Weather Data for Simplified Energy Calculation Methods

Volume II.

Middle United States: TRY Data

August 1984

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WEATHER DATA FOR SIMPLIFIED
ENERGY CALCULATION METHODS

VOLUME II: MIDDLE UNITED STATES: TRY DATA

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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 Weather 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 (WVEC 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

ATLANTA, GEORGIA
WBAN 13874
TABLE A:

TRY Data (1975)

Latitude 33.70 N
Longitude 84.40 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															
75 to 79	0	0	0	0	4	0	0	0	4	63.0	744	22990	0	0	
70 to 74	0	0	0	1	6	9	0	0	16	62.1	730	19291	14	21	
65 to 69	0	0	0	6	7	5	3	0	21	59.9	719	15665	25	115	
60 to 64	5	0	3	10	7	8	10	9	52	56.7	689	12139	55	309	
55 to 59	8	14	13	8	15	16	5	4	83	51.5	622	8852	122	742	
50 to 54	14	9	9	14	21	19	14	12	112	47.7	516	5969	228	1579	
45 to 49	17	12	8	19	14	16	25	22	133	42.5	419	3634	325	2964	
40 to 44	9	19	21	18	9	9	21	14	120	39.1	252	1934	492	4984	
35 to 39	24	15	20	10	8	9	6	19	111	32.8	156	909	588	7679	
30 to 34	7	16	9	3	2	2	5	5	49	29.0	73	370	671	10860	
25 to 29	6	4	5	3	0	0	4	5	27	25.0	31	121	713	14331	
20 to 24	3	2	3	1	0	0	0	3	12	19.4	11	30	733	17960	
15 to 19	0	2	2	0	0	0	0	0	4	16.8	0	0	744	21650	
Feb															
70 to 74	0	0	0	0	4	1	0	0	5	63.6	672	17173	0	0	
65 to 69	0	0	0	2	9	14	4	0	29	61.1	661	13831	11	18	
60 to 64	6	3	3	15	17	16	11	5	76	55.7	616	10620	56	167	
55 to 59	11	9	7	11	13	12	7	16	86	52.0	530	7757	142	664	
50 to 54	7	11	12	11	12	11	12	1	77	46.6	453	5324	219	1591	
45 to 49	8	7	5	11	14	15	21	18	99	42.5	368	3276	304	2903	
40 to 44	14	11	21	15	9	8	9	20	107	38.7	258	1729	414	4716	
35 to 39	21	22	16	11	1	4	13	14	102	33.9	148	706	524	7053	
30 to 34	11	15	12	6	5	3	5	5	62	31.1	40	215	632	9922	
25 to 29	4	0	6	2	0	0	2	5	19	24.7	21	63	651	13130	
20 to 24	2	6	2	0	0	0	0	0	10	21.7	3	3	669	16430	
Mar															
75 to 79	0	0	0	0	3	7	0	0	10	61.9	743	20604	1	1	
70 to 74	1	0	0	1	10	7	6	2	27	62.0	728	16926	16	43	
65 to 69	4	5	2	8	8	17	8	4	56	58.9	689	13386	55	223	
60 to 64	9	3	9	13	20	13	11	7	85	54.5	628	10092	116	649	
55 to 59	10	11	7	14	14	17	17	13	103	51.1	525	7200	219	1477	
50 to 54	12	11	7	19	9	3	15	18	94	46.1	427	4826	317	2823	
45 to 49	19	18	23	13	12	15	15	20	135	42.8	333	2916	411	4633	
40 to 44	12	12	14	8	6	8	7	8	75	37.0	203	1628	541	7065	
35 to 39	9	9	13	10	11	5	8	12	77	32.2	136	785	608	9942	
30 to 34	7	10	6	6	0	1	5	3	38	27.9	61	322	683	13199	
25 to 29	6	11	9	1	0	0	1	6	34	23.3	32	82	712	16679	
20 to 24	4	3	3	0	0	0	0	0	10	19.7	4	6	740	20323	

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

ATLANTA, GEORGIA
WBAN 13874
TABLE A:

TRY Data (1975)

Latitude 33.70 N
Longitude 84.40 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Second 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*	
	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	9	6	0	0	17	67.7	720	16607	0	0	
75 to 79	0	0	0	5	16	20	4	0	45	63.9	688	13076	32	69	
70 to 74	0	0	6	18	13	14	13	2	66	61.8	634	9756	86	349	
65 to 69	13	11	10	16	22	20	16	19	127	58.7	543	6777	177	970	
60 to 64	12	8	14	14	15	14	20	11	108	55.0	415	4381	305	2174	
55 to 59	18	15	12	20	7	10	20	25	127	50.3	299	2564	421	3957	
50 to 54	18	17	18	7	5	0	10	16	91	45.4	202	1327	518	6320	
45 to 49	13	15	13	4	3	6	5	11	70	42.0	105	568	615	9161	
40 to 44	10	13	7	3	0	0	2	5	40	35.7	54	193	666	12386	
35 to 39	6	10	9	1	0	0	0	1	27	31.2	15	25	705	15818	
30 to 34	0	1	1	0	0	0	0	0	2	29.0	0	0	720	19393	
May															
85 to 89	0	0	0	4	12	11	0	0	27	70.9	741	12760	3	3	
80 to 84	0	0	3	17	21	19	7	0	67	69.4	693	9156	51	119	
75 to 79	1	0	9	21	29	33	19	3	115	66.4	602	5883	142	566	
70 to 74	16	9	19	30	17	21	37	23	172	65.9	480	3146	264	1549	
65 to 69	32	31	33	17	11	6	23	41	194	63.4	297	1212	447	3335	
60 to 64	37	40	24	4	3	3	7	22	140	60.5	87	266	657	6109	
55 to 59	5	7	5	0	0	0	0	4	21	54.6	17	57	727	9620	
50 to 54	2	6	0	0	0	0	0	0	8	50.0	5	4	739	13287	
Jun															
90 to 94	0	0	0	0	1	2	0	0	3	72.7	720	13363	0	0	
85 to 89	0	0	0	5	22	12	2	0	41	72.5	715	9772	5	9	
80 to 84	0	0	2	34	50	54	9	0	149	69.8	631	6363	89	200	
75 to 79	2	0	17	40	15	13	36	6	129	69.3	478	3613	242	1050	
70 to 74	17	14	42	11	2	7	28	43	164	67.4	340	1552	380	2589	
65 to 69	59	53	28	0	0	2	15	41	198	64.6	139	301	581	4938	
60 to 64	12	22	1	0	0	0	0	0	35	60.1	13	14	707	8251	
55 to 59	0	1	0	0	0	0	0	0	1	57.0	0	0	720	11837	

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

ATLANTA, GEORGIA
WBAN 13874
TABLE A:

TRY Data (1975)

Latitude 33.70 N
Longitude 84.40 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															
85 to 89	0	0	0	1	20	11	0	0	32	73.8	744	9463	0	0	
80 to 84	0	0	0	31	52	54	12	0	149	73.2	666	5887	78	144	
75 to 79	3	0	16	40	18	16	39	14	146	71.9	506	2989	238	966	
70 to 74	59	46	65	21	3	10	33	57	294	69.9	321	854	423	2551	
65 to 69	31	47	12	0	0	2	9	22	123	67.0	23	34	721	5451	
Aug															
90 to 94	0	0	0	1	7	6	0	0	14	76.2	744	11813	0	0	
85 to 89	0	0	0	23	41	35	1	0	100	75.4	708	8156	36	63	
80 to 84	0	0	10	33	26	29	24	0	122	74.4	586	4929	158	556	
75 to 79	4	0	22	24	17	18	44	45	174	73.0	458	2296	286	1643	
70 to 74	73	66	52	12	2	5	22	44	276	70.7	247	503	497	3570	
65 to 69	16	27	9	0	0	0	2	4	58	68.3	4	2	740	6789	
Sep															
90 to 94	0	0	0	2	3	3	0	0	8	75.0	719	16848	1	1	
85 to 89	0	0	0	4	12	11	0	0	27	73.9	703	13285	17	38	
80 to 84	0	0	1	20	20	16	8	0	65	72.9	660	9852	60	205	
75 to 79	0	0	10	13	15	13	18	13	82	70.3	602	6716	118	669	
70 to 74	30	19	22	17	18	23	24	22	175	68.1	489	3968	231	1521	
65 to 69	20	27	19	18	12	12	12	19	139	64.8	292	2020	428	3173	
60 to 64	18	18	15	11	7	8	19	21	117	58.6	179	856	541	5609	
55 to 59	12	18	15	4	3	4	7	9	72	54.8	73	249	647	8602	
50 to 54	9	6	7	1	0	0	2	6	31	50.5	17	33	703	11986	
45 to 49	1	2	1	0	0	0	0	0	4	48.5	0	0	720	15553	

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

ATLANTA, GEORGIA
WBAN 13874
TABLE A:

TRY Data (1975)

Latitude 33.70 N
Longitude 84.40 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														
80 to 84	0	0	0	2	15	10	0	0	27	68.2	741	14903	3	3
75 to 79	0	0	0	9	21	19	1	0	50	66.6	701	11293	43	113
70 to 74	0	0	2	24	15	16	19	2	78	64.8	638	7938	106	478
65 to 69	17	13	20	20	25	21	22	25	163	63.1	533	4972	211	1232
60 to 64	27	25	25	17	7	15	17	26	159	58.7	359	2750	385	2730
55 to 59	24	20	14	12	7	8	22	22	129	53.7	212	1313	532	5013
50 to 54	11	18	18	9	3	4	8	8	79	48.4	99	568	645	7988
45 to 49	7	5	6	0	0	0	3	4	25	43.1	48	228	696	11368
40 to 44	6	7	6	0	0	0	1	6	26	40.0	21	51	723	14911
35 to 39	1	5	2	0	0	0	0	0	8	38.1	0	0	744	18580
Nov														
75 to 79	0	0	0	0	7	4	0	0	11	64.7	720	17269	0	0
70 to 74	0	0	0	12	27	21	2	0	62	64.2	688	13723	32	54
65 to 69	9	8	11	23	12	17	22	11	113	61.9	613	10454	107	385
60 to 64	14	11	10	9	11	13	10	19	97	56.6	487	7696	233	1227
55 to 59	10	10	9	10	4	7	18	12	80	51.3	413	5461	307	2592
50 to 54	16	11	10	7	9	7	11	14	85	45.3	328	3628	392	4359
45 to 49	5	12	9	8	11	5	3	4	57	40.9	247	2212	473	6543
40 to 44	7	3	13	14	6	11	7	6	67	37.0	190	1114	530	9045
35 to 39	19	12	11	7	3	5	16	20	93	33.7	112	350	608	11881
30 to 34	10	22	16	0	0	0	1	4	53	30.5	21	31	699	15162
25 to 29	0	1	1	0	0	0	0	0	2	27.5	1	1	719	18732
Dec														
70 to 74	0	0	0	0	1	0	0	0	1	61.0	744	22018	0	0
65 to 69	0	0	0	1	16	9	0	0	26	57.0	732	18310	12	12
60 to 64	2	3	1	6	9	13	5	1	40	53.3	708	14715	36	137
55 to 59	5	2	5	14	5	7	15	8	61	51.4	654	11299	90	441
50 to 54	10	13	8	11	8	7	7	13	77	46.8	587	8180	157	1042
45 to 49	13	8	9	11	15	15	10	9	90	42.8	512	5431	232	2013
40 to 44	19	20	20	16	22	19	22	20	158	37.7	381	3160	363	3462
35 to 39	14	10	15	19	11	15	18	16	118	32.6	236	1635	508	5657
30 to 34	11	19	16	8	3	4	10	16	87	27.9	129	729	615	8471
25 to 29	16	13	10	5	3	3	3	7	60	23.5	57	261	687	11723
20 to 24	0	2	6	2	0	1	2	0	13	19.9	16	90	728	15272
15 to 19	3	1	1	0	0	0	1	3	9	13.8	11	23	733	18925
10 to 14	0	2	2	0	0	0	0	0	4	12.0	0	0	744	22622

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

ATLANTA, GEORGIA
WBAN 13874
TABLE B:

TRY Data (1975)

Latitude 33.70 N
Longitude 84.40 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
90 to 94	0	0	0	3	11	11	0	0	25	0.0	0.0	0.0	75.0	75.5	75.5	0.0	0.0	75.4
85 to 89	0	0	0	37	107	80	3	0	227	0.0	0.0	0.0	74.9	73.9	73.5	73.7	0.0	73.9
80 to 84	0	0	16	139	193	188	60	0	596	0.0	0.0	73.4	72.6	71.2	71.3	72.7	0.0	71.8
75 to 79	10	0	74	152	145	143	161	81	766	71.7	0.0	71.5	69.8	67.6	67.6	70.7	72.2	69.6
70 to 74	196	154	208	147	118	134	184	195	1336	69.9	69.7	69.1	66.8	63.7	64.1	67.1	69.0	67.8
65 to 69	201	222	144	111	122	125	136	186	1247	64.9	65.7	64.8	61.3	58.2	59.0	63.0	64.6	63.2
60 to 64	142	133	105	99	96	103	110	121	909	59.9	60.1	59.2	56.1	52.6	52.4	56.7	59.3	57.4
55 to 59	103	107	87	93	68	81	111	113	763	54.1	55.3	54.4	50.1	48.2	48.1	51.0	52.9	52.0
50 to 54	99	102	89	79	67	51	79	88	654	48.6	49.2	49.3	45.3	43.9	43.5	45.1	46.9	46.8
45 to 49	83	79	74	66	69	72	82	88	613	43.1	43.9	44.2	40.9	41.2	41.9	42.1	42.0	42.5
40 to 44	77	85	102	74	52	55	69	79	593	37.8	38.7	39.0	37.6	37.7	36.4	37.4	37.9	38.0
35 to 39	94	83	86	58	34	38	61	82	536	32.8	33.2	33.1	33.2	32.4	32.8	33.2	33.1	33.0
30 to 34	46	85	60	23	10	10	26	33	291	29.7	29.9	30.0	28.0	28.3	28.3	27.6	28.5	29.2
25 to 29	32	29	31	11	3	3	10	23	142	24.3	23.9	24.5	22.8	22.3	21.7	23.5	24.0	23.9
20 to 24	9	13	14	3	0	1	2	3	45	19.9	20.8	20.7	19.0	0.0	18.0	17.0	19.0	20.1
15 to 19	3	3	3	0	0	0	1	3	13	13.0	15.3	15.7	0.0	0.0	0.0	16.0	14.3	14.7
10 to 14	0	2	2	0	0	0	0	0	4	0.0	12.0	12.0	0.0	0.0	0.0	0.0	0.0	12.0

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 MPH
Month	Ave	Max	Min	Daily Max	Ave Min		4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	46.6	77	18	56	38	42.3	80	73	57	69	72	0.0051	0.0052	0.0054	0.0053	0.0052	9.7
Feb	46.9	71	21	57	37	42.9	83	78	60	70	74	0.0052	0.0056	0.0058	0.0054	0.0055	10.4
Mar	49.8	78	20	61	40	44.2	76	68	53	61	66	0.0054	0.0056	0.0060	0.0057	0.0056	11.1
Apr	59.4	82	34	70	49	51.8	75	59	47	57	62	0.0070	0.0074	0.0073	0.0073	0.0072	9.2
May	70.4	89	51	79	62	64.3	89	71	59	71	75	0.0117	0.0124	0.0120	0.0121	0.0121	6.2
Jun	73.9	90	59	84	66	67.4	88	70	57	73	74	0.0128	0.0141	0.0138	0.0136	0.0135	7.6
Jul	74.8	87	65	83	69	70.6	95	80	66	83	83	0.0153	0.0160	0.0158	0.0157	0.0158	7.3
Aug	76.6	91	67	85	70	72.4	97	80	66	84	84	0.0161	0.0172	0.0168	0.0169	0.0168	6.7
Sep	69.1	93	49	77	62	64.7	91	77	69	81	81	0.0122	0.0130	0.0135	0.0130	0.0129	7.9
Oct	62.5	84	38	72	54	57.8	89	76	58	77	78	0.0093	0.0103	0.0099	0.0100	0.0098	8.1
Nov	53.5	77	27	64	45	48.3	80	71	54	70	70	0.0064	0.0070	0.0071	0.0070	0.0068	8.2
Dec	42.9	70	14	52	35	38.1	75	68	53	62	66	0.0041	0.0043	0.0044	0.0041	0.0042	9.4
Year	60.6	93	14	70	52	55.5	85	72	58	71	74	0.0092	0.0099	0.0098	0.0097	0.0096	8.5

ATLANTA, GEORGIA
WBAN 13074
TABLE D:

TRY Data (1975)

Latitude 33.70 N
Longitude 84.40 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		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 Hrs	Deg	Above Hrs	Deg		
94	0	411	0	0	334	0	0	286	0	0	295	0	0	1243	0	8760	2925	0
93	0	400	0	0	323	0	0	275	0	0	284	0	0	1210	0	8759	2837	1
92	0	390	0	0	312	0	1	264	0	0	273	0	0	1177	0	8758	2749	2
91	0	379	0	0	301	0	4	253	0	2	262	0	0	1144	0	8753	2662	7
90	0	368	0	1	290	0	9	242	0	7	251	0	0	1111	0	8742	2574	18
89	0	357	0	3	279	0	16	231	0	14	240	0	0	1079	0	8726	2487	34
88	0	346	0	5	268	0	25	221	0	20	229	0	0	1046	0	8708	2400	52
87	0	335	0	9	258	0	40	210	1	33	219	1	0	1013	0	8677	2313	83
86	0	324	0	16	247	0	68	200	1	53	208	1	0	980	0	8622	2226	138
85	0	313	0	30	236	0	101	189	2	77	198	2	2	947	0	8548	2140	212
84	0	302	0	47	225	1	137	180	3	104	188	3	5	914	0	8466	2055	294
83	1	291	0	69	215	1	169	170	5	137	178	4	10	881	0	8372	1971	388
82	2	280	0	94	205	2	204	161	7	177	169	5	19	849	0	8263	1888	497
81	6	269	0	120	195	3	247	153	9	216	160	7	32	816	0	8135	1806	625
80	12	258	0	158	185	5	290	144	12	259	151	10	51	783	0	7988	1725	772
79	20	247	0	197	176	6	328	136	15	292	143	12	76	750	0	7844	1646	916
78	31	237	1	230	167	9	355	129	18	317	135	16	103	717	0	7717	1568	1043
77	45	226	1	259	159	11	381	122	22	343	127	19	133	684	0	7585	1492	1175
76	58	216	1	285	151	14	410	115	26	369	120	22	166	652	0	7441	1417	1319
75	77	205	2	314	143	17	439	108	30	401	113	26	203	619	1	7258	1343	1502
74	105	195	3	351	135	20	470	102	35	432	106	30	242	587	2	7042	1271	1718
73	135	186	4	386	128	24	496	95	39	455	100	35	275	556	3	6825	1202	1935
72	173	176	6	412	121	28	518	90	45	486	93	40	306	525	5	6576	1135	2184
71	219	167	8	438	114	32	536	84	50	515	87	45	339	496	9	6301	1071	2459
70	270	159	10	465	108	37	559	78	55	541	82	50	382	468	14	5986	1009	2774
69	315	151	13	492	102	41	588	73	61	564	76	55	429	441	20	5653	951	3107
68	347	143	16	512	96	46	615	68	67	586	71	61	463	417	28	5370	896	3390
67	376	136	20	529	90	52	639	64	73	612	66	67	484	393	37	5125	843	3635
66	405	129	24	552	84	57	659	59	80	638	62	73	504	371	48	4905	793	3855
65	430	122	28	577	79	63	682	55	86	666	57	80	529	349	59	4683	745	4077
64	450	115	33	601	74	69	707	51	93	691	53	87	556	329	72	4455	700	4305
63	471	109	37	621	69	75	728	47	101	709	49	94	581	310	85	4264	656	4496
62	491	103	42	637	65	81	747	44	108	727	45	101	604	291	99	4103	614	4667
61	513	97	47	656	60	87	765	40	116	750	42	108	624	273	114	3930	574	4830
60	537	91	52	677	56	94	782	37	123	773	38	116	644	256	130	3744	536	5016
59	555	86	58	696	52	101	797	34	131	791	35	124	667	239	146	3576	499	5184
58	571	81	63	715	48	108	813	31	139	806	32	132	690	223	163	3422	464	5338
57	589	75	69	733	44	115	829	26	147	824	29	140	713	208	181	3273	431	5487
56	606	70	75	749	41	123	841	26	156	842	27	148	735	194	199	3131	399	5629
55	624	66	81	769	37	130	853	23	164	858	24	157	755	180	218	2976	368	5784
54	646	61	88	791	34	138	867	21	173	870	22	165	773	166	238	2820	339	5940
53	666	57	94	806	31	146	880	19	182	878	20	174	791	154	258	2692	312	6068
52	682	52	101	817	28	154	892	17	191	886	18	183	808	142	279	2572	285	6188
51	700	48	108	831	26	162	902	15	199	897	16	192	821	130	300	2446	260	6314
50	716	45	115	850	23	171	917	13	209	909	14	201	835	119	322	2309	236	6451
49	730	41	122	865	21	179	932	11	218	923	12	210	851	109	344	2184	214	6576

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

ATLANTA, GEORGIA
WBAN 13874
TABLE D:

TRY Data (1975)

Latitude 33.70 N
Longitude 84.40 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	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*
48	745	37	130	874	18	188	945	9	227	936	10	219	865	18	166	2312	99	367			2081	193	6679	1298				
47	762	34	137	880	16	197	960	8	237	950	9	229	880	16	175	2358	89	391			1967	172	6793	1363				
46	778	31	145	894	14	206	974	7	246	966	8	238	902	14	184	2422	80	414			1822	153	6938	1434				
45	790	27	153	915	12	215	989	6	256	980	6	248	920	12	193	2481	72	439			1683	136	7077	1504				
44	807	24	161	933	11	224	1002	5	266	995	5	258	938	10	202	2525	64	464			1557	120	7203	1575				
43	829	22	169	951	9	233	1015	4	276	1009	4	268	957	9	212	2572	57	490			1425	105	7335	1648				
42	855	19	177	968	8	243	1028	3	286	1019	4	278	968	8	222	2621	50	516			1300	91	7460	1722				
41	876	17	186	981	7	253	1035	2	297	1027	3	288	979	7	231	2670	44	542			1190	79	7570	1797				
40	891	15	195	994	5	263	1043	2	307	1037	2	299	990	5	241	2719	38	569			1085	67	7675	1873				
39	904	13	204	1006	4	273	1054	1	318	1050	2	309	1002	4	251	2774	32	596			968	57	7792	1951				
38	918	11	213	1018	4	283	1063	1	328	1060	1	320	1018	4	261	2828	28	624			854	48	7906	2029				
37	937	9	222	1028	3	293	1070	1	339	1065	1	330	1034	3	271	2877	23	653			748	40	8012	2109				
36	958	8	232	1039	2	303	1077	1	350	1072	1	341	1047	2	282	2928	19	682			637	33	8123	2189				
35	977	7	241	1052	2	314	1081	0	361	1078	0	352	1054	2	292	2978	16	711			538	27	8222	2271				
34	994	5	251	1060	1	324	1084	0	371	1085	0	363	1058	2	303	3025	13	742			453	22	8307	2354				
33	1011	5	261	1068	1	335	1088	0	382	1089	0	373	1064	1	314	3071	11	772			367	18	8393	2437				
32	1024	4	271	1074	1	346	1091	0	393	1090	0	384	1069	1	324	3105	9	803			305	15	8455	2522				
31	1033	3	282	1077	1	357	1091	0	404	1090	0	395	1074	1	335	3128	7	834			265	12	8495	2606				
30	1040	3	292	1080	1	367	1092	0	415	1091	0	406	1080	1	346	3152	6	866			224	10	8536	2691				
29	1048	2	302	1082	0	378	1092	0	426	1091	0	417	1084	0	357	3174	5	897			187	8	8573	2777				
28	1056	2	313	1083	0	389	1093	0	437	1092	0	428	1087	0	367	3191	4	929			156	6	8604	2863				
27	1063	1	324	1086	0	400	1094	0	448	1093	0	439	1090	0	378	3205	3	961			128	5	8632	2949				
26	1068	1	334	1089	0	411	1095	0	459	1093	0	450	1091	0	389	3221	2	993			101	3	8659	3036				
25	1073	1	345	1091	0	422	1095	0	470	1094	0	461	1091	0	400	3240	2	1025			75	3	8685	3122				
24	1079	1	356	1092	0	432	1095	0	481	1094	0	472	1092	0	411	3254	1	1058			53	2	8707	3209				
23	1084	0	366	1093	0	443	1095	0	492	1094	0	483	1092	0	422	3261	1	1090			39	1	8721	3296				
22	1086	0	377	1094	0	454	1095	0	502	1095	0	494	1092	0	433	3266	1	1123			32	1	8728	3384				
21	1087	0	388	1094	0	465	1095	0	513	1095	0	505	1093	0	444	3269	1	1156			26	1	8734	3471				
20	1089	0	399	1095	0	476	1095	0	524	1095	0	516	1094	0	455	3272	0	1189			20	1	8740	3558				
19	1090	0	410	1095	0	487	1095	0	535	1095	0	526	1094	0	466	3275	0	1221			15	0	8745	3646				
18	1091	0	421	1095	0	498	1095	0	546	1095	0	537	1095	0	477	3276	0	1254			12	0	8748	3733				
17	1092	0	432	1095	0	509	1095	0	557	1095	0	548	1095	0	488	3278	0	1287			9	0	8751	3821				
16	1093	0	443	1095	0	520	1095	0	568	1095	0	559	1095	0	498	3280	0	1320			6	0	8764	3908				
15	1093	0	454	1095	0	531	1095	0	579	1095	0	570	1095	0	509	3282	0	1352			5	0	8755	3996				
14	1094	0	465	1095	0	542	1095	0	590	1095	0	581	1095	0	520	3284	0	1385			2	0	8758	4083				
13	1095	0	476	1095	0	553	1095	0	601	1095	0	592	1095	0	531	3285	0	1418			0	0	8760	4171				

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

ATLANTA, GEORGIA

WBAH 13874

TABLE E:

TRY Data (1975)

Latitude 33.70 N

Longitude 84.40 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:	5770	5395	4961	4458	3947	3208	2353	1332	456	36	0
Annual Wet Bulb Cooling deg-hrs:	89888	72931	57199	42829	29920	18825	10030	3952	883	39	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	33	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	71	71	70	68	66	63	58	50	34	19	10	.001		
.002	0	0	0	0	0	0	0	0	0	0	0	63	63	62	61	60	57	53	46	32	17	9	.002		
.003	0	1	1	1	1	1	1	1	1	1	1	55	55	55	54	53	51	48	42	29	16	8	.003		
.004	1	1	2	2	3	3	3	3	3	3	3	48	48	48	48	47	46	43	38	27	15	8	.004		
.005	1	2	3	4	4	5	5	5	5	6	6	42	42	42	42	41	40	38	34	24	13	7	.005		
.006	1	2	4	5	6	7	8	8	8	8	8	36	36	36	36	36	35	34	30	21	12	6	.006		
.007	1	3	5	7	9	10	11	11	11	11	11	30	30	30	30	30	30	29	26	19	10	6	.007		
.008	1	3	6	9	11	13	14	14	15	15	15	25	25	25	25	25	25	24	22	16	9	5	.008		
.009	2	4	7	10	13	16	17	18	19	19	19	20	20	20	20	20	20	20	19	14	8	4	.009		
.010	2	4	8	12	15	18	21	22	23	23	23	16	16	16	16	16	16	16	15	11	6	3	.010		
.011	2	5	9	14	18	21	24	26	27	28	28	12	12	12	12	12	12	12	12	9	5	3	.011		
.012	2	5	10	15	20	24	28	31	32	33	33	9	9	9	9	9	9	9	9	7	4	2	.012		
.013	2	6	11	17	22	27	32	35	38	39	39	6	6	6	6	6	6	6	6	5	3	2	.013		
.014	3	6	12	18	24	30	35	40	43	45	46	4	4	4	4	4	4	4	4	3	2	1	.014		
.015	3	7	13	20	27	33	39	45	49	51	52	2	2	2	2	2	2	2	2	2	1	1	.015		
.016	3	7	14	22	29	36	43	49	55	58	59	1	1	1	1	1	1	1	1	1	0	0	.016		
.017	3	8	15	23	31	39	46	54	60	65	67	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	3	8	16	25	33	42	50	58	66	72	75	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	48	57	50	61	56	69	48	52	36	35	38	52
VERTICAL													
NORTH	100	100	100	98	95	90	96	96	100	100	100	100	97
WEST	51	60	71	65	73	73	81	66	67	52	50	51	66
SOUTH	34	48	64	69	87	90	92	73	66	40	32	32	60
EAST	51	62	69	67	77	68	83	62	65	50	48	52	66
% Possible Sun	48	54	57	66	68	67	62	65	63	68	59	50	61

FOOTNOTES: * Corrected For Cloud Cover.

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

ATLANTA, GEORGIA
 MBAN 13874
 TABLE H:

TRY Data (1975)

Latitude 33.70 N
 Longitude 84.40 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/ 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	1871	1750	1436	1148	748	417	237	184	184	2055	1158	901	849	716	593	417	271	193	169	168	954	603	718
Feb	1828	1709	1468	1253	897	557	336	229	223	2225	1459	850	805	711	623	480	351	271	234	230	963	729	969
Mar	1559	1535	1452	1363	1111	813	551	358	286	2291	1852	961	950	896	837	713	584	480	409	381	1179	1064	1304
Apr	1146	1254	1324	1362	1246	1039	787	553	386	2197	2193	974	1004	1016	1015	936	820	691	576	498	1445	1489	1686
May	851	1034	1208	1350	1343	1223	997	756	547	2060	2404	840	898	951	996	974	910	808	705	632	1299	1507	1854
Jun	742	936	1145	1327	1371	1292	1095	860	656	1983	2482	813	911	1017	1112	1130	1079	965	833	722	1372	1676	1914
Jul	789	975	1168	1329	1355	1256	1053	819	611	1999	2431	812	855	904	947	942	892	813	726	661	1212	1433	1812
Aug	1009	1147	1257	1332	1267	1100	866	638	458	2095	2245	890	977	1030	1063	1010	901	758	620	517	1416	1530	1709
Sep	1377	1393	1364	1320	1126	873	628	430	333	2198	1943	940	953	932	901	794	665	547	452	405	1258	1201	1422
Oct	1705	1622	1445	1274	962	651	418	280	255	2198	1571	1087	1047	946	845	663	485	355	277	263	1314	999	1200
Nov	1825	1704	1413	1149	766	449	258	200	198	2068	1233	1002	949	806	673	473	309	212	183	182	1095	703	883
Dec	1844	1722	1393	1094	685	373	206	175	174	1977	1073	936	874	720	577	386	248	176	161	160	980	595	674
Year	1376	1397	1339	1275	1074	838	621	458	360	2111	1839	918	923	888	849	744	627	524	447	403	1208	1129	1345

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
 ** Derived according to DOE-2.1 LOADS Algorithms and TRY cloud cover data.
 *** South exposure tilt 45 degrees.
 **** Cinquemani, V., J. R. Owenby, Jr. and R. G. Baldwin. 1978. Input Data for Solar Systems. NCC, Ashville, NC.

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	1603	1474	1199	954	601	316	175	150	149	762	708	595	491	337	212	150	137	137
Feb	1532	1423	1223	1042	728	436	250	184	181	704	664	587	512	389	280	214	189	187
Mar	1226	1251	1199	1132	914	652	422	272	232	772	774	733	687	582	472	383	327	310
Apr	821	974	1076	1128	1031	846	623	421	303	749	799	826	833	767	667	555	458	401
May	579	758	963	1110	1115	1007	806	590	408	652	708	769	813	798	742	655	568	503
Jun	505	665	898	1083	1134	1066	884	675	481	629	705	817	911	930	887	785	668	565
Jul	539	705	923	1089	1120	1036	850	641	453	639	678	730	772	770	729	660	586	530
Aug	710	873	1013	1101	1048	900	694	494	354	677	772	839	877	834	737	611	492	412
Sep	1051	1122	1124	1100	932	707	490	328	270	737	772	765	744	653	541	438	359	329
Oct	1405	1345	1201	1064	792	516	315	219	208	894	866	784	703	545	389	276	221	214
Nov	1559	1431	1179	954	622	342	194	162	161	848	792	671	557	384	240	166	149	148
Dec	1587	1455	1164	905	551	277	157	142	142	796	733	598	474	311	192	139	131	130
Year	1091	1121	1096	1055	883	676	490	357	279	738	748	727	699	609	508	420	358	323

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

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BIRMINGHAM, ALABAMA
WBAN 13876
TABLE A:

TRY Data (1965)

Latitude 33.60 N
Longitude 86.90 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															
70 to 74	0	0	0	1	8	1	0	0	10	62.1	744	20081	0	0	
65 to 69	0	0	1	10	13	13	4	0	41	59.2	720	16403	24	42	
60 to 64	11	12	11	14	14	13	15	12	102	57.2	658	12923	86	282	
55 to 59	18	9	9	9	13	14	5	16	93	52.3	548	9895	196	974	
50 to 54	0	5	5	15	12	10	6	3	56	45.8	477	7357	267	2156	
45 to 49	11	9	11	10	8	12	12	6	79	41.9	414	5126	330	3645	
40 to 44	12	11	15	16	10	13	16	18	111	38.4	313	3285	431	5524	
35 to 39	13	10	15	7	3	5	14	15	82	34.4	217	1980	527	7939	
30 to 34	13	19	11	2	1	4	9	11	70	29.8	148	1085	596	10764	
25 to 29	7	8	4	0	8	5	8	6	46	23.8	87	533	657	13932	
20 to 24	2	3	5	6	3	3	3	2	27	20.2	39	229	705	17348	
15 to 19	5	2	0	3	0	0	1	4	15	15.5	21	81	723	20920	
10 to 14	1	5	5	0	0	0	0	0	11	10.8	8	13	736	24572	
5 to 9	0	0	1	0	0	0	0	0	1	8.0	0	0	744	28279	
Feb															
75 to 79	0	0	0	0	3	1	0	0	4	66.3	672	21780	0	0	
70 to 74	0	0	0	2	6	5	1	0	14	64.4	666	18434	6	14	
65 to 69	0	0	2	5	6	5	8	4	30	60.2	645	15152	27	92	
60 to 64	9	9	8	13	16	16	8	5	84	57.4	587	12035	85	335	
55 to 59	9	7	5	11	8	9	4	7	60	50.3	519	9289	153	949	
50 to 54	4	2	6	9	10	15	13	15	74	44.7	455	6859	217	1879	
45 to 49	8	11	11	17	17	8	10	1	83	41.8	384	4777	288	3157	
40 to 44	3	4	9	10	11	14	11	11	73	38.1	291	3097	381	4837	
35 to 39	10	3	11	7	1	4	15	12	63	33.0	227	1817	445	6917	
30 to 34	18	25	15	4	5	5	8	17	97	28.8	155	856	517	9316	
25 to 29	11	7	7	2	1	2	4	7	41	24.1	72	339	600	12159	
20 to 24	9	11	5	4	0	0	2	5	36	20.9	26	83	646	15263	
15 to 19	3	5	5	0	0	0	0	0	13	16.2	6	9	666	18549	
Mar															
80 to 84	0	0	0	0	1	0	0	0	1	68.0	744	24206	0	0	
75 to 79	0	0	0	3	9	4	0	0	16	65.9	739	20493	5	7	
70 to 74	0	0	2	8	3	8	8	1	30	64.8	716	16838	28	72	
65 to 69	11	6	8	4	8	4	5	12	58	62.1	678	13347	66	301	
60 to 64	6	8	8	14	22	21	8	6	93	56.9	605	10130	139	804	
55 to 59	13	13	11	18	14	15	10	7	101	52.2	512	7330	232	1724	
50 to 54	9	7	10	13	7	11	18	13	88	47.4	402	5049	342	3163	
45 to 49	7	8	12	7	12	11	16	12	85	43.3	324	3224	420	5058	
40 to 44	11	10	13	9	5	7	10	14	77	38.3	251	1813	493	7367	
35 to 39	13	16	11	11	9	5	7	10	82	34.0	152	797	592	10071	
30 to 34	15	16	13	6	5	7	9	14	85	30.1	66	222	678	13216	
25 to 29	5	8	4	0	0	0	2	2	19	25.4	15	60	729	16774	
20 to 24	3	2	1	0	0	0	0	2	8	20.4	4	8	740	20442	
15 to 19	0	1	0	0	0	0	0	0	1	18.0	0	0	744	24154	

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

BIRMINGHAM, ALABAMA
 MBAN 13876
 TABLE A:

TRY Data (1965)

Latitude 33.60 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 ^a		COOLING ^a	
	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	3	0	0	8	69.3	720	16218	0	0	
80 to 84	0	0	0	10	23	17	0	0	50	68.3	696	12660	24	42	
75 to 79	0	0	2	17	19	21	12	2	73	65.1	635	9326	85	308	
70 to 74	10	3	12	20	20	24	13	15	117	64.5	548	6346	172	928	
65 to 69	16	18	26	19	11	12	26	13	141	61.8	413	3928	307	2110	
60 to 64	22	19	18	12	7	10	13	27	128	58.3	286	2196	434	3978	
55 to 59	9	16	19	6	1	0	15	8	74	53.5	168	1120	552	6502	
50 to 54	15	10	7	5	4	3	10	18	72	49.4	96	453	624	9435	
45 to 49	10	15	6	1	0	0	1	6	39	45.7	36	132	684	12714	
40 to 44	8	8	0	0	0	0	0	1	17	41.2	13	21	707	16203	
35 to 39	0	1	0	0	0	0	0	0	1	38.0	0	0	720	19782	
May															
90 to 94	0	0	0	0	1	0	0	0	1	73.0	744	15191	0	0	
85 to 89	0	0	0	12	29	19	0	0	60	69.8	730	11488	14	17	
80 to 84	0	0	6	45	50	45	6	2	154	67.5	616	8052	128	301	
75 to 79	3	0	28	32	8	23	18	6	118	66.3	485	5324	259	1293	
70 to 74	15	17	32	3	5	6	32	15	125	66.1	369	3204	375	2893	
65 to 69	20	21	22	1	0	0	24	26	114	63.3	230	1691	514	5100	
60 to 64	23	15	4	0	0	0	13	27	82	59.3	139	789	605	7918	
55 to 59	16	18	1	0	0	0	0	13	48	55.5	65	292	679	11141	
50 to 54	13	16	0	0	0	0	0	4	33	51.0	23	66	721	14635	
45 to 49	3	6	0	0	0	0	0	0	9	46.6	3	6	741	18295	
Jun															
90 to 94	0	0	0	0	9	5	0	0	14	73.2	720	12883	0	0	
85 to 89	0	0	0	15	21	13	1	0	50	72.2	689	9349	31	66	
80 to 84	0	0	13	40	36	36	7	0	132	71.4	608	6056	112	373	
75 to 79	1	0	32	24	17	21	39	8	142	69.8	470	3360	250	1277	
70 to 74	47	39	38	10	5	12	25	49	225	68.6	315	1385	405	2902	
65 to 69	25	30	7	1	2	2	14	23	104	65.0	103	409	617	5526	
60 to 64	9	16	0	0	0	1	4	9	39	60.7	30	101	690	8818	
55 to 59	8	5	0	0	0	0	0	1	14	55.4	8	14	712	12331	

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

BIRMINGHAM, ALABAMA
WBAN 13876
TABLE A:

TRY Data (1965)

Latitude 33.60 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*	
	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	1	6	2	0	0	9	77.4	744	11944	0	0	
85 to 89	0	0	0	25	55	29	0	0	109	76.0	717	8264	27	40	
80 to 84	0	0	15	58	17	33	12	3	138	74.3	568	5035	176	531	
75 to 79	6	0	49	9	6	13	44	19	146	72.7	441	2533	303	1749	
70 to 74	52	53	27	0	9	16	34	56	247	70.3	256	739	488	3675	
65 to 69	31	34	2	0	0	0	3	13	83	66.5	38	108	706	6764	
60 to 64	4	5	0	0	0	0	0	2	11	61.0	7	13	737	10389	
55 to 59	0	1	0	0	0	0	0	0	1	58.0	0	0	744	14096	
Aug															
90 to 94	0	0	0	3	15	2	0	0	20	77.0	742	11519	2	1	
85 to 89	0	0	1	29	43	28	3	0	104	75.3	699	7886	45	88	
80 to 84	0	0	20	45	25	43	13	0	146	73.8	556	4715	188	637	
75 to 79	12	7	41	13	8	16	42	29	168	72.9	423	2276	321	1918	
70 to 74	54	55	28	3	2	4	34	49	229	70.3	215	634	529	3996	
65 to 69	23	23	3	0	0	0	1	15	65	65.8	38	85	706	7167	
60 to 64	4	8	0	0	0	0	0	0	12	61.9	4	4	740	10806	
Sep															
85 to 89	0	0	0	12	29	13	0	0	54	74.7	709	10430	11	8	
80 to 84	0	0	6	34	29	30	3	0	102	73.7	632	7064	88	242	
75 to 79	10	9	22	24	19	21	24	17	146	71.7	510	4183	210	961	
70 to 74	30	20	37	12	7	17	37	30	190	68.9	344	2042	376	2420	
65 to 69	33	38	19	7	6	8	17	35	163	64.4	163	790	557	4768	
60 to 64	10	16	2	1	0	0	5	2	36	59.9	40	346	680	7924	
55 to 59	1	1	1	0	0	1	1	2	7	53.3	25	188	695	11366	
50 to 54	1	3	2	0	0	0	3	1	10	49.5	18	77	702	14855	
45 to 49	5	1	1	0	0	0	0	3	10	46.5	7	12	713	18390	
40 to 44	0	2	0	0	0	0	0	0	2	43.0	0	0	720	21978	

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

BIRMINGHAM, ALABAMA

WBAN 13876

TABLE A:

TRY Data (1965)

Latitude 33.60 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	10-12	13-15	16-18	19-21	22-24	hours below			degree hours	hours above	degree hours	
Oct															
80 to 84	0	0	0	4	15	3	0	0	22	67.5	742	16944	2	1	
75 to 79	0	0	0	15	19	11	0	0	45	63.4	709	13320	35	97	
70 to 74	3	3	7	22	27	21	2	2	87	62.5	650	9911	94	408	
65 to 69	4	0	11	22	19	25	12	8	101	59.3	556	6897	188	1114	
60 to 64	17	15	30	18	4	17	35	20	156	58.2	424	4416	320	2353	
55 to 59	19	16	15	8	9	5	15	20	107	53.0	285	2679	459	4336	
50 to 54	13	22	12	4	0	8	11	19	89	48.9	191	1493	553	6870	
45 to 49	20	12	10	0	0	3	9	12	66	44.2	112	754	632	9851	
40 to 44	5	7	4	0	0	0	5	5	26	40.1	63	345	681	13162	
35 to 39	8	9	3	0	0	0	4	6	30	35.5	35	104	709	16641	
30 to 34	4	9	1	0	0	0	0	1	15	32.2	4	7	740	20264	
Nov															
75 to 79	0	0	0	1	10	1	0	0	12	63.8	720	16268	0	0	
70 to 74	2	0	0	13	18	12	5	2	52	60.6	694	12719	26	51	
65 to 69	2	0	4	16	16	15	8	6	67	58.8	636	9394	84	326	
60 to 64	10	4	13	27	18	19	7	9	107	57.2	549	6418	171	950	
55 to 59	25	32	33	18	19	20	19	20	186	53.5	389	3986	331	2118	
50 to 54	14	20	16	8	3	11	18	13	103	48.2	255	2439	465	4171	
45 to 49	10	7	9	2	3	5	16	15	67	43.3	161	1406	559	6738	
40 to 44	7	6	3	4	3	4	7	11	45	38.4	105	745	615	9677	
35 to 39	8	6	7	1	0	3	6	6	37	34.7	62	323	658	12855	
30 to 34	9	12	3	0	0	0	3	3	30	31.0	20	98	700	16230	
25 to 29	3	0	1	0	0	0	1	5	10	25.5	8	27	712	19759	
20 to 24	0	3	1	0	0	0	0	0	4	21.8	2	2	718	23334	
Dec															
70 to 74	0	0	0	1	6	2	0	0	9	60.9	742	19788	2	1	
65 to 69	0	0	0	3	12	5	0	0	20	55.1	735	16104	9	37	
60 to 64	1	0	0	11	13	10	8	6	49	53.1	700	12508	44	161	
55 to 59	11	7	7	21	22	13	9	7	97	49.8	621	9168	123	541	
50 to 54	7	12	17	27	25	22	11	16	137	46.7	509	6295	235	1388	
45 to 49	15	13	14	18	13	18	12	3	106	42.0	384	4065	360	2878	
40 to 44	9	17	19	9	2	20	19	17	112	38.7	286	2384	458	4917	
35 to 39	11	3	11	3	0	2	24	16	70	34.1	181	1247	563	7500	
30 to 34	24	14	13	0	0	1	9	23	84	30.0	115	486	629	10459	
25 to 29	10	19	9	0	0	0	1	5	44	26.2	42	116	702	13809	
20 to 24	5	7	2	0	0	0	0	0	14	22.5	7	11	737	17424	
15 to 19	0	1	1	0	0	0	0	0	2	19.0	0	0	744	21133	

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

BIRMINGHAM, ALABAMA
 MBAN 13876
 TABLE B:

TRY Data (1965)

Latitude 33.60 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
90 to 94	0	0	0	4	31	9	0	0	44	0.0	0.0	0.0	77.8	75.9	74.4	0.0	0.0	75.8
85 to 89	0	0	1	93	182	105	4	0	385	0.0	0.0	79.0	75.4	73.7	73.3	74.8	0.0	74.0
80 to 84	0	0	60	236	196	207	41	5	745	0.0	0.0	73.8	72.2	70.4	70.9	73.4	73.8	71.6
75 to 79	32	16	174	138	118	132	179	81	870	72.6	73.3	71.3	68.3	66.7	68.1	71.2	72.0	69.8
70 to 74	213	190	183	95	116	128	191	219	1335	69.0	69.3	68.4	64.3	63.4	65.3	68.1	69.2	67.7
65 to 69	165	170	105	88	93	89	122	155	987	65.0	65.4	63.4	59.8	56.5	59.2	62.8	63.9	62.7
60 to 64	126	127	94	110	94	107	116	125	899	59.9	60.7	58.6	55.4	53.8	55.0	58.3	59.5	57.8
55 to 59	129	125	101	91	86	77	78	101	788	54.8	55.3	54.0	50.1	47.5	49.1	52.9	54.1	52.6
50 to 54	76	97	75	81	61	80	90	102	662	49.8	50.0	48.4	44.3	44.5	45.1	48.2	48.8	47.6
45 to 49	89	82	74	55	53	57	76	58	544	44.7	44.6	43.5	40.4	39.8	40.8	43.2	44.9	43.0
40 to 44	55	65	63	48	29	58	68	77	463	40.1	40.4	38.7	36.6	37.0	36.8	38.7	39.2	38.6
35 to 39	63	48	58	29	13	19	70	65	365	35.1	35.4	34.3	32.5	34.3	33.2	33.4	34.1	34.2
30 to 34	83	95	56	12	11	17	38	69	381	30.3	30.3	30.1	28.3	28.2	27.5	29.4	29.8	29.8
25 to 29	36	40	25	2	9	7	16	25	160	25.1	25.4	25.4	24.0	23.9	23.6	23.1	25.1	24.9
20 to 24	19	26	14	10	3	3	5	9	89	21.8	21.3	21.4	19.9	20.7	19.0	19.4	20.0	20.9
15 to 19	8	9	6	3	0	0	1	4	31	15.8	16.6	16.2	15.0	0.0	0.0	17.0	16.3	16.1
10 to 14	1	5	5	0	0	0	0	0	11	13.0	10.8	10.4	0.0	0.0	0.0	0.0	0.0	10.8
5 to 9	0	0	1	0	0	0	0	0	1	0.0	0.0	8.0	0.0	0.0	0.0	0.0	0.0	8.0

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Month	Dry Bulb Temperature (F)					Wet Bulb Ave	Percent Relative Humidity Average					Absolute 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	45.5	72	8	57	35	41.4	86	66	54	74	73	0.0054	0.0051	0.0051	0.0052	0.0052	8.3
Feb	45.1	76	15	56	34	40.5	81	66	53	68	69	0.0046	0.0051	0.0051	0.0050	0.0049	8.6
Mar	50.0	80	19	59	41	45.7	84	71	63	73	74	0.0060	0.0064	0.0064	0.0062	0.0063	9.1
Apr	65.0	87	38	76	54	59.0	89	70	53	75	74	0.0093	0.0104	0.0099	0.0099	0.0099	7.1
May	72.1	90	45	84	59	64.0	89	55	46	72	68	0.0104	0.0120	0.0111	0.0116	0.0113	5.4
Jun	74.6	92	55	84	66	68.5	89	68	60	80	76	0.0130	0.0144	0.0140	0.0143	0.0139	6.5
Jul	76.4	91	59	87	68	71.8	94	73	69	86	82	0.0147	0.0171	0.0168	0.0162	0.0162	5.1
Aug	77.0	93	61	87	69	71.9	93	71	65	86	80	0.0150	0.0169	0.0162	0.0166	0.0161	4.9
Sep	73.0	89	43	82	65	68.3	90	74	66	85	80	0.0132	0.0151	0.0150	0.0144	0.0143	7.5
Oct	59.7	83	30	72	48	54.3	91	61	52	82	74	0.0076	0.0086	0.0085	0.0086	0.0083	5.3
Nov	54.9	77	21	66	44	50.1	87	66	55	78	74	0.0068	0.0074	0.0071	0.0072	0.0071	4.3
Dec	45.9	73	19	58	35	41.2	85	61	50	75	71	0.0045	0.0048	0.0048	0.0050	0.0047	4.8
Year	61.7	93	8	72	52	56.5	88	67	57	78	75	0.0093	0.0103	0.0100	0.0100	0.0099	6.4

BIRMINGHAM, ALABAMA
WBAN 13876
TABLE D:

TRY Data (1965)

Latitude 33.60 N
Longitude 86.90 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				
94	0	376	0	0	292	0	0	257	0	0	289	0	0	365	0	0	1252	0	8760	2831	0	0	
93	0	365	0	0	281	0	0	1	246	0	0	278	0	0	354	0	0	1219	0	8759	2743	1	0
92	0	354	0	0	270	0	0	3	235	0	0	267	0	0	343	0	0	1186	0	8756	2656	4	0
91	0	343	0	0	259	0	0	9	224	0	2	256	0	0	332	0	0	1153	0	8748	2568	12	0
90	0	332	0	2	248	0	22	213	0	6	245	0	0	321	0	0	1121	0	8729	2481	31	0	
89	0	321	0	7	237	0	40	203	1	15	235	0	0	310	0	0	1088	0	8696	2394	64	1	
88	0	310	0	16	226	0	62	192	1	27	224	0	0	299	0	0	1055	0	8654	2307	106	2	
87	0	299	0	30	216	0	90	182	2	40	213	1	0	288	0	0	1022	0	8598	2221	162	3	
86	0	288	0	52	205	1	131	172	3	63	203	1	1	277	0	0	989	0	8512	2135	248	5	
85	1	278	0	80	195	1	184	163	4	96	193	2	3	266	0	0	956	0	8395	2050	365	8	
84	4	267	0	117	185	2	238	154	7	132	183	3	4	256	0	0	923	0	8264	1967	496	12	
83	9	256	0	163	173	4	289	146	9	170	173	5	8	245	0	0	891	0	8119	1885	641	18	
82	17	245	0	217	166	6	335	138	12	212	164	7	14	234	0	0	858	0	7964	1805	796	25	
81	30	234	0	266	158	8	369	131	16	257	156	9	23	223	0	0	825	0	7813	1726	947	34	
80	49	224	1	310	150	11	396	123	20	300	147	12	37	212	1	3	792	0	7663	1648	1097	44	
79	73	213	1	347	142	14	424	117	24	336	140	15	59	202	1	8	759	0	7513	1573	1247	56	
78	97	203	2	380	135	18	449	110	28	365	132	18	89	192	2	11	726	0	7366	1498	1394	69	
77	128	193	3	411	128	22	470	104	33	393	125	22	116	182	3	26	694	0	7214	1425	1546	83	
76	169	184	5	435	121	26	492	98	38	418	118	26	154	172	4	54	661	1	7037	1354	1723	100	
75	212	175	7	458	114	31	516	92	43	440	112	31	202	163	6	103	629	1	6827	1284	1933	118	
74	255	166	9	482	108	35	539	86	48	467	105	35	240	154	8	176	598	3	6599	1217	2161	138	
73	295	158	12	502	102	40	566	81	53	490	99	40	273	146	11	261	567	5	6371	1152	2389	161	
72	337	150	15	519	96	45	591	75	59	518	93	45	314	138	14	364	537	8	6115	1090	2645	186	
71	374	143	19	537	91	51	610	70	65	547	87	50	356	130	17	509	509	12	5825	1030	2935	214	
70	404	136	23	556	85	56	631	66	71	569	82	56	394	123	21	675	482	18	5530	973	3230	245	
69	430	129	27	573	80	62	649	61	78	587	77	62	431	116	25	811	456	26	5278	920	3482	279	
68	455	122	31	587	75	68	664	57	84	602	72	68	459	110	29	927	432	34	5065	868	3695	314	
67	476	116	36	606	70	74	680	53	91	619	67	74	485	104	34	1037	409	44	4855	818	3905	352	
66	495	110	41	628	65	80	700	48	98	639	62	80	507	98	39	1118	387	55	4672	771	4088	393	
65	513	104	46	646	60	86	724	45	105	660	58	86	527	92	44	1198	366	67	4491	725	4269	434	
64	531	98	51	663	56	93	746	41	112	681	54	93	545	86	50	1295	346	79	4296	681	4464	478	
63	547	93	56	683	52	99	768	38	120	703	50	100	563	81	55	1381	326	93	4114	639	4646	524	
62	565	87	62	709	48	106	787	35	128	722	46	107	588	76	61	1454	307	107	3934	599	4826	571	
61	585	82	68	735	44	114	805	32	136	741	42	115	616	71	67	1516	289	122	3760	560	5000	620	
60	606	77	74	755	41	121	822	29	144	764	39	122	642	66	73	1583	272	137	3587	523	5173	671	
59	629	73	80	772	37	129	843	26	152	784	36	130	659	62	80	1665	255	153	3407	488	5353	723	
58	652	68	86	790	34	136	865	24	161	799	33	138	676	57	87	1747	240	170	3229	455	5531	778	
57	676	64	93	813	31	144	881	21	170	818	30	146	694	53	93	1825	225	188	3050	424	5710	834	
56	697	60	100	833	28	153	895	19	178	832	27	154	711	49	100	1889	210	207	2902	394	5858	892	
55	711	56	107	848	26	161	909	17	187	844	24	162	725	46	108	1947	197	226	2775	366	5985	951	
54	727	52	114	863	24	170	923	16	197	860	22	171	739	42	115	2004	184	246	2643	339	6117	1012	
53	746	48	121	878	21	178	935	14	206	875	20	180	761	38	122	2060	171	266	2502	313	6258	1074	
52	762	45	129	895	19	187	945	12	215	891	18	188	780	35	130	2114	159	287	2370	289	6390	1137	
51	774	42	137	913	17	196	957	11	225	908	16	197	794	32	138	2168	148	308	2245	266	6515	1201	
50	786	39	144	928	16	205	971	10	234	926	14	207	811	29	146	2226	137	330	2110	244	6650	1267	
49	802	36	152	940	14	215	984	9	244	940	12	216	829	26	154	2280	127	353	1984	223	6776	1334	

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

BIRMINGHAM, ALABAMA
WBAN 13876
TABLE D:

TRY Date (1965)

Latitude 33.60 N
Longitude 86.90 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		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*					
48	818	33	160	947	12	224	996	8	254	953	11	225	841	24	163	2329	117	376	1874	204		6886	1403					
47	832	30	169	955	11	234	1008	7	264	966	10	235	856	21	171	2374	107	399	1766	186		6994	1472					
46	845	27	177	966	10	243	1020	6	274	975	8	245	873	19	180	2418	99	423	1661	169		7099	1543					
45	859	25	186	982	8	253	1027	5	285	985	7	255	887	17	189	2461	90	448	1558	153		7202	1614					
44	872	23	194	998	7	263	1036	4	295	995	6	264	902	15	197	2497	82	473	1458	138		7302	1687					
43	881	21	203	1009	7	273	1047	4	305	1008	5	274	913	13	207	2531	74	498	1369	123		7391	1760					
42	895	18	212	1019	6	283	1054	3	316	1022	4	285	930	11	216	2574	67	523	1264	110		7496	1834					
41	912	17	221	1027	5	293	1057	3	326	1032	4	295	945	10	225	2620	60	549	1165	98		7595	1910					
40	924	15	230	1035	4	304	1058	3	337	1042	3	305	957	8	235	2661	54	576	1081	87		7679	1986					
39	935	13	239	1042	4	314	1062	2	348	1056	3	316	969	7	244	2699	48	602	996	77		7764	2064					
38	950	12	249	1049	3	325	1068	2	358	1063	2	326	982	6	254	2733	42	630	914	67		7846	2142					
37	963	10	258	1057	3	335	1070	2	369	1064	2	337	997	5	264	2765	37	657	841	58		7919	2220					
36	970	9	268	1062	3	346	1071	2	380	1066	2	348	1013	4	274	2797	32	685	779	50		7981	2300					
35	981	8	278	1065	2	356	1072	1	390	1068	1	358	1028	3	284	2833	27	713	711	43		8049	2380					
34	994	7	288	1069	2	367	1072	1	401	1071	1	369	1039	3	295	2882	23	742	631	36		8129	2461					
33	1005	6	298	1071	2	378	1075	1	412	1076	1	380	1048	2	305	2935	19	771	549	30		8211	2543					
32	1019	5	308	1075	1	388	1079	1	423	1078	1	391	1059	2	316	2991	16	800	458	25		8302	2625					
31	1032	4	318	1078	1	399	1081	1	433	1079	1	401	1066	1	326	3039	13	831	383	21		8377	2709					
30	1040	4	328	1079	1	410	1082	0	444	1082	0	412	1070	1	337	3080	11	861	325	17		8435	2793					
29	1046	3	339	1080	1	421	1084	0	455	1086	0	423	1075	1	348	3114	9	892	273	14		8487	2877					
28	1051	3	349	1081	1	432	1087	0	466	1087	0	434	1079	1	358	3135	7	923	239	12		8521	2962					
27	1056	2	360	1082	1	442	1088	0	477	1088	0	445	1080	0	369	3153	6	955	211	10		8549	3048					
26	1062	2	370	1082	1	453	1090	0	488	1091	0	456	1083	0	380	3171	5	986	180	8		8580	3133					
25	1067	2	381	1082	0	464	1092	0	499	1092	0	467	1087	0	391	3193	4	1018	147	6		8613	3219					
24	1071	1	392	1083	0	475	1092	0	509	1092	0	477	1089	0	402	3215	3	1050	115	5		8645	3306					
23	1076	1	403	1087	0	486	1094	0	520	1092	0	488	1090	0	413	3232	2	1083	88	4		8672	3392					
22	1080	1	413	1089	0	497	1095	0	531	1092	0	499	1091	0	424	3241	2	1115	70	3		8690	3479					
21	1082	1	424	1090	0	508	1095	0	542	1093	0	510	1092	0	434	3249	1	1147	57	2		8703	3566					
20	1082	1	435	1091	0	518	1095	0	553	1094	0	521	1093	0	445	3255	1	1180	48	2		8712	3653					
19	1084	1	446	1092	0	529	1095	0	564	1095	0	532	1094	0	456	3261	1	1213	37	1		8723	3740					
18	1085	0	457	1093	0	540	1095	0	575	1095	0	543	1095	0	467	3267	1	1245	29	1		8731	3828					
17	1086	0	468	1093	0	551	1095	0	586	1095	0	554	1095	0	478	3271	0	1278	24	1		8736	3915					
16	1087	0	478	1094	0	562	1095	0	597	1095	0	565	1095	0	489	3275	0	1311	18	1		8742	4002					
15	1088	0	489	1095	0	573	1095	0	608	1095	0	576	1095	0	500	3278	0	1343	13	0		8747	4090					
14	1089	0	500	1095	0	584	1095	0	619	1095	0	587	1095	0	511	3279	0	1376	11	0		8749	4177					
13	1089	0	511	1095	0	595	1095	0	630	1095	0	598	1095	0	522	3281	0	1409	9	0		8751	4265					
12	1091	0	522	1095	0	606	1095	0	641	1095	0	609	1095	0	533	3282	0	1442	6	0		8754	4352					
11	1093	0	533	1095	0	617	1095	0	652	1095	0	620	1095	0	544	3283	0	1475	3	0		8757	4440					
10	1094	0	544	1095	0	628	1095	0	663	1095	0	631	1095	0	555	3284	0	1507	1	0		8759	4527					
9	1094	0	555	1095	0	639	1095	0	674	1095	0	642	1095	0	566	3285	0	1540	1	0		8759	4615					
8	1094	0	566	1095	0	650	1095	0	685	1095	0	653	1095	0	577	3285	0	1573	0	0		8760	4703					
7	1095	0	577	1095	0	661	1095	0	696	1095	0	664	1095	0	588	3285	0	1606	0	0		8760	4790					

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

BIRMINGHAM, ALABAMA

WBAN 13876

TABLE E:

TRY Date (1965)

Latitude 33.60 N

Longitude 86.90 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:	6079	5665	5159	4624	4071	3383	2636	1683	729	142	0
Annual Wet Bulb Cooling deg-hrs:	96354.	78552.	62048.	47028.	33713.	22208.	12765.	5768.	1700.	207.	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	73	73	72	70	68	65	60	52	40	24	14	.001
.002	0	0	0	0	0	0	0	0	0	0	0	65	65	64	63	62	59	55	48	37	23	13	.002
.003	0	1	1	1	1	1	1	1	1	1	1	57	57	57	56	55	53	49	44	34	21	12	.003
.004	1	1	2	2	2	3	3	3	3	3	3	50	50	50	50	49	48	44	40	31	19	11	.004
.005	1	2	3	3	4	4	5	5	5	5	5	43	43	43	43	43	42	39	35	28	17	10	.005
.006	1	3	4	5	6	6	7	7	7	7	7	37	37	37	37	37	36	35	31	25	15	9	.006
.007	2	3	5	6	8	9	9	10	10	10	10	31	31	31	31	31	31	30	27	22	13	8	.007
.008	2	4	6	8	10	11	12	13	13	13	14	26	26	26	26	26	26	25	23	19	12	7	.008
.009	2	5	7	9	12	14	16	16	17	17	17	21	21	21	21	21	21	21	20	16	10	6	.009
.010	3	5	8	11	14	17	19	20	21	21	22	16	16	16	16	16	16	16	16	13	8	5	.010
.011	3	6	9	12	16	19	23	24	25	26	26	13	13	13	13	13	13	13	12	11	7	4	.011
.012	3	7	10	14	18	22	26	29	30	31	32	9	9	9	9	9	9	9	9	8	5	3	.012
.013	3	7	11	15	20	25	30	33	35	36	37	6	6	6	6	6	6	6	6	6	4	2	.013
.014	4	8	12	17	22	28	33	37	40	42	43	4	4	4	4	4	4	4	4	4	3	2	.014
.015	4	9	13	18	24	30	37	42	46	48	50	2	2	2	2	2	2	2	2	2	2	1	.015
.016	4	9	14	20	26	33	40	46	51	55	57	1	1	1	1	1	1	1	1	1	1	1	.016
.017	5	10	15	21	28	36	44	51	57	61	64	0	0	0	0	0	0	0	0	0	0	0	.017
.018	5	11	16	23	30	38	47	55	62	68	72	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	35	41	65	52	50	55	60	57	53	30	45	38	50
VERTICAL													
NORTH	100	100	100	98	93	91	94	98	100	100	100	100	96
WEST	49	57	81	66	66	72	77	73	68	47	55	50	66
SOUTH	31	43	73	74	82	90	89	79	66	33	40	32	59
EAST	48	54	76	69	66	69	72	68	63	46	60	53	64
% Possible Sun	42	50	55	63	66	65	59	63	61	66	55	46	58

FOOTNOTES: * Corrected For Cloud Cover.

