	132

TABLE F:

Annual Humidification/Dehumidification Requirements
At various Indoor Conditions and Degree Day Bases
(Pounds of Moisture)

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **												COOLING HUMIDITY RATIO HOURS **												Maintained Indoor Humidity Ratio*
	Heating Degree Base												Cooling Degree Base												
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80			
.001	0	0	0	0	0	0	0	0	0	0	0	93	93	92	92	90	87	83	75	65	46	24	.001		
.002	0	0	0	0	0	0	0	0	0	0	0	85	84	84	84	82	80	76	70	60	43	22	.002		
.003	0	0	0	0	0	0	0	0	0	0	0	76	76	76	76	75	73	70	65	56	40	21	.003		
.004	0	0	0	1	1	1	1	1	1	1	1	68	68	68	68	68	66	64	59	52	37	19	.004		
.005	0	0	1	1	2	2	2	3	3	3	3	61	61	61	61	61	60	58	54	47	34	18	.005		
.006	0	0	1	2	3	3	4	4	4	4	4	54	54	54	54	54	53	52	49	43	31	16	.006		
.007	0	0	1	3	4	5	5	6	6	6	6	47	47	47	47	47	47	46	43	39	28	15	.007		
.008	0	0	2	3	5	6	7	8	8	8	8	40	40	40	40	40	40	40	38	34	25	13	.008		
.009	0	1	2	4	6	8	10	10	11	11	11	34	34	34	34	34	34	34	33	30	22	12	.009		
.010	0	1	2	5	8	10	12	13	14	14	14	29	29	29	29	29	29	29	28	26	19	10	.010		
.011	0	1	3	6	9	12	14	16	17	17	18	23	23	23	23	23	23	23	23	22	17	9	.011		
.012	0	1	3	5	10	13	17	19	21	21	22	19	19	19	19	19	19	19	19	18	14	7	.012		
.013	0	1	3	7	11	15	19	22	24	25	26	14	14	14	14	14	14	14	14	14	11	6	.013		
.014	0	1	4	8	12	17	21	26	29	30	31	11	11	11	11	11	11	11	11	10	9	4	.014		
.015	0	1	4	8	13	19	24	29	33	35	36	7	7	7	7	7	7	7	7	7	6	3	.015		
.016	0	1	4	9	15	20	26	32	37	40	41	4	4	4	4	4	4	4	4	4	4	2	.016		
.017	0	1	5	10	16	22	29	35	41	45	47	2	2	2	2	2	2	2	2	2	2	1	.017		
.018	0	1	5	11	17	24	31	38	45	50	54	1	1	1	1	1	1	1	1	1	1	0	.018		

FOOTNOTES: * Indoor Humidity Level is measured in pounds of moisture per pound of dry air. Indoor set points of 72 deg(F)-30%RH and 78 deg(F)-50%RH yield humidity ratios of .005 and .010 respectively.
** Heating (Cooling) Humidity Ratio Hours are defined as the summation of the differences between the maintained indoor humidity ratio and the observed outdoor humidity ratio when both the outdoor dry bulb temperature and the humidity ratio are above (below) the base levels.

TABLE G:

Percent Diffuse Solar Radiation*
and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
% Diffuse on surface													
HORIZONTAL	48	44	50	53	53	47	59	57	44	41	34	44	49
VERTICAL													
NORTH	100	100	100	99	93	86	92	97	100	100	100	100	96
WEST	57	57	62	70	71	67	77	75	63	55	49	54	65
SOUTH	44	46	58	74	88	91	92	83	63	46	34	39	61
EAST	60	57	66	71	68	62	71	68	56	55	51	64	64

% Possible Sun DATA IS NOT AVAILABLE AT THIS TIME

FOOTNOTES: * Corrected For Cloud Cover.
** Source: NOAA, Comparative Climatic Data for the United States Through 1978.

LAKE CHARLES, LOUISIANA
WBAN 3937

WYEC Data

Latitude 30.10 N
Longitude 93.20 E

TABLE H: Average Daily Solar Radiation on Vertical and Horizontal Surfaces
(BTU/DAY.SQFT)

Month	Under Clear Sky Assumption*										Corrected For Cloud Cover**										obs
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NNW	NNE/ NNW	N	S-45 horiz ***	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NNW	NNE/ NNW	N	S-45 horiz ***	
Jan	1731	1637	1357	1108	745	440	256	200	199	2002	1215	769	705	590	493	362	260	204	186	165	827
Feb	1692	1599	1407	1229	910	601	375	250	236	2147	1495	978	933	839	746	586	435	329	271	242	1143
Mar	1408	1395	1346	1267	1074	804	558	370	295	2180	1854	1009	977	924	869	745	604	491	410	381	1305
Apr	1001	1132	1232	1305	1227	1041	810	576	392	2063	2156	868	902	920	931	871	768	660	557	487	1311
May	726	921	1112	1257	1288	1189	988	760	553	1917	2338	749	842	934	1005	1016	958	847	724	617	1287
Jun	632	834	1057	1236	1313	1260	1080	865	675	1850	2419	730	853	992	1106	1153	1114	994	852	733	1420
Jul	677	875	1085	1252	1307	1238	1050	831	654	1876	2380	785	876	973	1053	1073	1027	924	806	711	1318
Aug	882	1040	1175	1281	1248	1107	891	665	470	1977	2212	847	940	1005	1057	1027	937	811	682	570	1316
Sep	1241	1280	1289	1281	1125	892	656	456	345	2096	1945	959	1021	1036	1036	936	785	630	496	417	1393
Oct	1570	1494	1350	1216	943	654	428	291	267	2119	1603	1150	1105	1010	919	742	581	424	359	324	1423
Nov	1739	1626	1373	1146	804	488	295	218	216	2045	1301	1053	984	838	707	517	347	249	209	208	1200
Dec	1760	1641	1348	1081	716	407	240	193	193	1957	1143	842	769	630	506	359	248	195	190	180	902
Year	1254	1288	1260	1223	1059	845	637	474	374	2018	1640	894	908	891	869	783	671	564	471	423	1237

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.
*** South exposure tilt 45 degrees.

TABLE I: Average Daily Solar Heat Gain Through Single Pane Glass on Vertical and Horizontal Surfaces
(BTU/DAY.SQFT)

Month	Under Clear Sky*									Corrected For Cloud Cover**								
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NNW	NNE/ NNW	N	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NNW	NNE/ NNW	N
Jan	1494	1370	1130	919	604	354	192	163	162	646	581	486	404	293	206	162	151	151
Feb	1399	1321	1165	1021	747	472	278	198	197	803	767	691	616	480	348	256	217	213
Mar	1082	1127	1108	1069	887	650	431	280	240	808	793	756	714	608	489	390	327	310
Apr	693	863	995	1073	1012	850	640	438	307	662	713	743	758	710	622	527	443	393
May	489	662	875	1031	1062	975	795	590	408	572	650	749	823	834	785	687	578	483
Jun	442	588	822	1012	1085	1037	875	677	492	560	647	790	908	952	918	811	681	559
Jul	467	624	849	1024	1081	1018	849	650	466	610	681	781	862	882	842	751	646	561
Aug	607	780	946	1055	1035	909	715	515	362	651	742	818	870	847	769	657	544	456
Sep	923	1018	1055	1059	927	725	514	348	279	735	822	853	858	772	641	502	389	339
Oct	1277	1229	1117	1009	770	517	323	228	217	935	907	834	761	608	450	331	271	264
Nov	1471	1355	1141	953	649	372	220	137	126	885	816	693	584	417	273	193	170	169
Dec	1509	1377	1122	897	576	309	180	157	157	711	636	516	414	287	195	155	146	146
Year	985	1024	1026	1010	870	682	502	369	289	714	729	726	714	641	546	453	381	338

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.

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LAS VEGAS, NEVADA
WBAH 23169
TABLE A:

MYEC Data

Latitude 36.08 N
Longitude 115.12 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): First Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Jan														
75 to 79	0	0	0	0	2	0	0	0	2	53.5	744	24699	0	0
70 to 74	0	0	0	2	6	5	0	0	13	51.8	735	21192	9	13
65 to 69	0	0	1	3	6	7	3	1	21	48.0	724	17545	20	86
60 to 64	4	3	1	6	11	5	5	7	42	46.6	696	13991	48	252
55 to 59	3	4	3	16	18	11	1	2	58	42.9	644	10642	100	623
50 to 54	6	3	12	20	19	20	9	5	94	39.8	572	7580	172	1281
45 to 49	9	5	8	11	13	17	24	11	98	36.2	480	4952	284	2373
40 to 44	13	11	13	19	17	20	18	21	132	32.9	359	2834	365	3975
35 to 39	24	28	23	14	1	8	20	22	140	29.9	225	1350	519	6211
30 to 34	18	19	19	2	0	0	7	13	78	26.9	104	552	640	9133
25 to 29	10	9	6	0	0	0	6	7	38	22.1	49	196	695	12497
20 to 24	5	10	5	0	0	0	0	4	24	17.2	18	39	726	16000
15 to 19	1	1	2	0	0	0	0	0	4	13.5	1	1	743	19742
Feb														
65 to 69	0	0	0	0	6	1	0	0	7	50.0	672	12363	0	0
60 to 64	0	0	2	9	24	18	0	0	53	49.6	652	9239	20	36
55 to 59	6	5	7	30	26	28	21	12	135	47.5	562	6164	110	321
50 to 54	14	13	15	26	21	22	21	13	147	42.8	411	3712	261	1229
45 to 49	14	12	20	13	2	9	19	19	108	38.7	291	1972	381	2849
40 to 44	30	18	22	3	2	3	18	29	123	35.3	188	813	504	5050
35 to 39	13	24	11	1	3	2	2	7	63	30.7	71	265	601	7862
30 to 34	7	6	4	2	0	1	2	5	25	25.1	24	65	648	11022
25 to 29	0	4	3	0	0	0	1	1	9	21.2	3	4	669	14321
Mar														
80 to 84	0	0	0	1	2	0	0	0	3	54.7	744	20348	0	0
75 to 79	0	0	0	1	7	6	1	0	15	50.8	735	16643	9	12
70 to 74	2	0	0	9	24	19	2	3	59	48.7	701	13623	43	115
65 to 69	1	3	0	16	27	27	9	0	83	46.5	640	9664	104	476
60 to 64	0	0	11	29	12	15	26	7	100	44.5	544	6698	200	1230
55 to 59	3	0	19	15	11	12	24	19	103	41.3	446	4221	298	2473
50 to 54	34	13	23	17	7	9	13	31	147	39.2	336	2256	408	4228
45 to 49	28	21	24	5	3	3	11	17	112	35.8	190	988	534	6680
40 to 44	13	40	11	0	0	2	4	11	81	33.3	80	308	664	9720
35 to 39	9	7	4	0	0	0	3	5	28	33.3	19	69	725	13201
30 to 34	3	9	1	0	0	0	0	0	13	24.5	5	5	739	16857

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

LAS VEGAS, NEVADA
 WBAN 25169
 TABLE A:

WYEC Data

Latitude 36.08 N
 Longitude 115.17 E

Monthly Dry Bulb Temperature Frequencies With Mean
 Coincident Wet Bulb Temperature (MCWB): Second Quarter
 (5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Apr														
90 to 94	0	0	0	0	5	4	0	0	9	57.2	719	20312	1	1
85 to 89	0	0	0	4	14	16	0	0	34	55.7	701	16751	19	40
80 to 84	0	0	4	13	10	8	3	0	38	53.2	662	13342	58	231
75 to 79	1	1	7	10	15	10	8	4	56	51.4	625	10122	95	611
70 to 74	7	3	6	16	15	22	15	9	93	49.5	548	7164	172	1253
65 to 69	10	5	15	22	20	17	23	13	125	47.4	441	4678	279	2367
60 to 64	8	11	21	14	5	6	15	12	92	45.7	328	2772	332	4061
55 to 59	18	16	22	7	3	2	16	27	111	43.0	222	1366	491	6255
50 to 54	30	26	10	3	1	3	7	19	98	40.7	113	501	607	6990
45 to 49	10	21	4	1	2	2	3	6	49	40.8	47	127	673	12216
40 to 44	6	4	1	0	0	0	0	0	11	38.0	7	22	713	15711
35 to 39	0	3	0	0	0	0	0	0	3	34.3	2	1	718	19290
May														
95 to 99	0	0	0	0	1	0	0	0	1	59.0	744	17781	0	0
90 to 94	0	0	0	3	33	24	0	0	60	56.8	737	14069	7	8
85 to 89	0	0	1	25	25	30	3	0	84	55.3	652	10590	92	249
80 to 84	0	0	9	33	10	17	24	0	93	53.6	568	7553	176	932
75 to 79	6	1	20	13	17	14	30	15	116	51.5	469	4956	275	2055
70 to 74	10	8	30	11	4	4	17	31	115	50.1	343	2917	401	3736
65 to 69	25	19	16	5	2	1	11	21	100	48.2	241	1477	503	6016
60 to 64	31	29	15	3	1	2	5	18	104	45.4	138	538	606	8797
55 to 59	17	26	2	0	0	1	3	6	55	43.3	43	103	701	12082
50 to 54	4	10	0	0	0	0	0	2	16	41.6	2	3	742	15702
Jun														
105 to 109	0	0	0	1	10	4	0	0	15	61.1	720	17317	0	0
100 to 104	0	0	0	16	20	26	1	0	63	61.3	627	13787	43	70
95 to 99	0	0	3	16	23	20	11	0	73	60.2	616	10549	104	432
90 to 94	0	0	12	21	14	15	18	3	83	58.1	538	7659	182	1142
85 to 89	6	0	21	12	11	16	21	15	102	56.5	451	5177	269	2260
80 to 84	17	13	17	11	5	3	21	19	107	55.2	346	3189	374	3872
75 to 79	17	12	16	6	3	4	9	19	86	52.7	242	1733	478	6016
70 to 74	18	28	10	7	3	2	6	24	98	52.0	139	758	581	8641
65 to 69	23	24	9	0	0	0	1	7	64	49.7	71	254	649	11737
60 to 64	6	10	2	0	0	0	2	2	22	48.0	19	67	701	15150
55 to 59	2	1	0	0	0	0	0	1	4	46.3	6	17	714	18700
50 to 54	1	2	0	0	0	0	0	0	3	44.7	0	0	720	22283

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

LAS VEGAS, NEVADA
 WRAH 23169
 TABLE A:

WYEC Data

Latitude 36.08 N
 Longitude 115.17 E

Monthly Dry Bulb Temperature Frequencies With Mean
 Coincident Wet Bulb Temperature (MCWB): Third Quarter
 (5 Degrees(F)/3Hr Bias)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degrees hours	hours above	degrees hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Jul														
110 to 114	0	0	0	0	3	0	0	0	3	65.7	744	16513	0	0
105 to 109	0	0	0	3	18	18	0	0	39	65.7	733	12809	11	16
100 to 104	0	0	2	26	40	36	6	0	110	63.7	671	9269	73	196
95 to 99	0	0	14	35	19	24	25	2	119	62.9	533	6258	211	905
90 to 94	4	3	27	19	9	3	30	15	110	62.5	428	3850	316	2217
85 to 89	18	11	36	8	0	7	17	36	133	61.2	307	1992	437	4079
80 to 84	36	34	11	1	1	4	12	24	125	59.2	186	757	558	6564
75 to 79	29	27	3	1	2	1	3	15	81	59.7	62	171	682	9698
70 to 74	4	16	0	0	1	0	0	1	22	61.4	11	16	733	13263
65 to 69	0	2	0	0	0	0	0	0	2	65.0	0	0	744	16967
Aug														
105 to 109	0	0	0	2	9	5	0	0	16	66.6	742	14626	2	1
100 to 104	0	0	0	13	34	29	2	0	78	66.3	706	10980	36	75
95 to 99	0	0	3	27	29	33	12	0	104	66.1	614	7665	130	480
90 to 94	0	0	17	35	12	14	31	11	120	64.8	503	4869	241	1404
85 to 89	19	3	38	11	7	7	29	30	144	63.4	371	2672	373	2927
80 to 84	34	27	27	3	2	5	15	31	144	62.1	235	1176	509	5151
75 to 79	23	32	5	2	0	0	3	17	82	59.0	104	383	640	8078
70 to 74	15	23	3	0	0	0	1	4	46	54.5	31	78	713	11493
65 to 69	2	8	0	0	0	0	0	0	10	50.0	4	4	740	15139
Sep														
105 to 109	0	0	0	0	3	1	0	0	4	64.8	720	19529	0	0
100 to 104	0	0	0	2	9	7	0	0	18	63.5	712	15945	8	14
95 to 99	0	0	0	7	27	14	0	0	48	62.5	686	12443	34	114
90 to 94	0	0	3	23	32	36	8	1	103	59.9	600	9168	111	439
85 to 89	3	0	9	28	9	16	14	7	86	58.2	515	6372	205	1243
80 to 84	7	4	21	19	10	12	26	9	108	56.7	409	4037	311	2508
75 to 79	10	8	27	11	0	1	25	30	112	55.3	298	2240	422	4311
70 to 74	30	21	21	0	0	1	15	28	116	52.9	188	1014	532	6685
65 to 69	28	29	7	0	0	0	2	13	79	50.5	88	336	632	9607
60 to 64	11	20	2	0	0	0	0	2	35	47.8	28	67	692	12938
55 to 59	1	8	0	0	0	0	0	0	9	44.0	3	4	717	16475

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

LAS VEGAS, NEVADA
 WBAN 23169
 TABLE A:

WYEC Data

Latitude 36.06 N
 Longitude 115.17 E

Monthly Dry Bulb Temperature Frequencies With Mean
 Coincident Wet Bulb Temperature (MCWB): Fourth Quarter
 (5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Oct															
95 to 99	0	0	0	0	7	3	0	0	10	62.1	742	22956	2	1	
90 to 94	0	0	0	8	10	5	0	0	23	62.7	727	19285	17	50	
85 to 89	0	0	1	9	4	9	0	0	23	60.8	700	15715	44	200	
80 to 84	0	0	7	5	16	6	8	3	45	57.7	679	12263	65	468	
75 to 79	6	1	7	15	25	19	12	7	92	55.8	608	9014	136	959	
70 to 74	4	7	9	24	14	17	5	10	90	53.0	520	6190	224	1835	
65 to 69	12	14	18	19	10	18	18	9	119	50.5	423	3834	321	3199	
60 to 64	17	10	17	11	4	10	31	25	125	48.2	298	2054	446	5159	
55 to 59	31	19	20	2	1	3	12	20	108	45.5	181	882	563	7687	
50 to 54	13	21	10	0	2	2	7	15	70	44.8	70	265	674	10790	
45 to 49	7	19	4	0	0	0	0	4	34	41.9	22	44	722	14289	
40 to 44	3	2	0	0	0	0	0	0	5	32.4	3	3	741	17968	
Nov															
75 to 79	0	0	0	2	20	5	0	0	27	54.0	713	17989	7	8	
70 to 74	0	0	0	11	9	12	2	0	34	51.1	683	14507	37	126	
65 to 69	1	0	3	15	11	11	1	3	45	49.2	648	11186	72	405	
60 to 64	3	1	9	15	24	14	17	4	87	47.7	587	8091	133	910	
55 to 59	6	9	14	24	14	19	14	20	116	45.2	474	5403	246	1822	
50 to 54	23	21	20	11	1	11	22	18	129	43.8	373	3295	347	3314	
45 to 49	18	17	16	3	6	9	9	15	95	39.9	243	1788	477	5407	
40 to 44	15	21	12	7	5	6	16	16	98	35.6	141	805	579	8024	
35 to 39	12	8	7	2	0	3	6	8	46	31.4	66	291	634	11110	
30 to 34	7	14	8	0	0	0	3	5	37	28.8	21	61	699	14480	
25 to 29	3	3	1	0	0	0	0	1	8	24.4	6	9	714	16828	
Dec															
65 to 69	0	0	0	4	6	3	0	0	13	49.5	740	16850	4	3	
60 to 64	3	3	3	4	12	4	3	3	35	49.9	720	13188	24	61	
55 to 59	0	0	0	13	36	25	4	0	78	44.5	676	9689	68	282	
50 to 54	0	0	2	35	21	26	14	7	105	41.0	592	6520	152	833	
45 to 49	25	20	25	17	14	21	31	28	181	38.7	449	3901	295	1934	
40 to 44	23	17	21	17	4	9	16	16	123	35.1	278	2104	466	3857	
35 to 39	14	20	17	3	0	3	11	19	89	30.6	179	990	565	6463	
30 to 34	15	13	13	0	0	0	13	12	66	25.7	85	338	659	9531	
25 to 29	12	18	11	0	0	0	1	8	50	22.2	28	51	716	12964	
20 to 24	1	2	1	0	0	0	0	0	4	18.5	0	0	744	16633	

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

LAS VEGAS, NEVADA
 NBAN 25169
 TABLE B:

NYEC Data

Latitude 36.08 N
 Longitude 115.17 E

Annual Dry Bulb Temperature Frequencies
 With Mean Coincident Wet Bulb Temperature
 (5 Degrees(F)/3Hr Bins)

Dry Bulb range(F)	Number of Hours of Occurrence in time period									Mean Coincident Wet Bulb Temperature (F)								
	Hour of day									Hour of day								
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year
110 to 114	0	0	0	0	3	0	0	0	3	0.0	0.0	0.0	0.0	65.7	0.0	0.0	0.0	65.7
105 to 109	0	0	0	6	40	28	0	0	74	0.0	0.0	0.0	66.3	64.9	64.6	0.0	0.0	64.9
100 to 104	0	0	2	57	103	98	9	0	269	0.0	0.0	64.5	64.1	64.2	63.4	63.7	0.0	63.9
95 to 99	0	0	20	85	106	94	46	2	355	0.0	0.0	62.8	63.4	63.7	62.9	62.4	60.5	63.2
90 to 94	4	3	59	109	115	101	67	30	508	60.5	60.0	61.7	63.0	59.9	59.2	61.2	62.9	61.1
85 to 89	46	14	106	97	70	103	84	88	608	60.4	62.2	61.0	59.2	57.2	58.1	58.8	60.1	59.3
80 to 84	96	78	96	86	57	55	109	66	663	58.3	59.2	58.5	55.3	55.9	56.5	57.1	58.6	57.5
75 to 79	92	82	85	61	91	60	91	107	669	55.8	57.2	55.0	53.6	53.2	53.4	54.4	55.3	54.9
70 to 74	90	106	79	80	76	82	63	110	686	53.2	54.1	52.6	51.1	49.6	50.0	51.1	51.3	51.8
65 to 69	102	104	89	84	88	86	60	67	668	49.5	50.1	49.8	48.1	47.7	47.5	48.3	49.7	48.8
60 to 64	83	87	83	91	93	74	104	80	695	47.1	47.5	47.2	46.7	46.7	46.8	46.3	46.7	46.9
55 to 59	87	84	87	107	109	101	95	107	777	44.4	44.5	44.5	44.4	43.3	44.7	45.0	44.6	44.4
50 to 54	127	111	92	112	72	93	93	110	810	42.0	42.3	42.4	40.7	38.7	40.4	42.7	42.8	41.6
45 to 49	111	115	101	50	40	61	97	100	675	39.4	39.5	39.0	36.4	35.6	36.1	38.1	38.8	38.3
40 to 44	103	113	80	46	28	40	72	93	575	35.3	35.3	35.3	32.0	31.4	32.6	34.3	35.1	34.5
35 to 39	72	90	62	20	4	18	42	61	369	30.9	31.7	31.2	29.3	26.3	27.8	29.8	30.6	30.7
30 to 34	50	61	45	4	0	1	25	33	219	27.0	26.9	26.6	25.3	0.0	24.0	25.5	26.4	26.5
25 to 29	25	34	21	0	0	0	8	17	105	22.3	22.4	22.3	0.0	0.0	0.0	20.9	22.4	22.2
20 to 24	6	12	6	0	0	0	0	4	28	17.2	17.1	16.0	0.0	0.0	0.0	0.0	17.8	17.4
15 to 19	1	1	2	0	0	0	0	0	4	14.0	14.0	13.0	0.0	0.0	0.0	0.0	0.0	13.5

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Month	Dry Bulb Temperature (F)					Wet Bulb Ave	Percent Relative Humidity					Average Humidity Ratio (lb moisture/lb dry air)					Average wind MPH
	Ave	Max	Min	Daily			4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
				Max	Min												
Jan	44.0	75	17	56	33	34.2	48	35	25	40	36	0.0023	0.0024	0.0023	0.0023	0.0023	8.8
Feb	48.6	87	25	58	40	40.2	57	46	37	48	49	0.0037	0.0039	0.0038	0.0039	0.0036	11.3
Mar	55.2	92	30	67	42	40.4	38	24	16	26	28	0.0024	0.0025	0.0020	0.0025	0.0024	11.0
Apr	64.3	93	37	76	52	46.3	39	21	16	27	27	0.0033	0.0027	0.0025	0.0031	0.0029	10.7
May	73.6	95	50	86	60	50.3	28	17	11	15	18	0.0033	0.0034	0.0025	0.0026	0.0030	12.7
Jun	83.4	107	53	96	69	55.3	24	16	10	14	17	0.0039	0.0041	0.0030	0.0033	0.0036	11.3
Jul	90.3	111	69	102	77	61.8	28	19	16	20	22	0.0060	0.0066	0.0039	0.0061	0.0062	12.5
Aug	87.8	108	66	99	76	62.9	36	25	19	25	27	0.0076	0.0083	0.0073	0.0076	0.0078	10.7
Sep	80.4	105	56	94	66	55.9	30	18	13	20	22	0.0046	0.0045	0.0043	0.0045	0.0046	8.4
Oct	66.6	98	41	79	55	50.6	46	29	24	36	35	0.0048	0.0049	0.0048	0.0049	0.0049	8.8
Nov	52.5	79	25	65	42	42.2	58	38	29	48	46	0.0038	0.0037	0.0036	0.0039	0.0038	5.1
Dec	44.9	69	23	56	35	36.4	55	42	31	45	46	0.0030	0.0032	0.0030	0.0031	0.0031	7.6
Year	66.1	111	17	78	54	48.1	41	27	20	30	31	0.0041	0.0042	0.0038	0.0040	0.0040	9.9

LAS VEGAS, NEVADA
WBAN 23169
TABLE D:

WYEC Date

Latitude 36.06 N
Longitude 115.17 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																24 HOUR SUMMARY			
	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**		HEATING		COOLING					
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg	Hrs	Deg				
	Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Below Base 100s*		Above Base 100s*					
	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool		
112	0	337	0	0	436	0	0	387	0	0	412	0	0	459	0	0	1751	0		
111	0	526	0	0	425	0	0	376	0	0	401	0	0	488	0	0	1718	0		
110	0	515	0	0	415	0	2	365	0	0	390	0	0	477	0	0	1685	0		
109	0	504	0	0	404	0	4	354	0	0	379	0	0	466	0	0	1653	0		
108	0	493	0	0	393	0	7	343	0	2	368	0	0	455	0	0	1620	0		
107	0	482	0	0	382	0	12	333	0	6	357	0	0	444	0	0	1587	0		
106	0	471	0	1	371	0	18	322	0	12	346	0	0	433	0	0	1554	0		
105	0	460	0	4	360	0	32	311	1	22	335	0	0	422	0	0	1521	0		
104	0	449	0	10	349	0	48	301	1	34	325	1	0	411	0	0	1488	0		
103	0	438	0	18	338	0	67	290	2	50	314	1	0	400	0	0	1455	0		
102	0	427	0	27	327	0	95	280	2	70	304	2	1	389	0	0	1423	0		
101	0	417	0	37	317	1	118	270	3	92	294	2	3	378	0	0	1390	0		
100	1	406	0	52	306	1	136	260	5	115	284	3	7	367	0	0	1357	0		
99	2	395	0	70	295	2	156	251	6	134	274	5	12	357	0	0	1324	0		
98	3	384	0	90	286	3	176	242	8	155	265	6	20	346	0	0	1291	0		
97	5	373	0	107	276	4	194	233	10	176	255	8	29	335	1	0	1258	0		
96	10	362	0	122	266	5	215	224	12	195	246	10	40	324	1	0	1226	0		
95	17	351	0	139	256	6	239	215	14	212	237	12	51	314	1	1	1193	0		
94	26	340	1	159	247	8	261	207	16	229	229	14	64	304	2	2	1160	0		
93	34	330	1	180	238	9	283	198	19	246	220	16	79	293	3	5	1127	0		
92	44	319	1	199	229	11	306	190	22	264	212	19	97	283	4	12	1094	0		
91	58	309	2	222	220	13	334	183	25	284	203	22	113	273	5	20	1062	0		
90	74	298	2	246	211	16	357	175	29	308	195	25	132	264	6	32	1029	1		
89	89	288	3	267	203	18	372	168	33	326	188	28	152	254	7	49	998	1		
88	108	278	4	295	195	21	387	161	36	341	180	31	167	245	9	74	964	2		
87	126	269	5	316	187	24	404	154	40	364	173	35	181	236	11	105	932	2		
86	145	259	7	329	179	27	420	147	44	385	165	38	200	226	12	138	901	4		
85	172	250	8	344	171	31	432	140	49	409	158	42	220	218	15	171	869	5		
84	193	240	10	367	164	34	441	134	53	430	152	46	237	209	17	203	838	7		
83	207	232	12	389	157	38	456	127	57	439	145	51	259	201	19	245	808	9		
82	224	223	14	404	150	42	459	121	62	447	139	55	282	192	22	302	778	12		
81	247	214	17	415	143	46	471	114	67	459	132	60	301	184	25	360	748	15		
80	271	206	19	430	136	50	486	108	71	472	126	64	323	176	28	416	719	19		
79	294	198	22	443	130	55	501	102	76	483	120	69	349	169	31	476	691	24		
78	316	190	25	455	123	59	514	96	81	493	114	74	372	161	35	529	663	29		
77	334	182	28	465	117	64	530	91	87	502	108	79	391	154	39	587	636	34		
76	348	175	32	475	111	68	549	85	92	515	102	84	405	147	43	644	609	40		
75	361	167	35	491	105	73	572	80	98	531	96	89	420	141	47	697	583	47		
74	376	160	39	508	99	78	594	75	104	546	90	95	436	134	51	768	557	54		
73	393	153	43	524	93	83	610	70	110	563	85	100	449	127	56	836	532	62		
72	409	146	47	542	87	89	625	65	116	582	80	106	460	121	60	895	508	71		
71	423	139	51	559	82	94	638	60	122	599	75	112	471	115	65	956	485	80		
70	438	132	55	573	76	100	652	56	129	614	70	118	484	109	70	1010	462	90		
69	454	126	60	588	71	106	667	51	135	629	65	124	496	102	75	1059	439	101		
68	468	120	64	603	66	112	682	47	142	645	61	131	506	97	80	1106	417	111		
67	482	113	69	618	61	118	700	43	149	662	56	137	519	91	85	1155	396	123		

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 565 x 100 = 56500 Deg Hrs)
** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

LAS VEGAS, NEVADA
 WBAN 23169
 TABLE D:

WYEC Date

Latitude 36.08 N
 Longitude 115.17 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY												24-HOUR SUMMARY									
	7-9AM**			10-12AM**			1-3PM**			4-6PM**			7-9PM**			10PM-5AM**			HEATING		COOLING	
	Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg	Hrs	Deg
	Above (100s)*	Base	Heat Cool	Above (100s)*	Base	Heat Cool	Above (100s)*	Base	Heat Cool	Above (100s)*	Base	Heat Cool	Above (100s)*	Base	Heat Cool	Above (100s)*	Base	Heat Cool	Below Base 100s*	Hrs	Above Base 100s*	Hrs
66	496	107	74	636	57	124	718	39	156	681	52	144	534	85	90	1216	375	135	4477	715	4263	722
65	509	101	79	656	52	131	737	36	163	698	48	151	549	80	95	1279	354	147	4330	671	4430	766
64	525	96	84	674	48	137	757	32	171	717	44	158	568	74	101	1328	334	160	4189	628	4371	811
63	544	90	90	689	44	144	773	29	178	733	40	165	586	69	107	1368	315	174	4066	587	4694	857
62	560	85	95	704	40	151	789	26	186	744	37	173	605	64	113	1412	296	187	3943	547	4817	905
61	574	79	101	727	36	158	810	23	194	758	33	180	628	59	119	1465	278	202	3797	508	4963	954
60	590	74	107	748	33	166	832	20	202	773	30	188	651	55	125	1525	260	217	3639	471	5121	1004
59	609	69	113	766	29	173	852	17	211	791	27	195	672	50	132	1577	242	232	3492	435	5268	1056
58	627	64	119	785	26	181	876	15	219	814	24	203	691	46	139	1623	226	246	3343	401	5417	1110
57	646	60	125	801	23	189	899	13	228	835	21	212	709	42	146	1677	209	263	3190	369	5570	1164
56	664	55	132	821	20	197	919	11	237	849	19	220	731	38	153	1736	193	282	3039	337	5721	1221
55	678	51	138	840	17	205	939	10	247	868	16	229	752	35	160	1800	178	300	2873	308	5887	1279
54	691	47	145	855	15	214	958	8	256	891	14	238	766	32	168	1871	164	318	2707	280	6053	1339
53	707	43	152	890	13	223	970	7	266	908	12	247	781	28	176	1946	150	337	2549	254	6211	1400
52	728	39	159	920	11	232	982	6	276	926	11	258	799	25	184	2017	137	357	2386	229	6374	1463
51	748	36	167	942	10	241	1001	5	285	945	9	265	820	22	192	2080	125	377	2222	206	6538	1527
50	768	32	174	963	8	251	1017	4	296	965	8	275	841	20	200	2146	113	398	2038	185	6702	1594
49	786	29	182	982	7	260	1027	3	306	981	6	284	861	17	209	2212	102	420	1910	165	6830	1661
48	805	26	190	995	6	270	1036	2	316	992	5	294	880	15	217	2267	91	443	1783	146	6977	1731
47	826	24	198	1007	5	280	1045	2	326	1002	4	304	901	13	226	2328	81	466	1650	129	7110	1801
46	844	21	207	1017	4	290	1053	1	337	1013	3	314	921	11	235	2394	72	489	1517	113	7243	1873
45	865	18	215	1023	3	301	1059	1	348	1027	3	325	938	10	245	2467	64	513	1378	99	7382	1946
44	887	16	224	1030	3	311	1066	1	358	1042	2	335	959	8	254	2539	56	539	1234	86	7526	2020
43	905	14	233	1039	2	321	1074	0	369	1050	2	345	980	7	264	2607	49	564	1102	74	7658	2096
42	926	13	242	1045	2	332	1081	0	380	1055	1	356	997	6	274	2675	42	591	979	64	7781	2174
41	940	11	251	1055	1	342	1086	0	390	1064	1	366	1006	5	284	2731	37	618	875	54	7885	2252
40	951	9	261	1066	1	353	1089	0	401	1073	1	377	1016	4	294	2787	31	645	776	46	7984	2331
39	965	8	270	1074	1	364	1092	0	412	1078	0	388	1025	3	304	2838	27	673	687	39	8073	2412
38	976	7	280	1079	0	374	1093	0	423	1083	0	399	1034	3	314	2888	22	702	605	32	8155	2493
37	990	6	290	1083	0	385	1093	0	434	1088	0	410	1043	2	325	2942	19	731	519	27	8241	2575
36	1006	5	300	1087	0	396	1094	0	445	1090	0	420	1050	2	335	2988	15	761	443	22	8317	2658
35	1016	4	310	1090	0	407	1095	0	456	1093	0	431	1057	1	346	3025	13	791	383	18	8377	2741
34	1026	3	320	1091	0	418	1095	0	467	1094	0	442	1063	1	356	3059	10	821	328	14	8432	2825
33	1037	3	331	1092	0	429	1095	0	478	1093	0	453	1071	1	367	3099	8	852	270	11	8490	2910
32	1048	2	341	1093	0	440	1095	0	489	1095	0	464	1077	0	378	3136	7	883	214	9	8546	2995
31	1058	2	352	1094	0	451	1095	0	500	1095	0	475	1081	0	389	3160	5	915	175	7	8583	3081
30	1064	1	362	1095	0	461	1095	0	511	1095	0	486	1085	0	399	3176	4	947	146	5	8611	3167
29	1069	1	373	1095	0	472	1095	0	522	1095	0	497	1089	0	410	3193	3	978	123	4	8637	3253
28	1073	1	384	1095	0	483	1095	0	533	1095	0	508	1092	0	421	3212	2	1010	98	3	8662	3339
27	1076	1	394	1095	0	494	1095	0	544	1095	0	519	1093	0	432	3231	2	1043	74	2	8686	3426
26	1080	0	405	1095	0	505	1095	0	555	1095	0	530	1093	0	443	3246	1	1075	55	2	8705	3513
25	1084	0	416	1095	0	516	1095	0	566	1095	0	541	1094	0	454	3256	1	1108	39	1	8721	3600
24	1087	0	427	1095	0	527	1095	0	576	1095	0	552	1095	0	465	3263	1	1140	29	1	8731	3687
23	1089	0	438	1095	0	538	1095	0	587	1095	0	563	1095	0	476	3268	0	1173	22	0	8738	3775
22	1091	0	449	1095	0	549	1095	0	598	1095	0	574	1095	0	487	3273	0	1206	15	0	8745	3862
21	1092	0	460	1095	0	560	1095	0	609	1093	0	585	1095	0	498	3276	0	1236	11	0	8749	3950

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 565 x 100 = 56500 Deg Hrs)
 ** The Hours Below the Base Temp for any X-Hr period is calculated by subtracting the Hrs Above from X times 365

LAS VEGAS, NEVADA
WDAN 23169

WYEC Data

Latitude 36.06 N
Longitude 115.17 E

TABLE D:

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE		7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**		24 HOUR SUMMARY			
		Hrs Deg-Hrs		Hrs Deg-Hrs		Hrs Deg-Hrs		Hrs Deg-Hrs		Hrs Deg-Hrs		Hrs Deg-Hrs		HEATING		COOLING	
		(F) Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Below Hrs		Above Hrs	
		Base	Heat Cool	Base	Heat Cool	Base	Heat Cool	Base	Heat Cool	Base	Heat Cool	Base	Heat Cool	Base	100s*	Base	100s*
20	1093	0	470	1095	0	571	1095	0	620	1095	0	599	3260	0	1271	7	0
19	1093	0	481	1095	0	582	1095	0	631	1095	0	570	3284	0	1304	3	0
18	1093	0	492	1095	0	593	1095	0	642	1095	0	531	3285	0	1337	1	0
17	1094	0	503	1095	0	604	1095	0	653	1095	0	542	3285	0	1370	0	0
16	1095	0	514	1095	0	615	1095	0	664	1095	0	552	3285	0	1402	0	0

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg, 565 x 100 = 56500 Deg Hrs)

** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

LAS VEGAS, NEVADA
WBAN 23169

MYEC Data

Latitude 36.08 N
Longitude 115.17 E

TABLE E:

Annual COOLING Wet Bulb Degree Hour Summary

Wet Bulb Temperature (F) Base:	50	53	56	59	62	65	68	71	74	77	80
Annual Wet Bulb hours ABOVE base:	4126	3160	2292	1621	1071	678	323	76	0	0	0
Annual Wet Bulb Cooling deg-hrs:	35661	24274	15656	9530	5234	2452	787	118	0	0	0

TABLE F:

Annual Humidification/Dehumidification Requirements At various Indoor Conditions and Degree Day Bases (Pounds of Moisture)

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **											COOLING HUMIDITY RATIO HOURS **											Maintained Indoor Humidity Ratio*
	Heating Degree Base											Cooling Degree Base											
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80	
.001	0	0	0	0	0	0	0	0	0	0	0	22	22	22	21	20	18	16	15	13	11	9	.001
.002	0	0	1	1	1	1	1	1	2	2	2	15	15	15	15	14	13	12	11	10	9	7	.002
.003	0	1	1	2	2	3	3	4	4	4	5	10	10	10	10	10	9	8	8	7	6	5	.003
.004	0	1	2	3	4	5	6	7	8	8	9	7	7	7	7	7	6	6	6	5	5	4	.004
.005	1	1	3	4	6	8	9	10	12	13	14	5	5	5	5	5	4	4	4	4	4	3	.005
.006	1	2	3	6	8	10	12	14	16	18	20	3	3	3	3	3	3	3	3	3	3	2	.006
.007	1	2	4	7	10	13	16	18	21	23	26	2	2	2	2	2	2	2	2	2	2	2	.007
.008	1	2	5	8	12	16	19	23	26	29	32	2	2	2	2	2	2	2	2	2	1	1	.008
.009	1	3	6	9	14	18	23	27	31	35	38	1	1	1	1	1	1	1	1	1	1	1	.009
.010	1	3	6	11	16	21	26	31	36	40	44	1	1	1	1	1	1	1	1	1	1	0	.010
.011	1	4	7	12	18	24	30	35	41	46	50	0	0	0	0	0	0	0	0	0	0	0	.011
.012	2	4	8	13	20	27	34	40	46	51	57	0	0	0	0	0	0	0	0	0	0	0	.012
.013	2	4	8	15	22	30	37	44	50	57	63	0	0	0	0	0	0	0	0	0	0	0	.013
.014	2	5	9	16	24	32	41	48	55	63	69	0	0	0	0	0	0	0	0	0	0	0	.014
.015	2	5	10	17	25	35	44	52	60	68	75	0	0	0	0	0	0	0	0	0	0	0	.015
.016	2	5	11	19	27	38	48	57	65	74	82	0	0	0	0	0	0	0	0	0	0	0	.016
.017	2	6	11	20	29	41	51	61	70	79	88	0	0	0	0	0	0	0	0	0	0	0	.017
.018	2	6	12	21	31	44	55	65	75	85	94	0	0	0	0	0	0	0	0	0	0	0	.018

FOOTNOTES: * Indoor Humidity Level is measured in pounds of moisture per pound of dry air. Indoor set points of 72 deg(F)-30%RH and 76 deg(F)-50%RH yield humidity ratios of .005 and .010 respectively.

** Heating (Cooling) Humidity Ratio Hours are defined as the summation of the differences between the maintained indoor humidity ratio and the observed outdoor humidity ratio when both the hourly dry bulb temperature and the humidity ratio are above (below) the base levels.

TABLE G:

Percent Diffuse Solar Radiation* and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
% Diffuse on surface													
HORIZONTAL	30	23	36	28	28	21	27	27	21	20	24	29	26
VERTICAL													
NORTH	100	100	100	97	87	78	83	94	100	100	100	100	92
WEST	43	40	54	46	49	45	51	48	40	38	39	42	46
SOUTH	25	24	43	49	63	65	67	53	34	24	23	23	39
EAST	42	38	49	49	49	43	45	46	40	36	38	43	44
% Possible Sun	77	81	83	86	88	92	87	88	92	86	86	78	85

FOOTNOTES: * Corrected For Cloud Cover.

** Sources: NOAA, Comparative Climatic Data for the United States Through 1978.

LAS VEGAS, NEVADA
 WBAN 23169
 TABLE H:

WYEC Data
 Average Daily Solar Radiation on Vertical and Horizontal Surfaces
 (BTU/DAY.SQFT)

Latitude 36.08 N
 Longitude 115.17 E

Month	Under Clear Sky Assumption*										Corrected For Cloud Cover**										obs		
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ MNN	NE/ NN	NNE/ NNW	N	S-45 ***	horiz	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ MNN	NE/ NN	NNE/ NNW	N		S-45 ***	horiz
Jan	1876	1756	1432	1125	718	387	218	172	171	2006	1077	1273	1200	995	797	534	321	212	181	181	1338	774	988
Feb	1906	1781	1515	1275	896	543	321	219	214	2255	1416	1279	1213	1042	880	628	399	260	198	194	1488	961	1324
Mar	1687	1649	1538	1423	1138	815	541	349	281	2400	1873	1323	1314	1228	1136	930	706	527	407	363	1714	1399	1817
Apr	1284	1384	1435	1457	1313	1074	801	553	383	2370	2292	1211	1269	1292	1294	1170	981	773	590	467	2003	1962	2358
May	970	1156	1329	1463	1435	1285	1031	767	545	2266	2569	982	1113	1237	1333	1303	1182	964	780	609	1953	2211	2639
Jun	842	1044	1262	1443	1472	1366	1137	878	654	2198	2677	854	1032	1220	1375	1397	1298	1093	861	662	2038	2467	2770
Jul	899	1093	1293	1450	1459	1332	1096	836	611	2226	2632	896	1066	1228	1355	1357	1244	1045	829	628	1912	2240	2553
Aug	1144	1279	1379	1440	1351	1151	890	642	452	2306	2035	1073	1182	1252	1290	1208	1041	832	635	482	1928	1990	2341
Sep	1536	1542	1487	1420	1189	901	634	425	327	2381	2391	1423	1438	1390	1326	1116	859	625	445	359	2134	1840	2872
Oct	1840	1744	1535	1334	982	648	486	269	247	2310	1583	1536	1462	1282	1109	817	549	363	264	248	1883	1304	1523
Nov	1905	1775	1455	1166	753	427	239	188	187	2103	1193	1398	1314	1094	892	600	365	229	191	190	1526	912	1083
Dec	1875	1751	1409	1089	666	350	190	163	162	1958	1006	1233	1150	932	727	460	271	179	162	162	1273	783	878
Year	1478	1494	1422	1341	1115	858	627	456	354	2231	1898	1206	1229	1183	1127	961	770	595	463	380	1766	1566	1854

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
 ** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.
 *** South exposure tilt 45 degrees.

TABLE I:
 Average Daily Solar Heat Gain Through Single Pane Glass on Vertical
 and Horizontal Surfaces
 (BTU/DAY.SQFT)

Month	Under Clear Sky*									Corrected For Cloud Cover**									
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ MNN	NE/ NN	NNE/ NNW	N	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ MNN	NE/ NN	NNE/ NNW	N	
Jan	1619	1490	1200	940	577	294	162	140	140	1091	1014	831	664	431	249	164	148	148	
Feb	1607	1490	1266	1063	727	424	238	176	174	1077	1014	868	732	509	313	197	159	158	
Mar	1346	1354	1215	1188	937	653	415	266	228	1068	1080	1016	943	763	568	414	321	297	
Apr	939	1087	1174	1211	1088	876	633	421	302	912	1006	1055	1070	964	798	617	461	374	
May	661	852	1060	1204	1189	1056	831	597	404	708	841	990	1094	1076	971	796	616	467	
Jun	567	747	992	1182	1218	1127	919	687	479	593	750	961	1125	1153	1068	882	677	494	
Jul	608	792	1071	1190	1205	1097	883	652	450	638	792	976	1112	1120	1024	845	648	477	
Aug	813	982	1116	1194	1117	941	711	495	349	790	921	1016	1068	998	852	667	495	379	
Sep	1194	1257	1236	1191	990	734	496	325	267	1113	1174	1154	1109	926	700	493	345	293	
Oct	1532	1455	1280	1115	810	512	304	211	201	1282	1220	1069	925	672	434	276	210	202	
Nov	1648	1508	1228	975	616	325	181	154	154	1203	1113	921	747	491	282	177	157	156	
Dec	1625	1492	1184	907	536	260	146	133	133	1062	975	780	602	371	207	141	132	132	
Year	1177	1207	1169	1113	918	693	495	356	274	960	991	970	933	791	624	474	365	299	

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
 ** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.