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

BIRMINGHAM, ALABAMA
WBAN 13876

TRY Data (1965)

Latitude 33.60 N
Longitude 86.90 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/ 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	1862	1739	1430	1140	749	416	240	185	184	2044	1153	1018	960	808	662	464	295	206	177	176	1090	602	707
Feb	1812	1702	1466	1252	903	567	340	231	223	2208	1451	949	913	812	714	552	399	293	239	234	1098	814	967
Mar	1542	1518	1436	1348	1100	806	548	356	286	2269	1839	870	865	820	766	657	545	460	405	385	1042	972	1296
Apr	1136	1244	1313	1352	1242	1034	781	550	385	2179	2179	915	945	960	960	893	786	668	565	494	1357	1426	1674
May	844	1024	1199	1336	1335	1211	992	752	542	2040	2384	848	932	1010	1071	1056	975	850	718	612	1439	1668	1857
Jun	735	929	1140	1318	1369	1284	1093	858	655	1965	2464	790	882	980	1063	1079	1024	918	793	694	1345	1637	1919
Jul	783	967	1161	1314	1345	1241	1045	812	609	1982	2412	806	881	958	1020	1023	962	864	752	654	1287	1528	1810
Aug	1001	1137	1245	1316	1257	1087	858	635	454	2078	2229	926	993	1036	1061	1013	907	778	653	561	1382	1502	1724
Sep	1365	1380	1362	1324	1135	883	636	436	334	2180	1932	984	1015	1000	969	857	716	584	477	423	1303	1235	1455
Oct	1690	1605	1432	1265	952	644	415	280	256	2181	1562	1262	1200	1066	937	713	505	359	278	265	1548	1133	1211
Nov	1806	1688	1398	1140	757	445	259	200	198	2049	1226	808	750	629	524	378	266	202	180	178	871	589	858
Dec	1827	1713	1392	1093	693	376	212	175	174	1960	1067	955	890	730	579	394	255	184	166	165	1000	605	661
Year	1364	1386	1330	1266	1071	834	620	457	359	2094	1827	928	936	901	862	758	637	532	451	404	1231	1151	1345

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

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

*** South exposure tilt 45 degrees.

**** Cinquemani, V., J. R. Owenby, Jr. and R. G. Baldwin. 1978. Input Data for Solar Systems. NCC, Asheville, NC.

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	1596	1465	1193	951	603	318	178	150	150	864	804	672	550	374	231	160	144	144
Feb	1521	1419	1223	1046	735	443	254	184	181	787	756	673	592	451	318	229	193	190
Mar	1214	1238	1186	1121	905	646	419	271	233	700	707	671	628	534	439	369	326	313
Apr	815	969	1071	1123	1028	844	622	421	303	703	752	780	788	732	641	540	452	397
May	575	752	956	1102	1107	1000	802	588	405	644	727	816	880	870	800	689	574	483
Jun	503	662	894	1079	1130	1063	884	676	483	610	684	787	870	888	842	745	636	545
Jul	536	702	918	1082	1113	1029	846	639	454	626	690	773	837	842	793	704	606	520
Aug	705	868	1007	1092	1040	893	689	490	352	714	792	847	877	836	743	629	522	452
Sep	1042	1117	1122	1101	937	714	497	332	271	773	825	824	802	706	583	467	378	344
Oct	1395	1334	1192	1056	786	514	315	220	209	1046	995	884	778	587	404	278	223	216
Nov	1548	1422	1172	949	618	341	193	163	162	683	624	521	432	309	211	160	147	146
Dec	1578	1454	1167	912	558	284	160	143	142	816	749	605	478	319	200	145	135	135
Year	1083	1115	1091	1051	881	675	489	357	279	748	759	738	710	622	518	427	362	325

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

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

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BISMARCK, NORTH DAKOTA
WBAN 24011
TABLE A:

TRY Data (1970)

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)/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	0	0	0	3	3	36.7	744	27698	0	0	
35 to 39	0	0	0	0	3	1	3	1	8	34.1	738	23990	6	12	
30 to 34	5	2	2	5	9	13	9	6	51	30.0	711	20337	33	79	
25 to 29	9	15	8	6	10	9	7	7	71	25.5	651	16922	93	384	
20 to 24	7	1	11	15	5	4	6	3	52	21.2	584	13831	160	1013	
15 to 19	1	4	5	5	7	6	5	6	39	16.2	540	11016	204	1918	
10 to 14	9	9	9	7	9	7	9	7	66	11.0	494	8414	250	3036	
5 to 9	6	12	10	9	12	8	5	10	72	5.8	424	6132	320	4474	
0 to 4	12	7	4	12	15	20	11	6	87	1.1	348	4180	396	6242	
-5 to -1	8	14	14	11	7	9	16	13	92	-3.5	257	2664	487	8446	
-10 to -6	12	7	11	8	7	5	7	13	70	-8.0	174	1590	570	11092	
-15 to -11	14	9	4	3	4	6	5	9	54	-12.8	107	883	637	14105	
-20 to -16	4	4	3	8	5	5	5	1	35	-17.8	61	469	683	17411	
-25 to -21	2	3	6	2	0	0	4	4	21	-23.0	37	226	707	20888	
-30 to -26	1	2	0	2	0	0	1	1	7	-27.9	19	98	725	24480	
-35 to -31	3	4	6	0	0	0	0	3	16	-33.3	11	15	733	28117	
Feb															
40 to 44	0	0	0	1	5	9	1	0	16	36.8	665	17243	7	5	
35 to 39	2	5	4	9	19	19	9	4	71	33.1	626	13977	46	99	
30 to 34	8	4	5	10	12	8	14	15	76	29.5	550	11025	122	507	
25 to 29	17	8	5	12	15	10	11	12	90	25.0	475	8448	197	1290	
20 to 24	9	15	13	16	6	10	8	9	86	20.5	391	6288	281	2490	
15 to 19	12	13	17	11	0	1	12	8	74	16.6	292	4583	380	4145	
10 to 14	9	7	10	1	5	3	5	12	52	11.3	238	3260	434	6182	
5 to 9	5	4	0	5	6	10	7	6	43	5.9	192	2193	480	8475	
0 to 4	9	8	11	6	8	8	4	3	57	1.5	141	1365	531	11007	
-5 to -1	1	6	4	3	7	6	7	3	37	-3.3	88	797	584	13799	
-10 to -6	0	3	4	6	1	0	6	6	26	-8.0	56	431	616	16793	
-15 to -11	6	2	2	3	0	0	0	6	19	-13.3	35	200	637	19922	
-20 to -16	5	5	5	1	0	0	0	0	16	-18.1	18	60	654	23142	
-25 to -21	1	4	4	0	0	0	0	0	9	-22.7	3	6	669	26448	
Mar															
40 to 44	0	0	0	3	7	7	0	0	17	35.5	736	16764	8	6	
35 to 39	0	0	0	7	11	13	2	0	33	33.2	714	13127	30	89	
30 to 34	8	7	7	15	19	18	23	11	108	29.4	663	9660	81	342	
25 to 29	14	10	11	11	12	7	9	15	89	25.1	550	6655	194	1057	
20 to 24	12	14	12	21	22	28	15	14	138	20.3	436	4132	308	2254	
15 to 19	15	24	26	23	17	15	12	10	142	15.4	315	2281	429	4123	
10 to 14	19	9	14	8	5	5	22	14	96	11.2	177	1083	567	6645	
5 to 9	8	13	11	4	0	0	10	18	64	6.3	96	428	648	9710	
0 to 4	14	10	7	1	0	0	0	11	43	1.5	40	107	704	13109	
-5 to -1	3	6	5	0	0	0	0	0	14	-2.2	4	3	740	16725	

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

BISMARCK, NORTH DAKOTA
WBAN 24011
TABLE A:

TRY Data (1970)

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)/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	2	0	0	0	2	56.0	719	30946	1	2	
75 to 79	0	0	0	1	1	0	0	0	2	55.0	717	27356	3	12	
70 to 74	0	0	0	0	1	4	0	0	5	52.2	716	23773	4	29	
65 to 69	0	0	0	1	0	0	1	0	2	50.5	710	20214	10	70	
60 to 64	0	0	0	1	1	1	0	0	3	47.7	707	16669	13	125	
55 to 59	0	0	1	6	14	19	1	0	41	43.8	691	13150	29	206	
50 to 54	0	0	2	13	11	6	14	0	46	40.5	652	9795	68	451	
45 to 49	6	1	7	13	13	11	10	10	71	40.4	595	6676	125	932	
40 to 44	15	11	17	14	12	12	17	20	118	37.1	500	3919	220	1775	
35 to 39	26	30	24	21	32	22	17	26	198	33.1	381	1709	339	3165	
30 to 34	31	31	31	18	3	15	28	26	183	30.8	111	428	609	5484	
25 to 29	8	11	4	2	0	0	2	7	34	25.4	28	137	692	8793	
20 to 24	1	3	3	0	0	0	0	1	8	21.4	9	56	711	12312	
15 to 19	3	1	0	0	0	0	0	0	4	15.5	5	17	715	15873	
10 to 14	0	2	1	0	0	0	0	0	3	12.7	0	0	720	19456	
May															
90 to 94	0	0	0	0	1	2	0	0	3	62.0	744	28863	0	0	
85 to 89	0	0	0	1	2	1	1	0	5	62.2	739	25153	5	10	
80 to 84	0	0	0	1	3	4	1	0	9	61.8	736	21467	8	44	
75 to 79	0	0	0	2	5	3	1	0	11	59.5	726	17812	18	109	
70 to 74	0	0	0	5	14	14	6	0	39	56.0	705	14228	39	245	
65 to 69	2	0	3	17	13	18	5	3	61	54.5	657	10814	87	551	
60 to 64	1	0	4	11	17	18	19	5	75	52.0	580	7700	164	1157	
55 to 59	4	6	14	13	13	8	23	13	94	50.4	503	4973	241	2150	
50 to 54	21	17	23	17	12	12	19	27	148	46.8	412	2689	332	3586	
45 to 49	29	26	23	18	13	13	13	20	155	44.0	226	1101	518	5718	
40 to 44	22	27	19	8	0	0	5	21	102	40.7	79	328	665	8665	
35 to 39	10	10	5	0	0	0	0	4	29	33.7	35	84	709	12141	
30 to 34	4	7	2	0	0	0	0	0	13	31.3	2	1	742	15778	
Jun															
90 to 94	0	0	0	0	3	5	0	0	8	66.3	720	17606	0	0	
85 to 89	0	0	0	8	20	22	5	0	55	67.6	688	14050	32	44	
80 to 84	0	0	1	13	16	11	14	3	58	65.8	637	10749	83	343	
75 to 79	4	0	9	16	17	21	16	4	87	64.1	567	7720	153	914	
70 to 74	3	4	12	23	15	17	16	11	101	62.6	476	5106	244	1900	
65 to 69	13	6	22	19	13	11	21	22	127	60.4	365	2990	355	3384	
60 to 64	26	19	21	8	6	3	13	23	119	58.6	220	1500	500	5494	
55 to 59	19	22	17	3	0	0	5	16	82	54.5	125	640	595	8234	
50 to 54	18	24	7	0	0	0	0	10	59	49.8	63	187	657	11381	
45 to 49	6	12	1	0	0	0	0	1	20	46.0	8	21	712	14815	
40 to 44	1	3	0	0	0	0	0	0	4	41.8	0	0	720	18394	

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

BISMARCK, NORTH DAKOTA
WBAN 24011
TABLE A:

TRY Data (1970)

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								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	19402	0	0
90 to 94	0	0	0	2	15	17	1	0	35	69.5	734	15696	10	14
85 to 89	0	0	0	11	26	29	6	0	72	68.4	680	12145	64	183
80 to 84	0	0	1	22	22	16	23	0	84	66.4	600	8919	144	677
75 to 79	1	0	9	28	13	16	22	8	97	64.4	511	6130	233	1608
70 to 74	5	0	21	17	11	7	19	24	104	62.0	422	3798	322	2996
65 to 69	31	20	32	10	3	2	14	22	134	61.4	293	1989	451	4907
60 to 64	19	27	18	3	3	4	8	27	109	58.5	163	839	581	7477
55 to 59	27	27	10	0	0	0	0	9	73	54.4	70	260	674	10618
50 to 54	9	13	2	0	0	0	0	3	27	49.9	21	50	723	14128
45 to 49	1	6	0	0	0	0	0	0	7	46.4	2	1	742	17799
Aug														
100 to 104	0	0	0	0	2	0	0	0	2	69.0	744	24137	0	0
95 to 99	0	0	0	0	8	8	0	0	16	67.9	739	20426	5	9
90 to 94	0	0	0	2	10	12	4	0	28	67.0	719	16779	25	82
85 to 89	0	0	0	10	24	36	7	0	77	66.2	675	13281	69	304
80 to 84	0	0	0	20	19	11	14	2	66	64.8	594	10113	150	856
75 to 79	1	0	7	23	14	10	22	4	81	62.8	523	7310	221	1773
70 to 74	12	3	12	17	8	11	20	19	102	61.7	439	4893	305	3076
65 to 69	13	17	23	17	7	4	16	22	119	58.9	316	2992	428	4895
60 to 64	16	9	19	4	1	1	8	20	78	56.0	217	1672	527	7295
55 to 59	29	21	19	0	0	0	2	19	90	52.9	139	769	605	10112
50 to 54	10	24	10	0	0	0	0	5	49	49.9	63	275	681	13338
45 to 49	11	10	3	0	0	0	0	2	26	44.6	24	72	720	16855
40 to 44	1	9	0	0	0	0	0	0	10	40.9	4	5	740	20508
Sep														
95 to 99	0	0	0	0	1	2	0	0	3	67.7	720	28851	0	0
90 to 94	0	0	0	1	6	7	0	0	14	67.2	711	25269	9	18
85 to 89	0	0	0	5	12	11	2	0	30	63.3	693	21752	27	101
80 to 84	0	0	1	6	10	7	5	0	29	62.4	664	18359	56	308
75 to 79	1	0	2	5	3	6	5	4	26	60.8	639	15121	81	670
70 to 74	5	1	4	8	10	15	7	4	54	59.5	600	12016	120	1165
65 to 69	4	5	4	12	17	7	9	9	67	56.6	535	9172	185	1921
60 to 64	10	4	7	16	8	9	13	8	75	53.9	465	6671	255	3020
55 to 59	7	12	10	12	4	11	12	11	79	50.7	389	4528	331	4477
50 to 54	15	12	14	9	4	3	14	10	81	47.7	317	2760	403	6309
45 to 49	9	11	18	9	12	6	10	17	92	43.4	219	1408	501	8557
40 to 44	26	25	19	6	3	6	11	20	116	39.6	135	512	585	11261
35 to 39	6	9	8	1	0	0	2	7	33	35.2	42	144	678	14493
30 to 34	7	8	3	0	0	0	0	0	18	31.3	10	22	710	17971
25 to 29	0	3	0	0	0	0	0	0	3	28.0	0	0	720	21549

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

BISMARCK, NORTH DAKOTA
WBAN 24011
TABLE A:

TRY Data (1970)

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	2	3	0	0	5	58.4	743	32552	1	1	
80 to 84	0	0	0	0	3	1	0	0	4	57.5	737	28852	7	21	
75 to 79	0	0	0	0	1	2	0	0	3	56.0	734	25173	10	62	
70 to 74	0	0	0	1	4	2	0	0	7	51.3	731	21513	13	122	
65 to 69	0	0	0	4	6	7	2	0	19	50.2	720	17878	24	207	
60 to 64	0	0	0	4	14	13	3	0	34	46.8	697	14345	47	394	
55 to 59	2	3	2	14	10	12	5	7	55	46.6	657	10964	87	733	
50 to 54	9	4	7	15	14	12	11	9	81	44.4	593	7844	151	1333	
45 to 49	11	7	9	12	3	3	21	13	79	41.4	505	5088	239	2297	
40 to 44	13	11	12	15	23	17	16	16	123	37.1	411	2772	333	3701	
35 to 39	24	23	25	26	13	20	28	29	188	33.9	259	1057	485	5706	
30 to 34	28	31	26	2	0	1	7	18	113	30.7	74	240	670	8609	
25 to 29	6	11	10	0	0	0	0	1	28	25.8	21	36	723	12125	
20 to 24	0	3	2	0	0	0	0	0	5	22.8	1	1	743	15810	
Nov															
50 to 54	0	0	0	0	5	2	0	0	7	42.7	719	17933	1	1	
45 to 49	0	0	0	1	5	4	0	0	10	40.2	712	14358	8	26	
40 to 44	0	0	1	9	16	9	2	0	37	37.7	692	10832	28	100	
35 to 39	8	12	19	19	16	20	19	12	125	34.5	650	7471	70	339	
30 to 34	25	21	18	24	18	23	32	32	193	30.6	446	4660	274	1128	
25 to 29	23	23	20	13	12	10	14	19	134	26.7	272	2856	448	2924	
20 to 24	11	12	12	10	7	7	5	7	71	21.1	185	1740	535	5408	
15 to 19	9	7	6	6	5	8	3	6	50	16.2	121	987	599	8255	
10 to 14	4	4	5	2	0	1	8	6	30	11.2	83	493	637	11361	
5 to 9	9	5	3	2	5	3	5	8	40	6.6	43	163	677	14631	
0 to 4	1	5	3	3	1	3	2	0	18	1.9	11	37	709	18105	
-5 to -1	0	1	3	1	0	0	0	0	5	-3.4	2	3	718	21671	
Dec															
40 to 44	0	0	0	0	2	1	0	0	3	35.3	744	22625	0	0	
35 to 39	0	0	0	3	9	6	3	1	22	33.8	733	18921	11	16	
30 to 34	6	0	2	4	7	8	3	5	35	29.1	703	15319	41	134	
25 to 29	2	10	8	9	4	8	9	3	53	25.3	665	11086	79	421	
20 to 24	7	10	14	12	15	17	15	8	98	20.3	602	8712	142	967	
15 to 19	14	6	9	12	21	10	7	11	90	16.2	492	5975	252	1950	
10 to 14	11	16	11	16	11	19	20	22	126	11.1	387	3746	357	3441	
5 to 9	20	17	8	15	12	8	13	16	109	6.6	265	2104	479	5519	
0 to 4	14	9	16	8	9	12	8	6	82	1.6	172	1014	572	8149	
-5 to -1	11	15	13	8	3	3	12	15	80	-3.1	96	354	648	11209	
-10 to -6	6	5	9	5	0	1	3	6	35	-7.6	27	78	717	14653	
-15 to -11	2	5	2	1	0	0	0	0	10	-12.3	6	7	738	18302	
-20 to -16	0	0	1	0	0	0	0	0	1	-16.0	0	0	744	22015	

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

BISMARCK, NORTH DAKOTA

WBAN 24011

TABLE B:

TRY Data (1970)

Latitude 46.80 N

Longitude 100.80 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	2	0	0	0	2	0.0	0.0	0.0	0.0	69.0	0.0	0.0	0.0	69.0
95 to 99	0	0	0	0	9	12	0	0	21	0.0	0.0	0.0	0.0	68.4	68.3	0.0	0.0	68.0
90 to 94	0	0	0	5	35	43	5	0	88	0.0	0.0	0.0	70.2	68.3	67.1	67.4	0.0	67.8
85 to 89	0	0	0	35	86	102	21	0	244	0.0	0.0	0.0	68.5	66.7	65.9	66.6	0.0	66.6
80 to 84	0	0	3	62	75	50	57	5	252	0.0	0.0	69.7	66.6	63.3	63.6	66.3	68.6	65.0
75 to 79	7	0	27	75	54	58	66	20	307	66.1	0.0	66.5	63.3	61.4	61.5	64.0	64.9	63.2
70 to 74	25	8	49	71	63	70	68	58	412	64.1	66.4	63.8	61.0	57.9	57.8	60.2	64.0	60.9
65 to 69	63	48	84	80	59	49	68	78	529	61.8	62.5	60.7	56.9	55.5	54.7	58.3	59.3	58.8
60 to 64	72	59	69	47	50	49	64	83	493	57.1	59.2	57.3	53.1	52.0	50.9	54.9	56.9	55.6
55 to 59	88	91	73	48	41	50	48	75	514	53.7	53.9	52.6	48.6	46.6	46.5	48.4	52.7	51.2
50 to 54	82	94	65	54	46	35	58	64	498	48.4	49.4	47.9	44.5	43.3	43.9	44.7	47.4	46.7
45 to 49	73	73	61	53	46	37	54	63	460	43.4	45.0	43.9	41.5	42.0	42.2	41.7	42.7	42.9
40 to 44	78	86	68	56	68	61	52	80	549	39.7	39.9	38.8	37.4	36.6	37.0	37.7	38.8	38.4
35 to 39	76	89	85	86	103	101	83	84	707	33.8	34.3	34.1	33.5	33.5	33.7	33.6	33.3	33.7
30 to 34	122	111	96	78	68	86	116	113	790	30.6	30.7	30.4	29.9	29.2	29.8	30.4	30.8	30.3
25 to 29	79	91	66	53	53	44	52	64	502	26.1	26.0	25.5	25.2	24.9	25.2	25.7	26.2	25.7
20 to 24	47	58	67	74	55	66	49	42	458	21.1	21.1	21.0	20.6	19.8	20.0	20.7	20.9	20.6
15 to 19	54	55	63	57	50	40	39	41	399	16.1	16.2	16.0	15.7	15.8	15.7	16.3	16.2	16.0
10 to 14	52	47	50	34	30	35	64	61	373	11.4	11.7	11.3	10.9	10.7	10.7	11.0	11.2	11.2
5 to 9	48	51	32	35	35	29	40	58	328	6.3	6.6	6.6	6.0	5.8	5.7	6.3	6.5	6.3
0 to 4	50	39	41	30	33	43	25	26	287	1.4	1.2	1.6	1.0	1.2	1.8	1.5	2.0	1.5
-5 to -1	23	42	39	23	17	18	35	31	228	-3.3	-3.0	-3.1	-3.2	-4.1	-3.6	-3.1	-3.6	-3.3
-10 to -6	18	15	24	19	8	6	16	25	131	-8.0	-7.3	-8.0	-8.2	-8.9	-8.2	-7.0	-8.1	-7.9
-15 to -11	22	16	8	7	4	6	5	15	83	-13.2	-13.0	-12.4	-12.6	-12.5	-12.2	-12.6	-12.9	-12.8
-20 to -16	9	9	9	9	5	5	5	1	52	-17.4	-18.6	-18.7	-18.3	-16.4	-17.4	-17.4	-16.0	-17.9
-25 to -21	3	7	10	2	0	0	4	4	30	-23.7	-22.3	-22.9	-23.0	0.0	0.0	-22.8	-23.5	-22.9
-30 to -26	1	2	0	2	0	0	1	1	7	-26.0	-28.0	0.0	-28.0	0.0	0.0	-30.0	-27.0	-27.9
-35 to -31	3	4	6	0	0	0	0	3	16	-33.0	-33.5	-33.5	0.0	0.0	0.0	0.0	-32.7	-33.3

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	5.3	41	-34	13	-4	4.4	88	87	80	85	86	0.0010	0.0010	0.0012	0.0012	0.0011	10.0
Feb	16.8	44	-25	29	4	15.3	88	74	72	84	82	0.0015	0.0016	0.0021	0.0019	0.0017	10.9
Mar	20.0	44	-4	29	10	18.3	88	76	68	83	80	0.0016	0.0018	0.0021	0.0019	0.0018	9.3
Apr	39.5	84	13	48	32	34.7	78	61	56	69	67	0.0034	0.0033	0.0035	0.0036	0.0034	14.0
May	53.7	90	32	65	44	47.2	82	64	53	58	67	0.0056	0.0062	0.0064	0.0060	0.0060	11.8
Jun	68.0	92	43	80	55	59.9	87	62	49	59	67	0.0093	0.0106	0.0104	0.0104	0.0101	10.0
Jul	71.4	96	47	85	58	61.9	83	57	42	57	63	0.0098	0.0111	0.0104	0.0112	0.0106	9.7
Aug	70.1	102	40	86	54	59.2	82	54	33	49	59	0.0089	0.0100	0.0085	0.0092	0.0092	9.1
Sep	57.4	96	28	72	45	49.6	82	65	41	61	65	0.0062	0.0074	0.0065	0.0067	0.0067	9.4
Oct	43.7	88	22	56	34	38.0	77	68	47	62	65	0.0037	0.0043	0.0039	0.0038	0.0039	9.5
Nov	27.6	53	-4	34	21	26.1	91	86	76	86	86	0.0027	0.0028	0.0031	0.0029	0.0029	9.7
Dec	12.1	41	-16	21	1	11.1	93	84	75	87	85	0.0012	0.0012	0.0016	0.0014	0.0013	9.6
r	40.6	102	-34	52	30	35.6	85	70	58	70	73	0.0046	0.0051	0.0050	0.0050	0.0049	10.2

BISMARCK, NORTH DAKOTA
WBAN 24011
TABLE D:

TRY Data (1970)

Latitude 46.80 N
Longitude 100.80 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	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Below Base 100s*	Hrs	Below Base 100s*	Hrs	Above Base 100s*	Hrs	Above Base 100s*	Hrs	Above Base 100s*	
103	0	733	0	0	648	0	0	595	0	0	596	0	0	663	0	0	2232	0	8760	5467	0	0						
102	0	722	0	0	637	0	0	584	0	0	585	0	0	652	0	0	2199	0	8759	5380	1	0						
101	0	711	0	0	626	0	1	573	0	0	574	0	0	641	0	0	2167	0	8759	5292	1	0						
100	0	700	0	0	615	0	1	562	0	0	563	0	0	630	0	0	2134	0	8758	5205	2	0						
99	0	689	0	0	604	0	2	551	0	0	552	0	0	619	0	0	2101	0	8758	5117	2	0						
98	0	678	0	0	594	0	3	540	0	0	541	0	0	608	0	0	2068	0	8756	5030	4	0						
97	0	667	0	0	583	0	5	529	0	0	530	0	0	597	0	0	2035	0	8754	4942	6	0						
96	0	656	0	0	572	0	7	518	0	3	519	0	0	586	0	0	2002	0	8749	4854	11	0						
95	0	646	0	0	561	0	10	507	0	9	509	0	0	575	0	0	1969	0	8741	4767	19	0						
94	0	635	0	0	550	0	13	496	0	16	498	0	0	564	0	0	1937	0	8731	4680	29	1						
93	0	624	0	0	539	0	16	486	1	22	487	0	0	554	0	0	1904	0	8720	4592	40	1						
92	0	613	0	1	528	0	23	475	1	30	476	1	0	543	0	0	1871	0	8706	4505	54	1						
91	0	602	0	2	517	0	32	464	1	40	466	1	0	532	0	0	1838	0	8685	4418	75	2						
90	0	591	0	4	506	0	41	454	1	50	455	1	3	521	0	0	1805	0	8661	4332	99	3						
89	0	580	0	7	495	0	55	443	2	60	445	2	5	510	0	0	1772	0	8631	4245	129	4						
88	0	569	0	13	484	0	73	433	2	77	435	3	7	499	0	0	1740	0	8588	4159	172	5						
87	0	558	0	20	473	0	87	423	3	97	424	4	11	488	0	0	1707	0	8544	4073	216	7						
86	0	547	0	28	463	1	100	413	4	116	415	5	15	477	0	0	1674	0	8499	3988	261	10						
85	0	536	0	36	452	1	120	403	5	142	405	6	22	466	1	0	1641	0	8439	3903	321	13						
84	0	525	0	47	442	1	140	393	7	162	396	7	32	456	1	0	1608	0	8378	3819	382	16						
83	0	514	0	57	431	2	155	384	8	172	386	9	43	445	1	1	1575	0	8331	3736	429	20						
82	1	503	0	65	421	3	169	374	10	182	377	11	55	435	2	1	1542	0	8285	3653	475	25						
81	2	492	0	76	411	3	184	365	11	189	368	13	67	424	2	3	1510	0	8237	3570	523	30						
80	3	481	0	92	400	4	199	356	13	199	359	15	77	414	3	5	1477	0	8184	3488	576	35						
79	4	470	0	107	391	5	212	347	15	213	350	17	89	404	4	6	1444	0	8127	3406	633	41						
78	8	460	0	119	381	6	223	339	18	225	341	19	102	394	5	10	1411	0	8071	3325	689	48						
77	14	449	0	133	371	7	234	330	20	235	333	21	110	384	6	16	1379	0	8015	3245	745	55						
76	20	438	0	145	361	9	246	321	22	245	324	24	121	374	7	22	1346	1	7959	3165	801	63						
75	26	427	1	164	352	10	256	313	25	258	316	26	139	365	8	28	1313	1	7887	3086	873	71						
74	34	417	1	187	343	12	266	305	27	272	307	29	154	355	10	37	1281	1	7809	3007	951	80						
73	41	406	1	201	334	14	279	296	30	284	299	32	164	346	11	47	1248	2	7743	2930	1017	90						
72	48	395	2	210	325	16	292	288	33	297	291	34	176	337	13	63	1216	2	7673	2852	1087	101						
71	57	385	2	224	316	18	302	280	36	315	283	38	194	328	15	85	1184	3	7582	2776	1178	112						
70	71	375	3	240	308	21	315	272	39	330	276	41	210	319	17	110	1152	4	7482	2701	1278	124						
69	86	365	4	254	299	23	331	265	42	340	268	44	223	310	19	140	1120	5	7383	2626	1377	137						
68	102	355	5	274	291	26	343	257	46	349	260	48	238	301	21	176	1089	7	7276	2553	1484	152						
67	118	345	6	292	283	29	353	250	49	359	253	51	252	293	24	211	1058	9	7174	2481	1586	167						
66	134	335	7	304	275	32	367	242	53	369	246	55	264	284	26	247	1028	11	7072	2410	1688	183						
65	153	325	8	320	267	35	378	235	57	379	239	59	278	276	29	290	997	13	6960	2339	1800	201						
64	172	316	10	333	259	38	391	228	60	391	231	62	297	268	32	332	968	17	6841	2270	1919	219						
63	189	307	12	344	252	41	403	221	64	404	224	66	314	260	35	380	938	20	6725	2203	2035	239						
62	203	298	14	355	244	45	410	214	68	412	218	70	326	252	38	425	910	24	6627	2136	2133	260						
61	216	289	16	365	237	48	419	207	73	418	211	75	336	245	42	466	881	29	6538	2070	2222	282						
60	227	280	18	372	230	52	428	201	77	427	204	79	343	237	45	507	853	34	6454	2005	2306	304						
59	242	272	21	380	222	56	438	194	81	439	197	83	351	230	48	549	826	39	6360	1941	2400	328						
58	260	263	23	388	215	60	446	187	86	451	191	88	360	222	52	600	799	45	6253	1878	2507	353						

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 D:

TRY Data (1970)

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**			BY TIME OF DAY 4-6PM**			7-9PM**			10PM-6AM**			24 HOUR SUMMARY			
	Hrs		Deg-Hrs (100s)*	Hrs		Deg-Hrs (100s)*	Hrs		Deg-Hrs (100s)*	Hrs		Deg-Hrs (100s)*	Hrs		Deg-Hrs (100s)*	Hrs		Deg-Hrs (100s)*	HEATING		COOLING	
	Above Base	Heat Cool		Above Base	Heat Cool		Above Base	Heat Cool		Above Base	Heat Cool		Above Base	Heat Cool		Above Base	Heat Cool		Below Base	Deg 100s*	Above Base	Deg 100s*
57	272	255	26	396	208	64	455	181	90	462	185	92	371	215	56	651	772	51	6152	1816	2608	378
56	284	247	28	403	201	68	465	175	95	471	178	97	382	208	59	702	746	58	6051	1755	2709	405
55	298	239	31	414	194	72	472	168	99	479	172	102	393	201	63	755	720	65	5947	1695	2813	432
54	310	231	34	425	188	76	477	162	104	485	166	106	403	194	67	794	695	73	5864	1636	2896	461
53	320	223	38	430	181	80	485	156	109	491	160	111	413	187	71	831	670	81	5787	1578	2973	490
52	331	216	41	441	174	85	494	150	114	499	154	116	425	180	76	880	646	89	5689	1520	3071	520
51	346	208	44	456	168	89	503	144	119	504	148	121	439	174	80	930	622	98	5581	1464	3179	552
50	362	201	48	470	162	94	514	138	124	512	142	126	450	167	84	987	599	108	5464	1409	3296	584
49	378	193	51	482	155	98	523	132	129	522	136	132	459	161	89	1047	576	118	5347	1355	3413	617
48	393	186	55	491	149	103	529	127	134	530	131	137	470	154	94	1101	554	129	5244	1302	3516	652
47	405	179	59	500	143	108	538	121	140	536	125	142	483	148	98	1146	533	140	5151	1250	3609	688
46	415	172	63	511	137	113	548	116	145	542	119	148	492	142	103	1181	512	152	5070	1199	3690	724
45	425	166	68	524	132	119	558	110	151	550	114	153	502	136	108	1214	491	164	4986	1148	3774	762
44	435	159	72	537	126	124	571	105	156	561	109	159	516	130	113	1252	470	176	4887	1099	3873	800
43	450	152	76	549	121	129	584	100	162	578	103	164	525	124	118	1301	450	189	4772	1051	3988	839
42	466	146	81	558	115	135	601	95	168	596	98	170	534	119	124	1352	430	202	4650	1003	4110	880
41	479	140	86	566	110	140	615	90	174	606	93	176	545	113	129	1404	411	216	4543	958	4217	921
40	492	134	91	577	105	146	627	85	180	613	88	182	555	108	135	1451	393	230	4443	913	4317	964
39	505	128	96	592	99	152	643	80	187	623	84	188	566	102	140	1486	375	245	4343	869	4417	1008
38	517	122	101	604	95	158	662	76	193	643	79	195	578	97	146	1518	357	260	4237	826	4523	1052
37	529	116	106	619	90	164	684	72	200	666	75	201	590	92	152	1562	339	275	4108	784	4652	1098
36	543	111	111	641	85	170	705	68	207	687	70	208	606	87	158	1613	322	291	3963	744	4797	1145
35	567	105	117	662	81	177	725	64	214	708	67	215	631	82	164	1680	306	307	3786	705	4974	1194
34	597	100	123	683	76	184	746	60	221	731	63	222	658	78	170	1774	290	325	3569	668	5191	1245
33	620	95	129	705	72	191	763	57	229	755	59	230	689	74	177	1864	276	343	3362	633	5398	1298
32	643	91	135	721	69	198	776	54	237	772	56	237	716	70	184	1942	262	362	3188	601	5572	1353
31	661	86	142	733	65	205	788	51	244	781	53	245	735	66	191	2004	249	382	3056	569	5704	1409
30	673	82	148	744	61	212	800	48	252	793	50	253	752	63	199	2046	236	402	2950	539	5810	1467
29	688	78	155	756	58	220	811	45	260	808	47	261	766	59	206	2093	224	423	2836	510	5924	1525
28	699	74	162	769	55	228	821	42	269	819	44	269	778	56	214	2152	212	444	2720	483	6040	1585
27	707	70	169	780	51	235	829	39	277	827	41	277	788	53	222	2210	201	466	2616	456	6144	1646
26	721	66	176	789	48	243	839	37	285	834	39	286	799	50	230	2249	191	488	2526	430	6234	1708
25	738	62	183	799	45	251	851	34	294	842	36	294	808	47	238	2283	181	511	2437	406	6323	1771
24	751	59	191	811	42	259	862	32	302	853	34	302	817	44	246	2318	171	534	2346	382	6414	1835
23	765	56	198	828	40	267	872	30	311	865	31	311	827	41	254	2347	161	557	2254	359	6506	1899
22	780	52	206	845	37	276	884	27	320	876	29	320	838	39	263	2377	152	581	2158	337	6602	1965
21	792	49	214	859	35	284	895	25	329	892	27	329	847	36	271	2406	143	605	2067	315	6693	2031
20	805	46	222	871	32	293	906	23	338	907	25	338	855	34	280	2434	135	629	1980	295	6780	2099
19	820	43	230	882	30	302	922	22	347	918	23	347	865	31	288	2461	126	653	1889	276	6871	2167
18	834	41	238	895	28	310	937	20	356	926	21	356	876	29	297	2486	118	678	1805	257	6955	2236
17	846	38	247	907	26	320	947	18	365	933	20	365	885	27	306	2515	110	703	1725	240	7035	2306
16	857	36	255	916	24	329	956	17	375	940	18	375	892	25	315	2548	103	728	1650	223	7110	2377
15	869	34	264	927	23	338	961	16	385	947	17	384	897	23	324	2582	96	754	1574	207	7186	2448
14	882	31	273	937	21	347	965	14	394	956	15	394	904	21	333	2620	89	780	1495	191	7265	2520
13	894	29	282	944	19	357	971	13	404	964	14	403	915	19	342	2654	82	806	1417	177	7343	2593
12	902	27	291	953	18	366	979	12	414	973	13	413	930	17	351	2683	76	833	1338	163	7422	2667

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eq. 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

TRY Data (1970)

Latitude 46.80 N

WBAN 24011

Longitude 100.80 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 (F)	Hrs Above (100s)*	Deg-Hrs		Hrs Above (100s)*	Deg-Hrs		Hrs Above (100s)*	Deg-Hrs		Hrs Above (100s)*	Deg-Hrs		Hrs Above (100s)*	Deg-Hrs		Hrs Above (100s)*	Deg-Hrs	
	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	100s*	
11	910	25	300	961	17	376	987	11	423	979	11	423	945	16	360	2713	70	860
10	921	24	309	966	15	385	991	10	433	985	10	432	957	14	370	2742	65	887
9	932	22	318	972	14	395	996	9	443	989	9	442	968	13	379	2776	59	915
8	940	20	327	981	13	405	1004	8	453	993	8	452	977	12	389	2810	54	943
7	945	19	337	988	12	415	1011	7	463	999	7	462	986	11	399	2843	50	971
6	951	17	346	995	11	425	1017	6	474	1006	6	472	992	10	409	2875	46	1000
5	956	16	356	1001	10	434	1024	5	484	1013	5	482	999	9	419	2903	42	1029
4	961	15	366	1006	9	445	1031	5	494	1024	5	493	1007	8	429	2927	38	1058
3	970	13	375	1011	8	455	1039	4	504	1038	4	503	1013	7	439	2947	34	1087
2	980	12	385	1016	7	465	1046	3	515	1047	3	513	1017	6	449	2971	31	1117
1	988	11	395	1023	6	475	1051	3	525	1052	3	524	1022	5	459	2994	28	1147
0	995	10	405	1029	6	485	1057	3	536	1057	3	534	1027	5	470	3016	25	1177
-1	1003	9	415	1036	5	496	1063	2	546	1063	2	545	1033	4	480	3039	23	1207
-2	1012	8	425	1042	4	506	1066	2	557	1066	2	556	1043	4	490	3057	20	1237
-3	1020	7	435	1046	4	516	1069	2	568	1069	2	566	1050	3	501	3077	18	1268
-4	1028	7	445	1051	4	527	1071	1	578	1073	1	577	1055	3	511	3097	16	1299
-5	1035	6	455	1054	3	537	1075	1	589	1076	1	588	1061	2	522	3117	15	1330
-6	1040	5	466	1058	3	548	1078	1	600	1079	1	598	1067	2	532	3135	13	1361
-7	1045	5	476	1063	2	559	1079	1	611	1080	1	609	1073	2	543	3148	12	1393
-8	1050	4	487	1066	2	569	1080	1	622	1080	1	620	1077	2	554	3159	10	1424
-9	1056	4	497	1069	2	580	1081	1	632	1081	1	631	1079	1	565	3169	9	1456
-10	1060	4	508	1073	2	591	1083	0	643	1083	1	642	1080	1	576	3179	8	1488
-11	1063	3	519	1076	1	601	1087	0	654	1085	0	653	1080	1	586	3188	7	1520
-12	1065	3	529	1078	1	612	1088	0	665	1087	0	663	1081	1	597	3200	6	1551
-13	1067	3	540	1080	1	623	1088	0	676	1088	0	674	1083	1	608	3213	5	1584
-14	1069	2	551	1081	1	634	1089	0	687	1089	0	685	1084	1	619	3222	5	1616
-15	1070	2	561	1081	1	645	1089	0	698	1090	0	696	1085	1	630	3231	4	1648
-16	1070	2	572	1083	1	655	1091	0	708	1090	0	707	1086	0	641	3239	3	1680
-17	1071	2	583	1085	0	666	1094	0	719	1091	0	718	1088	0	651	3244	3	1713
-18	1073	2	593	1085	0	677	1095	0	730	1094	0	729	1088	0	662	3249	3	1745
-19	1075	1	604	1086	0	688	1095	0	741	1095	0	740	1088	0	673	3252	2	1778
-20	1077	1	615	1089	0	699	1095	0	752	1095	0	751	1089	0	684	3255	2	1810
-21	1079	1	626	1091	0	710	1095	0	763	1095	0	762	1090	0	695	3258	2	1843
-22	1081	1	636	1091	0	721	1095	0	774	1095	0	773	1091	0	706	3261	1	1875
-23	1084	1	647	1092	0	732	1095	0	785	1095	0	784	1092	0	717	3264	1	1908
-24	1087	1	658	1093	0	742	1095	0	796	1095	0	795	1093	0	728	3267	1	1941
-25	1088	1	669	1093	0	753	1095	0	807	1095	0	805	1094	0	739	3270	1	1973
-26	1089	0	680	1093	0	764	1095	0	818	1095	0	816	1094	0	750	3271	1	2006
-27	1089	0	691	1093	0	775	1095	0	829	1095	0	827	1094	0	761	3273	1	2039
-28	1089	0	702	1094	0	786	1095	0	840	1095	0	838	1094	0	771	3274	1	2072
-29	1089	0	713	1094	0	797	1095	0	851	1095	0	849	1094	0	782	3274	0	2104
-30	1089	0	723	1095	0	808	1095	0	862	1095	0	860	1094	0	793	3275	0	2137
-31	1089	0	734	1095	0	819	1095	0	873	1095	0	871	1095	0	804	3275	0	2170
-32	1089	0	745	1095	0	830	1095	0	884	1095	0	882	1095	0	815	3277	0	2203
-33	1090	0	756	1095	0	841	1095	0	895	1095	0	893	1095	0	826	3279	0	2235
-34	1093	0	767	1095	0	852	1095	0	906	1095	0	904	1095	0	837	3282	0	2268

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

TRY Data (1970)

Latitude 46.80 N
Longitude 100.80 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:	2751	2411	2022	1584	1106	672	327	123	16	0	0
Annual Wet Bulb Cooling deg-hrs:	30202.	22262.	15407.	9773.	5485.	2652.	1009.	257.	25.	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*
Ratio*	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80	Ratio*		
.001	1	1	1	1	1	1	1	1	1	1	1	30	29	27	26	24	22	19	15	11	7	5	.001		
.002	3	3	4	4	4	4	4	4	4	4	4	25	24	23	22	21	19	16	13	9	6	4	.002		
.003	6	7	7	7	7	7	7	7	7	7	7	19	19	19	18	17	16	14	11	8	6	4	.003		
.004	9	10	11	11	11	11	12	12	12	12	12	15	15	15	15	14	13	12	10	7	5	3	.004		
.005	12	14	15	16	16	17	17	17	17	17	17	12	12	12	12	12	11	10	8	6	4	3	.005		
.006	15	18	20	21	21	22	22	23	23	23	23	9	9	9	9	9	9	8	6	5	3	2	.006		
.007	18	21	24	26	27	28	28	29	29	29	29	7	7	7	7	7	6	6	5	4	3	2	.007		
.008	21	25	28	31	32	33	34	35	35	36	36	5	5	5	5	5	5	4	4	3	2	1	.008		
.009	24	29	33	36	38	39	41	41	42	43	43	3	3	3	3	3	3	3	3	2	1	1	.009		
.010	27	32	37	41	43	45	47	48	49	50	50	2	2	2	2	2	2	2	2	1	1	1	.010		
.011	29	36	42	46	48	51	53	55	56	57	58	1	1	1	1	1	1	1	1	1	1	0	.011		
.012	32	40	46	51	54	57	60	62	63	65	66	1	1	1	1	1	1	1	1	1	0	0	.012		
.013	35	43	50	55	59	63	66	69	71	72	73	0	0	0	0	0	0	0	0	0	0	0	.013		
.014	38	47	55	60	65	69	73	76	78	80	82	0	0	0	0	0	0	0	0	0	0	0	.014		
.015	41	51	59	65	70	75	79	82	86	88	90	0	0	0	0	0	0	0	0	0	0	0	.015		
.016	44	54	64	70	75	81	85	89	93	96	98	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	47	58	68	75	81	87	92	96	100	104	106	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	50	62	72	80	86	92	98	103	108	112	114	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	62	42	41	61	67	38	38	30	37	35	60	44	44
VERTICAL													
NORTH	100	100	100	99	96	85	88	94	100	100	100	100	94
WEST	61	49	51	76	72	55	56	48	50	48	60	50	57
SOUTH	42	33	41	68	82	65	64	47	41	32	43	26	50
EAST	66	49	54	66	81	54	55	46	50	44	68	45	56
% 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:

TRY Data (1970)

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**											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	1733	1606	1265	915	505	225	121	112	112	1647	678	538	497	403	309	203	135	110	107	107	499	283	467
Feb	1960	1827	1500	1179	753	403	227	162	161	2046	1039	907	849	712	579	404	258	185	159	158	927	551	776
Mar	1940	1854	1641	1433	1060	694	436	285	240	2384	1579	959	909	808	709	548	397	299	247	230	1111	808	1168
Apr	1642	1684	1638	1573	1325	1016	727	493	355	2506	2117	1003	1037	1007	962	835	690	569	478	428	1230	1125	1459
May	1352	1476	1558	1607	1484	1255	975	710	521	2486	2489	1012	1019	1011	995	920	826	729	645	596	1318	1382	1848
Jun	1227	1372	1510	1608	1549	1365	1097	829	642	2457	2650	1111	1202	1278	1329	1276	1143	962	785	660	1847	2000	2060
Jul	1272	1406	1516	1596	1510	1308	1039	777	592	2447	2560	1152	1233	1289	1326	1252	1105	921	749	628	1862	1963	2184
Aug	1488	1565	1570	1556	1367	1100	825	586	428	2436	2227	1255	1311	1299	1270	1116	914	716	550	444	1887	1747	1877
Sep	1781	1736	1593	1439	1118	790	532	358	289	2353	1734	1093	1069	988	897	714	535	401	312	280	1344	1038	1355
Oct	1905	1784	1499	1227	818	490	288	203	194	2099	1196	996	956	832	705	506	340	233	183	177	1083	685	908
Nov	1780	1655	1318	991	567	280	150	129	129	1739	773	558	513	416	326	217	149	121	116	116	531	313	507
Dec	1616	1498	1174	833	434	185	102	100	100	1501	582	729	690	561	421	249	133	93	92	92	671	311	373
Year	1639	1620	1481	1330	1042	761	545	397	314	2175	1638	943	941	884	821	688	554	446	370	327	1194	1020	1248

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
** Derived according to DOE-2.1 LOADS Algorithms and TRY cloud cover data.
*** South exposure tilt 45 degrees.
**** Cinquemani, V., J. R. Owenby, Jr. and R. G. Baldwin. 1978. Input Data for Solar Systems. NCC, Asheville, NC.

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

Month	S	Under Clear Sky*								N	Corrected For Cloud Cover**								N
		SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NNW	NNE/ NNW	NNE/ NNW		S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NNW	NNE/ NNW	
Jan	1506	1378	1061	758	394	162	94	91	91	457	418	333	254	162	105	89	87	87	87
Feb	1682	1551	1259	988	607	311	167	131	131	769	712	593	482	327	203	145	129	129	129
Mar	1609	1551	1374	1199	870	555	334	218	195	792	754	669	587	447	319	237	197	187	187
Apr	1285	1364	1350	1306	1094	826	572	378	279	803	845	827	792	684	560	456	380	345	345
May	1007	1150	1268	1333	1229	1029	781	553	392	802	817	821	813	752	673	590	520	476	476
Jun	889	1042	1212	1330	1282	1123	886	653	479	843	935	1032	1096	1053	939	780	626	510	510
Jul	935	1082	1227	1321	1250	1076	838	610	445	879	968	1046	1093	1032	905	745	596	490	490
Aug	1146	1250	1290	1291	1131	899	657	454	331	980	1053	1066	1050	920	745	573	433	350	350
Sep	1448	1441	1324	1200	924	638	413	274	234	889	885	819	744	588	433	316	246	227	227
Oct	1619	1504	1257	1022	670	379	215	162	158	837	803	695	587	416	268	180	147	144	144
Nov	1542	1414	1109	820	455	205	115	105	105	473	429	344	267	175	118	97	94	94	94
Dec	1407	1291	984	686	337	130	82	81	81	627	589	470	349	196	100	76	75	75	75
Year	1337	1333	1226	1105	855	613	431	310	244	763	768	727	677	564	449	358	295	260	260

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

CHICAGO, ILLINOIS
WBAN 14819
TABLE A:

TRY Data (1974)

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															
50 to 54	0	0	0	0	3	2	0	0	5	46.0	742	20206	2	1	
45 to 49	3	1	0	3	3	2	3	4	19	42.6	734	16509	10	24	
40 to 44	0	3	5	14	18	11	4	0	55	39.0	708	12894	36	129	
35 to 39	18	16	19	15	11	22	17	17	135	34.5	642	9520	102	475	
30 to 34	21	25	26	21	18	15	24	23	173	30.9	424	6780	320	1455	
25 to 29	12	9	4	2	4	5	7	10	53	26.0	330	4931	414	3326	
20 to 24	6	2	0	5	13	7	5	7	45	19.3	294	3394	450	5509	
15 to 19	9	12	12	18	11	15	10	9	96	15.8	218	2082	526	7917	
10 to 14	0	2	10	3	4	5	12	1	37	10.9	147	1213	597	10768	
5 to 9	8	8	4	6	6	3	2	14	51	5.7	111	564	633	13839	
0 to 4	15	11	7	5	2	4	4	5	53	1.5	51	165	693	17160	
-5 to -1	1	3	3	1	0	2	5	3	18	-3.1	11	28	733	20743	
-10 to -6	0	1	3	0	0	0	0	0	4	-7.3	1	1	743	24436	
Feb															
55 to 59	0	0	0	2	0	0	0	0	2	45.0	672	20148	0	0	
50 to 54	0	0	0	1	2	0	0	0	3	42.3	669	16795	3	7	
45 to 49	3	3	1	5	13	5	3	3	36	40.9	660	13461	12	33	
40 to 44	2	2	6	10	9	13	6	3	51	38.1	611	10277	61	209	
35 to 39	12	12	7	8	8	13	11	12	83	33.6	553	7354	119	646	
30 to 34	9	8	14	11	9	10	16	14	91	29.1	466	4817	206	1469	
25 to 29	16	16	16	15	19	13	14	15	124	25.1	346	2756	326	2768	
20 to 24	17	22	21	23	22	23	18	13	159	20.1	222	1315	450	4687	
15 to 19	10	3	4	7	2	7	10	9	52	15.4	100	567	572	7299	
10 to 14	9	6	8	2	0	0	6	13	44	11.1	46	198	626	10290	
5 to 9	5	9	7	0	0	0	0	2	23	5.8	22	44	650	13496	
0 to 4	1	3	0	0	0	0	0	0	4	2.5	3	2	669	16814	
Mar															
75 to 79	0	0	0	0	2	1	0	0	3	62.7	742	29114	2	2	
70 to 74	0	0	0	2	2	1	0	0	5	61.6	740	25409	4	17	
65 to 69	0	0	0	2	0	3	1	0	6	60.2	733	21726	11	54	
60 to 64	3	4	3	1	1	1	2	4	19	57.8	724	18077	20	125	
55 to 59	4	2	0	0	7	5	2	3	23	51.8	707	14508	37	276	
50 to 54	2	1	3	7	7	3	7	1	31	47.7	676	11047	68	535	
45 to 49	12	7	8	11	12	16	13	16	95	42.7	628	7758	116	966	
40 to 44	9	12	16	17	23	24	15	12	128	38.0	518	4888	226	1816	
35 to 39	17	24	25	34	24	24	24	17	189	33.8	354	2665	390	3313	
30 to 34	29	17	21	10	9	8	20	28	142	29.3	172	1358	572	5726	
25 to 29	10	16	5	3	0	1	3	6	44	25.0	77	781	667	8869	
20 to 24	1	3	4	2	0	0	0	0	10	19.3	55	463	689	12271	
15 to 19	0	1	4	1	3	5	2	0	16	14.3	41	216	703	15744	
10 to 14	6	3	1	1	3	1	4	6	25	10.3	19	51	725	19299	
5 to 9	0	3	3	2	0	0	0	0	8	6.1	4	4	740	22972	

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

CHICAGO, ILLINOIS

TRY Data (1974)

Latitude 41.80 N

WBAN 14819

Longitude 87.90 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			16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Apr															
85 to 89	0	0	0	0	0	1	0	0	1	62.0	720	25854	0	0	
80 to 84	0	0	0	0	3	2	0	0	5	61.6	717	22259	3	5	
75 to 79	0	0	0	2	6	3	3	0	14	61.4	708	18689	12	35	
70 to 74	0	2	0	6	7	5	2	3	25	60.4	694	15184	26	130	
65 to 69	7	1	5	11	13	19	8	8	72	58.9	635	11808	85	354	
60 to 64	13	11	12	13	11	13	14	12	99	54.4	563	8773	157	919	
55 to 59	6	9	12	14	12	5	15	11	84	49.3	474	6208	246	1954	
50 to 54	10	12	15	14	15	12	7	11	96	44.6	383	4079	337	3425	
45 to 49	12	12	14	15	5	5	8	7	78	40.8	292	2407	428	5353	
40 to 44	14	10	14	9	12	13	13	11	96	36.9	214	1147	506	7693	
35 to 39	15	17	10	6	6	10	17	21	102	33.5	104	344	616	10490	
30 to 34	11	12	8	0	0	2	3	6	42	29.7	29	56	691	13802	
25 to 29	2	4	0	0	0	0	0	0	6	26.0	3	3	717	17349	
May															
85 to 89	0	0	0	2	0	0	0	0	2	75.5	744	22859	0	0	
80 to 84	0	0	1	1	1	1	0	0	4	72.3	741	19148	3	9	
75 to 79	0	0	1	1	7	4	3	0	16	69.3	735	15454	9	35	
70 to 74	3	0	1	7	11	11	2	1	36	63.9	710	11837	34	138	
65 to 69	6	7	12	20	11	9	10	12	87	60.8	662	8398	82	419	
60 to 64	14	9	22	20	25	27	17	13	147	54.7	549	5358	195	1099	
55 to 59	13	15	21	18	15	12	25	18	137	51.0	400	3002	344	2463	
50 to 54	29	32	19	14	15	20	19	23	171	47.3	234	1377	510	4558	
45 to 49	11	7	11	9	5	5	9	14	71	41.8	121	539	623	7440	
40 to 44	12	17	5	1	3	4	7	9	58	39.0	44	131	700	10752	
35 to 39	3	4	0	0	0	0	1	3	11	32.5	10	24	734	14365	
30 to 34	2	2	0	0	0	0	0	0	4	29.3	0	0	744	18061	
Jun															
90 to 94	0	0	0	0	2	2	0	0	4	77.5	720	18291	0	0	
85 to 89	0	0	0	1	4	2	0	0	7	70.6	714	14704	6	13	
80 to 84	0	0	1	8	17	16	5	0	47	67.1	692	11166	28	75	
75 to 79	2	0	10	23	23	20	9	5	92	64.5	639	7833	81	342	
70 to 74	9	7	29	25	20	12	14	7	123	62.6	520	4915	200	1024	
65 to 69	24	25	20	15	9	16	25	28	162	60.5	367	2639	353	2348	
60 to 64	10	15	20	16	13	19	24	21	138	55.0	233	1138	487	4447	
55 to 59	30	20	10	2	2	3	10	21	98	51.3	108	319	612	7228	
50 to 54	14	21	0	0	0	0	3	8	46	48.3	17	31	703	10540	
45 to 49	1	2	0	0	0	0	0	0	3	46.3	1	1	719	14110	

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

CHICAGO, ILLINOIS
WBAN 14819
TABLE A:

TRY Data (1974)

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*	
	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	2	4	5	0	0	11	75.8	743	16320	1	2	
90 to 94	0	0	0	8	15	11	2	0	36	74.1	726	12647	18	49	
85 to 89	0	0	8	18	16	22	8	2	74	71.6	671	9148	73	270	
80 to 84	4	0	9	14	18	10	22	10	87	69.5	597	5988	147	830	
75 to 79	17	13	25	36	29	35	18	20	193	66.7	461	3278	283	1840	
70 to 74	22	24	29	9	8	7	26	24	149	64.2	282	1453	462	3735	
65 to 69	28	27	19	5	3	3	16	28	129	61.6	129	434	615	6436	
60 to 64	22	27	3	1	0	0	1	9	63	58.3	33	44	711	9766	
55 to 59	0	2	0	0	0	0	0	0	2	54.0	0	0	744	13442	
Aug															
90 to 94	0	0	0	0	6	3	0	0	9	73.1	742	15369	2	2	
85 to 89	0	0	0	10	18	10	1	0	39	71.6	724	11688	20	41	
80 to 84	0	0	3	20	22	18	9	0	72	68.9	670	8181	74	254	
75 to 79	4	0	15	30	19	27	10	8	113	66.3	581	5027	163	820	
70 to 74	25	21	38	21	18	23	38	32	216	65.0	423	2462	321	1975	
65 to 69	33	31	25	10	10	10	28	36	183	61.4	216	874	528	4107	
60 to 64	22	23	10	2	0	2	7	16	82	58.0	70	194	674	7147	
55 to 59	9	17	2	0	0	0	0	1	29	55.9	8	11	736	10684	
50 to 54	0	1	0	0	0	0	0	0	1	50.0	1	1	743	14394	
Sep															
85 to 89	0	0	0	1	4	1	0	0	6	69.5	720	18805	0	0	
80 to 84	0	0	0	9	18	9	0	0	36	66.5	700	15239	20	34	
75 to 79	0	0	2	13	6	8	3	0	32	64.8	666	11827	54	222	
70 to 74	5	6	10	13	21	15	11	8	89	61.5	630	8579	90	574	
65 to 69	5	3	9	18	14	21	12	6	88	58.6	518	5712	202	1307	
60 to 64	14	13	24	19	12	12	28	33	155	54.8	417	3341	303	2536	
55 to 59	28	22	21	9	9	14	14	14	131	50.7	268	1673	452	4468	
50 to 54	22	27	12	5	3	7	15	18	109	46.8	129	679	591	7074	
45 to 49	10	11	8	2	3	3	7	5	49	41.9	53	246	667	10241	
40 to 44	3	2	1	1	0	0	0	6	13	37.1	21	87	699	13682	
35 to 39	3	5	3	0	0	0	0	0	11	33.2	8	15	712	17210	
30 to 34	0	1	0	0	0	0	0	0	1	31.0	0	0	720	20795	

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

CHICAGO, ILLINOIS
 MBAN 14819
 TABLE A:

TRY Data (1974)

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	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	1	10	3	0	0	14	62.3	743	17747	1	1
70 to 74	0	0	0	10	12	14	5	2	43	60.6	712	14091	32	65
65 to 69	4	3	4	15	13	12	11	9	71	57.0	668	10634	76	328
60 to 64	17	8	14	21	17	11	17	17	122	55.1	549	7520	195	934
55 to 59	9	15	13	15	17	16	14	6	105	50.0	460	5008	284	2142
50 to 54	14	14	23	11	13	13	8	16	112	46.2	343	2998	401	3852
45 to 49	5	8	10	17	8	17	19	14	98	41.0	235	1555	509	6129
40 to 44	23	20	21	3	3	6	15	18	109	38.1	141	614	603	8908
35 to 39	12	13	6	0	0	1	4	7	43	34.7	48	191	696	12205
30 to 34	9	10	2	0	0	0	0	4	25	29.5	21	39	723	15773
25 to 29	0	2	0	0	0	0	0	0	2	25.5	0	0	744	19454
Nov														
75 to 79	0	0	0	0	3	0	0	0	3	61.3	720	26320	0	0
70 to 74	0	0	0	2	3	3	0	0	8	59.8	715	22733	5	13
65 to 69	3	0	0	4	0	3	1	1	12	59.4	704	19189	16	69
60 to 64	0	2	3	0	2	1	8	5	21	56.5	695	15698	25	178
55 to 59	7	2	2	4	7	4	0	4	30	52.0	668	12293	52	373
50 to 54	2	6	5	11	12	11	5	5	57	47.8	626	9055	94	735
45 to 49	8	8	11	16	12	9	9	5	78	44.1	558	6078	162	1358
40 to 44	18	17	19	20	16	21	27	22	160	39.5	452	3522	268	2402
35 to 39	19	16	13	13	25	22	14	20	142	33.9	313	1651	407	4131
30 to 34	17	21	21	18	8	11	17	14	127	30.0	133	516	587	6596
25 to 29	15	18	15	2	2	5	9	12	78	25.6	48	65	672	9745
20 to 24	1	0	1	0	0	0	0	2	4	21.8	0	0	720	13280
Dec														
45 to 49	0	0	0	0	2	1	0	0	3	39.3	744	11732	0	0
40 to 44	4	1	3	11	21	11	8	8	67	37.7	735	8030	9	18
35 to 39	23	26	20	26	21	29	30	23	198	35.0	622	4599	122	307
30 to 34	37	33	38	33	33	36	31	35	276	30.8	351	2124	393	1552
25 to 29	11	13	15	15	10	5	9	7	85	25.6	163	974	581	4122
20 to 24	5	6	8	7	6	9	10	16	67	20.8	87	357	657	7225
15 to 19	11	7	7	1	0	2	5	2	35	16.1	33	88	711	10676
10 to 14	2	7	2	0	0	0	0	2	13	12.6	3	3	741	14311

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

CHICAGO, ILLINOIS
WBAW 14819
TABLE B:

TRY Data (1974)

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
95 to 99	0	0	0	2	4	5	0	0	11	0.0	0.0	0.0	77.5	76.3	74.8	0.0	0.0	75.8
90 to 94	0	0	0	8	23	16	2	0	49	0.0	0.0	0.0	75.3	74.0	73.9	74.5	0.0	74.2
85 to 89	0	0	8	32	42	36	9	2	129	0.0	0.0	73.8	72.4	71.0	70.6	71.1	73.0	71.4
80 to 84	4	0	14	52	79	56	36	10	251	71.5	0.0	71.4	69.2	66.8	67.4	69.4	71.0	68.3
75 to 79	23	13	53	106	105	101	46	33	480	69.0	69.4	67.9	65.0	64.7	64.5	66.6	68.0	65.8
70 to 74	64	60	107	95	102	91	98	77	694	66.2	66.8	64.4	62.1	60.8	60.8	63.3	65.0	63.4
65 to 69	110	97	94	100	73	96	112	128	810	61.8	62.4	60.7	58.5	57.5	58.3	60.3	61.2	60.2
60 to 64	115	112	111	93	81	86	118	130	846	57.4	57.9	55.9	53.2	52.9	53.4	55.2	56.2	55.5
55 to 59	106	104	81	64	69	59	80	78	641	52.3	52.7	50.9	49.8	49.2	49.9	49.4	51.1	50.9
50 to 54	93	114	77	63	70	68	64	82	631	47.3	48.1	47.4	45.5	45.0	45.4	46.7	47.0	46.7
45 to 49	65	59	63	78	63	63	71	68	530	43.3	43.4	42.4	41.0	40.4	41.2	42.0	42.4	42.0
40 to 44	85	84	90	86	105	103	95	89	737	38.6	39.0	38.3	37.9	38.0	38.2	38.2	38.2	38.3
35 to 39	122	133	103	102	95	121	118	120	914	34.5	34.3	34.1	33.9	33.6	33.8	34.5	34.2	34.1
30 to 34	135	129	130	93	77	82	111	124	881	30.1	30.5	30.3	30.1	30.0	29.9	30.2	30.2	30.2
25 to 29	66	78	55	37	35	29	42	50	392	25.8	25.6	25.5	24.8	24.6	25.0	25.4	25.9	25.4
20 to 24	30	33	34	37	41	39	33	38	285	20.3	20.4	20.3	19.5	19.5	19.9	20.3	20.8	20.1
15 to 19	30	23	27	27	16	29	27	20	199	15.4	15.7	15.8	15.6	16.4	15.1	15.5	16.0	15.6
10 to 14	17	18	21	6	7	6	22	22	119	10.8	11.6	11.2	10.2	10.4	11.8	10.8	11.0	11.0
5 to 9	13	20	14	8	6	3	2	16	82	5.9	5.4	5.6	6.0	5.3	4.3	9.0	6.2	5.8
0 to 4	16	14	7	5	2	4	4	5	57	1.9	1.5	1.7	1.6	1.5	0.7	1.5	1.0	1.6
-5 to -1	1	3	3	1	0	2	5	3	18	-3.0	-4.0	-1.3	-5.0	0.0	-4.0	-3.4	-2.0	-3.1
-10 to -6	0	1	3	0	0	0	0	0	4	0.0	-7.0	-7.5	0.0	0.0	0.0	0.0	0.0	-7.3

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 Max	Daily Min		4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	25.3	53	-8	31	19	23.7	82	78	75	83	81	0.0024	0.0024	0.0027	0.0026	0.0025	7.6
Feb	27.5	56	2	35	20	25.0	81	72	68	74	74	0.0022	0.0023	0.0025	0.0023	0.0023	10.3
Mar	38.4	79	6	46	32	34.8	77	71	63	73	71	0.0036	0.0038	0.0038	0.0040	0.0038	11.6
Apr	51.6	85	26	62	42	44.9	70	59	54	62	62	0.0049	0.0055	0.0057	0.0053	0.0053	12.5
May	56.8	87	33	65	49	51.0	76	64	62	68	69	0.0067	0.0075	0.0075	0.0072	0.0072	10.2
Jun	67.1	91	47	75	58	58.8	78	59	53	60	63	0.0090	0.0098	0.0097	0.0086	0.0092	11.1
Jul	75.6	99	58	84	66	65.9	76	57	51	60	62	0.0114	0.0122	0.0122	0.0117	0.0118	8.7
Aug	71.8	94	52	80	63	64.0	80	61	53	67	67	0.0109	0.0117	0.0112	0.0113	0.0113	8.0
Sep	61.4	87	34	71	52	53.7	76	54	49	63	63	0.0074	0.0077	0.0074	0.0075	0.0075	9.7
Oct	53.6	78	28	64	44	47.2	77	59	52	63	64	0.0057	0.0060	0.0059	0.0059	0.0059	9.8
Nov	40.9	77	23	48	34	37.9	83	74	70	79	78	0.0043	0.0045	0.0044	0.0045	0.0044	9.8
Dec	31.7	47	11	37	26	30.0	87	84	80	86	84	0.0031	0.0032	0.0033	0.0032	0.0032	9.3
Year	50.3	99	-8	58	42	44.9	79	66	61	70	70	0.0060	0.0064	0.0064	0.0062	0.0062	9.9

CHICAGO, ILLINOIS

WBAN 14819

TABLE D:

TRY Data (1974)

Latitude 41.80 N

Longitude 87.90 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	Base	(100s)*	Heat	Above	Base	(100s)*	Heat	Above	Base	(100s)*	Heat	Above	Base	(100s)*	Heat	Above	Base	(100s)*	Heat	Above	Base	(100s)*	Heat	Below	Hrs	Above	Hrs
100	0	564	0	0	0	507	0	0	0	484	0	0	0	502	0	0	0	544	0	0	0	1755	0	8760	4355	0	0	
99	0	553	0	0	0	496	0	0	0	473	0	0	0	491	0	0	0	534	0	0	0	1722	0	8759	4268	1	0	
98	0	542	0	0	0	485	0	0	0	462	0	0	1	480	0	0	0	523	0	0	0	1689	0	8759	4180	1	0	
97	0	531	0	0	0	474	0	1	451	0	2	469	0	0	512	0	0	0	512	0	0	0	1656	0	8757	4093	3	0
96	0	520	0	0	0	463	0	2	440	0	3	458	0	0	501	0	0	0	501	0	0	0	1623	0	8753	4005	7	0
95	0	509	0	1	452	0	3	429	0	4	447	0	0	490	0	0	0	490	0	0	0	1591	0	8750	3918	10	0	
94	0	498	0	2	441	0	5	418	0	5	436	0	0	479	0	0	0	479	0	0	0	1558	0	8747	3830	13	0	
93	0	487	0	3	430	0	6	407	0	6	407	0	7	426	0	0	0	468	0	0	0	1525	0	8742	3743	18	0	
92	0	476	0	4	419	0	10	396	0	10	415	0	1	457	0	0	0	457	0	0	0	1492	0	8734	3655	26	1	
91	0	465	0	6	408	0	15	386	0	15	386	0	1	446	0	0	0	446	0	0	0	1459	0	8723	3568	37	1	
90	0	454	0	9	397	0	22	375	1	22	375	1	1	435	0	0	0	435	0	0	0	1426	0	8709	3481	51	1	
89	0	443	0	14	386	0	30	364	1	30	364	1	2	424	0	0	0	424	0	0	0	1394	0	8690	3394	70	2	
88	0	432	0	20	376	1	38	353	1	38	353	1	3	413	0	0	0	413	0	0	0	1361	0	8671	3307	89	3	
87	1	421	0	26	365	1	47	343	2	47	343	2	4	402	0	0	0	402	0	0	0	1328	0	8649	3220	111	4	
86	3	410	0	30	354	1	55	332	2	55	332	2	6	391	0	0	0	391	0	0	0	1295	0	8623	3134	137	5	
85	6	400	0	37	344	1	64	322	3	64	322	3	9	380	0	1	1262	0	8590	3048	170	6	8549	2962	211	8		
84	8	389	0	46	333	2	75	312	3	75	312	3	14	370	0	2	1229	0	8549	2962	211	8	8506	2877	254	11		
83	8	378	0	56	323	2	89	302	4	89	302	4	18	359	1	3	1196	0	8459	2792	301	13	8408	2708	352	17		
82	13	367	0	68	312	3	105	292	5	105	292	5	23	348	1	5	1164	0	8351	2624	409	20	8287	2541	473	25		
81	18	356	1	79	302	4	120	282	6	120	282	6	32	337	1	7	1131	0	8205	2458	555	30	8103	2377	657	36		
80	20	345	1	89	292	4	138	272	8	138	272	8	42	327	1	12	1098	0	7996	2296	764	43	7891	2217	869	51		
79	24	335	1	102	282	5	156	263	9	156	263	9	52	316	2	20	1065	0	7780	2138	980	60	7653	2061	1107	71		
78	30	324	1	122	272	7	179	254	11	179	254	11	59	306	2	29	1033	1	7512	1985	1248	83	7375	1911	1385	96		
77	40	313	2	147	263	8	203	244	13	203	244	13	67	296	3	42	1000	1	7229	1838	1531	110	7055	1766	1705	126		
76	54	303	2	169	253	9	224	236	15	224	236	15	77	285	4	59	968	1	6878	1697	1882	144	6723	1629	2037	164		
75	68	293	3	189	244	11	243	227	17	243	227	17	87	275	5	76	936	2	6574	1562	2186	185	6414	1497	2346	208		
74	84	282	3	211	235	13	262	219	20	262	219	20	100	265	5	100	904	3	6266	1434	2494	232	6094	1372	2666	258		
73	102	272	4	230	226	15	279	210	22	279	210	22	120	255	7	136	872	4	5895	1312	2865	285	5718	1254	3042	315		
72	123	263	5	250	218	18	300	202	25	300	202	25	144	246	8	173	841	6	5565	1198	3195	346	5429	1143	3331	379		
71	144	253	7	267	210	20	322	195	28	322	195	28	164	236	9	212	810	8	5310	1089	3450	413	5176	1036	3584	448		
70	168	244	8	283	201	23	343	187	32	343	187	32	182	227	11	260	779	10	5044	985	3716	484	4919	936	3841	522		
69	190	234	10	306	193	26	364	179	35	364	179	35	206	218	13	320	749	13	4878	887	3979	559	4711	879	4111	609		
68	210	225	12	327	186	29	381	172	39	381	172	39	231	209	15	389	720	16	4549	807	4259	619	4421	829	4649	719		
67	230	217	14	348	178	33	395	165	43	395	165	43	254	201	18	447	691	21	4229	717	4019	699	4179	819	4429	719		
66	249	208	17	367	171	36	407	158	47	407	158	47	275	193	20	506	663	25	3979	666	3819	666	3979	666	3819	666		
65	268	200	19	385	163	40	421	151	51	421	151	51	293	184	23	582	636	31	3779	613	3619	613	3779	613	3619	613		
64	286	192	22	403	156	44	435	145	55	435	145	55	312	177	26	648	609	37	3679	563	3519	563	3679	563	3519	563		
63	309	184	25	420	150	48	450	138	60	450	138	60	335	169	29	722	583	44	3579	513	3419	513	3579	513	3419	513		
62	334	176	28	444	143	52	467	132	64	467	132	64	360	161	33	812	558	51	3479	463	3319	463	3479	463	3319	463		
61	357	168	32	467	137	57	483	126	69	483	126	69	384	154	37	888	534	60	3379	413	3219	413	3379	413	3219	413		
60	378	161	35	481	130	62	499	120	74	499	120	74	409	147	41	949	510	69	3279	363	3119	363	3279	363	3119	363		
59	392	154	39	495	124	67	514	114	79	514	114	79	427	140	45	1006	487	79	3179	313	3019	313	3179	313	3019	313		
58	405	147	43	509	118	72	526	108	84	526	108	84	439	134	49	1058	464	89	3079	263	2919	263	3079	263	2919	263		
57	428	140	47	521	113	77	541	102	90	541	102	90	454	127	54	1116	442	100	2979	213	2819	213	2979	213	2819	213		
56	450	134	52	534	107	82	555	97	95	555	97	95	471	121	58	1173	421	112	2879	163	2719	163	2879	163	2719	163		
55	463	127	56	546	101	87	569	92	101	569	92	101	490	115	63	1230	400	124	2779	113	2619	113	2779	113	2619	113		

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 0:

TRY Data (1974)

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*	Below Base 100s*	Above Base 100s*
54	479	121	61	558	96	93	583	86	106	554	95	96	507	109	68	1301	380	136	4776	887	3984	561
53	497	115	66	571	91	99	597	81	112	568	89	102	520	103	73	1371	361	150	4633	840	4127	602
52	511	109	71	581	85	104	611	76	118	580	84	108	532	97	79	1436	342	164	4507	794	4253	644
51	524	103	76	591	80	110	625	72	125	593	79	114	543	92	84	1487	324	178	4396	750	4364	687
50	537	98	81	606	75	116	640	67	131	607	74	120	557	86	89	1532	306	193	4280	706	4480	731
49	549	92	87	621	71	122	653	63	137	620	69	126	570	81	95	1572	288	209	4173	664	4587	776
48	560	87	92	636	66	129	663	58	144	634	65	132	582	76	101	1606	272	225	4077	623	4683	823
47	573	82	98	653	61	135	676	54	151	647	60	139	599	71	107	1643	255	241	3967	583	4793	870
46	586	76	104	669	57	142	689	50	157	657	56	145	618	66	113	1684	239	258	3855	544	4905	919
45	600	71	110	684	53	148	703	46	164	670	51	152	631	61	119	1726	223	275	3745	506	5015	968
44	615	66	116	700	49	155	720	42	172	690	47	158	641	57	125	1767	208	292	3625	469	5135	1019
43	632	62	122	716	45	163	737	38	179	707	43	165	657	52	132	1807	193	310	3503	433	5257	1071
42	649	57	129	730	41	170	755	35	186	719	39	173	677	48	139	1858	178	328	3370	399	5390	1124
41	667	53	135	746	38	177	778	32	194	740	36	180	695	44	145	1916	164	347	3217	366	5543	1179
40	687	49	142	767	34	185	803	29	202	766	32	187	717	40	152	1973	151	367	3044	334	5716	1235
39	706	45	149	793	31	192	827	26	210	789	29	195	742	36	160	2030	138	387	2871	305	5889	1293
38	722	41	156	813	28	201	847	23	218	809	26	203	762	33	167	2083	125	407	2723	277	6037	1353
37	740	37	163	829	25	209	864	21	227	833	24	211	778	30	175	2154	114	428	2560	250	6200	1414
36	766	34	171	847	23	217	880	19	236	862	21	220	808	26	183	2247	103	450	2348	226	6412	1477
35	791	31	179	868	21	226	899	17	245	889	19	229	840	24	191	2338	93	473	2133	203	6627	1542
34	814	28	187	894	18	234	923	15	254	911	17	238	865	21	200	2426	84	497	1926	183	6834	1609
33	843	25	195	920	17	244	945	13	263	929	15	247	894	19	208	2521	76	522	1705	165	7055	1679
32	875	23	204	942	15	253	962	12	273	947	14	256	917	17	218	2611	69	548	1504	149	7256	1750
31	899	21	212	958	13	262	972	10	282	967	12	266	939	16	227	2679	62	574	1345	135	7415	1824
30	920	19	222	969	12	272	982	9	292	980	11	276	955	14	236	2737	57	601	1216	122	7544	1899
29	937	17	231	978	11	282	993	8	302	987	10	285	965	13	246	2795	51	629	1104	110	7656	1975
28	949	16	240	985	10	292	1001	7	312	995	9	295	977	12	256	2842	47	657	1009	100	7751	2052
27	961	14	250	993	9	301	1007	6	322	1003	8	305	986	11	265	2887	43	686	921	90	7839	2130
26	973	13	260	1001	8	311	1013	5	332	1007	7	315	992	9	275	2925	39	715	846	81	7914	2209
25	982	12	269	1007	7	322	1019	5	342	1010	6	325	999	9	285	2951	35	744	790	73	7970	2288
24	990	11	279	1013	6	332	1026	4	352	1017	5	336	1005	8	295	2970	32	774	737	66	8023	2368
23	996	10	289	1018	5	342	1035	3	363	1025	5	346	1011	7	305	2989	29	804	684	59	8076	2448
22	1000	9	299	1025	5	352	1044	3	373	1031	4	356	1018	6	316	3013	26	834	628	52	8132	2529
21	1005	8	309	1032	4	362	1053	2	384	1038	3	366	1025	5	326	3034	24	864	571	46	8189	2611
20	1014	7	319	1042	3	373	1061	2	394	1046	3	377	1032	5	336	3052	21	894	511	41	8249	2693
19	1023	6	329	1052	3	383	1068	2	405	1054	2	387	1039	4	346	3069	19	925	454	36	8306	2776
18	1028	6	340	1059	2	394	1076	1	416	1060	2	398	1045	3	357	3080	17	956	410	31	8350	2859
17	1034	5	350	1066	2	404	1079	1	426	1067	2	409	1049	3	367	3092	15	987	372	28	8388	2943
16	1039	4	360	1072	2	415	1080	1	437	1074	1	419	1054	2	378	3109	13	1018	331	24	8429	3027
15	1044	4	371	1074	2	426	1080	1	448	1078	1	430	1059	2	388	3128	11	1049	295	21	8465	3112
14	1051	3	381	1076	1	436	1081	1	459	1081	1	441	1065	2	399	3143	10	1080	261	18	8499	3196
13	1057	3	392	1077	1	447	1082	1	470	1084	1	452	1071	2	410	3159	9	1112	229	16	8531	3282
12	1060	3	402	1078	1	458	1083	0	480	1085	1	463	1074	1	420	3175	7	1143	203	14	8557	3367
11	1062	2	413	1079	1	469	1085	0	491	1086	1	473	1078	1	431	3185	6	1175	183	12	8577	3453
10	1065	2	424	1080	1	480	1086	0	502	1086	1	484	1082	1	442	3191	5	1207	168	10	8592	3539
9	1068	2	434	1082	1	490	1088	0	513	1086	1	495	1085	1	453	3196	4	1239	155	8	8605	3625

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 pe are calculated by subtracting the Hrs Above from X times 365

CHICAGO, ILLINOIS
WBAN 14819
TABLE D:

TRY Data (1974)

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)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Below	Deg	Above	Deg				
	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	100s*	Base	100s*				
8 1068	1	445	1084	0	501	1089	0	524	1086	1	506	1086	1	464	3202	4 1271	143	7	8617	3711
7 1073	1	456	1086	0	512	1090	0	535	1087	0	517	1086	1	475	3212	3 1303	125	5	8635	3797
6 1079	1	466	1087	0	523	1092	0	546	1087	0	528	1086	1	485	3225	2 1335	103	4	8657	3883
5 1081	1	477	1088	0	534	1093	0	557	1088	0	539	1086	0	496	3237	2 1367	86	3	8674	3970
4 1083	1	488	1090	0	545	1093	0	567	1089	0	549	1086	0	507	3245	1 1400	71	3	8689	4057
3 1085	1	499	1091	0	556	1094	0	578	1090	0	560	1087	0	518	3252	1 1432	59	2	8701	4144
2 1086	0	510	1092	0	567	1095	0	589	1090	0	571	1088	0	529	3261	1 1465	46	1	8714	4231
1 1087	0	521	1093	0	578	1095	0	600	1091	0	582	1089	0	540	3270	0 1498	34	1	8726	4318
0 1088	0	532	1093	0	588	1095	0	611	1092	0	593	1089	0	551	3275	0 1530	26	1	8734	4405
-1 1090	0	542	1094	0	599	1095	0	622	1093	0	604	1091	0	562	3278	0 1563	18	0	8742	4493
-2 1091	0	553	1094	0	610	1095	0	633	1093	0	615	1092	0	572	3281	0 1596	13	0	8747	4580
-3 1092	0	564	1094	0	621	1095	0	644	1094	0	626	1093	0	583	3282	0 1629	10	0	8750	4668
-4 1092	0	575	1094	0	632	1095	0	655	1094	0	637	1094	0	594	3282	0 1662	7	0	8753	4755
-5 1092	0	586	1095	0	643	1095	0	666	1095	0	648	1095	0	605	3283	0 1694	4	0	8756	4843
-6 1092	0	597	1095	0	654	1095	0	677	1095	0	659	1095	0	616	3284	0 1727	3	0	8757	4930
-7 1093	0	608	1095	0	665	1095	0	688	1095	0	670	1095	0	627	3285	0 1760	2	0	8758	5018
-8 1094	0	619	1095	0	676	1095	0	699	1095	0	681	1095	0	638	3285	0 1793	0	0	8760	5105
-9 1095	0	630	1095	0	687	1095	0	710	1095	0	692	1095	0	649	3285	0 1826	0	0	8760	5193

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:

TRY Data (1974)

Latitude 41.80 N

Longitude 87.90 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:	3764	3274	2782	2281	1740	1118	582	291	91	12	0
Annual Wet Bulb Cooling deg-hrs:	43792.	33024.	23746.	15914.	9566.	5025.	2264.	823.	176.	18.	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	38	36	34	31	28	22	15	9	4	.001
.002	1	1	1	1	1	1	1	1	1	1	1	34	33	32	31	30	28	25	20	13	8	4	.002
.003	2	3	3	3	3	3	3	3	3	3	3	27	27	27	26	25	24	22	17	12	7	4	.003
.004	3	5	6	6	6	6	6	6	6	6	6	22	22	22	21	21	20	18	15	10	6	3	.004
.005	5	7	9	10	10	10	11	11	11	11	11	17	17	17	17	17	17	15	13	9	6	3	.005
.006	6	9	11	13	14	15	15	16	16	16	16	13	13	13	13	13	13	13	11	8	5	2	.006
.007	7	11	14	17	18	20	20	21	21	21	21	10	10	10	10	10	10	10	9	6	4	2	.007
.008	8	13	17	21	23	24	26	27	27	27	27	7	7	7	7	7	7	7	7	5	3	2	.008
.009	9	15	20	24	27	29	31	33	33	34	34	5	5	5	5	5	5	5	5	4	2	1	.009
.010	10	17	23	28	31	34	37	39	40	40	41	4	4	4	4	4	4	4	3	3	2	1	.010
.011	11	19	26	32	35	39	42	45	46	47	48	2	2	2	2	2	2	2	2	2	1	1	.011
.012	13	21	29	35	40	44	48	51	53	55	56	1	1	1	1	1	1	1	1	1	1	1	.012
.013	14	23	32	39	44	49	53	58	60	62	64	1	1	1	1	1	1	1	1	1	0	0	.013
.014	15	25	35	43	48	54	59	64	68	70	72	0	0	0	0	0	0	0	0	0	0	0	.014
.015	16	27	38	46	52	58	64	70	75	78	80	0	0	0	0	0	0	0	0	0	0	0	.015
.016	17	29	41	50	56	63	69	77	82	86	88	0	0	0	0	0	0	0	0	0	0	0	.016
.017	18	31	44	54	61	68	75	83	89	94	97	0	0	0	0	0	0	0	0	0	0	0	.017
.018	20	33	47	57	65	73	80	89	96	102	105	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	48	60	51	68	49	38	58	38	34	46	64	50
VERTICAL													
NORTH	100	100	100	99	96	91	89	98	100	100	100	100	96
WEST	56	56	73	70	82	68	61	73	55	50	59	72	66
SOUTH	36	41	62	65	85	78	68	73	46	33	36	49	57
EAST	59	57	68	65	72	65	54	68	50	47	52	65	61
% 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

United States Through 1976.

CHICAGO, ILLINOIS
WBAN 14819
TABLE H:

TRY Data (1974)

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/ 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	1793	1665	1328	997	589	286	161	140	140	1803	855	724	671	547	426	281	178	139	132	132	709	412	507
Feb	1913	1786	1494	1212	816	471	270	191	186	2113	1197	842	787	675	565	412	283	215	189	186	890	592	760
Mar	1776	1712	1549	1388	1067	734	475	310	258	2327	1674	836	825	764	697	574	455	371	316	298	955	802	1107
Apr	1431	1496	1493	1472	1281	1014	742	511	364	2361	2130	1000	1036	1017	985	870	730	600	496	436	1348	1284	1459
May	1139	1283	1403	1486	1418	1232	973	720	525	2294	2432	949	1015	1057	1084	1043	949	829	714	618	1288	1409	1789
Jun	1019	1183	1350	1476	1465	1320	1079	828	639	2247	2560	944	1017	1082	1129	1102	1008	876	743	645	1535	1736	2007
Jul	1066	1220	1364	1474	1439	1276	1033	784	595	2249	2488	984	1093	1179	1241	1201	1077	906	735	600	1714	1888	1944
Aug	1287	1381	1423	1447	1309	1082	825	596	435	2280	2215	1026	1080	1087	1080	987	856	722	607	530	1397	1416	1719
Sep	1610	1592	1497	1391	1125	825	571	388	308	2274	1806	1143	1153	1094	1023	850	659	501	387	338	1481	1236	1354
Oct	1821	1711	1465	1235	865	541	334	231	219	2127	1334	979	940	823	703	511	350	248	197	189	1113	743	969
Nov	1814	1694	1368	1064	654	349	193	157	157	1875	948	767	738	624	508	346	225	160	144	143	773	468	566
Dec	1733	1606	1271	935	534	253	140	130	130	1700	766	507	486	411	332	228	152	121	117	117	482	302	402
Year	1531	1526	1417	1298	1048	783	568	417	330	2137	1703	891	904	864	815	702	578	475	399	354	1141	1026	1215

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
** Derived according to DOE-2.1 LOADS Algorithms and TRY cloud cover data.
*** South exposure tilt 45 degrees.
**** Cinquemani, V., J. R. Owenby, Jr. and R. G. Baldwin. 1978. Input Data for Solar Systems. NCD, Asheville, NC.

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

Month	S	Under Clear Sky*								S	Corrected For Cloud Cover**								N
		SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N		SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	
Jan	1554	1422	1114	827	466	213	122	114	114	617	564	453	351	224	139	111	108	108	
Feb	1629	1505	1250	1014	660	363	201	153	151	707	656	561	469	333	224	170	153	152	
Mar	1449	1418	1289	1157	875	584	362	237	210	681	678	628	573	468	367	296	253	242	
Apr	1090	1195	1226	1219	1056	823	583	389	287	789	837	832	809	712	591	479	393	351	
May	818	977	1131	1228	1172	1010	783	562	395	747	809	861	892	858	778	673	573	493	
Jun	713	874	1071	1215	1208	1086	872	651	475	718	790	868	923	902	823	708	594	507	
Jul	759	917	1093	1215	1188	1051	835	617	447	738	845	950	1020	988	883	732	584	469	
Aug	961	1088	1165	1198	1082	885	659	462	338	809	871	890	889	811	699	583	485	426	
Sep	1285	1307	1238	1156	926	665	445	297	249	917	947	904	848	700	534	396	304	275	
Oct	1533	1433	1224	1027	706	424	249	184	178	819	785	684	581	417	278	192	158	154	
Nov	1563	1436	1147	882	525	261	146	128	128	651	621	521	421	281	175	126	117	117	
Dec	1503	1374	1064	774	419	184	110	106	105	429	408	343	275	182	119	98	95	95	
Year	1236	1244	1167	1076	838	630	449	326	257	718	734	708	671	574	469	382	319	283	

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

CINCINNATI, OHIO
WBAN 93814
TABLE A:

TRY Data (1957)

Latitude 39.10 N
Longitude 84.70 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	1	2	0	0	3	54.0	744	25661	0	0	
55 to 59	1	1	2	3	4	4	6	2	23	53.8	738	21955	6	14	
50 to 54	2	2	1	1	1	0	0	2	9	51.0	710	18342	34	121	
45 to 49	0	0	1	2	0	0	0	0	3	45.3	708	14798	36	297	
40 to 44	5	3	2	0	5	3	2	7	27	37.4	702	11269	42	488	
35 to 39	15	12	10	13	26	27	20	15	138	34.0	633	7871	111	810	
30 to 34	18	13	15	24	21	21	20	17	149	29.4	500	5054	244	1713	
25 to 29	13	21	17	22	19	11	14	16	133	24.8	333	2990	411	3369	
20 to 24	11	12	19	12	7	16	12	7	96	20.0	219	1626	525	5725	
15 to 19	17	17	11	7	6	6	15	18	97	15.5	116	769	628	8588	
10 to 14	7	1	4	5	0	0	1	6	24	11.3	54	377	690	11916	
5 to 9	1	7	5	3	3	2	0	0	21	7.0	27	167	717	15426	
0 to 4	0	1	5	1	0	1	2	0	10	1.9	15	64	729	19043	
-5 to -1	3	3	1	0	0	0	1	3	11	-3.5	7	8	737	22707	
Feb															
65 to 69	0	0	0	1	3	0	0	0	4	54.5	672	19563	0	0	
60 to 64	0	1	3	5	5	4	3	0	21	56.5	665	16218	7	15	
55 to 59	1	2	1	4	4	7	1	3	23	53.5	636	12958	36	115	
50 to 54	7	6	5	2	9	10	5	3	47	47.7	601	9843	71	360	
45 to 49	4	1	2	8	10	13	13	9	60	42.1	560	6935	112	812	
40 to 44	10	9	10	11	13	9	10	14	86	37.8	496	4301	176	1538	
35 to 39	32	24	17	20	25	24	26	27	195	34.0	374	2100	298	2697	
30 to 34	9	14	20	22	15	15	22	10	127	29.6	167	767	505	4724	
25 to 29	17	20	20	11	0	2	2	15	87	25.1	62	193	610	7510	
20 to 24	3	4	4	0	0	0	2	3	16	21.0	12	35	660	10712	
15 to 19	1	3	2	0	0	0	0	0	6	16.7	2	1	670	14038	
Mar															
70 to 74	0	0	0	0	6	4	0	0	10	54.2	743	22349	1	1	
65 to 69	0	0	0	3	6	4	3	1	17	53.1	732	18667	12	39	
60 to 64	0	0	0	5	4	9	5	1	24	50.4	710	15058	34	150	
55 to 59	1	0	3	5	9	7	7	7	39	45.9	680	11581	64	393	
50 to 54	10	6	8	18	13	11	10	9	85	43.9	633	8300	111	832	
45 to 49	8	10	12	14	20	22	19	9	114	39.4	535	5369	209	1621	
40 to 44	16	15	16	17	17	16	18	25	140	36.7	412	3006	332	2978	
35 to 39	25	20	20	22	17	19	17	20	160	33.5	249	1340	495	5032	
30 to 34	17	20	19	8	1	1	12	16	94	29.0	108	472	636	7884	
25 to 29	13	17	11	1	0	0	2	3	47	25.3	35	118	709	11250	
20 to 24	2	2	3	0	0	0	0	2	9	20.9	9	30	735	14882	
15 to 19	1	3	1	0	0	0	0	0	5	16.2	1	1	743	18573	

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

CINCINNATI, OHIO
WBAN 93814
TABLE A:

TRY Data (1957)

Latitude 39.10 N
Longitude 84.70 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														
80 to 84	0	0	0	5	25	17	0	0	47	65.8	711	19153	9	8
75 to 79	0	0	1	17	5	8	6	0	37	64.0	659	15739	61	194
70 to 74	0	0	11	10	5	11	20	9	66	63.5	614	12540	106	595
65 to 69	19	7	16	9	11	11	13	19	105	60.8	531	9663	189	1318
60 to 64	13	21	6	6	2	0	3	12	63	58.9	429	7279	291	2534
55 to 59	13	9	10	5	7	13	6	5	68	52.0	379	5250	341	4105
50 to 54	3	9	9	12	14	6	11	5	69	47.7	301	3531	419	5986
45 to 49	11	8	11	5	8	9	9	11	72	41.8	232	2183	488	8238
40 to 44	7	11	2	6	3	7	7	10	53	37.4	171	1184	549	10839
35 to 39	12	9	13	11	9	5	10	13	82	33.4	112	469	608	13724
30 to 34	7	7	9	4	1	3	5	6	42	29.2	43	121	677	16976
25 to 29	5	9	2	0	0	0	0	0	16	25.1	8	12	712	20467
May														
85 to 89	0	0	0	1	3	0	0	0	4	68.7	741	17484	3	2
80 to 84	0	0	1	7	14	13	0	0	35	66.3	731	13791	13	29
75 to 79	0	0	1	18	35	31	7	0	92	63.6	680	10247	64	205
70 to 74	2	0	13	21	14	25	28	3	106	63.4	577	7105	167	783
65 to 69	18	15	27	19	9	6	28	35	157	60.9	455	4523	289	1921
60 to 64	29	22	17	11	7	9	10	25	130	56.8	287	2680	457	3798
55 to 59	18	20	14	6	8	3	9	8	86	52.2	184	1504	560	6342
50 to 54	11	14	8	6	0	3	5	9	56	47.1	107	797	637	9355
45 to 49	5	9	7	1	0	0	3	5	30	42.1	61	380	683	12658
40 to 44	5	5	4	3	3	3	3	4	30	36.8	35	134	709	16132
35 to 39	4	6	1	0	0	0	0	4	15	34.3	12	22	732	19740
30 to 34	1	2	0	0	0	0	0	0	3	31.0	0	0	744	23438
Jun														
95 to 99	0	0	0	0	1	0	0	0	1	77.0	720	17684	0	0
90 to 94	0	0	0	4	5	5	0	0	14	76.0	716	14091	4	7
85 to 89	0	0	1	4	12	7	3	0	27	71.3	699	10554	21	70
80 to 84	0	0	4	18	30	40	16	1	109	69.7	658	7148	62	264
75 to 79	6	1	13	31	26	24	35	18	154	68.4	515	4213	205	929
70 to 74	30	25	30	19	5	8	21	36	174	67.0	344	2057	376	2373
65 to 69	28	27	23	5	9	6	12	25	135	63.4	187	753	533	4669
60 to 64	21	23	13	8	2	0	3	10	80	59.3	63	160	657	7676
55 to 59	5	14	6	1	0	0	0	0	26	54.6	7	8	713	11124

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

CINCINNATI, OHIO
WBAN 93814
TABLE A:

TRY Data (1957)

Latitude 39.10 N
Longitude 84.70 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	0	1	0	0	1	74.0	744	15686	0	0
90 to 94	0	0	0	1	10	13	2	0	26	73.1	737	11975	7	9
85 to 89	0	0	0	19	36	36	11	0	102	72.3	678	8388	66	142
80 to 84	0	0	7	28	31	32	35	8	141	70.1	559	5284	185	758
75 to 79	14	1	18	29	12	8	30	36	148	68.1	414	2868	330	2062
70 to 74	41	42	37	15	4	3	15	28	185	67.2	244	1186	500	4100
65 to 69	19	23	23	1	0	0	0	18	84	62.9	99	387	645	7021
60 to 64	18	21	8	0	0	0	0	3	50	58.3	36	72	708	10426
55 to 59	1	6	0	0	0	0	0	0	7	56.1	0	0	744	14074
Aug														
90 to 94	0	0	0	2	13	13	0	0	28	71.3	743	13644	1	1
85 to 89	0	0	0	14	29	28	6	0	77	70.8	692	10039	52	116
80 to 84	0	0	4	24	27	27	28	0	110	67.5	600	6803	144	600
75 to 79	6	0	13	27	13	16	25	21	121	66.5	486	4094	258	1611
70 to 74	29	25	25	20	10	9	27	37	182	65.3	348	1992	396	3229
65 to 69	28	27	29	6	1	0	6	29	126	62.4	168	741	576	5698
60 to 64	27	25	18	0	0	0	1	6	77	57.4	67	184	677	8861
55 to 59	3	14	3	0	0	0	0	0	20	55.2	11	27	733	12424
50 to 54	0	2	1	0	0	0	0	0	3	50.0	2	4	742	16121
Sep														
90 to 94	0	0	0	1	1	4	0	0	6	70.3	718	18275	2	1
85 to 89	0	0	0	2	5	2	1	0	10	71.1	707	14703	13	29
80 to 84	0	0	0	5	12	14	4	0	35	67.9	690	11190	30	116
75 to 79	0	0	2	12	28	31	8	4	85	66.2	645	7832	75	358
70 to 74	22	15	19	26	24	17	31	24	178	66.0	528	4870	192	996
65 to 69	22	25	19	25	14	14	19	24	162	61.7	326	2730	394	2456
60 to 64	13	8	15	9	5	5	17	13	85	55.3	209	1423	511	4749
55 to 59	13	15	17	8	1	3	8	17	82	52.6	124	604	596	7530
50 to 54	14	16	11	2	0	0	2	7	52	48.4	56	190	664	10716
45 to 49	6	8	5	0	0	0	0	1	20	42.6	15	32	705	14158
40 to 44	0	3	2	0	0	0	0	0	5	38.8	1	1	719	17727

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

CINCINNATI, OHIO
WBAN 93814
TABLE A:

TRY Data (1957)

Latitude 39.10 N
Longitude 84.70 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														
80 to 84	0	0	0	0	0	1	0	0	1	61.0	744	21754	0	0
75 to 79	0	0	0	0	4	3	0	0	7	58.6	742	18037	2	3
70 to 74	0	0	0	4	15	10	1	0	30	57.4	724	14358	20	44
65 to 69	2	0	0	11	16	19	10	6	64	54.7	683	10820	61	226
60 to 64	8	9	8	21	18	21	22	10	117	55.1	602	7584	142	710
55 to 59	14	9	11	18	14	11	15	24	116	49.8	483	4881	261	1727
50 to 54	23	20	22	19	14	14	20	16	148	46.4	345	2781	399	3347
45 to 49	20	24	22	10	3	5	14	21	119	43.1	206	1407	538	5693
40 to 44	11	11	9	5	5	6	6	5	58	37.3	125	637	619	8643
35 to 39	14	14	12	3	4	3	5	11	66	33.6	69	162	675	11888
30 to 34	1	6	9	2	0	0	0	0	18	31.5	5	4	739	15450
Nov														
65 to 69	0	0	0	1	5	1	0	0	7	53.9	720	17137	0	0
60 to 64	1	2	1	4	14	13	3	1	39	54.1	701	13568	19	31
55 to 59	2	3	8	17	16	18	14	3	81	50.8	655	10175	65	238
50 to 54	15	15	9	10	9	12	17	21	108	48.0	559	7137	161	800
45 to 49	15	7	10	18	16	14	13	18	111	41.9	444	4646	276	1909
40 to 44	14	16	13	12	13	13	12	6	99	37.4	331	2697	389	3560
35 to 39	14	17	20	14	11	12	18	22	128	32.6	219	1296	501	5759
30 to 34	19	17	12	10	3	4	9	12	86	28.5	110	501	610	8564
25 to 29	6	8	14	2	0	1	1	5	37	25.0	40	146	680	11809
20 to 24	4	5	2	2	3	2	3	2	23	20.3	10	19	710	15282
15 to 19	0	0	1	0	0	0	0	0	1	18.0	0	0	720	18863
Dec														
60 to 64	0	0	0	0	2	2	0	0	4	49.5	744	17564	0	0
55 to 59	3	1	0	7	14	8	5	7	45	50.2	733	13865	11	21
50 to 54	15	18	16	10	9	15	12	13	106	48.9	650	10371	94	247
45 to 49	5	1	3	9	17	18	13	7	73	41.6	561	7366	183	962
40 to 44	14	15	12	16	19	23	27	17	143	37.2	473	4756	271	2072
35 to 39	25	24	23	26	20	9	11	18	156	33.8	302	2800	442	3836
30 to 34	6	9	9	15	6	12	16	11	84	29.6	173	1639	571	6395
25 to 29	10	11	18	4	0	0	3	13	59	25.3	103	932	641	9408
20 to 24	10	10	6	0	1	3	3	4	37	19.3	61	525	683	12721
15 to 19	2	2	0	0	2	0	0	0	6	15.5	33	300	711	16216
10 to 14	0	1	2	2	0	0	0	0	5	10.6	29	143	715	19779
5 to 9	3	3	4	4	3	3	3	3	26	5.8	16	18	728	23374

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

CINCINNATI, OHIO
WBAN 93814
TABLE B:

TRY Data (1957)

Latitude 39.10 N
Longitude 84.70 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	77.0	74.0	0.0	0.0	75.5
90 to 94	0	0	0	8	29	35	2	0	74	0.0	0.0	0.0	74.6	72.6	72.5	73.0	0.0	72.7
85 to 89	0	0	1	40	85	73	21	0	220	0.0	0.0	76.0	72.7	71.0	71.3	72.2	0.0	71.5
80 to 84	0	0	16	87	139	144	83	9	478	0.0	0.0	72.7	69.7	67.3	67.1	70.5	72.4	68.5
75 to 79	26	2	48	134	123	121	111	79	644	71.0	71.5	69.8	66.2	64.1	64.3	67.5	70.0	66.6
70 to 74	124	107	135	115	83	87	143	137	931	68.0	68.4	66.8	63.6	61.3	62.0	64.4	66.5	65.4
65 to 69	136	124	137	81	74	61	91	157	861	63.1	64.4	62.9	58.8	56.2	56.0	59.9	61.6	61.2
60 to 64	130	132	89	69	60	65	67	81	693	58.4	59.0	57.8	54.6	53.3	51.9	55.0	57.4	56.5
55 to 59	75	94	73	74	77	74	71	76	616	53.3	54.3	52.9	50.5	48.4	49.3	50.0	51.6	51.4
50 to 54	100	106	90	80	69	71	82	85	683	48.9	49.2	48.6	45.6	44.1	44.3	47.0	48.2	47.2
45 to 49	74	68	73	67	74	81	84	81	602	42.5	43.3	42.8	42.0	40.3	40.3	40.7	42.1	41.7
40 to 44	82	88	70	70	78	80	85	88	641	38.3	38.8	38.3	36.0	36.4	36.0	36.6	37.0	37.2
35 to 39	141	126	116	109	112	99	107	130	940	33.8	34.0	33.9	33.6	33.3	33.4	33.5	33.5	33.6
30 to 34	78	88	93	85	47	56	84	72	603	29.1	29.8	29.7	29.6	29.6	29.5	28.9	28.7	29.4
25 to 29	64	86	82	40	19	14	22	52	379	25.7	25.3	25.1	24.4	23.8	23.9	24.8	25.1	25.0
20 to 24	30	33	34	14	11	21	20	18	181	20.3	20.8	20.5	20.9	19.6	18.9	18.9	19.4	20.0
15 to 19	21	25	15	7	8	6	15	18	115	15.5	15.7	16.8	15.0	14.6	15.3	14.9	15.8	15.6
10 to 14	7	2	6	7	0	0	1	6	29	10.9	11.5	10.0	10.9	0.0	0.0	13.0	12.7	11.2
5 to 9	4	10	9	7	6	5	3	3	47	6.2	6.9	6.8	6.6	6.5	5.4	5.0	5.3	6.3
0 to 4	0	1	5	1	0	1	2	0	10	0.0	4.0	1.6	4.0	0.0	2.0	0.5	0.0	1.9
-5 to -1	3	3	1	0	0	0	1	3	11	-4.7	-3.3	-2.0	0.0	0.0	0.0	-3.0	-3.0	-3.5

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 Max	Ave Min		4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	28.0	62	-5	35	21	25.8	82	78	67	77	77	0.0025	0.0025	0.0027	0.0027	0.0026	9.7
Feb	38.4	66	17	46	31	35.2	81	79	66	73	75	0.0037	0.0039	0.0041	0.0038	0.0039	9.2
Mar	42.5	73	17	51	34	36.8	73	59	50	59	62	0.0034	0.0034	0.0036	0.0037	0.0035	11.1
Apr	55.9	84	25	66	47	49.9	79	66	55	69	69	0.0069	0.0074	0.0072	0.0075	0.0072	11.1
May	64.0	88	33	74	54	56.7	83	60	49	66	67	0.0086	0.0089	0.0088	0.0093	0.0089	10.0
Jun	72.9	96	56	82	65	66.1	87	68	56	69	72	0.0125	0.0128	0.0126	0.0132	0.0128	9.2
Jul	76.4	96	58	86	66	67.6	84	63	48	62	66	0.0128	0.0132	0.0127	0.0138	0.0131	7.7
Aug	74.2	93	50	85	64	65.0	82	59	43	62	64	0.0115	0.0118	0.0110	0.0122	0.0117	6.5
Sep	67.1	93	42	77	59	60.4	84	71	53	67	70	0.0104	0.0108	0.0101	0.0104	0.0104	8.7
Oct	53.3	80	31	62	44	46.8	77	66	48	60	65	0.0057	0.0060	0.0055	0.0058	0.0057	9.3
Nov	43.7	66	19	52	35	39.1	79	71	53	62	68	0.0044	0.0046	0.0043	0.0043	0.0044	10.4
Dec	38.9	61	5	47	31	35.3	77	74	63	71	72	0.0037	0.0038	0.0039	0.0040	0.0039	12.2
Year	54.7	96	-5	64	46	48.8	81	68	54	66	69	0.0072	0.0074	0.0072	0.0076	0.0073	9.6

CINCINNATI, OHIO
WBAN 93814
TABLE D:

TRY Data (1957)

Latitude 39.10 N
Longitude 84.70 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	Base	Above	Base	Above	Base	Above	Base	Above	Base	Above	Base	Below	100s*	Above	100s*
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg	Hrs	Deg
	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	100s*	Base	100s*
97	0	508	0	0	437	0	0	393	0	0	446	0	0	1527	0	0
96	0	497	0	0	426	0	0	382	0	0	435	0	0	1494	0	0
95	0	486	0	0	415	0	1	371	0	1	424	0	0	1462	0	0
94	0	475	0	0	404	0	2	360	0	2	413	0	0	1429	0	0
93	0	464	0	0	393	0	5	349	0	4	402	0	0	1396	0	0
92	0	453	0	1	382	0	11	338	0	7	341	0	0	1363	0	0
91	0	442	0	2	371	0	19	327	0	14	331	0	0	1330	0	0
90	0	431	0	5	360	0	26	316	1	27	320	0	1	1297	0	0
89	0	421	0	9	350	0	38	306	1	42	309	1	2	1264	0	0
88	0	410	0	14	339	0	55	295	1	57	299	1	5	1232	0	0
87	0	399	0	22	328	0	73	285	2	74	288	2	11	1199	0	0
86	0	388	0	32	317	1	90	275	3	87	278	3	16	1166	0	0
85	1	377	0	42	307	1	106	265	4	100	268	4	20	1133	0	0
84	1	366	0	55	296	2	127	255	5	119	258	5	29	1100	0	0
83	3	355	0	70	286	2	150	246	6	141	249	6	40	1067	0	0
82	4	344	0	85	276	3	177	236	8	173	239	8	55	1035	0	0
81	8	333	0	106	266	4	209	227	10	207	230	9	71	1002	0	0
80	15	322	0	127	256	5	240	219	12	237	222	12	92	969	0	0
79	22	311	0	145	246	6	267	210	15	265	213	14	113	936	0	0
78	30	301	1	169	237	8	294	202	17	286	205	17	133	904	0	0
77	37	290	1	196	228	10	316	194	20	309	197	20	156	871	1	1
76	45	280	1	222	219	12	337	186	24	337	189	23	180	839	1	1
75	57	269	2	252	210	14	362	179	27	363	182	27	205	807	2	2
74	76	259	3	286	202	17	384	172	31	382	175	30	233	775	3	3
73	98	249	3	316	194	20	401	165	35	400	168	34	262	744	5	5
72	126	239	5	340	187	23	416	158	39	419	161	38	291	713	7	7
71	156	229	6	360	179	27	431	151	43	435	154	43	319	683	10	10
70	185	220	8	376	172	30	450	145	48	451	148	47	345	655	14	14
69	219	211	10	388	165	34	466	138	52	470	141	52	369	627	19	19
68	251	203	12	406	158	38	481	132	57	484	135	57	385	599	25	25
67	278	194	15	424	151	42	496	126	62	493	129	61	401	573	31	31
66	302	186	18	439	144	47	510	120	67	503	123	66	420	548	39	39
65	325	178	21	457	138	51	525	114	72	515	117	72	440	523	47	47
64	347	171	24	472	132	56	539	109	77	524	111	77	458	509	56	56
63	366	164	28	485	125	61	550	103	83	533	106	82	470	476	66	66
62	383	156	31	497	119	66	560	98	88	547	100	87	483	454	77	77
61	401	149	35	511	113	71	572	92	94	560	95	93	497	435	88	88
60	418	142	39	526	108	76	587	87	100	576	89	99	510	412	100	100
59	433	136	44	542	102	81	603	82	106	591	84	104	524	391	112	112
58	448	129	48	555	97	87	618	78	112	604	79	110	536	371	125	125
57	463	123	53	569	91	92	632	73	118	620	75	117	549	352	139	139
56	478	117	57	586	86	98	646	68	125	636	70	123	564	333	152	152
55	493	110	62	601	81	104	661	64	131	652	65	129	580	314	167	167
54	512	105	67	616	76	110	676	60	138	665	61	136	599	296	182	182
53	534	99	73	633	72	116	686	55	145	676	57	143	618	279	197	197
52	549	93	78	647	67	123	697	51	152	690	53	149	634	262	213	213
66	302	186	18	439	144	47	510	120	67	503	123	66	420	548	39	39
65	325	178	21	457	138	51	525	114	72	515	117	72	440	523	47	47
64	347	171	24	472	132	56	539	109	77	524	111	77	458	509	56	56
63	366	164	28	485	125	61	550	103	83	533	106	82	470	476	66	66
62	383	156	31	497	119	66	560	98	88	547	100	87	483	454	77	77
61	401	149	35	511	113	71	572	92	94	560	95	93	497	435	88	88
60	418	142	39	526	108	76	587	87	100	576	89	99	510	412	100	100
59	433	136	44	542	102	81	603	82	106	591	84	104	524	391	112	112
58	448	129	48	555	97	87	618	78	112	604	79	110	536	371	125	125
57	463	123	53	569	91	92	632	73	118	620	75	117	549	352	139	139
56	478	117	57	586	86	98	646	68	125	636	70	123	564	333	152	152
55	493	110	62	601	81	104	661	64	131	652	65	129	580	314	167	167
54	512	105	67	616	76	110	676	60	138	665	61	136	599	296	182	182
53	534	99	73	633	72	116	686	55	145	676	57	143	618	279	197	197
52	549	93	78	647	67	123	697	51	152	690	53	149	634	262	213	213

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

CINCINNATI, OHIO
WBAN 93814

TRY Data (1957)

Latitude 39.10 N
Longitude 84.70 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	Below	Deg	Hrs	Deg	
(F)	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
51	562	88	84	659	63	129	713	48	159	708	49	156	652	62	119	1691	246	230
50	581	83	89	677	58	136	731	44	166	725	45	164	666	58	126	1749	230	247
49	597	78	95	696	54	143	747	40	173	741	41	171	680	53	133	1803	215	265
48	606	73	101	710	50	150	759	37	181	759	38	178	697	49	140	1851	201	283
47	617	68	107	720	47	157	775	34	188	773	35	186	711	45	147	1899	187	302
46	634	63	113	732	43	164	790	30	196	787	31	194	726	42	154	1944	173	321
45	654	59	120	747	39	172	804	27	204	804	28	202	745	38	161	1984	160	341
44	669	54	127	757	36	179	822	25	212	822	26	210	761	35	169	2025	147	361
43	677	50	133	767	32	187	839	22	221	840	23	218	772	31	176	2066	135	381
42	687	46	140	784	29	195	853	19	229	855	21	227	789	28	184	2108	123	402
41	703	42	147	797	26	202	866	17	238	870	18	235	812	25	192	2157	111	423
40	723	38	154	813	23	210	882	15	246	886	16	244	832	22	201	2222	100	445
39	740	35	162	832	21	219	905	13	255	904	14	253	850	20	209	2298	90	468
38	756	31	169	850	18	227	929	11	265	926	12	262	870	18	218	2370	80	491
37	777	28	177	875	16	236	950	10	274	944	11	272	890	15	226	2442	72	515
36	802	25	185	903	14	245	971	8	284	961	9	281	917	13	235	2521	64	540
35	833	22	193	926	12	254	993	7	293	981	8	291	939	12	245	2611	56	566
34	862	19	201	948	10	263	1011	6	303	1000	7	301	954	10	254	2686	50	592
33	884	17	210	972	9	273	1026	5	314	1017	6	311	968	9	264	2729	44	619
32	903	15	219	990	8	283	1036	5	324	1030	5	321	984	8	273	2765	39	647
31	920	13	228	1003	7	293	1042	4	334	1038	5	331	1002	7	283	2811	34	675
30	935	12	237	1014	6	303	1048	4	345	1045	4	342	1021	6	294	2866	29	703
29	949	10	247	1024	5	313	1052	3	355	1050	4	352	1036	5	304	2927	26	732
28	965	9	256	1034	5	323	1055	3	366	1053	3	363	1042	5	314	2985	22	762
27	983	8	266	1041	4	334	1060	3	376	1056	3	373	1046	4	325	3025	20	792
26	999	7	276	1048	4	344	1065	2	387	1058	3	384	1049	4	335	3051	17	822
25	1015	6	286	1055	3	354	1068	2	398	1061	2	395	1051	3	346	3080	15	853
24	1030	5	296	1062	3	365	1070	2	408	1064	2	405	1054	3	356	3112	13	884
23	1040	4	307	1067	2	376	1072	1	419	1068	2	416	1056	3	367	3131	11	915
22	1047	4	317	1070	2	386	1075	1	430	1070	1	427	1060	2	377	3141	10	946
21	1052	3	328	1072	2	397	1078	1	441	1072	1	437	1063	2	388	3152	9	978
20	1056	3	338	1073	2	408	1080	1	451	1078	1	448	1069	2	399	3168	7	1009
19	1061	3	349	1074	2	419	1082	1	462	1084	1	459	1074	1	409	3186	6	1041
18	1067	2	359	1076	1	429	1084	1	473	1087	1	470	1076	1	420	3202	5	1073
17	1071	2	370	1077	1	440	1086	1	484	1088	1	481	1079	1	431	3216	5	1105
16	1073	2	381	1077	1	451	1088	0	495	1088	1	491	1083	1	442	3226	4	1138
15	1073	2	391	1079	1	462	1089	0	506	1089	0	502	1086	1	453	3237	3	1170
14	1074	1	402	1080	1	472	1089	0	517	1089	0	513	1088	1	463	3246	3	1202
13	1074	1	413	1082	0	483	1089	0	527	1089	0	524	1089	1	474	3250	3	1235
12	1075	1	424	1084	0	494	1089	0	538	1089	0	535	1089	1	485	3253	2	1267
11	1077	1	434	1086	0	505	1089	0	549	1089	0	546	1089	0	496	3255	2	1300
10	1079	1	445	1087	0	516	1089	0	560	1089	0	557	1089	0	507	3257	2	1332
9	1081	1	456	1088	0	527	1091	0	571	1089	0	568	1089	0	518	3260	1	1365
8	1084	0	467	1091	0	538	1093	0	582	1090	0	579	1089	0	529	3263	1	1398
7	1086	0	478	1093	0	549	1094	0	593	1092	0	589	1090	0	540	3267	1	1430
6	1087	0	489	1093	0	559	1095	0	604	1093	0	600	1091	0	551	3272	1	1463

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

CINCINNATI, OHIO

WBAN 93814

TABLE D:

TRY Data (1957)

Latitude 39.10 N

Longitude 84.70 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	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*
5	1088	0	499	1094	0	570	1095	0	615	1094	0	611	1092	0	561	3275	1	1496	21	1	8739	4353
4	1089	0	510	1094	0	581	1095	0	626	1094	0	622	1092	0	572	3275	1	1528	19	1	8741	4440
3	1091	0	521	1095	0	592	1095	0	637	1095	0	633	1092	0	583	3276	1	1561	16	1	8744	4528
2	1092	0	532	1095	0	603	1095	0	648	1095	0	644	1092	0	594	3276	0	1594	14	1	8746	4615
1	1093	0	543	1095	0	614	1095	0	659	1095	0	655	1093	0	605	3276	0	1627	12	0	8748	4703
0	1093	0	554	1095	0	625	1095	0	670	1095	0	666	1094	0	616	3276	0	1659	11	0	8749	4790
-1	1094	0	565	1095	0	636	1095	0	680	1095	0	677	1094	0	627	3276	0	1692	10	0	8750	4878
-2	1095	0	576	1095	0	647	1095	0	691	1095	0	688	1094	0	638	3278	0	1725	8	0	8752	4965
-3	1095	0	587	1095	0	658	1095	0	702	1095	0	699	1094	0	649	3280	0	1758	5	0	8755	5053
-4	1095	0	598	1095	0	669	1095	0	713	1095	0	710	1095	0	660	3283	0	1791	2	0	8758	5140
-5	1095	0	609	1095	0	680	1095	0	724	1095	0	721	1095	0	671	3284	0	1823	0	0	8760	5228
-6	1095	0	620	1095	0	691	1095	0	735	1095	0	732	1095	0	682	3285	0	1856	0	0	8760	5316

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

CINCINNATI, OHIO
WBAN 93814
TABLE E:

TRY Data (1957)

Latitude 39.10 N
Longitude 84.70 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:	4503	4047	3588	3114	2610	1972	1301	586	161	11	0
Annual Wet Bulb Cooling deg-hrs:	61065.	48033.	36312.	26011.	17166.	9965.	4720.	1530.	287.	14.	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	51	50	48	47	45	42	38	32	24	14	8	.001
.002	1	1	1	1	1	1	1	1	1	1	1	43	43	42	41	40	37	34	29	22	13	7	.002
.003	1	2	2	3	3	3	3	3	3	3	3	37	37	36	36	35	33	30	26	20	12	6	.003
.004	2	3	4	5	5	6	6	6	6	6	6	31	31	31	31	30	29	27	23	17	10	6	.004
.005	3	5	7	8	9	9	9	9	9	9	9	26	26	26	26	25	24	23	20	15	9	5	.005
.006	4	6	9	11	12	13	13	13	14	14	14	21	21	21	21	21	20	20	17	13	8	4	.006
.007	4	7	11	14	16	17	17	18	18	18	18	17	17	17	17	17	17	16	15	11	7	4	.007
.008	5	9	14	17	19	21	22	22	23	23	23	13	13	13	13	13	13	13	12	9	5	3	.008
.009	6	10	16	20	23	25	27	27	28	29	29	10	10	10	10	10	10	10	9	7	4	2	.009
.010	7	12	18	23	26	29	31	33	34	34	35	7	7	7	7	7	7	7	7	6	3	2	.010
.011	8	13	21	26	30	34	36	38	40	40	41	5	5	5	5	5	5	5	5	4	2	1	.011
.012	8	14	23	29	33	38	41	44	46	47	48	3	3	3	3	3	3	3	3	3	2	1	.012
.013	9	16	25	31	37	42	46	49	52	53	55	2	2	2	2	2	2	2	2	2	1	1	.013
.014	10	17	27	34	40	46	51	55	58	60	62	1	1	1	1	1	1	1	1	1	1	0	.014
.015	11	18	30	37	44	50	56	60	64	67	70	0	0	0	0	0	0	0	0	0	0	0	.015
.016	11	20	32	40	48	55	61	66	71	75	77	0	0	0	0	0	0	0	0	0	0	0	.016
.017	12	21	34	43	51	59	65	71	77	82	85	0	0	0	0	0	0	0	0	0	0	0	.017
.018	13	23	37	46	55	63	70	77	84	89	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	58	66	52	62	61	62	48	43	65	45	44	47	55
VERTICAL													
NORTH	100	100	100	99	95	94	91	97	100	100	100	100	97
WEST	63	71	67	77	76	79	69	60	74	61	55	65	69
SOUTH	45	60	54	77	82	88	79	65	71	46	36	35	63
EAST	66	75	61	72	71	74	61	62	73	56	56	52	66
% Possible Sun	41	45	50	55	60	67	68	66	66	59	44	38	57

FOOTNOTES: * Corrected For Cloud Cover.

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

CINCINNATI, OHIO
WBAN 93814
TABLE H:

TRY Data (1957)

Latitude 39.10 N
Longitude 84.70 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	1854	1733	1399	1077	664	345	190	156	155	1918	619	581	483	388	273	189	148	139	139	612	501
Feb	1908	1782	1499	1240	850	499	294	203	199	2176	636	598	522	452	354	272	226	203	201	661	738
Mar	1719	1668	1532	1394	1091	764	502	328	269	2338	1011	1005	935	857	703	546	429	353	329	1200	1027
Apr	1343	1421	1443	1441	1275	1028	761	526	374	2323	934	970	964	945	857	747	637	543	484	1230	1399
May	1045	1204	1344	1447	1393	1230	982	730	529	2227	960	1028	1079	1115	1071	979	851	729	631	1393	1672
Jun	922	1098	1282	1429	1429	1308	1076	831	632	2167	873	945	1012	1066	1052	984	873	758	666	1321	1837
Jul	973	1140	1304	1428	1412	1273	1037	792	594	2176	934	1044	1138	1208	1188	1090	937	780	650	1547	1771
Aug	1198	1307	1377	1414	1304	1098	847	615	444	2233	1038	1080	1094	1092	1005	872	724	594	510	1593	1634
Sep	1545	1535	1454	1367	1122	837	587	399	316	2268	978	971	924	868	749	624	525	454	423	1167	1312
Oct	1802	1703	1481	1266	912	590	367	249	232	2174	880	853	767	676	524	384	288	238	230	1008	990
Nov	1844	1714	1393	1097	690	379	211	172	171	1965	810	758	630	511	349	230	169	155	154	838	589
Dec	1812	1686	1347	1021	602	305	166	146	146	1828	776	752	636	506	329	205	148	139	139	768	433
Year	1495	1498	1404	1302	1063	806	587	430	339	2149	872	884	851	809	707	596	498	425	381	1115	1159

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
 ** Derived according to DOE-2.1 LOADS Algorithms and TRY cloud cover data.
 *** South exposure tilt 45 degrees.
 **** Cinquemani, V., J. R. Owenby, Jr. and R. G. Baldwin. 1978. Input Data for Solar Systems. NCC, Ashville, NC.

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	1600	1472	1171	896	529	258	143	127	126	523	485	398	319	220	149	119	113	113		
Feb	1619	1497	1255	1034	688	389	217	163	162	527	493	429	371	288	220	180	165	164		
Mar	1387	1374	1270	1159	896	611	385	250	218	822	827	770	707	576	440	340	281	267		
Apr	1004	1126	1181	1195	1054	835	599	401	294	735	779	786	775	702	607	512	433	390		
May	733	901	1075	1191	1152	1007	788	568	395	747	814	875	914	880	800	689	584	501		
Jun	635	801	1012	1171	1181	1075	871	653	470	678	742	816	871	862	804	708	608	529		
Jul	679	844	1038	1177	1168	1048	840	623	445	710	810	917	993	979	894	760	623	510		
Aug	879	1020	1122	1175	1080	899	677	476	345	797	859	891	900	827	711	582	472	408		
Sep	1216	1252	1203	1138	928	677	457	305	257	785	792	758	715	614	507	421	364	344		
Oct	1507	1422	1233	1055	748	463	275	197	189	728	708	635	561	430	305	226	192	187		
Nov	1584	1448	1166	908	556	283	159	140	139	687	634	524	420	281	180	134	126	125		
Dec	1563	1433	1125	843	480	223	128	118	118	659	636	531	417	264	157	118	113	113		
Year	1198	1214	1154	1079	872	649	463	336	264	701	717	696	666	579	483	400	340	305		

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

CLEVELAND, OHIO
WBAN 14820
TABLE A:

TRY Data (1969)

Latitude 41.40 N
Longitude 81.90 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 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
Jan														
55 to 59	0	0	0	0	3	3	0	0	6	50.2	740	23501	4	4
50 to 54	6	6	6	4	6	3	5	6	42	48.3	712	19835	32	58
45 to 49	0	3	3	10	6	5	1	0	28	44.0	679	16347	65	290
40 to 44	12	9	9	6	7	6	10	10	69	38.2	646	13021	98	684
35 to 39	8	8	6	5	5	13	14	13	72	33.6	566	9991	178	1374
30 to 34	7	7	8	12	15	8	4	3	64	29.3	479	7358	265	2461
25 to 29	3	7	14	7	3	6	5	6	51	23.9	446	5032	298	3855
20 to 24	20	16	7	17	17	18	19	15	129	19.4	364	2958	380	5501
15 to 19	7	8	8	11	24	21	19	16	114	14.7	234	1456	510	7719
10 to 14	22	14	14	13	6	8	13	20	110	10.3	124	543	620	10526
5 to 9	2	6	8	5	1	2	3	0	27	6.6	41	165	703	13868
0 to 4	6	9	10	3	0	0	0	4	32	1.7	14	14	730	17437
Feb														
45 to 49	0	0	0	0	3	3	0	0	6	38.7	668	13050	4	2
40 to 44	5	0	0	4	6	6	6	6	33	36.6	654	9729	18	41
35 to 39	4	10	9	8	11	7	6	4	59	33.3	615	6547	57	219
30 to 34	18	14	14	27	35	37	27	21	193	28.4	513	3693	159	725
25 to 29	28	19	23	24	15	21	25	31	186	24.5	296	1677	376	2069
20 to 24	17	27	21	12	13	9	16	12	127	19.7	139	622	533	4374
15 to 19	6	3	9	9	1	1	4	6	39	15.6	48	173	624	7285
10 to 14	6	9	6	0	0	0	0	4	25	12.0	10	26	662	10498
5 to 9	0	2	2	0	0	0	0	0	4	6.8	2	1	670	13833
Mar														
70 to 74	0	0	0	0	1	0	0	0	1	54.0	744	28583	0	0
65 to 69	0	0	0	1	3	1	0	0	5	51.0	741	24868	3	5
60 to 64	0	0	0	2	8	7	0	0	17	48.4	733	21176	11	33
55 to 59	0	0	1	6	3	7	2	0	19	44.5	709	17565	35	142
50 to 54	3	2	1	6	3	1	13	7	36	41.8	695	14049	49	346
45 to 49	8	7	8	3	3	5	6	10	50	41.0	646	10684	98	701
40 to 44	9	8	7	10	12	11	3	4	64	34.8	600	7588	144	1325
35 to 39	1	1	6	8	19	18	11	5	69	30.9	532	4769	212	2226
30 to 34	25	19	15	30	28	27	28	29	201	27.6	415	2347	329	3524
25 to 29	29	27	28	16	9	13	26	26	174	24.6	191	847	553	5744
20 to 24	15	21	18	7	1	0	2	12	76	19.7	63	246	681	8863
15 to 19	3	5	6	3	3	3	2	0	25	15.1	20	53	724	12390
10 to 14	0	3	3	1	0	0	0	0	7	11.1	1	1	743	16058

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

CLEVELAND, OHIO
WBAN 14820
TABLE A:

TRY Data (1969)

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*	
	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	2	1	0	0	3	63.3	720	23672	0	0
75 to 79	0	0	0	4	7	2	0	0	13	61.9	709	20088	11	16
70 to 74	0	0	0	6	9	9	4	2	30	57.3	694	16572	26	100
65 to 69	0	0	5	8	9	14	8	3	47	55.3	652	13192	68	320
60 to 64	13	6	6	13	5	4	13	15	75	54.1	607	10034	113	762
55 to 59	12	17	18	11	10	9	4	4	85	50.1	519	7215	201	1543
50 to 54	6	10	9	10	9	11	9	9	73	44.6	447	4831	273	2759
45 to 49	5	5	8	13	14	11	15	10	81	41.1	358	2812	362	4340
40 to 44	23	16	20	16	20	26	28	22	171	37.7	269	1232	451	6360
35 to 39	19	17	16	9	5	3	9	21	99	33.9	106	355	614	9083
30 to 34	10	13	7	0	0	0	0	3	33	28.9	32	76	688	12404
25 to 29	2	6	1	0	0	0	0	1	10	26.2	2	2	718	15930
May														
85 to 89	0	0	0	0	5	4	0	0	9	69.8	741	21061	3	2
80 to 84	0	0	0	7	10	7	2	0	26	65.8	722	17388	22	49
75 to 79	0	0	1	12	8	9	7	0	37	62.0	693	13834	51	215
70 to 74	0	0	8	12	11	13	10	3	57	60.1	645	10473	99	574
65 to 69	10	5	15	16	21	20	15	19	121	58.2	582	7371	162	1192
60 to 64	10	12	19	13	8	10	13	14	99	54.9	452	4796	292	2337
55 to 59	20	14	16	11	14	13	14	15	117	50.8	350	2779	394	4040
50 to 54	19	23	18	18	13	8	18	18	135	46.3	228	1337	516	6318
45 to 49	14	17	10	4	3	8	9	11	76	42.9	104	534	640	9235
40 to 44	15	12	4	0	0	1	5	10	47	38.7	53	164	691	12585
35 to 39	5	8	2	0	0	0	0	3	18	34.6	11	24	733	16165
30 to 34	0	2	0	0	0	0	0	0	2	30.0	1	1	743	19862
Jun														
90 to 94	0	0	0	1	6	3	0	0	10	76.8	720	19627	0	0
85 to 89	0	0	0	9	9	4	1	0	23	74.3	703	16061	17	34
80 to 84	1	0	7	8	4	10	7	3	40	71.4	672	12620	48	193
75 to 79	6	3	8	5	13	11	12	6	64	69.3	629	9374	91	547
70 to 74	10	13	7	23	18	12	11	15	109	65.1	532	6438	188	1211
65 to 69	11	11	11	14	12	18	12	10	99	60.4	442	3989	278	2362
60 to 64	18	16	27	14	11	13	20	20	139	56.6	327	2056	393	4029
55 to 59	19	21	18	9	9	15	21	17	129	53.3	166	809	554	6382
50 to 54	12	12	12	7	8	4	6	16	77	48.9	62	234	658	9407
45 to 49	10	7	0	0	0	0	0	3	20	45.0	16	52	704	12825
40 to 44	3	7	0	0	0	0	0	0	10	41.4	5	4	715	16377

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

CLEVELAND, OHIO
WBAN 14820
TABLE A:

TRY Data (1969)

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	3	2	0	0	5	77.0	744	15044	0	0
85 to 89	0	0	0	6	6	8	2	0	22	73.0	732	11347	12	23
80 to 84	0	0	3	27	32	31	9	2	104	71.1	699	7753	45	149
75 to 79	3	3	22	29	28	26	27	5	143	69.1	557	4590	187	706
70 to 74	25	20	38	19	14	15	33	40	204	66.0	404	2161	340	1997
65 to 69	41	42	17	10	9	11	16	29	175	62.6	187	693	557	4249
60 to 64	17	17	12	1	1	0	6	15	69	58.6	59	156	685	7432
55 to 59	7	11	1	1	0	0	0	2	22	53.7	12	13	732	11009
Aug														
85 to 89	0	0	0	10	31	22	0	0	63	70.9	732	11448	12	11
80 to 84	0	0	0	39	21	26	11	0	97	69.3	647	7994	97	277
75 to 79	0	0	20	26	29	27	28	6	136	67.1	528	5030	216	1033
70 to 74	18	14	32	14	11	15	31	29	164	65.2	381	2722	363	2445
65 to 69	31	29	26	4	1	3	19	32	145	62.4	212	1217	532	4660
60 to 64	30	26	10	0	0	0	4	16	86	58.1	104	470	640	7633
55 to 59	5	15	2	0	0	0	0	7	29	54.2	40	162	704	11045
50 to 54	9	8	3	0	0	0	0	3	23	49.3	14	28	730	14631
45 to 49	0	1	0	0	0	0	0	0	1	46.0	0	0	744	18323
Sep														
85 to 89	0	0	0	2	6	3	0	0	11	72.5	720	17567	0	0
80 to 84	0	0	0	6	12	8	2	0	28	70.6	701	14007	19	40
75 to 79	0	0	4	17	15	13	6	2	57	66.9	664	10585	56	218
70 to 74	7	5	11	16	14	13	14	9	89	64.8	591	7430	129	663
65 to 69	17	18	15	9	12	17	14	19	121	62.0	486	4709	234	1542
60 to 64	12	10	14	19	16	17	15	7	110	56.7	374	2566	346	2999
55 to 59	27	19	19	20	14	18	28	29	174	53.1	231	1006	489	5039
50 to 54	21	25	22	1	1	1	8	18	97	49.2	82	261	638	7894
45 to 49	3	10	4	0	0	0	3	6	26	45.8	16	45	704	11278
40 to 44	3	3	1	0	0	0	0	0	7	41.9	3	3	717	14836

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

CLEVELAND, OHIO
WBAN 14820
TABLE A:

TRY Data (1969)

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														
80 to 84	0	0	0	0	3	1	0	0	4	69.8	744	22867	0	0
75 to 79	0	0	0	2	5	4	1	0	12	65.3	737	19166	7	19
70 to 74	0	0	1	7	9	8	1	1	27	63.9	716	15519	28	92
65 to 69	8	3	5	15	11	11	13	8	74	60.1	675	12018	69	311
60 to 64	11	9	11	14	12	12	9	12	90	57.0	599	8833	145	846
55 to 59	4	14	16	8	19	19	20	15	115	51.7	496	6107	248	1840
50 to 54	22	17	9	14	10	13	14	13	112	46.8	380	3914	364	3367
45 to 49	8	8	16	13	12	7	7	11	82	41.9	271	2303	473	5476
40 to 44	16	21	19	12	6	12	12	13	111	37.5	201	1125	543	8018
35 to 39	7	3	7	8	6	6	13	11	61	33.1	96	428	648	11041
30 to 34	13	13	6	0	0	0	3	6	41	29.5	32	123	712	14456
25 to 29	3	3	2	0	0	0	0	3	11	25.6	10	28	734	18081
20 to 24	1	2	1	0	0	0	0	0	4	22.5	1	1	743	21774
Nov														
55 to 59	8	5	0	1	8	6	6	7	41	51.1	720	12412	0	0
50 to 54	5	10	7	11	13	17	9	4	76	47.2	659	8980	61	168
45 to 49	17	18	26	25	24	16	18	19	163	44.1	530	5943	190	731
40 to 44	14	9	11	19	20	20	12	8	113	37.9	399	3652	321	2040
35 to 39	8	13	12	13	5	13	23	18	105	33.7	286	1968	434	3956
30 to 34	24	21	14	12	11	9	9	19	119	29.6	157	825	563	6413
25 to 29	7	5	11	2	9	9	11	13	67	24.1	83	256	637	9444
20 to 24	7	9	9	7	0	0	2	2	36	20.6	11	18	709	12806
Dec														
40 to 44	0	0	0	0	3	1	0	2	6	37.0	744	10857	0	0
35 to 39	14	11	6	16	13	16	14	14	104	33.2	703	7193	41	56
30 to 34	25	23	24	23	29	21	25	24	196	28.9	543	3975	201	558
25 to 29	26	23	30	33	38	43	33	26	252	24.3	334	1752	410	2055
20 to 24	19	23	19	13	6	8	13	16	117	19.5	153	637	591	4660
15 to 19	3	4	11	7	4	4	7	5	45	15.5	45	197	699	7940
10 to 14	3	4	0	1	0	0	1	3	12	11.2	17	57	727	11520
5 to 9	3	3	3	0	0	0	0	3	12	6.8	2	1	742	15184

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

CLEVELAND, OHIO
WBAN 14820
TABLE B:

TRY Data (1969)

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	9	5	0	0	15	0.0	0.0	0.0	78.0	77.0	76.4	0.0	0.0	76.9
85 to 89	0	0	0	27	57	41	3	0	128	0.0	0.0	0.0	73.4	71.5	71.3	75.7	0.0	71.9
80 to 84	1	0	10	87	84	84	31	5	302	73.0	0.0	73.3	70.4	69.3	69.4	70.4	73.8	70.0
75 to 79	9	6	55	95	105	92	81	19	462	71.3	71.2	69.5	66.7	66.4	66.5	67.7	70.0	67.4
70 to 74	60	52	97	97	87	85	104	99	681	66.7	67.1	65.9	62.8	62.3	62.4	64.3	66.0	64.5
65 to 69	118	108	94	77	78	95	97	120	787	62.6	62.8	61.0	58.9	57.9	58.4	60.7	61.8	60.8
60 to 64	111	96	99	76	61	63	80	99	685	57.8	58.3	57.1	54.4	54.0	54.6	55.8	57.3	56.5
55 to 59	102	116	91	67	80	90	95	96	737	53.0	53.7	53.0	51.2	49.8	50.1	51.5	52.3	51.9
50 to 54	103	113	87	71	63	58	82	94	671	47.9	48.0	48.3	46.0	46.3	45.1	45.6	47.4	47.0
45 to 49	65	76	75	68	65	55	59	70	533	43.9	43.7	43.2	43.0	41.3	42.4	42.6	42.8	42.9
40 to 44	100	85	71	67	74	83	76	75	631	38.0	38.1	38.0	37.0	36.9	37.0	37.5	38.1	37.6
35 to 39	66	71	64	67	64	76	90	89	587	33.8	33.6	33.3	32.8	32.5	32.6	33.4	33.6	33.2
30 to 34	122	114	88	104	118	102	96	105	849	29.0	29.0	29.1	28.3	28.3	28.3	28.3	28.8	28.6
25 to 29	98	90	109	82	74	92	100	106	751	24.4	24.6	24.5	24.5	24.2	24.3	24.5	24.3	24.4
20 to 24	79	98	75	56	37	35	52	57	489	19.6	20.0	20.0	19.9	19.5	19.2	19.5	19.3	19.7
15 to 19	19	20	34	30	32	29	32	27	223	14.4	14.9	15.2	14.8	15.0	15.1	15.3	15.3	15.0
10 to 14	31	30	23	15	6	8	14	27	154	10.9	11.0	10.7	10.9	9.5	9.9	10.1	10.4	10.6
5 to 9	5	11	13	5	1	2	3	3	43	6.8	7.1	6.2	6.6	6.0	7.5	6.0	7.3	6.7
0 to 4	6	9	10	3	0	0	0	4	32	1.8	1.6	1.5	1.7	0.0	0.0	0.0	2.5	1.7

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	Ave	4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	25.9	59	0	32	19	72	72	67	69	70	0.0022	0.0023	0.0024	0.0022	0.0023	12.5
Feb	28.1	48	7	33	23	74	74	60	69	70	0.0020	0.0021	0.0022	0.0022	0.0021	10.8
Mar	34.1	70	12	42	27	66	61	52	58	60	0.0022	0.0023	0.0026	0.0024	0.0024	11.5
Apr	49.6	81	26	59	40	72	60	56	62	64	0.0048	0.0051	0.0051	0.0050	0.0050	10.7
May	59.2	88	32	68	48	73	57	54	62	63	0.0062	0.0073	0.0074	0.0071	0.0070	8.9
Jun	65.2	91	41	74	57	81	69	65	71	73	0.0094	0.0108	0.0107	0.0101	0.0102	9.7
Jul	72.3	91	56	80	65	81	68	62	70	72	0.0116	0.0133	0.0134	0.0126	0.0126	7.7
Aug	72.1	89	49	82	61	82	61	53	64	68	0.0106	0.0127	0.0118	0.0115	0.0116	7.6
Sep	63.1	86	41	72	55	84	70	64	75	75	0.0090	0.0100	0.0101	0.0096	0.0095	8.4
Oct	51.8	82	22	60	43	78	69	59	71	70	0.0058	0.0066	0.0068	0.0064	0.0063	10.4
Nov	40.3	57	20	45	35	77	78	68	73	74	0.0042	0.0043	0.0042	0.0040	0.0041	10.1
Dec	27.9	42	7	32	23	70	74	68	68	71	0.0021	0.0022	0.0022	0.0022	0.0021	11.4
Year	49.2	91	0	57	41	76	68	61	68	69	0.0059	0.0066	0.0066	0.0063	0.0063	10.0