LOS ANGELES, CALIFORNIA
WBAN 23174
TABLE A:

WYEC Data

Latitude 33.90 N
Longitude 118.40 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): First Quarter
(5 Degrees(F)/5Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence In time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	hours below			degree hours	hours above	degree hours	
Jan															
75 to 79	0	0	0	2	4	0	0	0	3	60.0	744	17270	0	0	
70 to 74	0	0	0	3	6	2	0	0	11	56.1	738	13562	6	12	
65 to 69	0	0	1	5	11	6	0	0	23	52.9	726	9903	18	73	
60 to 64	3	2	2	22	27	12	5	3	76	51.3	687	6355	57	243	
55 to 59	20	9	16	46	46	56	52	31	276	50.9	555	3190	189	800	
50 to 54	27	32	39	15	2	15	31	37	198	46.4	267	1245	477	2375	
45 to 49	33	30	24	0	0	2	5	20	114	41.4	101	331	643	5381	
40 to 44	10	17	10	0	0	0	0	2	39	37.0	28	55	716	8825	
35 to 39	0	3	1	0	0	0	0	0	4	32.5	2	1	742	12497	
Feb															
70 to 74	0	0	0	3	3	0	0	0	6	51.5	672	11485	0	0	
65 to 69	0	0	0	10	12	3	0	0	25	51.0	658	8151	14	26	
60 to 64	0	0	3	29	40	20	4	0	96	54.4	619	4938	53	173	
55 to 59	22	13	29	39	29	34	55	35	277	52.2	452	2187	220	782	
50 to 54	38	34	37	3	0	7	23	43	185	48.6	184	643	488	2598	
45 to 49	22	28	13	0	0	0	1	6	70	43.4	47	115	625	5430	
40 to 44	2	9	2	0	0	0	0	0	13	37.5	7	7	665	8682	
Mar															
70 to 74	0	0	0	4	2	0	3	1	10	53.2	742	12080	2	1	
65 to 69	2	0	1	13	17	5	0	1	39	54.3	724	8404	20	45	
60 to 64	1	0	8	50	58	35	6	0	158	54.2	649	4926	95	287	
55 to 59	15	2	37	20	13	43	68	56	254	51.7	457	2145	287	1227	
50 to 54	59	57	39	6	3	10	15	30	215	48.7	195	539	549	3340	
45 to 49	15	30	11	0	0	0	1	5	62	43.6	35	72	709	6593	
40 to 44	1	4	1	0	0	0	0	0	6	40.7	2	1	742	10242	

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

LOS ANGELES, CALIFORNIA

MYEC Data

Latitude 33.90 N

WBAN 23174

Longitude 118.42 E

TABLE A:

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Second Quarter
(5 Degrees(F)/5Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Apr														
90 to 94	0	0	0	1	0	0	0	0	1	59.0	720	24852	0	0
85 to 89	0	0	0	2	0	0	0	0	2	60.5	718	21257	2	5
80 to 84	0	0	2	3	2	0	0	0	7	59.3	713	12675	7	23
75 to 79	0	0	2	1	4	3	0	0	10	57.4	706	14124	14	72
70 to 74	0	0	1	9	11	4	1	0	26	59.6	695	10619	25	167
65 to 69	1	0	6	10	4	8	3	3	37	56.6	666	7221	54	369
60 to 64	7	7	10	33	56	26	9	7	155	54.9	597	4026	123	774
55 to 59	35	25	44	29	12	46	48	42	281	51.8	390	1517	330	1665
50 to 54	34	37	24	2	1	3	26	36	163	48.0	115	290	605	4238
45 to 49	13	21	1	0	0	0	1	2	38	43.9	11	13	709	7561
May														
75 to 79	0	0	0	7	8	1	0	0	16	64.8	742	12262	2	1
70 to 74	0	0	4	9	6	8	0	0	27	62.9	718	8610	26	69
65 to 69	0	0	13	31	35	11	9	1	100	59.1	685	5089	59	266
60 to 64	18	24	48	46	44	58	23	25	286	56.3	494	2041	250	940
55 to 59	60	51	28	0	0	15	61	65	280	53.7	172	321	572	2940
50 to 54	15	18	0	0	0	0	0	2	35	49.1	9	7	735	6346
Jun														
75 to 79	0	0	1	4	2	0	0	0	7	66.1	720	10291	0	0
70 to 74	0	0	1	19	25	6	1	0	52	63.9	712	6713	8	22
65 to 69	0	0	23	52	58	44	4	1	182	61.1	592	3571	128	280
60 to 64	56	58	62	15	5	40	73	63	372	58.6	382	900	338	1409
55 to 59	34	31	3	0	0	0	12	26	106	56.2	20	22	700	4131
50 to 54	0	1	0	0	0	0	0	0	1	52.0	0	0	720	7709

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

LOS ANGELES, CALIFORNIA
WBAN 23174
TABLE A:

WYEC Data

Latitude 33.90 N
Longitude 118.40 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Third Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence In time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Jul														
75 to 79	0	0	3	19	17	3	0	0	42	67.2	743	7481	1	1
70 to 74	0	0	30	69	73	52	0	0	224	64.7	598	3993	146	233
65 to 69	29	29	51	5	3	35	60	37	247	62.2	424	1493	320	1453
60 to 64	62	57	9	0	0	5	33	55	221	59.9	89	146	655	3626
55 to 59	2	7	0	0	0	0	0	1	10	55.2	1	1	743	7401
Aug														
80 to 84	0	0	0	0	2	0	0	0	2	69.5	744	10463	0	0
75 to 79	0	0	3	29	16	2	0	0	50	67.9	736	6756	8	13
70 to 74	0	0	28	54	73	53	7	3	218	64.9	623	3270	121	247
65 to 69	68	63	59	10	2	36	77	66	383	62.4	363	789	361	1486
60 to 64	25	30	3	0	0	0	9	24	91	60.4	18	15	726	4432
Sep														
95 to 99	0	0	0	2	3	0	0	0	5	82.6	718	21758	2	2
90 to 94	0	0	0	1	0	1	0	0	2	81.0	714	18177	6	21
85 to 89	0	0	1	3	0	2	0	0	6	82.3	710	14614	10	58
80 to 84	0	0	4	5	4	2	3	0	18	84.8	704	11073	16	119
75 to 79	0	0	5	12	14	3	2	1	39	85.8	678	7610	42	234
70 to 74	5	2	7	39	52	20	10	12	147	83.5	622	4342	98	586
65 to 69	27	28	43	28	17	50	32	16	241	81.9	438	1691	282	1335
60 to 64	57	43	27	0	0	10	42	61	240	79.5	132	210	568	3654
55 to 59	1	17	3	0	0	0	1	0	22	76.3	2	1	718	7045

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

LOS ANGELES, CALIFORNIA
 MBAN 23174
 TABLE A:

MYEC Data

Latitude 33.90 N
 Longitude 118.40 E

Monthly Dry Bulb Temperature Frequencies With Mean
 Coincident Wet Bulb Temperature (MCWB): Fourth Quarter
 (5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Oct														
100 to 104	0	0	0	4	4	0	0	0	8	68.4	741	28317	3	2
95 to 99	0	0	0	2	1	0	0	0	3	67.3	735	24628	9	33
90 to 94	0	0	3	0	1	2	0	0	6	65.7	731	20962	13	67
85 to 89	0	0	1	4	1	3	0	0	9	64.3	727	17320	17	165
80 to 84	3	3	3	1	2	1	6	4	23	63.2	710	13727	34	292
75 to 79	3	0	2	3	2	2	0	2	14	63.3	689	10234	59	519
70 to 74	1	4	2	22	22	4	3	3	61	60.2	667	6820	77	833
65 to 69	8	8	14	46	45	34	4	5	164	59.9	563	3698	181	1423
60 to 64	33	27	41	8	15	43	73	35	295	58.3	342	1362	482	2807
55 to 59	35	27	21	3	0	4	5	20	115	52.9	169	340	635	5905
50 to 54	6	23	6	0	0	0	2	4	41	47.8	21	43	723	8928
45 to 49	4	1	0	0	0	0	0	0	5	45.0	0	0	744	12605
Nov														
80 to 84	0	0	0	0	3	0	0	0	3	60.7	719	16607	1	1
75 to 79	0	0	0	5	5	1	0	0	11	58.0	713	13021	7	19
70 to 74	0	0	0	10	8	3	0	0	21	59.8	697	9491	23	85
65 to 69	0	0	3	33	47	15	5	1	104	57.0	660	6065	60	259
60 to 64	10	9	15	36	26	55	38	18	207	55.5	402	3110	228	904
55 to 59	40	19	35	5	1	16	42	53	211	52.0	300	1144	420	2538
50 to 54	37	45	30	1	0	0	5	18	136	48.2	91	207	629	5201
45 to 49	3	16	7	0	0	0	0	0	26	43.1	8	12	712	8606
40 to 44	0	1	0	0	0	0	0	0	1	42.0	0	0	720	12194
Dec														
75 to 79	0	0	0	1	1	0	0	0	2	54.0	744	13697	0	0
70 to 74	0	0	0	17	11	1	0	0	29	53.9	731	11993	13	16
65 to 69	0	0	0	16	17	4	1	0	38	53.2	702	8408	42	151
60 to 64	3	3	15	29	44	25	17	15	151	54.3	626	5036	118	499
55 to 59	30	14	21	22	18	43	45	30	223	50.2	447	2356	297	1539
50 to 54	42	35	31	7	2	19	30	41	207	47.2	211	712	533	3615
45 to 49	15	33	22	1	0	1	0	7	79	42.7	48	109	696	6732
40 to 44	3	8	4	0	0	0	0	0	15	35.2	4	3	740	10346

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

LOS ANGELES, CALIFORNIA
WBAN 23174
TABLE B:

WYEC Data

Latitude 33.90 N
Longitude 118.40 E

Annual Dry Bulb Temperature Frequencies
With Mean Coincident Wet Bulb Temperature
(5 Degrees(F)/3Hr Bins)

Dry Bulb range(F)	Number of Hours of Occurrence in time period										Mean Coincident Wet Bulb Temperature (F)									
	Hour of day										Hour of day									
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year		1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	
100 to 104	0	0	0	4	4	0	0	0	8		0.0	0.0	0.0	67.3	69.5	0.0	0.0	0.0	68.4	
95 to 99	0	0	0	4	4	0	0	0	8		0.0	0.0	0.0	64.0	64.0	0.0	0.0	0.0	64.4	
90 to 94	0	0	3	2	1	3	0	0	9		0.0	0.0	65.3	60.0	67.0	64.0	0.0	0.0	63.9	
85 to 89	0	0	2	9	1	5	0	0	17		0.0	0.0	62.0	64.1	61.0	62.4	0.0	0.0	63.2	
80 to 84	3	3	9	9	13	3	9	4	53		62.0	62.0	61.2	65.6	64.1	65.0	62.7	63.0	63.3	
75 to 79	3	0	16	83	70	17	2	3	194		62.3	0.0	63.3	66.1	65.5	64.1	61.5	62.7	65.3	
70 to 74	6	6	75	258	292	153	25	19	832		55.2	57.2	64.4	62.5	63.2	64.2	62.0	61.5	63.1	
65 to 69	135	178	214	259	268	251	197	131	1583		61.9	62.0	61.3	58.2	58.4	60.7	61.8	62.0	60.4	
60 to 64	275	260	243	268	315	329	332	326	2348		59.1	59.0	58.5	54.0	55.0	56.0	57.7	58.8	57.1	
55 to 59	294	215	237	164	119	277	390	359	2059		52.7	53.5	51.3	50.5	50.6	52.3	52.3	52.5	52.2	
50 to 54	258	282	202	34	8	54	132	211	1181		48.3	47.9	47.1	46.4	48.6	47.7	47.6	48.3	47.8	
45 to 49	105	159	78	1	0	3	8	40	394		42.5	43.2	42.3	42.0	0.0	42.3	43.5	42.3	42.8	
40 to 44	16	39	17	8	0	0	0	2	74		36.9	37.3	36.5	0.0	0.0	0.0	0.0	39.0	37.1	
35 to 39	0	3	1	0	0	0	0	0	4		0.0	32.7	32.0	0.0	0.0	0.0	0.0	0.0	32.5	

TABLE C: Annual and Monthly Temperature, Humidity and Windspeed Summary

Month	Dry Bulb Temperature (F)					Wet Bulb		Percent Relative Humidity					Average Humidity Ratio					Average wind	
	Daily					Ave		Average					(lb moisture/lb dry air)					MPH	
	Ave	Max	Min	Max	Min	Ave	Ave	4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day		
Jan	54.3	76	37	82	47	47.6	67	54	60	68	63	63	0.0050	0.0052	0.0063	0.0062	0.0056	7.3	
Feb	55.4	72	40	83	49	50.3	79	62	67	75	72	72	0.0061	0.0062	0.0072	0.0070	0.0066	9.6	
Mar	56.3	73	42	84	49	50.7	79	58	66	70	70	70	0.0061	0.0063	0.0074	0.0068	0.0066	8.7	
Apr	58.0	91	45	85	51	51.9	78	58	62	72	68	68	0.0067	0.0067	0.0072	0.0070	0.0069	10.5	
May	61.0	78	51	87	56	55.8	81	64	66	78	73	73	0.0080	0.0083	0.0085	0.0083	0.0084	9.5	
Jun	63.2	77	54	89	59	59.4	88	73	73	85	81	81	0.0097	0.0102	0.0102	0.0099	0.0100	7.5	
Jul	67.4	78	57	74	62	62.3	86	67	69	82	77	77	0.0107	0.0116	0.0114	0.0107	0.0110	8.0	
Aug	68.4	81	60	74	64	63.2	83	68	69	80	76	76	0.0110	0.0116	0.0115	0.0112	0.0113	9.5	
Sep	67.3	99	57	75	62	61.6	82	65	69	78	75	75	0.0099	0.0106	0.0109	0.0104	0.0105	7.1	
Oct	64.4	103	48	73	58	57.8	78	56	66	76	70	70	0.0083	0.0083	0.0094	0.0093	0.0088	6.8	
Nov	59.4	83	43	69	52	53.0	76	57	62	72	67	67	0.0067	0.0068	0.0078	0.0077	0.0072	6.4	
Dec	56.4	76	41	66	49	49.4	65	51	66	68	63	63	0.0052	0.0055	0.0072	0.0065	0.0060	8.0	
Year	61.0	103	37	68	55	55.3	78	61	66	75	71	71	0.0078	0.0081	0.0088	0.0084	0.0082	8.2	

LOS ANGELES, CALIFORNIA

MYEC Data

Latitude 33.90 N

WBAN 23174

Longitude 118.40 E

TABLE D:

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																24 HOUR SUMMARY			
	7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**			
	Hrs Deg-Hrs				Hrs Deg-Hrs				Hrs Deg-Hrs				Hrs Deg-Hrs				Hrs Deg-Hrs			
	Above (100s)*				Above (100s)*				Above (100s)*				Above (100s)*				Above (100s)*			
	Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool	
104	0	484	0	0	413	0	0	407	0	0	447	0	0	482	0	0	1534	0	0	0
103	0	473	0	0	402	0	1	396	0	0	436	0	0	471	0	0	1501	0	0	0
102	0	462	0	1	391	0	2	385	0	0	425	0	0	460	0	0	1468	0	0	0
101	0	451	0	2	380	0	2	375	0	0	414	0	0	449	0	0	1435	0	0	0
100	0	440	0	3	369	0	3	364	0	0	403	0	0	438	0	0	1402	0	0	0
99	0	429	0	4	358	0	4	353	0	0	392	0	0	427	0	0	1369	0	0	0
98	0	418	0	5	348	0	4	342	0	0	381	0	0	416	0	0	1337	0	0	0
97	0	407	0	6	337	0	3	331	0	0	370	0	0	405	0	0	1304	0	0	0
96	0	396	0	7	326	0	5	320	0	0	359	0	0	394	0	0	1271	0	0	0
95	0	386	0	8	315	0	7	309	0	0	348	0	0	383	0	0	1238	0	0	0
94	0	375	0	8	304	0	8	298	0	0	337	0	0	372	0	0	1205	0	0	0
93	1	364	0	8	293	1	8	287	0	0	326	0	0	361	0	0	1172	0	0	0
92	2	353	0	9	282	1	8	276	1	0	315	0	0	350	0	0	1139	0	0	0
91	2	342	0	9	271	1	9	266	1	1	304	0	0	339	0	0	1107	0	0	0
90	2	331	0	10	261	1	9	255	1	2	293	0	0	328	0	0	1074	0	0	0
89	3	320	0	10	250	1	9	244	1	3	283	0	0	317	0	0	1041	0	0	0
88	4	309	0	11	239	1	9	233	1	4	272	0	0	306	0	0	1008	0	0	0
87	4	298	0	14	228	1	9	222	1	4	261	0	0	296	0	0	975	0	0	0
86	5	287	0	16	217	1	10	211	1	5	250	0	0	285	0	0	942	0	0	0
85	5	276	0	18	206	1	10	200	1	7	239	0	0	274	0	0	910	0	0	0
84	6	265	0	19	196	2	10	190	1	8	228	0	0	263	0	1	877	0	0	0
83	9	255	0	19	185	2	12	179	1	8	217	0	0	252	0	3	844	0	0	0
82	10	244	1	21	174	2	16	168	2	8	206	0	1	241	0	5	811	0	0	0
81	11	233	1	23	163	2	18	157	2	9	195	1	3	230	0	7	778	0	0	0
80	12	222	1	26	153	2	21	146	2	10	185	1	7	219	0	9	745	0	0	0
79	14	211	1	31	142	3	24	136	2	12	174	1	9	208	0	10	713	0	0	0
78	15	200	1	37	132	3	30	125	2	14	163	1	9	197	0	11	680	0	0	0
77	17	190	1	47	121	4	42	114	3	18	152	1	9	186	0	12	647	1	0	0
76	21	179	1	64	111	4	56	104	3	23	141	1	9	175	0	13	615	1	0	0
75	27	168	2	93	100	5	78	94	4	27	131	2	10	165	1	15	582	1	0	0
74	34	157	2	129	91	6	116	84	5	33	120	2	13	154	1	16	549	1	0	0
73	43	147	2	176	81	7	168	74	6	46	109	2	15	143	1	19	516	1	0	0
72	54	136	3	231	72	9	230	65	8	75	99	3	17	132	1	23	484	1	0	0
71	69	126	3	285	64	12	293	57	11	111	89	4	22	121	1	28	451	2	0	0
70	91	116	4	340	56	15	354	49	14	156	79	5	30	111	1	39	419	2	0	0
69	119	106	5	389	49	19	407	42	18	200	70	7	40	100	2	56	386	2	0	0
68	151	96	7	435	42	23	460	35	22	247	62	9	53	90	2	85	354	3	0	0
67	190	87	8	488	35	28	516	29	27	298	53	12	79	79	3	134	322	4	0	0
66	232	78	10	545	30	33	568	24	33	353	46	15	128	69	4	225	291	5	0	0
65	284	70	13	600	24	38	624	19	38	407	38	19	196	60	5	364	261	9	0	0
64	344	62	16	657	20	45	685	14	45	460	32	23	270	51	8	525	233	13	0	0
63	395	55	20	714	15	52	751	11	52	519	26	28	331	43	11	693	206	19	0	0
62	445	48	24	772	12	59	824	7	60	587	20	34	392	36	14	863	181	27	0	0
61	493	42	29	826	9	67	888	5	69	657	16	40	456	29	19	1032	157	36	0	0
60	537	36	34	875	7	76	940	3	78	726	12	47	524	23	23	1208	136	48	0	0
59	584	31	39	917	5	84	985	2	87	797	8	54	594	18	29	1376	116	61	0	0

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 565 x 100 = 56500 Deg Hrs)

** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

LOS ANGELES, CALIFORNIA
 WBAN 23174
 TABLE D:

MYEC Data

Latitude 33.90 N
 Longitude 118.40 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																								24 HOUR SUMMARY			
	7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**				10PM-6AM**				HEATING		COOLING	
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg	Hrs	Deg				
	Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Below	Hrs	Above	Hrs				
	Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	100s*	Base	100s*				
56	630	26	45	959	3	94	1021	1	97	864	6	63	659	13	35	1523	90	75			3103	147	5657	410				
57	677	21	52	1000	2	104	1052	1	108	927	4	72	751	9	42	1682	61	91			2690	118	6070	468				
58	724	17	59	1031	1	114	1072	0	119	980	2	81	819	6	50	1859	66	109			2274	93	6486	531				
55	771	14	66	1051	1	124	1083	0	129	1019	1	91	913	4	59	2059	52	128			1863	72	6897	598				
54	821	11	74	1067	0	135	1089	0	140	1050	1	102	975	2	68	2260	41	150			1496	56	7264	669				
53	863	9	83	1078	0	146	1093	0	151	1068	0	112	1012	1	78	2427	32	173			1216	42	7544	743				
52	903	6	92	1084	0	156	1095	0	162	1079	0	123	1043	1	86	2580	24	198			975	31	7785	820				
51	943	5	101	1089	0	167	1095	0	173	1067	0	134	1055	0	99	2718	18	225			762	23	7998	899				
50	980	3	111	1093	0	178	1095	0	184	1091	0	145	1060	0	110	2851	13	253			569	16	8191	980				
49	1008	2	121	1094	0	189	1095	0	195	1092	0	156	1069	0	121	2962	9	282			418	11	8342	1063				
48	1031	2	131	1094	0	200	1095	0	206	1093	0	166	1092	0	132	3046	6	312			307	8	8453	1147				
47	1051	1	141	1094	0	211	1095	0	217	1094	0	177	1094	0	142	3118	4	343			212	5	8548	1232				
46	1063	1	152	1095	0	222	1095	0	228	1095	0	188	1095	0	153	3165	3	374			152	4	8608	1318				
45	1072	0	162	1095	0	233	1095	0	239	1095	0	199	1095	0	164	3204	2	406			103	2	8657	1404				
44	1079	0	173	1095	0	244	1095	0	250	1095	0	210	1095	0	175	3233	1	438			67	1	8693	1491				
43	1084	0	184	1095	0	255	1095	0	261	1095	0	221	1095	0	186	3246	1	471			49	1	8711	1578				
42	1089	0	195	1095	0	266	1095	0	272	1095	0	232	1095	0	197	3259	0	503			32	0	8728	1665				
41	1092	0	206	1095	0	277	1095	0	283	1095	0	243	1095	0	208	3270	0	536			18	0	8742	1752				
40	1093	0	217	1095	0	288	1095	0	293	1095	0	254	1095	0	219	3278	0	569			8	0	8752	1840				
39	1094	0	228	1095	0	299	1095	0	304	1095	0	265	1095	0	230	3282	0	602			3	0	8757	1928				
38	1095	0	239	1095	0	310	1095	0	315	1095	0	276	1095	0	241	3282	0	634			2	0	8758	2015				
37	1095	0	250	1095	0	321	1095	0	326	1095	0	287	1095	0	252	3284	0	667			1	0	8759	2103				
36	1095	0	261	1095	0	332	1095	0	337	1095	0	298	1095	0	263	3285	0	700			0	0	8760	2190				

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 565 x 100 = 56500 Deg Hrs)

** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

LOS ANGELES, CALIFORNIA

WYEC Data

Latitude 33.90 N

WSAN 23174

Longitude 118.40 E

TABLE E:

Annual COOLING Wet Bulb Degree Hour Summary

Wet Bulb Temperature (F) Base:	50	53	56	59	62	65	68	71	74	77	80
Annual Wet Bulb hours ABOVE base:	6987	5809	4508	3303	1776	567	79	3	0	0	0
Annual Wet Bulb Cooling deg-hrs:	61991	42115	25970	13682	5227	1253	154	3	0	0	0

TABLE F:

Annual Humidification/Dehumidification Requirements
At various Indoor Conditions and Degree Day Bases
(Pounds of Moisture)

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **											COOLING HUMIDITY RATIO HOURS **											Maintained Indoor Humidity Ratio*
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80	
.001	0	0	0	0	0	0	0	0	0	0	0	59	59	59	59	57	50	37	20	8	2	0	.001
.002	0	0	0	0	0	0	0	0	0	0	0	50	50	50	50	49	43	33	17	7	1	0	.002
.003	0	0	0	0	0	0	0	0	0	0	0	42	42	42	42	41	37	28	13	6	1	0	.003
.004	0	0	0	0	0	0	1	1	1	1	1	34	34	34	34	33	30	24	13	5	1	0	.004
.005	0	0	0	0	1	1	2	2	2	2	2	26	26	26	26	26	24	19	11	4	1	0	.005
.006	0	0	0	0	1	2	3	3	4	4	4	19	19	19	19	19	18	15	9	4	1	0	.006
.007	0	0	0	0	1	3	5	6	6	6	6	13	13	13	13	13	13	11	7	3	1	0	.007
.008	0	0	0	0	2	5	8	9	10	10	10	8	8	8	8	8	8	8	5	2	0	0	.008
.009	0	0	0	0	2	6	11	14	15	15	15	5	5	5	5	5	5	4	3	1	0	0	.009
.010	0	0	0	1	3	8	15	19	20	21	21	2	2	2	2	2	2	2	1	1	0	0	.010
.011	0	0	0	1	3	10	19	25	27	28	29	1	1	1	1	1	1	1	0	0	0	0	.011
.012	0	0	0	1	4	11	22	31	35	37	37	0	0	0	0	0	0	0	0	0	0	0	.012
.013	0	0	0	1	4	13	26	37	42	45	46	0	0	0	0	0	0	0	0	0	0	0	.013
.014	0	0	0	1	5	15	30	43	50	53	54	0	0	0	0	0	0	0	0	0	0	0	.014
.015	0	0	0	1	5	16	33	49	58	62	63	0	0	0	0	0	0	0	0	0	0	0	.015
.016	0	0	0	1	6	18	37	55	65	70	71	0	0	0	0	0	0	0	0	0	0	0	.016
.017	0	0	0	1	6	20	41	61	73	79	80	0	0	0	0	0	0	0	0	0	0	0	.017
.018	0	0	0	1	7	21	44	67	81	87	89	0	0	0	0	0	0	0	0	0	0	0	.018

FOOTNOTES: * Indoor Humidity Level is measured in pounds of moisture per pound of dry air. Indoor set points of 72 deg(F)-30%RH and 78 deg(F)-50%RH yield humidity ratios of .005 and .010 respectively.

** Heating (Cooling) Humidity Ratio Hours are defined as the summation of the differences between the maintained indoor humidity ratio and the observed outdoor humidity ratio when both the hourly dry bulb temperature and the humidity ratio are above (below) the base levels.

TABLE G:

Percent Diffuse Solar Radiation*
and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
\$ Diffuse on surface													
HORIZONTAL	30	20	37	33	42	41	31	33	32	31	27	29	34
VERTICAL													
NORTH	100	100	100	97	93	91	87	96	100	100	100	100	95
WEST	43	43	51	47	55	53	46	48	45	46	41	40	47
SOUTH	26	30	46	57	75	81	72	62	47	36	24	24	45
EAST	41	42	54	56	70	84	69	68	58	51	39	43	58
\$ Possible Sun	69	72	73	70	66	65	82	83	79	73	74	71	73

FOOTNOTES: * Corrected For Cloud Cover.

** Source: NOAA, Comparative Climatic Data for the United States Through 1978.

LOS ANGELES, CALIFORNIA
WBAN 23174
TABLE H:

WYEC Data

Latitude 33.90 N
Longitude 118.40 E

Average Daily Solar Radiation on Vertical and Horizontal Surfaces (BTU/DAY.SQFT)

Month	Under Clear Sky Assumption*											Corrected For Cloud Cover**											obs
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S-45 horiz ***		S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S-45 horiz ***		
Jan	2076	1934	1583	1253	815	441	246	187	186	2278	1262	1267	1197	1004	819	565	344	226	190	189	1358	805	954
Feb	2006	1887	1624	1380	990	616	359	238	227	2445	1585	1300	1229	1078	934	699	474	318	246	239	1535	1057	1209
Mar	1676	1644	1550	1450	1176	854	572	365	290	2472	1984	1257	1221	1145	1065	888	695	534	419	375	1667	1401	1670
Apr	1205	1321	1392	1434	1314	1086	814	565	387	2327	2314	1035	1060	1078	1084	995	849	689	549	455	1723	1747	1971
May	874	1063	1244	1381	1380	1243	1015	763	543	2137	2487	836	871	924	963	942	862	755	644	568	1516	1734	2096
Jun	750	949	1169	1347	1400	1307	1109	866	658	2027	2533	728	735	768	797	787	734	668	597	593	1427	1716	2111
Jul	798	987	1182	1333	1364	1254	1053	814	610	2030	2462	792	823	883	927	919	845	745	637	589	1682	1996	2363
Aug	1034	1175	1286	1360	1296	1114	876	640	452	2160	2306	940	923	930	929	867	756	641	538	479	1677	1788	2056
Sep	1439	1463	1434	1395	1191	920	656	443	334	2305	2028	1146	1082	1020	969	834	678	538	432	377	1685	1524	1664
Oct	1817	1720	1528	1345	1005	668	423	281	256	2347	1662	1258	1170	1031	903	688	492	363	292	280	1553	1162	1309
Nov	1985	1853	1530	1243	821	471	268	201	200	2249	1323	1262	1186	993	818	561	347	222	182	181	1396	822	1028
Dec	2020	1891	1533	1195	752	396	217	175	175	2165	1155	1315	1220	992	782	519	308	206	180	180	1382	781	870
Year	1470	1488	1420	1343	1126	865	635	463	361	2244	1926	1094	1059	987	916	772	616	493	410	376	1550	1380	1611

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.
*** South exposure tilt 45 degrees.

TABLE I: Average Daily Solar Heat Gain Through Single Pane Glass on Vertical and Horizontal Surfaces (BTU/DAY.SQFT)

Month	Under Clear Sky*									Corrected For Cloud Cover**								
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N
Jan	1785	1634	1325	1048	656	336	181	152	152	1080	1007	839	685	458	267	173	155	154
Feb	1685	1575	1356	1156	808	479	266	188	185	1083	1022	897	779	571	372	245	197	194
Mar	1321	1345	1285	1210	970	685	437	277	236	1003	997	942	881	730	562	421	331	306
Apr	860	1025	1134	1188	1085	886	645	430	303	770	834	875	890	815	690	551	432	363
May	588	775	986	1136	1139	1024	815	592	402	618	671	737	784	767	703	609	515	445
Jun	510	677	915	1105	1157	1084	898	682	485	539	569	608	640	633	594	537	482	467
Jul	542	712	932	1097	1127	1037	850	638	452	568	620	693	749	743	687	599	509	456
Aug	723	893	1037	1123	1069	913	699	493	348	689	713	740	752	700	610	512	429	380
Sep	1099	1179	1184	1160	985	745	512	337	271	890	865	832	795	682	548	429	342	306
Oct	1500	1429	1272	1122	826	532	319	220	209	1038	966	851	745	561	394	284	234	228
Nov	1700	1561	1283	1036	666	360	197	164	163	1076	997	831	682	457	269	169	148	148
Dec	1743	1603	1282	996	602	297	161	143	143	1126	1026	824	649	416	238	159	147	147
Year	1169	1199	1165	1114	924	699	500	361	280	872	856	805	752	628	495	391	328	300

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.

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MADISON, WISCONSIN
WBAH 14837
TABLE A:

WYEC Data

Latitude 43.10 N
Longitude 89.30 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): First Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Jan														
50 to 54	0	0	0	0	4	0	0	0	4	43.5	743	26287	1	1
45 to 49	0	0	0	3	6	1	0	0	10	39.9	737	22586	7	20
40 to 44	0	1	0	5	7	6	0	0	19	36.5	724	18929	20	83
35 to 39	3	2	4	8	6	6	3	1	33	33.1	698	15359	46	233
30 to 34	4	3	7	8	12	12	8	10	64	30.0	663	11953	81	547
25 to 29	15	14	10	14	13	19	20	17	122	25.2	575	8856	169	1170
20 to 24	14	13	14	10	12	6	9	12	90	20.3	452	6331	292	2365
15 to 19	12	6	4	11	10	12	12	9	76	14.6	376	4272	368	4026
10 to 14	6	12	14	16	12	14	15	8	97	10.2	289	2599	455	6073
5 to 9	9	11	14	5	8	9	10	12	78	5.4	198	1392	546	8586
0 to 4	17	10	7	11	3	7	11	15	81	1.1	116	607	628	11521
-5 to -1	5	11	10	2	0	1	3	4	36	-4.2	57	213	687	14847
-10 to -6	7	10	9	0	0	0	2	5	33	-8.4	14	20	730	18374
-15 to -11	1	0	0	0	0	0	0	0	1	-12.0	0	0	744	22074
Feb														
40 to 44	0	0	0	1	3	1	0	0	5	37.4	669	14312	3	2
35 to 39	0	0	0	2	2	3	0	0	7	33.3	665	10977	7	27
30 to 34	11	10	10	14	16	12	15	12	100	29.7	639	7682	33	92
25 to 29	12	13	10	16	27	25	10	10	123	24.8	519	4812	153	582
20 to 24	21	24	24	27	30	33	24	24	207	20.4	354	2576	318	1706
15 to 19	17	7	11	16	6	8	17	16	98	16.0	177	1295	495	3785
10 to 14	9	13	11	7	0	2	13	12	67	11.8	89	603	583	6453
5 to 9	7	3	9	1	0	0	5	5	30	6.7	51	259	621	9469
0 to 4	3	11	6	0	0	0	0	4	24	2.1	22	81	650	12651
-5 to -1	3	0	3	0	0	0	0	1	7	-2.7	6	19	666	15949
-10 to -6	1	3	0	0	0	0	0	0	4	-6.5	0	0	672	19290
Mar														
70 to 74	0	0	0	0	0	1	0	0	1	58.0	744	31144	0	0
65 to 69	0	0	0	0	2	1	0	0	3	55.7	740	27428	4	4
60 to 64	0	0	0	2	1	1	0	0	4	52.5	737	23732	7	28
55 to 59	0	0	0	1	3	2	1	0	7	47.9	731	20053	13	69
50 to 54	0	0	1	2	2	3	2	1	11	44.5	727	16408	17	144
45 to 49	3	2	2	3	4	2	3	3	22	42.1	713	12809	31	265
40 to 44	2	1	3	8	9	10	1	2	36	37.6	690	9311	54	487
35 to 39	4	6	11	26	43	35	18	7	150	33.9	629	5984	115	880
30 to 34	30	27	32	27	9	19	42	39	225	30.8	395	3354	349	1970
25 to 29	23	20	20	9	10	6	10	20	118	25.8	228	1840	516	4176
20 to 24	17	22	11	6	9	9	10	13	97	21.2	107	983	637	7039
15 to 19	5	5	5	6	1	4	0	1	27	15.6	60	598	684	10374
10 to 14	0	4	2	2	0	0	1	2	11	11.5	36	362	708	13858
5 to 9	5	0	1	1	0	0	5	3	15	6.9	26	201	718	17417
0 to 4	1	0	2	0	0	0	0	1	4	1.8	16	106	728	21042
-5 to -1	0	3	1	0	0	0	0	1	5	-2.8	11	40	733	24696
-10 to -6	3	3	2	0	0	0	0	0	8	-7.4	3	3	741	28379

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

MADISON, WISCONSIN
WBAN 14837
TABLE A:

WYEC Data

Latitude 43.10 N
Longitude 89.30 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Second Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence In time period								Month Total	MCWD Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Apr														
70 to 74	0	0	0	1	7	2	0	0	10	55.1	719	19635	1	1
65 to 69	0	0	1	7	4	7	0	0	19	53.8	703	16076	17	42
60 to 64	0	0	2	8	11	9	7	0	37	48.3	683	12608	37	174
55 to 59	3	3	5	12	23	21	6	9	82	46.1	630	9313	90	479
50 to 54	7	2	12	11	6	12	15	11	76	44.1	546	6394	174	1160
45 to 49	15	14	12	19	15	13	21	13	122	40.9	449	3669	271	2235
40 to 44	18	12	18	17	15	16	18	18	152	38.4	312	1927	408	3893
35 to 39	20	27	28	15	9	10	17	17	143	35.2	175	683	544	6249
30 to 34	20	20	12	0	0	0	6	22	80	30.8	52	138	668	9304
25 to 29	7	12	0	0	0	0	0	0	19	26.9	8	7	712	12773
May														
80 to 84	0	0	0	4	10	6	0	0	20	67.9	738	19460	6	5
75 to 79	0	0	1	4	6	5	2	0	18	64.3	720	15816	24	81
70 to 74	2	1	6	11	13	15	6	3	57	61.3	688	12381	56	266
65 to 69	4	4	8	21	22	18	8	4	89	57.8	617	9905	127	710
60 to 64	3	4	13	18	15	20	19	7	101	54.6	529	6153	215	1578
55 to 59	10	6	23	18	13	15	17	17	117	52.4	414	3791	339	2936
50 to 54	23	27	17	9	6	6	21	24	133	47.6	288	2810	456	4875
45 to 49	19	18	17	6	8	7	15	16	106	43.5	163	887	581	7472
40 to 44	19	17	5	2	0	3	4	18	68	39.9	64	321	680	10626
35 to 39	7	10	1	0	0	0	1	1	20	36.3	21	118	723	14143
30 to 34	4	2	0	0	0	0	0	3	9	30.4	13	39	731	17784
25 to 29	2	4	0	0	0	0	0	0	6	27.2	3	2	741	21467
Jun														
90 to 94	0	0	0	0	1	1	0	0	2	73.0	720	18855	0	0
85 to 89	0	0	0	4	9	9	0	0	22	70.7	713	15265	7	10
80 to 84	0	0	3	14	18	16	3	0	54	68.5	682	11764	38	109
75 to 79	0	0	8	20	21	24	9	0	82	66.3	609	8523	111	468
70 to 74	4	2	18	23	22	21	25	10	125	63.9	512	5684	208	1229
65 to 69	14	17	22	11	10	9	22	23	128	62.2	395	3425	325	2570
60 to 64	22	17	23	11	3	4	12	19	111	57.9	261	1817	459	4562
55 to 59	20	19	8	4	6	6	16	20	99	54.0	148	783	572	7128
50 to 54	14	20	6	3	0	0	2	13	58	49.5	64	264	656	10209
45 to 49	14	12	2	0	0	0	1	5	34	45.3	25	49	695	13594
40 to 44	2	3	0	0	0	0	0	0	5	42.0	0	0	720	17145

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

MADISON, WISCONSIN
WBAN 14837
TABLE A:

MYEC Data

Latitude 43.10 N
Longitude 89.30 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Third Quarter
(5 Degrees(F)/5Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day 10-12 13-15		16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Jul														
85 to 89	0	0	0	1	12	8	0	0	21	74.0	743	12708	1	1
80 to 84	0	0	1	23	41	39	4	0	110	69.8	688	9083	56	96
75 to 79	0	0	12	31	25	27	23	3	121	67.8	567	5948	177	681
70 to 74	16	7	27	28	12	13	39	20	162	66.8	438	3420	306	1873
65 to 69	18	26	36	5	1	2	15	38	141	64.3	270	1659	474	3832
60 to 64	32	32	13	3	2	4	10	20	116	60.1	139	645	605	6538
55 to 59	17	17	4	0	0	0	2	8	48	55.7	51	206	693	9819
50 to 54	7	8	0	0	0	0	0	4	19	50.6	17	54	727	13387
45 to 49	3	3	0	0	0	0	0	0	6	46.7	5	5	739	17058
Aug														
90 to 94	0	0	0	0	1	0	0	0	1	80.0	744	17238	0	0
85 to 89	0	0	0	2	5	4	0	0	11	78.7	739	13524	5	6
80 to 84	0	0	1	12	34	25	4	0	76	73.1	716	9864	28	66
75 to 79	1	0	3	37	26	37	16	7	129	69.9	610	6543	134	465
70 to 74	14	13	28	27	20	18	25	15	160	67.7	464	3845	280	1487
65 to 69	24	14	35	11	4	6	31	33	158	64.2	309	1915	435	3277
60 to 64	27	33	16	1	3	3	10	24	117	60.7	156	770	588	5852
55 to 59	17	21	7	3	0	0	6	6	60	56.3	54	268	690	9070
50 to 54	6	5	1	0	0	0	1	7	20	51.5	22	89	722	12611
45 to 49	3	5	0	0	0	0	0	1	9	47.2	7	20	737	16262
40 to 44	1	2	0	0	0	0	0	0	3	43.3	0	0	744	19962
Sep														
85 to 89	0	0	0	0	3	0	0	0	3	73.0	720	20984	0	0
80 to 84	0	0	0	3	7	5	0	0	15	69.9	713	16496	7	12
75 to 79	0	0	1	14	17	13	0	0	45	66.9	687	12983	33	99
70 to 74	3	0	4	10	16	20	7	4	72	65.2	629	9673	91	389
65 to 69	12	12	16	17	17	17	22	16	129	62.3	537	6728	183	1044
60 to 64	13	13	18	15	16	14	12	12	113	57.7	408	4376	312	2292
55 to 59	12	9	15	15	11	15	18	14	109	53.6	298	2610	422	4126
50 to 54	16	20	20	8	3	3	15	15	100	50.3	193	1377	527	6493
45 to 49	8	6	10	0	0	3	11	10	48	46.0	117	646	603	9362
40 to 44	15	13	5	0	0	0	5	17	57	41.8	60	202	660	12518
35 to 39	11	10	1	0	0	0	0	2	24	37.8	15	31	705	15947
30 to 34	0	5	0	0	0	0	0	0	5	33.2	1	1	719	19517

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

MADISON, WISCONSIN
WBAN 14837
TABLE A:

WYEC Data

Latitude 43.10 N
Longitude 89.30 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Fourth Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence In time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day 10-12 13-15		16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Oct														
75 to 79	0	0	0	2	14	3	0	0	19	63.8	740	20280	4	2
70 to 74	0	0	0	10	6	6	0	1	23	62.2	717	16641	27	83
65 to 69	0	0	2	11	14	14	2	3	46	57.6	690	13119	54	281
60 to 64	8	7	13	14	17	17	11	2	89	55.9	614	9819	130	701
55 to 59	9	4	11	14	13	10	15	9	85	51.7	538	6952	206	1554
50 to 54	15	15	14	15	8	17	16	25	125	48.9	438	4492	306	2814
45 to 49	18	16	16	11	12	12	25	15	125	43.2	321	2625	423	4667
40 to 44	14	15	15	6	3	6	6	19	84	39.6	190	1362	554	7124
35 to 39	13	21	11	10	6	5	9	9	84	33.6	118	597	626	10079
30 to 34	7	8	7	0	0	3	4	3	32	29.2	47	216	697	13418
25 to 29	6	3	2	0	0	0	5	7	23	23.9	15	51	729	16973
20 to 24	3	4	2	0	0	0	0	0	9	19.3	5	7	739	20649
Nov														
55 to 59	0	0	0	1	9	1	0	0	11	48.5	715	16514	5	5
50 to 54	0	0	0	4	5	3	0	0	12	44.4	706	12964	14	55
45 to 49	0	0	0	10	22	10	4	1	47	40.6	685	9480	35	171
40 to 44	5	5	7	29	15	17	5	7	90	38.8	616	6203	104	494
35 to 39	10	4	15	24	27	32	27	16	155	34.6	501	3381	219	1272
30 to 34	38	43	43	20	12	23	38	33	250	30.9	274	1321	446	2812
25 to 29	16	18	14	1	0	4	14	22	89	26.0	109	423	611	5514
20 to 24	21	16	9	1	0	0	1	10	58	21.6	27	68	693	8759
15 to 19	0	4	2	0	0	0	1	1	8	18.1	1	1	719	12292
Dec														
60 to 64	0	0	0	0	2	0	0	0	2	54.0	744	29878	0	0
55 to 59	0	0	0	2	5	1	0	0	8	51.8	739	26168	5	10
50 to 54	0	0	0	3	2	3	3	0	11	48.8	730	22491	14	53
45 to 49	2	0	2	5	3	2	1	4	19	44.6	716	18875	28	157
40 to 44	4	4	4	5	6	6	3	2	34	40.7	685	15354	59	356
35 to 39	3	5	3	5	3	8	6	9	42	35.7	660	11987	84	709
30 to 34	15	13	11	8	17	13	14	9	100	30.5	601	8823	143	1265
25 to 29	20	17	25	21	19	16	20	19	157	25.9	460	6146	284	2308
20 to 24	13	16	10	12	11	14	13	15	104	21.1	312	4227	432	4109
15 to 19	6	8	8	13	8	7	3	5	58	15.9	248	2855	496	6457
10 to 14	4	6	8	5	6	8	13	10	60	11.3	184	1772	560	9094
5 to 9	12	9	9	5	5	5	2	4	51	6.4	130	997	614	12039
0 to 4	6	3	1	2	4	5	9	11	41	1.3	80	487	664	15249
-5 to -1	4	6	7	7	2	4	3	2	35	-3.5	39	182	705	18664
-10 to -6	4	4	3	0	0	1	3	3	18	-9.3	19	53	725	22255
-15 to -11	0	2	0	0	0	0	0	0	2	-12.5	3	14	741	25936
-20 to -16	0	0	1	0	0	0	0	0	1	-17.0	1	4	743	29646
-25 to -21	0	0	1	0	0	0	0	0	1	-21.0	0	0	744	33362

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

MADISON, WISCONSIN
WBAN 14837
TABLE B:

WYEC Data

Latitude 43.10 N
Longitude 89.30 E

Annual Dry Bulb Temperature Frequencies
With Mean Coincident Wet Bulb Temperature
(5 Degrees(F)/5Hr Bins)

Dry Bulb range(F)	Number of Hours of Occurrence in time period									Mean Coincident Wet Bulb Temperature (F)								
	Hour of day									Hour of day								
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year
90 to 94	0	0	0	0	2	1	0	0	3	0.0	0.0	0.0	0.0	77.5	75.0	0.0	0.0	76.7
85 to 89	0	0	0	7	29	21	0	0	57	0.0	0.0	0.0	75.1	73.5	73.5	0.0	0.0	73.6
80 to 84	0	0	5	58	110	91	11	0	275	0.0	0.0	73.2	70.7	69.8	70.3	73.3	0.0	70.3
75 to 79	1	0	27	108	109	109	50	10	414	70.0	0.0	69.1	67.8	66.3	67.1	70.0	73.7	67.7
70 to 74	39	23	83	118	96	96	102	53	610	69.1	69.3	67.1	64.5	63.0	62.9	66.0	67.8	65.4
65 to 69	72	73	120	83	74	74	100	117	713	64.1	64.9	63.2	59.6	58.2	58.1	62.5	63.6	62.0
60 to 64	105	106	100	72	70	72	81	84	690	60.3	60.5	58.0	53.8	52.6	53.9	57.0	59.7	57.4
55 to 59	88	79	73	70	83	69	81	83	626	54.8	55.6	53.2	50.4	49.1	49.2	52.9	53.4	52.4
50 to 54	88	97	71	55	36	47	75	100	569	49.3	49.7	48.1	46.8	46.2	46.3	47.4	48.8	48.2
45 to 49	85	76	61	57	70	50	81	68	548	44.1	44.3	43.7	41.4	40.7	42.1	42.7	43.9	43.0
40 to 44	80	75	57	73	58	65	42	83	533	40.2	40.7	39.5	38.4	37.3	38.0	39.6	40.1	39.3
35 to 39	71	85	74	90	96	99	81	62	658	35.7	35.9	35.1	33.8	33.9	34.0	34.3	34.6	34.6
30 to 34	129	131	122	77	66	82	127	131	865	30.8	30.7	30.9	30.3	29.8	30.0	30.7	30.7	30.6
25 to 29	101	101	81	61	69	70	79	95	657	25.9	26.1	25.9	25.1	24.8	24.9	25.4	25.7	25.6
20 to 24	89	95	70	56	62	62	57	74	565	21.2	21.2	21.2	20.8	19.9	19.8	20.8	20.9	20.8
15 to 19	40	30	30	46	25	31	33	32	267	15.3	16.0	16.4	15.7	15.0	15.2	15.8	15.4	15.6
10 to 14	19	35	35	30	18	24	42	32	235	12.1	11.6	10.9	10.7	10.4	11.3	10.5	10.7	11.0
5 to 9	33	23	33	12	13	14	22	24	174	6.0	5.7	6.7	6.5	5.1	5.5	6.5	6.0	6.1
0 to 4	27	24	16	13	7	12	20	31	150	1.1	2.3	1.8	0.5	0.7	1.2	0.9	1.5	1.4
-5 to -1	12	20	21	9	2	5	8	8	83	-3.4	-3.6	-4.3	-3.2	-2.0	-3.6	-3.8	-3.7	-3.7
-10 to -6	15	20	14	0	0	1	5	8	63	-8.3	-8.2	-8.8	0.0	0.0	-7.0	-8.0	-8.7	-8.4
-15 to -11	1	2	0	0	0	0	0	0	3	-12.0	-12.5	0.0	0.0	0.0	0.0	0.0	0.0	-12.3
-20 to -16	0	0	1	0	0	0	0	0	1	0.0	0.0	-17.0	0.0	0.0	0.0	0.0	0.0	-17.0
-25 to -21	0	0	1	0	0	0	0	0	1	0.0	0.0	-21.0	0.0	0.0	0.0	0.0	0.0	-21.0

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Month	Dry Bulb Temperature (F)					Wet Bulb Ave	Percent Relative Humidity					Average Humidity Ratio (lb moisture/lb dry air)					Average wind MPH
	Ave	Max	Min	Daily Ave			Ave	Average				4AM	10AM	4PM	10PM	Day	
				Max	Min			4AM	10AM	4PM	10PM						
Jan	17.2	53	-11	27	8	15.3	75	74	61	75	72	0.0013	0.0017	0.0018	0.0015	0.0015	9.4
Feb	21.2	43	-7	27	14	19.7	89	81	74	79	81	0.0018	0.0018	0.0020	0.0018	0.0018	11.2
Mar	30.6	70	-9	37	24	28.5	89	79	71	83	81	0.0026	0.0029	0.0032	0.0030	0.0029	9.8
Apr	45.2	73	26	55	36	39.7	82	61	50	64	66	0.0040	0.0042	0.0039	0.0041	0.0040	11.3
May	56.4	84	27	67	44	50.6	85	63	56	69	70	0.0062	0.0075	0.0075	0.0070	0.0071	9.6
Jun	68.3	90	43	77	53	60.0	86	66	56	71	72	0.0087	0.0109	0.0110	0.0101	0.0102	8.6
Jul	70.4	88	46	80	60	64.8	96	70	58	76	77	0.0116	0.0129	0.0128	0.0129	0.0125	7.7
Aug	69.3	90	43	79	59	65.3	94	77	67	85	83	0.0116	0.0138	0.0142	0.0137	0.0131	8.3
Sep	59.6	85	32	72	48	55.6	93	74	63	85	81	0.0081	0.0099	0.0100	0.0091	0.0092	7.4
Oct	50.2	78	20	61	39	45.7	83	70	58	76	73	0.0035	0.0067	0.0066	0.0060	0.0061	8.1
Nov	34.6	59	17	44	26	32.3	89	79	71	84	82	0.0029	0.0036	0.0037	0.0034	0.0033	7.7
Dec	22.3	61	-21	29	15	21.2	86	87	81	83	85	0.0021	0.0025	0.0026	0.0022	0.0023	9.6
Year	45.4	90	-21	55	36	41.7	87	73	64	78	77	0.0056	0.0066	0.0066	0.0063	0.0062	9.0

MADISON, WISCONSIN
WBAW 14637
TABLE D:

WYEC Data

Latitude 43.10 N
Longitude 89.30 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																24 HOUR SUMMARY														
	7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**				10PM-6AM**				HEATING		COOLING				
	Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg		Hrs		Deg				
	Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Base		100s*		Base		100s*				
	Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool
91	0	524	0	0	450	0	0	413	0	0	437	0	0	501	0	0	1668	0	8760	3993	0	0									
90	0	513	0	0	439	0	1	402	0	0	426	0	0	490	0	0	1635	0	8758	3906	2	0									
89	0	503	0	0	426	0	3	391	0	1	415	0	0	479	0	0	1602	0	8755	3818	5	0									
88	0	492	0	0	417	0	7	381	0	2	404	0	0	468	0	0	1569	0	8750	3730	10	0									
87	0	481	0	1	406	0	11	370	0	4	393	0	0	457	0	0	1537	0	8743	3643	17	0									
86	0	470	0	3	395	0	16	359	0	8	382	0	0	446	0	0	1504	0	8732	3556	28	0									
85	0	459	0	5	384	0	25	348	0	16	371	0	0	435	0	0	1471	0	8712	3468	48	1									
84	0	448	0	9	373	0	35	338	1	26	360	0	0	424	0	0	1438	0	8689	3381	71	1									
83	0	437	0	15	363	0	55	327	1	38	350	1	0	413	0	0	1405	0	8651	3295	109	2									
82	0	426	0	25	352	0	85	317	2	55	339	1	1	402	0	0	1372	0	8594	3208	166	4									
81	1	415	0	37	341	1	107	307	3	77	329	2	5	391	0	0	1339	0	8531	3123	229	6									
80	3	404	0	54	331	1	130	297	4	101	319	3	9	381	0	0	1307	0	8462	3036	298	8									
79	5	393	0	74	320	2	151	287	5	123	309	4	16	370	0	0	1274	0	8389	2953	371	11									
78	7	382	0	96	310	3	174	278	7	142	299	5	23	359	0	1	1241	0	8315	2870	445	16									
77	13	371	0	115	300	4	196	269	9	163	290	7	29	348	1	1	1208	0	8242	2787	518	20									
76	18	361	0	133	291	5	217	260	11	186	281	8	40	338	1	4	1175	0	8161	2705	599	26									
75	26	350	1	159	281	6	239	251	13	210	272	10	54	327	1	8	1142	0	8062	2624	698	32									
74	39	339	1	183	272	8	261	243	16	233	263	13	68	317	2	17	1110	0	7956	2544	804	40									
73	54	329	1	208	263	10	281	235	19	254	255	15	89	307	3	30	1077	0	7846	2465	914	48									
72	72	318	2	231	254	12	297	227	21	272	246	18	105	297	4	46	1045	1	7735	2387	1025	58									
71	91	308	3	251	246	15	314	219	24	289	238	21	124	287	5	74	1012	1	7616	2310	1144	69									
70	107	298	4	277	237	17	334	211	28	307	230	24	147	277	6	109	980	2	7477	2235	1283	81									
69	126	289	5	298	229	20	354	204	31	326	222	27	175	268	8	145	949	4	7335	2161	1425	95									
68	151	279	6	311	221	23	370	196	35	343	215	30	197	259	10	181	918	5	7205	2088	1555	109									
67	179	270	8	326	214	26	386	189	39	359	207	34	218	250	12	225	887	7	7065	2016	1695	126									
66	205	261	10	344	206	30	401	182	42	373	200	37	238	241	14	282	856	10	6915	1947	1845	143									
65	226	252	12	364	199	33	414	175	47	386	193	41	255	233	17	350	827	13	6764	1878	1996	163									
64	245	243	14	380	191	37	428	169	51	398	186	45	272	224	19	419	798	17	6615	1811	2145	183									
63	265	235	17	394	184	41	443	162	55	413	179	49	288	216	22	481	769	21	6475	1746	2285	205									
62	281	227	20	411	177	45	457	155	60	429	172	53	303	208	25	541	742	26	6336	1682	2424	229									
61	298	219	23	426	171	49	469	149	64	444	166	58	319	200	28	601	715	32	6202	1619	2558	254									
60	321	211	26	438	164	54	482	143	69	457	159	62	335	193	31	656	688	38	6069	1558	2691	280									
59	342	203	29	452	158	58	503	137	74	469	153	67	351	185	35	715	662	45	5926	1498	2834	308									
58	356	196	33	466	151	63	526	131	79	484	147	72	365	178	38	767	637	53	5794	1439	2966	337									
57	370	188	36	481	145	67	542	126	84	502	141	76	381	171	42	809	612	61	5673	1382	3087	367									
56	383	181	40	496	139	72	552	120	90	517	135	82	399	164	46	855	587	69	5558	1326	3204	399									
55	399	174	44	510	133	77	565	115	96	528	129	87	417	157	50	905	563	78	5435	1271	3325	431									
54	414	167	48	523	127	82	578	109	101	536	124	92	430	150	54	959	540	87	5321	1217	3439	465									
53	426	160	52	536	122	88	584	104	107	546	118	98	444	143	59	1014	517	97	5208	1164	3552	500									
52	443	154	56	549	116	93	592	99	113	557	113	103	459	137	63	1073	494	107	5086	1113	3674	536									
51	459	147	61	560	111	99	600	94	119	566	107	109	470	131	68	1128	472	118	4976	1065	3784	573									
50	472	141	66	567	105	104	607	89	125	573	102	114	488	125	73	1186	451	130	4864	1013	3896	612									
49	484	135	70	574	100	110	616	84	131	584	97	120	507	119	78	1237	430	142	4756	965	4004	651									
48	496	129	75	582	95	116	630	80	137	595	92	126	522	113	83	1274	410	155	4659	918	4101	692									
47	508	123	80	593	90	122	644	75	144	604	87	132	536	107	88	1315	390	167	4558	872	4202	733									
46	520	117	85	606	85	128	657	71	150	613	82	138	551	102	94	1363	371	181	4450	827	4310	776									

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 563 x 100 = 56300 Deg Hrs)
** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

MADISON, WISCONSIN
WBAN 14837

WYEC Data

Latitude 43.10 N
Longitude 89.30 E

TABLE D:

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																								24 HOUR SUMMARY			
	7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**				10PM-6AM**				HEATING		COOLING	
	Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs	
	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Below Base	Deg 100s*	Above Base	Deg 100s*	Below Base	Deg 100s*	Above Base	Deg 100s*		
45	533	111	91	620	80	154	670	66	157	624	77	144	570	96	99	1418	352	195	4324	783	4436	820	4193	741	4567	865		
44	547	106	96	636	75	140	683	62	164	636	73	151	586	91	105	1477	333	209	4070	699	4690	911	3962	659	4798	958		
43	561	101	102	649	71	147	695	56	170	650	68	157	599	86	111	1534	315	224	3868	620	4892	1007	3771	582	4989	1056		
42	572	95	107	660	67	153	708	54	177	664	64	164	610	81	117	1582	298	240	3661	545	5099	1107	3542	509	5218	1158		
41	581	90	113	677	62	160	717	50	185	675	59	170	614	76	123	1626	281	256	3412	474	5348	1211	3283	440	5477	1265		
40	592	85	119	693	58	167	728	47	192	688	55	177	619	72	129	1667	265	272	3144	408	5616	1320	2970	377	5790	1377		
39	604	80	125	707	54	174	746	43	199	702	51	184	626	67	135	1711	249	289	2781	349	5979	1436	2590	322	6170	1497		
38	619	75	131	722	50	181	763	40	207	718	47	191	638	62	142	1757	234	307	2412	297	6348	1560	2263	274	6497	1624		
37	632	71	137	739	47	188	780	36	214	737	44	198	654	58	148	1803	219	324	2132	252	6628	1690	1991	231	6769	1757		
36	646	66	144	756	43	196	799	33	222	758	40	206	671	53	155	1846	204	343	1843	212	6917	1825	1711	194	7049	1895		
35	663	62	150	777	40	203	820	31	230	780	37	214	692	49	162	1882	190	361	1597	178	7163	1966	1467	162	7293	2036		
34	685	57	157	799	37	211	836	28	239	804	34	222	721	45	169	1940	176	380	1325	148	7435	2112	1206	136	7554	2187		
33	713	53	164	816	34	219	850	25	247	823	31	230	754	42	176	2021	163	400	1111	124	7649	2263	1022	113	7738	2340		
32	742	50	171	835	31	227	863	23	256	836	29	238	783	39	184	2109	151	421	944	104	7816	2418	886	95	7874	2496		
31	768	46	179	852	29	236	879	21	264	851	26	246	807	36	192	2189	139	442	840	86	7920	2575	798	78	7962	2655		
30	785	43	187	863	27	244	894	19	273	868	24	255	825	33	200	2260	129	463	744	70	8016	2734	679	63	8081	2815		
29	802	40	195	874	24	253	905	17	282	882	21	264	839	30	208	2329	119	488	623	56	8137	2896	579	50	8181	2978		
28	820	37	203	885	22	262	921	15	291	895	19	273	854	28	217	2393	110	511	540	45	8220	3060	497	40	8263	3142		
27	835	35	211	896	20	271	939	13	301	912	17	282	870	25	225	2463	101	535	452	35	8308	3225	407	40	8263	3142		
26	846	32	219	911	18	280	951	12	310	927	16	291	889	23	234	2523	93	560	417	31	8343	3308	384	26	8376	3392		
25	863	30	228	924	16	289	961	10	320	939	14	300	905	21	243	2570	86	586	346	23	8414	3476	315	20	8445	3560		
24	881	27	237	938	15	298	976	9	329	952	13	310	916	19	252	2628	79	612	278	17	8482	3645	244	14	8516	3730		
23	899	25	246	954	13	308	989	8	339	965	11	319	931	18	261	2695	73	638	215	12	8545	3815	215	12	8545	3815		
22	920	24	255	964	12	317	1001	7	349	976	10	329	947	16	271	2745	67	666	185	10	8575	3901	185	10	8575	3901		
21	933	22	264	971	11	327	1013	6	359	987	9	339	957	15	280	2785	62	693	163	8	8597	3986	163	8	8597	3986		
20	940	20	273	979	9	337	1025	5	370	1001	8	349	964	13	290	2827	57	721										
19	948	19	283	991	8	347	1034	5	380	1011	7	359	972	12	300	2859	53	750										
18	953	17	292	1001	7	357	1040	4	390	1019	6	369	981	11	309	2877	49	779										
17	957	16	302	1011	6	367	1044	4	401	1026	5	379	988	10	319	2892	45	807										
16	963	15	311	1022	6	377	1047	3	411	1030	5	390	992	9	329	2906	41	836										
15	970	13	321	1029	5	387	1052	3	422	1035	4	400	997	8	339	2932	37	866										
14	978	12	331	1034	4	398	1058	2	432	1043	4	410	1002	7	349	2964	34	895										
13	987	11	341	1041	4	408	1063	2	443	1050	3	421	1008	6	359	2986	31	925										
12	993	10	351	1047	3	418	1065	2	453	1057	3	431	1017	5	369	3000	28	955										
11	996	9	360	1052	3	429	1067	1	464	1061	2	442	1029	4	380	3013	25	985										
10	1003	8	370	1057	2	439	1071	1	475	1062	2	452	1039	4	390	3029	22	1015										
9	1014	7	381	1063	2	450	1074	1	485	1065	2	463	1046	3	400	3044	20	1045										
8	1023	6	391	1066	2	461	1077	1	496	1069	1	474	1052	3	411	3055	17	1076										
7	1031	6	401	1069	2	471	1079	1	507	1071	1	484	1055	2	421	3069	15	1107										
6	1037	5	411	1072	1	482	1082	0	518	1075	1	495	1059	2	432	3090	13	1137										
5	1041	5	422	1073	1	493	1085	0	529	1075	1	506	1062	2	443	3108	11	1168										
4	1044	4	432	1074	1	503	1087	0	540	1079	1	517	1065	1	453	3131	10	1200										
3	1048	3	443	1077	1	514	1088	0	550	1083	0	528	1069	1	464	3150	8	1231										
2	1051	3	453	1079	0	525	1090	0	561	1085	0	538	1074	1	475	3165	7	1263										
1	1055	3	464	1081	0	536	1091	0	572	1087	0	549	1078	1	485	3181	6	1294										
0	1057	2	474	1084	0	547	1092	0	583	1088	0	560	1082	1	496	3193	5	1326										

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 565 x 100 = 56500 Deg Hrs)

** The Hours Below the Base Temp for any X-Hr period is calculated by subtracting the Hrs Above from X times 365

MAISON, WISCONSIN
WBAW 14837
TABLE D:

WYEC Data

Latitude 43.10 N
Longitude 89.30 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BY TIME OF DAY															24-HOUR SUMMARY							
BASE (F)	7-9AM**			10-12AM**			1-3PM**			4-6PM**			7-9PM**			10PM-6AM**			HEATING		COOLING	
	Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg	Hrs	Deg
	Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*			Below	Hrs	Above	Hrs
	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	100s*	Base	100s*
-1 1059	2	485	1087	0	558	1094	0	594	1089	0	571	1085	0	507	3204	4	1358		142	5	8618	4072
-2 1061	2	495	1090	0	568	1095	0	605	1090	0	582	1086	0	518	3213	3	1390		123	5	8637	4159
-3 1085	1	506	1093	0	579	1098	0	616	1092	0	593	1086	0	529	3221	2	1422		106	4	8654	4245
-4 1070	1	517	1094	0	590	1095	0	627	1093	0	604	1088	0	540	3228	2	1455		90	3	8670	4332
-5 1076	1	527	1094	0	601	1095	0	638	1093	0	615	1090	0	550	3236	1	1487		74	2	8686	4419
-6 1080	1	538	1095	0	612	1095	0	649	1094	0	626	1090	0	561	3244	1	1519		61	1	8699	4505
-7 1082	0	549	1095	0	623	1095	0	660	1095	0	637	1092	0	572	3255	1	1552		45	1	8715	4593
-8 1085	0	560	1095	0	634	1095	0	671	1095	0	648	1094	0	583	3265	0	1584		29	1	8731	4680
-9 1089	0	571	1095	0	645	1095	0	682	1095	0	659	1095	0	594	3274	0	1617		16	0	8744	4767
-10 1092	0	582	1095	0	656	1095	0	693	1095	0	669	1095	0	605	3280	0	1650		7	0	8753	4855
-11 1093	0	593	1095	0	667	1095	0	704	1095	0	680	1095	0	616	3282	0	1683		4	0	8756	4942
-12 1093	0	604	1095	0	678	1095	0	714	1095	0	691	1095	0	627	3283	0	1716		3	0	8757	5030
-13 1093	0	614	1095	0	689	1095	0	725	1095	0	702	1095	0	638	3284	0	1748		2	0	8758	5117
-14 1093	0	625	1095	0	700	1095	0	736	1095	0	713	1095	0	649	3285	0	1781		2	0	8758	5205
-15 1093	0	636	1095	0	711	1095	0	747	1095	0	724	1095	0	660	3285	0	1814		2	0	8758	5293
-16 1093	0	647	1095	0	722	1095	0	758	1095	0	735	1095	0	671	3285	0	1847		2	0	8758	5380
-17 1093	0	658	1095	0	733	1095	0	769	1095	0	746	1095	0	682	3285	0	1880		1	0	8759	5468
-18 1094	0	669	1095	0	744	1095	0	780	1095	0	757	1095	0	693	3285	0	1913		1	0	8759	5555
-19 1094	0	680	1095	0	755	1095	0	791	1095	0	768	1095	0	704	3285	0	1946		1	0	8759	5643
-20 1094	0	691	1095	0	765	1095	0	802	1095	0	779	1095	0	715	3285	0	1978		1	0	8759	5730
-21 1094	0	702	1095	0	776	1095	0	813	1095	0	790	1095	0	726	3285	0	2011		0	0	8760	5818
-22 1095	0	713	1095	0	787	1095	0	824	1095	0	801	1095	0	737	3285	0	2044		0	0	8760	5906

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 365 x 100 = 36500 Deg Hrs)
** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

MADISON, WISCONSIN
WBAN 14637

WYEC Data

Latitude 43.10 N
Longitude 89.30 E

TABLE E:

Annual COOLING Wet Bulb Degree Hour Summary

Wet Bulb Temperature (F) Base:	50	55	60	65	70	75	80	85	90	95	100
Annual Wet Bulb hours ABOVE base:	3426	3011	2649	2245	1778	1294	756	314	111	29	3
Annual Wet Bulb Cooling deg-hrs:	43286	33407	24737	17151	10858	6042	2763	993	298	66	3

TABLE F:

Annual Humidification/Dehumidification Requirements
At various indoor Conditions and Degree Day Bases
(Pounds of Moisture)

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS ** Heating Degree Base										COOLING HUMIDITY RATIO HOURS ** Cooling Degree Base										Maintained Indoor Humidity Ratio*
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	
.001	1	1	1	1	1	1	1	1	1	1	1	41	39	38	36	34	31	27	21	14	.001
.002	2	2	2	2	2	2	2	2	2	2	2	35	34	33	32	30	26	24	19	13	.002
.003	4	5	5	5	5	5	5	5	5	5	5	29	29	28	28	27	25	22	17	12	.003
.004	6	8	8	9	9	9	9	9	9	9	9	24	24	24	23	23	21	19	15	10	.004
.005	9	11	12	13	13	13	13	13	13	13	13	20	20	20	20	19	18	17	14	9	.005
.006	11	14	16	17	18	18	18	18	18	19	19	16	16	16	16	16	15	14	12	8	.006
.007	13	17	19	21	22	23	24	24	24	24	24	13	13	13	13	13	12	12	10	7	.007
.008	15	20	23	25	27	28	29	30	30	30	30	10	10	10	10	10	10	9	8	6	.008
.009	17	23	27	30	32	34	35	36	36	36	36	7	7	7	7	7	7	6	5	3	.009
.010	20	26	31	34	37	39	41	42	43	43	43	5	5	5	5	5	5	5	4	2	.010
.011	22	29	34	38	42	44	47	48	49	50	50	4	4	4	4	4	4	3	3	2	.011
.012	24	32	38	42	46	50	53	55	56	57	57	2	2	2	2	2	2	2	2	1	.012
.013	26	35	42	47	51	55	59	62	63	65	65	1	1	1	1	1	1	1	1	1	.013
.014	28	38	45	51	56	61	65	68	71	72	73	1	1	1	1	1	1	1	1	1	.014
.015	31	41	49	55	61	66	71	75	78	80	81	0	0	0	0	0	0	0	0	0	.015
.016	33	44	53	59	66	71	77	82	86	88	90	0	0	0	0	0	0	0	0	0	.016
.017	35	48	57	64	70	77	83	88	93	96	98	0	0	0	0	0	0	0	0	0	.017
.018	37	51	60	68	75	82	89	95	100	104	106	0	0	0	0	0	0	0	0	0	.018

FOOTNOTES: * Indoor Humidity Level is measured in pounds of moisture per pound of dry air. Indoor set points of 72 deg(F)-30%RH and 78 deg(F)-50%RH yield humidity ratios of .005 and .010 respectively.

** Heating (Cooling) Humidity Ratio Hours are defined as the summation of the differences between the maintained indoor humidity ratio and the observed outdoor humidity ratio when both the hourly dry bulb temperature and the humidity ratio are above (below) the base levels.

TABLE G:

Percent Diffuse Solar Radiation*
and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
% Diffuse on surface													
HORIZONTAL	51	49	62	55	59	55	57	50	52	38	56	55	54
VERTICAL													
NORTH	100	100	100	99	95	90	92	97	100	100	100	100	98
WEST	60	57	67	71	73	70	72	63	63	48	65	56	66
SOUTH	38	42	62	68	79	81	80	66	57	37	43	38	59
EAST	59	59	73	64	69	68	68	67	64	50	60	62	65
% Possible Sun	49	52	54	53	59	65	69	68	62	57	41	39	57

FOOTNOTES: * Corrected For Cloud Cover.

** Source: NOAA, Comparative Climatic Data for the United States Through 1970.

MADISON, WISCONSIN
 WBAN 14837
 TABLE H:

WYEC Data

Latitude 43.10 N
 Longitude 89.30 E

Average Daily Solar Radiation on Vertical and Horizontal Surfaces
 (BTU/DAY.SQFT)

Month	Under Clear Sky Assumption*										Corrected For Cloud Cover**										obs	
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ NNW	NE/ NNW	NNE/ NNW	N	S-45 horiz ***	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ NNW	NE/ NNW	NNE/ NNW	N	S-45 horiz ***		
Jan	1713	1595	1270	951	554	265	151	133	133	1699	784	719	676	557	435	287	183	143	135	135	698	518
Feb	1850	1726	1437	1158	768	441	252	184	179	2013	1116	766	718	610	508	369	257	194	172	169	800	799
Mar	1752	1686	1516	1348	1030	705	456	299	252	2252	1595	875	829	751	677	558	449	372	325	308	976	1132
Apr	1438	1494	1483	1452	1254	988	722	499	358	2311	2054	968	1011	1001	977	870	736	609	504	436	1275	1405
May	1163	1296	1401	1478	1399	1208	953	708	523	2266	2368	936	985	1019	1043	993	894	772	660	571	1333	1431
Jun	1050	1201	1355	1475	1452	1300	1065	816	635	2229	2503	893	959	1019	1066	1042	957	838	716	625	1372	1549
Jul	1094	1236	1367	1471	1422	1255	1015	775	590	2227	2450	946	1018	1069	1110	1069	970	842	715	625	1405	1549
Aug	1303	1589	1422	1433	1287	1058	806	585	453	2242	2149	1049	1079	1067	1049	945	808	674	564	498	1478	1467
Sep	1600	1576	1475	1363	1096	800	554	379	305	2212	1751	984	963	897	827	687	547	441	368	339	1191	1011
Oct	1779	1669	1420	1190	828	511	316	222	212	2042	1257	916	865	756	656	494	348	252	200	192	1026	706
Nov	1738	1623	1309	1007	615	324	182	150	150	1769	875	691	660	557	451	311	208	150	147	146	676	418
Dec	1644	1524	1203	878	494	250	130	122	122	1590	697	604	556	447	342	224	143	114	111	111	571	321
Year	1508	1500	1388	1267	1018	759	552	407	325	2071	1652	863	860	814	763	656	543	452	386	347	1068	955

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
 ** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.
 *** South exposure tilt 45 degrees.

TABLE I: Average Daily Solar Heat Gain Through Single Pane Glass on Vertical and Horizontal Surfaces
 (BTU/DAY.SQFT)

Month	Under Clear Sky*									Corrected For Cloud Cover**								
	S	SSE/SSW	SE/SW	ESE/WSW	E/W	ENE/NNW	NE/NNW	NNE/NNW	N	S	SSE/SSW	SE/SW	ESE/WSW	E/W	ENE/NNW	NE/NNW	NNE/NNW	N
Jan	1485	1362	1065	785	458	197	114	108	108	611	569	462	357	250	144	115	110	110
Feb	1576	1455	1201	965	621	338	189	147	145	644	597	504	419	299	203	154	139	138
Mar	1437	1401	1265	1128	847	561	348	230	205	714	680	617	558	457	364	299	262	250
Apr	1105	1200	1218	1203	1035	802	568	381	283	766	817	820	803	714	600	489	400	350
May	846	995	1134	1221	1157	992	768	554	396	730	785	829	857	816	732	627	550	454
Jun	746	898	1082	1215	1199	1073	861	644	474	690	752	823	874	857	786	682	575	490
Jul	790	939	1100	1212	1177	1035	821	610	447	736	805	868	911	879	796	683	574	494
Aug	983	1098	1162	1185	1065	867	644	453	336	821	865	870	860	774	657	542	451	399
Sep	1286	1300	1224	1135	904	646	432	292	246	798	790	739	682	564	445	353	295	276
Oct	1502	1401	1189	991	675	402	237	177	173	762	718	628	545	405	279	197	160	157
Nov	1502	1381	1099	838	492	243	156	122	122	586	556	465	374	252	164	126	120	119
Dec	1426	1305	1007	726	387	167	102	99	99	515	467	370	282	178	112	92	90	90
Year	1222	1226	1145	1051	834	611	456	319	253	698	700	667	628	537	441	364	310	276

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
 ** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.

MEOFORD, OREGON
WDAW 24225
TABLE A:

WYEC Data

Latitude 42.40 N
Longitude 122.90 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): First Quarter
15 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Jan														
55 to 59	0	0	0	1	3	0	0	0	4	47.3	744	15793	0	0
50 to 54	2	1	0	1	7	8	3	2	24	45.0	737	12090	7	17
45 to 49	8	3	3	10	18	20	9	7	78	43.3	694	8488	50	135
40 to 44	11	13	19	18	30	29	15	14	149	39.2	594	9254	150	621
35 to 39	16	19	17	27	31	29	34	18	191	35.3	401	2722	343	1809
30 to 34	22	27	24	24	4	7	23	29	160	31.3	224	1143	520	3950
25 to 29	20	11	13	11	0	0	9	21	85	26.3	105	369	639	6896
20 to 24	14	17	16	1	0	0	0	2	50	21.6	34	51	710	10298
15 to 19	0	2	1	0	0	0	0	0	3	18.7	0	0	744	13967
Feb														
60 to 64	0	0	0	0	1	0	0	0	1	51.0	672	14866	0	0
55 to 59	0	0	0	7	13	5	0	0	25	48.7	669	11512	3	6
50 to 54	0	2	3	9	32	32	7	4	89	45.0	673	8265	49	119
45 to 49	7	5	6	20	19	28	21	6	112	42.7	527	5400	145	614
40 to 44	27	23	24	26	8	9	29	32	178	36.6	394	3109	278	1683
35 to 39	14	15	17	9	9	8	14	20	106	34.8	215	1628	457	3562
30 to 34	18	13	14	8	2	2	9	12	78	30.3	129	784	543	6078
25 to 29	10	16	10	3	0	0	3	4	46	26.2	59	329	613	8983
20 to 24	4	3	6	2	0	0	1	6	22	19.8	28	127	644	12141
15 to 19	4	3	2	0	0	0	0	0	9	15.6	11	31	661	15405
10 to 14	0	4	2	0	0	0	0	0	6	12.7	0	0	672	18734
Mar														
70 to 74	0	0	0	0	3	5	0	0	8	52.3	743	21212	1	1
65 to 69	0	0	0	0	6	6	1	0	13	51.9	729	17927	15	36
60 to 64	0	0	0	3	12	14	3	0	32	48.9	713	13914	31	143
55 to 59	0	0	0	12	24	12	5	0	53	46.9	677	10452	73	401
50 to 54	4	1	3	17	14	25	24	10	98	44.3	611	7237	133	906
45 to 49	14	9	12	24	16	12	19	21	127	42.5	476	4485	268	1874
40 to 44	15	15	21	22	11	11	22	21	138	38.9	357	2391	387	3500
35 to 39	30	26	29	12	6	5	14	28	150	34.7	224	939	529	5768
30 to 34	24	31	21	3	1	3	5	12	100	31.0	81	227	663	6776
25 to 29	5	8	5	0	0	0	0	1	19	26.5	16	40	728	12309
20 to 24	1	3	2	0	0	0	0	0	6	21.8	1	2	743	15991

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

NEDFORD, OREGON
WSAN 24225
TABLE A:

WYEC Data

Latitude 42.40 N
Longitude 122.90 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Second Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence In time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Apr															
80 to 84	0	0	0	0	0	1	0	0	1	56.0	720	23350	0	0	
75 to 79	0	0	0	0	7	6	0	0	13	55.1	716	19763	4	5	
70 to 74	0	0	0	2	5	9	1	0	17	54.0	699	16228	21	70	
65 to 69	0	0	0	5	14	10	4	0	33	52.4	682	12775	30	217	
60 to 64	0	0	0	17	26	24	11	0	78	51.5	627	9478	93	520	
55 to 59	0	0	7	21	14	12	24	9	87	48.9	542	6553	178	1195	
50 to 54	17	10	20	19	10	12	10	23	129	46.4	446	4062	274	2304	
45 to 49	22	17	17	16	10	9	16	25	132	45.0	309	2106	411	4028	
40 to 44	15	16	28	9	4	6	10	13	101	39.3	198	935	522	6377	
35 to 39	26	34	15	1	0	1	6	20	103	36.2	82	231	638	9273	
30 to 34	9	11	2	0	0	0	0	0	22	31.9	13	29	707	12671	
25 to 29	1	2	1	0	0	0	0	0	4	28.5	0	0	720	16242	
May															
85 to 89	0	0	0	0	3	2	0	0	5	65.6	742	22661	2	3	
80 to 84	0	0	0	0	11	19	0	0	30	61.5	729	18970	15	32	
75 to 79	0	0	0	6	18	11	4	0	39	59.9	695	15401	49	183	
70 to 74	0	0	0	15	14	10	8	0	47	57.6	652	12028	92	530	
65 to 69	0	0	4	15	13	21	16	3	72	54.7	598	8882	146	1104	
60 to 64	2	1	16	22	14	5	10	17	95	53.1	511	6099	233	2041	
55 to 59	17	4	19	15	12	12	16	18	113	50.1	413	3769	331	3431	
50 to 54	14	24	22	13	7	7	12	17	116	46.6	290	1998	454	5380	
45 to 49	19	20	24	6	1	4	13	22	109	43.0	185	808	559	7910	
40 to 44	35	35	8	1	0	2	6	16	103	39.6	74	161	670	10983	
35 to 39	6	8	0	0	0	0	0	0	14	36.1	6	8	738	14590	
30 to 34	0	1	0	0	0	0	0	0	1	33.0	0	0	744	18262	
Jun															
100 to 104	0	0	0	0	1	0	0	0	1	69.0	720	27391	0	0	
95 to 99	0	0	0	0	4	4	0	0	8	65.9	717	23796	3	5	
90 to 94	0	0	0	1	1	4	1	0	7	65.3	709	20234	11	43	
85 to 89	0	0	0	2	11	11	2	0	26	62.2	698	16712	22	121	
80 to 84	0	0	0	7	19	18	6	0	50	60.3	660	13314	60	323	
75 to 79	0	0	1	13	15	19	16	0	64	58.7	609	10139	111	748	
70 to 74	0	0	4	23	23	18	17	5	90	56.5	533	7282	187	1491	
65 to 69	2	0	15	19	10	8	21	19	94	55.5	441	4862	279	2671	
60 to 64	19	3	23	17	3	5	16	27	113	53.2	342	2913	378	4322	
55 to 59	27	30	28	3	0	0	7	19	114	51.4	221	1512	499	8521	
50 to 54	15	24	10	5	2	3	2	10	71	47.1	118	690	602	9299	
45 to 49	14	14	7	0	1	0	2	0	46	43.6	60	260	660	12469	
40 to 44	11	14	2	0	0	0	0	2	29	40.0	22	54	698	15863	
35 to 39	2	5	0	0	0	0	0	0	7	36.3	3	6	717	19415	

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

NEEDFORD, OREGON
WBAN 24225
TABLE A:

WYEC Data

Latitude 42.40 N
Longitude 122.90 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Third Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day 10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Jul														
100 to 104	0	0	0	0	4	6	0	0	10	69.5	744	23503	0	0
95 to 99	0	0	0	0	12	13	0	0	25	69.2	722	19619	22	36
90 to 94	0	0	0	6	21	17	6	0	50	67.2	699	16059	45	196
85 to 89	0	0	0	11	16	12	9	0	50	65.5	641	12714	103	571
80 to 84	0	0	1	19	13	17	13	3	66	63.8	587	9640	157	1217
75 to 79	1	0	7	20	10	12	20	8	78	62.1	509	6905	235	2202
70 to 74	4	1	20	22	10	10	20	16	105	59.5	429	4550	313	3587
65 to 69	14	5	26	12	5	3	10	21	96	57.6	328	2671	416	5408
60 to 64	27	29	24	3	0	3	10	22	118	55.2	213	1306	531	7363
55 to 59	24	27	10	0	0	0	5	14	80	51.4	108	518	636	10695
50 to 54	13	20	5	0	0	0	0	6	44	47.6	46	144	698	14041
45 to 49	10	11	0	0	0	0	0	1	22	44.6	11	14	733	17631
Aug														
95 to 99	0	0	0	0	2	4	0	0	6	67.8	742	20492	2	1
90 to 94	0	0	0	0	16	21	1	0	38	66.6	751	16803	13	32
85 to 89	0	0	0	6	37	32	5	0	80	64.9	680	13268	64	217
80 to 84	0	0	0	20	15	15	17	0	67	63.1	601	10087	143	756
75 to 79	0	0	4	27	16	17	22	2	88	60.9	520	7283	224	1672
70 to 74	5	2	10	26	7	4	27	12	93	60.3	437	4894	307	3003
65 to 69	7	6	23	11	0	0	14	36	97	58.2	343	2952	401	4781
60 to 64	26	9	30	3	0	0	7	29	104	54.7	236	1508	508	7057
55 to 59	31	29	19	0	0	0	0	12	91	52.4	139	584	605	9853
50 to 54	23	30	7	0	0	0	0	2	62	48.6	47	134	697	13123
45 to 49	1	16	0	0	0	0	0	0	17	45.5	5	9	739	16718
40 to 44	0	1	0	9	0	0	0	0	1	43.0	0	0	744	20429
Sep														
100 to 104	0	0	0	0	1	0	0	0	1	67.0	726	28417	0	0
95 to 99	0	0	0	0	4	5	0	0	9	66.0	718	24821	2	4
90 to 94	0	0	0	0	8	9	0	0	17	64.4	704	21263	16	46
85 to 89	0	0	0	2	12	11	0	0	25	61.8	685	17787	35	170
80 to 84	0	0	0	6	19	14	5	0	44	60.9	652	14428	68	411
75 to 79	0	0	0	13	16	16	5	0	50	59.6	607	11284	113	867
70 to 74	0	0	0	17	17	17	15	0	63	57.5	545	8391	175	1574
65 to 69	0	0	6	25	8	11	23	8	61	55.7	476	5815	242	2598
60 to 64	8	1	19	16	2	4	25	20	61	53.7	397	3629	323	4012
55 to 59	25	13	26	8	3	3	13	37	128	51.9	284	1915	436	5898
50 to 54	33	26	23	2	0	0	2	20	105	48.5	163	801	557	8384
45 to 49	17	29	15	1	0	0	2	3	67	44.3	72	232	648	11415
40 to 44	7	21	5	0	0	0	0	2	35	41.3	17	19	703	14802

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

MEDFORD, OREGON
 WBAN 24225
 TABLE A:

WYEC Data

Latitude 42.40 N
 Longitude 122.90 E

Monthly Dry Bulb Temperature Frequencies With Mean
 Coincident Wet Bulb Temperature (MCWB): Fourth Quarter
 (5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence In time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day 10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Oct														
90 to 94	0	0	0	0	1	1	0	0	2	61.0	744	30470	0	0
85 to 89	0	0	0	0	5	8	0	0	13	62.2	739	26757	5	7
80 to 84	0	0	0	1	11	4	0	0	16	61.2	722	23898	22	68
75 to 79	0	0	0	2	9	7	0	0	18	61.2	702	19532	42	232
70 to 74	0	0	0	9	5	7	0	0	21	58.8	683	16065	61	475
65 to 69	0	0	0	6	7	7	0	0	30	55.8	650	12692	84	822
60 to 64	0	0	2	10	10	12	10	0	44	52.9	624	9464	120	1314
55 to 59	0	1	6	14	21	15	14	8	79	50.2	567	6457	177	2027
50 to 54	17	8	21	24	15	21	21	28	155	48.1	470	3821	274	3111
45 to 49	33	30	26	14	6	7	19	26	163	44.7	299	1907	445	4917
40 to 44	25	27	19	7	1	4	16	16	115	40.4	153	790	591	7520
35 to 39	5	14	12	3	0	0	4	9	47	36.5	63	284	681	10734
30 to 34	11	7	5	1	0	0	1	6	31	31.5	28	68	716	14238
25 to 29	2	6	2	0	0	0	0	0	10	28.2	2	2	742	17892
Nov														
65 to 69	0	0	0	0	5	3	0	0	8	56.4	715	17878	5	4
60 to 64	0	0	0	1	5	5	0	0	11	54.5	707	14321	13	47
55 to 59	0	0	0	7	15	10	3	2	37	50.7	689	10813	31	139
50 to 54	3	0	2	12	20	17	13	6	73	48.5	631	7490	89	416
45 to 49	13	15	14	19	13	18	15	11	118	45.2	542	4524	178	1050
40 to 44	22	19	26	25	22	25	30	28	197	40.9	396	2125	324	2251
35 to 39	30	34	33	19	8	12	24	34	194	36.6	192	639	528	4365
30 to 34	18	16	10	5	2	0	5	6	62	32.8	38	129	682	7455
25 to 29	4	6	5	2	0	0	0	3	20	26.9	11	19	709	10945
Dec														
70 to 74	0	0	0	0	1	0	0	0	1	58.0	744	26247	0	0
65 to 69	0	0	0	0	0	1	0	0	1	56.0	743	22530	1	3
60 to 64	0	0	0	0	1	2	3	1	7	53.4	739	18822	5	15
55 to 59	1	2	0	0	1	1	2	2	9	49.6	731	15144	13	57
50 to 54	3	1	3	6	17	11	2	1	46	49.2	716	11516	28	149
45 to 49	8	9	9	10	7	9	9	12	73	46.0	647	8101	97	454
40 to 44	14	11	10	15	25	24	16	12	125	40.3	569	5043	175	1116
35 to 39	25	24	22	29	38	33	34	24	229	36.0	411	2958	333	2351
30 to 34	21	24	28	21	5	9	8	20	136	32.2	160	1126	584	4639
25 to 29	4	3	1	8	0	3	18	9	46	25.3	104	496	640	7729
20 to 24	17	14	13	2	0	0	1	12	59	21.0	48	115	696	11068
15 to 19	0	5	7	0	0	0	0	0	12	17.0	5	6	739	14679

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

MEOFORD, OREGON
WBAN 24225
TABLE B:

WYEC Data

Latitude 42.40 N
Longitude 122.90 E

Annual Dry Bulb Temperature Frequencies
With Mean Coincident Wet Bulb Temperature
(5 Degrees(F)/3Hr Bins)

Dry Bulb range(F)	Number of Hours of Occurrence in time period									Mean Coincident Wet Bulb Temperature (F)								
	Hour of day									Hour of day								
	1-3	4-5	7-9	10-12	13-15	16-18	19-21	22-24	Year	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year
100 to 104	0	0	0	0	6	6	0	0	12	0.0	0.0	0.0	0.0	68.8	69.7	0.0	0.0	69.3
95 to 99	0	0	0	0	22	26	0	0	48	0.0	0.0	0.0	0.0	68.3	67.5	0.0	0.0	67.9
90 to 94	0	0	0	7	47	52	8	0	114	0.0	0.0	0.0	69.1	66.1	66.0	67.0	0.0	66.3
85 to 89	0	0	0	21	86	76	16	0	199	0.0	0.0	0.0	66.3	64.0	63.5	65.3	0.0	64.1
80 to 84	0	0	1	53	88	88	41	3	274	0.0	0.0	67.0	63.9	61.1	61.3	63.3	65.0	62.1
75 to 79	1	0	12	81	91	86	67	10	350	63.0	0.0	64.9	61.4	59.3	58.9	60.8	63.9	60.3
70 to 74	9	3	34	114	85	80	88	35	448	64.1	64.0	61.4	58.4	56.1	56.4	58.6	60.8	58.2
65 to 69	23	11	74	95	68	70	97	87	525	59.9	61.6	57.9	53.2	54.0	54.0	55.7	57.4	56.1
60 to 64	82	43	110	92	74	74	103	116	694	55.1	57.0	54.3	52.9	51.2	51.3	52.4	54.0	53.4
55 to 59	125	106	115	88	106	70	69	121	820	52.1	52.8	51.5	49.6	48.3	48.7	49.8	50.5	50.6
50 to 54	144	147	119	110	124	136	104	129	1013	48.1	48.5	47.8	46.5	46.0	45.6	46.2	47.2	47.1
45 to 49	166	178	133	120	93	107	125	142	1064	44.1	44.7	44.2	43.6	42.7	42.8	43.8	43.8	43.8
40 to 44	182	195	162	123	99	110	144	136	1171	40.3	40.2	40.3	39.8	38.6	38.9	40.0	40.0	39.9
35 to 39	154	179	145	100	92	88	130	153	1041	36.1	36.2	36.4	35.6	34.5	34.6	35.6	35.7	35.7
30 to 34	123	130	104	62	14	21	51	85	590	31.7	31.8	31.9	31.0	30.1	30.1	30.8	31.7	31.5
25 to 29	46	52	37	24	0	3	36	38	230	26.7	26.5	26.8	25.8	0.0	27.3	25.6	25.8	26.3
20 to 24	36	37	37	5	0	0	2	20	137	21.2	20.7	20.8	22.0	0.0	0.0	21.5	21.5	21.0
15 to 19	4	10	10	0	0	0	0	0	24	16.0	16.8	16.8	0.0	0.0	0.0	0.0	0.0	16.7
10 to 14	0	4	2	0	0	0	0	0	6	0.0	13.0	12.0	0.0	0.0	0.0	0.0	0.0	12.7

TABLE C: Annual and Monthly Temperature, Humidity and Windspeed Summary

Month	Dry Bulb Temperature (F)					Wet Bulb Ave	Percent Relative Humidity					Average Humidity Ratio (lb moisture/lb dry air)					Average wind MPH
	Ave	Max	Min	Daily			4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
				Max	Min												
Jan	36.3	56	19	44	30	34.4	91	91	72	84	86	0.0037	0.0039	0.0043	0.0040	0.0039	4.0
Feb	40.4	60	13	51	32	37.2	89	81	59	75	78	0.0039	0.0045	0.0047	0.0044	0.0043	5.1
Mar	44.0	73	21	55	34	39.3	86	74	50	65	71	0.0040	0.0046	0.0044	0.0043	0.0043	5.5
Apr	50.1	80	28	62	38	44.2	86	64	45	64	69	0.0049	0.0054	0.0050	0.0053	0.0052	5.6
May	57.0	89	34	71	44	49.1	81	58	40	59	62	0.0055	0.0065	0.0061	0.0065	0.0061	5.6
Jun	64.3	100	35	79	49	53.3	77	49	31	46	54	0.0063	0.0070	0.0062	0.0069	0.0067	6.4
Jul	71.2	101	45	88	55	58.6	75	48	31	46	52	0.0077	0.0089	0.0085	0.0086	0.0084	5.7
Aug	70.0	98	44	87	54	58.1	78	51	36	45	54	0.0078	0.0089	0.0082	0.0083	0.0083	5.4
Sep	65.0	100	40	81	47	53.3	82	58	32	52	59	0.0065	0.0076	0.0070	0.0070	0.0070	4.7
Oct	51.5	90	26	67	40	46.5	90	74	47	75	75	0.0055	0.0063	0.0063	0.0063	0.0061	3.4
Nov	42.7	69	25	51	36	41.0	97	93	75	90	89	0.0050	0.0055	0.0058	0.0055	0.0054	2.9
Dec	37.2	70	15	44	32	36.0	94	93	80	91	91	0.0043	0.0045	0.0049	0.0046	0.0045	2.2
Year	52.4	101	13	65	41	46.0	85	70	49	66	70	0.0054	0.0061	0.0060	0.0060	0.0059	4.7

MEDFORD, OREGON
WSAN 24225
TABLE D:

WYEC Data

Latitude 42.40 N
Longitude 122.90 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY														24-HOUR SUMMARY			
	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**		HEATING		COOLING		Base	100s*
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg	Hrs	Deg		
	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Below Base 100s*	Above Base 100s*	Below Base 100s*	Above Base 100s*		
102	0	599	0	0	503	0	0	429	0	0	435	0	0	521	0	0	1858	0
101	0	589	0	0	492	0	1	418	0	1	424	0	0	510	0	0	1825	0
100	0	570	0	0	481	0	6	407	0	5	413	0	0	500	0	0	1792	0
99	0	567	0	0	471	0	7	396	0	10	402	0	0	489	0	0	1759	0
98	0	556	0	0	460	0	11	385	0	18	392	0	0	478	0	0	1727	0
97	0	545	0	0	449	0	14	374	0	20	381	0	0	467	0	0	1694	0
96	0	534	0	0	438	0	19	363	0	27	370	1	0	456	0	0	1661	0
95	0	523	0	0	427	0	28	353	1	32	359	1	0	445	0	0	1628	0
94	0	512	0	0	416	0	36	342	1	37	349	1	0	434	0	0	1595	0
93	0	501	0	1	405	0	38	331	1	44	338	2	2	423	0	0	1562	0
92	0	490	0	3	394	0	49	321	2	36	328	2	4	412	0	0	1530	0
91	0	479	0	5	385	0	55	310	2	66	317	3	7	401	0	0	1497	0
90	0	468	0	7	372	0	75	300	3	84	307	3	8	390	0	0	1464	0
89	0	457	0	8	361	0	81	290	3	97	297	4	8	379	0	0	1431	0
88	0	446	0	13	350	0	96	280	4	111	287	5	11	368	0	0	1398	0
87	0	435	0	17	340	0	112	270	5	128	277	6	12	358	0	0	1365	0
86	0	424	0	22	329	1	133	260	6	139	267	7	20	347	1	0	1332	0
85	0	413	0	28	318	1	161	250	8	160	258	9	24	336	1	0	1300	0
84	0	402	0	35	307	1	176	241	9	176	248	10	29	325	1	0	1267	0
83	0	391	0	43	297	1	190	232	11	194	239	12	38	315	1	0	1234	0
82	0	380	0	56	286	2	215	223	15	207	230	14	49	304	2	1	1201	0
81	1	370	0	55	276	2	232	214	15	225	221	16	54	294	2	2	1168	0
80	1	359	0	81	266	3	249	205	17	246	213	18	65	283	3	3	1135	0
79	4	348	0	100	255	4	265	197	20	265	204	21	76	273	3	3	1103	0
78	6	337	0	115	245	5	287	188	23	280	196	23	86	263	4	4	1070	0
77	7	326	0	135	236	5	308	180	25	295	188	26	102	253	5	9	1037	0
76	10	315	0	144	226	7	323	172	28	317	180	29	116	243	6	10	1004	0
75	13	304	0	162	217	9	340	165	32	336	172	32	132	233	7	14	971	0
74	17	293	0	179	207	10	363	157	35	354	164	36	139	223	8	17	939	0
73	22	283	1	206	198	12	379	150	38	369	157	39	161	214	10	22	906	1
72	29	272	1	227	189	14	306	143	43	306	150	43	177	204	11	35	873	1
71	40	261	1	247	180	17	407	136	46	397	143	47	197	195	13	44	841	1
70	47	251	2	276	172	19	425	129	50	416	136	51	220	186	15	61	808	2
69	53	240	2	289	164	22	438	122	55	433	129	55	237	177	17	74	776	2
68	68	230	3	308	156	25	452	115	59	450	122	59	259	169	20	90	744	3
67	88	219	3	328	148	28	467	109	64	462	116	64	275	160	22	120	712	4
66	104	209	4	355	140	31	481	103	68	475	109	68	295	152	25	140	681	5
65	121	199	5	371	133	35	493	97	73	486	103	73	317	144	28	182	649	6
64	138	190	6	392	126	38	513	91	78	499	97	78	341	137	31	215	618	8
63	158	180	8	416	119	42	526	85	83	517	91	83	362	129	35	256	587	10
62	180	171	9	432	112	46	546	79	88	535	85	88	379	122	38	314	557	13
61	211	162	11	446	105	51	554	74	94	544	80	94	401	114	42	353	527	16
60	231	153	13	463	99	55	567	68	99	560	74	99	420	108	46	423	498	20
59	250	144	15	483	92	60	589	63	105	574	69	105	437	101	50	460	469	24
58	282	136	18	499	86	65	607	58	111	584	64	110	460	94	55	530	441	29
57	307	128	21	515	80	70	627	53	117	598	59	116	476	88	59	606	414	34

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 555 x 100 = 55500 Deg Hrs)
** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

MEADOW, OREGON
WBAN 24223
TABLE D:

WYEC Data

Latitude 42.40 N
Longitude 122.90 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																24-HOUR SUMMARY																	
	7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**				10PM-6AM**				HEATING		COOLING							
	Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs								
	Above (100s)*	Base	Heat	Cool	Above (100s)*	Base	Heat	Cool	Above (100s)*	Base	Heat	Cool	Above (100s)*	Base	Heat	Cool	Above (100s)*	Base	Heat	Cool	Above (100s)*	Base	Heat	Cool	Above (100s)*	Base	Heat	Cool	Above (100s)*	Base	Heat	Cool		
56	333	120	24	529	74	75	648	48	123	614	54	122	494	82	64	701	387	40	5441	765	3319	448	5441	765	3319	448	5441	765	3319	448	5441	765	3319	448
55	346	112	27	551	69	80	675	44	130	630	49	128	509	76	69	775	361	47	5276	711	3484	482	5276	711	3484	482	5276	711	3484	482	5276	711	3484	482
54	375	105	31	576	63	86	697	40	137	648	44	135	526	70	74	851	336	55	5087	658	3673	516	5087	658	3673	516	5087	658	3673	516	5087	658	3673	516
53	396	97	35	603	58	91	712	36	143	674	40	141	546	64	79	931	312	64	4898	607	3862	553	4898	607	3862	553	4898	607	3862	553	4898	607	3862	553
52	419	90	38	622	53	97	744	32	151	701	36	148	560	59	85	1014	286	73	4700	558	4060	592	4700	558	4060	592	4700	558	4060	592	4700	558	4060	592
51	447	84	43	648	48	104	771	28	158	738	32	155	587	53	90	1100	266	83	4469	511	4291	632	4469	511	4291	632	4469	511	4291	632	4469	511	4291	632
50	465	77	47	667	44	110	797	25	166	766	28	162	613	48	96	1195	244	94	4263	466	4497	675	4263	466	4497	675	4263	466	4497	675	4263	466	4497	675
49	488	71	52	692	40	117	814	22	174	798	25	170	645	43	102	1291	223	106	4040	424	4720	720	4040	424	4720	720	4040	424	4720	720	4040	424	4720	720
48	512	65	57	714	36	124	835	19	182	806	22	178	671	39	109	1395	203	119	3827	383	4935	767	3827	383	4935	767	3827	383	4935	767	3827	383	4935	767
47	544	59	62	737	32	131	852	17	190	830	19	186	692	35	115	1489	184	133	3616	345	5144	817	3616	345	5144	817	3616	345	5144	817	3616	345	5144	817
46	573	53	67	757	28	138	873	14	199	846	16	194	717	31	122	1581	166	148	3413	309	5347	868	3413	309	5347	868	3413	309	5347	868	3413	309	5347	868
45	598	48	73	781	25	146	890	12	207	873	14	203	738	27	130	1681	149	164	3199	275	5561	922	3199	275	5561	922	3199	275	5561	922	3199	275	5561	922
44	620	43	79	807	22	153	912	10	216	889	11	211	766	23	137	1763	133	180	3003	243	5757	977	3003	243	5757	977	3003	243	5757	977	3003	243	5757	977
43	660	39	85	831	19	162	930	8	225	908	9	220	799	20	145	1858	118	198	2774	213	5986	1035	2774	213	5986	1035	2774	213	5986	1035	2774	213	5986	1035
42	687	34	92	860	16	170	947	6	235	929	8	229	827	17	153	1979	104	217	2531	185	6229	1095	2531	185	6229	1095	2531	185	6229	1095	2531	185	6229	1095
41	717	30	99	880	14	178	962	5	244	953	6	239	853	14	161	2086	90	236	2309	160	6451	1157	2309	160	6451	1157	2309	160	6451	1157	2309	160	6451	1157
40	760	26	106	904	12	187	989	4	254	983	4	248	882	12	169	2214	79	257	2028	137	6732	1222	2028	137	6732	1222	2028	137	6732	1222	2028	137	6732	1222
39	793	23	113	923	10	196	1010	3	264	1006	3	258	904	10	178	2311	68	279	1813	116	6947	1289	1813	116	6947	1289	1813	116	6947	1289	1813	116	6947	1289
38	827	20	121	941	8	205	1028	2	274	1022	2	268	934	8	187	2411	58	302	1597	98	7163	1358	1597	98	7163	1358	1597	98	7163	1358	1597	98	7163	1358
37	854	17	130	958	7	215	1046	1	284	1032	2	278	961	6	197	2513	49	327	1396	82	7364	1430	1396	82	7364	1430	1396	82	7364	1430	1396	82	7364	1430
36	879	15	138	976	5	224	1063	1	295	1052	1	289	986	5	206	2611	42	352	1191	68	7569	1504	1191	68	7569	1504	1191	68	7569	1504	1191	68	7569	1504
35	905	13	147	1004	4	234	1081	0	305	1071	1	299	1012	4	216	2700	35	378	987	56	7773	1579	987	56	7773	1579	987	56	7773	1579	987	56	7773	1579
34	938	11	156	1027	3	244	1087	0	316	1076	0	310	1028	3	226	2805	29	405	799	46	7961	1657	799	46	7961	1657	799	46	7961	1657	799	46	7961	1657
33	957	9	165	1034	2	255	1092	0	327	1086	0	321	1040	2	236	2878	24	433	673	38	8087	1737	673	38	8087	1737	673	38	8087	1737	673	38	8087	1737
32	977	8	175	1050	2	265	1095	0	338	1080	0	331	1049	2	247	2942	20	462	560	32	8200	1817	560	32	8200	1817	560	32	8200	1817	560	32	8200	1817
31	1000	7	185	1055	1	275	1095	0	349	1092	0	342	1057	1	257	2994	17	491	467	26	8293	1899	467	26	8293	1899	467	26	8293	1899	467	26	8293	1899
30	1009	6	195	1066	1	286	1095	0	360	1092	0	353	1063	1	268	3038	14	521	397	21	8363	1982	397	21	8363	1982	397	21	8363	1982	397	21	8363	1982
29	1018	5	205	1071	1	297	1095	0	371	1095	0	364	1071	1	279	3068	11	551	342	17	8418	2066	342	17	8418	2066	342	17	8418	2066	342	17	8418	2066
28	1023	4	215	1079	0	307	1095	0	382	1095	0	375	1078	0	289	3093	9	582	297	14	8463	2150	297	14	8463	2150	297	14	8463	2150	297	14	8463	2150
27	1031	3	225	1084	0	318	1095	0	393	1095	0	386	1083	0	300	3123	7	613	249	11	8511	2235	249	11	8511	2235	249	11	8511	2235	249	11	8511	2235
26	1042	3	235	1087	0	329	1095	0	404	1095	0	397	1090	0	311	3148	6	644	203	9	8557	2320	203	9	8557	2320	203	9	8557	2320	203	9	8557	2320
25	1046	2	246	1090	0	340	1095	0	414	1095	0	408	1093	0	322	3174	4	676	167	7	8593	2406	167	7	8593	2406	167	7	8593	2406	167	7	8593	2406
24	1053	2	256	1095	0	351	1095	0	425	1095	0	419	1094	0	333	3192	3	707	136	5	8624	2491	136	5	8624	2491	136	5	8624	2491	136	5	8624	2491
23	1059	1	267	1095	0	362	1095	0	436	1095	0	430	1095	0	344	3210	2	739	111	4	8649	2578	111	4	8649	2578	111	4	8649	2578	111	4	8649	2578
22	1063	1	277	1095	0	373	1095	0	447	1095	0	441	1095	0	355	3229	1	771	88	2	8672	2664	88	2	8672	2664	88	2	8672	2664	88	2	8672	2664
21	1071	1	288	1095	0	384	1095	0	458	1095	0	452	1095	0	366	3253	1	804	54	2	8706	2751	54	2	8706	2751	54	2	8706	2751	54	2	8706	2751
20	1083	0	299	1095	0	395	1095	0	469	1095	0	463	1095	0	376	3267	1	836	30	1	8730	2838	30	1	8730	2838	30	1	8730	2838	30	1	8730	2838
19	1088	0	310	1095	0	405	1095	0	480	1095	0	474	1095	0	387	3271	0	869	23	1	8737	2925	23	1	8737	2925	23	1	8737	2925	23	1	8737	2925
18	1089	0	321	1095	0	416	1095	0	491	1095	0	485	1095	0	398	3275	0	902	16	0	8744	3013	16	0	8744	3013	16	0	8744	3013	16	0	8744	3013
17	1091	0	331	1095	0	427	1095	0	502	1095	0	496	1095	0	409	3277	0	934	12	0	8748	3100	12	0	8748	3100	12	0	8748	3100	12	0	8748	3100
16	1092	0	342	1095	0	438	1095	0	513	1095	0	506	1095	0	420	3280	0	967	8	0	8752	3188	8	0	8752	3188	8	0	8752	3188	8	0	8752	3188
15	1093	0	353	1095	0	449	1095	0	524	1095	0	517	1095	0	431	3281	0	1000	6	0	8754	3275	6	0	8754	3275	6	0	8754	3275	6	0	8754	3275

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 563 x 100 = 56300 Deg Hrs)

** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

MEGFORD, OREGON

WYEC Data

Latitude 42.40 N

MBAN 24225

Longitude 122.90 C

TABLE E:

Annual COOLING Wet Bulb Degree Hour Summary

Wet Bulb Temperature (F) Base:	50	53	56	59	62	65	68	71	74	77	80
Annual Wet Bulb hours ABOVE base:	3321	2583	1810	1196	705	346	122	13	0	0	0
Annual Wet Bulb Cooling deg-hrs:	26783.	17558.	10610.	5829.	2774.	1041.	238.	14.	0.	0.	0.

TABLE F:

Annual Humidification/Dehumidification Requirements
At various Indoor Conditions and Degree Day Bases
(Pounds of Moisture)

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **												COOLING HUMIDITY RATIO HOURS **												Maintained Indoor Humidity Ratio
	Heating Degree Base												Cooling Degree Base												
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80			
.001	0	0	0	0	0	0	0	0	0	0	0	38	36	33	29	25	20	16	12	9	6	4	.001		
.002	0	0	0	0	0	0	0	0	0	0	0	29	29	26	24	20	17	13	10	7	5	3	.002		
.003	0	1	1	1	1	1	1	1	1	1	1	21	21	20	18	16	13	11	8	6	4	3	.003		
.004	1	1	2	2	2	2	2	2	2	2	2	14	14	14	13	12	10	8	6	5	3	2	.004		
.005	1	2	4	4	5	5	5	5	5	5	6	9	9	9	9	8	7	6	5	4	3	2	.005		
.006	2	3	6	6	9	9	10	10	10	10	10	5	5	5	5	5	5	4	3	2	2	1	.006		
.007	2	4	8	11	15	14	15	16	16	16	17	3	3	3	3	3	3	2	2	1	1	1	.007		
.008	2	5	10	14	17	20	21	22	23	23	24	1	1	1	1	1	1	1	1	1	1	0	.008		
.009	3	6	12	17	21	25	27	29	30	31	31	1	1	1	1	1	1	1	1	0	0	0	.009		
.010	3	7	14	20	26	30	33	36	37	38	39	0	0	0	0	0	0	0	0	0	0	0	.010		
.011	4	8	16	24	30	35	39	42	44	46	47	0	0	0	0	0	0	0	0	0	0	0	.011		
.012	4	9	18	27	34	41	45	49	52	54	55	0	0	0	0	0	0	0	0	0	0	0	.012		
.013	4	10	20	30	38	46	51	56	59	62	64	0	0	0	0	0	0	0	0	0	0	0	.013		
.014	5	11	22	33	43	51	58	63	66	69	72	0	0	0	0	0	0	0	0	0	0	0	.014		
.015	5	12	24	36	47	56	64	69	74	77	80	0	0	0	0	0	0	0	0	0	0	0	.015		
.016	6	13	26	40	51	62	70	76	81	85	88	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	6	14	28	43	55	67	76	83	88	93	96	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	6	15	30	46	60	72	82	90	96	100	104	0	0	0	0	0	0	0	0	0	0	0	.018		

FOOTNOTES: * Indoor Humidity Level is measured in pounds of moisture per pound of dry air. Indoor set points of 72 deg(F)-30%RH and 78 deg(F)-50%RH yield humidity ratios of .005 and .010 respectively.