CLEVELAND, OHIO
WBAN 14820
TABLE D:

TRY Data (1969)

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				HEATING				COOLING			
	Hrs Above Base	Deg-Hrs (100s)*	Heat	Cool	Hrs Above Base	Deg-Hrs (100s)*	Heat	Cool	Hrs Above Base	Deg-Hrs (100s)*	Heat	Cool	Hrs Above Base	Deg-Hrs (100s)*	Heat	Cool	Hrs Above Base	Deg-Hrs (100s)*	Heat	Cool
92	0	493	0	0	0	436	0	0	0	411	0	0	0	421	0	0	0	1523	0	0
91	0	482	0	0	0	425	0	2	400	0	1	410	0	0	451	0	0	1490	0	0
90	0	471	0	0	0	414	0	6	389	0	3	399	0	0	440	0	0	1457	0	0
89	0	460	0	1	403	0	13	379	0	5	388	0	0	429	0	0	1424	0	0	0
88	0	449	0	3	392	0	22	368	0	9	377	0	0	418	0	0	1392	0	0	0
87	0	438	0	6	381	0	33	357	1	17	367	0	0	407	0	0	1359	0	0	0
86	0	427	0	12	370	0	44	347	1	27	356	0	1	396	0	0	1326	0	0	0
85	0	416	0	22	360	0	57	336	1	39	345	1	2	385	0	0	1293	0	0	0
84	1	405	0	33	349	1	73	326	2	53	335	1	4	374	0	0	1260	0	0	0
83	2	394	0	43	338	1	88	316	3	69	324	2	6	363	0	0	1227	0	0	0
82	4	383	0	57	328	1	101	306	4	87	314	3	9	352	0	0	1194	0	0	0
81	7	372	0	77	318	2	117	296	5	103	304	4	18	341	0	2	1162	0	0	0
80	9	361	0	102	307	3	139	286	6	120	294	5	29	331	1	5	1129	0	0	0
79	13	351	0	126	298	4	159	277	8	137	285	6	40	320	1	7	1096	0	0	0
78	20	340	0	149	288	6	181	267	9	158	275	7	52	310	1	9	1063	0	0	0
77	31	329	1	166	279	7	203	258	11	181	266	9	65	299	2	13	1031	0	0	0
76	45	318	1	182	270	9	218	250	13	197	257	11	84	289	3	21	998	0	0	0
75	58	308	2	201	260	11	240	241	16	213	248	13	105	279	4	33	965	1	0	0
74	75	298	2	218	252	13	265	233	18	235	239	15	124	269	5	50	933	1	0	0
73	94	288	3	236	243	15	285	224	21	260	231	18	145	260	6	80	901	2	0	0
72	109	278	4	252	234	18	300	216	24	274	223	21	163	250	8	117	869	3	0	0
71	128	268	5	273	226	20	313	208	27	282	214	23	183	241	9	164	837	4	0	0
70	151	258	7	297	218	23	331	201	30	297	206	26	208	232	11	223	806	6	0	0
69	171	249	8	315	210	26	351	193	34	319	198	29	228	223	14	280	776	9	0	0
68	191	240	10	328	202	29	368	186	37	339	191	33	254	215	16	343	746	12	0	0
67	210	231	12	339	195	33	384	179	41	351	183	36	277	206	19	420	717	15	0	0
66	228	222	14	355	187	36	398	172	45	369	176	40	293	198	21	498	689	20	0	0
65	246	214	17	374	180	40	411	165	49	392	169	43	308	190	24	564	661	25	0	0
64	267	205	19	391	173	44	425	158	53	407	162	47	322	183	28	627	634	31	0	0
63	287	197	22	404	166	48	437	151	58	422	155	52	336	175	31	678	608	38	0	0
62	304	189	25	418	159	52	453	145	62	438	148	56	353	167	34	734	582	45	0	0
61	321	181	28	435	152	56	465	138	67	449	142	60	372	160	38	800	557	53	0	0
60	342	174	31	451	146	60	475	132	71	459	135	65	388	153	42	867	533	61	0	0
59	371	166	35	469	140	65	488	126	76	475	129	70	403	146	46	940	509	70	0	0
58	397	159	39	485	133	70	504	120	81	491	123	74	417	139	50	1003	486	80	0	0
57	412	152	43	500	127	75	519	114	86	505	117	79	433	132	54	1062	463	90	0	0
56	427	145	47	512	121	80	534	109	91	524	111	84	457	126	59	1124	441	101	0	0
55	440	139	51	522	116	85	551	103	97	545	106	90	481	120	63	1185	420	112	0	0
54	461	132	56	535	110	90	568	98	102	563	100	95	498	114	68	1248	399	125	0	0
53	480	126	61	549	105	96	582	92	108	575	95	101	512	108	73	1309	379	137	0	0
52	495	120	65	561	99	101	597	87	114	581	90	107	530	102	78	1365	360	151	0	0
51	514	114	71	576	94	107	609	83	120	593	85	113	546	96	84	1427	341	165	0	0
50	528	108	76	591	89	113	618	78	126	607	80	119	562	91	89	1494	323	179	0	0
49	540	103	81	604	84	119	631	73	133	618	75	125	577	86	95	1550	305	195	0	0
48	556	97	87	622	79	125	647	68	139	635	70	131	593	81	101	1597	288	210	0	0
47	572	92	92	639	74	131	662	64	145	650	66	138	609	76	107	1642	271	227	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

CLEVELAND, OHIO
WBAN 14820
TABLE D:

TRY Data (1969)

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-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 100s*	Below Base 100s*	Above 100s*		
46	590	87	98	652	70	138	672	60	152	656	61	144	619	71	113	1684	255	243
45	604	82	104	662	65	144	682	56	159	663	57	151	628	66	119	1722	239	260
44	615	77	110	675	61	151	695	52	166	678	53	157	637	62	126	1758	224	278
43	626	72	116	687	57	158	707	48	173	694	49	164	647	57	132	1790	209	295
42	640	68	123	692	53	165	723	44	180	708	45	171	659	53	139	1839	194	313
41	653	63	129	702	49	172	739	40	187	724	41	178	675	48	145	1899	180	332
40	668	59	136	720	45	179	754	37	195	741	37	186	695	44	152	1960	166	351
39	683	55	143	740	42	186	769	33	202	763	34	193	719	40	159	2022	153	371
38	690	51	149	750	38	193	783	30	210	781	31	201	739	37	166	2060	141	392
37	702	47	156	759	35	201	798	27	218	793	28	209	761	33	174	2105	129	413
36	719	43	163	770	31	209	810	24	226	806	25	217	782	30	182	2161	117	434
35	735	39	171	787	28	216	821	21	234	820	22	225	794	27	190	2205	106	456
34	752	36	178	809	25	224	839	19	243	839	19	233	805	24	198	2258	96	478
33	773	32	186	826	22	233	863	16	251	862	17	242	823	21	206	2339	86	501
32	794	29	194	844	20	241	887	14	260	881	15	251	843	19	214	2418	77	525
31	809	26	202	869	17	249	911	12	269	905	12	259	861	16	223	2479	69	549
30	822	23	210	894	15	258	934	10	278	925	11	269	882	14	231	2537	61	574
29	844	21	218	916	13	267	954	9	287	946	9	278	909	12	240	2595	54	600
28	866	18	227	934	12	277	970	8	297	968	8	288	938	10	249	2653	47	626
27	882	16	235	948	10	286	982	6	307	982	7	297	958	9	259	2710	41	653
26	905	14	244	965	9	296	998	5	317	1001	6	307	973	8	269	2779	35	681
25	930	12	254	980	8	305	1014	5	327	1016	5	317	988	6	278	2839	31	709
24	946	11	263	990	6	315	1024	4	337	1023	4	328	999	5	288	2881	27	737
23	964	9	272	1003	5	325	1033	3	347	1028	3	338	1007	4	298	2932	23	766
22	983	8	282	1017	5	335	1040	3	358	1033	3	348	1016	4	309	2975	19	796
21	994	7	292	1025	4	345	1044	2	368	1042	2	358	1030	3	319	3017	17	826
20	1007	6	302	1035	3	356	1051	2	379	1052	2	369	1042	2	329	3069	14	856
19	1016	5	312	1044	3	366	1060	1	389	1061	1	380	1051	2	340	3101	12	887
18	1023	5	322	1049	2	377	1067	1	400	1071	1	390	1061	1	350	3115	10	918
17	1032	4	333	1054	2	387	1074	1	411	1077	1	401	1067	1	361	3127	9	950
16	1040	3	343	1060	1	398	1081	0	421	1079	1	412	1071	1	372	3136	7	981
15	1046	3	354	1067	1	408	1086	0	432	1082	0	423	1075	1	382	3150	6	1012
14	1050	2	364	1074	1	419	1088	0	443	1085	0	433	1078	1	393	3174	5	1044
13	1056	2	375	1079	1	430	1089	0	454	1087	0	444	1080	0	404	3197	4	1076
12	1062	2	385	1083	1	441	1089	0	465	1089	0	455	1084	0	415	3211	3	1108
11	1065	1	396	1084	0	452	1091	0	476	1090	0	466	1089	0	425	3227	2	1140
10	1070	1	406	1086	0	462	1093	0	487	1091	0	477	1091	0	436	3242	2	1172
9	1072	1	417	1088	0	473	1094	0	498	1094	0	488	1092	0	447	3251	1	1205
8	1076	1	428	1089	0	484	1094	0	508	1095	0	499	1092	0	458	3259	1	1237
7	1081	0	439	1090	0	495	1094	0	519	1095	0	510	1093	0	469	3265	1	1270
6	1084	0	450	1091	0	506	1095	0	530	1095	0	521	1094	0	480	3266	1	1303
5	1085	0	460	1091	0	517	1095	0	541	1095	0	532	1095	0	491	3266	0	1335
4	1086	0	471	1092	0	528	1095	0	552	1095	0	543	1095	0	502	3269	0	1368
3	1088	0	482	1093	0	539	1095	0	563	1095	0	554	1095	0	513	3274	0	1401
2	1091	0	493	1094	0	550	1095	0	574	1095	0	565	1095	0	524	3280	0	1434
1	1092	0	504	1094	0	561	1095	0	585	1095	0	575	1095	0	535	3284	0	1466

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 are calculated by subtracting the Hrs Above from X times 365

CLEVELAND, OHIO
WBAN 14820
TABLE 0:

TRY Data (1969)

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	Deg
	(F) Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Below	Base 100s*	Above	Base 100s*
	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat
0	1094	0	515	1095	0	572	1095	0	596	1095	0	586	1095	0	8759	4314
-1	1095	0	526	1095	0	582	1095	0	607	1095	0	597	1095	0	8760	4402

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:

TRY Data (1969)

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:	3737	3300	2845	2361	1881	1312	741	336	78	16	0
Annual Wet Bulb Cooling deg-hrs:	45938.	35189.	25740.	17679.	11091.	6024.	2683.	901.	186.	21.	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	42	41	40	38	36	33	28	23	16	9	5	.001		
.002	2	2	2	2	2	2	2	2	2	2	2	35	35	34	33	32	29	26	21	15	9	4	.002		
.003	3	4	4	5	5	5	5	5	5	5	5	29	29	29	29	28	26	23	19	13	8	4	.003		
.004	5	7	7	8	8	8	8	8	8	8	8	24	24	24	24	23	22	20	17	12	7	3	.004		
.005	7	9	11	12	12	12	12	13	13	13	13	20	20	20	20	19	19	17	14	10	6	3	.005		
.006	8	12	14	15	16	17	17	17	17	17	17	16	16	16	16	16	15	14	12	9	5	3	.006		
.007	10	14	17	19	20	22	22	22	23	23	23	12	12	12	12	12	12	11	10	8	5	2	.007		
.008	12	17	20	23	25	27	28	28	28	28	28	9	9	9	9	9	9	9	8	6	4	2	.008		
.009	13	19	23	27	29	32	33	34	34	35	35	7	7	7	7	7	7	7	6	5	3	2	.009		
.010	15	22	26	30	33	36	39	40	41	41	41	5	5	5	5	5	5	5	4	4	2	1	.010		
.011	17	24	29	34	38	41	45	46	48	48	48	3	3	3	3	3	3	3	3	3	2	1	.011		
.012	18	27	33	38	42	46	50	53	55	55	56	2	2	2	2	2	2	2	2	2	1	1	.012		
.013	20	30	36	42	46	51	56	59	62	63	64	1	1	1	1	1	1	1	1	1	1	0	.013		
.014	22	32	39	45	51	56	62	66	69	71	72	0	0	0	0	0	0	0	0	0	0	0	.014		
.015	24	35	42	49	55	61	67	72	76	79	80	0	0	0	0	0	0	0	0	0	0	0	.015		
.016	25	37	45	53	59	66	73	78	83	86	88	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	27	40	48	57	63	71	79	85	90	94	97	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	29	42	51	61	68	76	84	91	98	102	105	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	70	58	47	50	45	60	55	37	58	53	69	81	52
VERTICAL													
NORTH	100	100	100	98	93	94	94	95	100	100	100	100	96
WEST	74	63	58	63	64	73	69	53	66	64	78	85	65
SOUTH	57	51	49	65	70	85	80	57	64	49	57	69	63
EAST	77	70	60	66	62	75	72	53	69	63	73	82	66
% 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 1978.

CLEVELAND, OHIO
WBAN 14820
TABLE H:

TRY Data (1969)

Latitude 41.40 N
Longitude 81.90 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	1747	1629	1306	997	595	306	168	143	143	1759	845	455	428	359	291	206	152	129	123	438	297	388	
Feb	1827	1708	1423	1164	777	454	265	188	186	2027	1165	707	656	556	466	347	260	211	188	187	735	518	601
Mar	1705	1644	1495	1342	1032	714	470	310	259	2238	1624	944	905	826	747	600	457	356	296	278	1120	885	922
Apr	1373	1436	1440	1422	1240	986	729	508	367	2263	2059	983	992	974	947	843	715	597	498	439	1346	1305	1350
May	1099	1238	1352	1434	1359	1183	943	702	520	2200	2350	957	1027	1076	1109	1049	936	794	656	552	1519	1634	1681
Jun	984	1141	1302	1431	1408	1278	1051	810	623	2156	2471	876	927	977	1016	988	916	809	704	630	1326	1512	1843
Jul	1033	1181	1319	1424	1380	1234	1003	766	583	2158	2404	913	962	1004	1034	991	906	791	680	604	1399	1561	1828
Aug	1240	1335	1387	1409	1277	1067	824	599	440	2192	2150	1036	1101	1124	1124	1017	862	695	546	454	1607	1587	1583
Sep	1547	1526	1428	1325	1076	795	555	382	309	2186	1751	875	862	813	759	645	526	430	365	339	1059	936	1240
Oct	1753	1653	1425	1201	858	545	336	235	221	2052	1302	756	726	644	559	430	317	246	211	206	828	609	867
Nov	1743	1618	1309	1015	630	334	193	159	159	1808	928	502	482	415	344	248	178	147	140	140	491	341	466
Dec	1681	1566	1245	933	537	263	149	133	133	1653	757	360	345	297	246	180	137	119	115	115	337	246	318
Year	1475	1471	1369	1258	1015	765	559	413	329	2058	1653	781	785	757	722	630	532	445	378	339	1019	955	1091

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

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

*** South exposure tilt 45 degrees.

**** Cinquemanl, V., J. R. Owenby, Jr. and R. G. Baldwin. 1978. Input Data for Solar Systems. NCC, Ashville, NC.

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/ NNW	NNE/ NNW	N	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NNW	NNE/ NNW	N	
Jan	1507	1384	1093	824	474	226	128	116	116	381	355	295	237	166	121	104	100	100	100
Feb	1554	1436	1192	968	629	350	195	153	151	590	542	457	381	281	208	167	153	152	152
Mar	1386	1361	1240	1117	850	573	360	236	210	769	743	680	616	491	368	281	236	226	226
Apr	1045	1148	1183	1182	1029	807	577	390	290	772	798	795	778	693	583	479	397	353	353
May	789	942	1088	1182	1127	972	757	547	391	730	805	870	909	864	765	641	522	455	455
Jun	691	846	1034	1173	1167	1050	849	638	467	679	731	788	830	809	747	654	565	500	500
Jul	734	887	1055	1173	1145	1014	809	602	439	704	759	811	846	814	741	641	545	480	480
Aug	927	1051	1132	1169	1061	874	657	465	343	795	880	921	931	841	703	555	430	360	360
Sep	1233	1251	1185	1106	890	642	432	294	251	702	703	668	626	530	427	344	291	275	275
Oct	1472	1383	1187	1003	700	425	253	186	180	627	601	532	462	349	253	194	170	167	167
Nov	1500	1371	1095	840	504	250	145	129	129	420	401	343	282	200	141	118	114	114	114
Dec	1454	1336	1043	768	426	192	115	108	108	299	285	245	201	146	110	96	93	93	93
Year	1189	1198	1127	1042	834	616	441	323	257	622	634	618	593	517	432	357	302	272	272

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

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

COLUMBIA, MISSOURI
WBAN 13983
TABLE A:

TRY Data (1968)

Latitude 39.00 N
Longitude 92.30 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															
65 to 69	0	0	0	0	3	1	0	0	4	56.2	744	28471	0	0	
60 to 64	0	0	0	3	6	7	2	0	18	55.8	735	24768	9	17	
55 to 59	3	4	6	5	4	4	10	6	42	54.0	695	21160	49	129	
50 to 54	4	2	0	5	8	8	0	5	32	47.3	665	17753	79	442	
45 to 49	3	4	6	6	9	9	5	3	45	43.6	631	14498	113	907	
40 to 44	11	9	7	10	5	4	12	13	71	38.9	583	11462	161	1591	
35 to 39	6	8	6	6	8	9	10	3	56	34.8	510	8749	234	2598	
30 to 34	13	11	6	10	10	10	7	14	81	29.1	454	6335	290	3904	
25 to 29	6	7	17	14	12	12	14	9	91	25.4	360	4289	384	5578	
20 to 24	13	12	11	9	9	10	10	14	88	20.9	273	2716	471	7725	
15 to 19	10	10	7	8	10	7	9	7	68	16.1	180	1595	564	10324	
10 to 14	12	11	13	10	5	6	7	10	74	10.8	123	823	621	13272	
5 to 9	5	7	8	4	4	4	1	2	35	6.1	57	403	687	16572	
0 to 4	1	2	1	1	0	2	5	3	15	1.4	31	188	713	20077	
-5 to -1	3	3	2	2	0	0	1	4	15	-3.6	19	66	725	23675	
-10 to -6	3	2	2	0	0	0	0	0	7	-8.3	6	14	738	27343	
-15 to -11	0	1	1	0	0	0	0	0	2	-11.0	0	0	744	31049	
Feb															
60 to 64	2	0	0	0	0	0	0	0	2	57.0	672	22223	0	0	
55 to 59	1	1	0	0	0	0	0	1	3	56.0	668	18871	4	8	
50 to 54	0	2	3	3	9	6	0	0	23	44.9	661	15539	11	36	
45 to 49	0	0	0	5	11	10	4	0	30	39.4	633	12304	39	161	
40 to 44	5	2	1	10	9	7	8	7	49	35.8	601	9216	71	433	
35 to 39	4	3	5	13	23	23	14	9	94	32.1	537	6357	135	934	
30 to 34	27	26	21	14	10	15	18	24	155	28.3	416	3941	256	1878	
25 to 29	10	14	17	18	11	15	14	12	111	23.7	270	2262	402	3559	
20 to 24	7	4	11	7	9	8	15	5	66	18.2	182	1151	490	5808	
15 to 19	18	12	5	11	2	0	11	21	80	14.9	98	424	574	8441	
10 to 14	9	15	13	3	0	0	0	5	45	10.7	35	95	637	11472	
5 to 9	1	5	8	0	0	0	0	0	14	6.1	6	5	666	14742	
Mar															
80 to 84	0	0	0	0	0	1	0	0	1	65.0	744	27611	0	0	
75 to 79	0	0	0	1	12	8	0	0	21	61.8	733	23903	11	12	
70 to 74	0	0	0	10	8	9	3	0	30	57.0	710	20291	34	120	
65 to 69	0	0	2	8	6	9	8	8	41	56.1	680	16803	64	352	
60 to 64	7	2	7	7	8	7	15	8	61	52.4	634	13516	110	785	
55 to 59	12	12	10	7	11	11	4	9	76	49.6	561	10520	183	1509	
50 to 54	4	7	5	12	13	13	12	4	70	44.6	486	7903	258	2612	
45 to 49	15	7	12	9	4	4	12	14	77	40.3	413	5645	331	4074	
40 to 44	5	13	6	8	7	8	6	13	66	36.7	336	3764	408	5913	
35 to 39	15	6	15	15	13	10	9	7	90	32.3	272	2223	472	8092	
30 to 34	7	19	15	6	8	10	14	11	90	29.4	167	1104	577	10693	
25 to 29	13	12	8	7	2	3	7	11	63	24.5	89	469	655	13778	
20 to 24	8	7	7	2	1	0	3	6	34	20.1	44	149	700	17178	
15 to 19	7	8	4	1	0	0	0	2	22	16.4	10	18	734	20767	
10 to 14	0	0	2	0	0	0	0	0	2	13.0	0	0	744	24469	

FOOTNOTES: * The Cooling and Heating degree base is at the

or of the dry bulb temperature range.

COLUMBIA, MISSOURI

WBAN 13983

TABLE A:

TRY Data (1968)

Latitude 39.00 N

Longitude 92.30 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	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	2	1	0	0	3	57.3	720	19061	0	0	
75 to 79	0	0	0	2	8	7	0	0	17	58.9	712	15474	8	13	
70 to 74	0	0	0	7	18	18	5	0	48	55.7	691	11970	29	109	
65 to 69	2	0	3	20	22	26	18	12	103	55.6	624	8674	96	413	
60 to 64	12	8	10	20	10	15	23	13	111	53.6	498	5859	222	1198	
55 to 59	19	20	28	14	16	12	19	24	152	49.2	379	3650	341	2589	
50 to 54	18	10	17	10	5	5	11	19	95	45.5	241	2114	479	4653	
45 to 49	17	21	9	7	5	3	7	8	77	41.4	159	1109	561	7248	
40 to 44	10	9	12	5	1	0	2	7	46	37.9	93	506	627	10245	
35 to 39	5	13	7	5	3	3	5	6	47	33.1	48	149	672	13488	
30 to 34	7	8	4	0	0	0	0	1	20	29.4	11	16	709	16955	
25 to 29	0	1	0	0	0	0	0	0	1	26.0	0	0	720	20539	
May															
90 to 94	0	0	0	0	0	1	0	0	1	62.0	744	23119	0	0	
85 to 89	0	0	0	0	7	7	0	0	14	66.0	740	19405	4	6	
80 to 84	0	0	0	5	7	5	3	0	20	64.7	723	15745	21	66	
75 to 79	0	0	1	6	13	11	4	1	36	60.9	698	12184	46	225	
70 to 74	3	1	5	18	13	17	12	6	75	59.9	651	8807	93	568	
65 to 69	3	3	10	19	22	22	20	8	107	56.6	561	5769	183	1250	
60 to 64	17	12	15	22	21	15	21	24	147	54.3	439	3259	305	2460	
55 to 59	29	24	35	18	7	12	29	26	180	52.1	298	1422	446	4343	
50 to 54	21	24	21	5	3	3	4	22	103	48.2	114	442	630	7083	
45 to 49	16	21	5	0	0	0	0	6	48	43.7	30	92	714	10453	
40 to 44	4	7	1	0	0	0	0	0	12	39.6	5	9	739	14090	
35 to 39	0	1	0	0	0	0	0	0	1	38.0	0	0	744	17801	
Jun															
90 to 94	0	0	0	0	13	11	0	0	24	73.5	719	12636	1	1	
85 to 89	0	0	0	26	37	42	5	0	110	72.2	658	9148	62	113	
80 to 84	0	0	15	25	17	14	31	4	106	70.2	554	6129	166	694	
75 to 79	7	6	23	19	8	8	25	32	128	68.5	431	3656	289	1821	
70 to 74	40	35	25	8	8	10	11	23	160	66.2	290	1835	430	3600	
65 to 69	19	20	14	7	4	2	15	17	98	62.8	148	773	572	6138	
60 to 64	18	16	8	2	2	3	1	11	61	58.4	67	257	653	9222	
55 to 59	3	10	5	3	1	0	2	2	26	53.8	20	49	700	12614	
50 to 54	3	3	0	0	0	0	0	1	7	49.3	4	5	716	16170	

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

COLUMBIA, MISSOURI
WBAN 13983
TABLE A:

TRY Data (1968)

Latitude 39.00 N
Longitude 92.30 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	1	13	14	0	0	28	74.9	740	11711	4	3	
85 to 89	0	0	0	25	32	28	7	0	92	72.9	690	8116	54	128	
80 to 84	0	0	13	33	33	32	28	9	148	71.7	569	4939	175	671	
75 to 79	23	14	37	24	14	18	35	39	204	69.9	395	2485	349	1937	
70 to 74	37	33	23	9	1	1	18	26	148	67.3	211	993	533	4165	
65 to 69	23	31	18	1	0	0	5	12	90	62.4	76	295	668	7187	
60 to 64	5	8	2	0	0	0	0	7	22	57.4	23	79	721	10691	
55 to 59	5	7	0	0	0	0	0	0	12	53.9	5	9	739	14341	
Aug															
95 to 99	0	0	0	0	1	0	0	0	1	77.0	744	16086	0	0	
90 to 94	0	0	0	10	29	24	0	0	63	77.4	728	12379	16	13	
85 to 89	0	0	4	23	11	21	11	0	70	75.5	661	8917	83	271	
80 to 84	2	0	16	12	19	16	26	20	111	73.0	574	5821	170	895	
75 to 79	37	28	25	22	13	10	21	24	180	71.1	443	3254	301	2048	
70 to 74	18	28	18	12	14	15	12	17	134	67.3	255	1536	489	4050	
65 to 69	15	11	17	12	6	4	18	20	103	62.0	144	545	600	6779	
60 to 64	19	21	12	2	0	3	5	12	74	59.0	35	73	709	10027	
55 to 59	2	5	1	0	0	0	0	0	8	54.1	2	3	742	13677	
Sep															
85 to 89	0	0	0	0	10	6	0	0	16	66.1	720	14885	0	0	
80 to 84	0	0	0	8	16	15	0	0	39	65.1	692	11341	28	56	
75 to 79	0	0	1	23	27	24	6	0	81	62.7	637	7998	83	313	
70 to 74	0	3	9	28	22	21	21	12	116	63.3	547	5026	173	941	
65 to 69	28	18	27	19	7	20	36	25	180	61.7	406	2618	314	2133	
60 to 64	24	19	30	11	8	4	23	33	152	57.9	228	1054	492	4169	
55 to 59	27	30	17	1	0	0	4	18	97	54.2	94	281	626	6996	
50 to 54	11	18	5	0	0	0	0	2	36	50.9	18	25	702	10340	
45 to 49	0	2	1	0	0	0	0	0	3	47.0	1	1	719	13916	

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

COLUMBIA, MISSOURI
WBAN 13983
TABLE A:

TRY Data (1968)

Latitude 39.00 N
Longitude 92.30 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															
85 to 89	0	0	0	0	4	0	0	0	4	72.3	744	22464	0	0	
80 to 84	0	0	0	4	13	6	0	0	23	68.3	732	18762	12	18	
75 to 79	0	0	1	11	9	14	6	0	41	65.2	704	15172	40	148	
70 to 74	4	1	4	8	11	15	12	12	67	61.4	656	11769	88	465	
65 to 69	12	14	12	10	13	8	12	8	89	60.5	579	8668	165	1084	
60 to 64	10	9	8	15	14	18	13	13	100	53.1	486	6011	258	2147	
55 to 59	11	6	8	19	16	16	7	8	91	50.4	381	3842	363	3698	
50 to 54	10	12	22	17	7	10	22	13	113	45.8	288	2144	456	5720	
45 to 49	24	21	18	5	3	1	13	25	110	43.3	171	985	573	8281	
40 to 44	13	19	10	4	3	4	4	6	63	38.5	80	386	664	11402	
35 to 39	3	5	6	0	0	1	4	6	25	34.9	29	124	715	14860	
30 to 34	6	6	4	0	0	0	0	2	18	30.4	14	23	730	18479	
Nov															
80 to 84	0	0	0	1	3	2	0	0	6	65.2	716	28071	4	4	
75 to 79	0	0	0	1	0	1	0	0	2	64.0	713	24499	7	32	
70 to 74	0	0	0	1	3	1	3	2	10	59.4	708	20941	12	74	
65 to 69	3	2	3	2	2	3	0	2	17	57.2	698	17429	22	162	
60 to 64	3	3	2	2	7	2	5	3	27	53.6	680	13990	40	323	
55 to 59	3	1	2	12	15	12	4	6	55	49.0	641	10674	79	607	
50 to 54	7	9	9	14	6	12	12	4	73	45.7	578	7631	142	1164	
45 to 49	9	6	5	12	12	13	9	14	80	42.3	508	4923	212	2056	
40 to 44	21	17	23	16	26	19	24	23	169	39.5	382	2610	338	3343	
35 to 39	21	22	19	19	9	16	13	16	135	34.4	226	1098	494	5431	
30 to 34	15	21	19	9	7	8	17	15	111	30.0	81	313	639	8246	
25 to 29	5	6	6	1	0	1	3	3	25	25.8	21	78	699	11611	
20 to 24	3	3	2	0	0	0	0	2	10	20.6	8	13	712	15146	
Dec															
60 to 64	0	0	0	3	2	0	0	0	5	54.2	744	22625	0	0	
55 to 59	3	3	3	0	5	6	4	4	28	51.1	729	18930	15	25	
50 to 54	3	3	3	6	12	9	5	2	43	48.0	694	15358	50	173	
45 to 49	2	1	3	8	5	6	3	2	30	41.3	659	11988	85	523	
40 to 44	6	6	8	4	12	9	12	14	71	37.4	613	8780	131	1035	
35 to 39	11	10	5	22	14	16	10	9	97	33.5	530	5899	214	1874	
30 to 34	20	18	21	16	13	13	19	19	139	29.2	410	3503	334	3198	
25 to 29	22	15	12	15	24	18	16	20	142	24.6	278	1796	466	5211	
20 to 24	12	22	23	13	5	11	14	11	111	20.3	133	771	611	7906	
15 to 19	8	5	6	3	1	5	4	7	39	15.7	60	316	684	11171	
10 to 14	4	5	4	3	0	0	4	3	23	11.0	29	94	715	14669	
5 to 9	2	5	5	0	0	0	2	2	16	7.1	4	5	740	18300	

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

COLUMBIA, MISSOURI
 MBAN 13983
 TABLE B:

TRY Data (1968)

Latitude 39.00 N
 Longitude 92.50 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	0	0	0	1	0.0	0.0	0.0	0.0	77.0	0.0	0.0	0.0	77.0
90 to 94	0	0	0	11	55	50	0	0	116	0.0	0.0	0.0	77.8	76.1	75.2	0.0	0.0	75.9
85 to 89	0	0	4	74	101	104	23	0	306	0.0	0.0	76.3	74.5	71.4	71.5	75.5	0.0	72.6
80 to 84	2	0	44	88	110	92	88	33	457	74.0	0.0	73.5	70.9	68.1	68.2	72.2	73.8	70.4
75 to 79	67	48	88	109	104	101	97	96	710	72.0	71.5	70.8	66.6	62.8	63.5	69.1	70.8	67.9
70 to 74	102	101	84	101	98	107	97	98	788	67.9	68.7	66.8	61.6	59.7	59.6	62.6	66.2	64.1
65 to 69	105	99	106	98	85	95	132	112	832	62.7	63.1	61.3	57.6	56.9	57.5	59.6	60.7	60.0
60 to 64	117	98	94	87	78	74	108	124	780	57.5	57.8	57.0	53.9	51.8	51.6	55.0	56.7	55.5
55 to 59	118	123	115	79	75	73	83	104	770	52.9	53.1	52.3	50.5	48.7	48.7	50.1	51.5	51.3
50 to 54	81	90	85	72	63	66	66	72	595	48.0	48.8	47.4	45.9	44.7	45.0	44.5	46.6	46.6
45 to 49	86	83	59	52	49	46	53	72	500	42.4	43.4	43.1	41.0	41.2	40.0	41.8	42.3	42.1
40 to 44	75	82	68	57	63	51	68	83	547	38.9	39.4	39.3	37.9	36.4	36.7	38.2	38.1	38.2
35 to 39	65	68	63	80	70	78	65	56	545	34.0	34.6	34.1	32.7	32.5	32.9	33.8	33.4	33.5
30 to 34	95	109	90	55	48	56	75	86	614	29.2	29.4	29.9	29.3	28.9	28.6	28.8	29.0	29.2
25 to 29	56	55	60	55	49	49	54	55	433	25.6	25.2	25.4	24.0	23.9	23.9	24.2	24.4	24.6
20 to 24	43	48	54	31	24	29	42	38	309	20.3	20.5	20.6	19.8	19.3	19.3	19.3	20.1	20.0
15 to 19	43	35	22	23	13	12	24	37	209	15.6	15.9	16.5	14.6	14.4	16.2	15.9	15.4	15.6
10 to 14	25	31	32	16	5	6	11	18	144	10.5	11.2	11.3	9.8	10.2	10.2	11.0	10.9	10.8
5 to 9	8	17	21	4	4	4	3	4	65	7.0	7.1	6.1	5.5	5.5	5.0	7.0	5.8	6.4
0 to 4	1	2	1	1	0	2	5	3	15	1.0	3.0	1.0	0.0	0.0	2.0	0.8	1.7	1.4
-5 to -1	3	3	2	2	0	0	1	4	15	-4.3	-3.7	-2.5	-3.5	0.0	0.0	-2.0	-4.0	-3.6
-10 to -6	3	2	2	0	0	0	0	0	7	-7.0	-9.5	-9.0	0.0	0.0	0.0	0.0	0.0	-8.3
-15 to -11	0	1	1	0	0	0	0	0	2	0.0	-11.0	-11.0	0.0	0.0	0.0	0.0	0.0	-11.0

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 Max	Daily Min		4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	29.2	65	-11	38	20	27.1	86	80	69	79	80	0.0027	0.0031	0.0034	0.0033	0.0031	10.6
Feb	29.4	61	6	39	21	25.7	71	63	49	62	63	0.0021	0.0021	0.0021	0.0020	0.0021	10.3
Mar	43.4	80	14	56	35	39.2	75	62	47	58	62	0.0039	0.0044	0.0043	0.0042	0.0042	11.6
Apr	56.0	81	28	67	45	47.8	71	57	42	52	58	0.0055	0.0057	0.0056	0.0056	0.0056	12.6
May	61.4	90	39	71	52	53.7	77	61	50	61	64	0.0071	0.0077	0.0075	0.0076	0.0075	10.2
Jun	75.0	93	50	85	66	66.6	83	64	50	67	67	0.0121	0.0132	0.0126	0.0132	0.0127	9.4
Jul	76.8	94	55	86	68	68.8	83	66	53	68	69	0.0131	0.0145	0.0137	0.0142	0.0138	8.0
Aug	75.9	95	55	85	68	69.0	84	67	58	73	73	0.0139	0.0143	0.0144	0.0147	0.0144	8.5
Sep	66.8	86	47	78	57	59.9	85	66	54	71	70	0.0095	0.0103	0.0099	0.0101	0.0099	9.0
Oct	57.3	86	30	68	47	50.7	80	63	47	64	66	0.0069	0.0074	0.0069	0.0070	0.0070	10.6
Nov	43.5	84	20	51	37	39.5	82	73	62	73	74	0.0044	0.0047	0.0045	0.0045	0.0045	10.7
Dec	32.1	61	5	40	24	29.2	80	74	66	75	74	0.0027	0.0030	0.0031	0.0029	0.0029	12.3
Year	54.2	95	-11	64	45	48.2	80	66	54	67	68	0.0070	0.0076	0.0074	0.0075	0.0073	10.3

COLUMBIA, MISSOURI
WBAN 13983
TABLE D:

TRY Data (1968)

Latitude 39.00 N
Longitude 92.30 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 Above (100s)*	Deg-Hrs (100s)*	Hrs Above (100s)*	Deg-Hrs (100s)*	Hrs Above (100s)*	Deg-Hrs (100s)*	Hrs Above (100s)*	Deg-Hrs (100s)*	Hrs Above (100s)*	Deg-Hrs (100s)*	Hrs Above (100s)*	Deg-Hrs (100s)*	HEATING		COOLING				
													Base	Heat	Base	Heat	Base	Heat	Base
96	0	499	0	0	423	0	0	379	0	0	389	0	0	1525	0	8760	3661	0	0
95	0	488	0	0	412	0	0	368	0	0	378	0	0	1492	0	8759	3574	1	0
94	0	477	0	0	401	0	2	357	0	0	367	0	0	1459	0	8757	3486	3	0
93	0	466	0	0	390	0	7	346	0	5	356	0	0	1426	0	8747	3399	13	0
92	0	455	0	1	379	0	18	335	0	12	345	0	0	1393	0	8727	3311	33	0
91	0	444	0	4	368	0	31	324	0	21	334	0	0	1361	0	8703	3224	57	1
90	0	433	0	8	357	0	46	314	1	38	323	1	0	1328	0	8667	3137	93	1
89	0	422	0	15	347	0	64	303	1	58	313	1	0	1295	0	8622	3051	138	3
88	0	411	0	26	336	0	80	293	2	73	303	2	1	1262	0	8579	2965	181	4
87	0	401	0	40	325	1	99	283	3	86	292	2	4	1229	0	8529	2879	231	6
86	0	390	0	54	315	1	122	273	4	105	282	3	11	1196	0	8467	2794	293	9
85	2	379	0	74	304	2	145	264	5	135	273	5	19	1163	0	8385	2710	375	12
84	6	368	0	93	294	3	166	254	7	160	263	6	29	1131	0	8304	2626	456	16
83	9	357	0	111	284	4	192	245	9	176	254	8	43	1098	0	8228	2544	532	21
82	15	346	0	128	275	5	216	236	11	196	245	10	63	1065	0	8138	2462	622	27
81	26	335	0	145	265	6	236	227	13	216	236	12	85	1032	0	8044	2381	716	34
80	40	325	1	163	256	8	258	219	16	236	227	14	102	999	0	7937	2301	823	41
79	53	314	1	180	246	10	275	211	18	255	219	16	121	967	0	7832	2222	928	50
78	68	304	2	201	237	11	298	203	21	276	211	19	140	934	1	7705	2144	1055	60
77	88	294	3	227	229	14	323	195	24	298	202	22	160	903	2	7549	2068	1211	71
76	108	284	4	250	220	16	342	187	28	316	195	25	180	871	3	7403	1993	1357	84
75	126	274	5	271	212	19	361	180	31	335	187	28	198	840	5	7252	1920	1508	98
74	145	264	6	295	203	21	376	172	35	358	179	32	215	810	8	7098	1848	1662	114
73	162	255	8	318	196	24	392	165	39	377	172	35	230	780	11	6953	1778	1807	131
72	181	246	9	335	188	28	413	158	43	393	165	39	248	750	14	6803	1709	1957	150
71	197	237	11	353	180	31	433	152	47	413	158	43	272	722	18	6646	1642	2114	171
70	211	228	13	373	173	35	455	145	51	439	151	48	296	694	23	6473	1576	2287	193
69	229	219	16	391	166	39	475	139	56	467	145	52	315	666	28	6311	1513	2449	216
68	250	210	18	409	159	43	490	133	61	488	139	57	341	639	34	6158	1450	2602	242
67	275	202	21	429	152	47	505	127	66	503	133	62	375	613	41	5991	1389	2769	268
66	296	194	23	448	146	51	520	121	71	520	127	67	400	587	48	5833	1330	2927	297
65	315	186	26	469	139	56	541	115	76	539	121	72	422	562	56	5655	1273	3105	327
64	335	178	30	490	133	61	562	110	82	554	116	78	452	538	64	5467	1217	3293	359
63	354	171	33	508	127	66	577	105	87	567	111	83	476	514	74	5313	1163	3447	393
62	376	164	37	526	121	71	589	100	93	581	105	89	493	491	84	5161	1111	3599	428
61	394	156	41	541	116	76	603	95	99	594	100	95	511	469	94	5022	1060	3738	465
60	410	150	45	558	110	82	621	90	105	611	95	101	533	448	105	4866	1010	3894	503
59	425	143	49	576	105	87	637	85	112	630	91	107	552	427	118	4701	963	4059	543
58	447	136	53	591	100	93	651	81	118	644	86	114	566	407	130	4553	916	4207	584
57	476	130	58	608	95	99	671	76	125	659	82	120	581	387	144	4393	872	4367	627
56	499	124	63	624	90	105	690	72	131	672	77	127	597	368	158	4252	829	4508	671
55	522	118	68	639	86	112	702	68	138	686	73	134	616	350	172	4095	787	4665	717
54	541	112	73	656	81	118	715	64	146	703	69	141	630	333	188	3940	747	4820	765
53	557	107	79	674	77	125	730	61	153	716	65	148	639	316	204	3814	708	4946	813
52	573	102	84	689	73	132	741	57	160	729	62	155	652	300	220	3692	670	5068	863
51	591	96	90	699	69	138	750	53	168	742	58	162	665	284	237	3583	634	5177	917

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

COLUMBIA, MISSOURI
WBAN 13983
TABLE D:

TRY Data (1968)

Latitude 39.00 N
Longitude 92.30 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	Base	(100s)*	Heat	Above	Base	(100s)*	Heat	Above	Base	(100s)*	Heat	Above	Base	(100s)*	Heat	Above	Base	(100s)*	Heat	Above	Base	(100s)*	Heat	Below	Hrs	Above	Hrs
50	610	91	96	711	65	146	763	50	175	755	54	170	683	69	126	1769	268	255							3467	599	5293	967
49	624	87	102	719	61	153	775	47	183	764	51	177	700	65	133	1812	253	273							3364	565	5396	1021
48	636	82	109	726	57	160	785	44	191	769	48	185	712	62	140	1866	239	291							3264	531	5496	1075
47	650	78	115	738	54	167	793	41	199	777	45	193	723	58	147	1921	225	310							3157	499	5603	1130
46	658	73	122	749	50	175	801	38	207	783	42	200	733	54	154	1962	212	329							3072	468	5688	1187
45	670	69	128	762	47	182	812	35	215	797	38	208	742	51	162	2006	199	349							2970	438	5790	1244
44	685	65	135	779	44	190	823	32	223	811	36	216	752	47	169	2050	186	370							2859	409	5901	1303
43	699	61	142	794	40	198	834	29	231	816	33	225	763	44	177	2099	174	390							2753	381	6007	1362
42	714	57	149	803	38	206	847	27	239	824	30	233	777	40	184	2150	162	412							2643	354	6117	1423
41	728	53	156	812	35	214	861	24	248	835	27	241	791	37	192	2189	151	433							2542	328	6218	1485
40	741	49	164	823	32	222	875	22	257	850	25	249	806	34	200	2239	140	455							2425	303	6335	1547
39	753	46	171	832	29	230	888	20	265	866	22	258	821	32	208	2285	130	478							2312	279	6448	1611
38	767	43	179	845	27	239	901	18	274	884	20	267	833	29	217	2320	120	501							2209	257	6551	1676
37	779	39	186	863	24	247	914	16	284	898	18	276	846	26	225	2354	111	524							2105	235	6655	1742
36	789	36	194	881	22	256	931	14	293	910	16	285	858	24	234	2386	102	548							2003	215	6757	1809
35	802	33	202	899	20	265	946	13	302	927	14	294	871	22	242	2433	93	572							1881	195	6879	1877
34	822	30	210	916	18	274	958	11	312	943	13	303	886	19	251	2481	85	597							1752	177	7008	1947
33	844	28	219	931	16	283	972	10	321	955	11	313	902	17	260	2532	77	622							1622	160	7138	2018
32	864	25	227	944	15	293	983	9	331	967	10	322	921	16	269	2588	70	647							1492	145	7268	2090
31	881	23	236	953	13	302	989	8	341	980	9	332	934	14	278	2646	63	674							1376	130	7384	2163
30	894	21	245	960	12	312	996	7	351	989	8	342	947	12	288	2714	57	700							1259	117	7501	2237
29	907	19	254	969	11	321	1005	6	361	999	7	352	958	11	297	2770	52	728							1151	105	7609	2313
28	921	17	263	978	9	331	1018	5	371	1009	6	362	966	10	307	2805	47	756							1061	94	7699	2389
27	932	16	272	987	8	341	1028	4	381	1017	5	372	979	8	317	2836	42	784							978	84	7782	2467
26	942	14	282	1000	7	351	1034	4	392	1026	4	382	992	7	326	2867	38	812							898	74	7862	2545
25	954	13	291	1012	6	361	1043	3	402	1037	4	393	1003	6	336	2899	34	841							811	66	7949	2624
24	967	11	301	1022	6	371	1050	3	412	1046	3	403	1012	6	347	2928	30	870							734	58	8026	2704
23	980	10	310	1029	5	381	1057	2	423	1051	3	414	1019	5	357	2951	27	900							671	51	8089	2785
22	993	9	320	1037	4	392	1063	2	434	1055	2	424	1028	4	367	2977	23	929							605	45	8155	2866
21	1001	8	330	1043	4	402	1067	2	444	1062	2	435	1037	3	377	3001	20	959							548	39	8212	2948
20	1009	7	340	1047	3	412	1071	1	455	1068	2	445	1046	3	388	3027	18	989							491	34	8269	3030
19	1019	6	350	1051	3	423	1074	1	466	1072	1	456	1056	2	398	3059	15	1020							428	29	8332	3113
18	1027	6	361	1056	2	433	1077	1	476	1076	1	467	1064	2	409	3086	13	1051							373	25	8387	3197
17	1030	5	371	1061	2	444	1079	1	487	1080	1	478	1067	2	419	3107	11	1082							334	22	8426	3281
16	1032	4	381	1064	2	455	1080	1	498	1081	1	488	1071	2	430	3128	10	1113							303	19	8457	3365
15	1034	4	392	1068	1	465	1083	0	509	1082	1	499	1074	1	441	3150	8	1144							267	16	8493	3450
14	1040	3	402	1072	1	476	1086	0	520	1083	1	510	1076	1	452	3166	7	1176							234	13	8526	3535
13	1048	3	412	1073	1	487	1087	0	531	1084	1	521	1079	1	462	3183	6	1208							204	11	8556	3620
12	1055	2	423	1077	1	498	1088	0	541	1086	0	532	1082	1	473	3200	5	1239							170	9	8590	3706
11	1061	2	433	1081	1	508	1089	0	552	1088	0	543	1084	1	484	3214	4	1272							142	8	8618	3792
10	1065	1	444	1085	0	519	1090	0	563	1088	0	553	1085	1	495	3227	3	1304							118	6	8642	3879
9	1070	1	455	1088	0	530	1092	0	574	1089	0	564	1086	0	506	3241	3	1336							93	5	8667	3965
8	1075	1	466	1089	0	541	1093	0	585	1089	0	575	1088	0	517	3250	3	1369							74	4	8686	4052
7	1080	1	476	1090	0	552	1093	0	596	1090	0	586	1089	0	528	3256	2	1401							60	4	8700	4139
6	1084	1	487	1091	0	563	1094	0	607	1091	0	597	1089	0	538	3259	2	1434							52	3	8708	4226
5	1087	1	498	1091	0	574	1094	0	618	1092	0	608	1089	0	549	3261	2	1466							44	3	8716	4313

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 36.

COLUMBIA, MISSOURI
WBAN 13983
TABLE D:

TRY Data (1968)

Latitude 39.00 N
Longitude 92.30 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-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
	(F) 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	100s*	Base	100s*
4 1089	1	509	1092	0	585	1095	0	629	1093	0	619	1090	0	560	3265	2 1499
3 1089	0	520	1092	0	595	1095	0	640	1094	0	630	1091	0	571	3267	1 1532
2 1089	0	531	1092	0	606	1095	0	651	1095	0	641	1091	0	582	3268	1 1564
1 1090	0	542	1093	0	617	1095	0	662	1095	0	652	1092	0	593	3269	1 1597
0 1090	0	552	1093	0	628	1095	0	673	1095	0	663	1093	0	604	3269	1 1630
-1 1090	0	563	1093	0	639	1095	0	684	1095	0	674	1094	0	615	3269	1 1662
-2 1091	0	574	1094	0	650	1095	0	694	1095	0	685	1094	0	626	3269	1 1695
-3 1092	0	585	1094	0	661	1095	0	705	1095	0	696	1095	0	637	3273	0 1728
-4 1092	0	596	1094	0	672	1095	0	716	1095	0	706	1095	0	648	3277	0 1761
-5 1092	0	607	1095	0	683	1095	0	727	1095	0	717	1095	0	659	3278	0 1793
-6 1092	0	618	1095	0	694	1095	0	738	1095	0	728	1095	0	670	3279	0 1826
-7 1092	0	629	1095	0	705	1095	0	749	1095	0	739	1095	0	680	3280	0 1859
-8 1093	0	640	1095	0	716	1095	0	760	1095	0	750	1095	0	691	3281	0 1892
-9 1093	0	651	1095	0	727	1095	0	771	1095	0	761	1095	0	702	3282	0 1925
-10 1093	0	662	1095	0	738	1095	0	782	1095	0	772	1095	0	713	3283	0 1957
-11 1094	0	673	1095	0	749	1095	0	793	1095	0	783	1095	0	724	3284	0 1990
-12 1095	0	684	1095	0	760	1095	0	804	1095	0	794	1095	0	735	3285	0 2023

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

COLUMBIA, MISSOURI

WBAN 13983

TABLE E:

TRY Data (1968)

Latitude 39.00 N

Longitude 92.30 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:	4559	4087	3524	2962	2390	1888	1431	943	451	113	5
Annual Wet Bulb Cooling deg-hrs:	62450.	49264.	37524.	27447.	19135.	12493.	7322.	3499.	1144.	187.	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 **												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	51	50	49	48	46	43	39	33	26	18	10	.001		
.002	1	1	1	1	1	1	1	1	1	1	1	44	44	43	42	41	39	35	30	24	16	9	.002		
.003	2	3	3	3	3	3	3	3	3	3	3	37	37	37	36	36	34	31	27	21	15	8	.003		
.004	4	5	5	6	6	6	6	6	6	6	6	31	31	31	31	31	30	27	24	19	14	8	.004		
.005	5	7	8	9	9	9	10	10	10	10	10	26	26	26	26	26	25	24	21	17	12	7	.005		
.006	6	8	10	11	12	13	14	14	14	14	14	22	22	22	22	22	21	20	18	15	11	6	.006		
.007	7	10	12	14	16	17	18	18	19	19	19	18	18	18	18	18	17	17	15	13	9	5	.007		
.008	8	12	15	17	19	21	22	23	24	24	24	14	14	14	14	14	14	14	13	11	8	5	.008		
.009	10	14	17	20	23	25	27	28	29	29	30	11	11	11	11	11	11	11	11	9	7	4	.009		
.010	11	16	20	23	26	29	32	33	35	35	36	9	9	9	9	9	9	9	8	7	6	3	.010		
.011	12	17	22	26	29	33	36	39	41	42	43	7	7	7	7	7	7	7	6	6	5	3	.011		
.012	13	19	24	29	33	37	41	44	47	48	49	5	5	5	5	5	5	5	5	4	3	2	.012		
.013	14	21	27	32	36	41	46	50	53	55	56	3	3	3	3	3	3	3	3	3	3	2	.013		
.014	16	23	29	35	40	45	51	56	59	62	64	2	2	2	2	2	2	2	2	2	2	1	.014		
.015	17	25	31	38	43	49	55	61	66	69	71	1	1	1	1	1	1	1	1	1	1	1	.015		
.016	18	26	34	40	46	53	60	67	72	76	79	1	1	1	1	1	1	1	1	1	1	0	.016		
.017	19	28	36	43	50	57	65	72	79	83	86	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	20	30	38	46	53	61	70	78	85	90	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 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	41	45	51	55	46	53	57	39	33	53	53	48
VERTICAL													
NORTH	100	100	100	98	94	89	92	97	100	100	100	100	96
WEST	60	49	55	65	71	64	66	70	54	51	62	62	62
SOUTH	41	37	49	68	79	79	81	75	49	33	43	40	57
EAST	60	58	58	61	67	63	70	70	55	44	58	57	62
% Possible Sun	54	54	54	58	63	72	74	67	56	61	48	46	60

FOOTNOTES: * Corrected For Cloud Cover.

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

COLUMBIA, MISSOURI

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TABLE H:

TRY Data (1968)

Latitude 39.00 N

Longitude 92.30 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/ 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	1857	1722	1382	1065	647	333	184	156	156	1924	716	673	560	453	316	211	161	150	150	711	612
Feb	1897	1777	1499	1239	844	507	293	206	199	2169	929	849	714	596	436	309	232	198	195	1012	875
Mar	1721	1665	1525	1384	1084	763	503	325	270	2342	1122	1082	998	912	747	581	451	362	334	1363	1179
Apr	1341	1422	1450	1453	1286	1034	762	530	371	2324	1012	1066	1079	1077	984	846	699	570	477	1412	1526
May	1040	1197	1332	1438	1389	1214	975	725	529	2228	951	1027	1082	1127	1086	982	851	716	610	1440	1880
Jun	923	1097	1281	1431	1439	1312	1090	841	645	2169	884	982	1073	1146	1133	1044	908	762	650	1534	2090
Jul	970	1134	1293	1423	1403	1260	1034	789	596	2174	911	984	1048	1103	1076	989	866	738	645	1460	2116
Aug	1195	1308	1377	1422	1306	1093	846	613	443	2232	955	999	1015	1018	944	829	710	602	525	1349	1878
Sep	1540	1533	1463	1381	1140	853	599	406	317	2267	1097	1081	1025	963	813	646	504	400	351	1465	1450
Oct	1802	1696	1464	1253	904	573	356	245	232	2177	1109	1081	961	840	629	427	295	229	222	1283	1101
Nov	1846	1724	1410	1108	711	385	222	172	172	1968	706	675	577	480	345	231	175	158	157	719	703
Dec	1790	1665	1326	997	589	285	163	145	145	1813	678	647	541	434	294	188	141	133	133	665	523
Year	1491	1493	1399	1300	1063	802	587	431	340	2148	922	929	890	847	735	608	501	419	372	1202	1328

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

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

*** South exposure tilt 45 degrees.

**** Cinquemani, V., J. R. Owenby, Jr. and R. G. Baldwin. 1978. Input Data for Solar Systems. NCC, Asheville, NC.

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	1602	1460	1157	880	517	246	139	127	127	606	563	464	373	255	166	127	122	122
Feb	1609	1490	1251	1030	688	390	218	165	162	778	701	587	489	354	245	182	160	158
Mar	1387	1372	1266	1155	893	609	382	248	219	907	887	822	755	614	469	355	287	271
Apr	1001	1125	1184	1201	1062	842	604	404	292	787	853	882	888	812	693	563	451	383
May	731	899	1070	1183	1147	1000	782	564	397	734	809	878	925	893	805	688	572	483
Jun	635	800	1013	1173	1188	1081	879	660	477	666	757	860	937	930	855	733	607	508
Jul	676	841	1032	1168	1160	1037	832	617	446	698	771	846	902	883	809	701	591	509
Aug	874	1017	1119	1173	1080	897	675	474	343	745	798	826	834	774	678	574	482	421
Sep	1214	1252	1208	1147	939	688	465	311	258	872	880	841	794	666	522	400	316	285
Oct	1506	1413	1221	1043	735	451	267	194	188	924	901	802	699	513	338	227	184	180
Nov	1584	1458	1178	923	569	294	165	140	140	595	564	479	398	279	183	138	128	128
Dec	1547	1417	1108	822	464	212	124	118	117	575	543	449	358	236	146	112	108	108
Year	1195	1210	1150	1075	871	647	462	336	264	740	753	729	697	602	494	401	335	297

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

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

DETROIT, MICHIGAN
WBAN 94847
TABLE A:

TRY Data (1968)

Latitude 42.20 N
Longitude 83.30 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															
40 to 44	1	0	0	3	6	5	4	3	22	40.5	737	15510	7	5	
35 to 39	12	11	9	9	18	20	13	11	103	33.9	705	11886	39	101	
30 to 34	19	16	12	17	14	14	22	20	134	30.4	561	8697	183	63	
25 to 29	7	11	11	6	6	4	3	7	55	26.2	453	6223	291	1878	
20 to 24	10	13	17	17	18	17	12	9	113	20.1	389	4065	355	3440	
15 to 19	5	3	4	16	14	16	16	9	83	15.7	277	2409	467	5504	
10 to 14	16	15	14	10	8	7	9	19	98	10.6	205	1207	539	8022	
5 to 9	14	13	11	11	9	10	12	8	88	6.1	95	468	649	11003	
0 to 4	2	2	11	3	0	0	2	4	24	1.3	36	180	708	14435	
-5 to -1	5	5	1	1	0	0	0	3	15	-3.1	18	50	726	18025	
-10 to -6	2	4	3	0	0	0	0	0	9	-6.8	3	2	741	21697	
Feb															
50 to 54	0	0	0	0	0	3	2	0	5	49.2	671	19168	1	1	
45 to 49	3	2	0	1	7	3	1	3	20	42.5	659	15834	13	27	
40 to 44	1	1	2	4	6	7	1	0	22	34.5	644	12585	28	138	
35 to 39	2	3	4	8	14	13	4	3	51	31.2	611	9434	61	347	
30 to 34	6	1	2	15	24	21	17	11	97	27.1	533	6542	139	815	
25 to 29	21	19	20	24	9	13	26	27	159	24.3	415	4117	257	1750	
20 to 24	19	16	15	8	2	3	11	11	85	19.7	283	2412	389	3405	
15 to 19	7	13	13	8	15	12	5	10	83	14.5	202	1211	470	5564	
10 to 14	13	14	13	12	7	8	9	10	86	10.7	97	427	575	8140	
5 to 9	9	12	13	4	0	1	8	9	56	6.0	37	87	635	11160	
0 to 4	3	2	2	0	0	0	0	0	7	0.4	6	10	666	14443	
-5 to -1	0	1	0	0	0	0	0	0	1	-2.0	0	0	672	17793	
Mar															
70 to 74	0	0	0	0	3	3	0	0	6	54.8	743	26235	1	1	
65 to 69	0	0	0	5	6	5	1	0	17	53.4	731	22543	13	29	
60 to 64	2	0	1	4	7	7	3	3	27	50.7	711	18932	33	138	
55 to 59	4	4	2	3	10	6	5	2	36	48.7	682	15451	62	377	
50 to 54	3	5	7	9	4	8	3	4	43	46.7	639	12146	105	792	
45 to 49	0	0	1	11	14	13	11	4	54	40.8	596	9048	148	1414	
40 to 44	12	5	9	14	13	17	17	16	103	37.4	525	6235	219	2321	
35 to 39	11	17	18	10	12	10	15	11	104	33.5	411	3904	333	3710	
30 to 34	28	15	20	17	11	8	18	23	140	28.6	281	2106	463	5632	
25 to 29	15	27	11	15	10	11	9	16	114	24.4	171	958	573	8204	
20 to 24	9	9	15	2	3	5	8	9	60	19.9	71	387	673	11353	
15 to 19	3	3	1	2	0	0	3	4	16	14.5	33	149	711	14835	
10 to 14	6	8	8	1	0	0	0	1	24	10.5	17	17	727	18423	

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

DETROIT, MICHIGAN
WBAN 94847
TABLE A:

TRY Data (1968)

Latitude 42.20 N
Longitude 83.30 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	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	1	5	5	0	0	11	58.4	715	19037	5	4
70 to 74	0	0	0	2	3	1	2	0	8	57.8	707	15486	13	53
65 to 69	0	0	1	12	16	12	5	1	47	56.0	687	11984	33	151
60 to 64	6	2	9	20	32	32	8	5	114	51.6	626	8688	94	455
55 to 59	6	11	11	20	15	16	18	10	107	48.6	496	5907	224	1274
50 to 54	15	14	21	15	1	6	21	19	112	46.2	383	3694	337	2661
45 to 49	27	18	15	8	9	8	17	26	128	40.9	272	2040	448	4607
40 to 44	6	12	11	6	8	9	13	11	76	36.5	162	980	558	7147
35 to 39	14	10	11	5	1	1	5	15	62	33.5	95	338	625	10105
30 to 34	16	22	10	1	0	0	1	3	53	30.1	25	35	695	13402
25 to 29	0	1	1	0	0	0	0	0	2	26.5	0	0	720	16967
May														
80 to 84	0	0	0	2	3	1	0	0	6	67.3	741	19877	3	4
75 to 79	0	0	0	1	0	2	0	0	3	68.7	737	16185	7	32
70 to 74	0	0	3	1	8	12	4	0	28	57.9	730	12513	14	80
65 to 69	1	0	2	11	16	12	6	3	51	56.9	693	8948	51	235
60 to 64	11	12	10	30	39	38	26	11	177	54.1	599	5660	145	667
55 to 59	9	8	17	30	16	15	24	19	138	50.7	434	3140	310	1867
50 to 54	40	30	38	15	9	10	20	34	196	47.6	264	1347	480	3794
45 to 49	17	20	15	3	2	3	12	17	89	43.4	98	498	646	6665
40 to 44	9	11	7	0	0	0	1	6	34	37.8	45	169	699	10056
35 to 39	5	8	1	0	0	0	0	3	17	34.2	12	31	732	13638
30 to 34	1	4	0	0	0	0	0	0	5	31.0	0	0	744	17327
Jun														
90 to 94	0	0	0	1	9	3	0	0	13	75.2	718	17681	2	1
85 to 89	0	0	0	8	6	9	1	0	24	73.0	699	14134	21	54
80 to 84	0	0	4	12	12	19	10	0	57	70.2	662	10710	58	230
75 to 79	1	0	9	10	15	14	16	6	71	66.9	602	7543	118	663
70 to 74	14	6	14	20	21	21	15	16	127	63.7	527	4714	193	1434
65 to 69	19	23	17	21	17	14	18	17	146	61.1	347	2486	373	2806
60 to 64	16	14	32	17	10	9	25	29	152	57.4	216	1057	504	4977
55 to 59	24	27	12	1	0	1	5	18	88	53.0	102	307	618	7827
50 to 54	15	17	2	0	0	0	0	4	38	49.5	15	29	705	11149
45 to 49	1	3	0	0	0	0	0	0	4	46.5	0	0	720	14720

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

DETROIT, MICHIGAN
WBAN 94847
TABLE A:

TRY Data (1968)

Latitude 42.20 N
Longitude 83.30 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*	
	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	3	3	0	0	6	75.7	744	15357	0	0
85 to 89	0	0	0	8	20	14	1	0	43	74.7	717	11679	27	42
80 to 84	1	0	5	19	25	38	13	1	102	69.9	674	8185	70	268
75 to 79	6	6	16	36	39	20	27	14	164	67.2	545	5128	199	931
70 to 74	16	15	23	23	4	15	29	19	144	64.7	381	2846	363	2369
65 to 69	26	17	26	6	2	0	15	31	123	61.5	229	1325	515	4568
60 to 64	27	29	17	1	0	3	8	20	105	57.3	117	476	627	7439
55 to 59	12	15	6	0	0	0	0	8	41	52.7	43	119	701	10802
50 to 54	5	11	0	0	0	0	0	0	16	49.4	7	8	737	14411
Aug														
90 to 94	0	0	0	3	10	7	0	0	20	78.6	744	14929	0	0
85 to 89	0	0	0	12	17	20	6	0	55	77.4	705	11312	39	103
80 to 84	5	0	6	18	24	21	21	9	104	73.2	638	7938	106	449
75 to 79	16	19	18	23	24	25	17	18	160	69.7	507	5041	237	1272
70 to 74	17	9	19	24	15	15	20	21	140	65.1	360	2889	384	2840
65 to 69	16	23	28	11	2	4	18	14	116	61.8	217	1452	527	5123
60 to 64	21	16	11	2	1	1	9	15	76	56.9	128	631	616	8022
55 to 59	10	10	6	0	0	0	2	14	42	53.1	61	219	683	11330
50 to 54	7	14	5	0	0	0	0	2	28	49.5	18	33	726	14864
45 to 49	1	2	0	0	0	0	0	0	3	46.7	0	0	744	18551
Sep														
85 to 89	0	0	0	0	2	1	0	0	3	72.3	720	15907	0	0
80 to 84	0	0	0	5	15	9	0	0	29	69.8	709	12322	11	15
75 to 79	0	0	1	31	24	26	3	0	85	67.0	649	8887	71	180
70 to 74	4	1	9	15	21	20	25	8	103	64.7	576	5830	144	723
65 to 69	17	19	29	23	23	25	28	34	198	61.4	430	3264	290	1757
60 to 64	32	25	20	15	5	8	20	18	143	58.3	234	1632	486	3725
55 to 59	14	21	14	1	0	1	7	14	72	54.2	134	757	586	6450
50 to 54	11	6	10	0	0	0	6	9	42	49.9	67	278	653	9571
45 to 49	12	17	6	0	0	0	1	7	43	45.3	24	43	696	12936
40 to 44	0	1	1	0	0	0	0	0	2	42.0	0	0	720	16493

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

DETROIT, MICHIGAN
WBAN 94847
TABLE A:

TRY Data (1968)

Latitude 42.20 N
Longitude 83.30 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															
80 to 84	0	0	0	1	11	4	0	0	16	67.2	743	21382	1	1	
75 to 79	0	0	0	8	10	12	0	0	30	65.1	715	17729	29	68	
70 to 74	0	0	1	11	6	6	2	3	29	62.6	687	14221	57	280	
65 to 69	10	9	10	6	7	8	17	18	85	60.3	643	10873	101	652	
60 to 64	13	12	7	16	23	17	9	4	101	55.1	550	7892	194	1391	
55 to 59	4	2	9	19	13	13	6	4	70	50.2	456	5407	288	2626	
50 to 54	10	11	14	12	5	14	23	15	104	47.2	382	3298	362	4237	
45 to 49	20	19	16	10	12	11	17	17	122	43.1	262	1686	482	6345	
40 to 44	12	16	21	9	6	8	12	19	103	38.6	157	682	587	9061	
35 to 39	21	19	9	1	0	0	7	10	67	34.5	59	172	685	12271	
30 to 34	2	2	4	0	0	0	0	3	11	30.6	11	35	733	15854	
25 to 29	1	3	2	0	0	0	0	0	6	26.7	3	2	741	19541	
Nov															
75 to 79	0	0	0	0	3	2	0	0	5	65.6	720	25978	0	0	
70 to 74	0	0	0	1	0	1	1	0	3	63.0	715	22395	5	17	
65 to 69	0	0	0	1	0	0	2	0	3	59.7	711	18830	9	52	
60 to 64	0	0	0	2	6	3	0	2	13	52.8	705	15284	15	106	
55 to 59	0	0	1	2	7	4	3	1	18	49.1	687	11796	33	218	
50 to 54	4	0	0	11	14	14	6	3	52	45.5	667	8403	53	425	
45 to 49	13	16	14	23	26	23	23	18	156	42.5	571	5261	149	883	
40 to 44	18	15	22	25	21	22	19	23	165	38.1	400	2835	320	2057	
35 to 39	22	28	26	18	9	14	17	15	149	33.8	250	1220	470	4042	
30 to 34	21	16	16	7	4	6	15	22	107	29.6	103	329	617	6751	
25 to 29	11	12	7	0	0	1	4	6	41	26.0	19	47	701	10069	
20 to 24	1	3	4	0	0	0	0	0	8	22.3	2	1	718	13623	
Dec															
50 to 54	0	0	0	0	2	0	0	0	2	43.5	743	17640	1	1	
45 to 49	1	5	5	5	6	5	3	2	32	41.7	737	13935	7	16	
40 to 44	8	2	1	7	15	9	2	7	51	37.6	701	10350	43	151	
35 to 39	13	16	17	15	13	16	19	16	125	34.7	605	7026	139	547	
30 to 34	17	16	18	18	19	19	19	15	141	29.9	483	4299	261	1540	
25 to 29	11	9	8	23	25	25	21	15	137	24.4	349	2285	395	3246	
20 to 24	20	18	18	19	10	14	18	22	139	20.1	198	900	546	5581	
15 to 19	13	21	19	5	3	4	7	9	81	15.5	81	235	663	8636	
10 to 14	10	6	7	1	0	1	4	7	36	11.5	10	17	734	12138	

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

DETROIT, MICHIGAN
WBAN 94847
TABLE B:

TRY Data (1968)

Latitude 42.20 N
Longitude 83.30 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	4	22	13	0	0	39	0.0	0.0	0.0	78.5	76.9	76.7	0.0	0.0	77.0
85 to 89	0	0	0	28	45	44	8	0	125	0.0	0.0	0.0	75.9	75.0	75.7	76.8	0.0	75.5
80 to 84	6	0	15	57	90	92	44	10	314	73.8	0.0	74.2	71.8	69.3	69.5	73.1	74.7	70.9
75 to 79	23	25	44	110	120	106	63	38	529	71.9	72.0	70.7	67.3	65.1	65.2	68.7	71.6	67.6
70 to 74	51	31	69	97	81	94	98	67	588	67.7	68.0	66.8	62.6	60.4	60.6	64.3	66.8	64.0
65 to 69	89	91	113	96	89	80	110	118	786	63.5	63.6	61.7	57.8	56.6	57.5	59.8	62.6	60.5
60 to 64	128	110	107	107	123	118	108	107	908	58.1	58.6	57.0	53.8	52.7	52.6	55.4	56.9	55.6
55 to 59	83	98	78	76	61	56	70	90	612	52.6	53.0	52.6	49.5	48.0	48.7	50.5	52.1	51.2
50 to 54	110	108	97	62	35	55	81	90	638	48.6	48.7	47.9	45.1	44.7	45.1	46.8	48.5	47.4
45 to 49	95	102	72	61	76	66	85	54	651	43.5	44.0	43.3	41.6	41.0	41.1	41.9	42.4	42.5
40 to 44	67	63	74	68	75	77	69	85	578	38.6	39.1	39.2	37.1	36.3	36.2	37.4	38.3	37.8
35 to 39	100	112	95	66	67	74	80	84	678	34.6	34.7	34.5	33.2	31.9	32.3	33.9	34.2	33.8
30 to 34	110	92	82	75	72	68	92	97	688	29.7	29.9	29.5	29.2	28.3	28.8	29.1	29.7	29.3
25 to 29	66	82	60	68	50	54	63	71	514	25.3	25.2	25.0	23.9	24.3	24.1	24.7	24.9	24.7
20 to 24	59	59	69	46	33	39	49	51	405	20.3	20.2	20.4	20.2	19.3	19.4	19.5	20.3	20.0
15 to 19	28	40	37	31	32	32	31	32	263	15.9	15.3	15.4	15.1	15.0	14.8	15.1	15.0	15.2
10 to 14	45	43	42	24	15	16	22	37	244	10.8	10.7	11.0	10.4	9.9	10.6	11.3	10.9	10.8
5 to 9	23	25	24	15	9	11	20	17	144	6.9	6.4	6.1	5.3	5.2	5.7	5.8	6.1	6.0
0 to 4	5	4	13	3	0	0	2	4	31	0.8	0.8	0.6	1.7	0.0	0.0	2.5	2.3	1.1
-5 to -1	5	6	1	1	0	0	0	3	16	-3.6	-2.7	-2.0	-3.0	0.0	0.0	0.0	-3.0	-3.0
-10 to -6	2	4	3	0	0	0	0	0	9	-6.0	-6.5	-7.7	0.0	0.0	0.0	0.0	0.0	-6.8

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 Max	Ave Min	Ave	4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	21.7	44	-8	28	15	20.1	83	83	71	81	80	0.0019	0.0019	0.0022	0.0022	0.0020	10.8
Feb	24.0	53	-1	33	16	20.9	76	68	50	68	66	0.0017	0.0017	0.0017	0.0018	0.0017	12.2
Mar	37.2	73	11	47	28	32.7	75	67	52	65	66	0.0030	0.0033	0.0034	0.0031	0.0032	11.0
Apr	51.1	79	29	61	41	44.1	72	54	45	60	60	0.0046	0.0050	0.0052	0.0049	0.0049	11.3
May	55.8	84	33	65	47	49.6	79	63	53	65	67	0.0062	0.0068	0.0066	0.0065	0.0065	10.5
Jun	67.9	93	48	78	58	61.0	83	64	55	66	70	0.0096	0.0107	0.0109	0.0108	0.0105	8.9
Jul	71.9	92	51	82	62	64.1	80	61	54	66	68	0.0107	0.0116	0.0123	0.0118	0.0116	8.5
Aug	72.4	92	48	82	63	65.8	84	69	57	72	72	0.0118	0.0134	0.0136	0.0132	0.0129	8.6
Sep	65.4	86	43	75	56	59.9	87	68	59	77	75	0.0095	0.0107	0.0107	0.0104	0.0102	7.9
Oct	53.8	83	27	64	44	48.4	81	69	54	72	71	0.0062	0.0070	0.0068	0.0066	0.0066	9.4
Nov	41.4	76	22	49	34	37.5	80	73	60	70	72	0.0038	0.0043	0.0042	0.0041	0.0041	10.8
Dec	28.8	53	10	35	23	26.5	81	78	69	77	76	0.0025	0.0026	0.0026	0.0025	0.0025	11.7
Year	49.4	93	-8	58	41	44.3	80	68	57	70	70	0.0060	0.0066	0.0067	0.0065	0.0064	10.1

DETROIT, MICHIGAN
WBAN 94847
TABLE D:

TRY Data (1968)

Latitude 42.20 N
Longitude 83.30 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)*		Above (100s)*		Above (100s)*		Above (100s)*		Below (100s)*		Below (100s)*		Above (100s)*		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	Base	Heat	Cool	Base	Heat	Cool
94	0	526	0	0	452	0	0	414	0	0	423	0	0	481	0	0	1610	0	8760	3906	0	0								
93	0	515	0	0	441	0	0	403	0	0	412	0	0	470	0	0	1578	0	8759	3819	1	0								
92	0	505	0	0	430	0	0	392	0	2	401	0	0	459	0	0	1545	0	8751	3731	9	0								
91	0	494	0	1	419	0	14	381	0	5	391	0	0	448	0	0	1512	0	8740	3644	20	0								
90	0	483	0	3	408	0	19	370	0	10	380	0	0	437	0	0	1479	0	8728	3556	32	0								
89	0	472	0	6	397	0	27	359	1	22	369	0	0	426	0	0	1446	0	8704	3469	56	1								
88	0	461	0	10	386	0	35	349	1	34	358	1	0	415	0	0	1413	0	8680	3382	80	2								
87	0	450	0	12	375	0	41	338	1	41	348	1	1	404	0	0	1380	0	8664	3295	96	2								
86	0	439	0	17	365	0	49	328	2	49	337	1	2	393	0	0	1348	0	8642	3209	118	3								
85	0	428	0	27	354	1	60	317	2	54	327	2	6	382	0	0	1315	0	8612	3123	148	5								
84	0	417	0	35	343	1	73	307	3	63	316	2	10	371	0	0	1282	0	8578	3037	182	6								
83	2	406	0	43	333	1	86	297	4	77	306	3	15	360	0	0	1249	0	8535	2951	225	8								
82	4	395	0	53	322	2	100	287	5	93	296	4	23	350	0	1	1216	0	8485	2866	275	11								
81	8	384	0	66	312	2	114	277	6	112	286	5	34	339	1	2	1183	0	8423	2781	337	14								
80	13	373	0	81	302	3	140	267	7	135	276	6	46	328	1	9	1151	0	8335	2697	425	18								
79	17	363	0	97	292	4	173	258	8	161	267	8	55	318	2	22	1118	0	8234	2615	526	22								
78	23	352	1	115	282	5	199	249	10	180	258	9	66	308	2	35	1085	0	8140	2533	620	28								
77	31	341	1	137	272	6	219	240	12	196	249	11	79	297	3	50	1053	1	8047	2452	713	35								
76	40	331	1	162	262	8	238	231	15	215	240	13	91	287	4	66	1021	1	7946	2372	814	42								
75	52	320	2	187	253	10	263	223	17	240	231	16	106	277	5	89	989	2	7822	2293	938	51								
74	64	310	2	208	244	12	283	215	20	263	223	18	120	267	6	110	957	3	7710	2215	1050	61								
73	76	299	3	224	236	14	295	207	23	280	214	21	131	258	7	125	925	4	7627	2139	1133	72								
72	90	289	4	240	227	16	308	199	26	296	206	24	145	248	9	143	894	6	7536	2063	1224	84								
71	102	279	5	261	218	19	322	191	29	317	198	27	163	239	10	172	862	7	7422	1988	1338	97								
70	117	269	6	284	210	21	343	183	32	339	191	30	193	230	12	221	831	9	7261	1914	1499	111								
69	139	260	7	305	202	24	368	176	36	358	183	34	223	221	14	284	801	12	7081	1843	1679	127								
68	161	250	9	321	194	27	388	169	40	374	176	37	247	212	16	345	771	15	6923	1773	1837	144								
67	182	241	10	339	187	31	405	162	44	389	169	41	269	204	19	404	742	19	6769	1704	1991	163								
66	205	232	12	363	179	34	423	155	48	405	162	45	291	196	22	468	714	23	6603	1637	2157	184								
65	229	223	14	384	172	38	440	148	52	421	155	49	314	188	25	524	686	28	6447	1572	2313	206								
64	250	215	17	402	165	42	456	142	57	438	148	54	334	180	28	581	658	33	6298	1508	2462	230								
63	268	206	19	424	158	46	480	136	61	461	142	58	353	172	31	641	632	40	6132	1446	2628	256								
62	293	198	22	443	152	50	510	130	66	492	136	63	375	165	35	712	606	46	5934	1386	2826	283								
61	319	190	25	464	145	55	540	124	71	521	130	68	396	158	39	790	580	54	5728	1328	3032	312								
60	339	183	29	488	139	60	562	118	77	540	124	73	417	151	43	860	556	62	5553	1271	3207	343								
59	354	175	32	506	133	65	575	113	83	554	119	79	439	145	47	910	532	71	5420	1217	3340	376								
58	370	168	36	522	127	70	586	108	89	568	113	84	452	138	52	948	508	80	5312	1163	3448	410								
57	388	161	39	538	122	75	600	103	94	578	108	90	461	132	56	991	485	90	5203	1110	3557	445								
56	404	154	43	553	116	80	614	98	101	586	103	96	471	125	61	1049	462	100	5081	1059	3679	481								
55	419	147	48	568	111	86	625	93	107	597	98	102	489	119	66	1125	440	111	4935	1009	3825	519								
54	437	140	52	583	106	92	632	89	113	606	93	108	510	113	71	1201	419	123	4788	960	3972	558								
53	457	134	56	598	101	98	637	84	119	616	88	114	528	108	76	1264	399	135	4659	913	4101	598								
52	477	127	61	610	96	104	645	80	126	627	84	120	544	102	81	1323	379	148	4531	867	4229	640								
51	498	121	66	621	91	110	654	75	132	637	79	126	560	96	87	1382	359	162	4407	822	4353	683								
50	514	116	71	632	86	116	661	71	139	650	74	133	575	91	92	1440	341	176	4286	779	4474	727								
49	531	110	76	641	82	123	675	67	146	666	70	139	589	86	98	1496	322	190	4160	737	4600	772								

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

DETROIT, MICHIGAN
WBAN 94847
TABLE D:

TRY Data (1968)

Latitude 42.20 N
Longitude 83.30 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**			Hrs Below Base	HEATING		COOLING	
	Hrs	Deg-Hrs	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	Deg
	Base	Heat	Base	Heat	Base	Base	Heat	Base	Base	Heat	Base	Base	Heat	Base	Base	Heat	Base		Base	100s*	Base	100s*
48	549	104	82	649	77	129	690	62	152	681	66	146	607	81	104	1550	305	206	4031	696	4729	819
47	564	99	87	661	73	136	708	58	159	696	62	153	626	76	110	1611	288	221	3892	656	4868	867
46	577	94	93	676	68	142	726	55	167	708	58	160	642	72	117	1675	271	238	3755	618	5005	916
45	589	89	99	690	64	149	737	51	174	718	54	167	658	67	123	1737	256	255	3629	581	5131	967
44	602	84	105	702	60	156	748	48	181	729	50	174	672	63	130	1782	240	272	3524	545	5236	1019
43	616	79	111	711	56	163	760	44	189	741	47	182	682	59	137	1824	226	290	3424	510	5336	1072
42	632	74	117	722	53	170	771	41	196	755	43	189	694	55	144	1866	211	309	3319	477	5441	1126
41	646	69	123	734	49	178	788	38	204	771	40	197	706	51	151	1906	197	328	3206	444	5554	1180
40	661	65	130	753	45	185	807	35	212	791	37	205	724	47	158	1953	184	347	3069	412	5691	1237
39	675	61	137	770	42	193	821	32	220	806	34	213	744	43	165	2011	171	367	2931	383	5829	1294
38	689	57	143	783	39	200	830	29	229	818	31	221	761	40	173	2068	158	387	2809	354	5951	1353
37	707	53	150	797	36	208	841	27	237	832	28	229	777	37	180	2117	146	408	2688	326	6072	1413
36	728	49	158	807	33	216	854	24	245	846	26	237	791	34	188	2170	135	430	2563	300	6197	1475
35	751	45	165	822	30	224	872	22	254	864	23	246	807	31	196	2237	124	452	2406	275	6354	1537
34	770	42	173	837	28	233	890	20	263	889	21	255	827	28	204	2310	114	474	2235	252	6525	1602
33	785	39	180	856	25	241	907	18	272	911	19	264	851	25	213	2372	104	498	2076	230	6684	1668
32	804	36	188	879	23	250	925	16	281	926	17	273	871	23	221	2441	96	522	1911	210	6849	1735
31	822	33	196	893	21	259	938	14	290	934	16	282	887	21	230	2504	88	547	1779	192	6981	1805
30	837	30	205	903	19	268	950	13	300	939	14	292	901	19	239	2549	80	572	1679	175	7081	1875
29	852	28	213	911	17	277	963	11	309	950	13	301	915	17	248	2594	73	598	1574	159	7186	1946
28	861	25	222	921	15	286	974	10	319	960	11	311	930	15	257	2646	66	624	1466	143	7294	2019
27	870	23	230	932	13	295	984	9	329	969	10	320	941	14	267	2696	60	651	1366	129	7394	2092
26	882	21	239	948	12	305	993	8	339	982	9	330	950	12	276	2737	54	678	1266	116	7494	2167
25	898	19	248	966	10	314	1001	7	349	993	8	340	964	11	286	2777	49	705	1160	104	7600	2242
24	911	17	257	981	9	324	1010	6	359	1000	7	350	976	10	295	2803	44	733	1078	93	7682	2319
23	926	15	266	994	8	334	1016	5	369	1006	6	360	985	8	305	2837	39	761	994	82	7766	2396
22	945	14	276	1005	7	344	1021	4	379	1014	5	370	993	7	315	2882	35	790	898	73	7862	2474
21	959	12	285	1012	6	354	1027	4	389	1021	4	380	1002	6	325	2919	31	819	818	64	7942	2553
20	970	11	295	1018	6	364	1035	3	400	1030	4	390	1013	5	335	2948	28	848	745	57	8015	2633
19	980	10	305	1023	5	374	1044	3	410	1038	3	401	1023	5	345	2972	25	878	678	49	8082	2713
18	988	9	314	1029	4	385	1053	2	421	1045	2	411	1028	4	356	2993	22	908	621	43	8139	2794
17	994	8	324	1036	4	395	1059	2	431	1053	2	422	1034	3	366	3016	19	938	566	37	8194	2876
16	998	7	334	1041	3	405	1064	1	442	1058	2	432	1041	3	376	3034	16	968	521	32	8239	2958
15	1006	6	344	1048	2	416	1069	1	452	1064	1	443	1047	2	387	3052	14	999	473	27	8287	3041
14	1018	5	354	1054	2	426	1072	1	463	1070	1	454	1054	2	397	3073	12	1029	416	22	8344	3124
13	1027	4	365	1060	2	437	1076	1	474	1075	1	464	1062	2	408	3101	10	1060	359	18	8401	3208
12	1034	3	375	1065	1	447	1080	1	485	1079	1	475	1068	1	419	3131	8	1091	302	15	8458	3292
11	1042	3	385	1069	1	458	1082	0	495	1082	0	486	1071	1	429	3155	7	1123	258	12	8502	3377
10	1050	2	396	1073	1	469	1084	0	506	1083	0	497	1072	1	440	3176	5	1154	220	10	8540	3462
9	1056	2	406	1077	1	480	1086	0	517	1085	0	508	1074	1	451	3198	4	1186	182	8	8578	3548
8	1061	2	417	1080	0	490	1088	0	528	1087	0	518	1078	0	461	3216	4	1218	148	6	8612	3634
7	1066	1	428	1082	0	501	1091	0	539	1091	0	529	1084	0	472	3230	3	1251	114	5	8646	3720
6	1072	1	438	1085	0	512	1094	0	550	1094	0	540	1087	0	483	3242	2	1283	84	4	8676	3806
5	1076	1	449	1089	0	523	1095	0	561	1095	0	551	1091	0	494	3249	2	1315	64	3	8696	3893
4	1078	1	460	1091	0	534	1095	0	572	1095	0	562	1093	0	505	3253	2	1348	54	3	8706	3980
3	1079	1	471	1092	0	545	1095	0	583	1095	0	573	1094	0	516	3256	1	1380	47	2	8713	4067

NOTES: * Heating and Cooling Degree Hrs are in Hundreds (x 100)
** The Hours Below the Base Temp for any X-Hr period

65 x 100 = 56500 Deg Hrs)
calculated by subtracting the Hrs Above from X times 365

DETROIT, MICHIGAN
WBAN 94847

TRY Data (1968)

Latitude 42.20 N
Longitude 83.30 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			
	BY TIME OF DAY												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	Hrs	Above Base	Hrs
	Heat	Cool	Heat	Cool	Heat	Cool	Heat	Cool	Heat	Cool	Heat	Cool	100s*		100s*	
2	1082	0	481	1093	0	556	1095	0	584	1095	0	527	3260	1	1413	39
1	1086	0	492	1093	0	567	1095	0	595	1095	0	538	3263	1	1446	32
0	1090	0	503	1094	0	578	1095	0	606	1095	0	549	3264	1	1478	26
-1	1091	0	514	1094	0	589	1095	0	617	1095	0	560	3267	1	1511	22
-2	1092	0	525	1094	0	599	1095	0	637	1095	0	571	3270	0	1544	19
-3	1092	0	536	1094	0	610	1095	0	648	1095	0	582	3272	0	1576	16
-4	1092	0	547	1095	0	621	1095	0	659	1095	0	593	3275	0	1609	12
-5	1092	0	558	1095	0	632	1095	0	670	1095	0	604	3278	0	1642	10
-6	1092	0	569	1095	0	643	1095	0	681	1095	0	614	3281	0	1675	6
-7	1092	0	580	1095	0	654	1095	0	692	1095	0	625	3284	0	1707	3
-8	1094	0	590	1095	0	665	1095	0	703	1095	0	636	3284	0	1740	1
-9	1095	0	601	1095	0	676	1095	0	714	1095	0	647	3285	0	1773	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

DETROIT, MICHIGAN

TRY Data (1968)

Latitude 42.20 N

WBAN 94847

Longitude 83.30 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:	3835	3344	2826	2292	1770	1302	840	504	234	81	9
Annual Wet Bulb Cooling deg-hrs:	47097.	36070.	26614.	18647.	12297.	7536.	4084.	1927.	700.	164.	12.

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	43	42	41	39	37	34	30	24	16	11	5	.001		
.002	2	2	2	2	2	2	2	2	2	2	2	36	36	35	34	32	30	27	22	15	10	5	.002		
.003	3	4	4	4	4	4	4	4	4	4	4	30	30	30	29	28	26	24	19	14	9	4	.003		
.004	5	6	7	7	8	8	8	8	8	8	8	25	25	25	24	24	23	21	17	12	8	4	.004		
.005	7	8	10	11	11	12	12	12	12	12	12	20	20	20	20	20	19	18	15	11	8	4	.005		
.006	8	11	13	14	15	16	16	17	17	17	17	16	16	16	16	16	15	13	9	7	3	3	.006		
.007	10	13	16	18	20	21	21	22	22	22	22	12	12	12	12	12	12	12	11	8	6	3	.007		
.008	11	15	19	22	24	25	26	27	28	28	28	10	10	10	10	10	10	9	7	5	3	3	.008		
.009	13	18	22	25	28	30	32	33	34	34	34	7	7	7	7	7	7	7	6	4	2	2	.009		
.010	15	20	25	29	32	35	37	40	40	41	41	5	5	5	5	5	5	5	4	3	2	2	.010		
.011	16	22	28	32	37	40	43	46	47	48	48	4	4	4	4	4	4	4	3	3	2	2	.011		
.012	18	25	31	36	41	45	48	52	54	55	56	3	3	3	3	3	3	3	2	2	1	1	.012		
.013	20	27	34	39	45	50	54	59	61	63	64	2	2	2	2	2	2	2	2	1	1	1	.013		
.014	21	29	37	43	49	55	59	65	68	70	72	1	1	1	1	1	1	1	1	1	1	1	.014		
.015	23	32	40	46	53	59	65	71	76	78	80	1	1	1	1	1	1	1	1	1	0	0	.015		
.016	24	34	43	50	58	64	70	78	83	86	88	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	26	36	46	54	62	69	76	84	90	94	96	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	28	39	49	57	66	74	81	90	97	101	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	50	34	47	46	63	54	46	49	48	36	57	68	49
VERTICAL													
NORTH	100	100	100	98	96	92	90	97	100	100	100	100	96
WEST	60	46	63	62	78	71	65	62	62	52	62	74	64
SOUTH	36	30	50	60	82	80	74	66	55	35	46	52	57
EAST	56	43	55	60	71	69	59	62	59	45	66	70	61
% Possible Sun	32	43	49	52	59	65	70	65	61	56	35	32	54

* Corrected For Cloud Cover.

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

DETROIT, MICHIGAN
WBAN 94847
TABLE H:

TRY Data (1968)

Latitude 42.20 N
Longitude 83.30 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/ 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	1829	1703	1361	1026	605	301	162	139	139	1828	853	703	667	553	436	284	179	134	127	127	687	389	417
Feb	1938	1810	1504	1223	811	463	266	186	184	2133	1198	1021	973	832	698	497	322	218	173	172	1096	674	680
Mar	1814	1747	1581	1413	1079	735	477	311	258	2364	1687	1040	1032	957	874	707	540	413	334	308	1230	981	1000
Apr	1462	1525	1521	1493	1294	1022	748	513	368	2397	2152	1093	1120	1099	1065	939	785	642	522	448	1500	1411	1399
May	1166	1310	1426	1506	1418	1230	972	716	522	2328	2461	967	1039	1079	1103	1045	945	819	697	605	1345	1456	1716
Jun	1040	1204	1368	1496	1467	1323	1079	824	631	2279	2589	961	1036	1101	1149	1113	1024	891	761	665	1496	1689	1866
Jul	1090	1244	1385	1489	1440	1279	1031	779	589	2281	2515	1040	1150	1235	1294	1247	1130	960	792	660	1690	1870	1835
Aug	1312	1408	1454	1471	1329	1101	841	604	437	2315	2241	1073	1118	1128	1120	1018	877	730	601	515	1527	1523	1576
Sep	1642	1616	1506	1390	1116	816	562	382	306	2306	1818	1050	1051	992	922	769	611	482	392	353	1312	1117	1253
Oct	1853	1745	1498	1257	884	554	336	232	218	2155	1339	970	943	836	724	542	374	258	202	194	1095	742	876
Nov	1836	1703	1372	1059	646	337	187	155	155	1888	944	620	579	483	394	278	194	153	143	142	615	396	478
Dec	1758	1635	1296	962	542	259	143	128	128	1715	761	451	431	364	293	201	141	115	111	111	426	271	344
Year	1559	1553	1439	1316	1054	787	569	415	329	2166	1716	915	928	888	840	721	595	486	406	359	1168	1045	1120

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
** Derived according to DOE-2.1 LOADS Algorithms and TRY cloud cover data.
*** South exposure tilt 45 degrees.
**** Cinquemani, V., J. R. Owenby, Jr. and R. G. Baldwin. 1978. Input Data for Solar Systems. NCC, Ashville, NC.

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	1581	1451	1139	851	480	221	124	113	113	598	562	460	359	226	139	107	103	103
Feb	1649	1522	1259	1017	654	357	195	150	149	861	814	693	579	404	253	166	140	139
Mar	1480	1448	1314	1177	887	591	365	237	209	847	852	792	724	582	437	326	264	250
Apr	1117	1221	1251	1243	1074	834	591	394	290	859	904	900	877	773	640	515	414	361
May	838	998	1148	1243	1178	1009	779	556	390	757	827	878	906	861	773	662	557	482
Jun	729	892	1088	1230	1216	1088	872	648	471	739	812	887	940	914	837	722	610	525
Jul	774	934	1108	1228	1192	1050	831	612	440	791	896	998	1065	1028	926	777	631	517
Aug	983	1110	1189	1222	1102	900	670	468	340	837	898	924	924	838	716	588	479	411
Sep	1312	1327	1250	1161	925	660	437	292	248	844	862	818	763	634	496	384	310	287
Oct	1560	1463	1249	1048	723	432	252	183	177	809	788	696	603	445	296	199	161	158
Nov	1580	1443	1148	875	516	250	141	126	126	522	481	398	323	225	154	122	116	115
Dec	1521	1396	1084	792	430	188	110	104	104	379	360	301	240	162	111	92	90	90
Year	1258	1266	1185	1091	866	633	449	324	255	736	754	729	693	592	483	390	324	287

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

DODGE CITY, KANSAS
WBAN 13985
TABLE A:

TRY Data (1971)

Latitude 37.50 N
Longitude 100.00 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														
70 to 74	0	0	0	0	1	2	0	0	3	47.7	744	34359	0	0
65 to 69	0	0	0	0	2	0	0	0	2	47.5	740	30651	4	12
60 to 64	0	0	0	1	2	3	0	0	6	44.0	739	26955	5	36
55 to 59	0	0	0	0	0	2	0	0	2	44.5	733	23280	11	81
50 to 54	0	0	0	2	6	7	3	0	18	40.2	723	19628	21	149
45 to 49	4	0	0	4	17	11	6	3	45	38.0	707	16052	37	293
40 to 44	1	0	0	10	16	18	10	7	62	35.4	651	12668	93	629
35 to 39	9	6	4	18	7	7	16	17	84	32.4	577	9595	167	1276
30 to 34	18	16	12	13	6	4	9	11	89	28.7	494	6914	250	2315
25 to 29	16	23	24	8	8	15	18	19	131	25.4	387	4709	357	3830
20 to 24	15	12	16	13	5	0	7	14	82	20.7	275	3110	469	5951
15 to 19	9	13	13	4	8	11	6	1	65	16.3	188	1953	556	8514
10 to 14	6	6	3	3	6	4	4	10	42	11.4	137	1148	607	11429
5 to 9	6	6	6	8	9	7	7	2	51	7.0	87	572	657	14573
0 to 4	2	2	4	6	0	2	7	8	31	1.1	49	247	695	17968
-5 to -1	5	4	5	3	0	0	0	1	18	-3.0	22	69	722	21510
-10 to -6	2	5	6	0	0	0	0	0	13	-7.1	6	3	738	25164
Feb														
60 to 64	0	0	0	0	6	4	0	0	10	45.9	668	21238	4	4
55 to 59	0	0	0	3	8	8	0	0	19	44.7	659	17922	13	48
50 to 54	3	3	3	9	7	7	6	3	41	46.0	619	14702	53	188
45 to 49	0	0	1	6	3	12	10	2	34	40.5	590	11680	82	526
40 to 44	8	4	6	3	16	13	9	15	74	36.3	540	8837	132	1043
35 to 39	7	8	5	12	10	5	13	2	62	32.8	460	6336	212	1902
30 to 34	17	12	9	15	7	6	11	16	93	29.1	398	4164	274	3090
25 to 29	13	19	22	12	11	14	15	15	121	25.3	286	2439	386	4725
20 to 24	12	13	12	9	8	7	8	16	85	20.1	188	1266	484	6912
15 to 19	13	10	11	10	5	5	6	6	66	16.9	101	559	571	9565
10 to 14	5	6	11	5	3	2	2	3	37	11.6	49	213	623	12579
5 to 9	4	9	4	0	0	1	1	3	22	7.4	18	45	654	15771
0 to 4	2	0	0	0	0	0	3	3	8	2.6	3	4	669	19090
Mar														
90 to 94	0	0	0	0	2	1	0	0	3	57.7	744	37936	0	0
85 to 89	0	0	0	1	1	2	0	0	4	57.0	739	34225	5	9
80 to 84	0	0	0	0	4	6	1	0	11	54.8	736	30537	8	41
75 to 79	0	0	0	2	5	3	0	0	10	55.0	720	26899	24	123
70 to 74	0	0	0	3	0	2	3	0	8	50.3	715	23311	29	255
65 to 69	0	0	0	3	7	11	4	1	26	48.8	701	19767	43	431
60 to 64	3	0	1	5	11	7	8	5	40	46.8	662	16347	82	731
55 to 59	0	3	2	10	11	9	8	4	47	44.1	627	13119	117	1223
50 to 54	4	0	5	11	5	12	10	11	58	41.6	578	10113	166	1937
45 to 49	11	9	8	11	8	7	10	11	75	39.1	507	7396	237	2940
40 to 44	7	9	10	7	12	9	10	12	76	36.1	428	5055	316	4319
35 to 39	21	6	14	11	10	8	10	15	95	32.1	353	3099	391	6083
30 to 34	13	24	17	15	11	10	19	13	122	29.1	240	1594	504	8298
25 to 29	21	20	22	9	3	3	6	11	95	25.5	124	681	620	11105
20 to 24	10	19	8	1	2	3	1	7	51	20.9	47	263	697	14407
15 to 19	0	0	3	4	1	0	1	0	9	16.0	18	120	726	17094
10 to 14	1	0	1	0	0	0	1	1	5	11.0	12	45	732	9
5 to 9	2	3	2	0	0	0	0	2	9	8.2	1	1	743	5

DODGE CITY, KANSAS
WBAN 13985
TABLE A:

TRY Data (1971)

Latitude 37.50 N
Longitude 100.00 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	1	12	9	0	0	22	56.8	713	17588	7	5
70 to 74	0	0	0	5	18	18	3	0	44	56.3	683	14085	37	102
65 to 69	3	0	1	14	12	21	8	4	63	53.8	633	10784	87	401
60 to 64	7	5	6	19	21	14	22	12	106	51.9	556	7810	164	1027
55 to 59	9	4	12	18	11	8	16	13	91	47.9	446	5328	274	2145
50 to 54	18	21	17	14	9	12	15	14	120	46.0	350	3334	370	3751
45 to 49	15	9	20	13	4	4	15	20	100	41.8	233	1884	487	5901
40 to 44	17	17	14	4	2	3	2	16	75	36.8	133	963	587	8580
35 to 39	12	20	10	2	1	1	5	2	53	32.1	74	443	646	11660
30 to 34	1	5	7	0	0	0	3	5	21	28.2	33	184	687	15001
25 to 29	5	6	2	0	0	0	1	3	17	24.7	18	51	702	18468
20 to 24	3	3	1	0	0	0	0	1	8	20.4	4	3	716	22020
May														
90 to 94	0	0	0	0	2	4	0	0	6	65.3	744	23388	0	0
85 to 89	0	0	0	1	8	8	0	0	17	63.6	736	19686	8	18
80 to 84	0	0	0	4	11	13	3	0	31	61.9	712	16059	32	111
75 to 79	0	0	0	13	19	18	11	1	62	59.9	670	12598	74	370
70 to 74	2	0	4	17	13	10	11	9	66	58.7	610	9411	134	903
65 to 69	5	3	8	15	18	19	16	9	93	56.4	533	6564	211	1776
60 to 64	12	9	16	19	12	11	20	16	115	54.2	420	4168	324	3100
55 to 59	16	16	23	13	4	4	15	16	107	50.0	315	2332	429	4984
50 to 54	30	16	28	8	2	0	9	22	115	48.3	206	1027	538	7399
45 to 49	16	36	10	3	4	6	7	12	94	44.6	79	317	665	10409
40 to 44	7	8	3	0	0	0	1	8	27	39.4	24	83	720	13895
35 to 39	5	2	1	0	0	0	0	0	8	36.0	5	18	739	17550
30 to 34	0	3	0	0	0	0	0	0	3	31.3	1	1	743	21253
Jun														
100 to 104	0	0	0	0	5	4	0	0	9	68.9	717	18473	3	2
95 to 99	0	0	0	3	11	12	1	0	27	68.2	706	14911	14	40
90 to 94	0	0	0	10	25	20	7	0	62	68.3	661	11485	59	214
85 to 89	0	0	3	20	12	20	17	2	74	67.2	593	8356	127	685
80 to 84	2	0	10	20	32	25	20	20	129	66.6	511	5572	209	1501
75 to 79	19	8	20	25	5	7	18	9	111	65.1	372	3386	348	2915
70 to 74	12	17	26	12	0	1	18	22	108	63.9	259	1785	461	4914
65 to 69	26	17	20	0	0	0	3	19	85	61.8	159	734	561	7463
60 to 64	28	37	10	0	0	1	6	18	100	59.1	64	141	656	10470
55 to 59	3	9	1	0	0	0	0	0	13	54.9	5	12	715	13941
50 to 54	0	2	0	0	0	0	0	0	2	51.0	0	0	720	17529

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

DODGE CITY, KANSAS
WBAW 13985
TABLE A:

TRY Data (1971)

Latitude 37.50 N
Longitude 100.00 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	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Jul															
105 to 109	0	0	0	0	1	1	0	0	2	70.0	744	22691	0	0	
100 to 104	0	0	0	0	12	15	1	0	28	69.9	734	18982	10	11	
95 to 99	0	0	0	9	8	10	4	0	31	70.0	699	15394	45	143	
90 to 94	0	0	1	9	19	15	11	0	55	69.4	667	11968	77	437	
85 to 89	0	0	4	11	20	19	17	7	78	68.0	604	8791	140	980	
80 to 84	11	0	9	21	10	13	15	13	92	66.3	513	5994	231	1903	
75 to 79	11	15	18	18	14	12	15	19	122	64.7	405	3667	339	3296	
70 to 74	17	14	24	19	6	5	19	26	130	63.7	286	1925	458	5274	
65 to 69	22	20	22	3	0	3	7	18	95	61.5	176	801	568	7870	
60 to 64	25	33	12	0	3	0	4	8	85	58.1	66	196	678	10985	
55 to 59	7	8	3	3	0	0	0	2	23	54.5	12	23	732	14532	
50 to 54	0	3	0	0	0	0	0	0	3	51.7	0	0	744	18229	
Aug															
95 to 99	0	0	0	0	3	2	0	0	5	68.6	744	16598	0	0	
90 to 94	0	0	0	7	24	24	0	0	55	68.8	720	12908	24	30	
85 to 89	0	0	0	19	31	30	10	0	90	67.9	652	9446	92	288	
80 to 84	0	0	3	28	21	20	26	1	99	66.8	554	6413	190	975	
75 to 79	2	0	12	28	11	5	25	22	105	65.5	465	3879	279	2161	
70 to 74	27	13	32	9	1	8	19	35	144	63.7	340	1864	404	3866	
65 to 69	43	37	34	2	2	3	12	27	160	62.0	175	553	569	6275	
60 to 64	21	43	12	0	0	1	1	8	86	58.9	38	39	706	9481	
Sep															
100 to 104	0	0	0	0	1	2	0	0	3	67.7	720	25156	0	0	
95 to 99	0	0	0	0	8	7	0	0	15	66.4	714	21571	6	15	
90 to 94	0	0	0	7	17	18	1	0	43	65.9	686	18053	34	97	
85 to 89	0	0	0	12	14	13	7	0	46	64.6	643	14734	77	378	
80 to 84	0	0	5	15	4	7	13	7	51	63.8	598	11638	122	882	
75 to 79	11	1	5	7	16	9	15	14	78	61.8	533	8799	187	1643	
70 to 74	14	14	11	13	8	10	12	16	98	59.6	446	6335	274	2779	
65 to 69	16	19	20	11	3	4	10	11	94	57.6	342	4357	378	4401	
60 to 64	11	14	13	6	3	7	6	6	66	53.2	268	2847	452	6491	
55 to 59	7	9	7	2	5	4	10	14	58	50.6	206	1665	514	8909	
50 to 54	15	10	9	8	3	0	7	10	62	47.3	134	800	586	11644	
45 to 49	10	12	12	8	8	8	5	6	69	44.4	79	256	641	14700	
40 to 44	6	9	7	1	0	1	4	6	34	41.1	23	32	697	18076	
35 to 39	0	2	1	0	0	0	0	0	3	37.3	0	0	720	21644	

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

DODGE CITY, KANSAS
WBAN 13985
TABLE A:

TRY Data (1971)

Latitude 37.50 N
Longitude 100.00 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*	
	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	1	13	8	0	0	22	61.1	742	18925	2	1	
75 to 79	0	0	0	9	16	16	0	0	41	58.7	706	15302	38	98	
70 to 74	1	0	0	12	14	17	5	1	50	57.4	669	11864	75	380	
65 to 69	5	3	4	15	21	17	19	9	93	55.7	599	8677	145	913	
60 to 64	9	9	14	27	14	13	19	14	119	53.2	499	5935	245	1891	
55 to 59	16	9	14	14	7	9	17	22	108	49.0	375	3756	369	3432	
50 to 54	22	23	24	7	2	5	17	27	127	46.2	262	2148	482	5544	
45 to 49	18	18	19	2	3	1	7	6	74	43.0	144	1149	600	8265	
40 to 44	11	16	6	1	0	2	0	5	41	38.8	88	566	656	11402	
35 to 39	4	9	6	2	0	2	5	0	28	33.3	53	220	691	14776	
30 to 34	7	6	6	3	3	3	4	9	41	31.4	15	21	729	18297	
Nov															
75 to 79	0	0	0	0	5	1	0	0	6	52.2	720	25170	0	0	
70 to 74	0	0	0	1	6	3	0	0	10	50.8	713	21591	7	21	
65 to 69	0	0	0	2	7	5	0	0	14	51.8	704	18058	16	88	
60 to 64	1	0	0	7	7	12	3	3	33	50.9	677	14608	43	238	
55 to 59	2	1	1	13	12	10	10	1	50	47.8	640	11309	80	539	
50 to 54	13	11	12	9	13	8	6	11	83	45.6	574	8249	146	1079	
45 to 49	6	4	6	16	17	20	14	13	96	40.1	488	5579	232	2009	
40 to 44	15	15	13	14	6	10	16	19	108	36.6	398	3374	322	3404	
35 to 39	18	16	19	9	6	9	17	10	104	33.3	281	1695	439	5325	
30 to 34	17	23	21	15	8	6	15	20	125	29.7	169	558	551	7788	
25 to 29	18	17	16	4	3	6	9	13	86	26.1	36	54	684	10884	
20 to 24	0	3	2	0	0	0	0	0	5	21.8	0	0	720	14430	
Dec															
70 to 74	0	0	0	0	3	2	0	0	5	53.2	744	28989	0	0	
65 to 69	0	0	0	0	3	1	0	0	4	52.3	739	25283	5	14	
60 to 64	0	0	0	1	0	2	0	0	3	50.3	735	21602	9	53	
55 to 59	0	0	0	1	1	0	1	0	3	47.7	730	17939	14	110	
50 to 54	0	0	0	2	6	6	0	1	15	41.3	725	14297	19	188	
45 to 49	0	0	0	4	24	15	4	3	50	39.8	699	10719	45	330	
40 to 44	8	10	4	19	17	17	12	8	95	37.3	621	7381	123	712	
35 to 39	8	8	13	20	5	11	15	8	88	33.8	528	4499	216	1550	
30 to 34	34	21	19	20	16	20	32	35	197	29.8	427	2066	317	2837	
25 to 29	28	37	44	18	14	16	26	31	214	26.2	198	520	546	5011	
20 to 24	15	17	8	8	4	3	3	7	65	22.1	30	44	714	8255	
15 to 19	0	0	5	0	0	0	0	0	5	18.2	0	0	744	11931	

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

DODGE CITY, KANSAS
WBAN 13985
TABLE B:

TRY Data (1971)

Latitude 37.50 N
Longitude 100.00 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
105 to 109	0	0	0	0	1	1	0	0	2	0.0	0.0	0.0	0.0	70.0	70.0	0.0	0.0	70.0
100 to 104	0	0	0	0	18	21	1	0	40	0.0	0.0	0.0	0.0	69.8	69.3	69.0	0.0	69.5
95 to 99	0	0	0	12	30	31	5	0	78	0.0	0.0	0.0	70.2	68.7	68.1	67.6	0.0	68.6
90 to 94	0	0	1	33	89	82	19	0	224	0.0	0.0	67.0	69.3	68.3	67.4	67.0	0.0	68.0
85 to 89	0	0	7	64	86	92	51	9	309	0.0	0.0	67.7	67.9	66.9	66.4	66.4	65.9	66.9
80 to 84	13	0	27	89	95	92	78	41	435	64.3	0.0	66.4	66.8	65.3	64.2	65.5	64.5	65.4
75 to 79	43	24	55	103	103	80	84	65	557	63.7	62.9	65.4	64.2	60.3	60.4	64.0	64.2	62.9
70 to 74	73	58	97	91	70	78	90	109	666	63.7	63.6	64.0	60.3	55.4	56.8	61.6	62.9	61.2
65 to 69	120	99	109	65	75	84	79	98	729	61.0	61.9	61.0	54.7	53.1	52.8	57.7	60.5	58.4
60 to 64	117	150	84	85	79	75	89	90	769	57.2	58.3	56.2	51.7	50.2	50.0	52.5	55.2	54.5
55 to 59	60	59	63	77	59	54	77	72	521	51.1	51.1	50.5	48.3	45.8	46.3	48.1	49.4	48.8
50 to 54	105	89	98	70	53	57	73	99	644	47.4	48.1	47.2	44.8	42.1	42.0	45.2	46.6	45.9
45 to 49	80	88	76	67	88	84	78	76	637	43.2	44.0	42.8	40.1	40.1	40.2	40.8	41.1	41.6
40 to 44	80	88	63	59	69	73	64	96	592	37.5	38.4	38.0	36.2	35.8	35.7	36.8	37.4	37.1
35 to 39	84	77	73	74	39	43	81	54	525	33.0	33.4	33.5	32.9	31.6	32.5	32.8	32.8	32.9
30 to 34	107	110	91	81	51	49	93	109	691	29.4	29.7	29.3	29.2	29.6	30.0	29.3	29.4	29.4
25 to 29	101	122	130	51	39	54	75	92	664	25.5	25.6	25.6	25.8	26.0	26.1	25.7	25.9	25.7
20 to 24	55	67	47	31	19	13	19	45	296	21.3	21.1	20.8	20.7	20.3	20.2	20.8	20.8	20.9
15 to 19	22	23	32	18	14	16	13	7	145	17.0	16.6	17.0	16.3	17.1	16.2	15.6	17.0	16.6
10 to 14	12	12	15	8	9	6	8	14	84	11.2	11.4	11.1	11.5	11.7	11.3	11.9	11.7	11.5
5 to 9	12	18	12	8	9	8	8	7	82	7.1	7.1	7.8	5.8	7.1	7.6	8.0	7.4	7.2
0 to 4	4	2	4	6	0	2	10	11	39	1.8	0.5	1.5	1.5	0.0	2.5	1.9	0.8	1.4
-5 to -1	5	4	5	3	0	0	0	1	18	-2.4	-3.0	-3.8	-3.0	0.0	0.0	0.0	-2.0	-3.0
-10 to -6	2	5	6	0	0	0	0	0	13	-6.0	-6.8	-7.7	0.0	0.0	0.0	0.0	0.0	-7.1

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 Max	Ave Min		4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	26.3	72	-8	37	17	23.3	85	77	61	75	75	0.0021	0.0022	0.0026	0.0024	0.0023	12.1
Feb	30.9	64	0	41	23	27.5	81	77	61	74	74	0.0025	0.0029	0.0031	0.0029	0.0028	14.5
Mar	41.5	90	7	55	29	34.4	75	60	40	54	59	0.0030	0.0033	0.0032	0.0032	0.0031	15.1
Apr	53.1	79	21	66	40	44.9	71	57	40	55	58	0.0050	0.0057	0.0055	0.0055	0.0054	13.8
May	61.1	91	32	75	49	52.4	78	58	45	59	62	0.0069	0.0077	0.0078	0.0079	0.0075	13.8
Jun	76.8	103	53	90	64	64.4	74	52	37	53	57	0.0110	0.0122	0.0112	0.0115	0.0115	14.3
Jul	77.0	105	53	90	65	64.3	74	54	36	51	56	0.0111	0.0120	0.0111	0.0113	0.0114	12.0
Aug	75.2	95	60	88	64	64.4	78	57	43	55	60	0.0115	0.0127	0.0115	0.0115	0.0118	10.6
Sep	67.6	102	38	80	56	56.0	71	54	38	51	56	0.0087	0.0087	0.0078	0.0078	0.0082	13.4
Oct	57.1	83	30	70	46	48.8	74	58	43	61	61	0.0062	0.0065	0.0065	0.0067	0.0065	12.6
Nov	42.5	76	23	54	33	37.1	77	64	50	67	66	0.0040	0.0040	0.0041	0.0040	0.0040	12.8
Dec	33.5	71	18	43	27	30.8	87	83	63	81	79	0.0032	0.0034	0.0034	0.0033	0.0033	10.5
Year	53.7	105	-8	66	43	45.8	77	62	46	61	64	0.0063	0.0068	0.0065	0.0065	0.0065	12.9

DODGE CITY, KANSAS

WBAN 13985

TABLE D:

TRY Data (1971)

Latitude 37.50 N

Longitude 100.00 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	
	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base 100s*	Base 100s*	
106	0	636	0	0	534	0	0	468	0	0	558	0	0	1915	0
105	0	625	0	0	523	0	0	457	0	0	548	0	0	1882	0
104	0	614	0	0	512	0	1	446	0	1	452	0	0	1849	0
103	0	603	0	0	501	0	4	435	0	4	441	0	0	1816	0
102	0	592	0	0	490	0	7	424	0	9	430	0	0	1783	0
101	0	581	0	0	479	0	11	413	0	13	419	0	0	1750	0
100	0	570	0	0	468	0	16	403	0	18	409	0	0	1717	0
99	0	559	0	1	457	0	21	392	1	24	398	1	2	1685	0
98	0	548	0	3	446	0	26	381	1	28	387	1	3	1652	0
97	0	537	0	5	435	0	30	370	1	32	376	1	3	1619	0
96	0	526	0	7	424	0	36	360	1	39	366	1	4	1586	0
95	0	515	0	10	414	0	45	349	2	48	355	2	5	1553	0
94	0	504	0	14	403	0	57	339	2	58	345	2	7	1520	0
93	0	493	0	19	392	1	73	328	3	71	335	3	11	1488	0
92	0	482	0	24	381	1	91	318	4	87	324	4	16	1455	0
91	0	472	0	31	371	1	109	308	5	106	314	5	19	1422	0
90	0	461	0	40	360	1	127	299	6	125	305	6	22	1389	0
89	1	450	0	50	349	2	143	289	7	141	295	7	27	1356	0
88	1	439	0	62	339	2	158	280	9	158	286	9	35	1323	0
87	3	428	0	73	329	3	175	270	10	178	276	11	45	1290	0
86	5	417	0	83	319	4	191	261	12	196	267	12	54	1258	0
85	7	406	0	99	309	5	212	252	14	216	258	14	67	1225	0
84	9	395	0	113	299	6	234	244	17	233	250	17	81	1192	0
83	12	384	0	130	289	7	251	235	19	248	241	19	95	1159	0
82	16	373	0	152	279	8	266	227	22	270	233	22	110	1127	1
81	22	363	1	170	270	10	287	218	24	293	225	25	127	1094	1
80	30	352	1	188	261	12	308	211	27	311	217	28	146	1062	1
79	39	341	1	210	252	14	328	203	30	326	209	31	162	1030	2
78	48	331	2	232	243	16	350	195	34	343	201	34	178	997	3
77	60	320	2	249	235	18	370	188	37	355	194	38	195	966	4
76	72	310	3	266	226	21	388	181	41	367	187	41	212	934	5
75	83	300	4	289	218	24	411	174	45	387	179	45	228	903	6
74	100	290	5	309	210	27	427	167	49	407	172	49	248	872	8
73	117	280	6	327	202	30	437	160	54	419	166	53	264	841	11
72	134	270	7	351	195	33	450	154	58	428	159	57	282	811	13
71	152	261	8	373	188	37	465	147	63	443	152	62	303	782	17
70	173	252	10	386	180	41	482	141	68	466	146	66	320	752	20
69	197	242	12	397	173	45	498	135	72	484	140	71	336	724	25
68	218	234	14	410	166	49	509	129	77	498	134	76	355	696	30
67	245	225	16	425	160	53	521	123	83	516	128	81	371	669	35
66	269	217	19	441	153	57	541	118	88	532	122	86	385	642	41
65	286	208	22	453	147	62	560	112	93	550	116	92	400	616	48
64	307	200	25	468	140	66	576	107	99	572	111	97	414	591	56
63	327	193	28	485	134	71	595	102	105	588	106	103	432	566	64
62	342	185	31	498	128	76	614	97	111	600	101	109	453	542	73
61	357	178	35	516	122	81	626	92	117	613	96	115	473	519	83

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

DODGE CITY, KANSAS
WBAN 13985
TABLE D:

TRY Data (1971)

Latitude 37.50 N
Longitude 100.00 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 Base	100s*	Above Base	100s*
	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool				
60	373	170	38	534	116	86	637	88	124	628	91	121	489	126	71	1078	497	93	5019	1089	3741	534
59	384	163	42	554	111	92	652	83	130	639	87	128	503	120	76	1127	475	104	4899	1039	3861	572
58	394	156	46	572	106	97	666	79	137	650	82	134	515	114	81	1163	453	116	4797	991	3963	611
57	410	149	50	584	100	103	676	75	143	663	78	141	529	109	87	1197	432	127	4699	943	4061	651
56	425	142	54	597	95	109	685	71	150	674	74	147	547	103	92	1231	412	140	4600	897	4160	692
55	436	136	58	611	90	115	698	67	157	685	69	154	564	98	98	1274	391	152	4490	851	4270	734
54	455	129	63	627	86	121	710	63	164	695	65	161	582	92	103	1327	371	165	4362	807	4398	778
53	475	123	68	643	81	128	721	59	171	706	61	168	599	87	109	1382	352	179	4233	764	4527	822
52	491	117	72	660	77	134	731	55	179	716	58	175	612	82	115	1440	333	193	4108	722	4652	868
51	508	111	77	673	72	141	739	52	186	724	54	182	624	78	122	1499	315	207	3991	682	4769	915
50	529	105	83	683	68	148	750	48	193	737	50	190	638	73	128	1560	298	223	3861	642	4899	963
49	551	100	88	693	64	155	766	45	201	753	47	197	651	69	134	1626	281	239	3718	604	5042	1013
48	569	94	94	703	60	162	786	41	209	767	43	205	666	64	141	1680	264	255	3588	568	5172	1064
47	582	89	99	715	56	169	805	38	217	783	40	212	683	60	148	1726	249	272	3465	533	5295	1117
46	593	84	105	733	53	176	822	36	225	799	37	220	700	56	155	1774	233	290	3336	499	5424	1170
45	608	79	111	749	49	183	839	33	233	819	34	228	717	52	162	1817	218	308	3209	466	5551	1225
44	624	74	117	760	46	191	855	31	242	837	32	237	728	48	169	1863	204	326	3091	434	5669	1281
43	640	70	124	770	42	198	869	28	250	854	29	245	739	45	176	1916	190	345	2970	404	5790	1339
42	658	65	130	781	39	206	881	26	259	873	27	254	752	41	184	1972	177	364	2841	375	5919	1397
41	672	61	137	794	36	214	894	24	268	887	25	263	765	38	191	2019	164	384	2727	347	6033	1457
40	679	57	144	808	33	222	907	22	277	898	23	272	779	35	199	2069	151	405	2618	320	6142	1518
39	687	53	150	825	30	230	921	20	286	911	21	281	794	32	207	2129	139	426	2490	295	6270	1580
38	702	49	157	840	28	239	932	19	295	921	19	290	806	29	215	2180	128	447	2377	271	6383	1643
37	716	45	164	853	25	247	938	17	305	927	17	299	821	26	223	2213	117	469	2290	247	6470	1707
36	728	41	172	869	23	256	943	15	314	934	16	308	839	23	231	2243	107	492	2202	225	6558	1772
35	743	37	179	882	21	264	950	14	323	943	14	318	859	21	240	2289	96	514	2093	203	6667	1839
34	758	34	187	898	19	273	958	12	333	951	13	327	878	18	248	2343	87	537	1972	183	6788	1906
33	771	31	194	913	17	282	968	11	343	963	11	337	898	16	257	2400	78	561	1845	164	6915	1974
32	788	27	202	931	15	292	978	10	352	975	10	346	919	15	266	2464	69	585	1703	146	7057	2044
31	809	24	210	948	14	301	989	9	362	986	9	356	938	13	276	2533	61	610	1556	130	7204	2115
30	832	22	218	962	12	311	1000	8	372	993	8	366	955	11	285	2604	54	636	1412	115	7348	2188
29	861	19	227	976	11	320	1009	7	382	1004	7	376	970	10	295	2678	48	662	1260	102	7500	2262
28	890	17	235	988	10	330	1018	6	392	1019	6	386	985	9	305	2744	42	690	1114	90	7646	2338
27	914	15	244	999	9	340	1027	5	403	1031	5	397	1001	8	314	2810	37	717	976	79	7784	2415
26	936	13	254	1011	8	350	1036	5	413	1040	5	407	1016	7	325	2877	32	746	842	70	7918	2494
25	960	12	263	1019	7	360	1042	4	423	1047	4	417	1029	6	335	2932	29	775	729	62	8031	2574
24	978	11	273	1022	6	370	1044	4	434	1050	4	428	1038	6	345	2982	25	804	644	56	8116	2654
23	989	10	283	1025	6	381	1047	3	444	1052	3	438	1041	5	356	3026	23	835	577	50	8183	2736
22	1001	9	293	1032	5	391	1052	3	455	1057	3	449	1047	5	366	3062	20	865	507	44	8253	2818
21	1011	8	303	1040	4	401	1055	2	465	1060	3	459	1051	4	377	3090	18	896	451	39	8309	2901
20	1018	7	313	1048	4	412	1059	2	476	1061	2	470	1054	4	387	3112	16	927	406	35	8354	2984
19	1025	6	323	1053	3	422	1065	2	486	1063	2	481	1056	3	398	3134	15	958	362	31	8398	3068
18	1035	6	333	1057	3	433	1070	1	497	1066	2	491	1056	3	408	3149	13	989	325	28	8435	3152
17	1044	5	344	1061	3	443	1074	1	508	1071	1	502	1059	3	419	3160	12	1021	289	25	8471	3237
16	1049	5	354	1065	2	454	1076	1	519	1076	1	513	1064	2	429	3167	11	1053	262	22	8498	3322
15	1052	4	365	1069	2	465	1076	1	529	1078	1	524	1067	2	440	3173	10	1084	244	20	8516	3407

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundres
** The Hours Below the Base Temp for any X-Hr (

(eg. 565 x 100 = 56500 Deg Hrs)
d are calculated by subtracting the Hrs Above from X times 36'

DODGE CITY, KANSAS

WBAN 13985

TABLE D:

TRY Data (1971)

Latitude 37.50 N

Longitude 100.00 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)*		Below	Deg	Above	Deg
	Base Heat Cool		Base Heat Cool		Base Heat Cool		Base Heat Cool		Base Heat Cool		Base Heat Cool		Base 100s*	Hrs	Base 100s*	Hrs
14 1054	4	375	1070	2	475	1080	1	540	1080	1	534	1070	2	451	3180	9 1116
13 1057	3	386	1072	2	486	1083	0	551	1082	1	545	1072	2	461	3186	8 1148
12 1059	3	396	1075	1	497	1084	0	562	1083	0	556	1074	1	472	3192	7 1180
11 1061	3	407	1077	1	508	1085	0	573	1084	0	567	1075	1	483	3200	6 1212
10 1065	2	418	1077	1	518	1085	0	585	1084	0	578	1076	1	494	3209	5 1244
9 1069	2	428	1078	1	529	1088	0	594	1087	0	588	1079	1	504	3217	4 1276
8 1073	2	439	1078	1	540	1091	0	605	1090	0	599	1082	1	515	3227	3 1308
7 1078	2	450	1081	1	551	1093	0	616	1091	0	610	1084	0	526	3239	3 1341
6 1080	1	461	1084	0	562	1094	0	627	1093	0	621	1085	0	537	3246	3 1373
5 1080	1	471	1085	0	572	1095	0	638	1093	0	632	1085	0	548	3249	2 1405
4 1080	1	482	1087	0	583	1095	0	649	1093	0	643	1086	0	559	3251	2 1438
3 1081	1	493	1089	0	594	1095	0	660	1094	0	654	1089	0	569	3253	2 1470
2 1083	1	504	1090	0	605	1095	0	671	1095	0	665	1091	0	580	3255	1 1503
1 1083	1	515	1091	0	616	1095	0	682	1095	0	676	1092	0	591	3259	1 1536
0 1084	1	526	1092	0	627	1095	0	693	1095	0	687	1094	0	602	3264	1 1568
-1 1084	0	536	1092	0	638	1095	0	704	1095	0	698	1095	0	613	3270	1 1601
-2 1085	0	547	1093	0	649	1095	0	715	1095	0	709	1095	0	624	3273	0 1634
-3 1086	0	558	1094	0	660	1095	0	726	1095	0	720	1095	0	635	3275	0 1666
-4 1088	0	569	1095	0	671	1095	0	737	1095	0	731	1095	0	646	3276	0 1699
-5 1089	0	580	1095	0	682	1095	0	748	1095	0	742	1095	0	657	3277	0 1732
-6 1089	0	591	1095	0	693	1095	0	758	1095	0	753	1095	0	668	3280	0 1765
-7 1090	0	602	1095	0	704	1095	0	769	1095	0	764	1095	0	679	3283	0 1797
-8 1093	0	613	1095	0	714	1095	0	780	1095	0	774	1095	0	690	3284	0 1830
-9 1095	0	623	1095	0	725	1095	0	791	1095	0	785	1095	0	701	3285	0 1863

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

DODGE CITY, KANSAS
WBAN 13985
TABLE E:

TRY Data (1971)

Latitude 37.50 N
Longitude 100.00 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:	4000	3519	3080	2634	2069	1325	615	102	5	0	0
Annual Wet Bulb Cooling deg-hrs:	48013.	36497.	26386.	17517.	10177.	4668.	1449.	172.	8.	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	43	42	41	39	37	34	31	26	20	14	9	.001		
.002	1	1	1	1	1	1	1	1	1	1	1	36	35	35	34	32	30	28	23	17	12	8	.002		
.003	2	2	2	3	3	3	3	3	3	3	3	29	29	29	29	27	26	24	20	15	11	7	.003		
.004	3	4	5	5	6	6	6	6	6	6	6	24	24	24	24	23	22	21	17	13	9	6	.004		
.005	5	6	7	8	9	10	10	10	10	10	11	19	19	19	19	19	18	17	15	11	8	5	.005		
.006	6	8	10	12	13	13	14	15	15	15	15	15	15	15	15	15	14	12	9	7	4		.006		
.007	7	10	13	15	16	18	19	19	20	20	20	12	12	12	12	12	11	11	10	7	5	3	.007		
.008	9	12	15	18	20	22	23	24	25	25	26	9	9	9	9	9	9	8	7	6	4	3	.008		
.009	10	14	18	21	24	26	28	29	30	31	32	6	6	6	6	6	6	6	5	4	3	2	.009		
.010	11	16	20	24	28	31	33	35	36	37	38	4	4	4	4	4	4	4	3	3	2	1	.010		
.011	13	18	23	27	32	35	38	40	42	43	44	2	2	2	2	2	2	2	2	1	1	1	.011		
.012	14	20	25	30	35	40	43	46	48	50	51	1	1	1	1	1	1	1	1	1	0	0	.012		
.013	15	23	28	34	39	44	48	52	55	57	59	0	0	0	0	0	0	0	0	0	0	0	.013		
.014	17	25	30	37	43	48	53	57	61	64	66	0	0	0	0	0	0	0	0	0	0	0	.014		
.015	18	27	33	40	47	53	58	63	67	71	74	0	0	0	0	0	0	0	0	0	0	0	.015		
.016	19	29	36	43	50	57	63	69	74	78	81	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	21	31	38	46	54	62	68	75	80	85	89	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	22	33	41	49	58	66	73	80	87	92	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)-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	48	40	49	44	42	37	43	47	33	23	32	44	40
VERTICAL													
NORTH	100	100	100	98	91	87	90	96	100	100	100	100	95
WEST	57	50	63	60	61	57	60	67	51	40	45	54	57
SOUTH	39	37	54	62	73	75	77	70	46	27	28	34	51
EAST	55	50	58	61	58	58	63	61	49	41	46	54	56
% Possible Sun	67	65	66	68	69	76	79	77	74	74	66	65	71

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

DODGE CITY, KANSAS
WBAN 13985
TABLE H:

TRY Data (1971)

Latitude 37.50 N
Longitude 100.00 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	1934	1809	1467	1141	714	376	207	165	165	2038	1057	985	933	783	640	448	296	218	196	196	997	620	827
Feb	1958	1828	1547	1290	894	532	313	213	208	2279	1393	1013	955	832	717	533	363	261	215	212	1126	763	1122
Mar	1730	1684	1559	1431	1132	801	527	341	276	2411	1843	1153	1149	1084	1009	841	662	518	418	382	1415	1195	1476
Apr	1321	1410	1448	1458	1302	1058	786	542	379	2365	2249	1078	1116	1113	1095	984	837	686	558	478	1573	1544	1886
May	1006	1178	1336	1454	1414	1258	1006	748	537	2246	2505	972	1074	1160	1224	1185	1078	914	749	613	1665	1862	2090
Jun	878	1065	1268	1431	1447	1334	1105	853	641	2174	2604	908	1025	1142	1236	1227	1136	977	807	668	1758	2067	2358
Jul	931	1110	1291	1430	1428	1296	1062	812	601	2185	2541	901	989	1074	1140	1124	1034	895	749	636	1600	1850	2296
Aug	1166	1288	1373	1422	1324	1121	867	627	448	2261	2312	1043	1122	1155	1166	1085	950	793	652	550	1599	1673	2055
Sep	1540	1538	1470	1394	1156	870	611	412	322	2325	1950	1187	1193	1141	1080	913	721	553	424	365	1668	1465	1687
Oct	1837	1738	1521	1311	954	623	388	260	240	2263	1519	1294	1223	1073	929	691	476	326	242	227	1575	1107	1301
Nov	1909	1776	1449	1151	733	408	226	181	180	2073	1143	1140	1063	882	715	485	309	209	181	180	1220	742	894
Dec	1896	1768	1417	1084	651	334	180	155	155	1949	967	912	853	699	550	361	230	169	158	158	914	529	732
Year	1506	1514	1428	1333	1097	836	608	444	347	2213	1842	1049	1058	1012	959	825	676	545	447	390	1427	1287	1560

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
 ** Derived according to DOE-2.1 LOADS Algorithms and TRY cloud cover data.
 *** South exposure tilt 45 degrees.
 **** Cinquemani, V., J. R. Owenby, Jr. and R. G. Baldwin. 1978. Input Data for Solar Systems. NCC, Asheville, NC.