** Heating (Cooling) Humidity Ratio Hours are defined as the summation of the differences between the maintained indoor humidity ratio and the observed outdoor humidity ratio when both the hourly dry bulb temperature and the humidity ratio are above (below) the base levels.

TABLE G:

Percent Diffuse Solar Radiation*
and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
% Diffuse on surface													
HORIZONTAL	58	50	41	45	47	38	24	26	29	38	62	60	37
VERTICAL													
NORTH	100	100	100	98	94	86	85	94	100	100	100	100	94
WEST	64	58	53	62	63	56	48	43	46	50	61	67	53
SOUTH	46	44	46	60	70	69	55	47	38	37	51	44	51
EAST	63	68	58	64	67	58	45	49	47	53	79	67	56

% Possible Sun DATA IS NOT AVAILABLE AT THIS TIME

FOOTNOTES: * Corrected for Cloud Cover.

** Sources: NOAA, Cooperative Climatic Data for the United States Through 1978.

MEDFORD, OREGON
 WBAN 24225
 TABLE H:

MYEC Data

Latitude 42.40 N
 Longitude 122.90 E

Average Daily Solar Radiation on Vertical and Horizontal Surfaces
 (BTU/DAY.SQFT)

Month	Under Clear Sky Assumption*										Corrected For Cloud Cover**										obs		
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ ENW	NE/ NN	NNE/ NNW	N	S-45 horiz ***	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ ENW	NE/ NN	NNE/ NNW	N	S-45 horiz ***			
Jan	1764	1642	1310	994	583	290	160	135	137	1758	821	577	544	456	371	258	176	137	129	128	561	355	406
Feb	1881	1736	1460	1184	778	432	256	187	182	2066	1160	715	656	550	453	323	230	189	170	168	756	514	737
Mar	1804	1735	1565	1393	1065	732	474	305	257	2344	1669	943	897	810	727	582	446	347	284	262	1153	917	1131
Apr	1479	1542	1539	1513	1310	1032	750	516	364	2420	2163	1007	1014	982	941	821	681	557	465	413	1405	1329	1635
May	1190	1336	1452	1540	1456	1252	987	725	530	2390	2512	1029	1074	1098	1113	1041	918	782	658	577	1590	1683	2031
Jun	1069	1236	1408	1593	1529	1367	1120	852	642	2368	2680	997	1080	1163	1235	1203	1092	940	777	652	1769	1988	2254
Jul	1126	1284	1432	1548	1494	1316	1064	799	596	2382	2617	1064	1193	1294	1370	1309	1153	948	738	576	2045	2221	2460
Aug	1336	1457	1502	1519	1364	1118	848	605	436	2402	2314	1284	1240	1243	1232	1100	913	724	562	456	1988	1932	2134
Sep	1678	1653	1546	1432	1153	841	578	388	306	2398	1851	1307	1284	1195	1101	898	683	510	388	333	1746	1425	1715
Oct	1870	1756	1497	1256	882	541	329	227	217	2169	1342	1022	955	822	698	519	364	270	222	215	1150	798	968
Nov	1806	1684	1360	1045	643	331	189	153	153	1855	926	533	478	387	307	229	164	141	134	134	528	354	510
Dec	1693	1580	1253	926	526	243	139	126	126	1651	735	533	503	415	324	219	142	117	113	113	507	304	337
Year	1558	1554	1443	1326	1067	795	576	420	330	2180	1735	912	911	870	825	710	582	473	388	336	1270	1155	1363

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
 ** Derived according to DOE-2.1 LOADS Algorithms and MYEC cloud cover data.
 *** South exposure tilt 45 degrees.

TABLE I: Average Daily Solar Heat Gain Through Single Pane Glass on Vertical and Horizontal Surfaces
 (BTU/DAY.SQFT)

Month	Under Clear Sky*									Corrected For Cloud Cover**								
	S	SSE/SSW	SE/SW	ESE/WSW	E/W	ENE/ENW	NE/NN	NNE/NNW	N	S	SSE/SSW	SE/SW	ESE/WSW	E/W	ENE/ENW	NE/NN	NNE/NNW	N
Jan	1538	1411	1110	828	476	276	123	113	113	490	459	382	308	211	146	110	105	105
Feb	1615	1489	1231	991	639	348	192	151	149	604	547	455	372	262	183	149	139	137
Mar	1484	1450	1313	1174	886	589	363	236	210	772	741	671	604	480	361	277	228	214
Apr	1139	1247	1276	1267	1094	849	599	397	269	798	822	806	777	676	556	450	373	334
May	863	1027	1180	1278	1212	1038	798	569	401	796	853	893	914	857	753	635	529	460
Jun	753	924	1130	1282	1272	1136	909	672	479	749	834	936	1014	994	903	766	625	508
Jul	802	971	1154	1281	1245	1092	861	629	447	780	913	1044	1130	1086	953	767	583	443
Aug	1010	1153	1232	1265	1137	923	681	471	339	920	984	1014	1017	908	748	583	445	361
Sep	1352	1369	1292	1201	997	682	451	299	249	1058	1060	993	917	742	555	405	306	272
Oct	1591	1486	1265	1059	724	429	249	182	178	861	880	686	582	425	294	214	160	177
Nov	1572	1445	1149	876	517	253	143	126	126	453	398	319	252	179	133	115	110	110
Dec	1484	1368	1062	772	418	182	108	103	103	456	427	347	267	174	114	95	93	93
Year	1265	1277	1199	1107	882	646	458	336	257	729	738	714	681	585	476	382	310	269

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
 ** Derived according to DOE-2.1 LOADS Algorithms and MYEC cloud cover data.

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MIAMI, FLORIDA
WBAN 12859
TABLE A:

WYEC Data

Latitude 25.80 N
Longitude 80.30 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): First Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Jan														
80 to 84	0	0	0	4	10	1	0	0	15	73.7	744	11286	0	0
75 to 79	0	0	4	32	27	20	1	0	84	70.3	707	7631	37	65
70 to 74	23	21	29	29	33	40	42	37	256	67.1	565	4370	119	524
65 to 69	41	40	26	10	10	17	32	32	208	63.7	270	2267	474	2141
60 to 64	8	9	14	8	9	11	5	9	73	56.8	150	1280	594	4874
55 to 59	4	8	9	5	1	1	9	6	43	52.9	90	693	654	8007
50 to 54	5	9	5	1	0	0	1	6	31	48.5	55	345	689	11379
45 to 49	3	3	1	3	3	3	0	0	16	42.5	27	158	717	14912
40 to 44	0	0	4	1	0	0	3	0	8	38.9	13	59	731	18533
35 to 39	3	3	1	0	0	0	0	3	10	34.5	7	6	737	22200
Feb														
85 to 89	0	0	0	0	1	0	0	0	1	72.0	672	13380	0	0
80 to 84	0	0	0	10	15	4	0	0	29	72.6	667	10027	5	7
75 to 79	2	2	6	25	31	27	8	3	104	70.2	605	6808	67	148
70 to 74	23	18	18	18	16	26	23	21	163	67.3	461	4082	211	782
65 to 69	19	23	20	12	18	23	32	24	167	63.3	302	2148	370	2208
60 to 64	16	10	12	14	3	4	16	20	95	57.1	144	1027	528	4447
55 to 59	10	11	14	5	0	0	4	9	61	52.3	86	438	586	7218
50 to 54	4	13	9	0	0	0	1	7	34	47.8	37	139	635	10279
45 to 49	6	4	3	0	0	0	0	0	13	42.4	13	52	659	13332
40 to 44	0	3	2	0	0	0	0	0	5	40.0	0	0	612	16860
Mar														
85 to 89	0	0	0	0	5	0	0	0	5	74.0	744	11843	0	0
80 to 84	0	0	0	15	21	20	0	0	54	69.2	718	8158	26	35
75 to 79	6	3	8	49	44	44	21	7	182	67.5	624	4733	120	330
70 to 74	21	22	37	26	21	27	54	44	252	64.9	409	2097	335	1414
65 to 69	39	24	27	5	2	2	17	33	149	61.7	167	691	577	3728
60 to 64	24	39	18	0	0	0	1	9	91	58.6	66	115	676	8872
55 to 59	3	5	3	0	0	0	0	0	11	53.5	2	1	742	10478

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

MIAMI, FLORIDA
WBAH 12839
TABLE A:

WYEC Data

Latitude 25.80 N
Longitude 80.30 E

Monthly Dry Bulb Temperature Frequencies With Means
Coincident Wet Bulb Temperature (MCWB): Second Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Apr														
90 to 94	0	0	0	0	1	0	0	0	1	73.0	720	12831	0	0
85 to 89	0	0	0	10	14	2	0	0	26	73.0	716	9237	4	6
80 to 84	0	0	8	40	44	27	3	0	122	70.8	672	5756	48	125
75 to 79	16	11	32	28	22	49	47	28	253	68.9	490	2803	230	772
70 to 74	46	41	28	9	7	9	35	47	222	66.0	218	991	502	2560
65 to 69	21	22	17	2	2	2	2	12	80	61.6	77	303	643	3472
60 to 64	4	13	4	1	0	1	1	0	24	59.2	19	77	701	8846
55 to 59	3	3	1	0	0	0	2	3	12	58.6	10	10	710	12379
May														
85 to 89	0	0	0	22	29	10	1	0	62	72.2	732	7317	12	10
80 to 84	0	0	23	55	48	56	16	1	199	72.2	609	3889	135	302
75 to 79	51	27	47	11	11	19	61	72	299	71.3	377	1375	367	1508
70 to 74	36	52	16	4	5	8	14	15	150	69.6	99	255	645	4108
65 to 69	5	11	7	1	0	0	1	5	30	65.5	12	29	732	7602
60 to 64	1	3	0	0	0	0	0	0	4	61.0	0	0	744	11293
Jun														
90 to 94	0	0	0	0	6	0	0	0	6	74.5	720	8973	0	0
85 to 89	0	0	1	53	56	27	7	0	144	75.2	674	5428	46	55
80 to 84	7	2	49	33	17	41	37	30	216	74.5	487	2493	233	720
75 to 79	64	57	35	5	8	20	41	51	279	73.1	259	596	461	2423
70 to 74	19	31	5	1	3	2	5	9	75	70.7	20	21	700	5448

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

MIAMI, FLORIDA
 NBAN 12839
 TABLE A:

MYEC Data

Latitude 25.80 N
 Longitude 80.30 E

Monthly Dry Bulb Temperature Frequencies With Mean
 Coincident Wet Bulb Temperature (MCWB): Third Quarter
 (5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Jul														
90 to 94	0	0	0	3	8	0	0	0	11	77.5	744	7777	0	0
85 to 89	0	0	17	72	63	59	0	0	211	77.2	676	4135	68	78
80 to 84	47	30	64	14	20	26	74	64	339	76.3	426	1389	318	1052
75 to 79	41	59	11	4	2	8	18	26	169	74.6	97	150	647	3533
70 to 74	5	4	1	0	0	0	1	3	14	72.6	0	0	744	7103
Aug														
90 to 94	0	0	0	12	12	2	0	0	26	77.3	744	7863	0	0
85 to 89	0	0	20	60	57	31	5	0	193	77.4	651	4292	93	149
80 to 84	30	29	47	13	16	27	60	45	267	76.2	425	1602	319	1179
75 to 79	60	58	26	8	7	13	28	45	245	74.7	133	193	611	3490
70 to 74	3	6	0	0	1	0	0	3	13	72.6	0	0	744	7017
Sep														
85 to 89	0	0	2	50	59	46	4	0	161	78.1	696	4519	24	27
80 to 84	38	14	50	31	22	30	60	56	301	77.2	456	1594	264	702
75 to 79	52	75	37	8	9	13	23	32	249	75.7	118	143	602	2651
70 to 74	0	1	1	1	0	1	3	2	9	72.0	0	0	720	6308

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

MIAMI, FLORIDA
WBAN 12839
TABLE A:

WYEC Data

Latitude 25.80 N
Longitude 80.30 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Fourth Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Oct														
90 to 94	0	0	0	0	1	0	0	0	1	73.0	744	11298	0	0
85 to 89	0	0	0	19	34	7	0	0	60	74.9	739	7585	5	7
80 to 84	2	0	17	60	45	33	28	4	209	72.2	619	4144	125	286
75 to 79	51	39	49	9	12	31	53	61	301	70.8	355	1653	389	1315
70 to 74	24	31	15	3	1	2	8	16	101	68.4	110	633	634	4215
65 to 69	6	11	8	2	0	0	4	8	39	61.8	53	251	691	7553
60 to 64	8	5	4	0	0	0	0	4	21	58.8	21	69	723	11091
55 to 59	2	7	3	0	0	0	0	0	12	54.6	6	3	738	14745
Nov														
80 to 84	0	0	1	37	44	30	0	0	112	72.8	786	7288	14	9
75 to 79	37	32	40	30	26	35	50	39	289	70.8	486	4137	234	538
70 to 74	17	19	16	5	10	11	19	24	121	66.1	250	2401	470	2402
65 to 69	16	15	12	6	6	9	4	9	77	62.8	163	1375	557	4976
60 to 64	5	6	3	6	4	4	12	6	46	55.8	102	730	610	7931
55 to 59	5	6	6	6	0	1	2	9	35	52.8	57	331	663	11132
50 to 54	7	7	8	0	0	0	3	0	25	48.2	33	120	687	14921
45 to 49	3	2	3	0	0	0	0	3	11	44.4	8	27	712	18023
40 to 44	0	3	1	0	0	0	0	0	4	41.5	0	0	720	21601
Dec														
85 to 89	0	0	0	0	1	0	0	0	1	71.0	744	14414	0	0
80 to 84	0	0	0	14	20	3	0	0	37	71.6	739	10700	5	6
75 to 79	2	2	13	38	37	37	14	4	147	68.5	653	7160	89	186
70 to 74	41	28	26	11	16	25	39	43	229	66.8	442	4328	302	1074
65 to 69	15	25	18	12	8	14	15	14	121	63.3	281	2576	463	3042
60 to 64	17	11	15	8	5	6	12	14	88	57.4	179	1475	365	5661
55 to 59	3	12	7	7	6	7	3	3	48	51.6	90	811	654	8717
50 to 54	0	0	2	2	0	1	8	2	15	44.1	67	432	677	12058
45 to 49	9	5	7	1	0	0	2	13	37	41.5	44	142	708	15488
40 to 44	6	10	3	0	0	0	0	0	19	38.1	9	13	735	19079
35 to 39	0	0	2	0	0	0	0	0	2	35.0	0	0	744	22786

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

MIAMI, FLORIDA
WBAH 12839
TABLE B:

WYEC Data

Latitude 25.80 N
Longitude 80.30 E

Annual Dry Bulb Temperature Frequencies
With Mean Coincident Wet Bulb Temperature
(5 Degrees(F)/3Hr Bins)

Dry Bulb range(F)	Number of Hours of Occurrence in time period									Mean Coincident Wet Bulb Temperature (F)								
	Hour of day									Hour of day								
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year
90 to 94	0	0	0	13	28	2	0	0	45	0.0	0.0	0.0	77.1	76.5	77.0	0.0	0.0	76.8
85 to 89	0	0	40	286	319	202	17	0	864	0.0	0.0	77.1	76.4	76.2	76.6	76.3	0.0	76.4
80 to 84	124	75	259	324	322	318	278	200	1900	76.0	75.8	75.8	73.3	72.5	73.3	75.5	76.0	74.4
75 to 79	382	363	304	245	236	316	365	368	2581	73.5	73.8	72.5	68.8	68.5	69.7	71.7	72.6	71.6
70 to 74	260	274	193	107	113	151	243	264	1605	68.5	68.9	67.5	64.1	63.7	65.0	66.8	67.8	67.1
65 to 69	158	171	135	50	46	67	107	137	871	63.7	64.3	63.3	59.2	58.0	59.4	61.9	63.1	62.6
60 to 64	83	96	70	37	21	26	47	62	442	58.9	59.5	56.7	55.2	52.4	53.1	55.8	57.5	57.5
55 to 59	38	52	43	23	7	9	20	30	222	53.8	54.6	53.7	49.4	46.9	45.8	50.2	53.0	52.5
50 to 54	20	29	24	3	0	1	13	15	105	49.6	49.0	47.6	43.0	0.0	42.0	44.3	45.9	47.6
45 to 49	21	14	14	4	3	3	2	16	77	42.3	43.9	43.1	40.8	41.0	39.5	38.5	41.6	42.2
40 to 44	6	16	10	1	0	0	3	0	36	36.5	39.1	39.2	39.0	0.0	0.0	37.7	0.0	38.9
35 to 39	3	3	3	0	0	0	0	3	12	34.0	34.3	35.3	0.0	0.0	0.0	0.0	34.7	34.6

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Month	Dry Bulb Temperature (F)					Wet Bulb Ave	Percent Relative Humidity					Average Humidity Ratio (lb moisture/lb dry air)					Average wind MPH		
	Ave	Max	Min	Daily			4AM	10AM	Average		4PM	10PM	Day	4AM	10AM	4PM		10PM	Day
				Max	Min				4PM	10PM									
Jan	67.3	82	36	73	61	62.8	87	75	68	79	78	0.0115	0.0117	0.0116	0.0115	0.0115	8.7		
Feb	67.6	85	44	76	60	62.0	85	70	61	74	74	0.0109	0.0113	0.0111	0.0113	0.0110	8.3		
Mar	71.6	85	57	79	64	64.4	81	64	56	67	69	0.0112	0.0116	0.0112	0.0114	0.0114	10.8		
Apr	74.7	90	56	81	68	67.1	81	60	59	70	69	0.0127	0.0126	0.0126	0.0126	0.0126	8.4		
May	77.7	89	63	84	71	71.0	86	63	65	75	74	0.0148	0.0142	0.0147	0.0149	0.0148	9.3		
Jun	80.0	90	70	87	75	73.7	87	68	67	76	76	0.0164	0.0166	0.0161	0.0162	0.0164	7.3		
Jul	82.0	91	73	88	76	76.1	87	70	67	81	77	0.0180	0.0180	0.0179	0.0183	0.0180	6.3		
Aug	81.9	92	73	89	77	76.0	86	70	70	79	77	0.0180	0.0181	0.0179	0.0178	0.0180	7.2		
Sep	81.3	89	73	86	77	76.8	91	78	75	83	83	0.0190	0.0191	0.0189	0.0188	0.0189	7.8		
Oct	77.3	90	57	84	71	70.2	82	65	61	72	71	0.0144	0.0147	0.0141	0.0145	0.0144	11.2		
Nov	72.5	84	44	78	66	66.3	82	69	63	72	73	0.0126	0.0127	0.0128	0.0128	0.0128	11.5		
Dec	68.1	85	39	75	61	62.2	82	68	62	74	72	0.0110	0.0113	0.0111	0.0111	0.0110	10.3		
Year	75.2	92	36	82	69	69.1	85	68	64	75	74	0.0142	0.0143	0.0142	0.0143	0.0142	8.9		

MIAMI, FLORIDA

WDAV 12039

TABLE D:

NYEC Data

Latitude 25.00 N

Longitude 80.30 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY												24 HOUR SUMMARY									
	7-9AM**			10-12AM**			1-3PM**			4-6PM**			7-9PM**			10PM-6AM**			HEATING		COOLING	
	Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		
	Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*			Below	Above		
	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	100s*	Base	100s*
93	0	216	0	0	152	0	0	139	0	0	160	0	0	197	0	0	694	0	8760	1558	0	0
92	0	205	0	0	141	0	1	128	0	0	149	0	0	186	0	0	661	0	8758	1470	2	0
91	0	194	0	2	130	0	7	117	0	0	138	0	0	176	0	0	629	0	8751	1383	9	0
90	0	183	0	9	119	0	19	106	0	1	127	0	0	165	0	0	596	0	8730	1295	30	0
89	0	172	0	28	108	0	57	95	0	8	116	0	0	154	0	0	563	0	8666	1208	94	1
88	0	161	0	61	98	1	108	85	1	27	105	0	0	143	0	0	530	0	8563	1122	197	2
87	4	150	0	112	88	1	169	75	3	61	95	1	1	132	0	0	497	0	8412	1037	348	5
86	14	139	0	182	78	3	245	67	5	108	85	1	2	121	0	0	464	0	8207	954	553	9
85	30	129	0	261	70	5	315	58	8	168	75	3	10	110	0	0	432	0	7974	873	786	16
84	61	118	1	337	62	8	381	51	11	235	66	5	38	99	0	2	399	0	7704	794	1056	25
83	102	108	2	396	54	12	443	44	15	301	58	7	85	89	1	18	366	0	7413	719	1347	37
82	146	98	5	451	48	16	505	38	20	366	50	11	144	79	2	65	333	0	7083	646	1677	52
81	199	89	4	517	42	21	566	32	25	421	43	15	214	70	4	156	301	1	6684	577	2076	70
80	264	80	7	588	36	26	633	27	31	484	37	19	272	61	6	307	271	4	6211	512	2549	93
79	326	72	10	651	31	33	698	23	38	560	31	24	330	53	9	489	242	7	5704	453	3056	121
78	388	65	13	706	27	39	760	19	45	636	26	30	405	46	13	682	215	13	5182	398	3578	154
77	457	58	17	755	24	47	811	16	53	703	22	37	486	39	17	929	190	21	4617	349	4143	193
76	520	52	22	798	20	54	846	14	61	762	18	44	560	34	23	1195	168	32	4078	306	4682	237
75	575	47	28	845	18	63	884	11	70	815	15	52	626	29	28	1415	148	45	3598	268	5162	286
74	627	42	34	881	15	71	914	10	79	859	13	61	695	24	35	1629	130	60	3153	234	5607	340
73	670	37	40	905	13	80	940	8	88	897	10	70	759	21	42	1832	115	78	2755	205	6005	399
72	707	33	47	931	12	90	969	6	96	926	9	79	805	18	50	1992	101	97	2429	179	6331	460
71	741	30	55	954	10	99	990	5	108	955	7	88	841	15	58	2124	89	117	2153	156	6607	525
70	777	26	62	971	9	109	1009	4	118	980	6	98	881	15	67	2248	78	139	1893	156	6867	593
69	812	23	70	984	8	118	1022	4	128	1000	5	108	919	11	76	2380	68	162	1641	118	7119	663
68	845	21	78	996	7	128	1034	3	138	1017	4	118	947	9	85	2500	60	187	1421	103	7339	739
67	870	18	87	1008	6	138	1047	2	149	1031	3	128	970	8	95	2592	53	212	1247	90	7518	809
66	893	16	96	1016	5	148	1054	2	159	1043	3	138	989	7	105	2672	46	239	1092	78	7668	865
65	917	14	105	1024	4	159	1060	2	170	1051	2	149	1002	6	115	2744	40	266	959	68	7801	963
64	938	12	114	1030	3	169	1066	1	180	1059	2	160	1015	5	125	2811	35	294	859	59	7921	1041
63	953	11	124	1039	3	179	1071	1	191	1066	1	170	1025	4	135	2871	31	322	733	51	8027	1121
62	965	10	133	1049	2	190	1076	1	202	1071	1	181	1034	3	145	2919	27	351	643	44	8117	1202
61	978	8	143	1057	2	200	1081	1	212	1075	1	192	1043	3	156	2961	24	380	563	38	8197	1263
60	993	7	153	1062	2	211	1084	1	223	1079	1	202	1052	2	166	3000	21	410	487	33	8273	1366
59	1006	6	163	1067	1	221	1086	0	234	1082	1	213	1058	2	177	3036	18	440	423	29	8337	1449
58	1016	6	173	1073	1	232	1089	0	245	1084	0	224	1062	2	187	3066	16	471	367	25	8393	1533
57	1026	5	183	1078	1	243	1091	0	256	1087	0	235	1068	1	198	3092	14	502	316	21	8444	1617
56	1034	4	193	1083	1	254	1092	0	267	1089	0	246	1072	1	209	3115	12	533	274	18	8486	1701
55	1041	4	204	1086	1	265	1092	0	278	1090	0	257	1075	1	220	3132	10	564	245	16	8517	1786
54	1046	3	214	1087	0	275	1092	0	289	1091	0	268	1079	1	230	3146	9	595	218	13	8542	1872
53	1049	3	225	1087	0	286	1092	0	300	1092	0	278	1082	1	241	3157	7	627	199	11	8561	1957
52	1054	2	235	1088	0	297	1092	0	311	1092	0	289	1084	0	252	3171	6	659	178	9	8582	2043
51	1059	2	246	1089	0	308	1092	0	321	1092	0	300	1086	0	263	3189	5	690	152	8	8608	2129
50	1064	1	256	1090	0	319	1092	0	332	1092	0	311	1089	0	274	3200	4	722	132	6	8628	2215
49	1069	1	267	1090	0	330	1092	0	343	1092	0	322	1090	0	285	3209	3	754	117	5	8643	2301
48	1072	1	278	1091	0	341	1092	0	354	1092	0	333	1091	0	296	3220	3	787	101	4	8659	2388

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 565 x 100 = 56500 Deg Hrs)

** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

MIAMI, FLORIDA
WBAH 12839
TABLE D:

MYEC Data

Latitude 25.80 N
Longitude 80.30 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE	BY TIME OF DAY												24 HOUR SUMMARY			
	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-5AM**		HEATING		COOLING	
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg	Hrs	Deg
	(F) Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Below Base 100s*		Above Base 100s*	
	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Base	Heat
47 1075	1	289	1092	0	352	1093	0	365	1092	0	344	1092	0	306	3230	2 819
46 1078	1	299	1092	0	363	1094	0	376	1093	0	355	1092	0	317	3238	2 831
45 1081	0	310	1093	0	374	1095	0	387	1094	0	366	1092	0	328	3247	1 884
44 1085	0	321	1094	0	384	1095	0	398	1095	0	377	1092	0	339	3258	1 916
43 1089	0	332	1094	0	395	1095	0	409	1095	0	388	1093	0	350	3266	1 949
42 1090	0	343	1095	0	406	1095	0	420	1095	0	399	1093	0	361	3272	0 981
41 1091	0	354	1095	0	417	1095	0	431	1095	0	410	1094	0	372	3275	0 1014
40 1091	0	365	1095	0	428	1095	0	442	1095	0	421	1094	0	383	3276	0 1047
39 1093	0	375	1095	0	439	1095	0	453	1095	0	432	1095	0	394	3276	0 1080
38 1094	0	386	1095	0	450	1095	0	464	1095	0	442	1095	0	405	3277	0 1113
37 1095	0	397	1095	0	461	1095	0	475	1095	0	453	1095	0	416	3280	0 1145
36 1095	0	408	1095	0	472	1095	0	486	1095	0	464	1095	0	427	3284	0 1178
35 1095	0	419	1095	0	483	1095	0	497	1095	0	475	1095	0	438	3285	0 1211

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 365 x 100 = 36500 Deg Hrs)

** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

MIAMI, FLORIDA
WBAN 12839
TABLE E:

MYEC Date

Latitude 25.80 N
Longitude 80.30 E

Annual COOLING Wet Bulb Degree Hour Summary

Wet Bulb Temperature (F) Base:	50	55	56	59	62	65	68	71	74	77	80
Annual Wet Bulb hours ABOVE base:	8503	8383	8214	7897	7466	6813	5835	4678	2993	1127	43
Annual Wet Bulb Cooling deg-hrs:	177196	151819	126816	102463	79184	57404	37895	21477	9067	1870	53

TABLE F:

Annual Humidification/Dehumidification Requirements
At various indoor Conditions and Degree Day Bases
(Pounds of Moisture)

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **												COOLING HUMIDITY RATIO HOURS **												Maintained Indoor Humidity Ratio
	Heating Degree Base												Cooling Degree Base												
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80			
.001	0	0	0	0	0	0	0	0	0	0	0	112	112	112	111	111	111	109	105	95	73	36	.001		
.002	0	0	0	0	0	0	0	0	0	0	0	103	103	103	103	103	102	101	97	88	68	33	.002		
.003	0	0	0	0	0	0	0	0	0	0	0	94	94	94	94	94	93	90	82	63	31	.003			
.004	0	0	0	0	0	0	0	0	0	0	0	85	85	85	85	85	85	84	82	75	59	29	.004		
.005	0	0	0	0	0	0	0	0	0	0	0	77	77	77	77	77	77	76	74	68	54	26	.005		
.006	0	0	0	0	0	0	0	1	1	1	1	68	68	68	68	68	68	68	68	62	49	24	.006		
.007	0	0	0	0	0	1	1	1	1	1	1	60	60	60	60	60	60	60	59	55	44	22	.007		
.008	0	0	0	0	1	1	1	1	2	2	2	52	52	52	52	52	52	52	51	48	39	19	.008		
.009	0	0	0	0	1	1	2	2	2	3	3	44	44	44	44	44	44	44	44	42	34	17	.009		
.010	0	0	0	0	1	1	2	3	3	4	4	37	37	37	37	37	37	37	37	35	29	15	.010		
.011	0	0	0	0	1	1	2	4	5	5	6	30	30	30	30	30	30	30	30	29	24	13	.011		
.012	0	0	0	0	1	2	3	4	6	7	8	23	23	23	23	23	23	23	23	23	20	10	.012		
.013	0	0	0	0	1	2	3	5	8	10	11	18	18	18	18	18	18	18	18	17	15	8	.013		
.014	0	0	0	1	1	2	4	6	9	12	14	13	13	13	13	13	13	13	13	12	11	6	.014		
.015	0	0	0	1	1	2	4	7	11	15	18	8	8	8	8	8	8	8	8	8	8	4	.015		
.016	0	0	0	1	2	3	5	8	13	18	22	5	5	5	5	5	5	5	5	5	5	3	.016		
.017	0	0	0	1	2	3	5	9	15	22	27	2	2	2	2	2	2	2	2	2	2	1	.017		
.018	0	0	0	1	2	3	6	10	16	25	33	1	1	1	1	1	1	1	1	1	1	1	.018		

FOOTNOTES: * Indoor Humidity Level is measured in pounds of moisture per pound of dry air. Indoor sat points of 72 deg(F)-30%RH and 78 deg(F)-50%RH yield humidity ratios of .005 and .010 respectively.
** Heating (Cooling) Humidity Ratio Hours are defined as the summation of the differences between the maintained indoor humidity ratio and the observed outdoor humidity ratio when both the hourly dry bulb temperature and the humidity ratio are above (below) the base levels.

TABLE G:

Percent Diffuse Solar Radiation*
and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
% Diffuse on surface													
HORIZONTAL	43	39	44	51	53	57	58	63	58	47	36	27	50
VERTICAL													
NORTH	100	100	100	98	92	88	90	97	100	100	100	100	95
WEST	59	56	60	70	74	76	74	81	77	63	54	44	68
SOUTH	43	43	60	78	92	98	95	89	74	55	37	26	63
EAST	61	50	55	67	65	69	71	74	65	59	48	38	62
% Possible Sun	61	61	78	80	66	76	78	74	73	70	63	60	70

FOOTNOTES: * Corrected For Cloud Cover.

** Source: NOAA, Comparative Climatic Data for the United States Through 1978.

MIAMI, FLORIDA
 WYEC 12859
 TABLE H:
 Average Daily Solar Radiation on Vertical and Horizontal Surfaces
 (BTU/DAY.SQFT)
 WYEC Date
 Latitude 25.80 N
 Longitude 80.50 E

Under Clear Sky Assumptions
 S SSE/ SE/ ESE/ E/ ENE/ NE/ NNE/ N S-45 Horiz ***
 SSW SW WNW NN NNE
 Corrected for Cloud Cover**
 S SSE/ SE/ ESE/ E/ ENE/ NE/ NNE/ N S-45 Horiz ***

Month	S	SSE/	SE/	ESE/	E/	ENE/	NE/	NNE/	N	obs
Jan	1769	1655	1595	1170	815	501	297	221	219	216
Feb	1643	1556	1480	1295	982	653	416	275	235	228
Mar	1300	1315	1307	1283	1162	856	607	398	307	217
Apr	865	1026	1160	1261	1216	1066	858	604	402	199
May	602	820	1040	1215	1279	1216	1052	807	588	1819
Jun	523	757	981	1186	1297	1123	916	724	1736	2598
Jul	561	776	1008	1200	1287	1252	1088	875	674	1768
Aug	751	956	1102	1233	1231	1124	920	696	488	1897
Sep	1125	1185	1228	1293	1127	918	689	479	355	2064
Oct	1499	1439	1332	1232	966	706	472	315	282	2152
Nov	1717	1615	1389	1190	866	551	353	238	235	2129
Dec	1768	1659	1384	1141	785	470	274	214	212	2067
Year	1174	1225	1226	1218	1080	884	675	504	396	2099
Year	1174	1225	1226	1218	1080	884	675	504	396	2099

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
 ** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.
 *** South exposure tilt 45 degrees.

TABLE I:
 Average Daily Solar Heat Gain Through Single Pane Glass on Vertical
 and Horizontal Surfaces
 (BTU/DAY.SQFT)

Month	S	SSE/	SE/	ESE/	E/	ENE/	NE/	NNE/	N	Under Clear Sky*
Jan	1495	1374	1198	970	684	385	220	179	178	682
Feb	1340	1279	1159	1045	791	519	312	214	206	905
Mar	965	1046	1070	1064	911	689	466	299	249	775
Apr	578	768	932	1037	1007	870	667	469	314	625
May	415	579	812	995	1057	1000	851	627	427	550
Jun	395	513	756	968	1072	1055	909	717	517	550
Jul	408	546	782	979	1066	1035	879	684	487	577
Aug	505	687	878	1011	1020	921	737	536	371	625
Sep	802	928	1081	1034	931	747	559	365	287	685
Oct	1190	1178	1096	1020	806	560	395	245	229	895
Nov	1456	1335	1150	989	702	426	248	192	190	836
Dec	1501	1381	1148	946	635	357	205	173	175	837
Year	917	965	994	1004	889	714	532	392	303	707
Year	917	965	994	1004	889	714	532	392	303	707

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
 ** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.

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NASHVILLE, TENNESSEE
 WDAN 13897
 TABLE A:

WYEC Data

Latitude 36.10 N
 Longitude 86.90 E

Monthly Dry Bulb Temperature Frequencies With Mean
 Coincident Wet Bulb Temperature (MCWB): First Quarter
 (5 Degree(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Jan															
65 to 69	0	0	0	1	2	1	0	0	4	55.5	744	21840	0	0	
60 to 64	0	0	0	2	7	2	1	0	12	50.1	737	18134	7	14	
55 to 59	2	0	1	7	9	10	4	3	36	48.0	721	14486	23	86	
50 to 54	3	5	2	13	19	17	11	4	74	46.2	670	11001	74	321	
45 to 49	13	10	16	22	16	13	19	18	127	42.6	572	7866	172	906	
40 to 44	17	21	18	10	11	17	16	19	131	37.6	425	5345	319	2105	
35 to 39	16	11	14	10	5	7	10	13	86	33.0	326	3492	418	3972	
30 to 34	12	8	9	5	0	7	4	9	62	28.5	256	2074	488	6274	
25 to 29	10	17	16	13	16	16	14	11	113	24.4	186	979	578	8899	
20 to 24	6	6	3	8	0	3	11	7	46	19.8	79	416	665	12056	
15 to 19	7	9	9	0	0	0	1	8	34	16.2	35	129	709	15489	
10 to 14	5	6	5	0	0	0	0	1	17	10.5	14	24	730	19104	
Feb															
65 to 69	0	0	0	0	6	3	2	0	11	60.5	669	18104	3	4	
60 to 64	1	1	0	1	9	6	3	3	24	55.5	654	14793	18	53	
55 to 59	3	0	0	8	8	9	1	3	32	49.2	625	11589	47	209	
50 to 54	2	2	3	8	10	9	10	6	52	45.3	582	8560	90	540	
45 to 49	13	13	9	13	13	13	12	9	95	42.2	530	5770	142	1110	
40 to 44	14	13	16	25	27	24	20	18	157	38.2	402	3415	270	2115	
35 to 39	18	15	20	17	5	11	21	20	125	33.6	248	1809	424	3869	
30 to 34	17	15	11	7	8	3	6	13	80	28.1	143	859	529	6279	
25 to 29	7	15	16	4	0	6	6	6	60	24.0	71	335	601	9115	
20 to 24	4	2	3	1	0	0	3	5	18	19.1	28	119	644	12259	
15 to 19	5	8	4	0	0	0	0	1	18	15.2	10	18	662	15518	
Mar															
70 to 74	0	0	0	6	10	4	2	0	22	62.0	742	17566	2	1	
65 to 69	4	6	6	6	17	17	5	3	64	58.9	704	13938	40	93	
60 to 64	3	0	4	16	14	18	8	7	70	53.7	628	10614	116	489	
55 to 59	11	11	13	12	15	15	14	12	103	49.3	546	7659	198	1254	
50 to 54	8	7	9	13	13	18	22	19	109	46.7	453	5177	291	2492	
45 to 49	11	8	9	16	6	7	11	11	79	41.9	342	3206	402	4241	
40 to 44	20	14	15	9	15	13	17	13	116	37.9	252	1691	492	6446	
35 to 39	14	15	19	11	3	1	12	21	96	33.6	134	719	610	9194	
30 to 34	17	17	10	4	0	0	2	4	54	30.1	62	249	682	12444	
25 to 29	2	9	6	0	0	0	0	3	20	26.1	21	59	723	15974	
20 to 24	3	6	2	0	0	0	0	0	11	21.4	2	1	742	19638	

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

NASHVILLE, TENNESSEE
 WRA 13897
 TABLE A:

WYEC Data

Latitude 36.10 N
 Longitude 86.90 E

Monthly Dry Bulb Temperature Frequencies With Mean
 Coincident Wet Bulb Temperature (MCWB): Second Quarter
 (5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Apr															
85 to 89	0	0	0	1	4	2	0	0	7	66.7	720	19698	0	0	
80 to 84	0	0	0	5	8	7	0	0	20	67.2	705	16129	15	31	
75 to 79	0	0	1	13	17	16	9	1	57	63.5	679	12655	41	157	
70 to 74	4	0	9	13	16	17	14	11	84	61.2	611	9434	109	536	
65 to 69	16	13	19	16	16	19	12	13	124	58.5	516	6613	204	1315	
60 to 64	14	15	16	12	8	8	18	10	101	54.6	391	4373	329	2675	
55 to 59	12	15	8	10	4	6	12	19	86	51.4	287	2661	433	4563	
50 to 54	11	7	12	10	9	9	16	13	87	47.2	219	1413	501	6915	
45 to 49	15	18	18	8	8	3	4	12	86	44.8	114	565	606	9867	
40 to 44	11	7	6	2	0	3	5	8	42	39.5	51	175	669	12877	
35 to 39	5	15	1	0	0	0	0	3	24	35.7	10	22	710	16324	
30 to 34	2	0	0	0	0	0	0	0	2	31.5	0	0	720	19902	
May															
90 to 94	0	0	0	1	3	1	0	0	5	69.4	744	17919	0	0	
85 to 89	0	0	0	11	16	12	0	0	39	69.0	728	14220	16	21	
80 to 84	0	0	4	22	31	22	4	0	83	68.3	678	10707	66	228	
75 to 79	0	0	17	19	14	24	13	0	87	65.8	576	7567	168	808	
70 to 74	8	5	29	18	11	14	36	16	137	64.5	489	4873	255	1834	
65 to 69	25	23	16	9	7	8	16	37	141	62.0	319	2817	425	3498	
60 to 64	21	26	9	7	6	10	11	16	106	57.6	209	1498	535	5899	
55 to 59	16	10	9	2	3	2	7	7	60	53.2	123	708	621	8829	
50 to 54	10	16	7	4	0	0	6	11	54	48.5	64	244	680	12085	
45 to 49	9	10	2	0	0	0	0	6	27	44.4	18	42	720	15603	
40 to 44	2	3	0	0	0	0	0	0	5	39.6	3	6	741	19287	
Jun															
95 to 99	0	0	0	0	3	2	0	0	5	72.4	720	15450	0	0	
90 to 94	0	0	0	3	3	5	0	0	11	71.9	715	11871	7	21	
85 to 89	0	0	1	16	41	22	2	0	82	73.4	682	8360	38	110	
80 to 84	0	0	16	51	30	37	21	1	156	72.3	564	5216	156	566	
75 to 79	6	3	39	15	6	14	35	17	135	71.0	413	2806	307	1756	
70 to 74	36	36	25	4	7	9	29	52	198	69.2	261	1100	459	3650	
65 to 69	35	29	7	1	0	1	3	17	93	65.8	85	201	635	6431	
60 to 64	13	21	2	0	0	0	0	3	39	60.8	23	38	697	9788	
55 to 59	0	1	0	0	0	0	0	0	1	58.0	0	0	720	13350	

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

NASHVILLE, TENNESSEE
WBAN 13897
TABLE A:

NYEC Data

Latitude 36.10 N
Longitude 86.90 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Third Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Jul															
95 to 99	0	0	0	0	1	0	0	0	1	74.0	744	14167	0	0	
90 to 94	0	0	0	10	30	15	0	0	55	75.3	734	10459	10	12	
85 to 89	0	0	5	44	35	38	6	0	128	73.5	635	6984	109	257	
80 to 84	2	0	24	24	15	21	28	7	121	73.8	516	4121	228	1114	
75 to 79	13	13	37	12	7	19	44	36	183	72.5	372	1867	372	2580	
70 to 74	51	45	26	3	5	0	15	46	191	69.8	173	494	571	4927	
65 to 69	23	29	1	0	0	0	0	4	57	65.4	26	63	718	8216	
60 to 64	2	6	0	0	0	0	0	0	8	60.8	1	1	743	11874	
Aug															
95 to 99	0	0	0	0	1	0	0	0	1	75.0	744	15029	0	0	
90 to 94	0	0	0	10	30	13	0	0	53	75.8	734	11320	10	11	
85 to 89	0	0	2	37	27	27	2	0	95	74.0	660	7830	84	241	
80 to 84	0	0	22	28	29	37	24	0	140	72.0	543	4805	199	936	
75 to 79	6	3	30	16	5	14	42	36	152	71.4	404	2434	340	2305	
70 to 74	52	49	28	2	1	2	22	39	195	69.7	217	871	527	4442	
65 to 69	23	25	10	0	0	0	3	15	76	64.8	68	321	676	7512	
60 to 64	11	13	1	0	0	0	0	3	28	60.8	15	27	729	11038	
55 to 59	1	3	0	0	0	0	0	0	4	57.3	0	0	744	14731	
Sep															
90 to 94	0	0	0	0	9	4	0	0	13	72.8	720	15097	0	0	
85 to 89	0	0	0	10	26	19	0	0	55	72.6	689	11553	31	56	
80 to 84	0	0	1	26	21	26	10	0	64	70.3	622	8270	98	373	
75 to 79	0	0	16	21	13	12	28	10	100	68.9	536	5583	184	1086	
70 to 74	29	21	26	18	12	18	18	31	173	67.5	396	3017	324	2320	
65 to 69	20	28	24	13	6	8	21	18	138	63.6	235	1437	485	4340	
60 to 64	20	18	15	2	3	3	10	28	91	59.5	119	578	601	7081	
55 to 59	14	8	5	0	0	0	3	9	39	54.5	49	190	671	10293	
50 to 54	7	12	3	0	0	0	0	2	24	51.0	13	26	705	13729	
45 to 49	0	3	0	0	0	0	0	0	3	47.7	0	0	720	17303	

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

NASHVILLE, TENNESSEE
WSAN 13097
TABLE A:

WYEC Data

Latitude 36.10 N
Longitude 86.90 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Fourth Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day 10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Oct														
85 to 89	0	0	0	0	1	0	0	0	1	69.0	744	20255	0	0
80 to 84	0	0	0	3	7	4	0	0	14	64.9	741	16539	3	4
75 to 79	0	0	0	12	18	9	0	0	39	62.2	719	12881	25	66
70 to 74	2	3	9	21	22	10	10	4	89	62.6	664	9406	60	315
65 to 69	11	6	14	21	25	28	16	15	134	59.5	545	6346	199	971
60 to 64	19	16	14	20	11	21	22	19	142	57.2	407	3950	357	2295
55 to 59	13	19	20	11	9	10	17	15	114	55.6	274	2237	470	4302
50 to 54	14	10	16	5	0	2	19	15	81	48.9	175	1127	569	6912
45 to 49	16	13	14	0	0	1	8	22	74	44.7	99	436	645	9941
40 to 44	14	20	3	0	0	0	1	4	42	40.9	40	105	704	15350
35 to 39	4	6	3	0	0	0	0	1	14	36.8	5	4	739	16949
Nov														
75 to 79	0	0	0	1	2	0	0	0	3	66.3	720	20756	0	0
70 to 74	0	1	3	3	5	1	0	0	11	66.3	711	17170	9	14
65 to 69	2	5	3	3	8	9	0	0	30	61.0	696	13642	24	86
60 to 64	8	9	5	12	16	12	8	6	63	55.6	656	10239	64	283
55 to 59	10	12	9	23	30	24	16	15	141	52.7	562	7165	158	809
50 to 54	8	6	12	15	10	13	20	13	97	47.6	435	4727	285	1971
45 to 49	15	5	15	13	14	17	12	14	103	42.4	345	2797	379	3641
40 to 44	18	23	28	12	1	7	19	21	121	39.3	225	1353	495	2797
35 to 39	25	27	16	5	2	3	8	13	97	34.6	122	524	598	6568
30 to 34	1	9	5	2	4	3	2	8	50	29.9	35	166	685	11610
25 to 29	5	4	4	3	0	1	3	0	20	24.7	16	35	782	15279
20 to 24	0	2	2	0	0	0	0	0	4	22.8	0	0	720	16844
Dec														
65 to 69	0	0	0	1	11	2	0	0	14	56.6	740	20167	4	2
60 to 64	2	2	1	6	2	5	2	0	22	55.6	721	16510	23	65
55 to 59	8	8	11	15	5	7	7	15	76	52.7	686	12963	58	238
50 to 54	7	5	6	6	14	13	13	8	72	46.1	606	9738	138	733
45 to 49	3	6	6	12	21	12	9	5	76	42.0	529	6897	215	1612
40 to 44	16	16	15	12	7	18	13	9	106	36.4	428	4457	316	2892
35 to 39	18	13	15	14	13	16	25	24	140	33.4	334	2519	410	4674
30 to 34	18	17	19	16	10	8	9	17	114	29.9	179	1243	565	7118
25 to 29	9	12	9	4	9	9	9	4	65	24.9	99	583	645	10176
20 to 24	2	3	3	3	1	3	5	8	28	20.5	42	242	702	13557
15 to 19	3	6	5	2	0	0	1	2	19	15.8	24	81	720	17116
10 to 14	3	3	5	0	0	0	0	1	12	12.3	5	4	739	20759

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

NASHVILLE, TENNESSEE
WBAN 13897
TABLE B:

WYEC Data

Latitude 36.10 N
Longitude 86.90 E

Annual Dry Bulb Temperature Frequencies
With Mean Coincident Wet Bulb Temperature
(5 Degrees(F)/3Hr Bins)

Dry Bulb range(F)	Number of Hours of Occurrence in time period									Mean Coincident Wet Bulb Temperature (F)								
	Hour of day									Hour of day								
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year
95 to 99	0	0	0	0	5	2	0	0	7	0.0	0.0	0.0	0.0	73.6	71.5	0.0	0.0	73.0
90 to 94	0	0	0	24	75	38	0	0	137	0.0	0.0	0.0	76.1	74.6	74.3	0.0	0.0	74.8
85 to 89	0	0	8	119	150	120	10	0	407	0.0	0.0	76.4	73.6	72.2	72.8	75.0	0.0	72.0
80 to 84	2	0	67	159	141	154	87	8	618	76.5	0.0	73.7	71.1	70.1	70.8	72.6	76.1	71.4
75 to 79	27	19	140	109	82	108	171	100	756	73.2	73.8	71.1	68.2	65.0	67.5	70.3	71.7	69.5
70 to 74	162	160	155	88	87	83	146	199	1100	69.2	69.6	67.5	63.9	63.5	63.5	66.5	68.4	67.2
65 to 69	159	164	100	71	98	96	78	120	886	64.5	64.6	62.5	58.7	56.7	58.0	61.2	63.3	61.8
60 to 64	112	118	65	80	76	85	85	87	706	59.1	59.4	57.7	54.3	52.8	54.2	56.1	56.0	56.8
55 to 59	92	87	76	88	85	83	83	98	692	54.1	54.7	53.1	50.1	48.7	49.4	51.3	53.1	51.9
50 to 54	70	70	72	74	75	81	117	91	650	48.6	49.8	46.6	46.2	44.7	44.5	47.6	48.0	47.2
45 to 49	97	86	87	84	78	66	75	97	670	44.3	44.5	43.9	41.5	41.0	41.3	42.2	43.8	43.0
40 to 44	112	117	93	70	61	82	93	92	720	39.7	39.6	38.4	37.8	36.8	37.2	38.2	39.0	38.5
35 to 39	100	104	88	55	26	39	76	95	582	34.4	34.5	34.6	33.2	32.2	33.0	32.6	33.6	33.8
30 to 34	67	62	54	34	30	21	25	51	342	29.6	30.0	29.9	28.4	27.6	27.4	29.2	29.7	29.5
25 to 29	33	57	51	26	25	32	32	24	286	25.1	25.5	25.0	23.6	24.6	23.8	23.9	23.8	24.6
20 to 24	17	19	13	12	1	6	19	20	107	19.9	20.9	20.2	19.8	21.0	20.2	19.5	20.3	20.1
15 to 19	17	25	16	2	0	0	2	11	71	16.3	15.3	15.9	16.5	0.0	0.0	17.0	16.1	15.9
10 to 14	8	9	10	0	0	0	0	2	29	11.6	10.3	11.8	0.0	0.0	0.0	0.0	11.5	11.3

TABLE C: Annual and Monthly Temperature, Humidity and Windspeed Summary

Dry Bulb Temperature (F)						Wet Bulb	Percent Relative Humidity					Average Humidity Ratio (lb moisture/lb dry air)					Average
Month	Ave	Max	Min	Daily Ave		Ave	Average					4AM	10AM	4PM	10PM	Day	MPH
				Max	Min		4AM	10AM	4PM	10PM	Day						
Jan	38.1	66	10	46	31	34.1	78	66	58	69	69	0.0032	0.0034	0.0037	0.0037	0.0035	10.3
Feb	40.6	69	15	51	30	36.4	79	70	54	64	69	0.0037	0.0039	0.0040	0.0039	0.0039	9.9
Mar	48.9	73	22	59	38	43.3	81	62	53	66	68	0.0049	0.0052	0.0056	0.0053	0.0052	11.4
Apr	60.1	87	35	70	50	53.2	80	62	53	64	67	0.0072	0.0078	0.0078	0.0075	0.0076	9.7
May	68.4	90	40	79	57	60.9	83	59	52	67	68	0.0092	0.0107	0.0105	0.0103	0.0102	8.0
Jun	76.0	97	58	86	66	69.8	92	66	60	77	76	0.0135	0.0151	0.0148	0.0150	0.0147	7.2
Jul	78.5	95	62	89	70	71.7	92	66	59	76	75	0.0150	0.0161	0.0155	0.0159	0.0156	5.5
Aug	77.3	95	58	88	68	70.6	93	64	57	76	75	0.0144	0.0154	0.0151	0.0152	0.0149	6.5
Sep	71.5	92	49	82	61	65.4	90	69	57	75	75	0.0118	0.0126	0.0128	0.0129	0.0125	6.1
Oct	60.3	85	36	72	50	54.6	88	67	54	75	73	0.0078	0.0089	0.0083	0.0085	0.0082	7.4
Nov	48.7	75	23	57	39	44.8	89	70	60	77	76	0.0058	0.0059	0.0058	0.0059	0.0059	8.2
Dec	40.4	68	11	49	32	36.7	81	72	64	70	73	0.0041	0.0043	0.0041	0.0039	0.0041	10.8
Year	59.2	97	10	69	49	53.6	86	66	57	71	72	0.0084	0.0092	0.0090	0.0090	0.0089	8.4

NASHVILLE, TENNESSEE
WBAN 13097
TABLE D:

WYEC Data

Latitude 36.10 N
Longitude 86.90 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**		24 HOUR SUMMARY			
													HEATING		COOLING	
													Hrs	Deg	Hrs	Deg
	Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Below	Above	Below	Above
	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	100s*	Base	100s*
96	0	454	0	0	374	0	0	359	0	0	423	0	0	3451	0	0
97	0	443	0	0	363	0	1	326	0	0	412	0	0	3418	0	0
98	0	432	0	0	352	0	2	317	0	1	401	0	0	3386	0	0
99	0	421	0	0	341	0	3	306	0	2	328	0	0	3353	0	0
94	0	410	0	0	330	0	6	295	0	3	317	0	0	3320	0	0
93	0	399	0	1	319	0	13	264	0	7	306	0	0	3287	0	0
92	0	388	0	4	308	0	24	274	0	11	295	0	0	3254	0	0
91	0	378	0	9	298	0	41	263	1	18	284	0	0	3221	0	0
90	0	367	0	17	287	0	65	253	1	32	273	1	0	3189	0	0
89	0	356	0	31	276	0	94	242	2	49	263	1	0	3156	0	0
88	0	345	0	44	265	1	125	233	3	71	252	2	1	3123	0	0
87	1	334	0	63	255	1	160	223	4	98	242	2	2	3090	0	0
86	3	323	0	91	243	2	190	214	6	122	232	4	4	3057	0	0
85	6	312	0	125	233	3	216	205	8	146	223	5	8	3024	0	0
84	11	301	0	162	223	3	244	196	11	178	213	6	14	2991	0	0
83	19	290	0	194	216	6	271	188	13	208	204	8	24	2959	0	0
82	28	280	1	228	207	8	302	180	16	238	196	11	37	2926	1	1
81	45	269	1	263	199	11	333	172	19	271	187	13	57	2893	0	0
80	66	259	1	289	191	14	368	163	23	300	179	16	82	2860	2	2
79	86	248	2	318	183	17	378	157	26	322	171	19	110	2827	3	3
78	116	238	3	345	175	20	391	150	30	345	164	22	141	2795	4	4
77	131	229	3	366	168	24	406	143	34	369	156	26	176	2762	6	6
76	177	219	6	387	161	27	427	137	38	389	149	30	213	2730	8	8
75	201	210	8	404	154	31	446	130	43	411	142	34	250	2698	10	10
74	233	202	10	423	147	36	462	124	47	431	136	38	281	2667	13	13
73	265	193	13	441	140	40	481	117	52	450	129	42	307	2636	16	16
72	296	185	16	459	134	44	500	111	57	470	123	47	331	2607	19	19
71	327	177	19	471	127	49	515	105	62	486	117	52	359	2578	22	22
70	359	170	22	489	121	54	530	100	67	498	111	57	395	2551	26	26
69	380	162	26	506	115	59	548	94	73	512	105	62	422	2525	30	30
68	400	153	30	521	109	64	567	89	78	531	99	67	440	2500	34	34
67	419	149	34	534	104	69	587	84	84	553	93	72	454	2476	39	39
66	437	142	38	548	98	75	608	79	90	570	88	78	467	2453	43	43
65	459	133	43	561	93	80	628	74	96	589	83	84	483	2431	48	48
64	478	129	47	578	88	86	644	69	103	608	78	90	497	2410	53	53
63	493	123	52	595	83	92	659	63	109	625	73	96	512	2389	58	58
62	504	117	57	612	78	98	677	61	116	644	69	102	531	2369	63	63
61	513	111	62	629	73	104	696	56	123	658	64	109	548	2349	69	69
60	526	105	67	643	68	110	709	53	130	675	60	116	565	2330	74	74
59	542	100	73	656	64	117	722	49	137	692	56	122	582	2312	80	80
58	556	94	78	673	60	123	740	45	144	708	52	129	596	2294	86	86
57	574	89	84	693	55	130	756	42	152	723	46	137	608	2277	92	92
56	589	84	90	709	52	137	776	38	159	741	44	144	625	2261	98	98
55	602	78	96	726	48	144	792	33	167	759	41	151	647	2245	105	105
54	618	74	102	743	44	152	805	32	175	775	38	159	674	2229	111	111
53	633	69	108	754	41	159	815	29	183	788	34	167	700	2214	118	118

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 365 x 100 = 36500 Deg Hrs)
** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

NASHVILLE, TENNESSEE
 WBAN 13897
 TABLE D:

MYEC Data

Latitude 36.10 N
 Longitude 86.99 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BY TIME OF DAY														24 HOUR SUMMARY								
BASE	7-9AM**			10-12AM**			1-3PM**			4-6PM**			7-9PM**			10PM-6AM**			HEATING		COOLING	
TEMP (F)	Hrs Above	Deg-Hrs (100s)*	Base Heat Cool	Hrs Above	Deg-Hrs (100s)*	Base Heat Cool	Hrs Above	Deg-Hrs (100s)*	Base Heat Cool	Hrs Above	Deg-Hrs (100s)*	Base Heat Cool	Hrs Above	Deg-Hrs (100s)*	Base Heat Cool	Hrs Above	Deg-Hrs (100s)*	Base Heat Cool	Hrs Below	Deg 100s*	Hrs Above	Deg 100s*
52	644	65	114	768	37	167	826	27	191	805	31	175	718	44	125	1837	199	259	3160	404	5600	1032
51	635	60	121	785	34	175	847	24	200	824	29	183	739	41	132	1880	185	278	3029	373	5731	1088
50	672	56	127	802	31	183	867	22	208	842	26	191	763	37	140	1933	171	297	2879	343	5881	1148
49	692	52	134	820	28	191	880	20	217	854	24	200	780	34	148	1987	158	316	2745	315	6015	1206
48	709	48	141	838	26	199	896	17	226	867	21	208	792	31	155	2037	145	336	2619	285	6141	1267
47	723	44	149	855	23	208	912	16	235	881	19	217	807	28	163	2094	133	357	2486	263	6274	1329
46	737	41	156	867	21	216	925	14	244	891	17	226	822	25	172	2152	122	378	2364	239	6396	1392
45	757	37	163	884	19	225	941	12	254	906	15	235	839	22	180	2213	110	400	2218	216	6542	1457
44	777	34	171	903	17	234	958	11	263	923	13	244	859	20	188	2281	100	423	2090	194	6702	1523
43	791	31	179	921	15	243	973	9	273	941	12	253	878	18	197	2349	90	446	1905	175	6855	1591
42	806	28	187	938	13	252	987	8	283	961	10	263	896	16	206	2412	81	470	1758	156	7002	1660
41	825	25	195	951	12	262	998	7	292	979	9	273	916	14	215	2468	73	494	1621	139	7139	1731
40	849	22	203	962	10	271	1009	6	302	992	8	283	935	12	224	2530	65	519	1481	124	7279	1803
39	873	20	212	969	9	281	1017	6	313	1003	7	293	947	11	234	2595	58	545	1355	110	7405	1876
38	890	18	221	979	8	291	1025	5	323	1011	6	303	961	9	243	2654	51	571	1239	97	7521	1951
37	905	16	230	995	7	301	1030	4	333	1022	5	313	979	8	253	2712	45	598	1115	85	7645	2027
36	920	14	239	1010	6	311	1033	4	343	1031	5	323	996	7	263	2773	40	625	995	74	7765	2104
35	939	12	248	1019	5	321	1037	3	354	1034	4	333	1012	6	273	2835	35	653	884	65	7876	2182
34	953	11	258	1024	4	331	1040	2	364	1038	3	344	1023	5	283	2888	31	682	790	57	7970	2261
33	966	10	267	1029	4	341	1044	2	375	1042	3	354	1031	4	293	2933	27	711	713	49	8047	2341
32	980	8	277	1036	3	352	1051	1	385	1045	2	365	1038	4	304	2988	24	741	640	43	8120	2422
31	990	7	287	1046	2	362	1059	1	396	1050	2	375	1040	3	314	2994	21	770	580	36	8180	2504
30	999	6	297	1052	2	372	1066	1	406	1055	1	386	1041	3	324	3025	18	800	520	31	8240	2586
29	1012	5	307	1057	2	383	1072	0	417	1062	1	396	1046	2	335	3052	16	831	457	26	8305	2669
28	1021	5	317	1062	1	394	1079	0	428	1068	1	407	1050	2	345	3076	13	861	401	22	8349	2752
27	1031	4	327	1067	1	404	1086	0	439	1071	0	418	1055	1	356	3104	11	892	344	18	8416	2836
26	1041	3	338	1072	1	415	1092	0	449	1078	0	428	1061	1	367	3128	10	924	286	15	8474	2920
25	1050	3	348	1078	0	426	1094	0	460	1086	0	439	1068	1	377	3150	8	955	233	12	8527	3005
24	1058	3	359	1084	0	436	1094	0	471	1091	0	450	1077	0	388	3167	7	987	188	10	8572	3091
23	1060	2	369	1087	0	447	1095	0	482	1094	0	461	1081	0	399	3181	6	1018	160	9	8600	3177
22	1062	2	380	1089	0	458	1095	0	493	1095	0	472	1084	0	410	3190	5	1050	144	7	8616	3263
21	1064	2	390	1091	0	469	1095	0	504	1095	0	483	1088	0	420	3199	4	1082	127	6	8633	3349
20	1067	1	401	1092	0	480	1095	0	515	1095	0	494	1092	0	431	3209	3	1114	109	4	8651	3435
19	1071	1	412	1093	0	491	1095	0	526	1095	0	505	1094	0	442	3219	2	1146	92	3	8668	3522
18	1074	1	423	1094	0	502	1095	0	537	1095	0	516	1095	0	453	3230	2	1179	77	3	8683	3609
17	1078	1	433	1094	0	513	1095	0	548	1095	0	527	1095	0	464	3240	1	1211	63	2	8697	3696
16	1082	0	444	1094	0	524	1095	0	559	1095	0	538	1095	0	475	3248	1	1243	50	1	8710	3783
15	1084	0	455	1095	0	535	1095	0	570	1095	0	549	1095	0	486	3260	1	1276	36	1	8724	3870
14	1085	0	466	1095	0	546	1095	0	581	1095	0	559	1095	0	497	3266	0	1309	28	1	8732	3957
13	1087	0	477	1095	0	557	1095	0	592	1095	0	570	1095	0	508	3269	0	1341	23	0	8737	4045
12	1089	0	488	1095	0	568	1095	0	603	1095	0	581	1095	0	519	3273	0	1374	16	0	8744	4132
11	1093	0	499	1095	0	579	1095	0	614	1095	0	592	1095	0	530	3278	0	1407	9	0	8751	4219
10	1094	0	509	1095	0	590	1095	0	625	1095	0	603	1095	0	541	3283	0	1439	2	0	8758	4307
9	1095	0	520	1095	0	600	1095	0	636	1095	0	614	1095	0	552	3285	0	1472	0	0	8760	4394

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg, 565 x 100 = 56500 Deg Hrs)
 ** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

NASHVILLE, TENNESSEE
WBAN 13897
TABLE E:

WYEC Data

Latitude 36.10 N
Longitude 86.90 E

Annual COOLING Wet Bulb Degree Hour Summary

Wet Bulb Temperature (F) Base:	50	55	60	65	70	75	80
Annual Wet Bulb hours ABOVE base:	5252	4839	4401	3978	3510	2907	2257
Annual Wet Bulb Cooling deg-hrs:	62782	67478	53420	40639	29159	19162	11086

TABLE F:
Annual Humidification/Dehumidification Requirements
At various Indoor Conditions and Degree Day Bases
(Pounds of Moisture)

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **										COOLING HUMIDITY RATIO HOURS **										Maintained Indoor Humidity Ratio*	
	Heating Degree Base										Cooling Degree Base											
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80
.001	0	0	0	0	0	0	0	0	0	0	65	64	63	61	58	55	51	45	35	23	14	.001
.002	0	0	1	1	1	1	1	1	1	1	57	56	56	54	52	50	46	42	33	21	13	.002
.003	1	1	1	2	2	2	2	2	2	2	49	49	49	48	47	45	42	36	30	19	12	.003
.004	1	2	3	3	3	4	4	4	4	4	42	42	42	42	41	40	38	34	27	18	11	.004
.005	2	3	4	5	5	6	6	6	6	6	36	36	36	36	36	35	33	30	24	16	10	.005
.006	2	4	5	7	8	9	9	9	10	10	31	31	31	31	30	30	29	27	22	14	8	.006
.007	3	4	7	9	11	12	13	13	13	13	26	26	26	26	26	25	25	23	19	12	7	.007
.008	3	5	8	11	14	15	16	17	17	18	21	21	21	21	21	21	21	20	16	11	6	.008
.009	4	6	10	14	16	19	20	21	22	22	17	17	17	17	17	17	17	16	14	9	5	.009
.010	4	7	11	16	19	22	24	26	27	27	13	13	13	13	13	13	13	13	11	7	4	.010
.011	5	8	13	18	22	26	29	30	32	32	10	10	10	10	10	10	10	10	9	6	3	.011
.012	5	9	14	20	25	29	33	35	37	38	7	7	7	7	7	7	7	7	7	4	3	.012
.013	6	9	15	22	28	33	37	40	43	44	5	5	5	5	5	5	5	5	5	3	2	.013
.014	6	10	17	24	30	36	41	45	48	50	3	3	3	3	3	3	3	3	3	2	1	.014
.015	7	11	18	26	33	39	45	50	54	56	2	2	2	2	2	2	2	2	2	1	1	.015
.016	7	12	20	28	36	43	49	55	60	63	1	1	1	1	1	1	1	1	1	1	0	.016
.017	8	13	21	31	39	46	53	60	65	70	0	0	0	0	0	0	0	0	0	0	0	.017
.018	8	14	22	33	42	50	58	64	71	76	0	0	0	0	0	0	0	0	0	0	0	.018

FOOTNOTES: * Indoor Humidity Level is measured in pounds of moisture per pound of dry air. Indoor set points of 72 deg(F)-30%RH and 78 deg(F)-50%RH yield humidity ratios of .005 and .010 respectively.
** Heating (Cooling) Humidity Ratio Hours are defined as the summation of the differences between the maintained indoor humidity ratio and the observed outdoor humidity ratio when both the hourly dry bulb temperature and the humidity ratio are above (below) the base levels.

TABLE G:
Percent Diffuse Solar Radiation*
and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
% Diffuse on surface													
HORIZONTAL	49	41	47	54	46	54	61	39	45	29	37	46	46
VERTICAL													
NORTH	100	100	100	99	92	90	94	95	100	100	100	100	96
WEST	61	54	58	69	63	70	76	54	59	45	50	55	61
SOUTH	41	39	36	71	78	87	88	61	58	32	32	36	36
EAST	57	56	62	70	63	68	76	52	60	48	55	55	62
% Possible Sun	41	48	52	59	62	67	65	66	63	64	50	41	58

FOOTNOTES: * Corrected For Cloud Cover.
** Source: NOAA, Comparative Climatic Data for the United States Through 1978.

NASHVILLE, TENNESSEE
WBAN 13897
TABLE H:

WYEC Data

Latitude 36.10 N
Longitude 86.90 E

Average Daily Solar Radiation on Vertical and Horizontal Surfaces
(BTU/DAY.SQFT)

Month	Under Clear Sky Assumption*										Corrected For Cloud Cover**										obs		
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S-45 ***	horiz	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N		S-45 ***	horiz
Jan	1877	1752	1428	1118	715	383	218	172	171	2006	1076	809	770	652	535	381	256	192	172	172	829	536	580
Feb	1874	1756	1498	1260	890	545	321	220	213	2216	1393	950	889	768	654	490	344	256	218	214	1068	750	822
Mar	1633	1596	1488	1376	1102	792	529	343	279	2318	1813	1009	977	916	854	720	579	464	381	347	1280	1117	1131
Apr	1236	1330	1378	1399	1265	1036	775	540	379	2261	2191	990	1012	1009	996	912	792	670	568	501	1398	1420	1528
May	936	1109	1270	1392	1370	1227	990	744	536	2138	2425	924	1013	1089	1145	1118	1021	878	733	621	1561	1774	1825
Jun	819	1004	1210	1375	1408	1304	1095	853	647	2069	2518	859	957	1058	1140	1149	1081	959	822	702	1440	1722	1913
Jul	870	1047	1230	1370	1383	1261	1048	808	605	2082	2460	864	930	992	1041	1031	961	860	751	666	1332	1555	1887
Aug	1093	1217	1307	1364	1282	1093	851	622	447	2162	2249	979	1077	1134	1167	1097	951	772	604	480	1667	1745	1747
Sep	1455	1465	1415	1357	1141	871	619	421	327	2237	1917	1022	1022	986	941	816	670	539	436	384	1385	1265	1400
Oct	1755	1660	1463	1273	937	619	394	266	245	2197	1512	1165	1098	961	831	619	433	311	246	234	1419	1022	1111
Nov	1840	1719	1410	1133	733	418	238	187	186	2029	1156	944	874	720	581	393	259	190	170	169	1014	638	708
Dec	1837	1719	1387	1070	659	346	191	162	161	1918	988	760	716	593	474	323	212	154	141	141	771	461	519
Year	1433	1446	1373	1291	1075	826	607	446	350	2135	1810	940	945	907	864	756	631	522	438	387	1265	1169	1267

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.
*** South exposure tilt 45 degrees.

TABLE I: Average Daily Solar Heat Gain Through Single Pane Glass on Vertical and Horizontal Surfaces
(BTU/DAY.SQFT)

Month	Under Clear Sky*									Corrected For Cloud Cover**								
	S	SSE/SSW	SE/SW	ESE/WSW	E/W	ENE/WNW	NE/NN	NNE/NNW	N	S	SSE/SSW	SE/SW	ESE/WSW	E/W	ENE/WNW	NE/NN	NNE/NNW	N
Jan	1612	1481	1192	932	572	291	161	140	139	683	644	541	443	308	202	151	140	140
Feb	1580	1469	1251	1053	723	423	239	175	173	794	738	635	541	397	272	202	176	174
Mar	1301	1307	1230	1144	905	632	404	262	226	805	795	750	703	590	468	369	303	282
Apr	903	1043	1125	1160	1044	843	612	411	298	771	808	820	815	744	643	539	453	404
May	644	820	1013	1148	1134	1010	800	581	400	697	787	879	941	920	837	711	584	487
Jun	559	725	952	1129	1164	1079	886	671	479	660	743	850	935	946	890	780	659	552
Jul	598	766	976	1131	1146	1045	848	635	451	673	732	800	852	846	789	700	606	530
Aug	784	939	1062	1132	1061	896	682	482	347	732	848	926	968	907	779	620	475	381
Sep	1130	1189	1170	1130	944	706	484	323	265	805	829	810	778	672	545	431	346	313
Oct	1459	1384	1218	1062	772	492	297	210	200	968	911	794	686	506	345	243	197	191
Nov	1578	1449	1181	940	595	317	178	152	152	802	731	597	476	317	203	150	139	138
Dec	1583	1457	1158	887	525	257	145	131	131	645	600	491	390	261	166	122	115	114
Year	1142	1167	1127	1071	883	667	479	349	272	753	764	742	712	619	513	419	350	309

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.

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NEW YORK CITY, NEW YORK
WBAN 14732
TABLE A:

WYEC Data

Latitude 40.80 N
Longitude 73.90 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): First Quarter
(5 Degrees(F)/5Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence In time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Jan															
50 to 54	3	2	4	6	6	5	3	3	32	48.3	735	14891	9	6	
45 to 49	3	6	4	5	10	8	7	6	49	42.1	697	11313	47	148	
40 to 44	9	8	12	17	14	11	14	10	95	37.9	643	7960	101	515	
35 to 39	15	20	16	18	20	19	12	16	136	32.7	526	5042	218	1317	
30 to 34	17	6	10	11	15	22	22	17	120	28.1	389	2776	355	2771	
25 to 29	25	20	17	13	19	21	25	25	165	23.3	235	1163	509	4878	
20 to 24	13	19	16	16	9	7	10	11	101	18.8	107	350	637	7785	
15 to 19	6	9	11	5	0	0	0	5	36	15.3	22	61	722	11216	
10 to 14	2	3	3	2	0	0	0	0	10	10.6	5	7	739	14882	
Feb															
50 to 54	0	0	0	0	3	3	0	0	6	43.7	672	12971	0	0	
45 to 49	0	1	1	6	14	10	5	0	37	41.4	655	9635	17	24	
40 to 44	8	7	12	21	19	22	14	11	114	37.1	592	6490	80	239	
35 to 39	24	25	25	18	18	19	24	25	178	33.7	451	3843	221	952	
30 to 34	20	12	12	16	20	18	26	25	149	29.5	260	2072	412	2541	
25 to 29	8	15	9	11	1	6	9	8	67	23.7	162	1059	510	4888	
20 to 24	14	6	16	8	7	2	0	9	62	18.7	99	425	573	7614	
15 to 19	7	15	6	2	2	4	5	3	44	15.3	20	108	652	10657	
10 to 14	3	0	1	2	0	0	1	3	10	9.2	12	31	660	13940	
5 to 9	0	3	2	0	0	0	0	0	5	7.0	0	0	672	17269	
Mar															
70 to 74	0	0	0	0	2	1	0	0	3	54.0	744	24143	0	0	
65 to 69	0	0	0	1	6	5	2	0	14	52.9	736	20437	8	14	
60 to 64	0	0	0	3	4	4	4	1	16	51.6	720	16794	24	91	
55 to 59	1	0	0	5	4	7	6	4	27	47.3	703	13236	41	253	
50 to 54	2	1	3	6	10	2	3	6	33	44.6	673	9802	71	539	
45 to 49	12	9	10	19	22	24	17	11	124	40.7	624	6538	120	995	
40 to 44	12	16	20	13	12	17	18	23	131	36.7	479	3814	265	1991	
35 to 39	25	25	23	19	21	21	22	18	174	33.0	309	1796	435	3693	
30 to 34	26	20	15	20	9	9	18	22	139	28.9	160	615	584	6232	
25 to 29	12	18	17	7	3	3	2	5	67	23.3	52	133	692	9470	
20 to 24	3	4	5	0	0	0	1	3	16	18.7	10	12	734	13069	

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

NEW YORK CITY, NEW YORK
WSAH 14732
TABLE A:

WYEC Data

Latitude 40.80 N
Longitude 73.90 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Second Quarter
(5 Degrees(F)/5Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Apr															
80 to 84	0	0	0	2	7	6	1	0	16	60.6	716	22249	4	3	
75 to 79	0	0	0	7	4	3	4	0	18	60.4	698	18713	22	67	
70 to 74	1	0	5	4	4	3	4	7	28	60.4	681	15264	39	218	
65 to 69	8	3	5	5	3	7	4	3	38	56.8	646	11946	74	500	
60 to 64	0	6	3	1	10	7	4	2	33	51.5	609	8826	111	980	
55 to 59	8	8	9	15	12	8	13	7	80	48.2	564	5873	156	1627	
50 to 54	17	9	17	19	19	24	17	26	148	47.0	446	3297	274	2651	
45 to 49	26	32	25	18	17	16	20	21	175	42.0	285	1429	435	4383	
40 to 44	16	15	10	15	14	16	20	15	121	36.7	135	418	585	6972	
35 to 39	14	17	16	4	0	0	5	9	63	33.1	31	44	689	10198	
May															
80 to 84	0	0	0	0	4	0	0	0	4	62.5	744	15866	0	0	
75 to 79	0	0	0	10	12	11	0	0	33	61.2	732	12165	12	19	
70 to 74	0	0	7	20	27	15	15	0	84	59.5	683	8615	61	189	
65 to 69	8	0	17	18	16	26	12	17	114	57.7	578	5452	166	746	
60 to 64	17	20	26	19	18	26	32	26	184	56.1	440	2869	304	1883	
55 to 59	36	35	23	18	10	8	27	32	189	53.1	250	1125	494	3859	
50 to 54	19	21	11	7	4	6	7	14	89	46.7	98	324	646	6728	
45 to 49	12	12	9	1	2	1	0	4	41	41.8	23	48	721	10222	
40 to 44	1	5	0	0	0	0	0	0	6	39.2	0	0	744	13894	
Jun															
95 to 99	0	0	0	0	1	0	0	0	1	74.0	720	19095	0	0	
90 to 94	0	0	0	2	2	0	0	0	4	74.3	717	15501	3	6	
85 to 89	0	1	1	6	13	12	1	0	34	70.4	787	11930	13	35	
80 to 84	0	0	4	18	19	8	11	4	64	68.6	658	8497	62	202	
75 to 79	5	5	13	24	25	33	6	7	118	65.3	574	5397	146	702	
70 to 74	13	14	24	19	20	24	31	15	160	63.9	453	2824	267	1729	
65 to 69	39	31	31	15	10	13	30	42	211	61.2	271	993	449	3498	
60 to 64	21	25	15	6	0	0	11	16	94	57.5	56	214	664	6319	
55 to 59	12	14	2	0	0	0	0	6	34	52.7	17	22	703	9727	

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

NEW YORK CITY, NEW YORK
WBAN 14732
TABLE A:

WYEC Data

Latitude 40.80 N
Longitude 73.90 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Third Quarter
(5 Degrees(F)/3HR Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Jul															
95 to 99	0	0	0	0	3	1	0	0	4	72.3	744	15853	0	0	
90 to 94	0	0	0	4	10	3	0	0	19	75.2	736	12147	6	14	
85 to 89	0	0	2	17	25	18	7	1	70	73.0	704	8522	40	109	
80 to 84	6	7	14	29	25	35	19	10	146	70.9	602	5724	142	531	
75 to 79	28	24	30	23	17	20	35	26	203	69.9	417	2645	327	1672	
70 to 74	26	26	23	13	7	5	23	33	158	66.8	218	1052	526	3799	
65 to 69	23	29	20	6	2	4	6	11	101	62.9	102	278	642	6745	
60 to 64	10	12	4	1	4	5	3	4	43	60.5	10	6	754	10193	
Aug															
90 to 94	0	0	0	0	4	1	0	0	5	73.0	744	13602	0	0	
85 to 89	0	0	0	10	22	16	2	0	50	71.6	731	9902	13	20	
80 to 84	0	0	2	27	25	28	12	4	98	70.3	655	6418	89	256	
75 to 79	17	10	30	23	21	25	38	30	194	68.9	532	3424	212	982	
70 to 74	41	35	33	20	13	13	24	36	215	65.8	311	1297	433	2575	
65 to 69	27	35	24	13	6	10	17	23	157	61.9	107	243	637	3241	
60 to 64	6	13	4	0	0	0	0	0	25	56.8	9	16	735	8734	
Sep															
85 to 89	0	0	0	2	9	5	0	0	16	74.1	717	14366	3	3	
80 to 84	0	0	0	7	9	13	3	0	32	70.4	691	10838	29	75	
75 to 79	1	0	3	13	23	19	15	12	86	66.3	638	7478	82	315	
70 to 74	21	16	15	22	14	17	14	13	132	64.3	550	4530	190	967	
65 to 69	16	16	29	21	26	23	29	25	185	59.3	394	2201	326	2238	
60 to 64	32	27	25	23	6	10	21	27	171	57.1	174	741	546	4378	
55 to 59	13	16	15	2	3	3	8	11	71	51.9	67	189	653	7426	
50 to 54	7	15	3	0	0	0	0	2	27	48.4	10	15	710	16852	

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

NEW YORK CITY, NEW YORK
WBAN 14732

NYEC Data

Latitude 40.80 N
Longitude 73.90 E

TABLE A:

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Fourth Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Oct															
80 to 84	0	0	0	0	3	0	0	0	3	67.0	744	18372	0	0	
75 to 79	0	0	0	3	4	5	0	0	12	64.7	739	14866	5	14	
70 to 74	1	0	1	7	14	8	4	3	38	60.6	719	11008	25	76	
65 to 69	6	6	6	18	20	19	13	7	97	57.8	668	7520	76	308	
60 to 64	17	8	18	25	20	24	28	25	163	54.9	545	4481	199	989	
55 to 59	26	24	25	20	23	21	24	30	193	50.1	373	2211	371	2439	
50 to 54	20	34	28	14	3	9	13	11	132	47.0	172	857	572	4805	
45 to 49	9	10	12	8	3	5	8	10	65	42.1	79	264	665	7932	
40 to 44	12	11	3	0	3	2	3	7	41	37.4	21	31	723	11419	
Nov															
70 to 74	0	0	0	1	1	0	0	0	2	65.0	720	18098	0	0	
65 to 69	3	0	0	4	5	5	4	3	24	62.8	712	14510	8	12	
60 to 64	5	9	9	8	7	6	5	5	54	59.8	673	11030	45	132	
55 to 59	14	10	9	11	19	12	9	14	98	53.0	609	7810	111	512	
50 to 54	8	11	12	17	21	26	16	6	117	46.3	491	5052	229	1354	
45 to 49	9	2	9	15	15	15	23	21	109	40.4	388	2845	332	2747	
40 to 44	22	24	21	20	13	14	15	13	142	37.0	252	1198	468	4700	
35 to 39	23	24	21	9	6	9	15	24	131	33.2	117	274	603	7376	
30 to 34	6	10	9	5	3	3	3	4	43	28.8	8	9	712	19711	
Dec															
55 to 59	0	1	3	3	0	0	0	0	7	50.1	743	15954	1	1	
50 to 54	2	2	0	0	5	0	0	0	9	44.6	735	12260	11	27	
45 to 49	6	6	2	12	19	20	13	12	90	41.5	708	8634	36	121	
40 to 44	16	9	16	16	14	20	23	21	135	37.9	586	5383	158	590	
35 to 39	19	25	26	29	28	21	15	13	176	33.8	411	2817	333	1744	
30 to 34	28	27	29	19	16	18	30	34	197	29.1	229	1137	515	3804	
25 to 29	14	14	14	8	11	10	3	4	78	24.0	101	402	643	6769	
20 to 24	2	3	1	5	0	4	9	9	33	19.7	29	102	715	10189	
15 to 19	6	6	6	1	0	0	0	0	19	15.4	7	6	737	13813	

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

NEW YORK CITY, NEW YORK
 WBAN 14732
 TABLE B:

NYEC Data

Latitude 40.80 N
 Longitude 73.90 E

Annual Dry Bulb Temperature Frequencies
 With Mean Coincident Wet Bulb Temperature
 (5 Degree(F)/3Hr Bins)

Dry Bulb range(F)	Number of Hours of Occurrence in Time period									Mean Coincident Wet Bulb Temperature (F)								
	Hour of day									Hour of day								
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year
95 to 99	0	0	0	0	4	1	0	0	5	0.0	0.0	0.0	0.0	73.0	71.0	0.0	0.0	72.6
90 to 94	0	0	0	0	6	16	6	0	28	0.0	0.0	0.0	74.0	74.8	74.8	0.0	0.0	74.6
85 to 89	0	1	3	35	69	51	10	1	170	0.0	67.0	72.3	73.1	71.7	71.9	73.1	76.0	72.2
80 to 84	6	2	20	83	92	90	46	24	363	72.0	74.5	72.3	69.6	68.3	69.1	71.1	72.0	69.7
75 to 79	51	39	76	103	106	116	98	75	664	70.9	71.3	69.8	65.8	64.5	64.9	68.4	70.7	67.5
70 to 74	103	91	108	106	102	86	115	109	820	67.4	67.6	64.8	62.2	60.8	61.9	63.8	65.6	64.3
65 to 69	132	120	132	101	96	112	117	131	941	61.5	62.3	61.3	58.3	56.9	57.8	60.2	60.9	60.1
60 to 64	110	120	104	84	69	82	108	106	783	57.8	58.8	56.5	54.6	53.5	54.7	55.9	57.6	56.5
55 to 59	110	108	86	74	71	59	87	104	699	52.5	52.7	51.6	49.7	49.9	50.6	50.6	51.4	51.3
50 to 54	78	95	78	69	71	75	59	68	593	47.7	48.4	47.3	47.1	44.8	45.3	46.2	46.4	46.8
45 to 49	77	78	72	84	102	99	93	85	690	42.6	42.4	41.7	40.5	40.2	40.9	41.4	42.2	41.4
40 to 44	96	95	94	102	89	102	107	100	785	37.4	38.0	37.8	36.8	36.6	37.1	37.2	37.1	37.2
35 to 39	120	136	127	97	93	89	91	105	858	34.2	33.9	33.7	33.1	32.1	31.6	33.3	33.7	33.3
30 to 34	97	75	71	71	63	70	99	102	648	29.4	29.6	29.3	28.5	29.0	29.0	28.4	28.8	29.0
25 to 29	59	67	57	39	34	40	39	42	377	24.1	24.1	23.8	23.4	22.7	23.2	22.7	23.4	23.5
20 to 24	32	32	38	29	16	13	20	32	212	18.6	19.0	18.8	18.9	18.7	18.8	19.5	19.1	18.9
15 to 19	19	30	23	8	2	4	5	8	99	15.3	15.3	15.5	15.4	15.0	15.0	14.2	15.3	15.3
10 to 14	5	3	4	4	0	0	1	3	20	9.4	10.3	9.0	11.0	0.0	0.0	11.0	9.7	9.9
5 to 9	0	3	2	0	0	0	0	0	5	0.0	7.0	7.0	0.0	0.0	0.0	0.0	0.0	7.0

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Month	Dry Bulb Temperature (F)					Wet Bulb	Percent Relative Humidity					Average Humidity Ratio (lb moisture/lb dry air)					Average wind MPH
	Ave	Max	Min	Daily Ave			4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
				Max	Min												
Jan	32.5	54	10	38	26	28.8	69	62	59	64	65	0.0025	0.0023	0.0025	0.0026	0.0025	16.7
Feb	33.2	50	9	41	26	29.7	77	69	57	66	68	0.0026	0.0026	0.0027	0.0026	0.0026	14.0
Mar	40.0	71	20	48	33	34.9	68	63	51	61	62	0.0029	0.0031	0.0033	0.0034	0.0031	16.4
Apr	51.6	84	35	59	45	44.9	70	58	53	60	62	0.0050	0.0050	0.0049	0.0050	0.0050	12.9
May	61.2	81	44	70	54	54.2	78	59	55	65	66	0.0074	0.0074	0.0075	0.0076	0.0075	11.3
Jun	71.0	95	55	80	63	62.8	78	61	53	69	66	0.0106	0.0106	0.0104	0.0109	0.0105	10.4
Jul	76.2	96	61	84	70	68.4	79	66	59	68	69	0.0129	0.0135	0.0135	0.0133	0.0133	10.7
Aug	74.2	91	60	82	68	66.3	80	62	56	70	69	0.0123	0.0118	0.0122	0.0128	0.0124	9.2
Sep	67.6	89	50	76	61	60.2	77	63	55	67	67	0.0096	0.0095	0.0097	0.0099	0.0097	11.0
Oct	57.8	82	40	65	51	51.0	72	61	54	63	64	0.0066	0.0066	0.0069	0.0067	0.0066	13.8
Nov	47.4	71	30	52	42	42.7	74	68	59	66	68	0.0051	0.0051	0.0048	0.0049	0.0050	15.7
Dec	36.1	58	16	40	31	32.4	73	71	63	66	69	0.0030	0.0031	0.0029	0.0030	0.0030	16.3
Year	54.2	96	9	61	48	48.1	74	64	56	66	66	0.0067	0.0067	0.0067	0.0069	0.0068	13.2

NEW YORK CITY, NEW YORK
WBAN 14732
TABLE D:

NYEC Data

Latitude 40.80 N
Longitude 73.90 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-5AM**		24 HOUR SUMMARY					
	Hrs	Deg-Hrs Above (100s)*	Hrs	Deg-Hrs Above (100s)*	Hrs	Deg-Hrs Above (100s)*	Hrs	Deg-Hrs Above (100s)*	Hrs	Deg-Hrs Above (100s)*	Hrs	Deg-Hrs Above (100s)*	HEATING		COOLING			
													Hrs	Deg	Hrs	Deg	Hrs	Deg
	Base	Heat Cool	Base	Heat Cool	Base	Heat Cool	Base	Heat Cool	Base	Heat Cool	Base	Heat Cool	Base	100s*	Base	100s*		
97	0	494	0	0	445	0	0	416	0	0	429	0	0	463	0	0	1505	0
96	0	483	0	0	434	0	0	405	0	0	418	0	0	452	0	0	1473	0
95	0	472	0	0	423	0	2	394	0	0	407	0	0	441	0	0	1440	0
94	0	461	0	1	412	0	4	383	0	1	396	0	0	430	0	0	1407	0
93	0	450	0	2	401	0	5	372	0	2	385	0	0	419	0	0	1374	0
92	0	439	0	3	390	0	5	361	0	2	374	0	0	408	0	0	1341	0
91	0	428	0	4	379	0	6	351	0	2	363	0	0	397	0	0	1308	0
90	0	417	0	5	369	0	15	340	0	5	352	0	0	386	0	0	1275	0
89	0	406	0	7	358	0	22	329	1	9	342	0	0	375	0	0	1243	0
88	0	395	0	10	347	0	31	318	1	14	331	0	0	364	0	0	1210	0
87	0	384	0	14	336	0	44	308	1	26	320	0	2	353	0	0	1177	0
86	1	373	0	20	325	1	56	297	2	40	309	1	5	342	0	0	1144	0
85	2	362	0	33	314	1	76	287	2	52	299	1	8	331	0	1	1111	0
84	3	351	0	46	304	1	99	277	3	64	288	2	13	320	0	2	1078	0
83	5	341	0	63	293	2	117	267	4	76	278	3	21	310	0	4	1046	0
82	10	330	0	83	283	2	136	257	6	96	268	3	31	299	1	7	1013	0
81	13	319	0	97	273	3	155	246	7	116	258	4	43	288	1	16	980	0
80	18	308	0	113	263	4	172	239	9	137	249	6	52	278	1	28	947	0
79	30	297	1	136	254	6	195	229	10	157	239	7	64	268	2	43	915	1
78	42	287	1	157	244	7	220	221	13	178	230	9	85	257	3	63	883	1
77	55	276	2	176	235	9	241	212	15	203	221	11	103	247	4	87	850	2
76	69	266	2	196	226	11	260	203	17	227	212	13	121	237	5	120	819	3
75	87	256	3	217	217	13	278	195	20	250	203	15	143	228	6	169	787	4
74	108	246	4	240	208	15	297	187	23	272	195	18	162	218	8	229	756	6
73	126	236	5	262	200	18	315	179	26	287	187	21	181	209	9	289	726	9
72	146	226	6	283	192	20	336	172	29	303	179	24	203	200	11	349	696	12
71	166	217	8	300	184	23	357	164	33	320	171	27	225	191	13	401	667	16
70	193	208	10	319	176	26	377	157	36	338	163	30	232	183	16	462	639	20
69	217	199	12	339	168	30	397	150	40	358	156	34	276	175	19	534	611	25
68	243	190	14	357	161	33	413	143	44	379	149	37	297	166	21	600	584	31
67	269	182	17	380	153	37	436	136	49	407	142	41	319	159	24	667	557	37
66	294	174	20	402	146	41	456	130	53	430	135	45	345	151	28	741	531	44
65	323	166	23	423	139	45	475	123	58	450	128	50	372	144	31	833	506	52
64	349	158	26	446	133	49	491	117	63	472	122	54	398	136	35	936	482	61
63	370	151	30	469	126	54	504	111	68	489	116	59	420	130	39	1024	459	71
62	393	144	33	485	120	59	516	105	73	507	110	64	443	125	44	1086	437	81
61	414	137	37	495	114	63	529	100	78	525	104	69	464	117	48	1137	415	93
60	432	130	42	509	108	68	546	94	83	539	99	75	483	110	53	1192	394	104
59	450	124	46	524	103	74	558	89	89	548	93	80	504	104	58	1248	374	116
58	467	117	51	536	97	79	570	83	94	558	88	86	521	99	63	1302	353	129
57	486	111	55	551	91	84	585	78	100	570	82	91	535	93	68	1365	334	142
56	500	105	60	567	86	90	599	73	106	584	77	97	554	87	74	1435	315	156
55	517	99	65	583	81	96	616	68	112	597	72	103	573	82	79	1507	297	171
54	535	94	71	599	76	102	629	64	118	612	67	109	586	77	85	1568	279	187
53	550	88	76	615	71	108	646	59	125	626	62	115	598	72	91	1621	263	202
52	568	83	82	632	66	114	664	55	131	636	58	122	608	67	97	1672	246	219

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 365 x 100 = 36500 Deg Hrs)
** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

NEW YORK CITY, NEW YORK
WBAN 14732
TABLE D:

NYEC Data

Latitude 40.88 N
Longitude 73.90 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																24 HOUR SUMMARY											
	7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**				10PM-6AM**				HEATING		COOLING	
	Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg	Hrs	Deg				
	Above (100s)*	Base	Heat	Cool	Above (100s)*	Base	Heat	Cool	Above (100s)*	Base	Heat	Cool	Above (100s)*	Base	Heat	Cool	Above (100s)*	Base	Heat	Cool	Below Base 100s*	Hrs	Above Base 100s*	Hrs				
51	985	78	88	647	62	120	673	50	138	648	53	128	615	62	103	1717	230	236		3874	535	4886	813					
50	600	73	93	657	57	127	687	46	145	666	49	135	630	57	109	1761	215	253		3758	497	5002	862					
49	612	68	100	658	53	133	701	42	152	687	45	141	648	53	116	1807	200	271		3635	460	5125	913					
48	625	63	106	681	49	140	715	38	159	704	41	148	665	48	122	1850	185	289		3518	424	5242	965					
47	638	58	112	697	45	147	739	35	166	723	37	155	681	44	129	1898	171	308		3383	390	5377	1018					
46	653	54	118	715	41	154	763	31	174	747	33	163	697	40	136	1949	158	327		3234	357	5526	1072					
45	671	49	125	735	37	161	785	28	181	768	30	170	719	36	143	1998	144	347		3083	325	5677	1128					
44	687	45	132	753	34	169	806	25	189	790	27	178	743	33	150	2050	132	367		2929	295	5831	1186					
43	706	41	139	770	30	176	827	22	197	811	24	186	764	29	158	2098	120	388		2781	266	5979	1245					
42	727	38	146	791	27	184	848	20	206	826	21	194	783	26	166	2155	108	409		2628	239	6132	1306					
41	746	34	153	812	24	192	862	17	214	842	18	203	796	23	174	2221	97	431		2477	214	6283	1368					
40	764	31	161	834	21	200	877	15	223	865	16	211	823	20	182	2283	87	454		2312	190	6448	1431					
39	785	27	169	858	19	209	897	13	232	885	14	220	851	18	190	2359	77	477		2123	168	6637	1497					
38	812	24	177	881	17	218	916	11	241	901	12	229	868	15	199	2445	68	501		1936	147	6824	1564					
37	841	22	185	902	15	227	933	9	250	920	10	238	887	13	207	2523	60	526		1753	129	7007	1633					
36	869	19	193	919	13	236	951	8	260	940	8	247	908	11	216	2588	53	551		1583	112	7177	1704					
35	891	17	202	935	11	245	970	6	269	959	7	257	924	9	226	2646	46	578		1433	97	7327	1777					
34	905	15	211	951	10	254	991	5	279	981	6	266	941	8	235	2703	40	604		1286	84	7474	1851					
33	918	13	220	966	8	264	1012	4	289	1002	5	276	963	6	244	2768	35	632		1129	72	7631	1926					
32	933	12	230	981	7	274	1028	4	299	1017	4	287	989	5	254	2832	30	660		978	61	7782	2003					
31	951	10	239	995	6	284	1036	3	310	1029	3	297	1009	4	264	2879	26	688		868	52	7900	2082					
30	965	9	249	1008	5	294	1048	2	320	1039	2	307	1023	3	274	2925	22	717		761	44	7999	2161					
29	977	8	258	1019	4	304	1045	2	331	1043	2	317	1032	3	285	2966	16	747		677	37	8083	2242					
28	987	6	268	1026	4	314	1051	1	341	1053	1	328	1041	2	295	3004	15	777		595	30	8165	2323					
27	998	5	278	1033	3	324	1061	1	352	1064	1	339	1052	2	306	3048	13	807		501	25	8259	2405					
26	1010	5	288	1042	2	335	1069	1	362	1071	1	349	1059	1	316	3082	11	838		425	20	8355	2488					
25	1021	4	298	1050	2	345	1073	1	373	1075	1	360	1065	1	327	3106	9	869		367	16	8395	2572					
24	1030	3	309	1058	1	356	1080	0	384	1080	0	371	1073	1	337	3127	7	900		310	13	8450	2656					
23	1036	2	319	1064	1	366	1084	0	395	1084	0	382	1080	0	348	3146	6	931		264	10	8496	2741					
22	1044	2	329	1070	1	377	1086	0	405	1087	0	392	1085	0	359	3164	4	963		222	8	8538	2826					
21	1054	1	340	1077	1	388	1088	0	416	1089	0	403	1087	0	370	3185	3	994		179	6	8581	2911					
20	1062	1	350	1081	0	399	1091	0	427	1090	0	414	1088	0	381	3205	2	1026		141	4	8619	2997					
19	1071	1	361	1085	0	409	1093	0	438	1092	0	425	1089	0	392	3224	2	1059		104	3	8656	3084					
18	1079	1	372	1089	0	420	1094	0	449	1094	0	436	1091	0	403	3245	1	1091		66	2	8694	3171					
17	1084	0	383	1090	0	431	1095	0	460	1095	0	447	1092	0	413	3262	1	1123		41	2	8719	3258					
16	1087	0	394	1090	0	442	1095	0	471	1095	0	458	1093	0	424	3269	1	1156		30	1	8730	3345					
15	1089	0	404	1090	0	453	1095	0	482	1095	0	469	1094	0	435	3270	1	1189		26	1	8734	3432					
14	1089	0	415	1092	0	464	1095	0	493	1095	0	480	1094	0	446	3272	0	1221		22	1	8738	3520					
13	1089	0	426	1094	0	475	1095	0	504	1095	0	491	1095	0	457	3274	0	1254		18	0	8742	3607					
12	1089	0	437	1094	0	486	1095	0	515	1095	0	502	1095	0	468	3276	0	1287		15	0	8745	3694					
11	1090	0	448	1094	0	497	1095	0	526	1095	0	513	1095	0	479	3278	0	1320		12	0	8748	3782					
10	1092	0	459	1095	0	508	1095	0	537	1095	0	524	1095	0	490	3280	0	1353		7	0	8753	3869					
9	1094	0	470	1095	0	519	1095	0	548	1095	0	535	1095	0	501	3283	0	1385		2	0	8758	3957					
8	1095	0	481	1095	0	530	1095	0	559	1095	0	546	1095	0	512	3285	0	1418		0	0	8760	4045					

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 565 x 100 = 56500 Deg Hrs)

** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

NEW YORK CITY, NEW YORK
 WBAN 14732
 TABLE E:

NYEC Data

Latitude 40.60 N
 Longitude 73.90 E

Annual COOLING Wet Bulb Degree Hour Summary

Wet Bulb Temperature (F) Base:	50	55	56	59	62	65	68	71	74	77	80
Annual Wet Bulb hours ABOVE base:	4337	3886	3396	2843	2167	1566	1098	570	212	20	0
Annual Wet Bulb Cooling deg-hrs:	55943.	43352.	32122.	22490.	14618.	8708.	4521.	1752.	416.	29.	0.

TABLE F:

Annual Humidification/Dehumidification Requirements
 At various Indoor Conditions and Degree Day Bases
 (Pounds of Moisture)

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **												COOLING HUMIDITY RATIO HOURS **												Maintained Indoor Humidity Ratio*
	Heating Degree Base												Cooling Degree Base												
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80			
.001	0	0	0	0	0	0	0	0	0	0	0	46	46	44	43	41	38	34	28	20	12	6	.001		
.002	1	1	1	1	1	1	1	1	1	1	1	39	39	38	37	36	34	31	25	18	11	5	.002		
.003	2	2	3	3	4	4	4	4	4	4	4	32	32	32	32	31	29	27	22	16	10	5	.003		
.004	2	4	5	6	6	7	7	7	7	7	7	27	27	27	27	26	25	23	20	14	9	4	.004		
.005	3	5	7	9	10	10	10	10	11	11	11	22	22	22	22	22	21	20	17	13	8	4	.005		
.006	4	6	9	12	13	14	15	15	15	15	15	18	18	18	18	18	17	16	14	11	7	3	.006		
.007	4	8	12	15	17	18	19	19	20	20	20	14	14	14	14	14	14	13	12	9	6	3	.007		
.008	5	9	14	18	21	22	24	24	25	25	26	11	11	11	11	11	11	10	9	7	5	2	.008		
.009	6	10	16	21	24	27	29	30	31	31	32	8	8	8	8	8	8	8	7	6	4	2	.009		
.010	7	12	18	24	28	31	34	35	37	38	38	6	6	6	6	6	6	6	5	3	2		.010		
.011	7	13	20	27	32	35	39	41	43	44	45	4	4	4	4	4	4	4	4	3	2	1	.011		
.012	8	15	23	30	35	40	44	47	50	51	52	3	3	3	3	3	3	3	3	2	1		.012		
.013	9	16	25	33	39	44	49	52	56	58	60	2	2	2	2	2	2	2	2	1	1	1	.013		
.014	9	17	27	36	43	48	54	58	63	66	67	1	1	1	1	1	1	1	1	1	1	0	.014		
.015	10	19	29	39	47	52	59	64	70	73	75	0	0	0	0	0	0	0	0	0	0	0	.015		
.016	11	20	32	42	50	57	64	70	76	81	85	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	12	21	34	45	54	61	68	76	83	88	91	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	12	23	36	48	58	65	73	81	90	96	100	0	0	0	0	0	0	0	0	0	0	0	.018		

FOOTNOTES: * Indoor Humidity Level is measured in pounds of moisture per pound of dry air. Indoor set points of 72 deg(F)-50%RH and 78 deg(F)-50%RH yield humidity ratios of .003 and .010 respectively.

** Heating (Cooling) Humidity Ratio Hours are defined as the summation of the differences between the maintained indoor humidity ratio and the observed outdoor humidity ratio when both the hourly dry bulb temperature and the humidity ratio are above (below) the base levels.

TABLE G:

Percent Diffuse Solar Radiation*
 and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
% Diffuse on surface													
HORIZONTAL	44	40	44	48	48	48	50	41	41	34	43	45	45
VERTICAL													
NORTH	100	100	100	98	94	90	92	96	100	100	100	100	96
WEST	55	50	60	63	69	68	66	58	57	49	57	58	61
SOUTH	33	35	49	64	72	78	77	62	50	34	34	33	33
EAST	50	48	54	59	61	64	67	60	53	46	48	51	58
% Possible Sun	50	55	56	59	61	64	65	64	63	61	52	49	59

FOOTNOTES: * Corrected for Cloud Cover.

** Source: NOAA, Comparative Climatic Data for the United States Through 1978.

NEW YORK CITY, NEW YORK

MYEC Data

Latitude 40.80 N

WBAN 14732

Longitude 73.90 E

TABLE H:

Average Daily Solar Radiation on Vertical and Horizontal Surfaces
(BTU/DAY.SQFT)

Month	Under Clear Sky Assumption*										Corrected For Cloud Cover**										obs		
	S	SSE/ SSW	SE/ SW	ESE/ ESW	E/ W	ENE/ ENW	NE/ NN	NNE/ NNW	N	S-45 horiz ***	S	SSE/ SSW	SE/ SW	ESE/ ESW	E/ W	ENE/ ENW	NE/ NN	NNE/ NNW	N	S-45 horiz ***			
Jan	1851	1718	1373	1038	619	303	169	146	145	1862	911	780	743	620	496	331	199	144	133	133	774	443	504
Feb	1949	1822	1529	1247	845	494	281	198	192	2181	1237	921	876	760	643	471	318	222	181	177	991	636	721
Mar	1789	1727	1569	1412	1093	756	491	317	263	2379	1735	1038	1031	956	878	719	555	425	334	306	1267	1021	1038
Apr	1422	1494	1500	1488	1301	1035	758	521	367	2393	2183	1036	1089	1093	1081	973	823	671	541	456	1449	1408	1338
May	1117	1269	1399	1491	1432	1247	986	750	529	2311	2476	988	1068	1121	1154	1102	985	835	693	578	1542	1657	1617
Jun	995	1165	1344	1480	1479	1336	1099	843	646	2256	2600	940	1020	1097	1154	1136	1044	910	770	656	1557	1772	1710
Jul	1043	1203	1357	1477	1448	1288	1048	795	599	2260	2527	962	1031	1089	1132	1095	994	864	732	632	1533	1710	1661
Aug	1270	1372	1424	1455	1322	1096	836	603	437	2302	2262	1025	1060	1064	1059	963	824	679	555	473	1572	1579	1470
Sep	1612	1599	1511	1412	1150	846	588	397	311	2315	1861	1121	1128	1078	1014	853	672	520	410	359	1457	1247	1227
Oct	1850	1738	1492	1264	892	559	345	237	224	2188	1393	999	955	841	727	540	374	266	209	201	1155	796	690
Nov	1862	1741	1411	1102	686	368	205	163	162	1947	1003	817	789	671	551	374	236	163	145	145	826	491	533
Dec	1790	1662	1318	975	563	269	149	135	135	1777	820	756	721	598	467	300	181	132	124	124	737	410	404
Year	1543	1541	1435	1320	1070	801	581	425	335	2182	1755	948	959	916	864	739	602	487	403	354	1240	1100	1095

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.