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	1663	1531	1225	948	569	282	154	134	134	832	779	649	529	361	231	171	159	159
Feb	1650	1527	1288	1072	722	413	230	170	169	843	791	690	594	432	287	202	174	172
Mar	1382	1380	1288	1186	927	639	403	258	223	925	941	892	832	689	533	408	330	309
Apr	972	1108	1181	1207	1074	858	617	411	298	833	891	905	897	805	678	548	440	384
May	693	872	1063	1193	1167	1029	808	581	398	726	829	933	1003	975	880	737	593	478
Jun	596	767	994	1168	1192	1094	890	666	472	665	773	905	1004	1003	926	786	638	515
Jul	637	809	1019	1172	1176	1063	854	633	446	672	758	858	930	920	844	722	594	495
Aug	840	994	1112	1177	1092	915	690	483	346	799	888	937	958	890	773	637	516	438
Sep	1198	1246	1212	1157	953	701	473	313	260	931	966	937	892	749	582	435	331	295
Oct	1526	1445	1262	1090	782	489	290	204	195	1071	1012	886	767	565	377	249	191	185
Nov	1634	1494	1209	951	591	305	170	147	146	966	887	731	588	393	238	162	147	146
Dec	1638	1502	1185	897	520	246	138	126	126	777	717	579	451	289	178	134	128	128
Year	1200	1221	1169	1102	898	671	478	345	268	836	853	826	788	674	545	434	355	309

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

INDIANAPOLIS, INDIANA

WBAN 93819

TABLE A:

TRY Data (1972)

Latitude 39.90 N

Longitude 86.30 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*	
	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														
60 to 64	0	0	0	0	0	3	0	0	3	57.7	742	26950	2	2
55 to 59	0	0	0	1	3	0	0	0	4	54.0	741	23244	3	16
50 to 54	1	0	0	2	4	5	2	0	14	46.5	735	19554	9	46
45 to 49	4	1	3	2	11	13	9	5	48	43.4	706	15935	38	147
40 to 44	5	12	9	14	22	15	15	13	105	38.3	643	12535	101	467
35 to 39	23	17	10	14	10	15	18	21	128	34.7	507	9613	237	1265
30 to 34	6	6	16	18	4	3	5	4	62	30.0	413	7337	331	2709
25 to 29	12	15	13	6	8	7	5	10	76	25.3	353	5413	391	4505
20 to 24	8	3	4	4	6	10	12	10	57	20.0	289	3849	455	6661
15 to 19	6	10	8	10	13	4	6	6	63	15.4	215	2571	529	9103
10 to 14	11	9	12	11	6	10	4	7	70	10.7	147	1651	597	11903
5 to 9	5	8	5	5	2	4	4	5	38	6.2	95	1061	649	15033
0 to 4	0	1	5	0	1	1	8	0	16	1.3	71	661	673	18353
-5 to -1	6	5	2	1	0	0	2	8	24	-2.3	42	368	702	21780
-10 to -6	3	2	0	4	3	1	0	1	14	-7.9	32	185	712	25317
-15 to -11	0	1	4	1	0	2	1	0	9	-12.6	17	71	727	28923
-20 to -16	3	3	2	0	0	0	2	3	13	-17.5	8	7	736	32579
Feb														
65 to 69	0	0	0	0	1	0	0	0	1	53.0	672	26752	0	0
60 to 64	0	0	0	0	1	3	0	0	4	52.5	668	23398	4	6
55 to 59	0	0	0	1	1	0	1	0	3	49.7	666	20064	6	32
50 to 54	0	0	0	1	5	7	1	1	15	44.7	658	16747	14	75
45 to 49	2	0	0	2	6	4	5	3	22	41.1	637	13500	35	188
40 to 44	1	0	2	6	5	3	8	4	29	36.9	620	10358	52	406
35 to 39	7	5	7	12	14	16	8	11	80	33.6	586	7342	86	750
30 to 34	23	25	18	21	24	22	22	20	175	30.1	452	4687	220	1455
25 to 29	19	16	24	19	8	12	13	17	128	25.0	288	2871	384	2999
20 to 24	8	15	10	5	8	4	10	7	67	20.9	179	1720	493	5208
15 to 19	6	5	5	5	6	8	5	5	45	15.5	129	954	543	7802
10 to 14	8	7	6	6	5	5	5	8	50	11.0	71	430	601	10638
5 to 9	4	5	4	5	0	0	4	4	26	5.7	43	156	629	13724
0 to 4	5	6	8	1	0	0	2	4	26	1.8	8	12	664	16940
-5 to -1	1	0	0	0	0	0	0	0	1	-2.0	0	0	672	20288
Mar														
70 to 74	0	0	0	0	8	8	0	0	16	57.3	738	24416	6	8
65 to 69	0	0	0	5	7	6	5	1	24	57.1	720	20766	24	78
60 to 64	9	4	3	6	0	0	5	6	33	55.6	699	17220	45	252
55 to 59	0	4	7	7	4	4	8	6	40	54.2	644	15847	100	599
50 to 54	1	4	3	6	17	11	0	3	45	44.4	617	10692	127	1164
45 to 49	9	4	4	4	9	19	9	9	67	40.4	570	7723	174	1915
40 to 44	14	12	8	16	16	16	22	14	118	37.4	478	5085	266	2997
35 to 39	10	11	17	21	15	18	13	11	116	33.4	355	3023	389	4655
30 to 34	20	13	17	9	9	4	18	24	114	28.4	253	1527	491	6879
25 to 29	16	23	11	13	7	7	8	9	94	24.6	130	573	614	9645
20 to 24	9	10	17	5	1	0	5	9	56	20.5	48	131	696	12923
15 to 19	5	8	6	1	0	0	0	1	21	16.9	6	3	738	16515

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

INDIANAPOLIS, INDIANA

WBAN 93819

TABLE A:

TRY Data (1972)

Latitude 39.90 N

Longitude 86.30 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	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															
75 to 79	0	0	0	0	7	6	0	0	13	62.1	714	19281	6	5	
70 to 74	4	2	0	8	6	11	5	3	39	62.2	697	15747	23	71	
65 to 69	1	6	6	10	15	13	13	4	68	57.0	641	12376	79	300	
60 to 64	7	6	7	8	13	12	11	11	75	54.6	576	9342	144	866	
55 to 59	15	9	11	19	15	13	16	22	120	50.9	486	6670	234	1794	
50 to 54	9	8	15	14	11	13	13	8	91	46.0	364	4560	356	3284	
45 to 49	10	8	11	9	8	9	13	14	82	42.0	287	2930	433	5254	
40 to 44	20	19	12	5	5	3	6	11	81	38.2	200	1712	520	7636	
35 to 39	9	8	9	9	5	6	3	4	53	33.6	129	913	591	10437	
30 to 34	5	13	11	6	3	1	6	6	51	29.9	76	394	644	13518	
25 to 29	7	6	4	2	2	2	1	4	28	25.6	33	136	687	16860	
20 to 24	3	2	3	0	0	1	3	3	15	20.8	11	27	709	20351	
15 to 19	0	3	1	0	0	0	0	0	4	17.0	0	0	720	23924	
May															
90 to 94	0	0	0	0	1	1	0	0	2	66.5	744	19978	0	0	
85 to 89	0	0	0	1	14	16	0	0	31	65.3	735	16269	9	11	
80 to 84	0	0	0	16	20	16	11	0	63	63.6	687	12704	57	166	
75 to 79	0	0	3	20	13	11	10	7	64	62.9	632	9426	112	608	
70 to 74	4	0	14	17	17	20	20	8	100	61.2	550	6451	194	1353	
65 to 69	13	4	18	15	14	13	18	19	114	58.3	432	3988	312	2610	
60 to 64	32	30	25	15	10	10	17	24	163	55.6	313	2103	431	4445	
55 to 59	15	28	18	7	4	4	7	14	97	53.5	156	942	588	7004	
50 to 54	17	11	7	1	0	2	9	15	62	48.5	78	356	666	10138	
45 to 49	9	14	7	1	0	0	1	6	38	44.3	35	88	709	13590	
40 to 44	3	4	1	0	0	0	0	0	8	39.9	5	10	739	17232	
35 to 39	0	2	0	0	0	0	0	0	2	36.0	0	0	744	20942	
Jun															
90 to 94	0	0	0	0	2	2	0	0	4	72.3	720	17707	0	0	
85 to 89	0	0	0	2	14	10	2	0	28	72.0	712	14124	8	17	
80 to 84	0	0	0	14	14	24	6	0	58	69.0	673	10663	47	156	
75 to 79	3	0	7	21	15	19	24	10	99	67.2	588	7479	132	572	
70 to 74	15	10	21	23	21	16	22	18	146	64.6	475	4808	245	1501	
65 to 69	18	18	23	13	15	16	18	24	145	60.3	315	2829	405	3122	
60 to 64	17	16	11	9	5	0	10	11	79	56.0	212	1551	508	5444	
55 to 59	8	15	14	6	4	3	6	18	74	51.1	126	710	594	8203	
50 to 54	19	16	10	2	0	0	2	6	55	47.1	53	250	667	11343	
45 to 49	8	14	4	0	0	0	0	3	29	42.1	27	57	693	14750	
40 to 44	2	1	0	0	0	0	0	0	3	40.7	0	0	720	18293	

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

INDIANAPOLIS, INDIANA

TRY Data (1972)

Latitude 39.90 N

WBAN 93819

Longitude 86.30 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			16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Jul															
90 to 94	0	0	0	2	13	14	1	0	30	75.9	740	13474	4	2	
85 to 89	0	0	0	20	22	21	10	0	73	73.9	684	9885	60	133	
80 to 84	3	3	9	21	17	22	21	8	104	71.6	610	6649	134	617	
75 to 79	16	2	21	24	25	20	24	24	156	69.5	489	3882	255	1570	
70 to 74	27	31	25	17	9	11	25	28	173	66.8	306	1888	438	3296	
65 to 69	29	32	24	6	6	3	8	22	130	62.5	143	775	601	5903	
60 to 64	7	8	10	3	1	2	4	7	42	56.9	64	313	680	9161	
55 to 59	6	11	2	0	0	0	0	3	22	53.7	24	97	720	12665	
50 to 54	5	5	2	0	0	0	0	1	13	49.3	8	12	736	16300	
45 to 49	0	1	0	0	0	0	0	0	1	46.0	0	0	744	20008	
Aug															
90 to 94	0	0	0	0	7	4	0	0	11	77.4	744	14648	0	0	
85 to 89	0	0	0	8	19	22	2	0	51	74.4	725	10972	19	44	
80 to 84	0	0	1	27	31	31	16	1	107	72.2	646	7518	98	310	
75 to 79	3	1	11	26	21	19	35	20	136	70.1	530	4577	214	1089	
70 to 74	34	26	35	18	14	14	21	31	193	67.6	365	2296	379	2528	
65 to 69	29	33	26	10	1	3	13	23	138	63.7	173	969	571	4921	
60 to 64	16	15	12	4	0	0	6	13	66	58.3	90	361	654	8033	
55 to 59	9	6	6	0	0	0	0	5	26	54.3	28	92	716	11484	
50 to 54	2	12	2	0	0	0	0	0	16	50.8	4	5	740	15117	
Sep															
90 to 94	0	0	0	0	1	0	0	0	1	76.0	720	17292	0	0	
85 to 89	0	0	0	1	3	4	0	0	8	74.5	716	13698	4	6	
80 to 84	0	0	0	11	25	25	5	1	67	72.4	680	10166	40	74	
75 to 79	3	0	5	23	18	18	17	8	92	68.6	619	6913	101	421	
70 to 74	18	19	19	20	23	20	22	19	160	66.4	507	4077	213	1185	
65 to 69	24	23	21	20	12	17	25	25	167	63.8	312	2014	408	2722	
60 to 64	22	18	22	10	7	3	14	22	118	58.4	187	803	533	5111	
55 to 59	21	19	18	5	1	3	5	13	85	54.4	74	196	646	8104	
50 to 54	2	11	5	0	0	0	2	0	20	49.0	12	20	708	11528	
45 to 49	0	0	0	0	0	0	0	2	2	47.0	0	0	720	15108	

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

INDIANAPOLIS, INDIANA
WBAN 93819
TABLE A:

TRY Data (1972)

Latitude 39.90 N
Longitude 86.30 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															
75 to 79	0	0	0	0	1	1	0	0	2	60.5	744	19656	0	0	
70 to 74	0	0	0	3	9	6	0	0	18	59.9	736	15948	8	12	
65 to 69	3	1	1	8	16	14	2	2	47	58.8	712	12325	32	109	
60 to 64	6	5	2	12	10	19	14	6	74	56.1	650	8913	94	417	
55 to 59	12	12	17	16	19	15	22	18	131	52.7	553	5866	191	1090	
50 to 54	17	13	10	29	23	18	20	19	149	47.8	393	3448	351	2392	
45 to 49	17	17	23	10	8	12	17	21	125	43.0	279	1778	465	4442	
40 to 44	20	24	22	10	4	5	10	15	110	39.3	136	727	608	7111	
35 to 39	12	13	10	5	3	3	7	6	59	35.7	63	246	681	10350	
30 to 34	4	5	5	0	0	0	1	6	21	30.0	22	71	722	13895	
25 to 29	2	2	3	0	0	0	0	0	7	26.3	5	11	739	17555	
20 to 24	0	1	0	0	0	0	0	0	1	22.0	0	0	744	21264	
Nov															
65 to 69	0	1	1	0	2	0	0	0	4	59.8	720	19782	0	0	
60 to 64	3	2	1	1	4	4	0	3	18	56.5	705	16202	15	20	
55 to 59	3	3	4	8	6	5	6	3	38	53.2	686	12707	34	125	
50 to 54	2	1	3	2	3	4	2	2	19	48.3	653	9370	67	388	
45 to 49	5	5	0	8	21	16	20	13	88	43.6	611	6169	109	787	
40 to 44	29	25	29	25	15	22	17	22	184	39.8	453	3402	267	1620	
35 to 39	17	15	14	24	34	28	17	16	165	34.0	313	1499	407	3317	
30 to 34	19	25	24	22	5	11	23	21	150	31.0	96	395	624	5813	
25 to 29	9	7	8	0	0	0	5	8	37	26.2	30	101	690	9119	
20 to 24	3	6	6	0	0	0	0	2	17	22.2	7	8	713	12626	
Dec															
60 to 64	0	0	0	0	2	0	0	1	3	53.0	744	23307	0	0	
55 to 59	0	0	0	2	4	5	2	0	13	50.5	736	19599	8	12	
50 to 54	4	6	3	2	2	6	8	6	37	46.0	720	15949	24	82	
45 to 49	2	0	0	1	3	1	3	2	12	42.4	684	12451	60	304	
40 to 44	2	0	3	5	11	5	4	4	34	37.4	675	9052	69	625	
35 to 39	16	12	14	23	25	30	25	20	165	35.1	605	5806	139	1099	
30 to 34	34	35	32	26	17	17	21	30	212	31.2	374	3342	370	2355	
25 to 29	14	20	14	10	10	15	13	11	107	25.5	230	1900	514	4633	
20 to 24	8	5	12	11	12	4	3	4	59	20.6	136	1037	608	7490	
15 to 19	1	3	3	7	6	7	11	5	43	15.9	74	502	670	10675	
10 to 14	9	6	4	4	1	3	0	7	34	10.6	46	198	698	14091	
5 to 9	2	3	5	2	0	0	3	3	18	5.6	19	46	725	17659	
0 to 4	1	3	3	0	0	0	0	0	7	2.1	2	1	742	21334	

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

INDIANAPOLIS, INDIANA

WBAN 93819

TABLE B:

TRY Data (1972)

Latitude 39.90 N

Longitude 86.30 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	2	24	21	1	0	48	0.0	0.0	0.0	77.5	75.9	74.9	78.0	0.0	75.6
85 to 89	0	0	0	32	72	73	14	0	191	0.0	0.0	0.0	75.4	72.0	71.3	72.9	0.0	72.4
80 to 84	3	3	10	89	107	118	59	10	399	71.7	72.3	74.1	70.7	69.6	69.4	71.0	73.8	70.3
75 to 79	25	3	47	114	100	94	110	69	562	71.6	71.0	70.9	68.0	66.4	65.8	68.6	70.1	68.1
70 to 74	102	88	114	106	107	106	115	107	845	68.1	68.8	67.2	63.7	62.1	62.0	64.4	67.0	65.3
65 to 69	117	118	120	87	89	85	102	120	838	63.4	63.9	62.6	59.7	57.9	57.6	60.2	61.7	61.2
60 to 64	119	104	93	68	53	56	81	104	678	57.3	58.0	57.8	55.1	54.3	53.9	55.1	56.8	56.4
55 to 59	89	107	97	72	61	52	73	102	653	53.0	54.1	53.3	51.6	51.4	51.5	51.9	53.1	52.7
50 to 54	79	87	60	59	65	66	59	61	536	48.6	49.0	48.3	46.5	44.7	45.3	46.8	47.1	47.2
45 to 49	66	64	52	37	66	74	77	78	514	43.3	43.2	43.3	41.8	41.4	41.3	42.8	43.4	42.6
40 to 44	96	97	86	81	78	69	82	83	672	39.1	39.2	39.0	38.8	37.2	38.0	38.5	38.8	38.6
35 to 39	94	83	81	108	106	116	91	89	768	35.1	35.1	34.9	34.0	33.7	33.6	33.9	34.7	34.3
30 to 34	111	122	123	102	62	58	96	111	785	30.5	30.7	30.4	30.1	29.9	29.9	30.1	30.3	30.3
25 to 29	79	89	77	50	35	43	45	59	477	25.8	25.5	25.8	25.1	24.4	23.9	24.8	25.2	25.2
20 to 24	39	42	52	25	27	19	33	35	272	20.3	21.4	21.1	20.2	20.0	19.4	20.7	21.0	20.6
15 to 19	18	29	23	23	25	19	22	17	176	16.4	16.5	16.5	15.4	14.8	15.6	15.1	15.8	15.8
10 to 14	28	22	22	21	12	18	9	22	154	10.7	10.4	10.7	10.9	11.1	10.1	10.9	11.5	10.8
5 to 9	11	16	14	12	2	4	11	12	82	6.0	6.4	5.9	5.8	4.0	6.5	6.1	5.1	5.9
0 to 4	6	10	16	1	1	1	10	4	49	2.0	1.8	1.8	3.0	0.0	3.0	1.3	1.5	1.7
-5 to -1	7	5	2	1	0	0	2	8	25	-2.3	-2.0	-2.0	-2.0	0.0	0.0	-2.5	-2.5	-2.3
-10 to -6	3	2	0	4	3	1	0	1	14	-7.0	-9.5	0.0	-7.8	-8.0	-9.0	0.0	-6.0	-7.9
-15 to -11	0	1	4	1	0	2	1	0	9	0.0	-12.0	-12.8	-11.0	0.0	-12.0	-15.0	0.0	-12.6
-20 to -16	3	3	2	0	0	0	2	3	13	-18.3	-18.7	-18.0	0.0	0.0	0.0	-16.0	-16.0	-17.5

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 Max	Ave Min		4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	26.3	64	-19	36	17	24.2	86	82	67	75	78	0.0025	0.0026	0.0029	0.0027	0.0027	10.8
Feb	27.7	65	-1	36	19	25.4	82	79	65	76	76	0.0023	0.0024	0.0027	0.0027	0.0025	11.1
Mar	39.7	74	17	50	31	35.4	77	69	57	68	69	0.0035	0.0037	0.0041	0.0040	0.0038	12.4
Apr	50.7	79	18	62	41	45.1	78	64	56	68	68	0.0054	0.0055	0.0059	0.0061	0.0057	11.2
May	63.6	90	39	77	54	56.8	78	59	47	56	62	0.0078	0.0089	0.0084	0.0081	0.0083	9.3
Jun	67.9	92	43	78	57	60.1	78	62	53	61	66	0.0090	0.0105	0.0110	0.0104	0.0101	9.0
Jul	74.4	93	49	83	65	67.1	83	68	57	66	71	0.0124	0.0138	0.0133	0.0134	0.0132	7.9
Aug	72.8	92	50	83	64	66.9	88	74	59	74	76	0.0125	0.0140	0.0140	0.0140	0.0135	7.4
Sep	68.5	90	49	77	60	63.5	88	79	65	77	78	0.0114	0.0125	0.0125	0.0120	0.0120	8.7
Oct	51.1	75	23	60	43	46.7	84	75	60	73	75	0.0059	0.0064	0.0064	0.0063	0.0062	8.1
Nov	40.0	66	21	45	35	37.4	85	82	71	80	80	0.0044	0.0044	0.0044	0.0044	0.0044	9.3
Dec	31.2	60	2	38	25	29.3	85	84	78	82	82	0.0030	0.0030	0.0034	0.0034	0.0032	10.6
Year	51.5	93	-19	61	43	46.6	83	73	61	71	73	0.0067	0.0073	0.0074	0.0073	0.0072	9.6

INDIANAPOLIS, INDIANA

TRY Data (1972)

Latitude 39.90 N

WBAN 93819

Longitude 86.30 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	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*
94	0	509	0	0	440	0	0	398	0	0	399	0	0	450	0	0	1530	0	8760	3726	0	0						
93	0	498	0	0	429	0	1	387	0	0	388	0	0	439	0	0	1497	0	8758	3639	2	0						
92	0	487	0	0	418	0	6	376	0	2	377	0	0	428	0	0	1464	0	8752	3551	8	0						
91	0	476	0	0	407	0	12	365	0	7	366	0	0	418	0	0	1431	0	8740	3464	20	0						
90	0	465	0	1	397	0	20	354	0	16	355	0	0	407	0	0	1398	0	8722	3376	38	0						
89	0	454	0	4	386	0	28	344	1	24	345	0	1	396	0	0	1366	0	8701	3289	59	1						
88	0	443	0	9	375	0	39	333	1	34	334	1	1	385	0	0	1333	0	8675	3202	85	2						
87	0	432	0	13	364	0	51	323	1	49	323	1	3	374	0	0	1300	0	8643	3116	117	3						
86	0	421	0	20	353	0	67	312	2	69	313	2	6	363	0	0	1267	0	8596	3030	164	4						
85	0	410	0	30	342	1	87	302	3	87	303	2	11	352	0	0	1234	0	8544	2944	216	6						
84	0	399	0	43	332	1	107	292	4	106	293	3	16	341	0	0	1201	0	8486	2859	274	8						
83	1	388	0	59	321	1	133	282	5	125	283	5	22	330	0	0	1168	0	8418	2774	342	11						
82	3	378	0	73	311	2	156	273	6	144	274	6	35	320	1	0	1136	0	8347	2690	413	15						
81	5	367	0	91	301	3	173	264	8	172	264	7	52	309	1	1	1103	0	8264	2607	496	20						
80	8	356	0	112	291	4	192	254	10	201	255	9	67	299	2	9	1070	0	8170	2525	590	25						
79	12	345	0	128	281	5	214	246	12	219	246	11	81	289	3	20	1037	0	8084	2444	676	31						
78	18	334	0	147	272	7	231	237	14	240	238	14	102	279	3	28	1005	0	7993	2363	767	39						
77	27	323	1	172	262	8	248	228	16	259	229	16	122	269	5	40	972	1	7890	2284	870	47						
76	35	313	1	198	253	10	269	220	19	274	221	19	142	259	6	61	940	1	7780	2206	980	56						
75	47	302	1	224	244	12	291	212	22	294	213	22	169	250	7	93	908	2	7640	2128	1120	66						
74	63	292	2	245	236	14	314	204	25	323	205	25	200	241	9	136	876	3	7477	2053	1283	78						
73	84	282	3	263	227	17	335	196	28	346	197	28	223	232	11	184	845	5	7324	1979	1436	92						
72	113	272	4	282	219	20	356	189	32	361	190	32	238	223	14	245	814	7	7163	1906	1597	107						
71	138	262	5	308	211	23	383	181	35	384	183	35	261	215	16	308	784	10	6977	1836	1783	124						
70	160	252	6	333	203	26	403	174	39	405	176	39	288	207	19	372	754	13	6798	1767	1962	143						
69	184	243	8	353	196	29	421	168	43	421	169	44	308	199	22	450	726	17	6622	1700	2138	163						
68	215	234	10	373	189	33	441	161	48	440	162	48	333	191	25	528	698	22	6428	1634	2332	185						
67	245	226	12	390	181	37	462	154	52	458	156	52	356	183	29	603	670	28	6244	1571	2516	210						
66	265	217	15	404	175	41	480	148	57	474	149	57	371	176	32	674	644	34	6089	1509	2671	236						
65	282	209	18	421	168	45	492	142	62	489	143	62	390	169	36	737	618	41	5948	1449	2812	263						
64	298	201	21	436	161	49	507	136	67	503	137	67	410	162	40	785	593	49	5820	1390	2940	292						
63	315	193	24	448	154	54	519	130	72	516	131	72	424	155	44	831	568	57	5706	1333	3054	322						
62	335	185	27	464	148	58	527	125	77	528	126	77	438	149	49	886	544	65	5579	1276	3181	353						
61	356	178	30	479	142	63	537	119	82	539	120	82	455	142	53	953	520	75	5440	1221	3320	386						
60	375	171	34	491	136	68	547	114	88	548	115	88	472	136	58	1040	497	84	5285	1168	3475	420						
59	393	163	38	508	130	73	561	108	93	555	109	93	492	130	62	1118	475	95	5131	1116	3629	455						
58	415	157	42	524	124	78	575	103	99	565	104	99	509	124	67	1179	454	107	4992	1065	3768	492						
57	434	150	46	537	118	83	582	98	105	577	99	105	524	118	73	1233	433	119	4872	1016	3888	530						
56	452	143	51	551	113	89	595	93	111	590	94	111	537	112	78	1288	413	131	4746	967	4014	570						
55	471	137	55	564	108	94	610	88	117	601	89	117	549	107	83	1356	393	145	4607	921	4153	611						
54	489	131	60	576	102	100	622	83	123	612	84	123	558	101	89	1415	374	159	4486	875	4274	653						
53	505	125	65	591	97	106	637	78	129	627	79	129	570	96	95	1468	356	173	4361	831	4399	696						
52	518	119	70	604	92	112	646	74	136	640	74	136	582	91	100	1516	338	188	4252	788	4508	741						
51	527	113	75	614	87	118	656	69	142	651	70	142	591	86	106	1553	321	203	4166	746	4594	786						
50	536	108	81	623	83	124	670	65	149	664	65	148	605	81	112	1593	303	219	4066	705	4694	833						
49	546	102	86	632	78	130	680	61	156	677	61	155	620	76	118	1636	287	235	3967	665	4793	880						

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

INDIANAPOLIS, INDIANA

TRY Data (1972)

Latitude 39.90 N

WBAN 93819

Longitude 86.30 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	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg
	Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Base 100s*		Base 100s*									
	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat
48	555	97	92	640	73	137	688	57	162	690	57	162	633	71	125	1671	270	252	3880	625	4880	929		
47	566	91	97	650	69	143	700	53	169	705	53	169	645	67	131	1708	254	269	3784	587	4976	978		
46	578	86	103	657	64	150	713	49	176	719	49	176	658	62	137	1750	239	286	3684	550	5076	1028		
45	588	81	109	662	60	156	731	45	184	735	46	183	679	58	144	1798	224	304	3565	513	5195	1079		
44	600	76	115	676	56	163	749	41	191	756	42	190	699	54	151	1850	209	322	3429	478	5331	1132		
43	612	71	121	697	52	170	763	38	199	774	39	198	720	50	158	1907	195	341	3286	445	5474	1186		
42	631	66	127	712	48	177	779	35	206	786	36	206	739	46	165	1970	182	360	3142	413	5618	1241		
41	654	62	133	722	44	184	795	32	214	793	33	214	750	43	173	2026	169	380	3019	382	5741	1298		
40	671	58	140	737	40	191	812	29	222	805	30	222	764	40	180	2076	156	401	2894	352	5866	1356		
39	683	53	147	755	37	199	832	26	230	822	27	230	778	36	188	2131	145	422	2758	324	6002	1416		
38	693	49	154	774	34	206	851	24	239	842	24	238	789	33	196	2184	133	443	2625	297	6135	1476		
37	711	45	161	796	30	214	873	21	247	869	22	247	805	30	204	2229	123	465	2476	272	6284	1538		
36	732	42	168	818	28	222	895	19	256	897	20	256	829	27	212	2275	112	488	2312	248	6448	1602		
35	751	38	175	842	25	231	916	17	265	920	18	265	853	25	221	2333	102	511	2142	225	6618	1667		
34	767	35	183	868	23	239	938	16	275	939	16	274	875	23	229	2401	93	534	1970	205	6790	1734		
33	791	32	191	894	20	248	953	14	284	956	15	284	899	20	238	2480	85	559	1785	186	6975	1803		
32	822	29	199	916	18	257	966	13	294	969	13	293	921	19	247	2564	77	584	1601	169	7159	1874		
31	846	26	207	931	17	266	977	12	303	978	12	303	938	17	256	2630	70	610	1458	154	7302	1946		
30	870	24	216	947	15	276	985	10	313	984	11	313	953	16	266	2684	64	637	1336	140	7424	2020		
29	890	22	224	962	14	285	994	9	323	989	10	323	965	14	276	2731	58	664	1227	127	7533	2095		
28	910	20	233	973	13	295	999	8	333	994	9	333	974	13	285	2783	53	691	1126	115	7634	2171		
27	928	18	243	984	11	305	1004	7	343	1001	8	343	981	12	295	2840	48	719	1020	105	7740	2247		
26	940	16	252	993	10	315	1013	7	353	1010	7	353	989	11	305	2885	44	748	928	95	7832	2325		
25	953	15	261	1002	9	325	1022	6	363	1023	6	363	999	10	315	2920	40	777	839	86	7921	2404		
24	967	13	271	1011	8	335	1029	5	374	1033	6	373	1008	9	325	2957	37	806	753	78	8007	2484		
23	981	12	281	1016	8	345	1035	4	384	1035	5	383	1017	8	335	2982	34	836	691	71	8069	2564		
22	993	11	291	1020	7	355	1039	4	394	1038	4	394	1025	7	345	2999	31	866	644	64	8116	2645		
21	1000	10	301	1023	6	365	1043	3	405	1042	4	404	1030	7	356	3017	28	896	602	58	8158	2727		
20	1007	9	311	1028	5	375	1048	3	415	1047	3	415	1035	6	366	3039	25	926	554	52	8206	2808		
19	1017	8	321	1035	5	386	1057	2	426	1053	3	425	1040	5	376	3062	23	957	494	47	8266	2891		
18	1025	8	331	1040	4	396	1062	2	436	1058	3	436	1045	5	387	3082	21	988	445	42	8315	2974		
17	1031	7	341	1045	4	407	1064	2	447	1063	2	446	1048	4	397	3102	19	1019	405	38	8355	3057		
16	1034	6	352	1050	3	417	1067	1	458	1065	2	457	1052	4	408	3112	17	1050	377	34	8383	3141		
15	1035	6	362	1053	3	428	1073	1	468	1067	2	468	1058	3	418	3115	16	1081	357	31	8403	3225		
14	1036	5	372	1058	2	438	1081	1	479	1072	1	478	1061	3	429	3125	14	1112	326	27	8434	3309		
13	1042	5	383	1064	2	449	1085	1	490	1077	1	489	1065	3	439	3141	12	1143	285	24	8475	3393		
12	1048	4	393	1069	2	459	1086	1	501	1080	1	500	1067	3	450	3158	11	1175	250	21	8510	3478		
11	1051	4	404	1073	2	470	1087	1	512	1083	1	511	1068	2	461	3175	10	1207	222	19	8538	3563		
10	1055	3	414	1075	1	481	1088	1	523	1086	1	521	1068	2	471	3186	9	1238	199	17	8561	3649		
9	1059	3	425	1077	1	492	1089	1	533	1088	1	532	1070	2	482	3195	8	1270	181	15	8579	3735		
8	1061	3	435	1080	1	502	1089	1	544	1090	1	543	1074	2	493	3202	7	1302	163	13	8597	3821		
7	1062	2	446	1083	1	513	1089	1	555	1090	1	554	1077	1	504	3208	6	1334	148	12	8612	3907		
6	1066	2	457	1085	1	524	1090	0	566	1091	1	565	1079	1	514	3216	5	1366	131	10	8629	3993		
5	1070	2	467	1087	1	535	1090	0	577	1091	0	576	1080	1	525	3225	5	1399	116	9	8644	4079		
4	1072	1	478	1088	1	546	1091	0	588	1091	0	587	1081	1	536	3232	4	1431	103	8	8657	4166		
3	1076	1	489	1089	1	557	1091	0	599	1092	0	598	1084	1	547	3239	4	1463	88	7	8672	4252		

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

INDIANAPOLIS, INDIANA
WBAN 93819
TABLE D:

TRY Data (1972)

Latitude 39.90 N
Longitude 86.30 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	Hrs	Above	Hrs
	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	100s*	Base	100s*
2 1082	1	500	1089	1	568	1091	0	610	1092	0	609	1085	1	558	3244	3 1496
1 1085	1	510	1089	0	579	1092	0	621	1092	0	620	1088	1	569	3246	3 1528
0 1086	1	521	1089	0	589	1092	0	632	1092	0	631	1090	1	579	3248	3 1561
-1 1088	1	532	1089	0	600	1092	0	642	1092	0	641	1090	0	590	3253	2 1593
-2 1089	1	543	1090	0	611	1092	0	653	1092	0	652	1091	0	601	3260	2 1626
-3 1089	1	554	1090	0	622	1092	0	664	1092	0	663	1092	0	612	3264	2 1658
-4 1089	1	565	1090	0	633	1092	0	675	1092	0	674	1092	0	623	3266	2 1691
-5 1089	1	576	1090	0	644	1092	0	686	1092	0	685	1092	0	634	3268	1 1724
-6 1089	1	587	1090	0	655	1092	0	697	1092	0	696	1092	0	645	3270	1 1756
-7 1089	0	598	1091	0	666	1092	0	708	1092	0	707	1092	0	656	3271	1 1789
-8 1089	0	608	1092	0	677	1093	0	719	1092	0	718	1092	0	667	3272	1 1822
-9 1089	0	619	1093	0	688	1095	0	730	1092	0	729	1092	0	678	3273	1 1855
-10 1089	0	630	1094	0	698	1095	0	741	1093	0	740	1092	0	689	3274	1 1887
-11 1089	0	641	1094	0	709	1095	0	752	1093	0	751	1092	0	700	3275	1 1920
-12 1090	0	652	1095	0	720	1095	0	763	1094	0	762	1092	0	710	3275	1 1953
-13 1091	0	663	1095	0	731	1095	0	774	1094	0	773	1092	0	721	3276	0 1986
-14 1092	0	674	1095	0	742	1095	0	785	1095	0	784	1092	0	732	3276	0 2018
-15 1092	0	685	1095	0	753	1095	0	796	1095	0	794	1092	0	743	3276	0 2051
-16 1093	0	696	1095	0	764	1095	0	807	1095	0	805	1094	0	754	3277	0 2084
-17 1093	0	707	1095	0	775	1095	0	817	1095	0	816	1095	0	765	3279	0 2117
-18 1094	0	718	1095	0	786	1095	0	828	1095	0	827	1095	0	776	3280	0 2149
-19 1095	0	728	1095	0	797	1095	0	839	1095	0	838	1095	0	787	3283	0 2182
-20 1095	0	739	1095	0	808	1095	0	850	1095	0	849	1095	0	798	3285	0 2215

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

INDIANAPOLIS, INDIANA
WBAN 93819
TABLE E:

TRY Data (1972)

Latitude 39.90 N
Longitude 86.30 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:	4196	3849	3354	2798	2306	1787	1193	656	251	65	0
Annual Wet Bulb Cooling deg-hrs:	57074.	44816.	33736.	24208.	16312.	9951.	5211.	2175.	650.	93.	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	49	48	46	44	42	40	35	30	22	13	7	.001		
.002	1	1	1	1	1	1	1	1	1	1	1	42	41	40	39	38	36	32	28	20	12	6	.002		
.003	2	3	3	3	3	3	3	3	3	3	3	35	35	35	34	33	32	28	25	18	11	6	.003		
.004	4	5	5	6	6	6	6	6	6	6	6	29	29	29	29	29	28	25	22	16	10	5	.004		
.005	5	7	8	9	10	10	10	10	10	10	10	24	24	24	24	24	24	22	19	15	9	5	.005		
.006	6	9	11	13	13	14	14	14	14	14	14	20	20	20	20	20	20	18	17	13	8	4	.006		
.007	7	11	14	16	17	18	19	19	19	19	19	16	16	16	16	16	16	15	14	11	7	4	.007		
.008	9	13	17	20	21	23	23	24	24	25	25	13	13	13	13	13	13	12	12	9	6	3	.008		
.009	10	15	20	23	25	27	29	29	30	30	30	10	10	10	10	10	10	10	9	8	5	3	.009		
.010	11	17	22	27	29	32	34	35	36	36	37	7	7	7	7	7	7	7	7	6	4	2	.010		
.011	13	19	25	30	33	36	39	41	42	43	43	5	5	5	5	5	5	5	5	5	3	2	.011		
.012	14	21	28	34	37	41	44	47	48	50	50	4	4	4	4	4	4	4	4	3	2	1	.012		
.013	15	23	31	37	41	45	49	52	55	57	57	2	2	2	2	2	2	2	2	2	2	1	.013		
.014	16	25	34	41	45	50	54	58	62	64	65	1	1	1	1	1	1	1	1	1	1	1	.014		
.015	18	27	36	44	49	55	60	64	68	71	73	1	1	1	1	1	1	1	1	1	1	0	.015		
.016	19	29	39	48	53	59	65	70	75	79	80	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	20	32	42	51	57	64	70	76	82	86	89	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	21	34	45	55	61	68	75	82	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)-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	44	58	54	49	65	60	51	65	47	70	69	56
VERTICAL													
NORTH	100	100	100	99	93	93	93	97	100	100	100	100	97
WEST	49	57	65	73	70	78	76	69	74	60	81	81	70
SOUTH	32	39	61	69	76	89	84	69	73	47	60	55	64
EAST	54	55	68	64	61	74	70	63	75	57	73	67	66
\$ Possible Sun	42	51	52	56	62	67	70	71	66	64	43	40	58

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

INDIANAPOLIS, INDIANA

WBAN 93819

TABLE H:

TRY Data (1972)

Latitude 39.90 N

Longitude 86.30 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/ 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	1847	1722	1385	1054	643	326	182	151	151	1895	937	866	798	647	503	335	210	155	143	143	868	498	496
Feb	1924	1798	1512	1242	849	497	289	200	196	2174	1275	848	806	693	583	422	285	213	184	182	915	605	747
Mar	1745	1690	1544	1399	1089	758	495	323	266	2348	1737	887	859	794	729	606	483	391	332	314	1037	871	1037
Apr	1376	1450	1465	1457	1283	1028	758	522	371	2349	2170	1022	1071	1065	1042	936	795	657	543	476	1390	1362	1398
May	1076	1233	1368	1464	1409	1237	983	729	528	2259	2450	995	1097	1168	1215	1167	1053	895	740	617	1573	1732	1688
Jun	955	1128	1309	1450	1450	1319	1084	835	639	2203	2565	944	1023	1095	1149	1133	1055	936	813	716	1389	1610	1868
Jul	1004	1168	1327	1445	1427	1279	1040	793	597	2209	2498	928	1004	1066	1109	1084	997	875	750	651	1388	1572	1806
Aug	1229	1333	1393	1428	1309	1095	841	608	439	2259	2245	1001	1063	1080	1080	993	859	715	592	507	1448	1475	1644
Sep	1572	1562	1478	1385	1132	840	586	398	314	2283	1859	916	907	863	812	700	586	495	432	403	1099	1024	1324
Oct	1819	1714	1483	1263	898	576	357	244	228	2173	1407	837	811	730	647	501	370	279	229	220	950	707	977
Nov	1848	1722	1396	1097	682	373	206	168	167	1951	1027	527	511	445	376	276	206	167	156	156	521	377	579
Dec	1800	1674	1334	1001	587	291	158	141	141	1801	849	505	494	429	355	252	175	139	133	133	483	324	417
Year	1514	1514	1415	1307	1064	803	583	427	337	2158	1754	856	871	840	801	702	591	495	422	377	1090	1015	1165

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

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

*** South exposure tilt 45 degrees.

**** Cinquemani, Y., J. R. Owenby, Jr. and R. G. Baldwin. 1978. Input Data for Solar Systems, NCC, Asheville, NC.

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	1592	1462	1157	876	510	243	136	122	122	737	669	534	415	267	163	123	116	116
Feb	1632	1510	1263	1038	687	385	214	160	159	712	672	575	482	340	225	167	149	148
Mar	1413	1394	1280	1163	892	604	378	246	216	717	702	652	599	495	389	311	266	255
Apr	1035	1152	1200	1208	1059	834	596	398	292	802	864	872	858	767	645	525	431	384
May	761	928	1098	1210	1166	1015	792	569	395	759	859	945	999	961	862	723	589	486
Jun	660	825	1035	1191	1197	1086	877	656	474	737	807	884	941	929	863	760	653	568
Jul	703	867	1058	1193	1179	1053	842	623	447	720	791	863	911	891	817	710	601	517
Aug	905	1043	1137	1183	1082	895	671	471	342	780	853	884	890	816	699	575	472	407
Sep	1244	1276	1222	1152	934	679	456	304	255	734	739	707	667	573	475	398	347	327
Oct	1526	1434	1237	1051	738	453	268	193	186	692	672	605	536	412	296	219	184	179
Nov	1589	1456	1170	908	551	279	155	136	136	440	425	369	309	225	164	134	127	127
Dec	1557	1427	1116	829	465	213	123	115	115	424	413	357	294	204	138	112	108	108
Year	1216	1229	1164	1083	872	646	460	334	262	688	706	688	659	575	480	398	338	303

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

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

JACKSON, MISSISSIPPI
WBAN 3940
TABLE A:

TRY Data (1964)

Latitude 32.30 N
Longitude 90.10 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 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	
Jan															
70 to 74	0	0	0	0	2	2	0	0	4	61.0	744	19799	0	0	
65 to 69	0	3	3	5	11	4	2	1	29	60.4	731	16098	13	19	
60 to 64	4	0	2	7	21	21	10	8	73	55.5	679	12537	65	178	
55 to 59	14	6	6	20	11	18	20	13	108	51.4	603	9319	141	680	
50 to 54	9	17	15	12	14	10	11	13	101	47.0	484	6585	260	1666	
45 to 49	18	10	13	16	10	13	13	12	105	41.2	389	4402	355	3203	
40 to 44	7	12	17	11	11	9	11	15	93	36.7	280	2713	464	5234	
35 to 39	11	14	12	9	5	5	16	8	80	32.4	202	1513	542	7754	
30 to 34	12	11	9	7	5	8	1	13	66	29.7	105	711	639	10672	
25 to 29	11	8	5	3	3	3	8	4	45	24.6	64	278	680	13959	
20 to 24	6	8	8	3	0	0	1	6	32	20.3	24	67	720	17468	
15 to 19	1	4	3	0	0	0	0	0	8	17.0	3	6	741	21127	
Feb															
65 to 69	0	0	0	0	3	2	0	0	5	52.4	672	15235	0	0	
60 to 64	0	0	0	2	6	5	0	0	13	48.8	665	11890	7	15	
55 to 59	0	1	4	10	26	23	2	0	66	47.1	629	8625	43	110	
50 to 54	8	6	5	20	27	25	25	10	126	45.4	539	5665	133	510	
45 to 49	21	15	15	29	10	16	19	24	149	42.6	410	3295	262	1500	
40 to 44	18	19	28	17	11	9	17	17	136	38.0	237	1649	435	3214	
35 to 39	16	21	18	6	1	3	13	18	96	34.3	132	725	540	5650	
30 to 34	15	9	8	0	0	1	8	9	50	30.2	60	263	612	8548	
25 to 29	3	7	4	0	0	0	0	6	20	26.5	21	81	651	11726	
20 to 24	3	5	1	0	0	0	0	0	9	21.2	7	16	665	15021	
15 to 19	0	1	1	0	0	0	0	0	2	19.0	0	0	672	18365	
Mar															
80 to 84	0	0	0	0	1	1	0	0	2	68.0	744	19559	0	0	
75 to 79	0	0	1	7	11	8	1	0	28	67.1	733	15856	11	17	
70 to 74	5	7	11	13	20	17	3	3	79	63.3	691	12273	53	154	
65 to 69	10	8	4	14	29	28	13	14	120	59.3	581	9064	163	665	
60 to 64	4	0	5	20	8	15	18	9	79	54.3	487	6424	257	1745	
55 to 59	11	10	11	15	13	15	18	11	104	50.8	405	4185	339	3226	
50 to 54	14	16	24	11	7	5	14	19	110	47.4	278	2470	466	5231	
45 to 49	12	5	11	10	4	4	13	9	68	42.2	198	1293	546	7774	
40 to 44	21	27	19	2	0	0	12	19	100	38.8	115	479	629	10680	
35 to 39	11	12	4	1	0	0	1	7	36	35.3	39	128	705	14049	
30 to 34	2	7	3	0	0	0	0	2	14	30.1	11	25	733	17666	
25 to 29	3	1	0	0	0	0	0	0	4	28.5	0	0	744	21361	

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

JACKSON, MISSISSIPPI
WBAN 3940
TABLE A:

TRY Data (1964)

Latitude 32.30 N
Longitude 90.10 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	4	5	0	0	9	69.0	720	14378	0	0	
80 to 84	0	0	0	10	27	21	0	0	58	68.3	694	10823	26	45	
75 to 79	0	0	7	33	28	20	8	0	96	66.3	621	7524	99	346	
70 to 74	12	11	21	24	18	27	32	19	164	65.4	492	4688	228	1110	
65 to 69	34	28	33	10	6	11	28	38	188	62.8	305	2662	415	2684	
60 to 64	17	18	13	6	3	3	10	10	80	57.8	168	1520	552	5142	
55 to 59	6	6	3	6	4	3	4	8	40	51.0	105	853	615	8075	
50 to 54	8	9	9	1	0	0	6	9	42	47.7	65	420	655	11242	
45 to 49	5	6	1	0	0	0	2	3	17	44.6	36	184	684	14606	
40 to 44	7	5	3	0	0	0	0	3	18	39.5	20	51	700	18073	
35 to 39	1	7	0	0	0	0	0	0	8	36.5	3	3	717	21625	
May															
95 to 99	0	0	0	0	5	4	0	0	9	71.1	742	17288	2	1	
90 to 94	0	0	0	10	17	15	0	0	42	71.6	723	13607	21	40	
85 to 89	0	0	5	19	26	25	3	0	78	70.4	670	10119	74	272	
80 to 84	0	0	11	28	22	23	13	0	97	68.9	578	7009	166	882	
75 to 79	3	1	27	20	18	17	22	15	123	66.9	469	4376	275	1969	
70 to 74	31	28	21	15	4	9	31	30	169	66.4	321	2366	423	3679	
65 to 69	17	19	19	1	1	0	17	22	96	62.9	176	1123	568	6156	
60 to 64	25	18	9	0	0	0	7	19	78	58.1	105	432	639	9185	
55 to 59	9	17	1	0	0	0	0	5	32	55.1	35	122	709	12595	
50 to 54	8	10	0	0	0	0	0	2	20	50.3	11	14	733	16207	
Jun															
95 to 99	0	0	0	1	4	2	0	0	7	77.6	720	13239	0	0	
90 to 94	0	0	0	21	46	34	3	0	104	76.0	680	9692	40	53	
85 to 89	0	0	11	43	20	15	10	0	99	74.4	563	6571	157	532	
80 to 84	1	0	34	16	11	18	27	14	121	72.6	471	3972	249	1533	
75 to 79	37	32	26	3	4	12	29	39	182	72.2	333	1951	387	3112	
70 to 74	29	32	9	3	5	8	11	20	117	69.0	135	804	585	5565	
65 to 69	8	13	6	2	0	1	10	7	47	63.3	76	314	644	8675	
60 to 64	12	5	4	1	0	0	0	10	32	60.0	23	69	697	12030	
55 to 59	3	8	0	0	0	0	0	0	11	56.2	2	2	718	15563	

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

JACKSON, MISSISSIPPI
WBAN 3940
TABLE A:

TRY Data (1964)

Latitude 32.30 N
Longitude 90.10 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	0	0	0	3	80.3	744	12822	0	0	
90 to 94	0	0	0	19	46	31	0	0	96	77.6	720	9127	24	25	
85 to 89	0	0	13	48	29	35	14	1	140	76.6	592	5823	152	441	
80 to 84	6	1	22	11	9	12	30	13	104	75.2	467	3204	277	1542	
75 to 79	31	22	43	10	6	14	38	52	216	73.1	333	1166	411	3224	
70 to 74	51	64	15	5	0	1	11	24	171	70.3	73	123	671	5901	
65 to 69	5	4	0	0	0	0	0	3	12	65.3	7	14	737	9512	
60 to 64	0	2	0	0	0	0	0	0	2	62.0	0	0	744	13218	
Aug															
95 to 99	0	0	0	0	3	2	0	0	5	79.4	741	12717	3	2	
90 to 94	0	0	0	17	40	29	0	0	86	77.5	724	9031	20	36	
85 to 89	0	0	11	41	35	28	11	0	126	76.9	599	5708	145	433	
80 to 84	2	3	30	28	10	24	33	8	138	75.4	484	3012	260	1457	
75 to 79	51	32	40	7	5	10	43	64	252	73.3	308	990	436	3155	
70 to 74	34	50	11	0	0	0	6	19	120	70.5	50	145	694	6030	
65 to 69	5	5	1	0	0	0	0	2	13	63.8	12	25	732	9630	
60 to 64	1	3	0	0	0	0	0	0	4	61.8	0	0	744	13325	
Sep															
95 to 99	0	0	0	0	7	1	0	0	8	77.3	720	14830	0	0	
90 to 94	0	0	0	16	28	19	0	0	63	74.7	690	11274	30	44	
85 to 89	0	0	4	35	34	31	1	0	105	72.9	610	8010	110	380	
80 to 84	0	0	15	18	13	24	18	1	89	70.6	517	5223	203	1193	
75 to 79	14	6	31	14	2	7	42	39	155	70.6	413	2893	307	2463	
70 to 74	48	43	24	4	3	2	13	26	163	68.6	197	1324	523	4494	
65 to 69	10	20	7	3	3	6	13	14	76	63.7	108	595	612	7365	
60 to 64	8	6	5	0	0	0	3	6	28	58.1	42	257	678	10627	
55 to 59	7	5	4	0	0	0	0	4	20	53.3	23	91	697	14061	
50 to 54	3	9	0	0	0	0	0	0	12	50.4	5	10	715	17580	
45 to 49	0	1	0	0	0	0	0	0	1	46.0	0	0	720	21170	

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

JACKSON, MISSISSIPPI

WBAN 3940

TABLE A:

TRY Data (1964)

Latitude 32.30 N

Longitude 90.10 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	1	0	0	0	1	76.0	744	18941	0	0	
80 to 84	0	0	0	3	20	8	0	0	31	69.5	735	15231	9	10	
75 to 79	7	3	5	22	29	21	9	9	105	66.9	684	11660	60	159	
70 to 74	2	7	7	27	16	19	5	1	84	63.7	557	8560	187	779	
65 to 69	9	8	13	20	23	16	5	6	100	58.8	487	5927	257	1866	
60 to 64	7	5	21	20	2	18	21	11	105	56.4	388	3764	356	3423	
55 to 59	19	13	20	1	2	10	27	28	120	53.2	280	2118	464	5497	
50 to 54	20	19	14	0	0	1	15	20	89	48.9	162	1036	582	8135	
45 to 49	11	12	7	0	0	0	10	9	49	44.1	90	441	654	11260	
40 to 44	13	18	5	0	0	0	1	8	45	40.3	42	116	702	14655	
35 to 39	5	7	1	0	0	0	0	1	14	35.6	10	15	734	18274	
30 to 34	0	1	0	0	0	0	0	0	1	33.0	0	0	744	21979	
Nov															
80 to 84	0	0	0	4	18	5	0	0	27	67.0	717	16705	3	3	
75 to 79	0	0	0	21	28	18	0	0	67	64.1	666	13227	54	125	
70 to 74	3	1	6	28	16	15	8	3	80	63.7	595	10073	125	571	
65 to 69	15	15	21	12	10	16	18	16	123	62.3	509	7302	211	1400	
60 to 64	18	14	19	5	0	12	14	17	99	58.9	383	5116	337	2814	
55 to 59	12	14	7	2	3	4	15	12	69	54.3	291	3440	429	4738	
50 to 54	4	6	8	4	6	9	14	6	57	49.0	235	2124	485	7022	
45 to 49	20	11	11	6	6	5	7	23	89	44.1	159	1116	561	9614	
40 to 44	7	16	8	5	3	2	8	4	53	39.5	75	533	645	12631	
35 to 39	5	7	6	3	0	4	1	3	29	32.9	44	236	676	15934	
30 to 34	0	2	2	0	0	0	5	4	13	28.1	20	86	700	19384	
25 to 29	6	4	2	0	0	0	0	2	14	24.4	8	15	712	22913	
Dec															
75 to 79	0	0	0	2	10	2	0	0	14	66.6	743	21052	1	1	
70 to 74	0	1	2	11	5	11	4	0	34	66.0	717	17393	27	62	
65 to 69	8	6	7	3	13	8	11	13	69	62.9	676	13903	68	292	
60 to 64	16	14	7	11	12	9	9	13	91	59.0	583	10737	161	846	
55 to 59	1	6	10	14	14	14	7	0	66	51.9	510	8011	234	1840	
50 to 54	6	6	17	20	13	7	11	12	92	48.8	425	5656	319	3205	
45 to 49	14	12	8	7	8	16	8	9	82	44.4	348	3724	396	4993	
40 to 44	10	8	5	8	8	12	14	8	73	38.6	262	2218	482	7207	
35 to 39	17	16	14	14	7	9	13	20	110	34.0	180	1071	564	9780	
30 to 34	3	4	12	1	3	4	11	5	43	29.6	93	441	651	12870	
25 to 29	18	18	7	1	0	1	5	12	62	25.3	44	84	700	16233	
20 to 24	0	2	4	1	0	0	0	1	8	22.3	0	0	744	19869	

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

JACKSON, MISSISSIPPI
 MBAN 3940
 TABLE B:

TRY Data (1964)

Latitude 32.30 N
 Longitude 90.10 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	1	22	9	0	0	32	0.0	0.0	0.0	78.0	76.6	75.1	0.0	0.0	76.2
90 to 94	0	0	0	83	177	128	3	0	391	0.0	0.0	0.0	76.7	75.9	75.8	76.3	0.0	76.0
85 to 89	0	0	44	186	149	139	39	1	558	0.0	0.0	76.5	75.2	73.4	73.7	77.2	79.0	74.6
80 to 84	9	4	112	118	131	136	121	36	667	75.7	75.8	74.6	71.2	68.6	70.3	74.8	75.3	72.0
75 to 79	143	96	180	139	141	129	192	218	1238	72.8	73.1	72.0	67.1	64.7	66.9	71.9	72.5	70.3
70 to 74	215	244	127	130	89	111	124	145	1185	69.6	69.8	67.4	63.3	62.6	63.3	66.6	69.0	67.2
65 to 69	121	129	114	70	99	92	117	136	878	64.5	64.5	62.6	58.9	56.6	58.7	62.3	63.2	61.8
60 to 64	112	85	85	72	52	83	92	103	684	59.1	60.1	58.1	53.7	53.3	54.7	57.6	58.6	57.3
55 to 59	82	86	66	68	73	87	93	81	636	54.0	54.5	53.4	50.5	47.7	48.7	52.3	53.3	51.9
50 to 54	80	98	92	68	67	57	96	91	649	49.3	50.1	48.9	46.6	44.4	44.5	47.1	48.2	47.7
45 to 49	101	72	66	68	38	54	72	89	560	44.1	44.9	43.4	41.4	40.4	40.9	42.5	43.9	43.0
40 to 44	83	105	85	43	33	32	63	74	518	39.2	39.4	38.5	36.3	35.9	36.9	38.5	39.0	38.4
35 to 39	66	84	55	33	13	21	44	57	373	34.8	34.7	33.6	32.1	32.7	32.8	33.1	34.3	33.9
30 to 34	32	34	34	8	8	13	25	33	187	29.8	30.1	29.5	29.6	29.6	29.4	29.8	29.7	29.7
25 to 29	41	38	18	4	3	4	13	24	145	25.3	25.3	25.3	24.3	24.0	24.5	24.8	25.9	25.3
20 to 24	9	15	13	4	0	0	1	7	49	20.4	20.8	20.4	21.0	0.0	0.0	22.0	21.7	20.8
15 to 19	1	5	4	0	0	0	0	0	10	18.0	17.2	17.5	0.0	0.0	0.0	0.0	0.0	17.4

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Month	Dry Bulb Temperature (F)					Wet Bulb Ave	Percent Relative Humidity Average					Average Humidity Ratio (lb moisture/lb dry air)					Average wind MPH
	Ave	Max	Min	Daily Max	Ave Min		4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	45.9	71	15	55	36	41.0	78	66	55	65	68	0.0045	0.0047	0.0050	0.0049	0.0047	9.3
Feb	44.8	66	19	55	35	39.9	81	67	49	68	68	0.0041	0.0045	0.0040	0.0042	0.0042	9.6
Mar	56.2	81	29	68	44	50.4	83	64	49	72	69	0.0066	0.0072	0.0069	0.0072	0.0070	11.4
Apr	67.5	87	36	78	58	61.0	86	65	56	72	71	0.0101	0.0108	0.0106	0.0105	0.0105	10.6
May	74.3	98	50	86	62	65.3	85	54	44	72	66	0.0113	0.0118	0.0112	0.0126	0.0117	7.8
Jun	79.1	96	56	90	70	71.3	87	62	54	76	71	0.0146	0.0156	0.0145	0.0157	0.0150	6.9
Jul	80.3	95	64	90	73	73.9	88	69	60	81	76	0.0158	0.0172	0.0169	0.0174	0.0168	7.0
Aug	80.4	98	63	90	73	74.1	88	69	60	81	76	0.0161	0.0176	0.0170	0.0177	0.0170	6.7
Sep	76.9	96	48	88	67	68.8	86	60	50	73	70	0.0130	0.0143	0.0136	0.0141	0.0137	7.9
Oct	62.0	85	34	76	50	56.0	88	62	47	79	72	0.0083	0.0094	0.0085	0.0091	0.0088	8.0
Nov	59.3	84	25	72	48	54.0	88	65	51	79	74	0.0081	0.0090	0.0083	0.0084	0.0083	7.3
Dec	49.2	78	23	59	40	45.7	86	76	64	80	78	0.0061	0.0066	0.0068	0.0065	0.0064	10.4
Year	64.8	98	15	76	55	58.6	85	65	53	75	72	0.0099	0.0108	0.0103	0.0107	0.0104	8.6

JACKSON, MISSISSIPPI
WBAN 3940
TABLE D:

TRY Data (1964)

Latitude 32.30 N
Longitude 90.10 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	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*
99	0	404	0	0	315	0	0	275	0	0	302	0	0	385	0	0	1319	0	8760	2999	0	0
98	0	393	0	0	304	0	2	264	0	0	291	0	0	374	0	0	1286	0	8757	2912	3	0
97	0	382	0	0	293	0	4	253	0	1	281	0	0	363	0	0	1253	0	8755	2824	5	0
96	0	371	0	0	282	0	8	242	0	2	270	0	0	352	0	0	1220	0	8750	2737	10	0
95	0	360	0	0	271	0	17	231	0	6	259	0	0	341	0	0	1187	0	8736	2649	24	0
94	0	349	0	2	260	0	33	221	0	16	248	0	0	330	0	0	1155	0	8707	2562	53	1
93	0	338	0	10	249	0	61	210	1	33	237	0	0	319	0	0	1122	0	8656	2475	104	1
92	0	327	0	22	238	0	98	200	2	57	227	1	0	308	0	0	1089	0	8582	2389	178	3
91	0	317	0	39	227	0	137	190	3	86	216	2	0	297	0	0	1056	0	8497	2303	263	5
90	0	306	0	67	217	1	176	181	4	118	206	3	2	286	0	0	1023	0	8396	2219	364	8
89	0	295	0	103	207	2	216	172	6	148	197	4	5	275	0	0	990	0	8286	2136	474	12
88	2	284	0	144	197	3	247	163	9	177	187	6	9	264	0	0	958	0	8179	2053	581	17
87	9	273	0	186	188	5	276	155	11	209	178	7	14	253	0	0	925	0	8065	1972	695	24
86	18	262	0	225	179	7	307	147	14	238	170	10	23	243	0	0	892	0	7948	1892	812	31
85	33	251	0	256	170	9	336	139	17	264	161	12	35	232	1	0	859	0	7833	1813	927	40
84	49	241	1	285	162	12	362	132	21	284	153	15	49	221	1	2	826	0	7727	1735	1033	50
83	63	230	1	307	154	15	391	124	25	306	145	18	67	211	2	4	793	0	7621	1658	1139	61
82	85	220	2	325	146	18	417	118	29	338	137	21	89	201	2	10	760	0	7494	1583	1266	73
81	113	210	3	347	139	21	445	111	33	372	130	25	114	191	3	22	728	0	7346	1509	1414	86
80	141	200	4	374	132	25	470	105	38	399	123	29	145	181	5	39	695	1	7191	1436	1569	101
79	173	191	6	403	124	29	493	98	42	419	116	33	175	172	6	66	663	1	7030	1365	1730	117
78	205	182	8	434	118	33	521	92	48	440	109	37	209	163	8	117	631	2	6833	1295	1927	135
77	239	173	10	462	111	38	550	87	53	469	103	41	257	154	11	204	600	3	6577	1228	2183	156
76	276	165	13	487	105	42	583	82	59	497	97	46	297	146	13	308	569	6	6310	1164	2450	179
75	315	157	16	513	99	47	610	77	65	525	91	51	332	138	16	433	540	10	6030	1102	2730	205
74	351	149	19	543	93	53	633	72	71	552	86	57	372	131	20	595	512	15	5712	1043	3048	234
73	379	142	23	576	88	58	656	67	77	577	80	62	403	124	24	770	486	21	5397	988	3363	266
72	405	135	27	606	83	64	675	63	84	599	75	68	427	117	28	915	462	30	5131	935	3629	301
71	431	128	31	627	78	70	688	59	91	617	70	74	448	110	32	1005	439	40	4942	885	3818	338
70	452	122	35	646	74	77	701	55	98	639	66	81	469	104	37	1074	416	50	4777	836	3983	377
69	478	115	40	664	69	83	718	51	105	659	61	87	488	98	42	1150	395	61	4602	789	4158	418
68	502	109	45	678	65	90	734	47	112	675	57	94	513	92	47	1228	374	73	4427	744	4333	461
67	523	104	50	693	61	97	753	44	119	694	53	101	541	86	52	1309	353	86	4245	701	4515	505
66	545	98	55	711	57	104	776	41	127	715	49	108	565	81	58	1395	334	99	4051	659	4709	551
65	567	93	61	723	53	111	797	38	135	735	45	115	586	76	63	1468	316	114	3881	620	4879	599
64	585	87	67	734	50	118	811	35	143	753	42	122	607	71	69	1528	298	129	3741	582	5019	648
63	600	82	72	751	46	126	820	32	151	770	38	130	627	66	76	1594	281	144	3597	545	5163	699
62	615	77	79	766	43	133	830	29	159	789	35	138	642	61	82	1661	264	161	3456	510	5304	752
61	633	73	85	779	39	141	842	27	168	807	32	146	660	57	88	1717	248	177	3321	476	5439	805
60	652	68	91	792	36	149	855	24	176	820	29	154	679	53	95	1769	233	195	3190	443	5570	860
59	670	64	98	803	33	157	866	22	185	837	27	162	697	49	102	1819	218	213	3067	412	5693	917
58	683	60	105	814	31	165	883	20	194	856	24	171	715	45	109	1862	203	231	2945	382	5815	974
57	695	56	111	828	28	173	901	18	203	872	22	179	734	41	116	1908	189	250	2820	353	5940	1033
56	707	52	118	843	25	182	916	16	212	887	20	188	750	37	124	1958	176	269	2697	326	6063	1093
55	720	48	126	859	23	190	928	14	221	904	18	197	769	34	131	2015	163	289	2564	299	6196	1154
54	736	44	133	874	21	199	938	12	230	917	16	206	793	31	139	2077	150	310	2423	274	6337	1217

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

JACKSON, MISSISSIPPI
WBAN 3940
TABLE 0:

TRY Data (1964)

Latitude 32.30 N
Longitude 90.10 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 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* 100s*	Above Base	100s* 100s*
53	756	41	140	889	18	208	950	11	240	927	14	216	815	28	147	2141	139	331	2280	251	6480	1281
52	778	37	148	902	16	216	964	9	249	940	13	225	833	25	155	2199	127	353	2142	229	6618	1347
51	798	34	156	916	15	226	977	8	259	954	11	234	850	23	164	2250	117	375	2014	208	6746	1411
50	814	32	164	929	13	235	991	7	269	966	10	244	868	20	172	2295	107	398	1895	188	6865	1481
49	824	29	172	942	11	244	1007	6	279	977	9	254	885	18	181	2336	97	421	1789	170	6971	1551
48	833	26	180	954	10	254	1017	5	289	988	7	263	898	16	190	2386	88	444	1683	153	7077	1621
47	843	24	189	967	8	263	1024	5	299	998	6	273	912	14	199	2441	79	468	1573	136	7187	1692
46	857	21	197	982	7	273	1032	4	309	1008	6	283	927	13	208	2493	71	493	1459	121	7301	1765
45	876	19	206	997	6	283	1036	3	320	1019	5	294	941	11	218	2547	63	518	1342	107	7418	1838
44	894	17	215	1009	5	293	1043	3	330	1028	4	304	955	10	227	2605	56	544	1223	94	7537	1913
43	914	15	224	1023	4	303	1052	2	341	1038	3	314	967	8	237	2666	50	570	1098	83	7662	1989
42	932	13	233	1034	4	313	1058	2	351	1046	3	325	981	7	247	2726	44	597	981	72	7779	2066
41	944	12	243	1039	3	324	1063	2	362	1050	2	335	993	6	256	2773	38	625	896	63	7864	2145
40	960	10	252	1043	3	334	1068	1	372	1054	2	346	1004	5	266	2816	34	653	812	54	7948	2224
39	974	9	262	1048	2	345	1073	1	383	1060	2	356	1018	4	277	2858	29	681	727	47	8033	2303
38	982	8	272	1055	2	355	1077	1	394	1066	1	367	1027	3	287	2901	25	710	650	40	8110	2384
37	993	7	281	1064	1	366	1080	1	405	1069	1	377	1033	3	297	2948	21	739	573	34	8187	2466
36	1006	6	291	1071	1	376	1081	1	415	1072	1	388	1042	2	307	2991	18	769	494	28	8266	2548
35	1019	5	302	1077	1	387	1083	0	426	1076	1	399	1053	2	318	3029	16	799	421	24	8339	2631
34	1030	4	312	1079	1	398	1085	0	437	1081	0	410	1060	1	329	3060	13	830	364	20	8396	2715
33	1037	4	322	1083	1	409	1088	0	448	1085	0	421	1068	1	339	3085	11	860	313	17	8447	2799
32	1044	3	333	1086	1	420	1090	0	459	1087	0	431	1073	1	350	3106	9	891	272	14	8488	2884
31	1052	3	343	1086	0	430	1091	0	470	1089	0	442	1076	1	361	3123	8	922	242	11	8518	2969
30	1058	2	354	1086	0	441	1092	0	481	1091	0	453	1079	0	371	3137	6	954	216	9	8544	3054
29	1061	2	364	1087	0	452	1092	0	492	1092	0	464	1083	0	382	3159	5	985	185	7	8575	3140
28	1063	1	375	1089	0	463	1093	0	503	1093	0	475	1086	0	393	3183	3	1017	151	5	8609	3225
27	1067	1	385	1090	0	474	1094	0	514	1094	0	486	1089	0	404	3202	3	1049	123	4	8637	3312
26	1072	1	396	1090	0	485	1095	0	524	1095	0	497	1091	0	415	3221	2	1081	94	3	8666	3398
25	1076	1	407	1091	0	496	1095	0	535	1095	0	508	1093	0	426	3240	1	1113	69	2	8691	3485
24	1080	1	418	1092	0	507	1095	0	546	1095	0	519	1094	0	437	3252	1	1146	51	1	8709	3572
23	1082	0	428	1094	0	518	1095	0	557	1095	0	530	1095	0	448	3261	1	1178	37	1	8723	3659
22	1084	0	439	1095	0	529	1095	0	568	1095	0	541	1095	0	459	3268	0	1211	28	1	8732	3746
21	1086	0	450	1095	0	540	1095	0	579	1095	0	552	1095	0	470	3271	0	1244	23	0	8737	3834
20	1089	0	461	1095	0	551	1095	0	590	1095	0	563	1095	0	481	3275	0	1276	15	0	8745	3921
19	1092	0	472	1095	0	561	1095	0	601	1095	0	574	1095	0	491	3281	0	1309	7	0	8753	4009
18	1093	0	483	1095	0	572	1095	0	612	1095	0	585	1095	0	502	3283	0	1342	3	0	8757	4096
17	1094	0	494	1095	0	583	1095	0	623	1095	0	595	1095	0	513	3283	0	1375	3	0	8757	4184
16	1094	0	505	1095	0	594	1095	0	634	1095	0	606	1095	0	524	3283	0	1408	2	0	8758	4271
15	1095	0	516	1095	0	605	1095	0	645	1095	0	617	1095	0	535	3284	0	1441	0	0	8760	4359
14	1095	0	527	1095	0	616	1095	0	656	1095	0	628	1095	0	546	3285	0	1473	0	0	8760	4447

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

JACKSON, MISSISSIPPI
WBAN 3940
TABLE E:

TRY Data (1964)

Latitude 32.30 N
Longitude 90.10 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:	6268	5850	5444	4998	4502	3918	3180	2444	1383	489	29
Annual Wet Bulb Cooling deg-hrs:	109051.	90655.	73481.	57614.	43060.	30147.	19157.	10363.	4047.	868.	35.