** Derived according to DOE-2.1 LOADS Algorithms and MYEC cloud cover data.

*** South exposure tilt 45 degrees.

TABLE I:

Average Daily Solar Heat Gain Through Single Pane Glass on Vertical
and Horizontal Surfaces
(BTU/DAY.SQFT)

Month	Under Clear Sky*									Corrected For Cloud Cover**								
	S	SSE/ SSW	SE/ SW	ESE/ ESW	E/ W	ENE/ ENW	NE/ NNW	NNE/ NNW	N	S	SSE/ SSW	SE/ SW	ESE/ ESW	E/ W	ENE/ ENW	NE/ NNW	NNE/ NNW	N
Jan	1594	1456	1144	855	487	224	127	118	118	661	624	515	409	264	153	113	108	108
Feb	1654	1530	1275	1040	683	379	209	197	155	772	730	631	535	382	250	173	145	144
Mar	1450	1424	1301	1174	894	599	372	242	213	838	845	787	724	589	447	333	264	248
Apr	1075	1189	1230	1231	1073	839	596	395	289	806	875	895	891	800	670	537	427	366
May	794	961	1126	1233	1183	1029	795	570	397	756	839	908	949	906	808	676	552	457
Jun	690	857	1066	1219	1221	1103	688	662	479	713	789	880	946	932	856	738	616	515
Jul	734	898	1084	1215	1195	1061	844	823	448	736	806	877	925	897	813	699	586	498
Aug	940	1075	1161	1202	1092	896	667	466	339	787	841	864	867	788	670	545	441	377
Sep	1280	1309	1240	1172	946	683	456	303	252	894	923	889	839	700	543	411	322	292
Oct	1551	1451	1243	1049	726	439	257	188	182	850	794	698	601	440	297	205	167	163
Nov	1598	1471	1179	913	548	275	152	132	132	692	663	560	456	301	181	127	116	117
Dec	1545	1414	1098	804	440	195	114	109	109	643	608	497	384	238	159	104	101	101
Year	1240	1251	1179	1092	873	644	458	331	260	761	778	750	711	604	487	390	321	285

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.

** Derived according to DOE-2.1 LOADS Algorithms and MYEC cloud cover data.

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OMAHA (NORTH), NEBRASKA

WBAN 94918

TABLE A:

MYEC Data

Latitude 41.22 N

Longitude 96.01 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): First Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day 10-12 13-15		16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Jan														
40 to 44	0	0	0	2	11	8	0	0	21	35.8	741	14647	3	3
35 to 39	8	6	3	12	20	22	19	7	97	34.1	702	11022	42	98
30 to 34	23	19	19	22	17	17	21	28	166	31.2	548	7833	196	629
25 to 29	11	14	17	15	12	10	12	7	98	25.9	418	5441	326	1957
20 to 24	16	16	16	8	5	8	8	18	95	21.1	336	3566	408	3802
15 to 19	11	13	10	9	12	13	6	8	82	16.0	237	2177	507	6133
10 to 14	5	5	6	10	12	9	12	7	66	11.7	145	1222	599	8898
5 to 9	5	2	7	7	3	6	11	6	47	6.7	96	609	648	12005
0 to 4	9	11	4	4	1	0	4	11	44	1.7	56	233	688	15349
-5 to -1	5	4	5	4	0	0	0	1	19	-3.2	20	60	724	18896
-10 to -6	0	3	6	0	0	0	0	0	9	-7.7	5	5	739	22561
Feb														
55 to 59	0	0	0	0	1	0	0	0	1	47.0	672	20190	0	0
50 to 54	0	0	0	0	6	11	0	0	17	43.8	666	16838	6	8
45 to 49	1	2	0	3	11	6	4	2	29	40.8	643	13562	29	92
40 to 44	4	1	3	13	8	3	10	6	48	37.6	608	10426	64	316
35 to 39	7	6	2	9	8	14	4	3	53	33.2	561	7504	111	754
30 to 34	20	22	26	13	16	14	19	21	151	30.0	491	4856	181	1466
25 to 29	14	15	18	16	12	19	19	20	133	25.1	308	2867	364	2837
20 to 24	14	13	10	10	9	5	13	15	89	20.9	185	1617	487	4947
15 to 19	13	10	13	11	8	4	3	5	67	15.1	124	841	548	7531
10 to 14	2	7	2	6	3	8	7	3	38	10.0	70	376	602	10426
5 to 9	6	2	5	0	2	0	5	9	29	6.1	30	125	642	13535
0 to 4	3	6	2	3	0	0	0	0	14	1.0	12	26	660	16796
-5 to -1	0	0	3	0	0	0	0	0	3	-3.3	0	0	672	20130
Mar														
60 to 64	0	0	0	0	0	1	0	0	1	47.0	744	19182	0	0
55 to 59	0	0	0	2	6	5	1	0	14	44.5	739	15470	5	8
50 to 54	0	0	0	4	27	25	4	1	61	42.8	711	11822	33	80
45 to 49	3	0	0	15	6	11	22	6	63	40.0	647	8434	97	412
40 to 44	9	5	8	18	16	16	13	17	102	36.5	565	5385	179	1083
35 to 39	22	24	23	18	20	17	18	19	161	33.3	439	2836	305	2254
30 to 34	37	27	27	29	12	12	24	31	199	30.2	250	1051	494	4189
25 to 29	18	30	27	6	6	5	8	15	115	26.1	81	249	663	7107
20 to 24	2	4	5	1	0	1	3	4	20	22.3	13	45	731	10623
15 to 19	2	3	3	0	0	0	0	0	8	17.5	3	3	741	14301

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

OMAHA (NORTH), NEBRASKA
 WUAN 94918
 TABLE A:

WYEC Data

Latitude 41.22 N
 Longitude 96.01 E

Monthly Dry Bulb Temperature Frequencies With Mean
 Coincident Wet Bulb Temperature (MCWB): Second Quarter
 (5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day 10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Apr														
90 to 94	0	0	0	0	1	1	0	0	2	69.0	720	28927	0	0
85 to 89	0	0	0	1	2	5	1	0	9	66.9	713	29340	7	13
80 to 84	0	0	0	1	8	6	3	0	18	63.7	700	21795	20	68
75 to 79	0	0	0	5	2	2	7	5	21	63.0	686	18331	34	204
70 to 74	4	0	3	5	4	4	1	5	26	60.8	660	14962	60	439
65 to 69	4	7	3	2	6	12	9	5	48	55.1	622	11738	98	811
60 to 64	7	3	4	12	15	9	6	3	59	51.0	575	8741	145	1414
55 to 59	6	10	15	17	11	13	12	6	90	48.6	502	6029	218	2302
50 to 54	16	9	15	14	10	16	15	22	117	46.0	406	3754	314	3627
45 to 49	16	21	15	11	24	12	18	14	131	42.7	267	2954	453	5527
40 to 44	9	8	8	13	2	7	11	14	72	38.3	168	993	552	8066
35 to 39	21	17	15	7	5	3	7	12	87	34.3	94	327	626	11000
30 to 34	4	9	10	2	0	0	0	4	29	29.9	24	56	696	14331
25 to 29	3	6	2	0	0	0	0	0	11	26.0	1	1	719	17874
May														
90 to 94	0	0	0	0	2	3	0	0	5	72.2	744	21964	0	0
85 to 89	0	0	0	0	4	7	2	0	13	69.4	737	18261	7	17
80 to 84	0	0	0	7	13	6	5	1	32	66.1	715	14625	29	101
75 to 79	0	0	1	9	10	17	7	7	51	62.4	676	11137	68	333
70 to 74	8	4	8	11	21	19	13	4	88	60.5	601	7909	143	825
65 to 69	5	4	10	22	23	17	23	11	115	58.2	520	5094	224	1730
60 to 64	11	17	19	22	12	15	20	25	141	56.2	385	2829	359	3181
55 to 59	40	28	35	14	7	9	20	26	179	53.2	216	1283	528	5359
50 to 54	11	19	10	7	1	0	2	11	61	47.8	92	578	652	8374
45 to 49	9	4	6	1	0	0	1	5	26	41.7	50	249	694	11765
40 to 44	6	10	3	0	0	0	0	2	21	39.0	23	71	721	15307
35 to 39	3	7	1	0	0	0	0	1	12	35.7	2	4	742	18960
Jun														
90 to 94	0	0	0	1	12	10	0	0	23	72.3	717	14521	3	2
85 to 89	0	0	0	15	19	25	6	0	64	70.7	670	11027	50	108
80 to 84	0	0	6	15	24	20	21	0	86	69.1	609	7833	111	514
75 to 79	5	3	16	27	21	17	24	22	135	67.3	505	5041	215	1322
70 to 74	20	13	24	13	6	7	20	26	129	65.3	359	2890	361	2771
65 to 69	36	39	25	12	8	5	8	22	155	61.3	223	1406	497	4887
60 to 64	9	12	8	6	1	4	7	8	55	56.5	95	857	625	7738
55 to 59	8	8	8	1	0	2	3	6	36	51.6	59	276	661	10957
50 to 54	10	11	3	0	0	0	1	5	30	46.8	29	64	691	14345
45 to 49	2	3	0	0	0	0	0	1	6	43.2	3	6	717	17887
40 to 44	0	1	0	0	0	0	0	0	1	42.0	0	0	720	21481

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

OMAHA (NORTH), NEBRASKA

WYEC Data

Latitude 41.22 N

WGAN 94918

Longitude 96.01 E

TABLE A:

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Third Quarter
(5 Degrees(F)/3Hr Bins).

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day 10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Jul														
95 to 99	0	0	0	0	6	8	0	0	14	71.8	744	15387	0	0
90 to 94	0	0	0	8	23	14	3	0	48	73.6	721	11715	23	48
85 to 89	2	0	0	19	17	35	17	4	94	72.0	655	8281	89	334
80 to 84	5	1	9	24	32	19	27	10	127	68.6	537	5292	207	1065
75 to 79	15	14	26	27	7	12	23	22	146	68.4	405	2919	339	2412
70 to 74	28	20	25	10	5	5	16	29	138	67.0	262	1257	482	4470
65 to 69	34	33	31	4	2	0	7	26	137	64.1	125	306	619	7239
60 to 64	9	23	2	1	1	0	0	2	40	61.0	14	21	730	10674
Aug														
95 to 99	0	0	0	0	3	2	0	0	5	76.4	744	16551	0	0
90 to 94	0	0	0	6	21	20	0	0	47	74.4	724	12862	20	31
85 to 89	0	0	0	19	28	29	13	0	89	73.6	665	9384	79	273
80 to 84	0	0	9	29	11	10	28	4	91	73.1	567	6518	177	927
75 to 79	24	6	26	11	6	13	24	41	151	70.5	462	3726	282	2055
70 to 74	35	41	30	9	13	16	12	23	179	67.4	284	1846	460	3895
65 to 69	14	22	7	8	10	3	13	12	89	62.4	142	827	602	6596
60 to 64	11	11	8	9	1	0	2	10	52	58.5	68	311	676	9800
55 to 59	6	9	10	2	0	0	1	1	29	54.7	29	84	715	13293
50 to 54	3	4	3	0	0	0	0	2	12	51.3	4	6	740	16935
Sep														
90 to 94	0	0	0	0	3	2	0	0	5	77.6	720	18928	0	0
85 to 89	0	0	0	8	17	18	1	0	44	76.2	699	15384	21	36
80 to 84	0	0	2	11	11	8	15	6	53	73.3	653	11988	67	260
75 to 79	17	6	9	11	16	14	9	12	94	70.0	584	8873	136	745
70 to 74	2	12	6	17	5	7	7	6	64	66.0	502	8177	218	1849
65 to 69	13	14	21	22	22	22	11	12	137	61.1	414	3863	306	2935
60 to 64	16	13	16	14	16	14	23	18	130	58.4	258	2154	462	4656
55 to 59	14	13	14	6	0	5	8	10	70	54.1	165	1135	555	7427
50 to 54	11	13	14	1	0	0	12	15	66	48.5	99	512	621	10384
45 to 49	10	8	3	0	0	0	4	8	33	44.9	40	168	680	13640
40 to 44	5	7	2	0	0	0	0	3	17	40.5	15	39	705	17111
35 to 39	2	4	1	0	0	0	0	0	7	37.1	1	1	719	20673

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

OMAHA (NORTH), NEBRASKA

WBAN 94918

TABLE A:

WYEC Data

Latitude 41.22 N

Longitude 96.01 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Fourth Quarter
(5 Degree(F)/5Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day 10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Oct														
85 to 89	0	0	0	0	1	0	0	0	1	88.0	744	23933	0	0
80 to 84	0	0	0	0	3	5	0	0	8	86.1	740	20219	4	6
75 to 79	0	0	0	3	7	7	1	0	18	83.9	729	16539	15	46
70 to 74	0	0	0	7	24	16	5	1	53	81.0	702	12946	42	173
65 to 69	3	3	4	13	23	22	12	7	87	78.2	621	9600	123	595
60 to 64	9	8	9	26	12	16	20	10	110	75.2	529	6709	215	1376
55 to 59	10	5	12	16	5	9	24	18	99	71.0	424	4324	320	2711
50 to 54	29	18	20	12	5	3	15	28	130	68.3	316	2449	426	4556
45 to 49	23	24	20	6	6	8	7	18	112	64.5	196	1184	546	7011
40 to 44	13	23	17	4	6	6	3	3	75	60.8	87	490	657	10037
35 to 39	3	7	5	4	1	1	4	5	30	53.9	34	204	710	13471
30 to 34	0	2	3	2	0	0	2	0	9	47.8	18	86	726	17073
25 to 29	3	0	2	0	0	0	0	3	8	45.3	8	23	736	20730
20 to 24	0	3	1	0	0	0	0	0	4	43.0	0	0	744	24427
Nov														
70 to 74	0	0	0	0	0	1	0	0	1	67.0	720	23813	0	0
65 to 69	0	0	0	4	10	4	0	0	18	65.6	713	20223	7	10
60 to 64	0	0	0	5	9	5	1	0	20	63.2	697	16706	23	93
55 to 59	0	0	0	7	14	10	7	2	40	60.6	670	15789	50	276
50 to 54	3	3	3	11	10	14	10	7	61	58.2	625	10961	95	648
45 to 49	11	7	9	12	11	11	9	11	81	55.8	556	7118	164	1305
40 to 44	14	13	15	13	13	21	24	14	127	52.7	446	4586	274	2373
35 to 39	17	15	14	12	7	5	14	25	109	50.9	317	2677	403	4064
30 to 34	27	22	19	17	10	11	7	14	127	48.0	221	1330	499	6317
25 to 29	5	15	14	7	6	6	9	2	64	45.1	104	570	616	9157
20 to 24	7	3	10	2	0	2	9	13	46	42.5	57	172	663	12359
15 to 19	6	12	6	0	0	0	0	2	26	40.0	9	8	711	15795
Dec														
55 to 59	0	0	0	0	12	2	0	0	14	45.1	240	22233	4	4
50 to 54	3	2	0	5	10	9	0	1	30	43.8	721	18578	23	69
45 to 49	0	1	2	10	3	8	6	2	32	40.7	693	15053	51	264
40 to 44	0	0	2	10	13	13	8	4	50	37.2	649	11689	95	620
35 to 39	11	5	9	12	7	12	16	11	83	33.3	599	8568	145	1219
30 to 34	11	20	16	8	5	5	13	17	95	29.2	486	5842	250	2213
25 to 29	19	9	9	5	27	15	10	14	108	23.7	395	3614	349	3705
20 to 24	13	18	14	27	16	23	15	11	137	19.5	284	1910	460	5721
15 to 19	12	7	12	14	0	5	21	15	86	15.2	163	811	581	8542
10 to 14	20	21	21	2	0	1	4	14	83	10.7	80	232	664	17483
5 to 9	4	0	8	0	0	0	0	4	24	7.0	14	25	730	14996
0 to 4	0	2	0	0	0	0	0	0	2	3.5	0	0	744	18691

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

OMAHA (NORTH), NEBRASKA
WBAW 94918
TABLE B:

WVEC Data

Latitude 41.22 N
Longitude 96.01 E

Annual Dry Bulb Temperature Frequencies
With Mean Coincident Wet Bulb Temperature
(5 Degrees(F)/3Hr Bins)

Dry Bulb range(F)	Number of Hours of Occurrence in time period									Mean Coincident Wet Bulb Temperature (F)								
	Hour of day									Hour of day								
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year
95 to 99	0	0	0	0	2	10	0	0	19	0.0	0.0	0.0	0.0	74.3	71.8	0.0	0.0	73.0
90 to 94	0	0	0	15	62	50	3	0	130	0.0	0.0	0.0	74.1	73.3	74.0	70.3	0.0	73.7
85 to 89	2	0	0	62	87	119	40	4	314	72.5	0.0	0.0	73.5	72.8	71.8	72.8	71.3	72.5
80 to 84	5	1	26	87	102	74	99	21	415	67.0	71.0	71.9	70.3	68.2	67.9	71.7	71.4	69.8
75 to 79	61	29	78	93	69	82	95	109	616	71.4	69.6	69.9	67.4	64.5	64.3	68.1	70.3	68.1
70 to 74	97	90	98	72	78	75	74	94	678	67.2	68.5	66.5	63.0	60.4	61.3	64.6	66.2	65.0
65 to 69	109	122	101	87	104	85	83	95	786	63.2	63.5	62.9	59.1	55.9	54.9	59.5	62.3	60.3
60 to 64	72	89	66	95	67	64	79	76	608	59.2	59.8	57.8	54.0	52.9	53.6	55.2	58.4	56.4
55 to 59	84	73	94	65	56	55	76	69	572	54.7	54.7	52.6	49.5	46.3	48.4	50.2	52.1	51.4
50 to 54	66	79	68	54	69	78	59	92	585	48.0	48.9	48.1	44.6	44.0	43.9	47.0	47.6	46.6
45 to 49	75	70	55	58	61	56	71	67	513	43.7	44.3	45.4	40.9	40.6	40.3	41.8	44.0	42.4
40 to 44	60	68	58	73	69	74	69	63	534	38.9	39.7	39.0	37.1	36.2	36.8	37.0	37.7	37.7
35 to 39	94	91	73	74	68	74	82	83	639	34.1	34.8	34.4	33.0	32.8	33.1	33.6	33.9	33.6
30 to 34	122	121	120	95	60	59	86	115	776	30.0	30.8	30.0	29.7	29.8	29.8	30.2	30.3	30.0
25 to 29	73	89	89	49	63	55	58	61	537	25.7	25.9	26.2	25.2	25.4	25.8	24.7	25.7	25.2
20 to 24	52	57	56	48	50	39	48	61	391	20.4	21.2	20.8	20.1	19.1	19.6	20.6	20.4	20.4
15 to 19	44	45	44	34	20	22	30	30	269	15.7	16.1	15.9	15.2	15.7	15.0	15.5	15.7	15.7
10 to 14	27	35	29	18	15	18	23	24	187	11.2	10.7	10.3	11.1	10.9	11.1	10.6	11.6	10.9
5 to 9	15	12	20	7	5	6	16	19	100	6.3	7.5	6.5	6.7	5.0	5.5	6.9	6.6	6.6
0 to 4	12	19	6	7	1	0	4	11	60	1.7	1.0	2.3	0.9	2.0	0.0	2.5	2.1	1.6
-5 to -1	5	4	8	4	0	0	0	1	22	-2.8	-3.3	-3.6	-3.0	0.0	0.0	0.0	-2.0	-3.2
-10 to -6	0	3	6	0	0	0	0	0	9	0.0	-8.0	-7.5	0.0	0.0	0.0	0.0	0.0	-7.7

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Month	Dry Bulb Temperature (F)					Wet Bulb Ave	Percent Relative Humidity					Average Humidity Ratio (lb moisture/lb dry air)					Average wind MPH
	Ave	Max	Min	Daily Ave			4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
				Max	Min												
Jan	22.8	44	-9	50	16	21.7	90	89	78	88	87	0.0022	0.0022	0.0025	0.0024	0.0023	11.0
Feb	27.9	56	-2	57	19	25.0	81	76	65	74	79	0.0022	0.0023	0.0025	0.0024	0.0024	11.9
Mar	36.7	60	16	44	30	32.9	83	71	58	69	72	0.0030	0.0031	0.0033	0.0033	0.0031	10.4
Apr	52.3	91	27	62	43	45.4	77	60	49	59	63	0.0055	0.0053	0.0054	0.0056	0.0054	16.4
May	63.0	91	35	73	53	55.5	84	63	48	58	66	0.0082	0.0083	0.0082	0.0083	0.0083	11.1
Jun	72.3	93	44	83	61	63.6	78	61	51	63	69	0.0104	0.0117	0.0119	0.0119	0.0114	8.7
Jul	78.8	96	60	87	67	67.8	85	63	47	63	67	0.0131	0.0134	0.0127	0.0136	0.0132	9.4
Aug	75.3	96	51	85	66	68.0	85	67	53	73	72	0.0133	0.0138	0.0137	0.0152	0.0139	7.6
Sep	66.2	92	37	77	56	60.9	87	70	59	60	78	0.0105	0.0114	0.0118	0.0117	0.0112	7.7
Oct	55.3	85	23	67	45	49.2	83	64	47	66	68	0.0084	0.0084	0.0085	0.0089	0.0086	9.7
Nov	39.4	71	16	51	29	35.5	81	69	53	69	78	0.0054	0.0059	0.0059	0.0058	0.0057	10.3
Dec	27.6	59	3	38	18	24.5	79	71	56	70	78	0.0020	0.0023	0.0023	0.0023	0.0022	8.9
Year	51.4	96	-9	61	42	45.9	83	69	55	69	71	0.0067	0.0070	0.0071	0.0073	0.0070	10.3

OMAHA (NORTH), NEBRASKA
WBAN 94918
TABLE D:

WYEC Date

Latitude 41.72 N
Longitude 96.01 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY														24 HOUR SUMMARY				
	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**		HEATING		COOLING				
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg	Hrs	Deg			
	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Below (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool			
97	0	548	0	0	470	0	0	424	0	0	484	0	0	1651	0	8760	3994	0	0
96	0	537	0	0	459	0	2	407	0	1	413	0	0	1619	0	8756	3907	4	0
95	0	526	0	0	448	0	6	396	0	6	402	0	0	1586	0	8747	3819	13	0
94	0	515	0	0	437	0	12	385	0	12	391	0	0	1553	0	8735	3732	25	0
93	0	504	0	0	426	0	20	374	0	17	380	0	0	1520	0	8721	3645	39	1
92	0	493	0	2	415	0	33	364	1	27	369	0	1	1487	0	8696	3558	64	1
91	0	482	0	7	404	0	50	353	1	37	359	1	2	1454	0	8662	3471	98	2
90	0	471	0	13	393	0	65	343	2	50	348	1	3	1421	0	8628	3384	132	3
89	0	461	0	20	383	0	78	332	2	72	336	2	5	1389	0	8583	3298	177	4
88	0	450	0	28	372	1	96	322	3	95	328	3	8	1356	0	8531	3213	229	7
87	0	439	0	39	361	1	116	312	4	120	318	4	15	1323	0	8469	3128	291	9
86	0	428	0	55	351	1	134	303	5	146	308	5	26	1290	0	8397	3043	363	12
85	0	417	0	70	341	2	150	293	7	169	299	7	37	1257	0	8329	2960	431	16
84	0	406	0	86	330	3	168	284	8	187	290	8	50	1224	0	8260	2877	506	21
83	3	395	0	103	320	4	190	275	10	203	281	10	65	1192	0	8184	2794	576	26
82	6	384	0	119	310	5	211	266	12	217	272	13	82	1159	0	8109	2713	651	32
81	13	373	0	136	301	6	228	257	14	233	263	15	102	1126	0	8025	2632	735	39
80	22	362	0	155	291	8	248	248	17	249	255	17	127	1094	1	7929	2552	831	47
79	34	352	1	175	282	9	266	240	19	257	246	20	150	1061	1	7822	2474	928	56
78	47	341	1	198	273	11	278	232	22	268	238	22	168	1029	2	7727	2396	1033	66
77	60	331	2	219	264	13	290	224	25	282	230	25	186	997	2	7610	2319	1150	77
76	76	320	2	234	255	15	304	216	28	301	222	28	205	965	4	7486	2244	1274	89
75	95	310	3	249	247	18	320	208	31	324	214	31	226	934	5	7344	2169	1416	102
74	116	300	4	263	238	20	340	200	34	345	206	35	245	904	8	7197	2097	1563	117
73	138	291	5	275	230	23	358	193	38	363	199	38	261	873	11	7061	2025	1699	133
72	158	281	7	287	222	26	373	186	42	379	192	42	275	844	14	6925	1955	1835	151
71	179	272	9	303	214	29	388	178	45	392	185	46	288	815	18	6794	1887	1966	170
70	195	263	10	321	206	32	401	171	49	403	178	50	302	787	22	6660	1820	2100	190
69	213	254	12	336	199	35	419	165	53	417	171	54	315	759	27	6514	1754	2246	212
68	234	245	15	353	191	39	439	158	58	437	164	58	329	732	33	6362	1689	2398	235
67	255	237	17	373	184	42	459	151	62	456	158	62	346	703	39	6203	1626	2557	260
66	277	229	20	391	177	46	482	145	67	468	151	67	365	679	46	6040	1565	2720	286
65	296	220	23	408	170	50	502	139	72	484	145	72	385	654	54	5880	1506	2880	314
64	311	213	26	426	163	54	520	133	77	503	139	77	402	630	62	5723	1448	3037	344
63	324	205	29	447	156	59	534	128	82	517	133	82	417	606	72	5585	1391	3175	375
62	336	197	32	467	150	63	544	122	88	530	128	87	433	583	81	5467	1336	3293	407
61	349	190	36	485	144	68	556	117	93	543	122	93	448	560	91	5359	1282	3401	441
60	362	182	39	502	138	73	571	111	99	554	117	98	464	537	102	5251	1229	3509	475
59	376	175	43	519	132	78	584	106	105	565	111	104	483	515	112	5130	1177	3630	511
58	392	168	47	533	126	83	594	101	110	577	106	109	499	494	124	5013	1126	3747	548
57	414	161	51	548	121	89	602	96	116	590	101	115	510	473	135	4901	1077	3859	586
56	438	154	55	561	115	94	615	91	122	603	96	121	522	452	147	4784	1028	3976	625
55	456	148	60	571	110	100	628	87	129	612	91	127	539	432	160	4674	981	4086	666
54	471	141	64	583	105	106	641	82	135	619	86	133	557	412	173	4568	935	4192	707
53	485	135	69	593	100	112	654	78	142	631	81	140	567	392	186	4464	890	4296	749
52	497	129	74	603	95	118	667	73	148	646	77	146	578	373	200	4331	845	4409	793

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 565 x 100 = 56500 Deg Hrs)

** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 305

OMAHA (NORTH), NEBRASKA
WBAN 94910

WVEC Data

Latitude 41.22 N
Longitude 96.01 E

TABLE 0:

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY												24 HOUR SUMMARY										
	7-9AM**			10-12AM**			1-3PM**			4-6PM**			7-9PM**			10PM-6AM**			HEATING		COOLING		
	Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs			
	Above (100s)*	Base	Heat	Cool	Above (100s)*	Base	Heat	Cool	Above (100s)*	Base	Heat	Cool	Above (100s)*	Base	Heat	Cool	Above (100s)*	Base	Heat	Cool	Above (100s)*	Base	Heat
51	510	123	79	612	90	124	682	69	153	664	73	153	593	93	113	1472	355	215	4225	802	4533	838	
50	524	118	84	623	83	130	697	63	162	682	68	159	604	86	119	1529	337	230	4100	761	4660	884	
49	537	112	89	634	80	136	710	61	169	696	64	166	612	83	125	1581	320	245	3988	720	4772	931	
48	547	106	95	642	76	143	725	57	176	708	60	173	623	78	131	1624	303	261	3889	681	4871	979	
47	558	101	100	655	71	149	759	54	183	721	57	180	639	74	137	1666	287	278	3780	643	4980	1026	
46	567	96	106	673	67	156	751	50	191	732	53	188	654	69	144	1707	271	295	3679	605	5085	1079	
43	577	90	112	684	63	162	760	47	198	743	49	195	669	65	151	1749	255	312	3576	569	5184	1130	
44	591	85	117	694	59	169	770	43	206	756	46	202	685	61	157	1789	240	330	3472	534	5288	1182	
43	605	80	123	709	55	176	783	40	214	772	43	210	696	57	164	1831	225	348	3361	500	5399	1236	
42	620	75	130	727	51	184	794	37	222	787	39	218	710	53	171	1869	211	366	3250	467	5510	1290	
41	632	71	136	742	48	191	808	34	230	799	36	226	725	49	178	1901	197	385	3130	435	5610	1346	
40	640	66	142	754	44	198	825	31	238	813	33	234	740	45	186	1940	183	404	3046	404	5714	1402	
39	654	62	149	769	41	206	837	29	246	826	31	242	756	42	193	1986	170	424	2926	374	5832	1460	
38	670	57	155	781	38	214	849	26	255	837	28	250	769	38	201	2045	157	444	2808	345	5952	1519	
37	682	53	162	794	35	222	863	24	263	850	26	259	785	35	209	2093	145	465	2691	310	6069	1579	
36	696	49	169	807	32	230	878	22	272	868	23	267	802	32	217	2142	133	486	2566	291	6194	1640	
35	710	43	176	823	29	238	895	20	281	888	21	276	819	29	225	2201	122	508	2424	266	6336	1703	
34	727	41	183	846	26	246	909	18	290	901	19	285	840	27	233	2259	112	530	2280	243	6480	1767	
33	749	36	191	863	24	255	923	16	299	913	17	294	859	24	242	2326	102	553	2123	221	6637	1833	
32	773	35	198	882	22	263	937	14	308	930	15	303	879	22	250	2405	93	577	1953	200	6807	1900	
31	798	31	206	902	20	272	945	13	318	943	14	313	897	20	259	2470	84	601	1803	182	6957	1969	
30	823	28	214	919	18	281	954	11	327	951	12	322	910	18	268	2544	76	626	1657	164	7103	2039	
29	851	26	222	933	16	291	963	10	337	956	11	332	922	16	277	2629	69	652	1584	149	7256	2111	
28	881	24	231	943	14	300	969	9	346	964	10	341	933	15	287	2693	63	679	1374	134	7386	2184	
27	902	22	240	953	13	310	984	7	356	978	8	351	941	13	296	2720	58	706	1272	121	7488	2259	
26	911	20	249	962	12	319	1006	6	366	991	7	361	954	12	305	2753	52	733	1181	109	7579	2334	
25	920	18	256	972	10	329	1020	6	376	1003	6	371	969	10	314	2789	47	761	1086	97	7674	2410	
24	931	16	268	982	9	339	1024	5	386	1016	5	381	979	9	323	2826	42	789	998	87	7782	2487	
23	943	15	277	993	8	348	1027	4	397	1024	5	391	993	8	332	2861	38	817	917	77	7845	2563	
22	955	13	286	1001	7	358	1033	4	407	1030	4	402	1008	7	341	2895	34	846	838	69	7922	2644	
21	968	12	296	1009	6	368	1039	3	417	1036	3	412	1012	6	350	2930	30	875	763	61	7997	2724	
20	979	11	306	1020	5	379	1048	2	428	1044	3	422	1018	5	360	2964	27	905	686	53	8074	2804	
19	988	10	316	1027	5	389	1057	2	438	1050	2	433	1024	5	370	2994	24	933	619	47	8141	2885	
18	998	9	326	1033	4	399	1063	2	449	1052	2	443	1031	4	380	3016	21	965	563	41	8197	2967	
17	1007	8	336	1042	3	410	1069	1	460	1057	2	454	1040	3	390	3043	18	995	501	36	8259	3049	
16	1015	7	346	1051	3	420	1071	1	470	1062	1	464	1047	3	400	3070	16	1025	442	31	8318	3132	
15	1022	6	356	1057	3	431	1073	1	481	1066	1	475	1050	2	410	3091	14	1056	397	27	8363	3218	
14	1028	5	366	1062	2	441	1078	1	492	1074	1	486	1054	2	420	3111	12	1087	354	23	8406	3299	
13	1031	3	376	1067	2	452	1080	1	503	1079	0	497	1058	2	430	3130	10	1118	313	20	8447	3384	
12	1034	4	387	1070	2	463	1083	0	513	1084	0	507	1062	1	440	3144	9	1150	281	17	8479	3468	
11	1038	4	397	1073	1	473	1084	0	524	1087	0	518	1067	1	450	3158	8	1181	251	14	8500	3553	
10	1048	3	408	1076	1	484	1087	0	535	1088	0	529	1073	1	460	3173	6	1213	212	12	8540	3639	
9	1059	3	418	1078	1	495	1089	0	546	1089	0	540	1076	0	470	3191	5	1245	175	10	8585	3724	
8	1063	2	429	1079	1	506	1091	0	557	1090	0	551	1083	0	481	3202	5	1277	150	8	8610	3810	
7	1068	2	439	1081	1	516	1092	0	568	1092	0	562	1087	0	492	3210	4	1309	131	7	8629	3896	
6	1069	2	450	1082	1	527	1092	0	579	1094	0	573	1089	0	503	3221	3	1341	112	6	8648	3983	

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (x 100 = 36,500 Deg Hrs)

** The Hours Below the Base Temp for any X-Hr period

calculated by subtracting the Hrs Above from X times 365

OMAHA (NORTH), NEBRASKA
 WBAN 94918
 TABLE D:

WYEC Data

Latitude 41.22 N
 Longitude 96.01 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**		24 HOUR SUMMARY			
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	HEATING		COOLING	
	Above (100s)*	Above (100s)*	Above (100s)*	Above (100s)*	Above (100s)*	Above (100s)*	Above (100s)*	Above (100s)*	Above (100s)*	Above (100s)*	Above (100s)*	Above (100s)*	Below Base 100s*	Below Base 100s*	Above Base 100s*	Above Base 100s*
	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat
5 1072	2	461	1083	1	538	1093	0	590	1094	0	584	1090	0	524	3229	3 1373
4 1076	1	472	1085	0	549	1094	0	601	1095	0	595	1091	0	535	3232	2 1406
3 1078	1	482	1086	0	560	1094	0	612	1095	0	606	1092	0	546	3239	1 1458
2 1079	1	493	1088	0	571	1095	0	622	1095	0	617	1093	0	557	3248	1 1470
1 1079	1	504	1089	0	581	1095	0	633	1095	0	628	1094	0	568	3259	1 1503
0 1080	1	515	1090	0	592	1095	0	644	1095	0	638	1095	0	579	3268	1 1536
-1 1081	1	525	1091	0	603	1095	0	655	1095	0	649	1095	0	590	3273	0 1568
-2 1082	0	536	1093	0	614	1095	0	666	1095	0	660	1095	0	600	3275	0 1601
-3 1086	0	547	1094	0	625	1095	0	677	1095	0	671	1095	0	611	3277	0 1634
-4 1088	0	558	1094	0	636	1095	0	688	1095	0	682	1095	0	622	3279	0 1667
-5 1089	0	569	1094	0	647	1095	0	699	1095	0	693	1095	0	633	3281	0 1699
-6 1089	0	580	1095	0	658	1095	0	710	1095	0	704	1095	0	644	3282	0 1732
-7 1091	0	591	1095	0	669	1095	0	721	1095	0	715	1095	0	655	3282	0 1765
-8 1093	0	602	1095	0	680	1095	0	732	1095	0	726	1095	0	666	3283	0 1798
-9 1094	0	613	1095	0	691	1095	0	743	1095	0	737	1095	0	677	3284	0 1831
-10 1095	0	624	1095	0	702	1095	0	754	1095	0	748	1095	0	688	3285	0 1864

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 565 x 100 = 56500 Deg Hrs)
 ** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

OMAHA (NORTH), NEBRASKA
WBAN 94916
TABLE E:

MYEC Data
Annual COOLING Wet Bulb Degree Hour Summary

Latitude 41.22 N
Longitude 96.01 E

Wet Bulb Temperature (F) Base:	50	53	56	59	62	65	68	71	74	77	80
Annual Wet Bulb hours ABOVE base:	4018	3622	3256	2915	2502	1835	1317	827	380	83	5
Annual Wet Bulb Cooling deg-hrs:	58077.	46436.	35951.	26469.	18092.	11281.	6361.	2943.	960.	147.	5.

TABLE F:
Annual Humidification/Dehumidification Requirements
At various Indoor Conditions and Degree Day Bases
(Pounds of Moisture)

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS ** Heating Degree Base												COOLING HUMIDITY RATIO HOURS ** Cooling Degree Base												Maintained Indoor Humidity Ratio*
	30	35	40	45	50	55	60	65	70	75	80		30	35	40	45	50	55	60	65	70	75	80		
.001	0	0	0	0	0	0	0	0	0	0	0		48	47	45	44	42	40	36	31	24	17	10	.001	
.002	1	2	2	2	2	2	2	2	2	2	2		41	40	40	39	38	36	33	28	22	15	9	.002	
.003	3	3	4	4	4	4	4	4	4	4	4		35	35	34	34	33	32	29	26	20	14	8	.003	
.004	5	6	6	7	7	7	7	7	7	7	7		29	29	29	29	29	26	23	18	13	8		.004	
.005	6	8	9	10	11	11	11	11	12	12	12		25	25	25	25	25	24	23	20	16	11	7	.005	
.006	8	10	12	14	15	15	16	16	16	16	16		21	21	21	21	21	20	19	17	14	10	6	.006	
.007	9	13	15	17	19	20	20	21	21	21	21		17	17	17	17	17	17	16	15	12	9	5	.007	
.008	11	15	18	21	23	24	25	26	27	27	27		14	14	14	14	14	14	13	12	10	7	4	.008	
.009	12	17	21	24	27	29	30	31	32	32	32		11	11	11	11	11	11	11	10	8	6	4	.009	
.010	14	20	24	28	31	34	35	37	38	38	38		8	8	8	8	8	8	8	8	7	5	3	.010	
.011	16	22	27	31	35	38	41	42	44	44	45		6	6	6	6	6	6	6	6	5	4	2	.011	
.012	17	25	30	35	39	43	46	48	50	51	52		4	4	4	4	4	4	4	4	4	3	2	.012	
.013	19	27	33	38	43	47	51	54	57	58	59		3	3	3	3	3	3	3	3	3	2	1	.013	
.014	20	29	36	42	47	52	56	60	63	65	66		2	2	2	2	2	2	2	2	2	1	1	.014	
.015	22	32	39	46	51	57	61	66	70	72	74		1	1	1	1	1	1	1	1	1	1	1	.015	
.016	23	34	42	49	55	61	67	71	76	79	81		0	0	0	0	0	0	0	0	0	0	0	.016	
.017	25	36	45	53	59	66	72	77	83	86	89		0	0	0	0	0	0	0	0	0	0	0	.017	
.018	27	39	48	56	63	71	77	83	89	94	97		0	0	0	0	0	0	0	0	0	0	0	.018	

FOOTNOTES: * Indoor Humidity Level is measured in pounds of moisture per pound of dry air. Indoor set points of 72 deg(F)-50%RH and 78 deg(F)-50%RH yield humidity ratios of .003 and .010 respectively.
** Heating (Cooling) Humidity Ratio Hours are defined as the summation of the differences between the maintained indoor humidity ratio and the observed outdoor humidity ratio when both the hourly dry bulb temperature and the humidity ratio are above (below) the base levels.

TABLE G:
Percent Diffuse Solar Radiation*
and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
% Diffuse on surface													
HORIZONTAL	41	36	63	56	52	41	44	38	34	30	48	44	44
VERTICAL													
NORTH	100	100	100	99	93	88	91	95	100	100	100	100	95
WEST	50	46	77	63	68	59	63	57	49	44	60	55	59
SOUTH	30	32	66	69	76	73	73	60	43	30	38	31	52
EAST	51	52	67	69	66	61	63	53	51	43	53	50	59
% Possible Sun	55	54	55	58	62	68	73	72	67	67	52	49	62

FOOTNOTES: * Corrected For Cloud Cover.
** Source: NOAA, Comparative Climatic Data for the United States Through 1978.

OMAHA (NORTH), NEBRASKA
 WBAN 94918
 TABLE M:

WYEC Data

Latitude 41.22 N
 Longitude 96.01 E

Average Daily Solar Radiation on Vertical and Horizontal Surfaces
 (BTU/DAY.SQFT)

Month	Under Clear Sky Assumption*										Corrected For Cloud Cover**										obs	
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S-45 horiz ***	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S-45 horiz ***		
Jan	1863	1735	1389	1061	629	320	171	145	145	1881	898	896	835	680	531	343	215	153	141	141	890	632
Feb	1939	1811	1508	1232	816	476	273	192	189	2160	1237	975	898	749	617	435	292	212	178	177	1966	887
Mar	1801	1736	1577	1415	1085	750	488	316	262	2379	1722	869	879	829	770	645	517	416	351	329	996	859
Apr	1434	1503	1511	1493	1302	1031	757	522	370	2393	2173	1061	1065	1043	1013	807	776	654	552	493	1409	1369
May	1132	1282	1403	1493	1416	1227	975	719	526	2314	2472	999	1071	1121	1155	1098	987	851	715	614	1520	1859
Jun	1004	1172	1345	1485	1465	1327	1087	832	630	2258	2593	958	1041	1127	1197	1169	1075	926	772	657	1684	1923
Jul	1056	1214	1362	1476	1428	1276	1033	782	587	2280	2521	1004	1084	1151	1201	1153	1049	898	751	643	1668	1860
Aug	1283	1386	1442	1468	1329	1105	848	610	441	2304	2258	1050	1128	1161	1171	1071	918	746	589	476	1630	1830
Sep	1621	1599	1497	1391	1128	829	574	388	310	2311	1846	1189	1159	1082	1002	826	638	485	380	336	1573	1309
Oct	1855	1747	1504	1266	903	567	344	237	222	2182	1378	1153	1082	935	794	587	400	278	219	211	1327	900
Nov	1852	1719	1391	1076	567	347	197	160	160	1927	984	831	794	670	544	375	243	160	163	163	836	513
Dec	1789	1666	1323	990	568	272	151	133	133	1765	803	605	764	626	489	368	184	133	124	124	781	420
Year	1550	1546	1437	1321	1062	796	577	421	332	2178	1743	982	984	932	875	745	610	496	412	365	1262	1137

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
 ** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.
 *** South exposure tilt 45 degrees.

TABLE I: Average Daily Solar Heat Gain Through Single Pane Glass on Vertical
 and Horizontal Surfaces
 (BTU/DAY.SQFT)

Month	Under Clear Sky*									Corrected For Cloud Cover**								
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N
Jan	1609	1477	1165	879	504	236	130	118	118	765	703	565	436	276	166	121	115	115
Feb	1649	1521	1262	1023	663	365	199	155	153	821	746	618	507	351	230	164	144	143
Mar	1465	1439	1312	1181	897	602	373	240	213	703	723	685	638	531	419	331	280	268
Apr	1083	1195	1235	1236	1076	841	597	398	290	630	854	849	830	743	631	524	438	396
May	806	971	1128	1229	1173	1008	781	558	393	767	842	906	944	902	807	687	569	484
Jun	701	867	1089	1219	1215	1092	879	654	470	719	802	904	979	963	881	750	617	512
Jul	744	907	1088	1214	1186	1046	832	612	438	760	841	924	981	948	856	725	599	504
Aug	955	1089	1177	1218	1106	907	677	473	342	806	898	950	970	888	753	600	464	379
Sep	1292	1312	1244	1162	933	670	446	298	251	951	949	894	831	679	516	384	300	273
Oct	1558	1463	1254	1059	736	445	259	187	181	963	899	774	660	478	316	216	175	171
Nov	1594	1457	1163	892	532	261	148	130	130	704	667	558	450	303	191	142	132	132
Dec	1549	1424	1110	816	451	199	115	108	108	689	648	525	402	247	141	105	101	101
Year	1248	1259	1183	1094	874	641	454	329	258	789	798	763	720	611	494	397	329	291

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
 ** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.

SEATTLE-TACOMA, WASHINGTON
 MBAN 24233
 TABLE A:

MYEC Data

Latitude 47.50 N
 Longitude 122.50 E

Monthly Dry Bulb Temperature Frequencies With Mean
 Coincident Wet Bulb Temperature (MCWB): First Quarter
 15 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Jan														
50 to 54	3	1	0	3	10	8	3	3	31	47.5	741	10787	3	
45 to 49	12	14	16	18	21	21	18	11	131	44.2	679	7198	65	135
40 to 44	19	15	15	21	28	33	31	31	193	39.5	519	4197	225	854
35 to 39	28	26	23	28	19	12	18	19	173	35.0	305	2136	439	2513
30 to 34	16	19	21	13	10	12	10	15	116	30.2	144	991	680	5088
25 to 29	3	3	5	7	5	6	7	5	41	23.4	80	454	664	8271
20 to 24	9	11	6	3	0	1	6	7	43	18.8	45	143	699	11680
15 to 19	3	4	6	0	0	0	0	2	15	14.4	9	19	735	15276
10 to 14	0	0	1	0	0	0	0	0	1	13.0	0	0	744	18977
Feb														
55 to 59	0	0	0	0	2	1	0	0	3	45.3	672	10736	0	0
50 to 54	1	0	0	8	19	10	1	0	39	43.1	662	7388	10	12
45 to 49	5	8	8	26	28	35	22	10	142	41.4	596	4222	76	206
40 to 44	36	25	31	28	26	24	35	38	243	38.3	407	1684	265	1028
35 to 39	36	37	36	21	9	14	24	30	207	35.1	146	324	526	3028
30 to 34	6	14	9	1	0	0	2	6	38	30.7	16	12	656	6076
Mar														
70 to 74	0	0	0	0	1	2	0	0	3	54.7	744	21686	0	0
65 to 69	0	0	0	0	2	1	0	0	3	53.3	740	17975	4	9
60 to 64	0	0	0	4	5	4	1	0	14	52.1	733	14288	11	42
55 to 59	0	0	0	6	3	2	5	3	19	49.6	718	10661	26	135
50 to 54	4	2	4	2	13	13	7	6	51	46.1	694	7127	50	321
45 to 49	9	11	14	33	53	32	13	13	180	42.3	606	3823	156	737
40 to 44	36	27	30	43	16	38	49	38	277	39.6	361	1343	383	1977
35 to 39	37	38	40	5	0	1	16	32	169	35.7	93	204	651	4598
30 to 34	7	15	5	0	0	0	0	1	28	32.0	5	4	739	8078

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

SEATTLE-TACOMA, WASHINGTON

WYEC Data

Latitude 47.50 N

WGAN 24233

Longitude 122.30 E

TABLE A:

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB); Second Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Apr														
75 to 79	0	0	0	0	0	3	0	0	3	58.3	720	21467	0	0
70 to 74	0	0	0	0	2	3	1	0	6	58.3	715	17877	5	10
65 to 69	0	0	0	2	6	3	2	0	13	55.2	708	14316	12	49
60 to 64	0	0	0	6	7	6	4	0	23	51.5	688	10822	32	155
55 to 59	2	0	3	7	17	17	7	5	58	49.1	661	7444	59	377
50 to 54	8	6	10	29	33	31	22	9	148	45.9	573	4337	147	870
45 to 49	28	23	33	35	21	19	31	40	250	43.2	383	1908	337	2041
40 to 44	31	35	31	7	4	8	18	24	158	39.5	155	563	565	4296
35 to 39	20	20	12	4	0	0	5	12	73	34.9	47	88	673	7421
30 to 34	1	6	1	0	0	0	0	0	8	31.5	0	0	720	10933
May														
70 to 74	0	0	0	0	3	4	0	0	7	57.1	744	13875	0	0
65 to 69	0	0	1	6	19	16	2	0	44	54.8	727	10181	17	26
60 to 64	0	0	3	27	31	27	15	0	103	53.0	663	6684	81	249
55 to 59	11	7	24	34	27	24	31	23	181	50.7	519	3685	225	970
50 to 54	33	30	36	20	11	15	26	36	207	47.2	332	1534	412	2539
45 to 49	29	32	22	6	2	7	18	23	139	43.5	136	405	608	5130
40 to 44	18	21	7	0	0	0	1	11	58	40.3	21	36	723	8481
35 to 39	2	3	0	0	0	0	0	0	5	38.0	0	0	744	12165
Jun														
85 to 89	0	0	0	0	3	3	0	0	6	67.0	720	20607	0	0
80 to 84	0	0	0	2	6	9	2	0	19	64.2	708	17033	12	26
75 to 79	0	0	0	5	5	5	6	0	19	62.6	688	13547	32	140
70 to 74	0	0	3	6	7	10	4	2	32	60.2	664	10153	56	346
65 to 69	5	0	5	13	22	18	6	10	77	57.3	615	6921	105	714
60 to 64	7	5	11	17	21	18	23	4	106	54.2	529	4045	191	1438
55 to 59	19	20	27	30	18	24	37	34	209	52.5	388	1899	332	2692
50 to 54	48	50	43	17	8	5	12	38	221	49.3	147	317	573	4910
45 to 49	13	15	1	0	0	0	0	2	31	45.3	14	17	706	8210

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

SEATTLE-TACOMA, WASHINGTON
 NBAN 24233
 TABLE A:

WYEC Data

Latitude 47.50 N
 Longitude 122.30 E

Monthly Dry Bulb Temperature Frequencies With Mean
 Coincident Wet Bulb Temperature (MCWB): Third Quarter
 (5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Jul														
80 to 84	0	0	0	0	16	20	4	0	40	64.8	735	13552	9	6
75 to 79	0	0	0	10	24	22	11	0	67	62.4	689	10003	35	177
70 to 74	0	0	1	24	22	17	18	3	85	60.0	616	6755	128	649
65 to 69	4	0	15	23	22	26	24	13	127	56.3	509	3937	235	1551
60 to 64	17	7	31	29	9	8	33	31	165	56.0	363	1739	381	3073
55 to 59	59	36	45	7	0	0	3	43	213	53.5	174	373	570	5427
50 to 54	13	30	1	0	0	0	0	3	47	51.0	6	3	738	8777
Aug														
85 to 89	0	0	0	0	4	5	1	0	10	65.7	740	18446	4	4
80 to 84	0	0	0	4	5	4	0	0	13	63.2	727	14771	17	49
75 to 79	0	0	0	6	13	14	4	0	37	63.5	712	11165	32	163
70 to 74	0	0	4	8	24	28	15	1	80	61.1	659	7727	85	445
65 to 69	4	1	6	26	31	15	20	12	115	58.7	564	4650	180	1088
60 to 64	11	6	27	37	18	22	27	31	171	57.0	433	2146	311	2304
55 to 59	63	33	46	12	6	5	26	47	256	54.6	215	474	529	4352
50 to 54	15	30	10	0	0	0	0	2	57	51.1	15	51	729	7629
45 to 49	0	3	0	0	0	0	0	0	3	47.3	0	0	744	11318
Sep														
80 to 84	0	0	0	0	5	5	0	0	10	61.9	718	17150	2	1
75 to 79	0	0	0	3	6	3	1	0	13	60.6	708	13591	12	42
70 to 74	0	0	0	8	19	14	4	0	45	59.0	681	10106	39	157
65 to 69	0	0	2	17	18	22	8	1	68	57.6	625	6832	95	483
60 to 64	0	0	8	26	29	27	26	14	130	56.2	547	3891	173	1142
55 to 59	38	18	34	32	12	17	42	46	239	54.0	367	1573	353	2424
50 to 54	43	35	39	4	1	2	8	23	175	50.6	138	319	582	4770
45 to 49	8	17	7	0	0	0	1	6	39	46.6	21	28	699	8079
40 to 44	1	0	0	0	0	0	0	0	1	43.0	0	0	720	11651

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

SEATTLE-TACOMA, WASHINGTON
WBAN 24233
TABLE A:

MYEC Data

Latitude 47.50 N
Longitude 122.30 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Fourth Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day 10-12 13-15 16-18			19-21	22-24	hours below			degree hours	hours above	degree hours	
Oct															
65 to 69	0	0	0	0	1	2	0	0	3	53.7	744	11643	0	0	
60 to 64	3	3	5	6	21	13	0	2	53	56.8	728	7940	16	17	
55 to 59	2	5	7	36	39	38	26	8	161	53.5	625	4496	119	293	
50 to 54	40	28	32	39	32	31	41	43	286	49.2	434	1798	310	1319	
45 to 49	38	37	36	12	0	9	23	31	186	43.7	149	398	595	3635	
40 to 44	10	20	13	0	0	0	3	9	55	41.8	19	19	723	6976	
Nov															
60 to 64	0	0	0	0	3	1	0	0	4	50.5	716	13248	4	3	
55 to 59	0	0	0	3	2	2	1	0	8	48.4	714	9671	6	26	
50 to 54	6	5	7	25	39	21	10	18	123	47.4	677	8151	43	106	
45 to 49	25	30	25	29	27	38	35	28	237	43.3	524	3139	196	694	
40 to 44	36	28	30	23	8	19	31	37	212	39.8	267	1201	453	2356	
35 to 39	12	20	17	9	8	3	7	4	80	35.0	101	383	619	5138	
30 to 34	7	6	9	3	3	6	6	9	49	31.4	27	38	693	8413	
25 to 29	2	1	2	0	0	0	0	2	7	27.9	1	1	719	11956	
Dec															
55 to 59	2	0	0	0	2	0	0	0	4	48.5	744	12557	0	0	
50 to 54	6	5	4	6	10	7	7	6	51	47.4	726	8860	18	23	
45 to 49	6	13	14	24	30	24	20	12	143	43.1	643	5385	101	268	
40 to 44	30	25	27	25	24	30	25	30	216	40.0	476	2552	268	1155	
35 to 39	29	28	24	27	24	24	23	29	208	35.9	242	780	502	3103	
30 to 34	20	21	22	11	3	8	18	16	119	32.5	48	71	696	6114	
25 to 29	0	1	2	0	0	0	0	0	3	26.7	0	0	744	9763	