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	78	77	77	75	73	70	66	61	52	35	21	.001		
.002	0	0	0	0	0	0	0	0	0	0	0	69	69	69	68	66	64	61	56	48	33	19	.002		
.003	0	0	1	1	1	1	1	1	1	1	1	61	61	61	61	60	58	55	51	44	30	18	.003		
.004	1	1	1	2	2	2	2	2	2	2	2	54	54	54	54	53	52	50	46	40	28	17	.004		
.005	1	1	2	3	3	4	4	4	4	4	4	47	47	47	47	47	46	44	42	36	25	15	.005		
.006	1	2	3	4	5	6	6	6	6	7	7	41	41	41	41	41	40	39	37	32	23	14	.006		
.007	1	2	4	5	7	8	9	9	9	9	9	35	35	35	35	35	35	34	32	29	20	12	.007		
.008	1	2	4	7	9	10	11	12	12	12	13	29	29	29	29	29	29	29	28	25	18	11	.008		
.009	2	3	5	8	10	13	14	15	16	16	16	24	24	24	24	24	24	24	24	21	15	9	.009		
.010	2	3	6	9	12	15	17	19	19	20	20	20	20	20	20	20	20	20	19	18	13	8	.010		
.011	2	4	7	11	14	18	20	22	23	24	25	15	15	15	15	15	15	15	15	14	11	6	.011		
.012	2	4	7	12	16	20	24	26	28	29	30	12	12	12	12	12	12	12	12	11	9	5	.012		
.013	2	4	8	13	18	23	27	30	32	34	35	8	8	8	8	8	8	8	8	8	7	4	.013		
.014	3	5	9	14	20	25	30	34	37	39	40	6	6	6	6	6	6	6	6	6	5	3	.014		
.015	3	5	10	16	22	28	33	37	41	44	46	3	3	3	3	3	3	3	3	3	3	2	.015		
.016	3	6	10	17	23	30	36	41	46	50	53	2	2	2	2	2	2	2	2	2	2	1	.016		
.017	3	6	11	18	25	33	39	45	51	56	59	1	1	1	1	1	1	1	1	1	1	0	.017		
.018	3	6	12	19	27	35	42	49	56	62	66	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	46	38	48	54	45	46	49	57	39	30	32	49	45
VERTICAL													
NORTH	100	100	100	99	92	87	91	97	100	100	100	100	96
WEST	60	55	64	71	65	68	71	74	58	46	45	58	63
SOUTH	41	39	58	75	80	87	86	81	56	35	31	43	58
EAST	58	48	63	69	63	61	65	69	55	48	49	64	61
% Possible Sun	48	57	59	63	61	69	62	62	57	66	53	47	59

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

JACKSON, MISSISSIPPI

WBAN 3940

TABLE H:

TRY Data (1964)

Latitude 32.30 N

Longitude 90.10 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	1854	1728	1425	1145	759	431	247	191	191	2065	1195	891	848	725	604	435	296	221	198	197	947	638	754
Feb	1785	1686	1466	1260	921	592	358	240	228	2210	1483	1024	1001	899	794	615	436	308	243	235	1193	869	1026
Mar	1503	1480	1408	1331	1094	808	552	361	290	2255	1860	1045	1030	978	919	782	633	509	423	388	1362	1226	1369
Apr	1089	1208	1290	1343	1247	1043	796	562	387	2146	2182	915	960	980	989	925	813	692	581	503	1349	1423	1708
May	798	983	1162	1297	1309	1187	983	747	540	1995	2367	831	936	1030	1100	1094	1007	877	732	613	1499	1756	1941
Jun	694	891	1107	1282	1345	1271	1083	856	661	1918	2443	752	878	1011	1120	1156	1102	974	823	690	1432	1777	2024
Jul	740	930	1127	1278	1320	1229	1034	808	614	1937	2395	770	877	976	1053	1065	1001	880	746	639	1380	1662	1909
Aug	957	1102	1221	1308	1259	1094	875	646	459	2043	2226	889	960	1007	1041	1003	905	785	663	564	1343	1484	1781
Sep	1323	1355	1344	1321	1144	897	650	447	339	2158	1946	1049	1087	1079	1058	934	768	607	478	404	1524	1442	1509
Oct	1657	1571	1407	1252	953	645	418	284	260	2175	1589	1262	1190	1062	943	730	521	376	296	281	1577	1197	1271
Nov	1809	1687	1406	1158	787	464	276	206	206	2078	1269	986	912	766	635	449	295	209	177	176	1109	722	902
Dec	1837	1715	1400	1104	715	390	226	182	182	1996	1111	778	716	592	480	344	239	189	174	173	808	538	709
Year	1335	1360	1313	1256	1072	839	626	462	364	2080	1841	932	949	925	895	795	669	554	462	406	1294	1229	1409

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

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

*** South exposure tilt 45 degrees.

**** Clineham, V., J. R. Owenby, Jr. and R. G. Baldwin. 1978. Input Data for Solar Systems. NCC, Asheville, NC.

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	1585	1451	1187	952	612	327	184	156	155	751	707	600	498	352	233	174	161	160		
Feb	1490	1401	1220	1053	753	462	266	190	185	848	830	747	663	504	345	237	194	191		
Mar	1171	1201	1160	1104	899	648	423	274	236	829	836	799	754	639	510	405	336	315		
Apr	769	931	1046	1109	1028	852	631	429	304	702	762	796	809	756	662	556	462	405		
May	539	715	919	1066	1080	979	789	581	402	621	719	824	900	897	824	706	581	481		
Jun	478	633	864	1050	1109	1048	877	672	487	571	665	804	917	952	907	792	657	535		
Jul	507	669	885	1049	1088	1011	855	633	455	584	672	779	860	872	818	712	596	502		
Aug	667	835	985	1079	1041	900	700	500	354	686	761	820	857	826	743	635	530	452		
Sep	1000	1086	1105	1095	944	727	509	341	275	811	876	886	874	768	624	484	376	328		
Oct	1358	1298	1166	1040	779	512	317	223	211	1037	980	877	779	595	416	293	236	229		
Nov	1541	1415	1175	963	637	358	204	168	167	833	760	635	523	363	232	162	144	144		
Dec	1576	1445	1166	919	572	296	168	148	148	656	594	487	394	277	190	150	141	141		
Year	1054	1088	1072	1040	879	678	493	360	282	743	763	754	736	650	543	443	369	324		

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

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

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KANSAS CITY, MISSOURI
WBAN 13988
TABLE A:

TRY Data (1968)

Latitude 39.10 N
Longitude 94.60 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*	
	1-3	4-6	7-9	Hour of Day		16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Jan														
60 to 64	3	3	0	0	3	5	3	4	21	58.0	742	25437	2	1
55 to 59	1	0	0	1	7	8	6	4	27	53.0	714	21793	30	77
50 to 54	2	1	0	4	12	7	0	0	26	46.8	693	18284	51	288
45 to 49	3	3	7	10	7	7	11	4	52	43.8	644	14922	100	646
40 to 44	8	8	6	13	7	6	6	12	66	39.6	600	11808	144	1252
35 to 39	11	11	14	9	11	15	11	6	88	34.9	525	8997	219	2161
30 to 34	10	8	5	10	8	6	11	13	71	29.6	431	6617	313	3501
25 to 29	12	14	13	8	5	6	6	9	73	25.8	373	4610	371	5214
20 to 24	5	8	10	9	9	11	13	6	71	21.1	289	2964	455	7288
15 to 19	14	9	12	12	15	7	9	18	96	16.1	209	1690	535	9734
10 to 14	10	12	9	8	1	9	10	5	64	11.0	127	870	617	12634
5 to 9	8	7	10	2	6	3	4	8	48	6.2	69	382	675	15866
0 to 4	3	6	2	5	2	3	0	1	22	1.5	31	143	713	19347
-5 to -1	1	0	3	2	0	0	3	3	12	-3.1	13	39	731	22963
-10 to -6	2	3	2	0	0	0	0	0	7	-6.6	0	0	744	26644
Feb														
60 to 64	0	0	0	0	0	0	0	1	1	58.0	672	20373	0	0
55 to 59	2	0	0	0	4	4	0	0	10	46.6	669	17018	3	5
50 to 54	1	2	0	3	10	12	5	0	33	42.8	647	13715	25	62
45 to 49	4	2	2	9	9	6	8	8	48	39.6	611	10560	61	267
40 to 44	3	2	7	11	13	9	4	2	51	35.7	568	7626	104	693
35 to 39	11	10	13	21	16	16	14	11	112	32.6	500	4944	172	1371
30 to 34	21	22	17	12	11	16	26	27	152	27.7	362	2783	310	2570
25 to 29	13	16	16	13	17	15	5	14	109	22.9	221	1370	451	4517
20 to 24	17	14	16	9	3	6	18	12	95	18.0	117	544	555	7051
15 to 19	6	8	3	4	1	0	4	9	35	14.2	44	178	628	10045
10 to 14	6	6	6	2	0	0	0	0	20	9.9	13	39	659	13266
5 to 9	0	2	4	0	0	0	0	0	6	6.0	2	1	670	16588
Mar														
80 to 84	0	0	0	0	2	2	0	0	4	66.8	744	26634	0	0
75 to 79	0	0	0	2	8	6	1	0	17	61.9	734	22929	10	15
70 to 74	0	0	0	4	6	12	5	0	27	59.0	715	19309	29	115
65 to 69	0	0	1	9	14	9	9	6	48	55.2	675	15820	69	346
60 to 64	9	4	6	10	8	10	9	9	65	52.8	624	12558	120	804
55 to 59	11	10	12	6	14	16	10	12	91	49.4	541	9619	203	1585
50 to 54	10	12	7	17	8	2	15	12	83	44.7	464	7119	280	2805
45 to 49	7	7	8	8	3	7	10	5	55	41.2	383	5015	361	4421
40 to 44	12	12	10	6	14	12	5	11	82	35.8	328	3233	416	6359
35 to 39	11	6	13	13	8	5	13	13	82	31.9	237	1836	507	8682
30 to 34	12	16	12	13	6	10	8	11	88	28.1	137	864	607	11430
25 to 29	10	13	16	2	2	2	8	10	63	23.6	73	336	671	14622
20 to 24	11	7	4	2	0	0	0	4	28	19.8	29	103	715	18109
15 to 19	0	4	1	1	0	0	0	0	6	16.2	7	25	737	21751
10 to 14	0	2	3	0	0	0	0	0	5	12.0	2	2	742	25444

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

KANSAS CITY, MISSOURI
WBAN 13988
TABLE A:

TRY Data (1968)

Latitude 39.10 N
Longitude 94.60 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 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	3	2	0	0	5	59.2	718	18400	2	2	
75 to 79	0	0	0	3	8	4	1	0	16	59.4	712	14822	8	24	
70 to 74	0	0	0	9	19	21	7	0	56	57.3	680	11318	40	120	
65 to 69	4	0	3	28	22	25	21	13	116	56.4	590	8091	130	493	
60 to 64	14	9	19	17	18	19	17	9	122	51.8	478	5415	242	1417	
55 to 59	18	21	19	8	10	11	25	25	137	49.9	349	3335	371	2937	
50 to 54	14	9	15	11	4	3	9	18	83	44.5	233	1915	487	5117	
45 to 49	18	19	18	8	2	2	3	10	80	41.9	146	957	574	7759	
40 to 44	11	15	7	2	1	3	4	12	55	36.7	78	400	642	10802	
35 to 39	8	12	7	4	3	0	2	1	37	32.5	35	119	685	14121	
30 to 34	2	2	1	0	0	0	1	2	8	29.4	8	27	712	17629	
25 to 29	1	3	1	0	0	0	0	0	5	26.2	2	3	718	21205	
May															
90 to 94	0	0	0	0	2	2	0	0	4	64.0	744	22138	0	0	
85 to 89	0	0	0	1	7	6	0	0	14	66.7	739	18433	5	15	
80 to 84	0	0	0	4	5	5	3	0	17	64.7	722	14782	22	84	
75 to 79	0	0	3	12	12	11	6	3	47	63.5	692	11238	52	260	
70 to 74	3	3	2	12	19	18	10	4	71	59.6	634	7911	110	653	
65 to 69	11	5	16	21	22	29	25	15	144	57.1	540	4946	204	1408	
60 to 64	8	10	17	25	16	14	28	25	143	53.5	391	2629	353	2811	
55 to 59	42	31	36	17	10	8	18	29	191	51.9	237	1027	507	4929	
50 to 54	14	24	15	1	0	0	3	13	70	46.8	77	322	667	7944	
45 to 49	13	12	4	0	0	0	0	4	33	43.4	25	68	719	11410	
40 to 44	2	8	0	0	0	0	0	0	10	39.6	3	4	741	15066	
Jun															
95 to 99	0	0	0	0	1	2	0	0	3	77.0	720	14599	0	0	
90 to 94	0	0	0	2	29	21	1	0	53	74.7	706	11015	14	16	
85 to 89	0	0	2	35	26	33	25	0	121	73.0	620	7681	100	282	
80 to 84	4	0	19	19	14	14	24	28	122	71.0	499	4887	221	1088	
75 to 79	32	25	30	17	8	10	15	19	156	68.6	363	2724	357	2525	
70 to 74	23	25	16	4	3	5	17	23	116	65.6	213	1289	507	4690	
65 to 69	15	24	12	10	9	4	5	13	92	62.4	103	470	617	7471	
60 to 64	10	7	7	3	0	1	3	5	36	58.9	39	149	681	10750	
55 to 59	6	7	4	0	0	0	0	2	19	53.4	12	22	708	14223	
50 to 54	0	2	0	0	0	0	0	0	2	50.0	2	1	718	17802	

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

KANSAS CITY, MISSOURI
WBAN 13988
TABLE A:

TRY Data (1968)

Latitude 39.10 N
Longitude 94.60 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															
95 to 99	0	0	0	0	3	0	0	0	3	75.3	744	13294	0	0	
90 to 94	0	0	0	10	28	31	5	0	74	74.5	719	9604	25	30	
85 to 89	0	0	4	31	31	34	24	5	129	73.1	620	6219	124	365	
80 to 84	12	4	18	29	24	22	38	35	182	71.7	483	3459	261	1325	
75 to 79	35	29	31	18	7	6	21	33	180	69.3	287	1533	457	3119	
70 to 74	30	33	25	5	0	0	4	14	111	66.3	122	535	622	5841	
65 to 69	10	15	13	0	0	0	1	6	45	61.8	44	161	700	9187	
60 to 64	4	9	2	0	0	0	0	0	15	57.8	9	35	735	12781	
55 to 59	2	3	0	0	0	0	0	0	5	54.6	4	5	740	16471	
Aug															
95 to 99	0	0	0	0	5	3	0	0	8	78.9	743	14853	1	1	
90 to 94	0	0	0	19	31	29	2	0	81	77.9	708	11184	36	52	
85 to 89	1	0	10	18	16	13	28	6	92	74.9	635	7861	109	449	
80 to 84	19	4	16	16	13	16	14	30	128	73.0	517	4981	227	1289	
75 to 79	23	32	22	11	8	9	20	18	143	71.1	372	2734	372	2762	
70 to 74	18	23	17	12	12	17	14	19	132	67.4	238	1204	506	4952	
65 to 69	26	20	18	13	8	4	10	12	111	62.7	125	330	619	7798	
60 to 64	6	14	10	4	0	2	5	8	49	60.3	7	4	737	11192	
Sep															
90 to 94	0	0	0	0	1	1	0	0	2	70.5	720	16830	0	0	
85 to 89	0	0	0	0	9	9	0	0	18	69.6	712	13239	8	9	
80 to 84	0	0	0	16	38	24	6	0	84	66.7	675	9742	45	112	
75 to 79	1	0	4	25	25	29	20	9	113	64.4	576	6608	144	578	
70 to 74	16	14	17	29	9	18	22	18	143	64.0	452	4023	268	1593	
65 to 69	20	12	20	9	6	4	23	25	119	60.9	303	2151	417	3321	
60 to 64	18	25	25	10	2	5	17	22	124	57.6	202	902	518	5672	
55 to 59	27	21	21	1	0	0	2	16	88	54.5	87	226	633	8596	
50 to 54	8	16	2	0	0	0	0	0	26	51.2	14	22	706	11992	
45 to 49	0	2	1	0	0	0	0	0	3	48.0	0	0	720	15570	

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

KANSAS CITY, MISSOURI
WBAN 13988
TABLE A:

TRY Data (1968)

Latitude 39.10 N
Longitude 94.60 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	72.1	744	20939	0	0	
80 to 84	0	0	0	6	12	7	2	0	27	67.6	728	17252	16	33	
75 to 79	0	0	0	11	11	9	7	5	43	66.1	692	13691	52	192	
70 to 74	11	10	11	8	16	18	12	11	97	63.5	635	10353	109	574	
65 to 69	12	8	8	14	17	15	15	12	101	59.1	520	7454	224	1395	
60 to 64	6	8	8	17	17	19	9	8	92	53.4	428	5059	316	2720	
55 to 59	9	7	10	18	2	6	20	14	86	49.4	343	3129	401	4510	
50 to 54	21	18	19	10	11	7	12	14	112	46.3	257	1633	487	6734	
45 to 49	12	12	19	7	3	8	9	17	87	43.5	129	667	615	9488	
40 to 44	13	18	13	2	0	0	7	8	61	39.7	61	191	683	12732	
35 to 39	9	11	5	0	0	0	0	4	29	34.7	17	20	727	16281	
30 to 34	0	1	0	0	0	0	0	0	1	32.0	0	0	744	19981	
Nov															
80 to 84	0	0	0	1	3	1	0	0	5	67.4	719	28788	1	1	
75 to 79	0	0	0	2	0	2	1	0	5	66.0	713	25209	7	22	
70 to 74	1	0	1	0	3	1	2	3	11	61.0	708	21653	12	66	
65 to 69	5	3	1	2	5	3	0	1	20	56.9	695	18148	25	161	
60 to 64	0	1	1	3	1	4	2	0	12	52.5	675	14740	45	353	
55 to 59	2	2	2	6	15	10	4	6	47	47.7	650	11406	70	619	
50 to 54	3	5	3	11	6	9	8	2	47	45.1	604	8271	116	1084	
45 to 49	4	4	10	14	16	14	12	8	82	43.0	550	5379	170	1792	
40 to 44	22	21	25	20	14	20	26	25	173	39.5	423	2892	297	2905	
35 to 39	29	25	20	19	25	17	16	21	172	34.0	265	1181	455	4794	
30 to 34	15	19	14	12	2	8	12	15	97	30.5	84	343	636	7556	
25 to 29	7	7	12	0	0	1	7	9	43	25.6	35	63	685	10876	
20 to 24	2	3	1	0	0	0	0	0	6	23.2	1	1	719	14414	
Dec															
60 to 64	3	3	3	3	2	0	0	3	17	56.4	738	23607	6	6	
55 to 59	0	0	0	0	3	3	3	0	9	52.2	724	19957	20	76	
50 to 54	0	0	0	2	4	4	0	0	10	46.6	716	16364	28	203	
45 to 49	0	0	0	3	16	11	4	0	34	41.0	699	12820	45	379	
40 to 44	3	1	3	13	13	15	12	11	71	37.1	652	9432	92	711	
35 to 39	16	16	13	20	14	12	12	10	113	34.5	560	6361	184	1360	
30 to 34	18	20	25	15	13	14	22	26	153	29.1	434	3860	310	2579	
25 to 29	24	17	13	12	11	20	16	14	127	24.9	291	2083	453	4522	
20 to 24	16	20	15	16	14	9	14	17	121	20.1	163	948	581	7107	
15 to 19	6	7	12	5	0	2	5	6	43	16.0	63	405	681	10284	
10 to 14	5	4	4	4	1	0	2	4	24	11.0	34	162	710	13761	
5 to 9	2	5	5	0	2	2	0	0	16	7.1	9	47	735	17366	
0 to 4	0	0	0	0	0	1	2	0	3	1.7	5	16	739	21055	
-5 to -1	0	0	0	0	0	0	1	2	3	-1.7	1	1	743	24760	

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

KANSAS CITY, MISSOURI
WBAN 13988
TABLE B:

TRY Data (1968)

Latitude 39.10 N
Longitude 94.60 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
95 to 99	0	0	0	0	9	5	0	0	14	0.0	0.0	0.0	0.0	77.4	78.2	0.0	0.0	77.7
90 to 94	0	0	0	31	91	84	8	0	214	0.0	0.0	0.0	76.9	75.6	75.1	76.3	0.0	75.6
85 to 89	1	0	16	85	93	99	77	11	382	75.0	0.0	75.3	73.9	71.7	72.0	74.3	75.8	73.1
80 to 84	35	8	53	91	114	93	87	93	574	73.4	73.0	73.2	70.2	68.1	68.0	71.6	72.7	70.5
75 to 79	91	86	90	101	87	86	92	87	720	71.0	71.3	70.0	66.0	63.9	64.0	66.5	69.4	67.8
70 to 74	102	108	89	83	87	110	93	92	764	66.8	67.8	66.6	62.5	59.7	60.1	63.2	64.8	64.0
65 to 69	103	87	92	106	103	93	109	103	796	61.9	62.4	61.0	58.3	56.1	55.9	59.2	60.6	59.4
60 to 64	81	93	98	92	67	79	93	94	697	56.9	57.8	57.0	54.2	51.2	51.2	53.6	56.0	54.9
55 to 59	120	102	104	57	65	66	88	108	710	52.6	52.8	52.6	49.1	48.0	48.7	49.6	51.2	51.0
50 to 54	73	89	61	59	55	44	52	59	492	47.2	48.1	46.4	44.4	44.4	43.6	44.1	45.3	45.7
45 to 49	61	61	69	59	56	55	57	56	474	42.6	43.5	43.1	42.4	41.5	41.1	41.8	42.5	42.3
40 to 44	74	85	71	67	62	65	64	81	569	39.4	39.7	39.4	37.8	35.5	36.1	38.0	38.1	38.1
35 to 39	95	91	85	86	77	65	68	66	633	34.8	34.5	34.0	32.5	32.7	32.8	33.0	34.4	33.6
30 to 34	78	88	74	62	40	54	80	94	570	29.3	29.6	29.5	28.6	27.5	27.6	28.7	29.0	28.9
25 to 29	67	70	71	35	35	44	42	56	420	25.0	25.2	25.2	23.7	22.7	23.5	24.1	24.3	24.4
20 to 24	51	52	46	36	26	26	45	39	321	19.6	20.3	20.3	18.8	19.5	19.5	19.8	19.5	19.7
15 to 19	26	28	28	22	16	9	18	33	180	15.5	16.2	16.7	14.6	15.3	14.9	15.6	15.8	15.7
10 to 14	21	24	22	14	2	9	12	9	113	11.4	10.9	11.2	10.7	9.0	10.4	10.5	10.3	10.9
5 to 9	10	14	19	2	8	5	4	8	70	6.2	7.1	6.6	4.5	5.9	6.2	5.5	6.0	6.4
0 to 4	3	6	2	5	2	4	2	1	25	0.3	1.8	1.5	1.8	3.0	1.5	1.0	0.0	1.5
-5 to -1	1	0	3	2	0	0	4	5	15	-3.0	0.0	-3.0	-3.0	0.0	0.0	-1.5	-3.2	-2.8
-10 to -6	2	3	2	0	0	0	0	0	7	-6.0	-6.7	-7.0	0.0	0.0	0.0	0.0	0.0	-6.6

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 Ave			Ave	Average				Day	4AM	10AM	4PM	10PM		Day
				Max	Min			4AM	10AM	4PM	10PM							
Jan	28.3	63	-7	37	19	26.6	90	84	73	83	84	0.0028	0.0029	0.0036	0.0035	0.0031	9.5	
Feb	32.2	60	7	42	24	27.5	67	57	44	52	57	0.0023	0.0022	0.0022	0.0021	0.0022	9.4	
Mar	46.7	81	11	58	37	39.9	70	60	41	52	58	0.0040	0.0044	0.0044	0.0043	0.0042	12.0	
Apr	56.9	84	26	68	46	48.3	70	56	42	49	56	0.0053	0.0061	0.0058	0.0057	0.0057	11.5	
May	62.7	91	41	72	53	54.3	75	58	47	56	61	0.0072	0.0078	0.0077	0.0075	0.0075	9.6	
Jun	77.2	96	52	86	68	68.0	78	62	51	60	65	0.0126	0.0136	0.0136	0.0132	0.0132	9.9	
Jul	79.6	96	55	89	70	69.9	78	62	50	58	64	0.0136	0.0144	0.0143	0.0140	0.0140	9.2	
Aug	77.5	98	62	86	70	70.1	82	68	59	71	71	0.0144	0.0147	0.0150	0.0152	0.0148	9.7	
Sep	69.1	90	49	80	59	61.2	83	64	48	64	67	0.0099	0.0106	0.0103	0.0103	0.0102	8.5	
Oct	59.4	87	34	70	49	52.4	80	64	47	62	65	0.0073	0.0077	0.0075	0.0076	0.0075	9.8	
Nov	42.5	83	22	50	36	38.7	83	73	63	74	75	0.0044	0.0044	0.0045	0.0044	0.0044	9.3	
Dec	30.8	64	-3	39	23	28.1	84	76	63	75	76	0.0028	0.0029	0.0030	0.0028	0.0028	10.8	
Year	55.4	98	-7	65	46	48.9	78	66	52	63	67	0.0073	0.0077	0.0077	0.0076	0.0075	9.9	

KANSAS CITY, MISSOURI
WBAN 13988
TABLE D:

TRY Data (1968)

Latitude 39.10 N
Longitude 94.60 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*	
99	0	525	0	0	449	0	0	399	0	0	408	0	0	462	0	0	1578	0	0	1578	0	0	1578	0	8760	3821	0	0	
98	0	514	0	0	438	0	0	388	0	0	397	0	0	451	0	0	1545	0	0	1545	0	0	1545	0	8759	3734	1	0	
97	0	503	0	0	427	0	0	378	0	1	386	0	0	440	0	0	1513	0	0	1513	0	0	1513	0	8758	3646	2	0	
96	0	492	0	0	416	0	2	367	0	2	375	0	0	429	0	0	1480	0	0	1480	0	0	1480	0	8755	3559	5	0	
95	0	481	0	0	405	0	6	356	0	4	364	0	0	418	0	0	1447	0	0	1447	0	0	1447	0	8750	3471	10	0	
94	0	470	0	0	394	0	14	345	0	10	353	0	0	407	0	0	1414	0	0	1414	0	0	1414	0	8735	3384	25	0	
93	0	459	0	1	383	0	32	334	0	22	343	0	0	396	0	0	1381	0	0	1381	0	0	1381	0	8704	3296	56	1	
92	0	448	0	6	372	0	56	324	1	38	332	1	0	385	0	0	1348	0	0	1348	0	0	1348	0	8659	3210	101	1	
91	0	437	0	15	361	0	76	313	1	58	322	1	1	374	0	0	1315	0	0	1315	0	0	1315	0	8609	3123	151	3	
90	0	427	0	26	351	0	92	303	2	78	311	2	4	363	0	0	1283	0	0	1283	0	0	1283	0	8558	3037	202	4	
89	0	416	0	38	340	1	109	293	3	95	301	3	11	352	0	0	1250	0	0	1250	0	0	1250	0	8505	2952	255	7	
88	0	405	0	55	329	1	128	283	4	111	291	4	19	342	0	0	1217	0	0	1217	0	0	1217	0	8446	2867	314	9	
87	1	394	0	74	319	2	145	274	6	130	282	5	34	331	0	0	1184	0	0	1184	0	0	1184	0	8374	2783	386	13	
86	5	383	0	91	309	3	160	264	7	155	272	6	51	320	1	3	1151	0	0	1151	0	0	1151	0	8293	2700	467	17	
85	12	372	0	107	299	4	180	255	9	178	263	8	71	310	2	8	1118	0	0	1118	0	0	1118	0	8201	2617	559	22	
84	18	361	0	120	289	5	207	246	11	195	254	10	95	300	2	18	1086	0	0	1086	0	0	1086	0	8105	2536	655	28	
83	23	350	0	134	280	6	230	237	13	210	245	12	115	290	3	34	1053	0	0	1053	0	0	1053	0	8013	2455	747	35	
82	33	340	1	154	270	7	251	229	16	227	236	14	132	280	5	56	1021	1	0	1021	1	0	1021	1	7905	2376	855	43	
81	49	329	1	174	261	9	273	221	18	247	227	16	148	271	6	81	989	2	0	989	2	0	989	2	7786	2297	974	52	
80	63	319	2	195	252	11	295	212	21	269	219	19	164	261	8	121	957	2	0	957	2	0	957	2	7651	2220	1109	63	
79	76	308	2	214	243	13	315	205	24	287	211	22	178	252	9	173	925	4	0	925	4	0	925	4	7515	2144	1245	75	
78	92	298	3	236	234	15	333	197	27	304	203	25	196	243	11	220	894	6	0	894	6	0	894	6	7378	2069	1382	88	
77	110	288	4	259	226	18	350	189	31	324	195	28	216	234	13	268	864	8	0	864	8	0	864	8	7231	1996	1529	102	
76	127	279	5	277	217	20	366	182	34	340	187	31	234	225	16	315	834	11	0	834	11	0	834	11	7099	1925	1661	118	
75	146	269	7	297	209	23	384	175	38	356	180	35	254	217	18	374	805	15	0	805	15	0	805	15	6947	1854	1813	135	
74	168	260	8	317	201	26	401	168	42	376	173	38	273	209	21	441	776	19	0	776	19	0	776	19	6782	1786	1978	155	
73	184	251	10	334	194	30	415	161	46	398	166	42	293	200	23	502	748	24	0	748	24	0	748	24	6633	1719	2127	175	
72	203	241	12	350	186	33	433	154	50	424	159	46	313	193	26	564	720	29	0	720	29	0	720	29	6471	1653	2289	197	
71	225	233	14	364	179	37	452	148	55	445	152	51	329	185	30	619	693	35	0	693	35	0	693	35	6323	1589	2437	221	
70	241	224	17	380	172	40	471	141	59	464	146	55	346	177	33	679	667	41	0	667	41	0	667	41	6177	1527	2583	246	
69	259	216	19	402	164	44	490	135	64	487	140	60	370	170	37	739	641	48	0	641	48	0	641	48	6011	1466	2749	272	
68	279	207	22	423	158	48	511	129	69	511	134	65	398	163	40	794	616	56	0	616	56	0	616	56	5842	1407	2918	301	
67	295	199	25	445	151	53	530	124	74	531	128	70	420	156	45	858	591	64	0	591	64	0	591	64	5678	1349	3082	331	
66	312	191	28	466	145	57	553	118	80	545	122	76	439	149	49	921	567	73	0	567	73	0	567	73	5523	1293	3237	362	
65	331	184	31	486	138	62	575	113	86	561	117	81	457	143	53	978	544	83	0	544	83	0	544	83	5370	1239	3390	396	
64	352	176	34	509	133	67	590	108	91	578	112	87	474	137	58	1032	521	93	0	521	93	0	521	93	5223	1186	3537	430	
63	373	169	38	531	127	72	605	103	97	595	107	93	493	130	63	1084	499	103	0	499	103	0	499	103	5078	1134	3682	466	
62	390	162	42	550	121	78	620	98	103	609	102	99	513	124	68	1134	477	114	0	477	114	0	477	114	4942	1084	3818	504	
61	409	155	46	567	116	83	633	93	110	622	97	105	533	119	73	1183	456	126	0	456	126	0	456	126	4811	1035	3949	543	
60	428	148	50	582	111	89	645	89	116	639	92	111	550	113	79	1242	435	138	0	435	138	0	435	138	4671	988	4089	583	
59	447	141	54	594	106	95	657	84	123	655	88	118	566	108	84	1298	415	151	0	415	151	0	415	151	4540	942	4220	624	
58	467	135	59	606	101	101	672	80	129	668	83	124	587	103	90	1353	396	164	0	396	164	0	396	164	4406	897	4354	667	
57	487	129	64	617	96	107	685	76	136	683	79	131	608	98	96	1424	377	178	0	377	178	0	377	178	4255	854	4505	711	
56	508	123	69	628	91	113	695	72	143	698	75	138	625	93	102	1502	358	193	0	358	193	0	358	193	4102	812	4658	757	
55	532	117	74	640	86	120	708	68	150	709	71	145	641	88	108	1572	341	208	0	341	208	0	341	208	3956	772	4804	805	
54	548	112	79	653	82	126	723	64	157	719	67	152	652	84	115	1629	324	224	0	324	224	0	324	224	3834	733	4926	853	

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

KANSAS CITY, MISSOURI
WBAN 13988
TABLE D:

TRY Data (1968)

Latitude 39.10 N
Longitude 94.60 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*	
53	560	106	85	662	78	133	733	60	164	726	64	159	663	79	121	1672	308	241	3743	695	5017	903	
52	570	101	90	670	73	139	742	57	172	733	60	167	673	75	128	1714	292	257	3655	658	5105	954	
51	581	96	96	683	69	146	751	53	179	743	56	174	684	71	135	1758	276	275	3558	622	5202	1005	
50	595	91	102	697	65	153	763	50	187	753	53	181	694	67	142	1801	261	293	3455	587	5305	1058	
49	609	86	108	711	61	160	776	47	195	763	50	189	706	63	149	1846	247	311	3347	553	5413	1111	
48	625	81	114	723	57	167	789	43	202	775	46	197	717	59	156	1887	232	330	3242	520	5518	1166	
47	641	76	121	737	54	174	803	40	210	788	43	205	727	55	163	1929	219	349	3134	488	5626	1222	
46	652	72	127	748	50	182	813	38	218	797	40	213	737	52	170	1962	205	368	3050	457	5710	1278	
45	664	67	134	758	47	189	822	35	227	807	37	221	748	48	178	1989	192	388	2970	427	5790	1336	
44	680	63	140	769	44	197	832	32	235	817	34	229	762	45	185	2024	179	408	2875	398	5885	1394	
43	694	59	147	779	40	205	842	30	243	826	32	237	776	42	193	2070	167	428	2770	369	5990	1454	
42	706	55	154	793	37	213	854	27	252	838	29	245	791	39	201	2114	155	449	2663	342	6097	1514	
41	720	51	161	809	34	221	866	25	260	850	27	254	803	36	209	2158	144	471	2552	316	6208	1576	
40	735	48	169	824	32	229	881	22	269	868	24	262	814	33	217	2214	133	492	2422	291	6338	1638	
39	747	44	176	836	29	237	895	20	278	885	22	271	826	30	225	2271	122	515	2299	268	6461	1702	
38	757	41	184	847	26	246	907	18	287	896	20	280	838	27	234	2321	112	538	2192	245	6568	1767	
37	771	37	191	864	24	254	921	17	296	908	18	289	850	25	242	2372	103	561	2072	224	6688	1834	
36	791	34	199	885	22	263	938	15	305	924	16	298	867	22	251	2427	94	585	1926	204	6834	1901	
35	816	31	207	906	20	272	957	14	315	938	15	307	882	20	259	2475	86	610	1784	185	6976	1970	
34	835	29	215	922	18	281	971	12	325	952	13	317	901	18	268	2521	78	635	1656	168	7104	2041	
33	849	26	224	937	16	290	979	11	334	966	12	326	923	16	277	2581	71	660	1523	152	7237	2112	
32	863	24	232	954	15	300	987	10	344	975	11	336	940	15	287	2644	64	686	1395	138	7365	2185	
31	878	22	241	963	13	309	998	9	354	984	9	346	956	13	296	2692	58	713	1287	124	7473	2260	
30	894	19	250	972	12	319	1005	8	364	993	8	356	965	12	306	2734	52	740	1195	112	7565	2335	
29	909	17	259	981	11	329	1007	7	374	1000	7	366	971	11	315	2775	47	768	1115	100	7645	2411	
28	925	16	268	988	10	339	1012	6	384	1006	6	376	978	10	325	2813	42	796	1037	90	7723	2488	
27	943	14	277	995	9	348	1021	5	394	1018	6	386	984	8	335	2852	37	824	946	80	7814	2565	
26	957	13	287	1001	8	358	1031	5	405	1031	5	396	992	7	345	2892	33	853	854	71	7906	2644	
25	968	11	297	1009	7	368	1038	4	415	1039	4	407	1004	6	355	2931	29	882	770	63	7990	2724	
24	979	10	306	1016	6	379	1043	4	425	1044	4	417	1016	5	365	2961	26	911	700	55	8060	2804	
23	989	9	316	1021	5	389	1049	3	436	1049	3	427	1028	5	375	2988	23	941	634	49	8126	2885	
22	997	8	326	1027	5	399	1055	3	446	1056	3	438	1037	4	386	3017	20	971	569	43	8191	2966	
21	1005	7	336	1032	4	409	1059	2	457	1064	3	449	1044	4	396	3043	18	1002	512	37	8248	3049	
20	1013	6	346	1042	3	420	1064	2	468	1067	2	459	1051	3	406	3073	15	1032	447	32	8313	3131	
19	1025	5	356	1051	3	430	1068	2	478	1069	2	470	1057	3	417	3101	13	1063	388	28	8372	3215	
18	1033	5	367	1054	3	441	1071	1	489	1071	2	481	1063	2	428	3123	12	1094	344	25	8416	3299	
17	1039	4	377	1059	2	451	1074	1	500	1073	2	491	1069	2	438	3141	10	1125	304	21	8456	3383	
16	1042	4	387	1065	2	462	1078	1	510	1074	1	502	1072	2	449	3155	9	1157	272	19	8488	3468	
15	1045	3	398	1069	2	473	1082	1	521	1075	1	513	1072	2	460	3170	7	1189	245	16	8515	3553	
14	1051	3	408	1073	1	483	1083	1	532	1078	1	524	1074	1	470	3185	6	1220	215	14	8545	3638	
13	1058	2	419	1075	1	494	1083	1	543	1080	1	534	1076	1	481	3198	5	1252	188	12	8572	3724	
12	1061	2	430	1078	1	505	1083	1	554	1082	1	545	1079	1	492	3208	5	1284	167	10	8593	3810	
11	1063	2	440	1082	1	516	1083	0	565	1083	1	556	1081	1	503	3217	4	1316	148	8	8612	3896	
10	1067	1	451	1085	1	526	1084	0	575	1085	0	567	1083	1	514	3227	3	1349	127	7	8633	3982	
9	1071	1	462	1086	1	537	1085	0	586	1087	0	578	1085	1	524	3236	3	1381	109	6	8651	4068	
8	1076	1	472	1086	1	548	1088	0	597	1088	0	589	1086	1	535	3244	2	1413	90	5	8670	4155	

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 per l are calculated by subtracting the Hrs Above from X times 365

KANSAS CITY, MISSOURI
WBAN 13988
TABLE D:

TRY Data (1968)

Latitude 39.10 N
Longitude 94.60 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	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg			
(F)	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Below	Hrs	Below	Hrs	Above	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*	Base	100s*	Base	100s*			
7	1082	1	483	1086	0	559	1091	0	608	1089	0	600	1086	0	546	3250	2	1446	74	4	8686	4242							
6	1086	1	494	1086	0	570	1091	0	619	1090	0	610	1087	0	557	3255	2	1478	63	3	8697	4329							
5	1087	1	505	1087	0	581	1092	0	630	1091	0	621	1089	0	568	3261	1	1511	52	3	8708	4416							
4	1088	0	516	1088	0	592	1094	0	641	1091	0	632	1089	0	579	3265	1	1544	43	2	8717	4503							
3	1089	0	527	1090	0	603	1095	0	652	1092	0	643	1089	0	590	3266	1	1576	38	2	8722	4590							
2	1089	0	537	1092	0	613	1095	0	663	1093	0	654	1089	0	601	3268	1	1609	33	1	8727	4677							
1	1089	0	548	1093	0	624	1095	0	674	1094	0	665	1090	0	611	3271	1	1642	28	1	8732	4764							
0	1089	0	559	1093	0	635	1095	0	685	1094	0	676	1090	0	622	3273	1	1674	24	1	8736	4852							
-1	1091	0	570	1093	0	646	1095	0	696	1095	0	687	1092	0	633	3274	0	1707	19	1	8741	4939							
-2	1092	0	581	1094	0	657	1095	0	707	1095	0	698	1094	0	644	3275	0	1740	15	0	8745	5027							
-3	1092	0	592	1094	0	668	1095	0	717	1095	0	709	1095	0	655	3276	0	1773	12	0	8748	5114							
-4	1092	0	603	1095	0	679	1095	0	728	1095	0	720	1095	0	666	3277	0	1805	10	0	8750	5202							
-5	1092	0	614	1095	0	690	1095	0	739	1095	0	731	1095	0	677	3279	0	1838	8	0	8752	5289							
-6	1093	0	625	1095	0	701	1095	0	750	1095	0	742	1095	0	688	3281	0	1871	5	0	8755	5377							
-7	1094	0	636	1095	0	712	1095	0	761	1095	0	753	1095	0	699	3284	0	1904	2	0	8758	5464							
-8	1095	0	647	1095	0	723	1095	0	772	1095	0	764	1095	0	710	3285	0	1937	0	0	8760	5552							

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

KANSAS CITY, MISSOURI
WBAN 13988
TABLE E:

TRY Date (1968)

Latitude 39.10 N
Longitude 94.60 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:	4549	4162	3655	3232	2702	2124	1628	1158	593	156	6
Annual Wet Bulb Cooling deg-hrs:	67323.	54015.	42052.	31491.	22271.	14794.	8937.	4523.	1550.	277.	6.

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	53	52	51	49	47	45	41	37	30	22	14	.001
.002	1	1	1	1	1	1	1	1	1	1	1	45	45	44	43	42	41	37	33	27	20	13	.002
.003	2	3	3	3	3	3	3	3	3	3	3	39	39	38	38	37	36	33	30	25	18	12	.003
.004	3	5	5	6	6	6	6	6	6	6	6	33	33	33	32	32	31	29	27	22	17	11	.004
.005	5	6	8	8	9	9	10	10	10	10	10	28	28	28	28	27	27	26	24	20	15	10	.005
.006	6	8	10	11	12	13	13	14	14	14	14	23	23	23	23	23	23	22	20	18	13	9	.006
.007	7	10	12	14	16	17	18	18	19	19	19	19	19	19	19	19	19	18	17	15	12	8	.007
.008	8	11	15	17	19	21	22	23	23	24	24	15	15	15	15	15	15	15	14	13	10	7	.008
.009	9	13	17	20	22	24	26	28	29	29	29	12	12	12	12	12	12	12	11	8	6	5	.009
.010	10	15	19	23	26	28	31	33	34	35	35	9	9	9	9	9	9	9	9	7	5	4	.010
.011	11	17	22	26	29	32	36	38	40	41	42	7	7	7	7	7	7	7	7	7	5	4	.011
.012	13	18	24	29	33	36	40	43	46	47	48	5	5	5	5	5	5	5	5	4	3	3	.012
.013	14	20	26	32	36	40	45	49	52	54	55	4	4	4	4	4	4	4	4	4	3	2	.013
.014	15	22	29	35	39	44	49	54	58	61	62	2	2	2	2	2	2	2	2	2	2	1	.014
.015	16	23	31	38	43	48	54	59	64	67	69	1	1	1	1	1	1	1	1	1	1	1	.015
.016	17	25	33	41	46	52	59	65	70	74	77	1	1	1	1	1	1	1	1	1	1	0	.016
.017	18	27	36	43	50	56	63	70	76	81	84	0	0	0	0	0	0	0	0	0	0	0	.017
.018	20	29	38	46	53	59	68	75	82	88	92	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	47	41	39	45	48	45	51	47	35	33	49	48	44
VERTICAL													
NORTH	100	100	100	98	93	89	92	96	100	100	100	100	96
WEST	53	52	51	60	68	65	66	60	53	47	56	56	59
SOUTH	36	36	44	62	75	79	80	68	43	33	40	36	53
EAST	57	57	54	62	60	63	69	64	50	47	63	55	60
% Possible Sun	53	56	58	60	63	68	76	73	68	67	57	50	0

FOOTNOTES: * Corrected For Cloud Cover.

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

KANSAS CITY, MISSOURI
WBAN 13988
TABLE H:

TRY Data (1968)

Latitude 39.10 N
Longitude 94.60 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	1878	1747	1403	1086	658	344	187	156	156	1942	802	740	604	484	326	214	160	149	149	801	648
Feb	1912	1788	1503	1242	839	502	292	204	199	2184	927	863	728	603	426	294	220	190	188	1011	895
Mar	1738	1682	1541	1397	1090	766	504	326	270	2362	1189	1141	1042	947	763	580	442	352	323	1474	1203
Apr	1353	1434	1462	1463	1294	1037	768	532	373	2342	1070	1092	1085	1067	957	809	667	547	465	1533	1575
May	1049	1206	1341	1448	1392	1218	977	725	529	2245	934	1039	1110	1162	1115	998	850	699	581	1491	1873
Jun	926	1102	1283	1437	1437	1313	1086	835	636	2182	913	1002	1087	1160	1141	1055	916	772	665	1585	2080
Jul	976	1142	1301	1431	1404	1265	1033	786	591	2189	943	1011	1074	1125	1092	1004	875	747	659	1533	2102
Aug	1205	1319	1391	1435	1316	1105	856	619	446	2249	981	1025	1047	1054	974	849	715	589	503	1476	1862
Sep	1554	1542	1466	1379	1135	847	592	403	317	2284	1184	1184	1128	1061	888	694	528	410	356	1602	1452
Oct	1818	1714	1483	1267	917	585	360	247	232	2194	1104	1047	916	789	590	407	286	227	218	1280	1092
Nov	1861	1731	1412	1107	707	379	219	172	172	1982	741	685	567	454	318	216	169	155	154	763	737
Dec	1816	1687	1343	1016	598	293	165	145	145	1835	765	719	592	469	312	195	146	137	137	754	562
Year	1505	1506	1410	1309	1067	806	588	430	339	2165	963	963	916	866	744	611	499	416	367	1276	1340

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
** Derived according to DOE-2.1 LOADS Algorithms and TRY cloud cover data.
*** South exposure tilt 45 degrees.
**** Cinquemani, V., J. R. Owenby, Jr. and R. G. Baldwin, 1978. Input Data for Solar Systems. NCC, Asheville, NC.

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	1620	1483	1178	899	530	255	141	127	127		681	619	502	398	264	166	127	121	121	
Feb	1623	1501	1256	1032	685	387	215	164	161		781	718	602	494	344	232	173	154	153	
Mar	1400	1386	1278	1165	900	614	384	248	219		963	935	859	784	627	467	347	279	262	
Apr	1010	1135	1195	1212	1071	849	608	407	294		831	873	884	876	786	661	537	434	373	
May	737	907	1077	1190	1152	1002	782	563	396		712	814	899	954	918	818	685	555	458	
Jun	637	804	1017	1176	1189	1080	876	656	471		687	772	871	947	937	862	740	615	520	
Jul	680	846	1038	1174	1163	1039	832	616	442		720	790	864	918	895	819	707	599	519	
Aug	881	1025	1130	1186	1092	906	682	479	345		754	814	852	866	802	695	576	469	401	
Sep	1225	1260	1213	1149	937	684	461	308	257		943	969	932	879	731	561	418	323	289	
Oct	1520	1430	1237	1058	747	458	271	194	188		920	871	760	655	481	322	222	181	177	
Nov	1598	1464	1180	921	566	289	163	140	140		627	571	467	372	255	171	134	126	126	
Dec	1571	1437	1126	838	475	216	125	118	118		651	605	492	386	251	152	115	111	111	
Year	1206	1222	1160	1083	876	649	463	336	264		773	780	749	712	609	495	400	332	293	

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

LAKE CHARLES, LOUISIANA

WBAN 3937

TABLE A:

TRY Data (1966)

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*	
	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	1	3	0	0	0	4	70.3	744	22539	0	0	
70 to 74	3	3	1	3	8	4	0	1	23	65.3	737	18836	7	17	
65 to 69	3	3	5	5	6	4	3	3	32	62.7	705	15233	39	134	
60 to 64	0	2	3	8	10	10	3	2	38	55.4	672	11790	72	411	
55 to 59	4	1	2	13	11	15	10	6	62	53.9	626	8538	118	879	
50 to 54	15	9	11	14	16	20	24	22	131	49.2	537	5597	207	1658	
45 to 49	17	16	17	13	7	4	13	14	101	44.5	411	3245	333	3026	
40 to 44	20	26	26	20	24	27	16	21	180	40.2	293	1431	451	4932	
35 to 39	25	25	18	10	3	6	18	18	123	35.5	117	443	627	7664	
30 to 34	2	3	6	4	5	3	6	4	33	29.6	30	131	714	11072	
25 to 29	3	2	2	2	0	0	0	2	11	25.1	10	34	734	14695	
20 to 24	1	3	2	0	0	0	0	0	6	21.2	2	1	742	18382	
Feb															
70 to 74	0	0	0	3	8	2	0	0	13	64.3	670	13776	2	1	
65 to 69	6	2	3	10	19	18	6	6	70	60.0	634	10481	38	66	
60 to 64	8	3	3	13	14	13	6	6	66	56.2	569	7491	103	436	
55 to 59	6	11	15	21	22	29	12	10	126	52.4	488	4855	184	1160	
50 to 54	11	14	18	17	12	11	27	13	123	48.2	345	2775	327	2440	
45 to 49	29	20	15	10	8	9	15	28	134	44.1	221	1352	451	4377	
40 to 44	6	15	14	7	1	2	15	7	67	39.3	100	586	572	6971	
35 to 39	10	6	8	3	0	0	3	12	42	35.1	50	193	622	9938	
30 to 34	8	13	8	0	0	0	0	2	31	31.0	17	17	655	13122	
Mar															
80 to 84	0	0	0	1	3	0	0	0	4	66.0	743	17138	1	1	
75 to 79	0	0	0	7	21	9	0	0	37	65.5	734	13436	10	19	
70 to 74	0	0	2	21	13	18	3	1	58	64.6	681	9895	63	198	
65 to 69	12	9	12	20	27	30	13	11	134	61.9	602	6653	142	676	
60 to 64	16	13	20	15	16	17	38	22	157	57.0	439	4045	305	1788	
55 to 59	22	24	21	16	11	17	11	23	145	52.0	290	2233	454	3696	
50 to 54	14	15	14	12	2	2	16	15	90	47.8	170	1107	574	6290	
45 to 49	13	9	13	1	0	0	10	11	57	41.3	95	472	649	9375	
40 to 44	11	14	7	0	0	0	2	10	44	37.9	41	141	703	12764	
35 to 39	5	5	2	0	0	0	0	0	12	34.3	11	29	733	16372	
30 to 34	0	4	2	0	0	0	0	0	6	30.3	0	0	744	20063	

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

LAKE CHARLES, LOUISIANA
WBAN 3937
TABLE A:

TRY Data (1966)

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*	
	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	17	29	9	0	0	55	73.3	711	9832	9	9
75 to 79	0	0	15	27	36	37	10	2	127	69.6	638	6451	82	228
70 to 74	30	30	22	27	13	27	33	34	216	67.5	430	3696	290	1073
65 to 69	19	15	22	10	9	14	19	17	125	62.5	261	2015	459	2992
60 to 64	13	11	14	7	0	3	17	13	78	57.9	170	967	550	5544
55 to 59	20	15	13	2	3	0	9	21	83	54.0	77	327	643	8504
50 to 54	2	13	4	0	0	0	2	2	23	48.6	27	94	693	11871
45 to 49	6	6	0	0	0	0	0	1	13	43.2	8	13	712	15390
May														
90 to 94	0	0	0	0	1	0	0	0	1	76.0	744	13183	0	0
85 to 89	0	0	0	13	30	14	0	0	57	74.6	732	9475	12	12
80 to 84	0	0	13	36	32	39	4	0	124	73.4	638	6009	106	266
75 to 79	19	16	30	24	16	27	47	27	206	72.3	496	3152	248	1129
70 to 74	37	34	26	8	11	5	32	37	190	68.8	289	1203	455	2900
65 to 69	31	34	19	12	3	7	7	26	139	64.6	103	246	641	5663
60 to 64	6	6	4	0	0	1	3	3	23	58.7	19	39	725	9176
55 to 59	0	3	1	0	0	0	0	0	4	53.5	0	0	744	12857
Jun														
90 to 94	0	0	0	4	29	16	0	0	49	75.1	714	9905	6	4
85 to 89	0	0	2	57	44	32	4	0	139	75.1	623	6512	97	211
80 to 84	0	0	31	21	11	27	21	2	113	73.0	484	3766	236	1065
75 to 79	31	14	40	6	6	15	47	55	214	72.4	360	1624	360	2523
70 to 74	47	53	12	2	0	0	15	26	155	70.1	105	439	615	4938
65 to 69	4	14	3	0	0	0	3	4	28	64.9	30	140	690	8239
60 to 64	8	6	2	0	0	0	0	3	19	58.6	13	28	707	11727
55 to 59	0	3	0	0	0	0	0	0	3	56.7	0	0	720	15299

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

LAKE CHARLES, LOUISIANA

WBAN 3937

TABLE A:

TRY Data (1966)

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*	
	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	6	0	0	0	6	79.0	744	11139	0	0	
90 to 94	0	0	0	34	46	34	1	0	115	79.2	698	7477	46	58	
85 to 89	0	0	34	46	18	32	11	0	141	78.7	553	4316	191	617	
80 to 84	9	5	43	5	14	24	53	30	183	76.6	426	1847	318	1868	
75 to 79	80	83	15	6	9	3	28	59	283	74.6	164	257	580	3998	
70 to 74	4	5	1	2	0	0	0	4	16	71.1	6	3	738	7464	
Aug															
90 to 94	0	0	0	20	40	11	0	0	71	78.6	743	8943	1	1	
85 to 89	0	0	13	43	23	46	1	0	126	77.6	619	5520	125	298	
80 to 84	4	2	28	17	16	26	38	15	146	76.0	504	2721	240	1219	
75 to 79	73	61	40	11	14	10	50	68	327	74.3	266	663	478	2881	
70 to 74	11	22	7	1	0	0	4	9	54	69.3	40	112	704	6050	
65 to 69	5	8	5	1	0	0	0	1	20	64.8	2	1	742	9659	
Sep															
90 to 94	0	0	0	4	16	0	0	0	20	78.4	719	11071	1	1	
85 to 89	0	0	5	34	50	29	0	0	118	76.0	664	7570	56	100	
80 to 84	0	0	13	34	20	36	12	0	115	74.5	532	4588	188	718	
75 to 79	28	22	35	14	1	21	42	38	201	73.2	413	2211	307	1941	
70 to 74	32	40	24	4	3	4	29	33	169	70.0	179	728	541	4058	
65 to 69	22	17	10	0	0	0	7	13	69	65.3	58	176	662	7106	
60 to 64	8	11	3	0	0	0	0	6	28	60.7	11	13	709	10543	

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

LAKE CHARLES, LOUISIANA
WBAN 3937
TABLE A:

TRY Data (1966)

Latitude 30.10 N
Longitude 93.20 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*	
	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	10	18	6	0	0	34	77.9	742	15302	2	1	
80 to 84	0	0	3	16	18	15	0	0	52	72.8	693	11720	51	139	
75 to 79	9	6	11	18	27	23	17	11	122	68.5	623	8410	121	549	
70 to 74	13	14	12	19	18	23	16	17	132	65.7	481	5644	263	1503	
65 to 69	12	6	9	20	9	12	10	13	91	61.2	357	3556	387	3135	
60 to 64	14	20	26	6	0	9	23	10	108	57.6	273	1968	471	5267	
55 to 59	17	11	17	4	3	5	20	18	95	54.3	162	881	582	7900	
50 to 54	15	19	8	0	0	0	7	19	68	50.0	83	277	661	11016	
45 to 49	13	15	7	0	0	0	0	5	40	46.5	21	24	723	14483	
40 to 44	0	2	0	0	0	0	0	0	2	43.0	0	0	744	18179	
Nov															
80 to 84	0	0	1	4	16	0	0	0	21	70.4	720	14420	0	0	
75 to 79	2	0	1	24	28	19	3	3	80	69.0	673	10911	47	91	
70 to 74	4	7	4	17	19	27	2	2	82	65.3	590	7760	130	540	
65 to 69	10	7	22	25	13	20	33	19	149	63.3	474	5047	246	1427	
60 to 64	31	34	29	8	5	9	21	28	165	59.4	314	3041	406	3021	
55 to 59	18	14	11	4	3	4	12	16	82	53.6	185	1839	535	5419	
50 to 54	7	9	8	3	3	3	2	4	39	47.2	126	1083	594	8263	
45 to 49	5	1	3	4	3	7	6	6	35	43.3	91	546	629	11326	
40 to 44	8	10	6	1	0	1	8	9	43	39.5	40	198	680	14578	
35 to 39	2	5	4	0	0	0	3	0	14	34.1	16	63	704	18043	
30 to 34	3	3	1	0	0	0	0	3	10	30.7	6	8	714	21588	
Dec															
80 to 84	0	0	0	1	3	0	0	0	4	73.0	744	21628	0	0	
75 to 79	0	0	0	9	9	5	0	0	23	71.0	728	17933	16	25	
70 to 74	1	0	2	9	20	11	9	4	56	66.5	699	14348	45	160	
65 to 69	7	6	7	8	11	17	3	6	65	63.9	621	11009	123	541	
60 to 64	11	9	11	12	6	12	17	13	91	59.9	565	8021	179	1273	
55 to 59	19	16	10	9	10	10	18	21	113	54.9	465	5457	279	2429	
50 to 54	10	16	14	12	6	8	10	8	84	50.4	352	3431	392	4123	
45 to 49	16	14	21	11	15	17	10	11	115	44.2	266	1870	478	6282	
40 to 44	8	10	7	15	13	10	13	10	86	38.8	155	851	589	8983	
35 to 39	8	13	14	7	0	3	11	12	68	34.0	86	265	658	12117	
30 to 34	13	8	6	0	0	0	2	8	37	30.8	20	25	724	15597	
25 to 29	0	1	1	0	0	0	0	0	2	28.0	0	0	744	19292	

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

LAKE CHARLES, LOUISIANA
WBAN 3937
TABLE B:

TRY Data (1966)

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	6	0	0	0	6	0.0	0.0	0.0	0.0	79.0	0.0	0.0	0.0	79.0
90 to 94	0	0	0	62	132	61	1	0	256	0.0	0.0	0.0	79.2	78.0	77.5	79.0	0.0	78.2
85 to 89	0	0	54	203	183	159	16	0	615	0.0	0.0	78.9	77.0	75.8	76.5	77.8	0.0	76.7
80 to 84	13	7	132	152	162	176	128	47	817	76.9	76.7	76.3	73.4	72.6	74.1	76.0	76.7	74.5
75 to 79	242	202	187	147	170	169	244	263	1624	74.4	74.3	73.1	69.8	67.3	69.8	73.3	74.1	72.4
70 to 74	182	208	113	116	113	121	143	168	1164	70.2	70.3	69.2	63.8	63.0	64.5	68.6	69.7	67.9
65 to 69	131	121	117	111	97	122	104	119	922	65.1	65.2	64.2	60.2	58.2	60.7	64.3	64.8	63.0
60 to 64	115	115	115	69	51	74	128	106	773	60.1	60.3	59.0	54.5	51.4	53.8	59.0	60.1	58.1
55 to 59	106	98	90	69	63	80	92	115	713	54.9	55.5	53.9	51.2	50.1	50.5	53.9	54.9	53.4
50 to 54	74	95	77	58	39	44	88	83	558	50.5	50.2	49.2	46.6	46.6	46.9	48.7	49.3	48.9
45 to 49	99	81	76	39	33	37	54	76	495	44.6	45.2	44.6	42.7	41.6	41.7	43.6	44.3	44.0
40 to 44	53	77	60	43	38	40	54	57	422	39.6	39.9	39.5	38.8	39.3	38.9	39.7	39.6	39.5
35 to 39	50	54	46	20	3	9	35	42	259	35.2	35.2	35.0	34.5	34.7	33.3	34.7	34.6	34.9
30 to 34	26	31	23	4	5	3	8	17	117	31.2	30.3	30.0	29.3	29.0	29.7	30.0	31.4	30.5
25 to 29	3	3	3	2	0	0	0	2	13	24.7	28.0	25.7	23.0	0.0	0.0	0.0	25.5	25.5
20 to 24	1	3	2	0	0	0	0	0	6	22.0	21.3	20.5	0.0	0.0	0.0	0.0	0.0	21.2

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 Max	Ave Min		4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	47.2	77	22	55	41	44.6	88	80	72	86	83	0.0057	0.0059	0.0061	0.0061	0.0059	10.1
Feb	52.0	73	30	61	44	48.0	87	74	59	81	77	0.0062	0.0065	0.0065	0.0068	0.0065	9.6
Mar	59.5	83	33	70	50	53.9	82	62	54	76	71	0.0076	0.0079	0.0082	0.0083	0.0080	9.3
Apr	68.9	84	45	78	61	63.8	88	68	65	82	77	0.0114	0.0119	0.0125	0.0123	0.0119	11.6
May	74.8	90	58	82	68	69.8	90	73	68	84	79	0.0141	0.0145	0.0149	0.0151	0.0147	9.3
Jun	78.7	94	59	88	71	72.0	90	64	57	79	74	0.0150	0.0158	0.0151	0.0157	0.0154	6.8
Jul	82.5	96	72	91	76	76.5	90	69	65	81	78	0.0180	0.0190	0.0187	0.0182	0.0184	5.6
Aug	80.5	93	67	89	74	75.0	90	71	65	84	79	0.0172	0.0179	0.0174	0.0178	0.0175	5.7
Sep	77.1	93	60	87	70	72.0	91	71	64	85	80	0.0150	0.0165	0.0165	0.0160	0.0159	6.1
Oct	66.9	88	44	79	58	61.5	88	65	55	85	76	0.0101	0.0112	0.0113	0.0116	0.0109	7.7
Nov	62.5	82	30	74	54	58.1	90	71	58	86	78	0.0095	0.0104	0.0099	0.0098	0.0098	7.8
Dec	53.4	81	29	63	46	50.5	89	81	68	86	82	0.0071	0.0079	0.0083	0.0080	0.0078	9.0
Year	67.1	96	22	76	59	62.2	89	71	63	83	78	0.0114	0.0121	0.0122	0.0122	0.0119	8.2

LAKE CHARLES, LOUISIANA

WBAN 3937

TABLE D:

TRY Data (1966)

Latitude 30.10 N

Longitude 93.20 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)*	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*
97	0	354	0	0	276	0	0	244	0	0	272	0	0	341	0	0	1136	0	8760	2622	0	0
96	0	343	0	0	265	0	0	233	0	0	261	0	0	330	0	0	1103	0	8759	2534	1	0
95	0	332	0	0	254	0	3	222	0	0	250	0	0	319	0	0	1070	0	8756	2446	4	0
94	0	321	0	0	243	0	15	211	0	2	239	0	0	308	0	0	1037	0	8742	2359	18	0
93	0	310	0	2	232	0	29	200	0	9	228	0	0	297	0	0	1004	0	8718	2272	42	0
92	0	299	0	10	221	0	49	190	1	19	217	0	0	286	0	0	971	0	8681	2184	79	1
91	0	288	0	26	210	0	82	179	1	32	206	0	0	275	0	0	938	0	8619	2098	141	2
90	0	277	0	49	199	1	119	169	2	50	196	1	0	264	0	0	906	0	8540	2012	220	4
89	0	267	0	85	189	1	154	160	4	71	186	1	1	253	0	0	873	0	8447	1927	313	6
88	3	256	0	129	179	2	189	151	5	99	175	2	2	242	0	0	840	0	8337	1843	423	10
87	12	245	0	170	170	4	228	142	7	132	166	3	4	232	0	0	807	0	8213	1760	547	15
86	27	234	0	207	161	6	260	133	10	165	156	5	7	221	0	0	774	0	8093	1679	667	21
85	44	223	1	245	152	8	296	125	13	201	147	7	13	210	0	0	741	0	7960	1599	800	28
84	63	213	1	279	144	11	340	117	16	242	138	9	23	199	0	0	708	0	7812	1520	948	37
83	85	203	2	305	136	14	373	110	19	281	130	12	39	188	1	0	676	0	7676	1442	1084	47
82	110	193	3	331	128	17	404	103	23	316	122	15	59	178	1	2	643	0	7536	1366	1224	59
81	137	183	4	364	120	20	437	96	28	351	114	18	84	168	2	7	610	0	7379	1292	1381	72
80	168	174	6	399	113	24	468	90	32	382	107	22	122	158	3	38	577	0	7181	1219	1579	86
79	204	164	7	429	107	28	500	84	37	413	100	26	162	148	4	110	545	1	6941	1148	1819	103
78	238	156	10	455	100	33	532	78	42	448	93	30	208	139	6	214	514	2	6663	1080	2097	123
77	271	147	12	482	94	37	565	72	48	482	87	35	263	130	8	356	484	5	6340	1015	2420	145
76	308	139	15	512	88	42	606	67	53	518	81	39	312	122	11	518	455	9	5984	953	2776	171
75	350	132	18	546	82	47	641	63	60	552	76	45	362	115	15	686	428	15	5621	895	3139	201
74	387	124	22	577	77	53	665	58	66	575	70	51	408	108	19	844	403	23	5303	841	3457	234
73	414	117	26	601	72	59	689	54	73	600	65	56	443	101	23	976	379	32	5035	789	3725	270
72	442	111	30	624	67	65	712	50	80	626	60	63	474	95	27	1089	357	43	4791	740	3969	308
71	465	104	35	646	62	72	733	46	87	649	56	69	498	89	32	1184	336	54	4583	693	4177	349
70	479	98	40	668	58	78	755	43	95	672	52	76	520	83	37	1280	315	66	4384	648	4376	392
69	498	92	45	692	54	85	776	40	102	700	47	82	542	77	43	1380	295	80	4169	605	4591	437
68	525	86	50	718	50	92	798	36	110	728	44	90	564	72	48	1472	277	94	3954	565	4806	484
67	553	81	55	741	46	99	818	34	118	752	40	97	586	67	54	1552	259	109	3755	526	5005	533
66	577	75	61	762	43	107	837	31	127	776	37	105	606	62	60	1626	242	125	3575	490	5185	584
65	594	70	67	781	40	114	854	28	135	798	34	112	626	57	66	1683	226	142	3422	455	5338	636
64	613	65	73	797	37	122	871	26	144	817	31	121	647	52	73	1735	210	159	3279	421	5481	690
63	635	61	79	808	34	130	882	24	152	833	28	129	672	48	79	1804	195	176	3123	389	5637	746
62	661	56	85	823	31	139	892	22	161	850	26	137	703	44	86	1878	181	195	2952	359	5808	803
61	686	52	92	838	28	147	903	20	170	863	23	146	732	40	93	1948	167	214	2788	330	5972	862
60	707	48	99	852	26	155	911	18	179	875	21	154	754	36	101	2010	154	234	2650	303	6110	923
59	728	44	106	865	23	164	920	16	189	888	19	163	772	33	108	2073	141	254	2512	277	6248	984
58	747	41	114	879	21	173	934	15	198	904	17	172	787	30	116	2139	130	275	2367	253	6393	1048
57	761	37	121	895	19	181	950	13	207	918	15	181	803	27	124	2202	118	297	2228	230	6532	1112
56	777	34	129	908	17	191	963	12	217	932	13	191	822	24	132	2269	108	319	2086	208	6674	1178
55	798	31	137	921	15	200	973	10	226	952	12	200	844	22	140	2332	98	342	1939	188	6821	1246
54	816	28	145	935	14	209	982	9	236	967	10	210	867	19	149	2379	89	366	1813	169	6947	1315
53	831	25	153	945	12	218	991	8	246	978	9	219	886	17	158	2429	80	390	1698	152	7062	1385
52	846	23	161	955	11	228	997	7	256	987	8	229	906	15	167	2485	72	415	1582	135	7178	1456

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

LAKE CHARLES, LOUISIANA
WBAN 3937
TABLE D:

TRY Data (1966)

Latitude 30.10 N
Longitude 93.20 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	Deg	
(F)	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	Base	100s*	Base	100s*	
51	858	20	170		967	9	237		1004	6	266		994	7	239		924	13	176	2535	64	440	
50	874	18	179		980	8	247		1013	5	276		1001	6	249		937	12	185	2584	57	465	
49	897	16	187		991	7	257		1017	5	286		1008	5	259		951	10	195	2637	50	491	
48	915	14	197		1000	6	267		1021	4	296		1013	4	269		964	9	204	2688	44	518	
47	928	12	206		1008	5	277		1028	3	307		1020	4	279		976	7	214	2743	38	545	
46	941	11	215		1016	4	287		1035	2	317		1030	3	290		987	6	224	2800	33	573	
45	954	9	225		1023	4	297		1043	2	327		1039	2	300		995	5	234	2845	28	601	
44	969	8	234		1031	3	308		1054	1	338		1045	2	310		1003	4	244	2886	24	630	
43	982	7	244		1040	2	318		1064	1	349		1053	1	321		1016	3	254	2926	20	659	
42	990	6	254		1048	2	328		1071	1	359		1063	1	332		1029	3	264	2965	17	688	
41	1001	5	264		1055	1	339		1077	1	370		1070	1	342		1038	2	274	3006	14	718	
40	1014	4	274		1064	1	350		1084	0	381		1078	0	353		1047	2	285	3040	11	748	
39	1024	3	284		1072	1	360		1088	0	392		1084	0	364		1055	1	295	3067	9	779	
38	1034	2	294		1079	0	371		1089	0	403		1086	0	375		1065	1	306	3095	7	810	
37	1048	2	305		1086	0	382		1089	0	413		1088	0	385		1071	1	317	3127	5	841	
36	1059	1	315		1088	0	393		1089	0	424		1089	0	396		1075	0	327	3161	4	872	
35	1064	1	326		1088	0	404		1090	0	435		1090	0	407		1083	0	338	3187	3	904	
34	1068	1	337		1090	0	415		1090	0	446		1093	0	418		1089	0	349	3209	2	936	
33	1072	1	347		1091	0	425		1092	0	457		1094	0	429		1091	0	360	3229	1	968	
32	1079	0	358		1092	0	436		1094	0	468		1095	0	440		1092	0	371	3247	1	1001	
31	1085	0	369		1092	0	447		1095	0	479		1095	0	451		1094	0	382	3261	1	1033	
30	1089	0	380		1092	0	458		1095	0	490		1095	0	462		1095	0	393	3270	0	1066	
29	1090	0	391		1093	0	469		1095	0	501		1095	0	473		1095	0	404	3275	0	1099	
28	1091	0	402		1094	0	480		1095	0	512		1095	0	484		1095	0	415	3278	0	1131	
27	1092	0	413		1094	0	491		1095	0	523		1095	0	495		1095	0	426	3279	0	1164	
26	1092	0	423		1095	0	502		1095	0	534		1095	0	506		1095	0	436	3279	0	1197	
25	1092	0	434		1095	0	513		1095	0	545		1095	0	517		1095	0	447	3280	0	1230	
24	1093	0	445		1095	0	524		1095	0	556		1095	0	528		1095	0	458	3282	0	1263	
23	1093	0	456		1095	0	535		1095	0	567		1095	0	539		1095	0	469	3283	0	1295	
22	1094	0	467		1095	0	546		1095	0	577		1095	0	550		1095	0	480	3284	0	1328	
21	1095	0	478		1095	0	557		1095	0	588		1095	0	561		1095	0	491	3285	0	1361	

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

LAKE CHARLES, LOUISIANA
WBAN 3937
TABLE E:

TRY Data (1966)

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:	7024	6636	6156	5687	5154	4553	3946	3243	2146	862	192
Annual Wet Bulb Cooling deg-hrs:	129741.	109067.	89594.	71584.	54987.	40107.	27014.	15826.	7041.	2005.	242.