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

SEATTLE-TACOMA, WASHINGTON

WSAN 24233

TABLE B:

MYEC Data

Latitude 47.50 N

Longitude 122.30 E

Annual Dry Bulb Temperature Frequencies
With Mean Coincident Wet Bulb Temperature
(5 Degrees(F)/3Hr Bins)

Dry Bulb range(F)	Number of Hours of Occurrence in time period									Mean Coincident Wet Bulb Temperature (F)								
	Hour of day									Hour of day								
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year
85 to 89	0	0	0	0	7	8	1	0	16	0.0	0.0	0.0	0.0	65.9	66.5	66.0	0.0	66.2
80 to 84	0	0	0	6	32	38	6	0	82	0.0	0.0	0.0	64.0	64.2	63.9	64.2	0.0	64.0
75 to 79	0	0	0	24	48	45	22	0	139	0.0	0.0	0.0	63.1	62.8	62.0	62.2	0.0	62.5
70 to 74	0	0	8	46	78	78	42	6	258	0.0	0.0	62.5	60.9	60.0	59.4	59.5	60.5	60.0
65 to 69	11	1	29	87	121	103	62	36	450	57.9	57.0	59.4	58.1	57.5	56.8	57.5	58.0	57.6
60 to 64	38	21	85	152	136	126	129	82	769	55.8	57.2	56.3	55.6	54.7	54.9	55.1	55.9	55.4
55 to 59	196	159	186	167	128	130	178	209	1353	53.3	53.9	53.6	52.6	51.8	51.9	52.8	53.1	53.0
50 to 54	222	242	186	151	176	143	137	179	1436	49.2	49.6	49.5	47.6	46.4	46.7	47.9	48.8	48.4
45 to 49	173	203	176	183	182	185	183	176	1461	44.2	44.3	44.2	43.1	42.6	42.6	43.0	43.9	43.5
40 to 44	217	196	184	147	106	152	193	218	1413	39.6	39.7	39.7	39.5	39.6	39.3	39.3	39.5	39.5
35 to 39	164	172	152	94	60	54	93	126	915	35.3	35.6	35.4	35.5	35.0	35.2	35.2	35.4	35.4
30 to 34	57	81	67	28	16	26	36	47	358	31.3	31.4	31.6	30.4	30.0	30.9	31.9	31.2	31.3
25 to 29	5	5	9	7	5	6	7	7	51	25.4	26.0	26.8	22.1	21.8	21.7	24.1	24.4	24.4
20 to 24	9	11	6	3	0	1	6	7	43	18.7	19.2	19.8	17.0	0.0	20.0	18.3	18.6	18.8
15 to 19	3	4	6	0	0	0	0	2	15	12.7	14.8	15.2	0.0	0.0	0.0	0.0	14.0	14.4
10 to 14	0	0	1	0	0	0	0	0	1	0.0	0.0	13.0	0.0	0.0	0.0	0.0	0.0	13.0

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Month	Dry Bulb Temperature (F)					Wet Bulb	Percent Relative Humidity					Average Humidity Ratio					Average wind MPH
	Ave	Max	Min	Daily Ave	Ave		4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	38.0	54	14	43	34	35.5	82	89	73	78	79	0.0038	0.0038	0.0042	0.0040	0.0040	10.1
Feb	41.5	55	31	47	37	37.8	76	77	67	70	73	0.0038	0.0041	0.0042	0.0039	0.0040	9.5
Mar	43.4	71	31	50	38	40.1	85	79	66	76	76	0.0044	0.0048	0.0047	0.0046	0.0046	11.2
Apr	47.7	75	33	56	41	43.1	80	74	58	67	71	0.0048	0.0053	0.0051	0.0048	0.0049	9.5
May	53.9	71	38	62	47	48.1	78	66	57	67	68	0.0055	0.0064	0.0061	0.0060	0.0060	9.0
Jun	58.9	87	45	67	52	53.0	81	70	59	68	71	0.0068	0.0076	0.0076	0.0075	0.0074	8.7
Jul	64.3	84	52	74	55	56.8	81	66	50	60	66	0.0077	0.0085	0.0087	0.0085	0.0083	7.6
Aug	62.7	89	48	72	55	56.9	84	75	59	69	73	0.0081	0.0092	0.0093	0.0086	0.0087	7.9
Sep	58.7	83	44	66	51	54.1	91	78	59	74	78	0.0076	0.0084	0.0081	0.0079	0.0080	8.1
Oct	51.9	65	40	58	46	49.3	92	83	73	85	85	0.0068	0.0071	0.0072	0.0071	0.0070	10.5
Nov	44.1	64	27	50	39	41.2	84	79	74	80	80	0.0049	0.0049	0.0051	0.0049	0.0049	10.4
Dec	40.6	56	28	43	36	38.7	89	90	81	84	86	0.0045	0.0047	0.0048	0.0045	0.0046	7.5
Year	50.5	89	14	58	44	46.3	83	77	65	73	76	0.0057	0.0063	0.0063	0.0060	0.0061	9.2

SEATTLE-TACOMA, WASHINGTON

WYEC Data

Latitude 47.50 N

N8AN 24233

Longitude 122.30 E

TABLE C:

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BY TIME OF DAY																24 HOUR SUMMARY													
BASE		7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**				10PM-6AM**				HEATING		COOLING	
TEMP	Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs			
(F)	Above	(100s)*	Base	Heat	Cool	Above	(100s)*	Base	Heat	Cool	Above	(100s)*	Base	Heat	Cool	Above	(100s)*	Base	Heat	Cool	Below	Hrs	Below	Hrs	Above	Hrs			
																					Base	100s*	Base	100s*	Base	100s*			
50	0	463	0	0	409	0	0	372	0	0	381	0	0	423	0	0	1411	0	8760	3459	0	0	0	0	0	0			
55	0	452	0	0	399	0	0	361	0	1	370	0	0	412	0	0	1378	0	8759	3371	1	0	1	0	0	0			
60	0	441	0	0	388	0	0	350	0	2	360	0	0	401	0	0	1345	0	8757	3284	3	0	3	0	0	0			
65	0	430	0	0	377	0	1	339	0	4	349	0	0	390	0	0	1312	0	8754	3196	6	0	6	0	0	0			
70	0	419	0	0	366	0	3	328	0	5	338	0	0	379	0	0	1279	0	8751	3108	9	0	9	0	0	0			
75	0	408	0	0	355	0	5	317	0	7	327	0	0	368	0	0	1246	0	8747	3021	13	0	13	0	0	0			
80	0	397	0	0	344	0	8	306	0	9	316	0	1	357	0	0	1214	0	8741	2934	19	0	19	0	0	0			
85	0	386	0	0	333	0	13	295	0	16	305	0	1	346	0	0	1181	0	8729	2846	31	1	31	1	0	0			
90	0	375	0	2	322	0	21	285	0	27	294	1	3	335	0	0	1148	0	8707	2759	53	1	53	1	0	0			
95	0	364	0	4	311	0	29	274	1	34	284	1	4	324	0	0	1115	0	8686	2672	72	2	72	2	0	0			
100	0	353	0	5	300	0	36	263	1	41	273	1	5	313	0	0	1082	0	8672	2585	88	2	88	2	0	0			
105	0	342	0	6	289	0	42	253	1	47	263	2	9	302	0	0	1049	0	8654	2499	106	3	106	3	0	0			
110	0	332	0	9	278	0	49	242	2	50	252	2	13	291	0	0	1017	0	8638	2412	122	5	122	5	0	0			
115	0	321	0	13	267	0	58	232	2	58	242	3	16	281	0	0	984	0	8614	2326	146	6	146	6	0	0			
120	0	310	0	18	257	0	67	221	3	71	231	3	20	270	1	0	951	0	8582	2240	178	7	178	7	0	0			
125	0	299	0	26	246	1	79	211	4	84	221	4	26	259	1	0	918	0	8544	2154	216	9	216	9	0	0			
130	0	288	0	33	235	1	92	201	5	97	211	5	30	249	1	0	885	0	8506	2069	254	12	254	12	0	0			
135	2	277	0	39	225	1	102	191	6	109	201	6	37	238	1	1	852	0	8468	1984	292	14	292	14	0	0			
140	4	266	0	48	214	2	112	181	7	121	192	7	47	227	2	3	819	0	8423	1900	337	18	337	18	0	0			
145	6	255	0	58	204	2	124	171	8	136	182	9	56	217	2	3	787	0	8375	1816	385	21	385	21	0	0			
150	7	244	0	69	193	3	148	162	9	157	172	10	66	207	3	5	754	0	8307	1732	433	25	433	25	0	0			
155	9	233	0	82	183	4	176	153	11	177	163	12	77	196	4	8	721	0	8229	1649	531	30	531	30	0	0			
160	12	222	0	94	173	5	201	143	13	195	154	14	88	186	5	16	688	0	8152	1568	608	36	608	36	0	0			
165	17	212	1	108	163	6	226	135	15	217	145	16	98	176	6	26	656	0	8067	1486	693	42	693	42	0	0			
170	24	201	1	127	153	7	250	126	17	238	136	18	110	166	7	34	623	1	7975	1406	785	50	785	50	0	0			
175	32	190	1	150	144	8	274	118	20	260	128	20	126	157	8	46	591	1	7871	1327	889	58	889	58	0	0			
180	40	180	1	179	135	10	298	110	23	283	120	23	142	147	9	62	558	2	7755	1249	1005	68	1005	68	0	0			
185	49	169	2	205	126	12	324	102	26	305	112	26	166	137	11	82	526	2	7628	1172	1132	78	1132	78	0	0			
190	64	159	2	232	117	14	354	94	29	331	104	29	192	128	12	105	494	3	7479	1096	1281	90	1281	90	0	0			
195	84	148	3	267	108	16	385	87	33	356	96	33	216	119	14	135	463	5	7316	1022	1444	104	1444	104	0	0			
200	109	138	4	299	100	19	411	80	37	382	89	36	245	111	17	174	431	6	7139	950	1621	119	1621	119	0	0			
205	134	129	5	336	92	22	439	73	41	410	82	40	277	102	19	240	400	8	6922	879	1838	136	1838	136	0	0			
210	169	119	7	371	85	26	469	67	46	437	75	44	315	94	22	327	370	11	6669	811	2091	156	2091	156	0	0			
215	211	110	9	402	78	30	493	61	50	469	69	49	350	87	26	435	341	15	6396	746	2364	178	2364	178	0	0			
220	246	102	11	434	71	34	519	55	56	493	63	54	380	80	29	556	313	20	6130	683	2630	203	2630	203	0	0			
225	284	93	14	466	65	38	540	49	61	514	57	59	419	73	33	685	287	26	5850	623	2910	231	2910	231	0	0			
230	329	85	17	497	59	43	563	44	66	538	51	64	453	66	38	824	261	33	5558	566	3202	261	3202	261	0	0			
235	362	78	20	525	53	48	594	39	72	561	46	70	477	60	42	956	237	42	5264	512	3476	295	3476	295	0	0			
240	403	71	24	552	47	54	631	34	78	584	41	75	502	54	47	1091	215	52	4986	461	3764	331	3764	331	0	0			
245	443	64	28	584	42	59	670	29	85	613	36	81	530	48	52	1224	194	64	4694	412	4066	370	4066	370	0	0			
250	478	58	33	617	37	65	707	25	92	651	31	88	560	42	58	1346	174	77	4398	367	4362	412	4362	412	0	0			
255	506	52	38	644	32	72	740	22	99	685	27	94	590	37	64	1447	155	91	4146	324	4614	457	4614	457	0	0			
260	532	46	43	679	28	78	777	18	106	715	23	101	618	32	70	1544	137	106	3894	284	4866	504	4866	504	0	0			
265	562	40	48	718	24	85	815	15	114	756	19	109	649	28	76	1650	120	122	3608	246	5152	554	5152	554	0	0			
270	600	35	54	751	20	93	850	13	123	797	16	116	687	23	83	1754	104	139	3319	212	5441	607	5441	607	0	0			
275	645	30	60	792	17	100	888	10	131	834	13	125	734	19	90	1879	89	157	2985	180	5775	663	5775	663	0	0			

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 563 x 100 = 56300 Deg Hrs)

** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

SEATTLE-TACOMA, WASHINGTON
WBAN 24233
TABLE D:

WYEC Data

Latitude 47.50 N
Longitude 122.30 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY														24 HOUR SUMMARY							
	7-9AM**			10-12AM**			1-3PM**			4-6PM**			7-9PM**			10PM-6AM**			HEATING		COOLING	
	Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg	Hrs	Deg
	Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*			Below Hrs		Above Hrs	
	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base 100s*		Base 100s*	
44	690	26	67	832	14	109	923	9	141	870	11	133	781	16	97	2012	76	176	2650	152	6110	723
43	725	22	74	861	12	117	947	7	150	900	9	142	819	13	105	2141	64	197	2365	127	6395	785
42	761	19	82	894	10	126	966	6	159	931	7	151	861	11	114	2278	53	219	2067	105	6693	851
41	796	16	89	929	8	135	984	4	169	962	5	161	905	9	123	2402	44	243	1781	86	6979	919
40	832	13	97	953	6	144	1003	3	179	992	4	170	938	7	132	2522	36	267	1518	69	7242	990
39	871	10	106	972	5	154	1022	3	189	1015	3	180	969	5	141	2642	29	293	1268	55	7492	1064
38	909	8	115	993	4	164	1037	2	200	1027	3	191	994	4	151	2754	23	320	1043	44	7717	1140
37	945	7	124	1015	3	174	1051	1	210	1038	2	201	1009	3	161	2844	18	348	858	34	7902	1219
36	970	5	134	1034	2	184	1061	1	221	1048	2	211	1022	3	171	2924	14	377	699	27	8061	1298
35	995	4	144	1050	2	195	1069	1	231	1057	1	222	1038	2	182	3008	11	407	542	20	8218	1380
34	1017	3	154	1061	1	205	1076	1	242	1067	1	233	1056	1	192	3085	8	437	396	16	8364	1463
33	1038	3	164	1067	1	216	1081	0	253	1077	1	243	1071	1	203	3143	7	468	282	13	8478	1547
32	1054	2	174	1073	1	226	1085	0	264	1084	0	254	1075	1	214	3180	5	500	207	10	8553	1632
31	1065	2	185	1078	1	237	1088	0	274	1086	0	265	1078	1	224	3207	5	532	158	8	8604	1718
30	1071	2	196	1082	1	248	1089	0	285	1087	0	276	1081	1	235	3224	4	564	124	7	8638	1804
29	1075	1	206	1085	0	259	1090	0	296	1088	0	287	1083	1	246	3235	3	597	103	6	8657	1891
28	1078	1	217	1087	0	270	1092	0	307	1089	0	298	1085	0	257	3239	3	629	89	5	8671	1977
27	1080	1	228	1088	0	281	1094	0	318	1091	0	309	1086	0	268	3241	2	661	78	4	8682	2064
26	1081	1	239	1088	0	292	1095	0	329	1092	0	319	1088	0	278	3244	2	694	71	3	8689	2151
25	1081	1	250	1090	0	302	1095	0	340	1094	0	330	1089	0	289	3247	2	726	63	3	8697	2238
24	1082	1	260	1092	0	313	1095	0	351	1094	0	341	1090	0	300	3252	1	759	53	2	8707	2325
23	1084	1	271	1092	0	324	1095	0	362	1095	0	352	1091	0	311	3256	1	791	46	2	8714	2412
22	1085	0	282	1092	0	335	1095	0	373	1095	0	363	1092	0	322	3258	1	824	42	1	8718	2499
21	1085	0	293	1093	0	346	1095	0	384	1095	0	374	1093	0	333	3265	0	856	33	1	8727	2586
20	1087	0	304	1094	0	357	1095	0	395	1095	0	385	1094	0	344	3272	0	889	21	1	8739	2674
19	1088	0	315	1095	0	368	1095	0	406	1095	0	396	1095	0	355	3276	0	922	15	0	8745	2761
18	1090	0	326	1095	0	379	1095	0	417	1095	0	407	1095	0	366	3278	0	955	12	0	8748	2849
17	1091	0	337	1095	0	390	1095	0	428	1095	0	418	1095	0	377	3280	0	987	9	0	8751	2936
16	1092	0	347	1095	0	401	1095	0	439	1095	0	429	1095	0	388	3281	0	1020	6	0	8754	3024
15	1093	0	358	1095	0	412	1095	0	450	1095	0	440	1095	0	399	3284	0	1053	2	0	8758	3111
14	1094	0	369	1095	0	423	1095	0	460	1095	0	451	1095	0	410	3285	0	1086	0	0	8760	3199
13	1095	0	380	1095	0	434	1095	0	471	1095	0	462	1095	0	421	3285	0	1119	0	0	8760	3286

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 565 x 100 = 56500 Deg Hrs)
** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

SEATTLE-TACOMA, WASHINGTON
WPAW 24233

WYEC Data

Latitude 47.50 N
Longitude 122.30 E

TABLE E:

Annual COOLING Wet Bulb Degree Hour Summary

Wet Bulb Temperature (F) Base:	50	55	56	59	62	65	68	71	74	77	80
Annual Wet Bulb hours ABOVE base:	3431	2458	1464	692	271	82	9	0	0	0	0
Annual Wet Bulb Cooling deg-hrs:	21596.	12262.	5857.	2347.	749.	160.	9.	0.	0.	0.	0.

TABLE F:

Annual Humidification/Dehumidification Requirements At various Indoor Conditions and Degree Day Bases (Pounds of Moisture)

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **												COOLING HUMIDITY RATIO HOURS **												Maintained Indoor Humidity Ratio
	Heating Degree Base												Cooling Degree Base												
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80			
.001	0	0	0	0	0	0	0	0	0	0	0	40	39	36	31	26	18	10	6	3	1	1	.001		
.002	0	0	0	0	0	0	0	0	0	0	0	31	31	29	26	22	15	9	5	3	1	1	.002		
.003	0	0	0	1	1	1	1	1	1	1	1	23	23	22	20	17	13	7	4	2	1	0	.003		
.004	0	1	1	2	2	2	2	2	2	2	2	16	16	16	15	13	10	6	3	2	1	0	.004		
.005	0	1	3	4	5	5	5	5	5	5	5	10	10	10	10	9	7	4	3	1	1	0	.005		
.006	1	2	4	7	9	9	10	10	10	10	10	6	6	6	6	6	5	3	2	1	0	0	.006		
.007	1	2	5	10	13	14	15	15	15	16	16	3	3	3	3	3	3	2	1	1	0	0	.007		
.008	1	3	7	12	17	20	21	22	22	22	22	1	1	1	1	1	1	1	1	0	0	0	.008		
.009	1	3	8	15	21	26	28	29	30	30	30	0	0	0	0	0	0	0	0	0	0	0	.009		
.010	1	4	10	18	26	31	35	37	38	39	39	0	0	0	0	0	0	0	0	0	0	0	.010		
.011	1	4	11	21	30	37	42	45	46	47	47	0	0	0	0	0	0	0	0	0	0	0	.011		
.012	1	5	12	24	34	43	49	53	55	56	56	0	0	0	0	0	0	0	0	0	0	0	.012		
.013	1	5	14	26	38	48	56	60	63	64	65	0	0	0	0	0	0	0	0	0	0	0	.013		
.014	1	5	15	29	43	54	63	68	71	73	73	0	0	0	0	0	0	0	0	0	0	0	.014		
.015	2	6	17	32	47	60	70	76	79	81	82	0	0	0	0	0	0	0	0	0	0	0	.015		
.016	2	6	18	35	51	66	77	84	88	90	91	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	2	7	19	38	55	71	84	92	96	98	99	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	2	7	21	40	60	77	91	100	104	107	108	0	0	0	0	0	0	0	0	0	0	0	.018		

FOOTNOTES: * Indoor Humidity Level is measured in pounds of moisture per pound of dry air. Indoor set points of 72 deg(F)=50%RH and 78 deg(F)=50%RH yield humidity ratios of .005 and .010 respectively.

** Heating (Cooling) Humidity Ratio Hours are defined as the summation of the differences between the maintained indoor humidity ratio and the observed outdoor humidity ratio when both the hourly dry bulb temperature and the humidity ratio are above (below) the base levels.

TABLE G:

Percent Diffuse Solar Radiation* and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
* Diffuse on surface													
HORIZONTAL													
VERTICAL													
NORTH	100	100	100	99	96	93	88	97	100	100	100	100	96
WEST	64	84	65	75	72	65	49	60	51	54	59	77	62
SOUTH	44	58	55	77	78	75	58	62	45	44	39	60	60
EAST	65	65	67	83	79	75	55	66	59	67	62	80	68
% Possible Sun	21	41	49	52	58	55	65	61	58	43	28	18	49

FOOTNOTES: * Corrected For Cloud Cover.

** Source: NOAA, Comparative Climatic Data for the United States Through 1978.

SEATTLE-TACOMA, WASHINGTON
 WBAN 24233
 TABLE H:

WYEC Data

Latitude 47.38 N
 Longitude 122.30 E

Average Daily Solar Radiation on Vertical and Horizontal Surfaces (BTU/DAY.SQFT)

Month	Under Clear Sky Assumption*										Corrected For Cloud Cover**										obs		
	S	SSE/ SSW	SE/ WSW	ESE/ W	E/ WNW	ENE/ NN	NNE/ NNW	N	S-45 ***	horiz	S	SSE/ SSW	SE/ WSW	ESE/ W	E/ WNW	ENE/ NN	NNE/ NNW	N	S-45 ***	horiz			
Jan	1429	1333	1055	778	434	204	121	110	110	1345	564	431	403	330	258	172	115	93	89	401	232	264	
Feb	1650	1537	1260	996	631	353	201	138	156	1704	875	457	457	408	350	259	187	147	132	131	451	320	500
Mar	1697	1623	1437	1250	929	624	402	268	234	2052	1365	674	645	574	505	399	307	247	212	201	764	595	848
Apr	1495	1526	1484	1423	1202	929	674	479	347	2226	1879	813	791	746	700	610	525	459	413	387	964	920	1299
May	1282	1390	1461	1506	1389	1178	921	686	518	2275	2268	958	965	955	939	863	766	670	589	541	1271	1314	1705
Jun	1186	1318	1440	1535	1471	1293	1046	801	626	2292	2458	983	999	1006	1007	942	842	737	643	598	1447	1553	1821
Jul	1235	1357	1458	1530	1442	1248	999	758	584	2295	2391	1104	1153	1188	1209	1124	980	815	661	562	1824	1895	2243
Aug	1413	1477	1479	1458	1278	1031	777	564	424	2253	2056	1019	1011	977	955	821	692	576	486	435	1391	1322	1594
Sep	1631	1592	1454	1317	1033	738	506	350	287	2117	1565	940	888	800	720	581	451	355	292	263	1163	930	1141
Oct	1687	1583	1330	1088	740	441	272	198	191	1835	1051	636	578	483	400	295	214	172	152	150	673	460	650
Nov	1511	1406	1122	835	489	242	143	126	126	1464	660	513	479	392	304	202	132	104	98	98	493	286	333
Dec	1352	1257	990	711	382	170	105	99	99	1244	491	298	270	224	177	122	90	79	77	77	262	170	209
Year	1463	1449	1331	1203	955	706	516	384	309	1926	1472	736	722	675	627	534	443	372	321	295	928	836	1054

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
 ** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.
 *** South exposure tilt 45 degrees.

TABLE I: Average Daily Solar Heat Gain Through Single Pane Glass on Vertical and Horizontal Surfaces (BTU/DAY.SQFT)

Month	Under Clear Sky*									Corrected For Cloud Cover**								
	S	SSE/	SE/	ESE/	E/	ENE/	NE/	NNE/	N	S	SSE/	SE/	ESE/	E/	ENE/	NE/	NNE/	N
	SSW	SW	WSW	W	WNW	NN	NNW			SSW	SW	WSW	W	WNW	NN	NNW		
Jan	1240	1144	888	640	342	151	94	89	89	366	339	274	212	139	91	74	72	72
Feb	1417	1305	1059	828	511	268	153	128	127	382	382	340	290	211	149	117	107	106
Mar	1407	1356	1200	1046	764	495	306	209	190	556	552	472	415	325	246	197	171	164
Apr	1181	1246	1229	1185	995	756	532	361	275	656	642	608	571	498	427	372	333	314
May	965	1088	1189	1246	1151	969	744	539	393	760	774	775	767	706	626	544	476	434
Jun	874	1009	1159	1266	1219	1069	849	636	474	767	793	812	820	768	686	597	519	476
Jul	920	1051	1180	1265	1197	1033	811	601	444	843	905	961	993	927	806	661	530	439
Aug	1098	1189	1217	1212	1059	844	622	459	331	809	818	798	768	673	563	464	389	349
Sep	1333	1322	1215	1101	852	594	394	272	233	767	729	659	594	476	365	284	233	214
Oct	1434	1334	1114	909	599	345	205	158	156	553	478	397	328	258	172	137	123	122
Nov	1307	1201	940	693	386	180	109	102	102	437	403	325	250	161	104	83	80	80
Dec	1178	1085	833	585	297	125	83	81	81	244	226	185	145	98	72	64	63	63
Year	1195	1193	1102	999	782	571	410	302	242	594	586	551	514	436	360	301	259	237

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
 ** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.

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TALLAHASSEE, FLORIDA

WBAN 93805

TABLE A:

MYEC Data

Latitude 30.36 N

Longitude 84.37 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): First Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Jan														
75 to 79	0	0	0	0	6	4	0	0	10	65.9	742	18729	2	2
70 to 74	3	4	0	5	12	10	0	1	35	64.5	715	15065	29	58
65 to 69	3	2	4	13	14	15	8	4	63	61.8	678	11566	66	279
60 to 64	13	7	7	19	22	23	14	9	114	57.5	593	8357	151	790
55 to 59	8	13	15	16	11	13	24	22	122	53.8	458	5704	286	1857
50 to 54	18	15	14	9	12	12	18	12	110	47.8	361	3654	383	3527
45 to 49	14	15	19	12	8	11	8	19	106	43.5	238	2160	506	5753
40 to 44	11	7	6	9	7	5	13	8	66	37.3	154	1209	590	8522
35 to 39	7	13	10	6	1	0	6	8	51	33.4	96	592	648	11625
30 to 34	7	5	7	3	0	0	2	7	31	28.2	56	226	688	14979
25 to 29	9	12	11	1	0	0	0	3	36	24.8	22	27	722	18500
Feb														
80 to 84	0	0	0	0	4	4	0	0	8	64.5	567	18461	5	5
75 to 79	0	0	0	1	3	3	0	0	7	63.0	661	15741	11	45
70 to 74	0	0	0	6	17	13	4	0	40	61.2	648	11857	24	121
65 to 69	0	0	1	17	20	22	8	3	71	59.0	595	8746	77	370
60 to 64	13	19	16	11	14	17	15	13	118	57.5	508	5976	164	960
55 to 59	15	10	10	23	15	12	25	17	127	53.1	364	3767	308	2111
50 to 54	9	10	14	13	9	12	13	15	95	47.5	268	2199	404	3903
45 to 49	18	12	16	9	2	1	12	13	83	43.9	159	1132	513	6196
40 to 44	12	14	12	3	0	0	6	12	59	39.5	99	486	573	8910
35 to 39	11	12	11	1	0	0	1	10	46	35.0	45	138	627	11922
30 to 34	6	7	4	0	0	0	0	1	18	29.4	11	18	661	15162
Mar														
75 to 79	0	0	0	4	15	17	0	0	36	61.6	743	12442	1	2
70 to 74	4	3	3	14	25	24	9	5	87	63.3	685	8859	59	139
65 to 69	8	8	14	29	34	36	34	10	173	60.7	532	5736	212	736
60 to 64	21	19	19	26	15	11	22	29	162	56.5	383	3434	361	2154
55 to 59	21	21	22	9	1	2	17	16	109	52.8	228	1925	516	4565
50 to 54	11	7	8	7	3	3	9	19	67	45.5	146	1090	596	7160
45 to 49	16	11	16	4	0	0	1	11	59	43.8	81	421	663	10301
40 to 44	9	17	8	0	0	0	1	0	35	40.5	33	147	711	13747
35 to 39	0	5	2	0	0	0	0	1	8	35.0	12	50	732	17570
30 to 34	2	2	1	0	0	0	0	2	7	30.7	5	8	739	21048
25 to 29	1	0	0	0	0	0	0	0	1	28.0	0	0	744	24760

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

TALLAHASSEE, FLORIDA
WBAN 93805

WYEC Data

Latitude 30.38 N
Longitude 84.37 E

TABLE A:

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Second Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Apr														
85 to 89	0	0	0	0	3	3	0	0	6	66.7	720	14410	0	0
80 to 84	0	0	0	13	36	23	4	0	76	66.6	684	10849	36	39
75 to 79	0	0	3	31	26	34	11	1	106	65.5	605	7633	115	423
70 to 74	3	0	13	23	10	10	31	16	106	64.0	498	4888	224	1278
65 to 69	30	18	27	10	11	17	22	32	167	62.3	367	2719	353	2709
60 to 64	23	41	24	10	4	3	16	18	139	58.3	183	1341	537	4931
55 to 59	15	9	9	3	0	0	5	11	52	52.5	103	674	617	7864
50 to 54	8	12	9	0	0	0	1	0	38	48.5	52	295	668	13085
45 to 49	6	4	3	0	0	0	0	3	16	44.3	25	116	695	14506
40 to 44	3	3	1	0	0	0	0	1	8	40.3	11	30	709	18020
35 to 39	2	3	1	0	0	0	0	0	6	36.2	0	0	726	21590
May														
90 to 94	0	0	0	1	6	5	0	0	12	73.3	742	13833	2	1
85 to 89	0	0	0	9	43	26	1	0	79	72.3	707	10184	37	72
80 to 84	0	0	0	43	19	26	17	0	105	70.3	609	6867	133	475
75 to 79	0	0	21	24	19	20	39	13	132	69.6	493	4096	231	1424
70 to 74	41	30	38	8	9	16	25	32	219	68.3	346	1964	398	3012
65 to 69	36	38	19	5	1	0	9	17	125	64.7	125	836	619	5604
60 to 64	5	11	8	3	0	0	2	3	32	56.7	60	419	684	8907
55 to 59	2	5	5	0	0	0	0	3	15	53.7	33	193	711	12401
50 to 54	5	4	2	0	0	0	0	5	16	48.4	20	63	724	15991
45 to 49	4	5	0	0	0	0	0	0	9	46.4	4	4	740	19652
Jun														
95 to 99	0	0	0	0	2	0	0	0	2	74.0	720	13376	0	0
90 to 94	0	0	0	4	18	6	0	0	28	75.0	716	9784	4	8
85 to 89	0	0	3	41	47	41	4	0	136	75.2	646	6332	74	156
80 to 84	0	0	21	31	13	28	32	1	126	74.1	509	3443	211	867
75 to 79	35	23	42	11	9	14	49	60	243	74.0	360	1249	360	2273
70 to 74	52	58	23	3	1	1	5	28	171	70.8	82	162	638	4786
65 to 69	3	6	1	0	0	0	0	1	13	65.3	7	12	713	8236
60 to 64	0	1	0	0	0	0	0	0	1	63.0	0	0	720	11824

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

TALLAHASSEE, FLORIDA
WBAN 93805
TABLE A:

WYEC Date

Latitude 30.38 N
Longitude 84.37 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Third Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Jul														
90 to 94	0	0	0	5	28	9	0	0	42	76.1	742	10003	2	1
85 to 89	0	0	2	45	36	32	5	0	120	75.8	654	6461	90	179
80 to 84	0	0	24	30	6	20	29	2	111	75.6	543	3487	201	925
75 to 79	43	27	53	13	18	28	54	65	301	73.6	390	1097	354	2255
70 to 74	50	66	14	0	5	4	5	26	170	71.8	31	24	713	4902
Aug														
95 to 99	0	0	0	0	0	2	0	0	2	78.0	744	13452	0	0
90 to 94	0	0	0	6	40	13	0	0	59	76.8	734	9746	10	14
85 to 89	0	0	2	51	27	25	8	0	113	76.1	635	6282	109	270
80 to 84	0	0	18	25	11	42	35	6	137	75.6	521	3383	223	1091
75 to 79	44	15	43	8	13	10	47	66	246	74.4	358	1152	386	2580
70 to 74	46	71	27	3	2	1	3	21	174	71.8	57	102	687	5250
65 to 69	3	7	3	0	0	0	0	0	13	66.5	5	3	739	8871
Sep														
95 to 99	0	0	0	0	3	1	0	0	4	77.0	720	14614	0	0
90 to 94	0	0	0	4	4	3	1	0	12	76.2	712	11030	8	16
85 to 89	0	0	0	20	50	39	1	0	110	74.1	660	7538	60	124
80 to 84	2	0	7	38	23	35	24	5	134	72.3	538	4519	182	705
75 to 79	19	9	31	20	7	8	47	37	178	72.7	417	2147	303	1933
70 to 74	46	44	32	8	3	4	16	37	190	70.1	174	617	546	4003
65 to 69	20	31	17	0	0	0	1	11	80	65.0	38	83	682	7069
60 to 64	3	6	3	0	0	0	0	0	12	61.8	4	2	716	10588

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

TALLAHASSEE, FLORIDA
 NBAN 93803
 TABLE A:

WYEC Data

Latitude 30.38 N
 Longitude 84.37 E

Monthly Dry Bulb Temperature Frequencies With Mean
 Coincident Wet Bulb Temperature (MCWB): Fourth Quarter
 (5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Oct															
85 to 89	0	0	0	5	36	26	0	0	68	71.7	734	13779	10	8	
80 to 84	0	0	0	31	24	32	4	0	91	71.1	627	10346	117	295	
75 to 79	0	0	6	22	11	12	26	4	81	69.6	556	7381	188	1050	
70 to 74	23	15	26	10	4	4	25	29	136	68.6	455	4824	289	2213	
65 to 69	24	25	18	10	13	13	15	24	142	62.9	297	2937	447	4046	
60 to 64	18	16	15	8	5	6	9	18	95	58.5	181	1748	563	6577	
55 to 59	12	17	11	5	0	0	4	3	52	53.8	101	1068	643	9617	
50 to 54	1	5	5	1	0	0	6	3	21	46.3	71	648	673	12917	
45 to 49	3	3	8	0	0	0	2	4	20	43.1	52	343	692	16332	
40 to 44	5	3	2	0	0	0	2	4	16	38.9	32	138	712	19847	
35 to 39	7	9	2	0	0	0	0	4	22	35.2	13	16	731	23445	
Nov															
80 to 84	0	0	0	2	3	1	0	0	6	69.5	717	12500	3	3	
75 to 79	0	0	0	4	22	12	0	0	38	66.5	706	13932	14	35	
70 to 74	0	0	2	16	18	18	5	4	63	64.4	657	10517	63	220	
65 to 69	10	12	12	23	16	23	25	12	133	62.3	564	7424	156	727	
60 to 64	21	13	17	14	8	7	17	26	123	58.4	429	4944	291	1847	
55 to 59	15	18	16	12	11	15	7	18	104	53.0	294	3123	426	3626	
50 to 54	16	13	12	6	7	9	14	7	84	46.2	215	1829	502	5932	
45 to 49	12	9	6	4	4	2	13	19	69	41.5	159	939	581	8642	
40 to 44	10	19	18	7	1	3	3	4	65	38.0	68	401	652	11704	
35 to 39	1	0	2	2	0	0	4	3	12	31.6	29	193	691	15096	
30 to 34	2	3	2	0	0	0	2	5	14	28.1	19	72	701	18573	
25 to 29	3	2	3	0	0	0	0	0	8	24.4	7	13	713	22116	
20 to 24	0	1	0	0	0	0	0	0	1	23.0	0	0	720	25703	
Dec															
75 to 79	0	0	0	1	4	0	0	0	5	64.6	744	18614	0	0	
70 to 74	1	1	0	3	14	6	0	0	27	62.7	737	14909	7	15	
65 to 69	2	2	3	10	18	21	3	3	62	59.5	686	11336	58	162	
60 to 64	9	8	9	15	22	22	17	7	109	55.6	594	8077	150	623	
55 to 59	9	9	9	18	18	25	20	16	124	51.0	496	5359	248	1605	
50 to 54	16	11	9	22	15	12	26	19	130	47.0	371	3168	373	3154	
45 to 49	15	12	17	19	2	5	18	26	114	43.5	231	1682	513	5388	
40 to 44	20	23	21	5	0	0	6	11	86	39.9	130	779	614	8205	
35 to 39	11	14	12	0	0	0	3	7	47	35.3	65	316	679	11462	
30 to 34	7	6	8	0	0	0	0	3	24	31.2	24	96	720	14962	
25 to 29	3	7	5	0	0	0	0	1	16	26.1	7	13	737	18599	

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

TALLAHASSEE, FLORIDA
 WBAN 93805
 TABLE B:

WYEC Data

Latitude 30.38 N
 Longitude 84.37 E

Annual Dry Bulb Temperature Frequencies
 With Mean Coincident Wet Bulb Temperature
 (5 Degrees(F)/3Hr Bins)

Dry Bulb range(F)	Number of Hours of Occurrence In time period									Mean Coincident Wet Bulb Temperature (F)								
	Hour of day									Hour of day								
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year
95 to 99	0	0	0	0	5	3	0	0	8	0.0	0.0	0.0	0.0	75.8	77.7	0.0	0.0	76.5
90 to 94	0	0	0	20	96	36	1	0	153	0.0	0.0	0.0	77.0	76.0	75.0	79.0	0.0	73.9
85 to 89	0	0	7	172	242	192	19	0	632	0.0	0.0	77.9	76.0	73.8	73.6	75.9	0.0	74.5
80 to 84	2	0	70	213	139	211	145	14	794	73.0	0.0	75.8	73.2	69.4	71.7	74.1	75.4	72.6
75 to 79	141	74	199	139	149	162	273	246	1383	74.0	74.0	73.6	69.3	68.1	68.5	72.5	73.6	71.8
70 to 74	269	292	178	99	120	113	128	219	1418	70.7	71.1	69.7	64.5	62.2	63.3	67.4	69.9	68.5
65 to 69	139	151	119	117	127	147	125	117	1042	65.3	65.7	64.5	60.8	57.4	57.9	62.3	64.5	62.3
60 to 64	126	141	118	106	90	89	112	123	905	59.8	60.3	60.0	54.6	51.9	52.6	57.3	59.6	57.3
55 to 59	97	102	97	86	56	67	102	98	705	55.5	56.0	54.5	49.7	48.2	48.9	51.6	54.4	52.8
50 to 54	84	77	73	58	46	48	87	88	561	48.8	48.7	47.8	45.7	43.6	44.0	46.9	47.8	47.0
45 to 49	88	71	85	48	16	19	54	95	476	44.2	44.9	44.4	41.1	38.0	39.0	42.9	43.8	43.4
40 to 44	70	86	68	24	8	8	31	40	335	40.5	39.8	39.0	35.6	33.8	33.4	37.1	39.0	39.0
35 to 39	59	56	40	9	1	0	14	33	192	35.0	35.4	34.6	32.6	30.0	0.0	32.6	33.8	34.5
30 to 34	24	23	22	3	0	0	4	18	94	29.5	29.5	29.8	26.7	0.0	0.0	28.5	29.2	29.4
25 to 29	16	21	19	1	0	0	0	4	61	25.7	25.0	24.7	24.0	0.0	0.0	0.0	25.5	25.1
20 to 24	0	1	0	0	0	0	0	0	1	0.0	23.0	0.0	0.0	0.0	0.0	0.0	0.0	23.0

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Dry Bulb Temperature (F)						Wet Bulb Ave	Percent Relative Humidity					Average Humidity Ratio (lb moisture/lb dry air)					Average wind MPH
Month	Ave	Max	Min	Daily Max	Ave Min		Average	4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	
Jan	52.3	79	25	63	43	48.0	87	74	53	72	74	0.0067	0.0068	0.0065	0.0066	0.0066	6.1
Feb	53.0	84	30	66	44	50.2	88	73	50	75	74	0.0070	0.0072	0.0068	0.0073	0.0070	8.1
Mar	60.8	79	29	71	50	54.7	86	65	49	68	70	0.0082	0.0079	0.0075	0.0083	0.0081	11.0
Apr	67.5	86	38	78	58	60.4	89	64	48	67	70	0.0099	0.0104	0.0094	0.0102	0.0099	7.0
May	73.9	93	46	85	64	67.2	92	68	54	69	74	0.0129	0.0136	0.0125	0.0131	0.0130	8.8
Jun	78.9	95	64	88	72	73.4	93	70	54	80	79	0.0164	0.0167	0.0162	0.0169	0.0165	5.9
Jul	79.1	93	71	88	73	74.0	93	72	59	84	81	0.0166	0.0175	0.0165	0.0172	0.0169	4.7
Aug	79.4	96	67	89	73	74.3	94	72	66	85	81	0.0166	0.0178	0.0168	0.0179	0.0172	4.8
Sep	77.2	96	62	87	69	71.2	91	73	58	80	77	0.0149	0.0157	0.0147	0.0160	0.0152	9.3
Oct	69.0	89	35	81	58	62.9	90	67	51	78	74	0.0107	0.0121	0.0116	0.0125	0.0115	7.9
Nov	58.2	84	24	69	49	53.1	83	59	54	77	72	0.0076	0.0082	0.0081	0.0084	0.0079	6.6
Dec	52.5	76	25	64	42	47.6	84	72	50	74	72	0.0059	0.0062	0.0061	0.0066	0.0062	6.4
Year	67.0	96	24	77	58	61.5	89	70	56	76	75	0.0111	0.0117	0.0111	0.0118	0.0114	7.2

TABLE 24

NYEC Data

Latitude 30.38 N
Longitude 04.57 E

Annual Heating and Cooling Degree Hour Summary for All Degree Boxes

BY TIME OF DAY														24 HOUR SUMMARY														
BASE TEMP (F)	7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**				10PM-6AM**				HEATING		COOLING	
	Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg	Hrs	Deg				
	Above	(100s)*	Base	Heat Cool	Above	(100s)*	Base	Heat Cool	Above	(100s)*	Base	Heat Cool	Above	(100s)*	Base	Heat Cool	Above	(100s)*	Base	Heat Cool	Below	Hrs	Above	Hrs				
																					Base	100s*	Base	100s*				
97	0	376	0	0	280	0	0	236	0	0	251	0	0	322	0	0	1160	0	0	8760	2624	0	0					
96	0	365	0	0	269	0	0	225	0	0	240	0	0	311	0	0	1127	0	0	8758	2537	2	0					
95	0	354	0	0	258	0	3	214	0	2	229	0	0	300	0	0	1094	0	0	8754	2449	6	0					
94	0	343	0	0	247	0	7	203	0	4	218	0	0	289	0	0	1061	0	0	8748	2361	12	0					
93	0	332	0	2	236	0	13	192	0	6	207	0	0	278	0	0	1029	0	0	8739	2274	21	0					
92	0	321	0	4	225	0	24	181	0	10	196	0	0	267	0	0	996	0	0	8721	2187	39	1					
91	0	310	0	7	214	0	45	171	1	18	185	0	0	256	0	0	963	0	0	8688	2100	72	1					
90	0	299	0	14	204	0	80	160	1	31	175	1	1	245	0	0	930	0	0	8634	2013	126	2					
89	0	288	0	31	193	0	123	150	2	55	164	1	1	235	0	0	897	0	0	8549	1927	211	4					
88	0	277	0	57	182	1	173	141	4	88	154	2	1	224	0	0	864	0	0	8439	1842	321	6					
87	0	266	0	89	172	2	221	132	6	122	144	3	3	213	0	0	831	0	0	8324	1758	436	10					
86	0	255	0	125	162	3	264	123	8	161	135	4	9	202	0	0	799	0	0	8200	1675	560	15					
85	4	244	0	168	153	4	315	115	11	207	125	6	16	191	0	0	766	0	0	8049	1594	711	21					
84	10	233	0	215	144	6	359	106	14	252	117	8	25	180	0	0	733	0	0	7896	1514	864	29					
83	20	222	0	265	135	8	398	101	18	301	109	11	38	170	1	0	700	0	0	7736	1436	1024	38					
82	34	212	0	313	127	11	431	94	22	351	101	14	61	159	1	0	667	0	0	7569	1360	1191	50					
81	49	201	1	351	119	15	456	87	27	391	94	18	99	149	2	3	634	0	0	7410	1285	1350	62					
80	66	191	1	386	112	18	476	81	32	426	87	22	143	139	3	10	602	0	0	7251	1211	1509	77					
79	97	181	2	423	105	22	493	75	36	454	80	27	186	130	5	28	569	0	0	7075	1140	1685	92					
78	128	171	3	455	99	27	518	69	41	479	74	31	238	121	7	65	536	1	0	6876	1070	1864	110					
77	164	161	5	475	92	31	545	63	47	508	68	36	293	113	10	132	504	2	0	6637	1002	2123	130					
76	206	152	7	504	86	36	578	58	52	542	62	41	353	105	13	235	473	3	0	6340	937	2420	153					
75	249	144	9	531	81	42	613	53	58	582	57	47	411	98	17	386	443	6	0	5986	875	2774	179					
74	299	135	12	553	75	47	638	48	65	616	52	53	460	91	21	585	415	11	0	5608	818	3152	206					
73	346	128	15	571	70	53	661	44	71	641	47	59	491	85	26	794	389	18	0	5254	763	3506	242					
72	382	120	19	593	65	58	690	40	78	665	43	66	515	79	31	966	366	27	0	4948	712	3812	278					
71	408	113	23	615	60	64	716	36	85	688	39	73	540	74	36	1096	343	37	0	4694	664	4066	316					
70	438	107	27	634	55	71	739	32	92	708	35	80	558	68	42	1207	322	49	0	4474	619	4266	360					
69	466	100	31	652	51	77	764	29	100	735	31	87	577	63	47	1311	302	61	0	4256	575	4304	404					
68	492	94	36	676	46	84	789	26	107	770	28	94	600	58	53	1414	282	75	0	4017	533	4743	450					
67	517	88	41	700	42	91	814	23	115	800	25	102	625	53	59	1505	264	90	0	3796	494	4964	498					
66	540	82	46	722	38	98	841	20	124	825	22	110	652	48	66	1573	247	105	0	3607	458	5153	549					
65	562	77	52	747	35	105	866	17	132	852	19	119	678	44	72	1630	230	121	0	3423	422	5337	601					
64	585	72	58	772	31	113	891	15	141	872	17	127	705	40	79	1698	214	138	0	3235	389	5525	656					
63	612	67	64	793	28	121	916	13	150	890	15	136	730	36	86	1780	198	155	0	3038	358	5722	712					
62	634	62	70	812	25	129	935	12	159	908	13	145	753	33	94	1868	184	173	0	2848	328	5912	770					
61	653	58	76	836	23	137	949	10	169	927	11	154	775	29	102	1948	170	192	0	2681	301	6079	830					
60	677	53	83	858	20	145	962	9	178	944	9	164	792	26	109	2012	157	212	0	2512	275	6248	892					
59	706	49	90	878	18	154	974	8	188	962	8	173	818	23	117	2102	144	233	0	2318	250	6442	955					
58	730	46	97	897	16	163	988	6	198	978	7	183	841	21	126	2180	133	254	0	2144	228	6616	1021					
57	746	42	105	915	14	172	1001	5	208	990	6	193	855	18	134	2236	122	276	0	2017	208	6743	1087					
56	763	39	112	930	12	181	1011	5	218	1001	5	203	872	16	143	2283	112	299	0	1899	188	6861	1155					
55	780	35	120	945	11	190	1019	4	228	1013	4	213	893	14	152	2328	102	322	0	1780	170	6980	1225					
54	794	32	128	958	9	200	1026	3	238	1024	3	223	913	12	161	2371	93	346	0	1673	152	7087	1295					
53	807	29	136	971	8	210	1035	2	249	1035	2	233	931	10	170	2411	84	369	0	1567	136	7193	1366					
52	819	27	144	985	7	219	1047	2	259	1049	2	244	949	9	179	2464	75	394	0	1444	121	7316	1433					

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg, 565 x 100 = 56500 Deg Hrs)

** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

TALLAHASSEE, FLORIDA
 WBAN 93805
 TABLE D:

MYEC Data

Latitude 30.38 N
 Longitude 84.37 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE	BY TIME OF DAY																24 HOUR SUMMARY			
	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**		HEATING				COOLING			
	TEMP Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg
	(F) Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Below Hrs	Base 100s*	Above Hrs	Base 100s*	Below Hrs	Base 100s*	Above Hrs	Base 100s*
51	834	24 152	997	6 229	1058	1 269	1060	1 254	967	7 189	2518	68 419	1324	107	7436	1513				
50	852	21 160	1006	5 239	1067	1 280	1066	1 265	984	6 199	2570	60 444	1214	95	7546	1586				
49	874	19 169	1021	4 249	1072	1 291	1070	1 276	1003	5 209	2622	53 470	1096	83	7664	1664				
48	893	17 178	1036	3 260	1076	1 302	1075	1 286	1019	4 219	2679	47 497	981	73	7779	1741				
47	911	15 187	1042	3 270	1080	1 312	1079	0 297	1028	4 229	2739	41 524	880	63	7880	1819				
46	929	13 196	1047	2 281	1083	0 323	1083	0 308	1035	3 239	2787	36 551	794	55	7966	1898				
45	940	12 206	1054	2 291	1085	0 334	1086	0 319	1042	2 250	2832	31 579	719	47	8041	1979				
44	951	10 215	1060	1 302	1087	0 345	1088	0 330	1050	2 260	2876	27 608	645	41	8115	2059				
43	963	9 225	1065	1 312	1090	0 356	1090	0 340	1059	2 271	2924	23 637	567	35	8193	2141				
42	977	8 234	1072	1 323	1091	0 367	1092	0 351	1065	1 281	2974	20 666	486	29	8274	2223				
41	992	6 244	1078	1 334	1092	0 378	1094	0 362	1070	1 292	3012	17 696	419	25	8341	2306				
40	1007	5 254	1081	0 345	1093	0 389	1095	0 373	1075	1 303	3036	14 727	370	21	8390	2390				
39	1017	5 264	1084	0 355	1094	0 399	1095	0 384	1077	1 314	3065	12 757	327	17	8433	2474				
38	1024	4 274	1087	0 366	1094	0 410	1095	0 395	1081	0 324	3095	10 788	283	14	8477	2559				
37	1034	3 285	1089	0 377	1095	0 421	1095	0 406	1085	0 335	3121	8 819	240	12	8520	2644				
36	1043	3 295	1091	0 388	1095	0 432	1095	0 417	1086	0 346	3145	7 850	204	10	8576	2729				
35	1050	2 306	1091	0 399	1095	0 443	1095	0 428	1089	0 357	3167	5 882	172	8	8588	2815				
34	1058	2 316	1092	0 410	1095	0 454	1095	0 439	1091	0 368	3184	4 914	144	6	8616	2901				
33	1064	1 327	1093	0 421	1095	0 465	1095	0 450	1093	0 379	3196	3 946	123	5	8637	2987				
32	1066	1 337	1093	0 432	1095	0 476	1095	0 461	1094	0 390	3209	2 978	108	4	8652	3074				
31	1067	1 348	1093	0 443	1095	0 487	1095	0 472	1094	0 401	3224	2 1010	91	3	8669	3160				
30	1072	1 359	1094	0 454	1095	0 498	1095	0 483	1094	0 412	3238	1 1042	71	2	8689	3247				
29	1078	0 370	1094	0 465	1095	0 509	1095	0 494	1095	0 422	3248	1 1075	54	1	8706	3334				
28	1081	0 380	1095	0 476	1095	0 520	1095	0 505	1095	0 433	3257	0 1107	41	1	8719	3421				
27	1084	0 391	1095	0 486	1095	0 531	1095	0 516	1095	0 444	3266	0 1140	29	0	8731	3508				
26	1088	0 402	1095	0 497	1095	0 542	1095	0 527	1095	0 455	3275	0 1172	16	0	8744	3596				
25	1092	0 413	1095	0 508	1095	0 553	1095	0 538	1095	0 466	3282	0 1203	6	0	8754	3683				
24	1095	0 424	1095	0 519	1095	0 564	1095	0 548	1095	0 477	3284	0 1238	0	0	8760	3771				
23	1095	0 435	1095	0 530	1095	0 575	1095	0 559	1095	0 488	3285	0 1271	0	0	8760	3858				

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 265 x 100 = 26500 Deg Hrs)

** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

TALLAHASSEE, FLORIDA
WBAN 93803

WYEC Data

Latitude 30.38 N
Longitude 84.37 E

TABLE E:

Annual COOLING Wet Bulb Degree Hour Summary

Wet Bulb Temperature (F) Base:	50	53	56	59	62	65	68	71	74	77	80
Annual Wet Bulb hours ABOVE base:	6901	6512	6132	5636	5076	4475	3746	2961	1655	362	8
Annual Wet Bulb Cooling deg-hrs:	123467.	103190.	84025.	66117.	49742.	35154.	22453.	11955.	4176.	615.	9.

TABLE F:

Annual Humidification/Dehumidification Requirements At various Indoor Conditions and Degree Day Bases (Pounds of Moisture)

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **												COOLING HUMIDITY RATIO HOURS **												Maintained Indoor Humidity Ratio*
	Heating Degree Base												Cooling Degree Base												
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80			
.001	0	0	0	0	0	0	0	0	0	0	0	86	66	66	65	63	60	76	69	58	36	20	.001		
.002	0	0	0	0	0	0	0	0	0	0	0	78	78	78	77	75	74	69	65	54	34	18	.002		
.003	0	0	0	0	0	0	1	1	1	1	1	70	69	69	69	68	67	63	58	40	31	17	.003		
.004	0	0	1	1	1	1	1	1	1	1	1	62	62	62	61	61	60	57	53	49	29	16	.004		
.005	0	0	1	1	2	2	2	2	3	3	3	54	54	54	54	54	53	51	48	41	26	14	.005		
.006	0	1	1	2	3	3	4	4	4	4	5	47	47	47	47	47	47	45	42	37	24	13	.006		
.007	0	1	2	3	4	5	6	6	7	7	7	41	41	41	41	41	41	40	37	33	21	11	.007		
.008	0	1	2	3	5	7	8	8	9	9	9	35	35	35	35	35	35	34	33	29	19	10	.008		
.009	0	1	2	4	6	8	10	11	12	12	12	29	29	29	29	29	29	29	28	25	16	8	.009		
.010	1	1	3	5	7	10	12	14	15	15	16	24	24	24	24	24	24	24	23	21	14	7	.010		
.011	1	1	3	5	8	12	15	17	18	19	20	19	19	19	19	19	19	19	19	17	11	6	.011		
.012	1	2	3	6	10	13	17	20	22	23	24	14	14	14	14	14	14	14	14	14	9	5	.012		
.013	1	2	4	7	11	15	19	23	26	28	28	11	11	11	11	11	11	11	11	10	7	3	.013		
.014	1	2	4	7	12	17	22	27	30	32	33	7	7	7	7	7	7	7	7	7	5	2	.014		
.015	1	2	4	8	13	19	24	30	33	37	39	5	5	5	5	5	5	5	5	5	3	2	.015		
.016	1	2	5	9	14	20	27	33	39	43	45	2	2	2	2	2	2	2	2	2	2	1	.016		
.017	1	2	5	10	15	22	29	37	43	48	51	1	1	1	1	1	1	1	1	1	1	0	.017		
.018	1	3	5	10	17	24	32	40	48	54	58	0	0	0	0	0	0	0	0	0	0	0	.018		

FOOTNOTES: * Indoor Humidity Level is measured in pounds of moisture per pound of dry air. Indoor set points of 72 deg(F)-30%RH and 78 deg(F)-50%RH yield humidity ratios of .005 and .010 respectively.
** Heating (Cooling) Humidity Ratio Hours are defined as the summation of the differences between the maintained indoor humidity ratio and the observed outdoor humidity ratio when both the hourly dry bulb temperature and the humidity ratio are above (below) the base levels.

TABLE G:

Percent Diffuse Solar Radiation* and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
% Diffuse on surface													
HORIZONTAL	47	42	50	43	53	49	64	53	53	37	28	46	49
VERTICAL													
NORTH	100	100	100	98	94	89	94	97	100	100	100	100	96
WEST	60	54	66	61	71	73	82	76	69	51	44	59	66
SOUTH	42	44	61	69	85	91	93	80	69	42	29	41	61
EAST	58	58	65	61	70	64	75	65	67	53	45	59	63

% Possible Sun DATA IS NOT AVAILABLE AT THIS TIME

FOOTNOTES: * Corrected For Cloud Cover.

** Source: NOAA, Comparative Climatic Data for the United States Through 1978.

TALLAHASSEE, FLORIDA
WBAN 93805
TABLE H:

WYEC Data

Latitude 30.38 N
Longitude 84.37 E

Average Daily Solar Radiation on Vertical and Horizontal Surfaces
(BTU/DAY.SQFT)

Month	Under Clear Sky Assumption*										Corrected For Cloud Cover**										obs	
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S-45 ***	horiz	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N		S-45 ***
Jan	1762	1644	1364	1115	752	438	259	200	199	2004	1209	854	811	696	587	430	296	223	197	197	923	871
Feb	1690	1585	1383	1205	889	575	356	244	234	2140	1486	1011	950	842	746	583	428	325	270	264	1186	910
Mar	1412	1406	1358	1300	1089	820	569	373	294	2176	1845	1004	993	949	902	783	646	526	435	397	1319	1216
Apr	1010	1134	1229	1291	1206	1028	791	564	392	2067	2151	917	982	1023	1047	981	866	721	587	486	1486	1576
May	737	932	1120	1278	1297	1204	1002	771	562	1930	2342	852	942	1026	1100	1092	1026	907	778	677	1462	1731
Jun	639	843	1070	1260	1330	1276	1100	874	677	1861	2423	740	860	993	1109	1146	1105	989	845	714	1400	1753
Jul	685	883	1088	1264	1314	1239	1057	831	631	1882	2380	798	882	971	1050	1068	1020	925	812	714	1276	1550
Aug	890	1042	1172	1269	1231	1089	874	653	468	1981	2209	841	938	1007	1055	1021	928	795	660	546	1345	1504
Sep	1248	1282	1286	1270	1107	881	647	448	342	2098	1938	999	1021	1013	991	886	752	623	516	460	1366	1342
Oct	1583	1514	1371	1234	960	669	441	297	268	2126	1600	1148	1102	1006	911	730	545	406	320	303	1432	1140
Nov	1722	1617	1363	1134	786	483	288	216	213	2023	1285	1066	1005	855	720	516	342	230	187	185	1221	811
Dec	1739	1626	1328	1065	692	395	228	190	190	1933	1129	859	807	678	563	402	277	207	190	189	913	616
Year	1257	1291	1260	1224	1055	843	636	473	373	2017	1835	923	941	922	899	804	687	574	484	429	1277	1233

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.
*** South exposure tilt 45 degrees.

TABLE I: Average Daily Solar Heat Gain Through Single Pane Glass on Vertical and Horizontal Surfaces
(BTU/DAY.SQFT)

Month	Under Clear Sky*										Corrected For Cloud Cover**									
	S	SSE/	SE/	ESE/	E/	ENE/	NE/	NNE/	N		S	SSE/	SE/	ESE/	E/	ENE/	NE/	NNE/	N	
		SSW	SW	WSW	W	WNW	NN	NNW				SSW	SW	WSW	W	WNW	NN	NNW		
Jan	1506	1381	1140	929	608	337	192	163	162		720	676	578	486	349	234	175	161	160	
Feb	1405	1314	1151	1002	724	452	267	195	191		835	782	696	616	475	343	256	218	215	
Mar	1086	1135	1117	1079	895	658	437	282	238		792	802	775	741	640	522	418	345	322	
Apr	704	870	995	1068	1000	839	630	431	308		690	774	831	862	808	707	580	464	390	
May	497	670	885	1045	1074	990	806	599	416		648	729	823	896	895	837	732	620	535	
Jun	447	594	832	1028	1101	1055	891	689	495		569	654	790	906	944	910	804	676	558	
Jul	473	631	857	1035	1088	1026	856	654	467		627	691	783	860	879	840	754	654	570	
Aug	614	764	943	1047	1019	894	701	505	361		642	738	819	870	843	761	643	524	438	
Sep	928	1020	1052	1053	915	713	504	340	277		777	823	828	815	727	610	497	410	374	
Oct	1287	1247	1137	1031	791	533	334	231	218		933	904	830	756	599	437	317	255	247	
Nov	1462	1351	1135	943	641	372	216	175	173		901	836	710	596	422	267	177	152	150	
Dec	1493	1369	1110	883	560	298	173	155	155		727	673	563	464	327	218	164	155	154	
Year	990	1029	1029	1012	869	682	502	369	289		738	756	752	739	660	558	461	387	344	

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
** Derived according to DOE-2.1 LOADS Algorithms and WYEC cloud cover data.

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WASHINGTON DC (DULLES AIRPORT)
WBAN 93734
TABLE A:

WYEC Data

Latitude 38.95 N
Longitude 77.45 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): First Quarter
(5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Jan														
65 to 69	0	0	0	0	4	3	1	2	10	59.3	742	24290	2	2
60 to 64	2	2	0	2	10	5	4	1	26	55.6	723	20615	21	47
55 to 59	3	0	2	6	1	5	5	3	25	50.4	699	17062	45	214
50 to 54	3	5	4	4	0	1	2	4	23	47.7	672	13642	72	514
45 to 49	8	4	2	10	10	6	3	1	44	41.1	651	10333	93	925
40 to 44	6	10	9	5	17	18	11	13	89	38.1	577	7234	167	1546
35 to 39	9	9	17	16	16	20	19	13	119	33.8	465	4599	279	2631
30 to 34	21	17	14	30	23	18	22	20	165	29.2	343	2544	401	4296
25 to 29	16	18	23	8	5	8	12	18	108	24.4	188	1237	556	6709
20 to 24	14	15	10	5	4	6	7	7	68	19.6	91	533	653	9725
15 to 19	5	4	5	7	3	3	3	5	35	14.6	49	189	695	13101
10 to 14	6	9	7	0	0	0	4	6	32	10.5	22	17	722	16649
Feb														
60 to 64	0	0	0	1	4	3	0	0	8	46.1	669	17230	3	2
55 to 59	0	0	0	3	5	3	0	0	11	46.8	662	13904	10	36
50 to 54	0	0	0	4	6	8	4	2	24	45.5	641	10635	31	127
45 to 49	3	7	6	9	13	7	5	5	55	40.2	616	7480	56	332
40 to 44	11	6	9	18	23	24	14	8	113	35.2	536	4576	136	788
35 to 39	18	12	16	34	30	28	33	27	198	32.0	398	2219	274	1791
30 to 34	28	24	27	12	0	8	21	31	151	28.0	188	755	484	3687
25 to 29	17	28	22	3	3	3	7	11	94	24.3	63	142	609	6434
20 to 24	7	7	4	0	0	0	0	0	18	19.9	6	9	666	9661
Mar														
75 to 79	0	0	0	0	2	2	0	0	4	53.0	744	24438	0	0
70 to 74	0	0	0	0	6	5	2	0	13	50.4	735	20736	9	18
65 to 69	0	0	0	6	5	3	3	1	18	51.0	719	17095	25	97
60 to 64	0	0	1	6	9	11	6	1	34	50.1	702	13534	42	256
55 to 59	2	2	3	7	11	12	8	7	52	46.6	657	10132	87	574
50 to 54	4	7	6	13	14	12	12	8	76	43.1	593	6990	151	1152
45 to 49	13	5	8	19	17	20	16	12	110	39.4	511	4226	233	2108
40 to 44	24	19	23	22	22	26	27	26	189	36.0	367	2004	377	3606
35 to 39	26	30	28	14	7	2	19	27	153	32.7	167	670	577	5992
30 to 34	24	23	17	6	0	0	0	11	81	27.4	62	126	682	9168
25 to 29	0	7	7	0	0	0	0	0	14	24.7	1	1	743	12763

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

WASHINGTON DC (DULLES AIRPORT)
 WBAN 93734
 TABLE A:

WYEC Data

Latitude 38.95 N
 Longitude 77.45 E

Monthly Dry Bulb Temperature Frequencies With Mean
 Coincident Wet Bulb Temperature (MCWB): Second Quarter
 (5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCMB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Apr														
85 to 89	0	0	0	1	7	7	0	0	15	62.8	720	22852	0	0
80 to 84	0	0	0	5	9	6	2	0	22	64.4	692	19313	28	61
75 to 79	0	0	1	7	4	5	3	0	20	66.1	673	15900	47	248
70 to 74	2	0	7	6	5	8	9	3	40	61.3	658	12566	62	214
65 to 69	11	9	7	7	11	14	8	13	80	58.3	599	9423	121	971
60 to 64	5	8	3	10	13	5	14	9	67	53.0	516	6649	204	1797
55 to 59	10	10	17	17	8	14	10	6	92	49.7	434	4256	286	3004
50 to 54	10	9	16	12	16	13	15	17	108	43.7	349	2294	371	4642
45 to 49	23	22	19	23	16	16	25	25	169	41.4	221	860	499	6508
40 to 44	20	19	15	2	1	2	4	13	76	36.6	62	221	638	9769
35 to 39	9	7	5	0	0	0	0	4	25	31.6	19	42	701	13190
30 to 34	0	6	0	0	0	0	0	0	6	28.8	1	1	719	16749
May														
90 to 94	0	0	0	2	3	1	0	0	6	71.0	740	20031	4	4
85 to 89	0	0	1	1	4	3	0	0	9	70.0	737	16340	7	33
80 to 84	0	0	0	2	12	12	3	0	29	67.2	722	12685	22	98
75 to 79	0	0	0	12	25	23	8	4	72	62.9	686	9163	58	298
70 to 74	2	0	8	27	29	38	30	10	132	61.2	593	5964	151	817
65 to 69	29	15	26	27	12	13	31	30	183	60.3	417	3420	327	1993
60 to 64	21	26	30	11	3	2	11	30	134	56.7	250	1766	494	4059
55 to 59	24	27	16	1	0	0	1	8	77	52.6	146	802	598	6815
50 to 54	8	14	5	5	7	5	4	5	55	48.7	83	281	661	9994
45 to 49	9	9	7	5	2	4	5	6	47	46.9	10	9	734	13462
Jun														
90 to 94	0	0	0	0	3	1	0	0	4	76.0	720	12961	0	0
85 to 89	0	0	0	3	18	21	2	0	46	71.2	711	9376	9	15
80 to 84	0	0	3	26	41	45	23	2	140	69.0	609	6005	111	244
75 to 79	2	2	18	38	22	17	40	16	155	66.3	485	3289	235	1128
70 to 74	41	30	44	19	6	6	22	50	218	63.4	308	1290	412	2729
65 to 69	32	32	20	2	0	0	3	19	108	61.9	99	338	621	5377
60 to 64	15	19	5	0	0	0	0	3	42	57.3	24	52	696	8691
55 to 59	0	7	0	0	0	0	0	0	7	53.7	1	1	719	12240

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

WASHINGTON DC (DULLES AIRPORT)

WBAN 93734

TABLE A:

WTEC Data

Latitude 38.95 N

Longitude 77.45 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Third Quarter
(2 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Jul														
90 to 94	0	0	0	8	27	22	0	0	57	77.7	731	10737	13	8
85 to 89	0	0	2	26	34	28	11	0	101	75.2	650	7262	94	253
80 to 84	1	0	25	30	15	11	29	18	129	73.6	543	4287	201	998
75 to 79	36	31	31	21	15	26	26	32	218	71.4	376	1918	368	2349
70 to 74	34	34	25	7	2	6	24	28	160	68.2	168	578	576	4729
65 to 69	17	22	9	1	0	0	3	15	67	64.0	37	103	707	7974
60 to 64	3	3	1	0	0	0	0	0	7	57.3	9	24	735	11615
55 to 59	2	3	0	0	0	0	0	0	5	55.8	0	0	744	15311
Aug														
90 to 94	0	0	0	1	9	7	0	0	17	75.5	741	11644	3	2
85 to 89	0	0	0	15	33	35	2	0	85	74.4	704	8009	40	87
80 to 84	0	0	4	37	27	27	37	7	139	73.7	587	4744	157	542
75 to 79	28	14	36	27	17	18	32	39	211	71.9	424	2176	320	1694
70 to 74	43	49	42	10	7	5	18	34	208	68.8	186	617	558	3855
65 to 69	20	21	10	3	0	1	4	13	72	63.8	47	105	697	7063
60 to 64	2	6	1	0	0	0	0	0	11	57.3	7	12	737	10690
55 to 59	0	1	0	0	0	0	0	0	1	52.0	0	0	744	14398
Sep														
90 to 94	0	0	0	0	1	1	0	0	2	73.0	720	16100	0	0
85 to 89	0	0	0	3	10	10	1	0	24	72.6	711	12513	9	13
80 to 84	1	0	0	19	22	11	9	3	65	70.9	678	9029	44	129
75 to 79	5	2	9	18	15	22	19	10	92	68.8	604	5841	116	541
70 to 74	20	19	22	34	32	34	27	25	213	66.3	460	3120	260	1470
65 to 69	23	23	30	17	7	9	22	28	159	62.5	234	1371	466	3271
60 to 64	27	21	17	6	3	3	8	15	100	58.0	111	475	609	5975
55 to 59	11	17	9	1	0	0	4	9	51	53.8	39	115	681	9215
50 to 54	3	6	2	0	0	0	0	0	11	49.6	10	18	710	12718
45 to 49	0	2	1	0	0	0	0	0	3	46.0	0	0	720	16300

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

WASHINGTON DC (DULLES AIRPORT)
 WBAH 93734
 TABLE A:

WYEC Data

Latitude 38.95 N
 Longitude 77.45 E

Monthly Dry Bulb Temperature Frequencies With Mean
 Coincident Wet Bulb Temperature (MCWB): Fourth Quarter
 (5 Degrees(F)/3Hr Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degrees hours	hours above	degrees hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Oct														
80 to 84	0	0	0	0	5	2	0	0	7	64.9	744	17089	0	0
75 to 79	0	0	0	13	27	13	0	0	53	63.5	723	13404	21	35
70 to 74	0	0	0	12	14	20	7	1	54	62.4	669	9931	75	282
65 to 69	4	1	7	19	12	19	27	10	99	60.3	603	6744	141	815
60 to 64	21	14	19	15	14	12	16	22	133	56.9	481	4005	263	1796
55 to 59	20	25	32	26	16	14	14	21	170	51.7	330	1976	414	3487
50 to 54	22	22	16	8	3	13	23	19	126	48.7	161	749	583	5980
45 to 49	18	22	16	0	0	0	6	18	80	43.0	68	188	676	9139
40 to 44	7	6	2	0	0	0	0	2	17	40.4	8	26	736	12697
35 to 39	1	3	1	0	0	0	0	0	5	36.0	2	1	742	16392
Nov														
70 to 74	0	0	0	1	3	2	0	0	6	68.8	720	17336	0	0
65 to 69	0	0	0	3	5	3	3	1	15	57.8	711	13761	9	25
60 to 64	2	0	1	10	26	9	0	2	50	50.9	684	10255	36	119
55 to 59	2	5	10	20	19	28	13	1	98	49.6	618	6986	102	450
50 to 54	19	14	11	25	20	24	24	24	161	46.1	500	4182	220	1246
45 to 49	17	16	21	18	8	13	26	24	143	41.7	324	2131	396	2795
40 to 44	30	21	20	8	6	7	17	27	136	37.8	173	862	547	5126
35 to 39	13	22	16	5	3	3	4	7	73	33.0	79	250	641	8114
30 to 34	7	10	10	0	0	1	3	4	35	29.4	16	27	764	11491
25 to 29	0	2	1	0	0	0	0	0	3	26.3	0	0	720	15064
Dec														
65 to 69	0	0	0	0	2	1	0	0	3	55.7	743	22254	1	1
60 to 64	0	0	0	0	1	1	2	0	4	53.8	739	18548	5	15
55 to 59	3	3	3	6	10	1	1	2	29	47.6	728	14873	16	60
50 to 54	0	0	0	5	9	15	6	4	39	43.4	696	11308	48	215
45 to 49	6	4	2	12	11	8	10	7	60	40.0	654	7934	90	561
40 to 44	11	10	15	16	17	18	18	17	122	36.4	567	4855	177	1202
35 to 39	32	31	23	27	25	24	22	24	208	32.6	427	2370	317	2437
30 to 34	23	23	30	20	12	20	28	23	179	28.5	186	800	538	4587
25 to 29	11	12	11	7	6	5	6	12	70	23.9	67	213	677	7720
20 to 24	7	10	9	0	0	0	0	4	30	19.1	13	18	731	11245

FOOTNOTES: * The Cooling and Heating degree base is at the center of the dry bulb temperature range.

WASHINGTON DC (DULLES AIRPORT)
WDAW 93734
TABLE B:

WYEC Data

Latitude 38.95 N
Longitude 77.45 E

Annual Dry Bulb Temperature Frequencies
With Mean Coincident Wet Bulb Temperature
(5 Degree(F)/3Hr Bins)

Dry Bulb range(F)	Number of Hours of Occurrence in time period									Mean Coincident Wet Bulb Temperature (F)								
	Hour of day									Hour of day								
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year
90 to 94	0	0	0	11	43	32	0	0	86	0.0	0.0	0.0	75.9	76.7	76.8	0.0	0.0	76.6
85 to 89	0	0	3	51	106	104	16	0	280	0.0	0.0	75.3	75.0	72.5	72.7	75.7	0.0	73.2
80 to 84	2	0	32	119	131	114	103	30	531	73.5	0.0	74.9	71.9	69.7	69.5	72.5	73.7	71.3
75 to 79	71	49	95	128	127	126	128	101	825	73.1	73.3	71.9	67.7	64.5	64.7	69.4	71.9	68.8
70 to 74	142	132	148	116	100	116	139	151	1044	68.6	69.1	67.3	62.8	60.9	62.4	64.3	67.3	65.6
65 to 69	136	123	109	85	58	66	105	132	814	63.4	64.2	61.7	58.6	55.4	57.1	60.0	62.2	61.1
60 to 64	98	101	78	61	83	51	61	83	616	57.9	58.8	57.2	53.0	51.3	51.4	55.0	56.6	55.6
55 to 59	77	100	92	87	72	77	56	57	618	53.3	53.7	52.4	49.1	47.1	47.4	48.9	51.9	50.7
50 to 54	69	79	60	76	75	91	90	83	623	47.7	47.9	47.0	45.4	44.2	44.3	45.4	46.6	46.0
45 to 49	97	91	82	96	77	74	96	98	711	42.9	43.1	42.7	40.4	39.5	39.9	40.9	42.0	41.5
40 to 44	109	91	93	71	86	95	91	106	742	37.9	37.9	37.5	35.9	35.7	36.0	37.1	37.6	37.0
35 to 39	108	114	106	96	81	77	97	102	781	33.4	33.8	33.4	32.1	31.1	31.7	32.3	32.9	32.7
30 to 34	103	103	98	68	35	47	74	89	617	28.6	29.0	29.2	28.1	28.9	28.0	27.6	28.0	28.5
25 to 29	44	67	64	18	14	16	25	41	289	24.5	24.9	24.6	23.7	23.6	24.2	23.5	24.0	24.4
20 to 24	28	32	23	5	4	6	7	11	116	20.1	19.6	19.8	17.4	18.7	19.2	18.3	19.3	19.5
15 to 19	5	4	5	7	3	3	3	5	35	14.8	15.8	12.6	13.6	15.0	14.0	15.7	16.0	14.6
10 to 14	6	9	7	0	0	0	4	6	32	10.0	10.7	11.3	0.0	0.0	0.0	10.5	9.7	10.5

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Dry Bulb Temperature (F)						Wet Bulb	Percent Relative Humidity					Average Humidity Ratio (lb moisture/lb dry air)					Average wind
Month	Ave	Max	Min	Daily Ave		Ave	Average					4AM	10AM	4PM	10PM	Day	MPH
				Max	Min		4AM	10AM	4PM	10PM	Day						
Jan	34.9	69	11	44	27	31.2	76	70	56	65	68	0.0031	0.0031	0.0031	0.0030	0.0031	11.1
Feb	36.9	63	20	45	30	31.9	69	58	49	59	60	0.0025	0.0026	0.0028	0.0027	0.0026	11.1
Mar	44.7	76	27	54	36	37.5	66	53	38	50	53	0.0032	0.0033	0.0030	0.0033	0.0032	12.0
Apr	55.8	87	32	65	47	47.8	67	57	43	53	57	0.0055	0.0060	0.0055	0.0055	0.0056	9.0
May	65.6	94	46	75	57	58.0	61	64	52	63	67	0.0087	0.0087	0.0086	0.0089	0.0088	9.4
Jun	74.5	90	57	83	66	65.6	60	61	50	60	64	0.0115	0.0117	0.0116	0.0118	0.0117	10.5
Jul	78.1	94	58	87	70	71.2	67	70	58	73	73	0.0148	0.0156	0.0150	0.0151	0.0150	6.8
Aug	76.9	93	58	85	70	70.7	69	73	59	75	76	0.0146	0.0151	0.0146	0.0155	0.0149	6.9
Sep	70.1	91	48	78	63	64.0	66	70	57	72	74	0.0114	0.0117	0.0113	0.0120	0.0116	9.2
Oct	59.5	82	37	70	50	55.7	62	67	55	73	70	0.0072	0.0080	0.0079	0.0081	0.0077	7.4
Nov	48.4	72	28	57	40	42.6	72	64	52	62	63	0.0042	0.0049	0.0048	0.0045	0.0046	8.3
Dec	37.6	68	20	44	31	33.1	73	64	55	62	65	0.0030	0.0029	0.0030	0.0030	0.0030	8.0
Year	57.0	94	11	66	49	50.7	77	64	52	64	66	0.0075	0.0078	0.0076	0.0078	0.0077	9.1

WASHINGTON DC (DULLES AIRPORT)

MYEC Data

Latitude 38.95 N

W0AM 93734

Longitude 77.45 E

TABLE 0:

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY												24 HOUR SUMMARY									
	7-9AM**			10-12AM**			1-3PM**			4-6PM**			7-9PM**			10PM-6AM**			HEATING		COOLING	
	Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg	Hrs	Deg
	Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*			Below Base 100s*		Above Base 100s*	
	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool				
95	0	454	0	0	384	0	0	342	0	0	355	0	0	405	0	0	1388	0	8760	3328	0	0
94	0	444	0	0	375	0	1	331	0	0	344	0	0	394	0	0	1355	0	8758	3240	2	0
93	0	433	0	0	362	0	7	320	0	3	333	0	0	383	0	0	1323	0	8748	3155	12	0
92	0	422	0	1	351	0	17	309	0	9	322	0	0	372	0	0	1290	0	8732	3065	28	0
91	0	411	0	3	340	0	25	298	0	17	311	0	0	361	0	0	1257	0	8714	2978	46	1
90	0	400	0	8	329	0	35	288	1	26	301	0	0	350	0	0	1224	0	8689	2891	71	1
89	0	389	0	14	318	0	51	277	1	57	290	1	0	339	0	0	1191	0	8657	2804	103	2
88	0	378	0	20	308	0	69	267	2	47	280	1	2	328	0	0	1158	0	8620	2718	140	3
87	0	367	0	29	297	1	89	257	2	81	269	2	5	317	0	0	1126	0	8575	2632	185	5
86	1	356	0	39	286	1	110	247	3	84	259	2	9	306	0	0	1093	0	8516	2547	244	7
85	2	345	0	53	276	1	135	237	5	116	249	3	14	295	0	0	1060	0	8439	2462	321	10
84	4	334	0	72	266	2	163	227	6	150	239	5	21	285	0	0	1027	0	8348	2376	412	13
83	9	323	0	95	255	3	192	218	8	176	230	6	37	274	1	0	994	0	8250	2293	510	18
82	13	312	0	122	246	4	219	209	10	200	221	8	58	263	1	1	961	0	8145	2213	615	24
81	20	302	0	146	236	5	245	201	12	221	212	10	79	253	2	6	928	0	8042	2132	718	30
80	30	291	1	168	227	7	270	192	15	240	203	13	104	243	3	21	896	0	7926	2052	834	38
79	41	280	1	193	217	9	294	184	18	259	195	15	129	233	4	43	863	0	7799	1973	961	47
78	57	270	1	215	209	11	320	176	21	280	187	18	151	224	5	71	831	1	7665	1896	1095	57
77	77	259	2	237	200	13	342	169	24	301	179	21	173	214	7	105	799	2	7523	1820	1237	69
76	96	249	3	262	191	15	366	161	28	328	171	24	199	205	9	150	767	3	7358	1745	1402	82
75	118	240	4	291	183	18	393	154	31	360	163	27	230	197	11	215	736	5	7152	1673	1608	97
74	144	230	5	320	175	21	418	147	36	384	156	31	261	188	13	289	706	7	6943	1602	1817	114
73	172	221	7	341	168	23	438	141	40	402	149	35	286	180	16	366	676	11	6752	1534	2008	133
72	205	211	9	362	160	28	457	134	44	429	142	39	310	172	19	450	647	15	6544	1467	2216	154
71	238	203	11	387	153	32	475	128	49	459	136	44	337	164	22	538	620	20	6323	1403	2435	177
70	265	194	14	413	146	36	495	122	54	482	130	48	368	157	26	630	593	25	6106	1341	2654	203
69	293	186	16	433	139	40	513	116	59	501	124	53	401	150	30	728	566	32	5889	1281	2871	231
68	317	178	19	449	133	45	523	110	64	516	118	58	429	143	34	812	541	40	5713	1223	3047	260
67	336	171	23	465	126	49	534	104	69	529	112	64	449	136	38	887	517	49	5558	1167	3202	291
66	356	163	26	481	120	54	547	99	75	541	106	69	464	130	43	962	493	58	5408	1112	3352	324
65	376	156	30	498	114	58	558	93	80	552	101	74	481	124	48	1033	471	68	5261	1059	3499	358
64	393	149	34	515	108	64	571	88	86	561	96	80	498	118	52	1104	448	78	5115	1007	3645	394
63	410	142	38	529	103	69	586	83	92	571	90	86	511	112	58	1169	427	90	4983	956	3777	431
62	428	135	42	541	97	74	604	78	98	583	85	91	521	106	63	1227	406	102	4855	907	3905	470
61	443	128	46	551	92	80	623	73	104	594	80	97	532	100	68	1285	386	114	4730	859	4030	509
60	457	122	51	564	86	85	640	68	110	605	75	103	546	95	73	1333	366	128	4614	812	4146	550
59	475	116	55	579	81	91	656	64	117	617	70	109	558	89	79	1383	347	141	4491	767	4269	592
58	494	110	60	593	76	97	670	60	123	629	65	116	569	84	85	1438	328	155	4366	723	4394	636
57	513	104	65	610	71	103	684	56	130	645	61	122	578	79	90	1487	310	170	4244	679	4516	680
56	528	98	70	631	66	109	697	51	137	662	56	129	588	74	96	1532	292	185	4121	638	4639	726
55	546	92	76	649	62	116	711	48	144	676	52	135	601	69	102	1568	275	200	4007	597	4753	773
54	564	87	81	663	57	122	729	44	151	696	48	142	614	64	108	1604	258	216	3888	558	4872	821
53	574	82	87	675	53	129	746	40	158	719	44	149	629	59	114	1647	241	233	3768	519	4992	870
52	581	77	93	690	49	136	763	37	166	742	41	156	644	54	121	1698	225	249	3640	482	5120	921
51	593	71	99	709	45	143	777	34	174	758	37	164	663	50	127	1746	209	267	3512	446	5248	973
50	609	66	105	726	41	150	789	30	182	771	34	172	687	46	134	1791	194	284	3386	412	5374	1026

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 565 x 100 = 56500 Deg Hrs)

** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

WASHINGTON DC (DULLES AIRPORT)

WBAN 93734

TABLE 0:

- MYEC Data

Latitude 38.95 N

Longitude 77.45 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE (F)	BY TIME OF DAY												24 HOUR SUMMARY									
	7-9AM**			10-12AM**			1-3PM**			4-6PM**			7-9PM**			10PM-6AM**			HEATING		COOLING	
	Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg	Hrs	Deg
	Above (100s)*	Base	Heat Cool	Above (100s)*	Base	Heat Cool	Above (100s)*	Base	Heat Cool	Above (100s)*	Base	Heat Cool	Above (100s)*	Base	Heat Cool	Above (100s)*	Base	Heat Cool	Below	Hrs	Above	Hrs
																			Base	100s*	Base	100s*
49	624	62	111	741	37	157	806	27	190	784	31	179	705	42	141	1842	180	502	3256	379	5504	1080
48	636	57	117	760	34	165	825	25	198	800	28	187	725	38	148	1890	165	321	3122	347	5638	1136
47	653	53	124	783	31	172	844	22	206	815	25	195	751	34	155	1945	152	340	2967	316	5793	1193
46	671	48	130	800	28	180	860	20	215	827	22	204	773	31	163	2006	139	360	2822	288	5938	1252
45	688	44	137	818	25	188	868	17	223	841	19	212	787	28	171	2068	126	380	2688	260	6072	1312
44	707	40	144	835	22	197	880	15	232	862	17	220	801	25	179	2140	114	401	2533	234	6227	1373
43	726	36	151	847	20	205	897	13	241	884	15	229	821	22	187	2211	103	423	2372	209	6388	1436
42	745	33	159	860	17	214	919	11	250	907	13	238	840	20	195	2272	93	446	2215	186	6545	1501
41	761	29	166	876	15	222	939	10	259	928	11	247	856	17	204	2326	83	469	2073	165	6687	1567
40	780	26	174	893	13	231	952	8	269	941	9	257	875	15	212	2381	74	492	1938	145	6822	1635
39	801	23	182	911	11	240	968	7	278	954	8	266	896	13	221	2450	65	516	1779	126	6981	1704
38	818	20	190	931	9	249	988	6	288	968	7	276	917	11	230	2513	57	541	1622	109	7138	1774
37	839	17	198	951	8	259	1005	5	298	985	5	286	937	9	240	2564	49	566	1478	94	7282	1846
36	862	15	207	969	6	268	1018	4	308	1000	4	295	956	8	249	2621	43	592	1332	80	7428	1920
35	886	13	215	987	5	278	1032	3	318	1014	4	306	973	6	259	2690	36	619	1177	67	7583	1995
34	909	11	224	1004	4	288	1042	2	329	1029	3	316	988	5	269	2759	31	646	1027	56	7733	2072
33	938	9	234	1020	3	298	1048	2	339	1043	2	326	1003	4	278	2825	26	674	881	47	7879	2150
32	965	8	243	1035	3	309	1057	2	350	1056	2	337	1018	3	289	2889	21	703	738	39	8022	2229
31	978	7	253	1047	2	319	1066	1	360	1064	1	347	1035	3	299	2942	18	732	626	32	8134	2310
30	989	5	263	1059	2	330	1072	1	371	1068	1	358	1050	2	309	2998	15	761	522	26	8238	2392
29	1004	4	273	1067	1	340	1075	1	382	1073	1	369	1060	2	320	3054	12	792	425	21	8335	2475
28	1019	4	283	1072	1	351	1079	1	393	1078	1	379	1067	1	331	3095	10	823	348	18	8412	2559
27	1035	3	293	1075	1	362	1082	0	403	1081	1	390	1074	1	341	3121	8	854	291	14	8469	2643
26	1048	2	303	1079	1	372	1084	0	414	1083	0	401	1078	1	352	3146	7	885	240	12	8520	2728
25	1056	2	314	1082	1	383	1087	0	425	1085	0	412	1080	1	363	3169	5	917	200	10	8560	2813
24	1061	2	325	1083	1	394	1089	0	436	1087	0	423	1082	1	374	3188	4	948	168	8	8592	2899
23	1068	1	335	1084	0	405	1091	0	447	1090	0	434	1083	1	384	3211	3	980	132	6	8628	2985
22	1075	1	346	1085	0	416	1092	0	458	1091	0	444	1084	1	395	3230	3	1013	101	5	8659	3072
21	1078	1	357	1086	0	427	1092	0	469	1092	0	455	1085	0	406	3240	2	1045	85	4	8675	3158
20	1082	1	368	1087	0	437	1092	0	480	1092	0	466	1087	0	417	3247	2	1077	72	3	8688	3245
19	1083	1	378	1088	0	448	1093	0	491	1092	0	477	1089	0	428	3253	2	1110	60	3	8700	3332
18	1083	1	389	1090	0	459	1095	0	502	1093	0	488	1090	0	439	3257	1	1142	51	2	8709	3419
17	1083	0	400	1092	0	470	1095	0	512	1093	0	499	1090	0	450	3260	1	1175	46	2	8714	3506
16	1084	0	411	1094	0	481	1095	0	523	1094	0	510	1091	0	461	3262	1	1208	40	1	8720	3594
15	1086	0	422	1095	0	492	1095	0	534	1094	0	521	1091	0	471	3263	1	1240	34	1	8726	3681
14	1089	0	433	1095	0	503	1095	0	545	1095	0	532	1092	0	482	3265	0	1273	28	1	8732	3768
13	1091	0	444	1095	0	514	1095	0	556	1095	0	543	1093	0	493	3267	0	1306	23	0	8737	3855
12	1092	0	454	1095	0	525	1095	0	567	1095	0	554	1094	0	504	3274	0	1338	14	0	8746	3943
11	1094	0	465	1095	0	536	1095	0	578	1095	0	565	1095	0	515	3283	0	1371	3	0	8757	4030
10	1095	0	476	1095	0	547	1095	0	589	1095	0	576	1095	0	526	3285	0	1404	0	0	8760	4111

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 565 x 100 = 56500 Deg Hrs)

** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

WASHINGTON DC (DULLES AIRPORT)
 WBAW 93734
 TABLE E:

NYEC Data

Latitude 38.95 N
 Longitude 77.45 E

Annual COOLING Wet Bulb Degree Hour Summary

Wet Bulb Temperature (F) Base:	50	53	56	59	62	65	68	71	74	77	80
Annual Wet Bulb hours ABOVE base:	4602	4267	3848	3454	2945	2345	1761	1187	585	160	10
Annual Wet Bulb Cooling deg-hrs:	70928.	57445.	45047.	33898.	23980.	15724.	9298.	4529.	1578.	274.	16.

TABLE F:

Annual Humidification/Dehumidification Requirements
 At various Indoor Conditions and Degree Day Bases
 (Pounds of Moisture)

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **												COOLING HUMIDITY RATIO HOURS **												Maintained Indoor Humidity Ratio
	Heating Degree Base												Cooling Degree Base												
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80			
.001	0	0	0	0	0	0	0	0	0	0	0	54	53	52	51	49	46	43	39	31	19	10	.001		
.002	0	1	1	1	1	1	1	1	1	1	1	47	46	45	44	42	39	35	28	18	9		.002		
.003	1	2	2	3	3	3	3	3	3	3	3	40	40	40	39	38	37	35	32	25	16	9	.003		
.004	1	3	4	5	6	6	6	6	6	6	6	34	34	34	34	34	33	31	28	23	15	8	.004		
.005	2	4	6	7	8	9	9	10	10	10	10	29	29	29	29	29	28	27	25	20	13	7	.005		
.006	2	5	8	10	12	13	13	14	14	14	14	24	24	24	24	24	24	23	22	18	12	6	.006		
.007	3	6	10	13	15	16	17	18	18	18	19	20	20	20	20	20	20	20	19	16	10	5	.007		
.008	3	7	12	15	18	20	22	23	23	23	23	16	16	16	16	16	16	16	16	13	9	5	.008		
.009	4	8	13	18	22	24	26	27	28	29	29	13	13	13	13	13	13	13	13	11	7	4	.009		
.010	4	9	15	21	25	28	31	32	33	34	35	10	10	10	10	10	10	10	10	9	6	3	.010		
.011	5	10	17	23	28	32	35	37	39	40	41	8	8	8	8	8	8	8	8	7	5	3	.011		
.012	5	11	19	26	32	36	40	43	45	46	47	6	6	6	6	6	6	6	6	6	5	4	2	.012	
.013	6	13	21	28	35	40	44	48	51	53	54	4	4	4	4	4	4	4	4	4	4	3	2	.013	
.014	6	14	23	31	38	44	49	53	57	59	61	3	3	3	3	3	3	3	3	3	2	1		.014	
.015	7	15	25	34	42	48	54	58	63	66	68	1	1	1	1	1	1	1	1	1	1	1	1	.015	
.016	7	16	26	36	45	52	58	63	69	73	76	1	1	1	1	1	1	1	1	1	1	1	0	.016	
.017	8	17	28	39	48	56	63	69	75	80	83	0	0	0	0	0	0	0	0	0	0	0	0	.017	
.018	8	18	30	41	52	60	67	74	81	87	91	0	0	0	0	0	0	0	0	0	0	0	0	.018	

FOOTNOTES: * Indoor Humidity Level is measured in pounds of moisture per pound of dry air. Indoor set points of 72 deg(F)-30%RH and 78 deg(F)-50%RH yield humidity ratios of .005 and .010 respectively.
 ** Heating (Cooling) Humidity Ratio Hours are defined as the summation of the differences between the maintained indoor humidity ratio and the observed outdoor humidity ratio when both the hourly dry bulb temperature and the humidity ratio are above (below) the base levels.

TABLE G:

Percent Diffuse Solar Radiation*
 and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
\$ Diffuse on surface													
HORIZONTAL	39	39	43	46	48	49	47	46	41	33	36	48	44
VERTICAL													
NORTH	100	100	100	98	93	89	92	97	100	100	100	100	96
WEST	47	51	59	62	63	66	67	62	56	46	53	55	59
SOUTH	29	36	49	65	75	81	76	66	51	33	30	36	52
EAST	48	49	52	60	67	65	64	67	58	48	45	60	39
\$ Possible Sun	49	53	56	58	58	64	63	63	62	60	52	47	58

FOOTNOTES: * Corrected For Cloud Cover.

** Source: NOAA, Comparative Climatic Data for the United States Through 1976.

WASHINGTON DC (DULLES AIRPORT)

WBAN 93734

TABLE H:

MYEC Data

Latitude 38.95 N

Longitude 77.45 E

Average Daily Solar Radiation on Vertical and Horizontal Surfaces
(BTU/DAY.SQFT)

Month	Under Clear Sky Assumption*											Corrected For Cloud Cover**											N	S-45 ***	horiz	obs
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW				S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW							
Jan	1875	1739	1395	1075	653	336	185	157	156	1943	981	974	909	745	591	386	234	163	149	149	985	544	581			
Feb	1913	1792	1511	1249	850	511	295	207	199	2190	1310	968	926	807	692	510	349	245	199	194	1064	701	816			
Mar	1734	1678	1537	1395	1092	769	506	326	270	2363	1770	1050	1055	998	930	770	597	455	352	317	1311	1081	1136			
Apr	1348	1431	1459	1463	1295	1040	767	532	372	2342	2188	1016	1057	1060	1052	951	808	661	539	460	1465	1440	1464			
May	1043	1202	1339	1446	1396	1220	980	728	530	2244	2457	956	1016	1064	1102	1056	950	822	692	599	1541	1700	1721			
Jun	924	1100	1286	1438	1446	1318	1095	843	646	2182	2569	875	963	1050	1121	1110	1028	900	762	656	1473	1713	1917			
Jul	972	1138	1298	1430	1409	1266	1038	791	597	2188	2502	902	988	1058	1115	1083	985	850	711	603	1513	1707	1829			
Aug	1200	1314	1385	1430	1314	1099	850	615	443	2248	2260	1000	1029	1035	1031	945	817	688	575	500	1505	1535	1597			
Sep	1550	1543	1472	1389	1147	858	601	407	318	2285	1885	1092	1077	1018	955	806	642	505	407	362	1453	1267	1328			
Oct	1816	1709	1476	1263	911	578	358	246	232	2196	1442	1132	1061	919	789	585	401	286	232	225	1320	911	991			
Nov	1863	1739	1422	1118	717	388	223	173	172	1987	1065	980	937	792	640	432	266	186	160	160	1024	608	663			
Dec	1808	1681	1339	1007	595	288	164	145	145	1832	886	803	742	601	467	309	198	154	146	146	793	461	483			
Year	1501	1504	1409	1309	1070	807	590	432	341	2166	1778	979	980	929	875	746	608	494	412	365	1288	1141	1212			

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.

** Derived according to DOE-2.1 LOADS Algorithms and MYEC cloud cover data.

*** South exposure tilt 45 degrees.

TABLE I:

Average Daily Solar Heat Gain Through Single Pane Glass on Vertical
and Horizontal Surfaces
(BTU/DAY.SQFT)

Month	Under Clear Sky*									Corrected For Cloud Cover**									N
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW			S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	
Jan	1616	1473	1168	888	522	249	140	127	127		831	764	620	488	310	179	128	121	121
Feb	1621	1502	1260	1038	693	393	218	165	162		810	770	670	574	417	276	190	160	158
Mar	1397	1383	1276	1164	900	614	384	248	219		842	867	826	772	635	484	357	277	257
Apr	1008	1135	1195	1212	1072	850	609	407	293		787	846	867	867	782	659	531	428	369
May	733	903	1076	1190	1154	1006	786	566	398		728	795	859	901	865	777	663	552	473
Jun	634	801	1016	1178	1193	1086	882	661	477		663	744	841	916	911	843	728	608	512
Jul	678	845	1038	1176	1168	1044	837	620	447		684	770	854	913	890	806	687	568	477
Aug	879	1023	1127	1182	1089	903	679	477	344		774	818	840	844	774	667	555	461	401
Sep	1221	1259	1216	1154	945	692	467	312	258		870	875	834	787	660	519	401	322	294
Oct	1523	1429	1235	1055	743	455	270	195	189		947	883	764	654	476	318	223	187	183
Nov	1601	1472	1190	932	575	297	166	141	140		834	792	662	531	347	208	144	131	130
Dec	1566	1434	1121	833	470	214	125	118	118		683	622	497	383	247	155	123	119	119
Year	1204	1220	1159	1084	878	651	465	337	265		787	796	762	720	610	492	395	329	292

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.

** Derived according to DOE-2.1 LOADS Algorithms and MYEC cloud cover data.

4.0 REFERENCES

- Bowen, W. M., S. Moreno and A. R. Olsen. 1982. Climate Selection and Development of Climate Indicators. PNL-4435. Pacific Northwest Laboratory, Richland, WA.
- Crow, Loren W. 1980. Development of Hourly Data for Weather Year for Energy Calculations (WYEC), Including Solar Data at 21 Stations Throughout the United States. ASHRAE Research Project 239. ASHRAE, New York.
- Crow, Loren W. 1981. "Development of Hourly Data for Weather Year for Energy Calculations (WYEC)." ASHRAE Journal, October, pp. 37-41. ASHRAE, Atlanta, GA.
- National Climatic Center. 1981a. "Annual Degree Days to Selected Bases." Supplement to Climatology of the United States, No. 81. National Climatic Center, Asheville, NC.
- National Climatic Center. 1981b. Typical Meteorological Year User's Manual, TD-9734, Hourly Solar Radiation - Surface Meteorological Observations. National Climatic Center, Asheville, NC.
- National Climatic Center. 1976. "Test Reference Year," Tape Reference Manual, TD-9706. National Climatic Center, Asheville, NC.
- SOLMET. 1981. Volume I, User's Manual. Volume II, Rehabilitation of Hourly Solar Radiation Data. National Climatic Center, Asheville, NC.
- York, Don A. and Charlene C. Cappiello. 1981. DOE-2 Engineer's Manual (Version 2.1A). Lawrence Berkeley Laboratory Report No. LBL-11353 and Los Alamos National Laboratory Report No. LA-8520-M.

APPENDIX A

COMPUTATION PROCEDURES USED FOR WEATHER SUMMARIES

APPENDIX A

COMPUTATION PROCEDURES USED FOR WEATHER SUMMARIES

The basic computational procedures used to obtain weather summaries are the same as those associated with the DOE-2.1A computer program, which is capable of rapid and detailed analysis of energy consumption in buildings (York and Capiello 1981). To perform its hourly simulation, DOE-2 needs hourly weather information. A weather processor package prepares the information from a variety of weather data sources, in particular TRY and WYEC tapes. The algorithms described in this section are developed from the weather processor program and the LOADS simulation portion of DOE-2. Therefore, any simplified energy calculations completed using the weather data in this report are based on the same original hourly TRY or WYEC data processed by DOE-2. Moreover, except for the summary tabulations the algorithms are identical. Volume V contains listings of computer programs used in the computations.

DATA SUMMARY PROCEDURES

Procedures used for performing the tabulations for most tables are straightforward. A primary assumption for the tabulations is that no data is missing for any hour during the year. To meet this requirement a procedure for filling in missing data values was implemented. It is described subsequently. Weather parameters assumed to be available are DBT, dry bulb temperature (°F); WBT, wet bulb temperature (°F); DTP, dew point; PATM, atmospheric pressure (in. Hg); WINDSP, wind speed (knots); TCA, total cloud amount (tenths); ICA, cloud amount in layer 1, 2, 3 or 4; ICT, cloud type in layer 1, 2, 3 or 4; and RAOBS, observed total solar radiation on horizontal surface (WYEC only). All other parameters are derived from these, and in the case of solar radiation, the location's latitude and time zone.

The summaries given in Section 3 are usually self-explanatory. The table numbers A through I refer to tables produced for each city in Section 3. In Table A a count of the hourly dry bulb temperatures occurring in 5°F temperature ranges and at specific times of the day is given for each month.

For all hours that occur in a specific DBT bin, the average of the corresponding wet bulb temperature is computed, giving the Mean Coincident Wet Bulb Temperature (MCWB). Table B is tabulated in the same manner except on an annual basis. The monthly and annual averages in Table C are computed in the obvious way.

Heating (cooling) degree hours (Tables D and E) are the summation of each degree the hourly DBT temperature is below (above) a selected base temperature. They may be related to heating and cooling degree days by dividing by 24. Heating (cooling) humidity ratio hours (Table F) are the summation of hourly differences between ambient humidity ratios (lbs moisture/lb dry air) and the balance point humidity ratio base, when both the hourly dry bulb temperature and the ambient humidity ratio are below (above) their respective base. These summations are completed for all hours in the time bin under consideration.

The values in Tables G, H and I are monthly averages of selected solar radiation parameters. An exception is percent possible sunshine which is the long term normal values available in Local Climatological Data Annual Summaries, NOAA.

FILL-IN PROCEDURES FOR MISSING DATA

When missing data occurs for any hour or any weather parameter, it is filled in by using neighboring values. For continuous parameters, such as DBT, WBT, PATM, DPT and WINDSP, a linear interpolation from the previously available value to the next available value is used. Discrete parameters, TCA, ICA and ICT are assigned the previous available value. WBT is always forced to be less than or equal to DBT. RADSOL is not filled in, but assumed to be zero when missing values occur.

The TRY and WYEC locations contained in this report have minimal missing data for the continuous parameters. Many locations have no missing values. Cloud cover information is missing virtually every day. Typically, cloud cover information is recorded every three hours during daylight hours. Consequently, two-thirds or more of the 8760 hours are missing. Cloud cover information is used only for cloud corrected solar radiation calculations so that nighttime missing data is irrelevant. The adequacy of the cloud cover

data may severely limit the usefulness of the cloud corrected solar radiation summaries. It is the best currently available.

HUMIDITY CALCULATIONS

Humidity ratio (lbs moisture/lb dry air) is calculated as

$$\text{HUMRAT} = 0.622 \frac{\text{PPWV}}{\text{PATM} - \text{PPWV}}$$

where PATM is atmospheric pressure (in. Hg) and PPWV is the partial pressure of water vapor (in. Hg). The constant 0.622 is the ratio of the molecular weight of water vapor (18.01531) to the molecular weight of dry air (28.9645). The specific algorithm for calculating PPWV and percent relative humidity are given in Volume V.

SOLAR RADIATION CALCULATIONS

Hourly solar radiation for any location can be calculated using an empirical algorithm based on the time of the year, the latitude and time zone of the location and cloud cover weather data. This is the approach used in obtaining the solar radiation summaries in Tables G, H and I. The algorithm is the same as that used by the LOADS simulation portion of DOE-2.1A and described in its Engineering Manual. For WYEC weather data, observed total solar radiation on a horizontal surface is available. An alternative in this case, not used in this report, is to divide the observed radiation into direct and diffuse components using an empirical model.

The primary calculation is direct normal solar radiation (that is, beam radiation on a surface perpendicular to the incoming radiation). Clear (cloudless) sky conditions are assumed. All remaining calculations are based on this computation. An overview of the relationships of the other radiation parameters is given in Figure A.1. Two parallel computations are completed. Solar radiation under cloudless conditions for horizontal (B) and vertical (E) surfaces and solar heat gain for glass (G) are completed. This requires no input data from TRY or WYEC weather tapes. A similar sequence (C, D, E, G) is followed when hourly cloud cover information is added. In the latter case

cloud cover correction factors are applied to cloudless direct normal and horizontal surface radiation values. These "corrected" values are then used in the same vertical surface (E) and solar heat gain for glass (G) algorithms used for cloudless condition.

The solar radiation algorithms are empirically based. A key component of the algorithms is splitting total radiation on a surface into direct and diffuse radiation. In some cases the algorithm results in greater total radiation on a vertical surface under cloudy conditions than for cloudless conditions. This is a direct result of the empirical algorithm performing the split between diffuse and direct. For this reason, the solar data corrected for cloud cover should be used with this caveat in mind.

A detailed discussion of the solar radiation calculations is given in Volume V.

FIGURE A.1 Flow Diagram of Solar Radiation Algorithms

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