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	91	91	90	89	87	84	79	73	62	46	23	.001		
.002	0	0	0	0	0	0	0	0	0	0	0	83	83	82	81	80	77	73	67	58	43	22	.002		
.003	0	0	0	0	0	0	0	0	0	0	0	74	74	74	74	72	70	67	62	54	40	20	.003		
.004	0	0	0	1	1	1	1	1	1	1	1	66	66	66	66	65	64	61	57	50	37	19	.004		
.005	0	0	1	1	2	2	2	2	2	2	2	58	58	58	58	58	57	55	52	45	34	17	.005		
.006	0	1	1	2	3	3	3	4	4	4	4	51	51	51	51	51	51	49	47	41	31	16	.006		
.007	0	1	2	3	4	5	5	5	6	6	6	44	44	44	44	44	44	43	41	37	28	14	.007		
.008	0	1	2	4	5	6	7	8	8	8	8	38	38	38	38	38	38	38	36	33	25	13	.008		
.009	0	1	2	5	7	8	9	10	11	11	11	32	32	32	32	32	32	32	31	29	22	11	.009		
.010	0	1	3	5	8	10	12	13	14	14	14	27	27	27	27	27	27	27	26	25	19	10	.010		
.011	0	1	3	6	9	12	15	16	17	18	18	22	22	22	22	22	22	22	22	21	16	9	.011		
.012	0	1	4	7	11	14	17	20	21	22	22	17	17	17	17	17	17	17	17	17	13	7	.012		
.013	0	1	4	8	12	16	20	23	25	26	27	13	13	13	13	13	13	13	13	13	11	6	.013		
.014	0	2	4	9	13	18	22	26	29	31	32	10	10	10	10	10	10	10	10	10	8	4	.014		
.015	0	2	5	9	14	19	25	30	33	36	37	6	6	6	6	6	6	6	6	6	6	3	.015		
.016	0	2	5	10	16	21	27	33	38	41	43	4	4	4	4	4	4	4	4	4	4	2	.016		
.017	0	2	6	11	17	23	30	36	42	46	49	2	2	2	2	2	2	2	2	2	2	1	.017		
.018	0	2	6	12	18	25	33	40	46	52	56	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 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	59	44	53	63	63	46	56	60	46	38	31	52	52
VERTICAL													
NORTH	100	100	100	99	94	86	91	97	100	100	100	100	96
WEST	73	57	63	73	75	64	75	78	62	52	45	56	66
SOUTH	55	45	63	81	92	90	91	85	61	44	30	46	64
EAST	68	60	68	79	78	64	68	70	59	55	48	69	66

% 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

TABLE H:

TRY Data (1966)

Latitude 30.10 N

Longitude 93.20 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	1751	1637	1357	1108	745	440	256	200	199	2002	1215	669	643	561	481	363	267	212	194	193	706	526	728
Feb	1692	1599	1407	1229	910	601	375	250	236	2147	1495	1001	942	830	726	562	418	322	272	265	1172	891	1010
Mar	1408	1395	1346	1287	1074	804	558	370	295	2180	1854	962	937	896	849	734	605	497	418	387	1236	1137	1313
Apr	1001	1132	1232	1305	1227	1041	810	576	392	2063	2156	895	915	926	933	877	784	689	598	534	1262	1353	1570
May	726	921	1112	1257	1288	1189	988	760	553	1917	2338	736	796	857	906	910	862	775	683	616	1162	1395	1849
Jun	632	834	1057	1236	1313	1260	1080	865	675	1850	2419	737	853	982	1087	1130	1089	973	836	729	1450	1835	1970
Jul	677	875	1085	1252	1307	1238	1050	831	634	1876	2380	779	885	995	1085	1110	1063	951	822	712	1346	1656	1788
Aug	882	1040	1175	1281	1248	1107	891	665	470	1977	2212	842	932	994	1043	1013	926	804	680	573	1276	1440	1657
Sep	1241	1280	1289	1281	1125	892	656	456	345	2096	1945	985	1009	1006	991	888	744	601	482	416	1393	1337	1485
Oct	1570	1494	1350	1216	943	654	428	291	267	2119	1603	1146	1091	990	896	717	536	402	324	310	1433	1150	1381
Nov	1739	1626	1373	1146	804	488	295	218	216	2045	1301	1032	958	811	682	493	326	228	189	188	1180	787	917
Dec	1760	1641	1348	1081	716	407	240	193	193	1957	1143	678	614	507	419	309	221	178	164	164	711	489	706
Year	1254	1288	1260	1223	1059	845	637	474	374	2018	1840	870	880	863	842	759	654	554	473	425	1193	1167	1365

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

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

*** South exposure tilt 45 degrees.

**** Cinquemani, V., J. R. Owenby, Jr. and R. G. Baldwin, 1978, Input Data for Solar Systems, NCC, Ashville, NC.

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/ NNW	NNE/ NNW	N	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NNW	NNE/ NNW	N	
Jan	1493	1369	1129	918	603	333	192	163	162	559	533	464	396	295	212	169	158	157	
Feb	1402	1324	1168	1024	748	473	279	198	192	828	775	683	598	460	334	253	219	216	
Mar	1082	1127	1108	1070	887	651	431	280	240	760	760	733	698	601	491	397	333	315	
Apr	694	863	996	1074	1013	851	640	438	307	694	729	749	760	715	637	555	479	431	
May	489	662	875	1031	1062	975	795	590	409	572	623	688	738	743	703	629	548	487	
Jun	442	588	821	1011	1084	1036	874	677	492	564	647	780	889	928	893	790	667	563	
Jul	468	625	850	1026	1082	1020	851	651	467	605	684	799	890	915	874	774	658	559	
Aug	607	780	946	1055	1035	909	715	515	362	652	738	810	859	836	760	652	544	460	
Sep	925	1020	1057	1062	929	727	516	348	280	764	815	827	821	734	608	481	380	339	
Oct	1277	1229	1117	1009	770	516	323	228	217	933	894	816	740	585	428	315	260	252	
Nov	1473	1357	1143	955	651	378	220	177	176	869	795	672	564	399	256	177	154	153	
Dec	1506	1377	1122	898	576	309	180	157	157	570	505	416	344	249	176	142	134	133	
Year	986	1025	1027	1011	870	683	503	369	289	696	707	703	691	622	532	445	379	339	

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

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

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LOUISVILLE, KENTUCKY

WBAN 93821

TABLE A:

TRY Data (1972)

Latitude 38.20 N

Longitude 85.70 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														
70 to 74	0	0	0	0	0	1	0	0	1	59.0	744	27878	0	0
65 to 69	0	0	0	0	2	2	2	0	6	59.0	740	24164	4	6
60 to 64	0	0	1	2	6	6	1	0	16	57.0	735	20479	9	41
55 to 59	3	3	4	6	8	9	7	3	43	51.7	695	16881	49	163
50 to 54	6	6	6	6	9	7	17	15	72	48.1	659	13482	85	484
45 to 49	17	12	10	10	11	13	7	15	95	43.5	588	10371	156	1093
40 to 44	10	13	12	16	18	15	8	6	98	38.3	459	7749	285	2191
35 to 39	5	5	6	9	4	7	5	6	47	31.9	390	5638	354	3800
30 to 34	8	5	4	8	8	8	15	7	63	28.7	350	3789	394	5671
25 to 29	20	16	15	16	18	16	13	17	131	24.6	253	2248	491	7850
20 to 24	7	12	15	11	2	3	8	9	67	20.1	140	1295	604	10617
15 to 19	9	12	11	3	1	2	6	10	54	15.0	81	742	663	13784
10 to 14	3	3	3	0	2	1	1	2	15	10.7	41	448	703	17210
5 to 9	2	1	0	0	3	2	0	0	8	4.0	35	264	709	20746
0 to 4	0	2	3	5	1	1	3	0	15	0.6	21	119	723	24321
-5 to -1	0	0	1	1	0	0	0	3	5	-5.0	13	41	731	27963
-10 to -6	3	3	2	0	0	0	0	0	8	-7.1	0	0	744	31642
Feb														
70 to 74	0	0	0	0	0	1	0	0	1	54.0	672	25955	0	0
65 to 69	0	0	0	0	3	2	1	0	6	52.5	668	22601	4	6
60 to 64	0	0	0	1	0	1	2	1	5	49.6	664	19272	8	37
55 to 59	0	0	0	2	4	5	3	2	16	49.8	653	15976	19	101
50 to 54	3	0	0	2	4	7	5	5	26	43.0	639	12752	33	237
45 to 49	5	3	2	2	7	4	7	8	38	40.9	608	9644	64	489
40 to 44	9	6	7	9	15	15	9	4	74	38.3	554	6729	118	934
35 to 39	14	18	16	25	25	25	21	14	158	34.0	436	4176	236	1741
30 to 34	14	19	20	17	11	9	21	22	133	29.1	277	2371	395	3296
25 to 29	18	10	11	10	8	10	3	14	84	24.2	184	1237	488	5522
20 to 24	9	13	13	8	5	5	7	5	65	19.9	106	532	566	8177
15 to 19	6	6	6	6	2	0	5	9	40	14.9	50	157	622	11162
10 to 14	6	9	9	2	0	0	0	0	26	10.6	13	16	659	14381
Mar														
75 to 79	0	0	0	0	4	5	0	0	9	61.0	744	24358	0	0
70 to 74	0	0	0	1	7	6	2	0	16	58.4	725	20673	19	35
65 to 69	1	0	0	7	3	1	7	7	26	56.4	712	17073	32	155
60 to 64	12	7	7	7	3	6	5	5	52	55.3	678	13591	66	393
55 to 59	4	7	5	6	12	13	8	4	59	50.0	616	10357	128	879
50 to 54	5	5	5	8	17	21	12	9	82	44.7	551	7418	193	1660
45 to 49	14	9	7	15	13	12	20	16	106	41.4	464	4876	280	2838
40 to 44	10	17	20	17	17	15	15	19	130	37.0	339	2859	405	4541
35 to 39	18	9	13	10	8	6	11	12	87	32.2	231	1458	513	6860
30 to 34	13	17	18	17	8	8	8	10	99	27.7	134	543	610	9665
25 to 29	12	15	12	5	1	0	5	11	61	24.9	41	112	703	12954
20 to 24	4	7	6	0	0	0	0	0	17	20.5	9	10	735	16572

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

LOUISVILLE, KENTUCKY
WBAN 93821
TABLE A:

TRY Data (1972)

Latitude 38.20 N
Longitude 85.70 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	2	4	1	0	0	7	66.7	720	19447	0	0
75 to 79	0	0	0	4	6	9	2	0	21	63.3	703	15878	17	31
70 to 74	5	3	1	5	12	8	8	9	51	62.7	676	12414	44	167
65 to 69	12	6	9	18	21	24	13	6	109	59.3	599	9189	121	542
60 to 64	12	18	17	16	14	16	21	19	133	56.0	477	6480	243	1433
55 to 59	9	6	12	14	11	11	17	16	96	49.3	366	4405	354	2958
50 to 54	16	11	14	32	6	9	10	10	88	45.7	268	2827	452	4980
45 to 49	10	9	9	5	6	0	6	10	55	41.1	197	1699	523	7452
40 to 44	8	12	8	9	8	10	4	8	67	36.5	133	868	587	10221
35 to 39	9	11	11	3	2	2	6	4	48	33.4	69	372	651	13325
30 to 34	3	8	5	2	0	0	3	7	28	28.8	36	121	684	16674
25 to 29	6	6	3	0	0	0	0	1	16	24.3	11	15	709	20168
20 to 24	0	0	1	0	0	0	0	0	1	21.0	0	0	720	23753
May														
85 to 89	0	0	0	0	4	2	0	0	6	68.7	744	15922	0	0
80 to 84	0	0	0	7	22	19	4	0	52	65.8	723	12235	21	33
75 to 79	0	0	0	20	22	25	17	0	84	63.8	652	8783	92	301
70 to 74	3	1	8	26	21	19	24	13	115	62.0	561	5735	183	973
65 to 69	12	4	27	21	17	19	23	28	151	59.8	430	3247	314	2205
60 to 64	37	37	29	14	4	6	17	32	176	57.2	256	1497	488	4175
55 to 59	25	20	14	2	0	3	5	10	79	52.8	120	606	624	7004
50 to 54	11	19	12	3	3	0	3	9	60	48.5	51	170	693	10288
45 to 49	5	9	3	0	0	0	0	1	18	44.4	12	28	732	13866
40 to 44	0	3	0	0	0	0	0	0	3	40.7	1	1	743	17559
Jun														
90 to 94	0	0	0	0	2	0	0	0	2	74.0	720	16160	0	0
85 to 89	0	0	0	3	15	18	2	0	38	71.6	710	12574	10	14
80 to 84	0	0	0	16	24	25	16	1	82	69.4	660	9143	60	183
75 to 79	5	3	9	28	20	25	27	11	128	65.9	547	6106	173	746
70 to 74	19	11	28	20	17	14	24	24	157	63.7	406	3693	314	1933
65 to 69	24	19	17	13	9	5	12	26	125	60.2	255	2045	465	3885
60 to 64	10	21	13	7	3	3	7	11	75	55.8	151	1049	569	6489
55 to 59	16	10	14	2	0	0	2	10	54	51.3	91	454	629	9494
50 to 54	11	15	7	1	0	0	0	6	40	47.3	41	141	679	12781
45 to 49	5	11	2	0	0	0	0	1	19	42.7	13	18	707	16258

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

LOUISVILLE, KENTUCKY
WBAN 93821
TABLE A:

TRY Data (1972)

Latitude 38.20 N
Longitude 85.70 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	3	24	23	0	0	50	75.2	738	11789	6	4
85 to 89	0	0	2	30	25	23	17	0	97	73.9	650	8286	94	221
80 to 84	1	1	14	17	16	19	32	15	115	71.6	559	5259	185	914
75 to 79	29	20	26	18	17	16	21	29	176	70.4	415	2791	329	2166
70 to 74	38	38	25	19	8	9	15	31	183	66.8	225	1173	519	4268
65 to 69	11	15	15	6	3	3	6	8	67	62.4	90	441	654	7256
60 to 64	10	10	9	0	0	0	2	10	41	57.4	39	132	705	10667
55 to 59	4	7	1	0	0	0	0	0	12	52.5	11	29	733	14284
50 to 54	0	2	1	0	0	0	0	0	3	49.7	2	2	742	17977
Aug														
90 to 94	0	0	0	2	8	8	0	0	18	76.3	739	12516	5	4
85 to 89	0	0	0	11	33	34	9	0	87	73.5	706	8882	30	90
80 to 84	3	0	4	31	26	28	34	7	133	71.3	595	5627	149	555
75 to 79	18	14	22	26	19	17	25	23	164	70.0	450	3014	294	1662
70 to 74	36	30	33	20	7	6	22	42	196	67.5	259	1236	485	3604
65 to 69	24	27	24	3	0	0	3	15	96	63.1	104	393	640	6481
60 to 64	10	14	7	0	0	0	0	6	37	59.2	28	85	716	9893
55 to 59	2	8	3	0	0	0	0	0	13	55.1	6	6	738	13534
Sep														
90 to 94	0	0	0	0	1	3	0	0	4	74.5	720	14423	0	0
85 to 89	0	0	0	4	25	20	0	0	49	72.1	706	10842	14	19
80 to 84	0	0	0	17	21	19	11	2	70	70.4	647	7468	73	245
75 to 79	5	3	5	31	26	31	24	7	132	68.7	549	4450	171	827
70 to 74	32	24	34	23	12	12	38	47	222	66.9	396	2072	324	2049
65 to 69	34	35	26	11	5	5	15	22	153	62.9	173	687	547	4264
60 to 64	14	15	19	4	0	0	2	10	64	58.6	48	160	672	7337
55 to 59	5	13	6	0	0	0	0	1	25	54.4	10	14	710	10791
50 to 54	0	0	0	0	0	0	0	1	1	49.0	0	0	720	14377

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

LOUISVILLE, KENTUCKY
WBAN 93821
TABLE A:

TRY Data (1972)

Latitude 38.20 N
Longitude 85.70 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	0	2	1	0	0	3	62.0	744	16491	0	0
	70 to 74	0	0	0	5	21	25	0	0	51	61.2	730	12790	14	19
	65 to 69	3	3	3	11	12	10	20	9	71	60.0	665	9300	79	249
	60 to 64	13	9	8	20	23	20	14	16	123	55.9	576	6191	168	860
	55 to 59	22	19	21	26	15	20	18	14	155	51.8	446	3648	298	2037
	50 to 54	16	14	18	16	13	5	23	24	129	47.2	294	1820	450	3937
	45 to 49	23	29	28	9	7	11	12	17	136	43.3	155	700	589	6529
	40 to 44	7	9	5	6	0	1	5	8	41	39.8	53	244	691	9793
	35 to 39	7	7	8	0	0	0	1	4	27	35.5	22	64	722	13333
	30 to 34	2	3	2	0	0	0	0	1	8	29.1	4	6	740	16995
Nov															
	75 to 79	0	0	0	0	0	1	0	0	1	68.0	720	23658	0	0
	70 to 74	0	0	0	3	3	2	0	0	8	66.6	717	20064	3	6
	65 to 69	3	5	4	1	6	5	3	3	30	60.9	699	16512	21	54
	60 to 64	4	1	2	4	3	5	6	5	30	56.6	671	13099	49	241
	55 to 59	5	0	1	3	11	9	4	3	36	52.2	641	9818	79	560
	50 to 54	9	10	8	11	7	7	11	11	74	48.8	589	6735	131	1077
	45 to 49	12	17	15	24	15	19	21	16	139	43.4	493	3998	227	1940
	40 to 44	16	12	18	12	30	26	20	20	154	38.9	355	1913	365	3455
	35 to 39	29	29	27	30	15	16	19	20	185	35.0	157	593	563	5735
	30 to 34	6	10	9	2	0	0	6	9	42	30.6	37	164	683	8906
	25 to 29	5	3	2	0	0	0	0	3	13	25.8	18	45	702	12387
	20 to 24	1	3	4	0	0	0	0	0	8	22.8	1	1	719	15943
Dec															
	65 to 69	0	0	0	0	1	2	0	1	4	60.5	744	21837	0	0
	60 to 64	3	0	0	2	3	4	4	2	18	58.3	731	18137	13	20
	55 to 59	3	3	3	1	11	9	4	4	38	50.1	713	14523	31	126
	50 to 54	3	2	0	5	9	9	12	7	47	45.6	668	11080	76	403
	45 to 49	7	7	6	10	8	8	6	8	60	43.5	619	7868	125	911
	40 to 44	19	17	15	18	18	19	23	27	156	39.1	522	4966	222	1729
	35 to 39	26	30	25	22	18	16	14	14	165	35.7	324	2827	420	3310
	30 to 34	14	16	26	20	11	11	13	12	123	30.5	196	1499	548	5702
	25 to 29	3	4	6	5	8	11	9	4	50	24.3	115	768	629	8691
	20 to 24	12	6	3	5	5	3	5	11	50	19.0	70	323	674	11966
	15 to 19	0	5	6	3	1	1	3	0	19	15.2	23	111	721	15474
	10 to 14	3	0	0	2	0	0	0	3	8	10.0	11	29	733	19112
	5 to 9	0	3	3	0	0	0	0	0	6	7.3	0	0	744	22803

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

LOUISVILLE, KENTUCKY
WBAN 93821
TABLE B:

TRY Data (1972)

Latitude 38.20 N
Longitude 85.70 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	5	35	34	0	0	74	0.0	0.0	0.0	77.0	75.7	74.8	0.0	0.0	75.4
85 to 89	0	0	2	48	102	97	28	0	277	0.0	0.0	77.0	74.5	72.6	72.3	74.4	0.0	73.0
80 to 84	4	1	18	90	113	111	97	25	459	73.0	74.0	74.1	70.8	68.9	69.1	70.8	73.5	70.2
75 to 79	57	40	62	127	116	130	116	70	718	71.4	71.4	71.1	67.5	66.1	65.6	67.5	70.6	68.1
70 to 74	133	107	129	122	108	103	133	166	1001	67.2	67.6	66.8	64.5	62.0	61.5	64.2	66.9	65.3
65 to 69	124	114	125	91	82	78	105	125	844	62.8	63.6	62.4	59.2	57.8	58.5	59.0	61.0	60.8
60 to 64	125	132	112	77	59	67	81	117	770	57.5	58.5	58.1	54.5	54.1	54.0	56.3	57.2	56.7
55 to 59	98	96	84	62	72	79	68	67	626	52.4	53.1	52.8	50.5	49.7	49.3	50.9	51.2	51.4
50 to 54	80	84	71	64	68	65	93	97	622	47.3	48.7	47.4	46.1	45.3	44.8	46.6	47.4	46.8
45 to 49	98	106	82	75	67	67	79	92	666	43.1	43.4	43.4	43.1	41.9	42.4	41.9	42.4	42.8
40 to 44	79	89	85	87	106	101	84	92	723	39.0	39.3	39.3	38.2	37.4	37.1	37.9	38.6	38.3
35 to 39	108	109	106	99	72	72	77	74	717	34.5	34.8	34.7	34.3	34.1	33.7	33.6	34.2	34.3
30 to 34	60	78	84	66	38	36	66	68	496	29.6	29.9	30.0	29.3	28.1	27.9	28.6	29.0	29.2
25 to 29	64	54	49	36	35	37	30	50	355	24.8	24.7	24.9	24.0	24.3	23.8	24.1	25.2	24.6
20 to 24	33	41	42	24	12	11	20	25	208	19.9	20.8	20.1	19.3	18.7	18.5	20.2	19.9	19.9
15 to 19	15	23	23	12	4	3	14	19	113	14.3	15.5	15.7	15.2	16.0	12.3	14.7	14.5	15.0
10 to 14	12	12	12	4	2	1	1	5	49	10.6	10.8	10.4	10.8	8.0	10.0	11.0	10.8	10.5
5 to 9	2	4	3	0	3	2	0	0	14	6.0	6.0	7.7	0.0	3.7	3.0	0.0	0.0	5.4
0 to 4	0	2	3	5	1	1	3	0	15	0.0	1.0	0.0	1.0	2.0	1.0	-0.3	0.0	0.6
-5 to -1	0	0	1	1	0	0	0	3	5	0.0	0.0	-6.0	-4.0	0.0	0.0	0.0	-5.0	-5.0
-10 to -6	3	3	2	0	0	0	0	0	8	-7.0	-7.3	-7.0	0.0	0.0	0.0	0.0	0.0	-7.1

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	35.0	70	-7	44	27	31.9	76	76	62	71	72	0.0033	0.0035	0.0038	0.0038	0.0035	9.9
Feb	33.9	70	10	43	25	30.3	74	72	61	67	69	0.0027	0.0027	0.0032	0.0031	0.0029	9.9
Mar	44.8	76	21	55	36	39.0	68	65	54	60	62	0.0038	0.0040	0.0046	0.0043	0.0041	11.4
Apr	55.5	82	24	65	46	48.9	74	62	52	60	64	0.0062	0.0064	0.0067	0.0066	0.0065	10.1
May	66.1	87	42	76	56	58.4	80	63	51	59	66	0.0085	0.0095	0.0093	0.0089	0.0090	8.1
Jun	70.1	90	45	80	59	61.3	76	60	49	56	63	0.0093	0.0103	0.0107	0.0105	0.0102	9.0
Jul	76.7	94	51	86	68	68.7	82	65	54	64	69	0.0133	0.0139	0.0135	0.0137	0.0137	7.7
Aug	75.7	94	56	85	67	68.5	84	69	55	65	71	0.0130	0.0141	0.0139	0.0137	0.0137	7.5
Sep	72.5	90	53	82	65	65.9	81	74	58	71	73	0.0117	0.0128	0.0130	0.0124	0.0125	7.8
Oct	55.3	75	30	64	47	50.1	81	72	57	70	71	0.0065	0.0069	0.0072	0.0071	0.0068	8.1
Nov	44.6	76	22	50	39	43.5	84	82	72	76	79	0.0051	0.0052	0.0054	0.0051	0.0052	8.5
Dec	38.1	66	8	45	32	35.3	80	80	73	76	77	0.0037	0.0037	0.0043	0.0042	0.0040	10.2
Year	55.8	94	-7	65	47	50.1	78	70	58	66	70	0.0073	0.0078	0.0080	0.0078	0.0077	9.0

LOUISVILLE, KENTUCKY
WBAN 93823
TABLE D:

TRY Data (1972)

Latitude 38.20 N
Longitude 85.70 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)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Below Base 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		Base	Heat	Cool	
95	0	477	0		0	410	0		0	363	0		0	362	0		0	407	0		0	1415	0		8760	3433	0	0
94	0	466	0		0	399	0		0	352	0		0	351	0		0	396	0		0	1382	0		8759	3345	1	0
93	0	455	0		0	388	0		4	341	0		2	340	0		0	385	0		0	1349	0		8753	3258	7	0
92	0	444	0		0	377	0		11	331	0		7	329	0		0	374	0		0	1316	0		8742	3170	18	0
91	0	433	0		1	366	0		17	320	0		14	318	0		0	363	0		0	1283	0		8726	3083	34	0
90	0	422	0		4	355	0		27	309	0		26	307	0		0	352	0		0	1250	0		8702	2996	58	1
89	0	411	0		8	344	0		42	298	1		41	297	1		2	341	0		0	1218	0		8667	2909	93	2
88	0	400	0		15	333	0		57	288	1		56	286	1		6	330	0		0	1185	0		8626	2822	134	3
87	0	389	0		23	323	0		75	278	2		74	276	2		11	319	0		0	1152	0		8576	2736	184	4
86	0	378	0		33	312	1		100	268	3		97	266	3		14	308	0		0	1119	0		8515	2651	245	6
85	1	367	0		46	301	1		125	258	4		120	256	4		21	297	0		0	1086	0		8445	2566	315	9
84	3	356	0		60	291	2		146	248	5		141	246	5		35	287	1		0	1053	0		8374	2482	386	13
83	4	345	0		73	281	2		167	239	7		161	237	7		48	276	1		0	1020	0		8305	2399	455	17
82	6	335	0		90	271	3		190	230	9		184	228	8		64	266	2		2	988	0		8221	2316	539	22
81	12	324	0		111	261	4		216	221	11		209	219	10		84	256	2		9	955	0		8117	2234	643	28
80	18	313	0		132	251	5		240	212	13		231	210	12		110	246	3		21	922	0		8007	2153	753	35
79	24	302	1		154	241	7		262	204	15		256	201	15		134	236	5		37	890	0		7892	2074	868	43
78	33	292	1		180	232	8		290	195	18		280	193	18		155	226	6		62	857	1		7759	1996	1001	52
77	45	281	1		206	223	10		312	188	21		305	185	20		177	217	8		101	825	2		7613	1919	1147	63
76	58	271	2		229	214	12		331	180	24		336	177	24		201	208	10		139	793	3		7465	1843	1295	75
75	73	260	2		256	206	15		354	172	28		362	170	27		228	199	12		176	762	5		7309	1769	1451	89
74	93	250	3		283	198	18		376	165	32		383	163	31		258	191	14		225	731	6		7140	1697	1620	104
73	114	240	4		311	190	21		400	158	35		403	156	35		287	183	17		291	701	9		6951	1627	1809	121
72	137	230	5		338	182	24		424	151	40		424	149	39		313	175	20		369	671	12		6753	1558	2007	140
71	164	221	7		363	174	27		445	144	44		446	142	43		339	167	23		461	643	16		6540	1492	2220	161
70	195	212	9		383	167	31		465	138	48		465	136	48		362	159	27		558	615	22		6330	1427	2430	184
69	221	203	11		401	160	35		480	132	53		481	130	53		381	152	30		642	588	28		6152	1365	2608	210
68	247	194	13		419	153	39		498	126	58		500	124	58		402	145	34		717	562	34		5976	1304	2784	237
67	273	186	16		439	147	43		520	120	63		520	118	63		425	138	38		787	537	42		5794	1245	2966	265
66	299	178	19		457	140	48		536	114	68		539	112	68		445	132	43		858	512	50		5625	1188	3135	296
65	325	170	22		473	134	53		548	109	74		551	107	73		467	125	47		930	488	59		5464	1133	3296	328
64	351	163	25		490	128	57		562	103	79		559	101	79		491	119	52		1005	465	69		5300	1079	3460	362
63	380	155	29		505	122	62		575	98	85		571	96	85		513	113	57		1081	443	79		5134	1027	3626	397
62	404	148	33		520	116	67		587	93	91		583	91	90		530	108	62		1158	421	90		4976	976	3784	434
61	423	141	37		537	110	73		601	88	97		596	86	96		544	102	68		1236	400	102		4820	927	3940	473
60	441	135	41		553	105	78		612	83	103		611	81	102		555	97	73		1307	380	115		4679	880	4081	513
59	458	128	46		567	100	84		623	78	109		629	76	109		568	91	79		1362	361	128		4551	834	4209	555
58	479	122	50		582	94	90		637	74	115		643	71	115		583	86	85		1408	342	142		4427	789	4333	597
57	496	116	55		594	89	95		648	69	122		659	67	121		597	81	91		1458	323	157		4307	745	4453	641
56	510	110	60		606	84	101		661	65	128		677	63	128		609	76	97		1511	305	171		4184	703	4576	686
55	525	104	66		617	79	108		678	60	135		692	59	135		621	71	103		1569	288	187		4056	662	4704	733
54	541	99	71		628	75	114		695	56	142		707	55	142		637	67	109		1627	271	203		3924	622	4836	780
53	555	93	76		637	70	120		709	52	149		722	51	149		657	62	115		1669	254	219		3809	583	4951	829
52	564	88	82		648	66	127		720	49	156		736	47	156		676	58	122		1711	238	236		3703	546	5057	879
51	574	83	88		664	61	133		734	45	163		750	44	164		693	54	129		1767	223	254		3576	509	5184	931
50	591	78	93		678	57	140		749	41	171		760	40	171		711	50	136		1830	208	272		3439	474	5321	983

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

LOUISVILLE, KENTUCKY
WBAN 93821
TABLE D:

TRY Data (1972)

Latitude 38.20 N
Longitude 85.70 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	Cool3	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	100s*	Base	100s*	
49	607	73	99	692	53	147	765	38	178	773	37	179	727	46	143	1882	194	290
48	618	68	106	706	49	154	782	35	186	789	34	187	738	42	151	1923	180	309
47	637	63	112	722	45	161	792	32	194	802	31	195	755	39	158	1982	167	329
46	656	59	118	737	41	168	802	29	202	812	28	203	778	36	166	2059	154	349
45	674	54	125	752	38	176	815	26	210	823	25	211	794	33	174	2128	142	370
44	697	50	132	770	35	183	832	23	218	843	23	219	808	30	182	2178	131	391
43	715	46	139	787	31	191	856	21	227	865	20	228	825	27	190	2224	120	413
42	728	43	146	803	28	199	878	18	235	883	18	237	838	24	198	2283	110	436
41	740	39	153	820	26	207	896	16	244	900	16	246	853	22	207	2342	100	459
40	758	35	161	838	23	215	916	14	253	920	14	255	873	19	215	2393	91	483
39	780	32	169	862	20	224	940	13	263	940	12	264	894	17	224	2461	82	507
38	805	29	177	884	18	233	960	11	272	956	11	273	911	15	233	2537	74	532
37	827	26	185	903	16	241	974	10	282	970	10	283	924	14	242	2597	67	558
36	845	24	193	921	14	251	987	9	292	986	8	293	938	12	252	2639	60	584
35	865	21	202	937	13	260	997	8	302	999	7	303	952	11	261	2681	54	611
34	888	19	210	958	11	269	1004	7	312	1005	7	313	967	9	271	2728	48	638
33	912	17	219	977	10	279	1010	6	322	1011	6	323	980	8	280	2776	43	665
32	929	16	229	991	9	289	1015	5	332	1017	5	333	994	7	290	2825	38	693
31	938	14	238	1003	8	299	1024	4	342	1025	4	343	1012	6	300	2865	34	722
30	951	12	247	1011	7	309	1034	4	352	1035	3	354	1024	5	310	2900	30	750
29	964	11	257	1016	6	319	1041	3	363	1042	3	364	1031	5	321	2936	26	780
28	973	10	267	1022	6	329	1049	3	373	1047	2	374	1037	4	331	2974	23	809
27	984	9	276	1028	5	340	1057	2	384	1056	2	385	1040	3	341	3011	20	839
26	996	8	286	1033	4	350	1064	2	394	1065	2	396	1044	3	352	3048	17	869
25	1005	7	296	1042	4	360	1071	2	405	1073	1	406	1051	2	362	3073	15	900
24	1014	6	306	1050	3	371	1073	2	416	1078	1	417	1060	2	373	3096	13	931
23	1024	5	317	1055	3	381	1074	1	426	1079	1	428	1066	2	384	3117	11	962
22	1031	4	327	1059	2	392	1077	1	437	1080	1	439	1071	1	394	3134	10	993
21	1037	4	337	1063	2	402	1080	1	448	1083	1	449	1075	1	405	3155	8	1025
20	1046	3	348	1069	2	413	1083	1	459	1086	1	460	1077	1	416	3174	7	1056
19	1055	3	358	1073	2	424	1086	1	470	1088	1	471	1078	1	426	3187	6	1088
18	1060	2	369	1076	1	435	1088	1	480	1089	1	482	1082	1	437	3198	5	1120
17	1064	2	379	1081	1	445	1088	1	491	1089	0	493	1086	1	448	3211	4	1152
16	1068	2	390	1083	1	456	1088	1	502	1089	0	504	1088	1	459	3223	4	1184
15	1072	2	401	1084	1	467	1089	0	513	1090	0	515	1089	0	470	3234	3	1217
14	1075	1	412	1085	1	478	1089	0	524	1091	0	526	1091	0	481	3243	3	1249
13	1076	1	422	1087	1	489	1089	0	535	1092	0	537	1092	0	492	3251	2	1281
12	1079	1	433	1088	1	500	1090	0	546	1092	0	547	1092	0	503	3259	2	1314
11	1083	1	444	1088	1	510	1090	0	557	1092	0	558	1092	0	514	3264	2	1347
10	1085	1	455	1089	1	521	1090	0	568	1092	0	569	1092	0	524	3267	2	1379
9	1087	1	466	1089	0	532	1091	0	578	1092	0	580	1092	0	535	3270	2	1412
8	1088	1	476	1089	0	543	1091	0	589	1092	0	591	1092	0	546	3272	1	1445
7	1089	1	487	1089	0	554	1091	0	600	1092	0	602	1092	0	557	3272	1	1477
6	1089	1	498	1089	0	565	1092	0	611	1092	0	613	1092	0	568	3273	1	1510
5	1089	0	509	1089	0	576	1093	0	622	1093	0	624	1092	0	579	3273	1	1543
4	1089	0	520	1090	0	587	1094	0	633	1094	0	635	1092	0	590	3274	1	1576

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

LOUISVILLE, KENTUCKY
WBAN 93021
TABLE D:

TRY Data (1972)

Latitude 38.20 N
Longitude 85.70 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 Below Base	Deg 100s*	Hrs Above Base	Deg 100s*						
	Hrs	Deg-Hrs	Hrs	Deg-Hrs																		
	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				
3	1089	0	531	1091	0	598	1095	0	644	1094	0	646	1092	0	601	3275	1	1608	23	1	8737	4628
2	1089	0	542	1092	0	609	1095	0	655	1095	0	657	1092	0	612	3276	1	1641	20	1	8740	4715
1	1091	0	553	1092	0	619	1095	0	666	1095	0	668	1093	0	623	3276	1	1674	17	1	8743	4802
0	1092	0	564	1093	0	630	1095	0	677	1095	0	679	1094	0	634	3276	1	1707	14	1	8746	4890
-1	1092	0	575	1094	0	641	1095	0	688	1095	0	690	1095	0	645	3276	0	1739	13	1	8747	4977
-2	1092	0	585	1094	0	652	1095	0	699	1095	0	701	1095	0	656	3276	0	1772	13	0	8747	5065
-3	1092	0	596	1094	0	663	1095	0	710	1095	0	711	1095	0	667	3276	0	1805	12	0	8748	5152
-4	1092	0	607	1095	0	674	1095	0	721	1095	0	722	1095	0	678	3277	0	1838	10	0	8750	5240
-5	1092	0	618	1095	0	685	1095	0	732	1095	0	733	1095	0	688	3278	0	1870	9	0	8751	5327
-6	1093	0	629	1095	0	696	1095	0	743	1095	0	744	1095	0	699	3280	0	1903	6	0	8754	5415
-7	1094	0	640	1095	0	707	1095	0	754	1095	0	755	1095	0	710	3283	0	1936	2	0	8758	5502
-8	1095	0	651	1095	0	718	1095	0	765	1095	0	766	1095	0	721	3285	0	1969	0	0	8760	5590

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

LOUISVILLE, KENTUCKY

TRY Data (1972)

Latitude 38.20 N

WBAN 93821

Longitude 85.70 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:	4659	4323	3872	3392	2777	2115	1493	818	281	46	0
Annual Wet Bulb Cooling deg-hrs:	66506	52850	40349	29215	19640	12031	6241	2508	643	61	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	54	53	52	50	47	45	41	35	27	17	9	.001
.002	1	1	1	1	1	1	1	1	1	1	1	46	46	45	44	42	40	37	32	25	15	8	.002
.003	1	2	2	2	2	2	2	2	2	2	2	39	39	39	38	37	36	33	29	22	14	7	.003
.004	2	3	4	4	5	5	5	5	5	5	5	33	33	33	33	32	31	29	26	20	13	7	.004
.005	3	4	6	7	7	8	8	8	8	8	8	27	27	27	27	27	26	25	22	18	11	6	.005
.006	4	6	8	10	11	11	12	12	12	12	12	22	22	22	22	22	22	21	19	15	10	5	.006
.007	5	7	10	12	14	15	16	16	16	16	16	18	18	18	18	18	18	18	16	13	9	5	.007
.008	5	8	12	15	17	19	20	21	21	21	21	14	14	14	14	14	14	14	13	11	7	4	.008
.009	6	9	14	18	21	23	25	26	26	27	27	11	11	11	11	11	11	11	10	9	6	3	.009
.010	7	11	16	20	24	27	29	31	32	32	32	8	8	8	8	8	8	8	8	7	5	3	.010
.011	8	12	18	23	27	31	34	36	37	38	39	6	6	6	6	6	6	6	6	5	4	2	.011
.012	8	13	20	26	31	35	39	41	43	45	45	4	4	4	4	4	4	4	4	3	3	1	.012
.013	9	15	22	29	34	39	43	47	50	51	52	2	2	2	2	2	2	2	2	2	2	1	.013
.014	10	16	24	31	38	43	48	52	56	58	60	1	1	1	1	1	1	1	1	1	1	1	.014
.015	11	17	26	34	41	47	52	58	62	65	67	0	0	0	0	0	0	0	0	0	0	0	.015
.016	11	18	28	37	44	51	57	63	68	73	75	0	0	0	0	0	0	0	0	0	0	0	.016
.017	12	20	30	39	48	55	62	68	75	80	83	0	0	0	0	0	0	0	0	0	0	0	.017
.018	13	21	32	42	51	59	66	74	81	87	91	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	53	54	49	49	53	59	48	55	45	63	62	52
VERTICAL													
NORTH	100	100	100	99	93	90	93	97	100	100	100	100	96
WEST	60	63	65	65	70	73	78	64	69	54	72	69	68
SOUTH	38	49	57	67	77	84	85	69	66	47	55	49	63
EAST	53	64	63	65	63	65	68	63	71	60	71	67	64
% Possible Sun	42	48	50	55	62	66	66	67	65	62	47	41	57

FOOTNOTES: * Corrected For Cloud Cover.

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

LOUISVILLE, KENTUCKY
WBAN 93821
TABLE H:

TRY Data (12/2)

Latitude 38.20 N
Longitude 85.70 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	1871	1748	1416	1094	682	356	199	160	160	1955	1003	829	799	678	552	383	247	179	161	836	512	546
Feb	1910	1785	1509	1254	868	516	303	208	204	2202	1333	829	784	682	586	443	320	251	222	894	650	789
Mar	1702	1654	1526	1395	1100	776	511	333	272	2345	1778	977	954	887	816	676	533	427	358	1167	978	1102
Apr	1316	1399	1429	1434	1277	1034	768	531	375	2317	2186	1023	1044	1034	1013	912	782	651	542	1448	1436	1467
May	1015	1179	1327	1436	1393	1235	988	736	531	2210	2447	961	1053	1123	1174	1132	1030	881	736	1552	1730	1720
Jun	894	1073	1266	1419	1431	1314	1088	842	640	2147	2551	931	1035	1141	1226	1227	1148	1009	856	1528	1795	1904
Jul	944	1115	1286	1416	1410	1275	1045	800	599	2158	2488	930	1029	1109	1168	1150	1062	930	791	1434	1649	1838
Aug	1170	1283	1359	1402	1301	1099	849	617	444	2222	2255	1017	1076	1100	1106	1027	894	746	615	1532	1587	1680
Sep	1524	1521	1450	1371	1134	851	598	407	320	2270	1891	956	945	896	843	726	602	501	429	1210	1121	1361
Oct	1798	1698	1482	1274	921	600	376	255	236	2193	1459	842	788	701	622	488	368	285	236	974	742	1042
Nov	1854	1727	1407	1115	705	393	219	177	176	1996	1089	576	549	473	397	292	215	172	160	585	415	653
Dec	1831	1707	1367	1041	623	318	173	151	151	1867	916	582	551	463	376	264	185	147	140	568	371	488
Year	1483	1489	1401	1304	1071	815	595	436	343	2156	1785	871	885	858	825	728	617	516	438	1145	1085	1216

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
 ** Derived according to DOE-2.1 LOADS Algorithms and TRY cloud cover data.
 *** South exposure tilt 45 degrees.
 **** Cinquemani, V., J. R. Owenby, Jr. and R. G. Baldwin. 1978. Input Data for Solar Systems. MCC, Ashville, NC.

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	3483	1183	911	544	268	148	130	130	703	671	564	458	309	193	140	131	131		
Feb	1618	1498	1262	1047	703	402	225	167	166	691	649	564	483	359	256	199	180	179		
Mar	1368	1361	1264	1160	902	620	391	254	221	791	782	731	673	552	430	340	286	273		
Apr	979	1107	1170	1190	1055	841	605	405	296	796	836	843	832	747	635	521	430	383		
May	708	881	1062	1185	1154	1015	797	575	398	731	821	907	964	932	843	713	587	488		
Jun	613	779	998	1164	1182	1082	880	661	474	712	800	916	1006	1011	944	821	685	564		
Jul	654	821	1022	1167	1166	1051	845	628	447	720	807	897	961	947	871	754	633	536		
Aug	851	997	1106	1164	1076	899	679	477	345	784	859	898	912	844	729	600	489	421		
Sep	1196	1239	1200	1142	938	689	466	311	259	762	767	734	692	594	488	402	344	321		
Oct	1502	1418	1235	1062	758	473	282	201	192	692	648	578	514	401	296	225	189	184		
Nov	1593	1458	1178	924	571	295	165	144	143	483	457	391	326	238	171	138	130	130		
Dec	1583	1453	1144	863	497	235	133	123	123	490	460	383	310	214	146	118	114	114		
Year	1187	1206	1151	1082	880	657	469	341	267	696	714	701	679	597	501	415	351	311		

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

MEMPHIS, TENNESSEE

WBAN 13893

TABLE A:

TRY Data (1964)

Latitude 35.10 N

Longitude 90.00 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														
70 to 74	0	0	0	0	1	0	0	0	1	62.0	744	23049	0	0
65 to 69	0	0	0	2	11	6	2	0	21	59.5	739	19335	5	6
60 to 64	1	3	3	10	6	4	3	1	31	55.4	712	15711	32	102
55 to 59	6	6	4	11	13	15	6	7	68	51.9	673	12241	71	352
50 to 54	9	1	6	11	21	19	20	15	102	45.0	591	9089	153	920
45 to 49	16	15	13	18	13	14	12	16	117	42.2	474	6421	270	1972
40 to 44	7	8	9	12	8	12	10	5	71	36.4	372	4325	372	3596
35 to 39	7	11	11	12	10	8	13	10	82	33.6	295	2642	449	5633
30 to 34	18	13	16	10	6	8	13	19	103	29.0	218	1342	526	8053
25 to 29	15	16	14	3	4	7	10	9	78	25.3	120	528	624	10959
20 to 24	8	15	11	4	0	0	4	10	52	21.0	48	132	696	14283
15 to 19	6	5	4	0	0	0	0	1	16	17.4	7	11	737	17882
10 to 14	0	0	2	0	0	0	0	0	2	14.0	0	0	744	21591
Feb														
60 to 64	0	0	0	1	5	1	0	0	7	45.6	672	14746	0	0
55 to 59	0	0	0	4	13	10	0	0	27	47.7	658	11413	14	27
50 to 54	3	3	3	16	17	20	5	3	70	45.1	618	8211	54	185
45 to 49	3	0	7	18	23	22	18	6	97	41.0	540	5325	132	659
40 to 44	25	22	16	27	18	16	28	31	183	39.0	410	2918	262	1612
35 to 39	17	15	23	12	6	11	18	15	117	34.4	238	1369	434	3423
30 to 34	22	20	20	6	2	4	10	22	106	30.2	119	474	553	5888
25 to 29	10	18	12	0	0	0	5	6	51	26.6	35	95	637	8869
20 to 24	4	6	3	0	0	0	0	1	14	22.4	4	6	668	12140
Mar														
75 to 79	0	0	0	1	6	2	0	0	9	66.8	744	19010	0	0
70 to 74	3	0	2	8	9	7	3	3	35	64.9	727	15328	17	38
65 to 69	3	8	13	14	20	15	5	3	81	58.3	676	11820	68	250
60 to 64	11	7	2	12	15	20	12	9	88	53.4	599	8663	145	813
55 to 59	7	5	7	15	18	23	18	6	99	49.8	498	5944	246	1814
50 to 54	10	6	15	21	11	11	21	25	120	46.5	387	3716	357	3306
45 to 49	19	19	20	12	5	6	15	7	103	41.6	276	2083	468	5393
40 to 44	13	17	17	4	8	9	18	25	111	36.9	170	979	574	8009
35 to 39	13	12	8	4	1	0	1	10	49	34.7	73	394	671	11144
30 to 34	9	11	7	2	0	0	0	3	32	29.5	35	125	709	14595
25 to 29	5	4	2	0	0	0	0	2	13	24.1	10	23	734	18213
20 to 24	0	4	0	0	0	0	0	0	4	21.8	0	0	744	21910

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

MEMPHIS, TENNESSEE

WBAN 13893

TABLE A:

TRY Data (1964)

Latitude 35.10 N

Longitude 90.00 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															
80 to 84	0	0	0	0	8	6	0	0	14	66.9	720	13245	0	0	
75 to 79	0	0	0	19	27	24	5	0	75	65.1	686	9705	34	60	
70 to 74	11	3	15	26	22	17	14	10	118	63.1	597	6492	123	447	
65 to 69	18	22	25	24	17	28	33	30	197	61.4	445	3856	275	1411	
60 to 64	25	23	22	5	9	9	24	19	136	57.9	243	2170	477	3325	
55 to 59	12	18	13	9	3	2	7	13	77	52.9	149	1209	571	5964	
50 to 54	3	0	5	3	4	4	3	8	30	45.0	93	639	627	8994	
45 to 49	12	11	6	4	0	0	4	3	40	42.6	57	257	663	12212	
40 to 44	7	8	3	0	0	0	0	7	25	37.5	24	66	696	15621	
35 to 39	2	5	1	0	0	0	0	0	8	34.8	4	6	716	19161	
May															
90 to 94	0	0	0	2	11	4	0	0	17	74.3	741	15065	3	2	
85 to 89	0	0	2	19	20	17	3	0	61	72.3	707	11425	37	82	
80 to 84	0	0	11	14	18	25	13	3	84	69.6	640	8055	104	432	
75 to 79	6	4	19	28	18	20	26	16	137	68.2	528	5121	216	1218	
70 to 74	26	22	26	11	16	15	19	26	161	65.6	373	2860	371	2677	
65 to 69	27	27	12	13	9	9	17	22	136	62.3	219	1362	525	4899	
60 to 64	13	12	16	6	1	2	12	18	80	57.4	117	552	627	7809	
55 to 59	13	14	7	0	0	1	3	7	45	54.0	49	158	695	11135	
50 to 54	8	13	0	0	0	0	0	1	22	50.1	12	17	732	14714	
45 to 49	0	1	0	0	0	0	0	0	1	46.0	0	0	744	18417	
Jun															
95 to 99	0	0	0	0	10	8	0	0	18	77.7	720	13199	0	0	
90 to 94	0	0	0	21	37	30	5	0	93	77.1	672	9675	48	76	
85 to 89	0	0	13	30	14	18	20	1	96	74.8	568	6378	152	579	
80 to 84	12	0	31	16	13	16	26	27	141	73.1	459	3979	261	1580	
75 to 79	39	34	22	12	12	13	24	33	189	70.7	294	2073	426	3274	
70 to 74	13	26	11	6	1	2	7	14	80	67.1	135	1043	585	5844	
65 to 69	9	10	8	2	0	0	5	6	40	62.1	87	501	633	8902	
60 to 64	10	10	5	3	2	2	1	8	41	58.7	52	160	668	12161	
55 to 59	7	8	0	0	1	1	2	1	20	56.8	7	14	713	15615	
50 to 54	0	2	0	0	0	0	0	0	2	53.0	0	0	720	19201	

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

MEMPHIS, TENNESSEE

WBAN 13893

TABLE A:

TRY Data (1964)

Latitude 35.10 N

Longitude 90.00 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	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	4	2	0	0	6	79.8	744	13006	0	0	
90 to 94	0	0	0	17	33	25	1	0	76	78.4	726	9319	18	33	
85 to 89	0	0	8	44	36	41	16	2	147	77.5	603	5948	141	382	
80 to 84	4	2	35	16	8	9	46	17	137	75.2	468	3295	276	1449	
75 to 79	47	37	33	8	11	9	17	49	211	73.3	305	1336	439	3210	
70 to 74	28	40	14	8	1	7	12	18	128	70.2	111	351	633	5945	
65 to 69	9	7	3	0	0	0	1	5	25	65.2	25	83	719	9397	
60 to 64	5	7	0	0	0	0	0	2	14	61.2	4	5	740	13039	
Aug															
100 to 104	0	0	0	0	3	2	0	0	5	81.2	744	17944	0	0	
95 to 99	0	0	0	2	3	3	1	0	9	79.7	737	14240	7	16	
90 to 94	0	0	0	10	32	20	2	0	64	78.5	725	10578	19	74	
85 to 89	0	0	4	36	22	26	13	3	104	77.0	620	7188	124	404	
80 to 84	8	1	28	17	14	18	25	16	127	75.1	518	4324	226	1260	
75 to 79	36	27	26	15	12	13	29	36	194	72.8	371	2080	373	2736	
70 to 74	21	32	17	8	5	11	18	22	134	69.3	171	762	573	5138	
65 to 69	22	24	14	4	2	0	5	14	85	65.1	62	175	682	8271	
60 to 64	6	6	4	1	0	0	0	2	19	61.6	8	19	736	11835	
55 to 59	0	3	0	0	0	0	0	0	3	57.7	0	0	744	15536	
Sep															
90 to 94	0	0	0	0	10	1	0	0	11	74.4	720	13829	0	0	
85 to 89	0	0	0	29	39	35	0	0	103	73.8	679	10280	41	51	
80 to 84	0	0	9	29	14	19	14	0	85	71.0	572	7174	148	545	
75 to 79	10	0	25	11	12	14	34	24	130	69.0	472	4541	248	1512	
70 to 74	33	38	26	9	6	9	13	29	163	67.5	320	2507	400	3078	
65 to 69	22	21	11	6	5	6	13	17	101	62.7	192	1290	528	5461	
60 to 64	8	13	8	3	1	2	10	8	53	57.0	99	594	621	8365	
55 to 59	8	4	6	2	3	4	6	9	42	54.8	47	196	673	11567	
50 to 54	9	12	5	1	0	0	0	3	30	49.7	17	24	703	14995	
45 to 49	0	2	0	0	0	0	0	0	2	47.0	0	0	720	18571	

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

MEMPHIS, TENNESSEE

WBAN 13893

TABLE A:

TRY Data (1964)

Latitude 35.10 N

Longitude 90.00 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															
80 to 84	0	0	0	1	6	3	0	0	10	69.8	744	17295	0	0	
75 to 79	0	0	1	15	21	12	1	0	50	67.3	711	13631	33	56	
70 to 74	6	0	3	18	21	22	8	7	85	62.3	661	10198	83	343	
65 to 69	6	6	10	20	20	17	12	7	98	57.5	576	7147	168	1012	
60 to 64	4	9	12	19	20	21	18	11	114	54.4	470	4540	274	2125	
55 to 59	16	11	24	19	5	15	25	21	136	52.8	324	2539	420	3844	
50 to 54	25	18	20	1	0	3	19	24	110	47.5	203	1215	541	6240	
45 to 49	16	25	14	0	0	0	10	13	78	43.7	97	461	647	9206	
40 to 44	17	12	5	0	0	0	0	10	44	40.1	38	121	706	12586	
35 to 39	3	12	4	0	0	0	0	0	19	35.8	7	10	737	16195	
Nov															
80 to 84	0	0	0	1	3	1	0	0	5	69.4	720	19632	0	0	
75 to 79	0	0	0	5	16	3	0	0	24	66.7	710	16051	10	19	
70 to 74	0	0	1	21	26	23	5	1	77	63.2	661	12588	59	156	
65 to 69	13	12	12	20	8	20	18	17	120	62.9	571	9496	149	664	
60 to 64	10	8	16	9	9	7	12	13	84	57.7	461	6949	259	1717	
55 to 59	17	20	14	8	10	10	16	9	104	53.9	372	4865	348	3233	
50 to 54	13	5	13	8	4	8	13	17	81	48.7	277	3264	443	5232	
45 to 49	9	11	7	8	2	6	5	7	55	43.9	206	2073	514	7641	
40 to 44	9	13	12	3	7	5	11	8	68	40.1	142	1192	578	10360	
35 to 39	8	7	4	2	2	4	4	11	42	34.3	79	655	641	13423	
30 to 34	5	5	3	4	3	1	2	1	24	28.0	54	334	666	16702	
25 to 29	1	3	5	1	0	2	2	3	17	23.4	31	137	689	20105	
20 to 24	5	3	2	0	0	0	2	3	15	20.3	12	28	708	23596	
15 to 19	0	3	1	0	0	0	0	0	4	17.8	0	0	720	27168	
Dec															
70 to 74	0	0	0	3	3	1	0	0	7	63.9	743	21527	1	1	
65 to 69	3	4	3	5	7	5	3	3	33	62.0	726	17841	18	35	
60 to 64	3	2	5	4	8	11	5	4	42	58.2	682	14310	62	224	
55 to 59	11	11	7	8	19	15	15	8	94	52.2	645	10984	99	618	
50 to 54	7	7	11	17	13	14	11	16	96	48.1	535	8060	209	1414	
45 to 49	12	8	13	14	5	7	14	13	86	42.2	442	5637	302	2711	
40 to 44	15	16	10	9	14	12	5	7	88	38.0	342	3676	402	4470	
35 to 39	3	6	9	13	6	8	13	8	66	33.2	269	2160	475	6674	
30 to 34	23	24	20	11	10	11	18	20	137	29.9	169	1017	575	9251	
25 to 29	6	1	4	4	7	6	3	6	37	24.0	80	441	664	12395	
20 to 24	7	9	8	4	1	3	6	6	44	19.4	42	128	702	15802	
15 to 19	3	5	1	1	0	0	0	2	12	14.9	9	18	735	19412	
10 to 14	0	0	2	0	0	0	0	0	2	11.0	0	0	744	23114	

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

MEMPHIS, TENNESSEE
WBAW 13893
TABLE B:

TRY Data (1964)

Latitude 35.10 N
Longitude 90.00 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	2	0	0	5	0.0	0.0	0.0	0.0	81.3	81.0	0.0	0.0	81.2
95 to 99	0	0	0	2	17	13	1	0	33	0.0	0.0	0.0	81.0	79.3	77.4	79.0	0.0	78.6
90 to 94	0	0	0	50	123	80	8	0	261	0.0	0.0	0.0	78.7	77.3	77.2	77.3	0.0	77.5
85 to 89	0	0	27	158	131	137	52	6	511	0.0	0.0	77.6	76.5	74.5	74.6	76.1	78.0	75.5
80 to 84	24	3	114	94	84	97	124	63	603	75.0	76.0	75.1	72.9	69.4	70.5	73.9	74.9	73.0
75 to 79	138	102	126	114	135	110	136	158	1019	72.8	73.5	72.2	67.7	65.8	67.2	70.7	72.5	70.4
70 to 74	141	161	115	118	111	114	99	130	989	69.0	69.8	67.9	63.1	62.1	62.1	66.4	68.0	66.3
65 to 69	132	141	111	110	99	106	114	124	937	63.8	64.4	62.9	59.8	57.9	58.6	61.0	62.7	61.6
60 to 64	96	100	93	73	76	79	97	95	709	59.0	59.8	57.9	55.1	52.1	53.4	56.2	57.7	56.6
55 to 59	97	100	82	76	85	96	98	81	715	54.5	54.8	54.0	50.2	49.8	50.9	52.5	53.0	52.5
50 to 54	87	67	78	78	70	79	92	112	663	48.4	49.5	48.7	45.5	44.1	44.5	46.9	48.0	47.0
45 to 49	87	92	80	74	48	55	78	65	579	43.1	44.2	43.3	41.5	40.2	39.9	41.7	42.6	42.3
40 to 44	93	96	72	55	55	54	72	93	590	38.6	39.7	39.5	36.9	36.8	36.8	37.8	38.5	38.3
35 to 39	53	68	60	43	25	31	49	54	383	35.2	35.0	34.5	32.8	31.0	32.7	34.2	34.6	34.1
30 to 34	77	73	66	33	21	24	43	65	402	30.0	30.0	29.9	28.2	28.7	28.8	29.4	29.9	29.6
25 to 29	37	42	37	8	11	15	20	26	196	25.5	26.3	25.2	24.1	23.9	23.9	24.2	25.0	25.1
20 to 24	24	37	24	8	1	3	12	20	129	20.6	20.8	20.6	19.8	19.0	19.3	20.2	20.5	20.5
15 to 19	9	13	6	1	0	0	0	3	32	16.9	16.4	16.2	14.0	0.0	0.0	0.0	17.3	16.5
10 to 14	0	0	4	0	0	0	0	0	4	0.0	0.0	12.5	0.0	0.0	0.0	0.0	0.0	12.5

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Month	Dry Bulb Temperature (F)					Wet Bulb Ave	Percent Relative Humidity Average					Average Humidity Ratio (lb moisture/lb dry air)					Average wind MPH
	Ave	Max	Min	Daily Max	Ave Min		4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	41.5	70	14	52	31	37.3	81	69	53	71	71	0.0038	0.0043	0.0042	0.0043	0.0041	9.3
Feb	40.6	61	20	50	31	36.8	89	69	55	73	74	0.0038	0.0039	0.0038	0.0039	0.0039	9.3
Mar	51.9	77	24	63	40	48.0	78	64	52	64	66	0.0055	0.0061	0.0059	0.0055	0.0057	11.3
Apr	64.1	81	35	72	55	57.8	82	65	57	70	70	0.0089	0.0093	0.0095	0.0094	0.0092	10.6
May	72.3	93	49	82	62	64.6	84	63	53	69	69	0.0111	0.0122	0.0115	0.0119	0.0117	7.7
Jun	79.2	96	54	88	69	70.7	84	66	53	65	69	0.0140	0.0159	0.0144	0.0144	0.0147	7.9
Jul	80.0	97	60	89	72	74.0	91	72	63	75	77	0.0161	0.0180	0.0172	0.0169	0.0170	5.9
Aug	78.4	101	58	87	70	72.5	90	73	62	78	78	0.0153	0.0171	0.0167	0.0166	0.0162	6.7
Sep	73.3	90	49	83	64	66.2	85	65	55	72	72	0.0120	0.0136	0.0126	0.0127	0.0127	6.5
Oct	59.3	82	35	71	48	53.0	84	62	50	71	69	0.0069	0.0081	0.0078	0.0078	0.0076	6.5
Nov	55.2	81	18	66	45	51.1	89	74	59	79	77	0.0074	0.0085	0.0079	0.0078	0.0078	6.7
Dec	43.6	73	13	52	35	39.9	78	74	64	72	73	0.0046	0.0050	0.0052	0.0049	0.0049	10.0
Year	61.7	101	13	71	52	55.9	85	68	56	72	72	0.0092	0.0102	0.0098	0.0097	0.0096	8.2

MEMPHIS, TENNESSEE

WBAN 13893

TABLE D:

TRY Data (1964)

Latitude 35.10 N

Longitude 90.00 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)*	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	474	0	0	391	0	0	375	0	0	439	0	0	1495	0	0
101	0	463	0	0	380	0	0	364	0	0	428	0	0	1462	0	0
100	0	452	0	0	369	0	2	353	0	0	417	0	0	1429	0	0
99	0	441	0	0	359	0	3	322	0	2	342	0	0	1397	0	0
98	0	430	0	0	348	0	3	311	0	2	331	0	0	1364	0	0
97	0	419	0	1	337	0	4	301	0	3	320	0	0	1331	0	0
96	0	408	0	1	326	0	7	290	0	5	309	0	0	1298	0	0
95	0	397	0	1	315	0	15	279	0	11	298	0	0	1265	0	0
94	0	386	0	3	304	0	23	268	0	19	288	0	1	1232	0	0
93	0	375	0	8	293	0	35	257	1	27	277	1	1	1199	0	0
92	0	364	0	16	282	0	52	247	1	39	266	1	2	1167	0	0
91	0	353	0	26	271	0	77	237	2	60	256	1	4	1134	0	0
90	0	342	0	42	261	1	118	227	3	83	246	2	7	1101	0	0
89	0	331	0	65	250	1	156	217	4	110	236	3	11	1068	0	0
88	2	320	0	93	240	2	187	208	6	140	226	4	18	1035	0	0
87	4	310	0	122	230	3	221	199	8	171	217	6	27	1002	0	0
86	11	299	0	154	221	4	248	190	10	197	207	8	38	970	0	0
85	22	288	0	191	211	6	267	182	13	220	199	10	52	937	0	0
84	33	277	1	221	203	8	280	174	16	242	190	12	69	904	0	0
83	50	267	1	244	194	11	295	166	18	260	182	15	90	871	0	0
82	70	256	2	266	186	13	310	158	21	278	173	17	115	839	0	0
81	95	246	2	285	177	16	326	150	25	298	165	20	142	806	1	0
80	125	236	3	299	169	19	347	142	28	318	157	23	170	774	2	0
79	151	227	5	317	161	22	374	135	32	344	150	27	201	742	2	0
78	171	217	6	339	154	25	401	128	35	370	142	30	229	711	4	0
77	197	208	8	359	146	29	427	121	40	394	135	34	252	680	6	0
76	226	199	10	380	139	32	455	115	44	413	128	38	277	650	9	0
75	253	191	13	404	132	36	480	108	49	429	122	42	306	621	13	0
74	280	183	15	430	125	41	505	102	54	448	115	47	331	593	18	0
73	305	175	18	451	119	45	532	96	59	471	109	51	349	566	24	0
72	327	167	22	476	112	50	559	91	64	499	102	56	372	540	31	0
71	348	159	25	504	106	54	579	86	70	523	97	61	395	515	38	0
70	371	152	29	526	101	60	595	81	76	543	91	67	412	491	47	0
69	389	145	32	548	95	65	612	76	82	565	86	72	428	467	56	0
68	412	138	36	569	90	71	629	71	88	586	80	78	448	444	66	0
67	438	131	41	585	85	76	653	66	94	606	75	84	472	422	77	0
66	461	125	45	603	79	82	678	62	101	631	71	90	497	401	88	0
65	484	118	50	629	75	88	695	58	108	652	66	96	521	380	101	0
64	504	112	55	653	70	95	707	54	115	667	62	103	546	361	114	0
63	522	107	60	667	66	102	718	50	122	678	58	110	570	342	128	0
62	535	101	65	678	62	108	731	47	129	692	54	117	591	323	142	0
61	552	95	71	693	58	115	749	43	137	712	50	124	611	306	157	0
60	574	90	76	711	54	122	769	40	144	729	46	131	626	288	173	0
59	593	85	82	728	50	129	789	37	152	745	42	138	638	272	189	0
58	613	80	88	741	46	137	805	34	160	765	39	146	656	255	206	0
57	633	75	94	752	43	144	822	31	168	787	36	153	674	240	223	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

MEMPHIS, TENNESSEE
WBAN 13893
TABLE D:

TRY Data (1964)

Latitude 35.10 N
Longitude 90.00 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)*	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
56	648	71	101	766	39	152	844	28	177	807	33	161	690	50	115	1793	224	240	3209	446	5551	946
55	662	66	107	784	36	159	860	26	185	826	30	170	714	46	122	1857	210	259	3055	414	5705	1002
54	677	62	114	800	33	167	867	23	194	840	27	178	738	43	129	1920	196	278	2916	385	5844	1060
53	692	58	121	811	30	175	880	21	203	854	25	186	756	39	137	1972	182	297	2794	356	5966	1119
52	707	54	128	822	28	184	893	19	211	871	22	195	775	36	144	2024	170	317	2667	329	6093	1179
51	723	50	135	842	25	192	905	17	220	889	20	204	794	33	152	2081	157	337	2524	303	6236	1241
50	738	47	142	865	22	200	923	15	230	905	18	213	812	30	160	2134	145	359	2381	278	6379	1304
49	750	43	150	881	20	209	940	14	239	921	17	222	829	27	169	2180	134	380	2257	255	6503	1369
48	759	40	157	897	18	218	953	12	248	932	15	231	842	24	177	2230	123	402	2145	233	6615	1434
47	779	36	165	909	16	227	964	11	258	941	13	241	856	22	185	2279	113	425	2030	212	6730	1501
46	801	33	173	923	14	236	973	10	268	951	12	250	875	20	194	2326	103	448	1909	192	6851	1569
45	817	31	181	940	13	246	980	8	277	962	10	260	891	18	203	2376	94	471	1792	174	6968	1638
44	834	28	189	949	11	255	986	7	287	970	9	269	903	16	212	2433	85	495	1683	157	7077	1708
43	852	25	198	957	10	265	996	6	297	979	8	279	917	14	221	2493	77	520	1564	140	7196	1779
42	867	23	206	970	9	274	1008	5	307	993	7	289	937	12	230	2547	69	545	1435	125	7325	1852
41	880	21	215	984	7	284	1020	5	317	1006	6	299	953	11	240	2605	62	571	1310	112	7450	1926
40	892	19	224	997	6	294	1032	4	328	1017	5	309	964	9	249	2661	56	597	1196	99	7564	2001
39	905	17	233	1007	5	304	1038	3	338	1027	4	319	981	8	259	2704	50	624	1096	88	7664	2077
38	919	15	242	1016	5	314	1043	3	348	1035	4	330	997	7	269	2742	44	651	1005	77	7755	2154
37	928	13	251	1024	4	324	1050	2	359	1042	3	340	1004	6	279	2778	39	679	932	68	7828	2232
36	937	12	261	1032	3	335	1055	2	369	1046	3	350	1008	5	289	2812	34	707	868	59	7892	2311
35	950	10	270	1040	3	345	1060	2	380	1050	2	361	1015	4	299	2843	29	735	800	50	7960	2390
34	963	9	280	1050	2	355	1065	1	391	1057	2	371	1025	4	309	2885	25	764	713	43	8047	2470
33	972	7	289	1057	2	366	1071	1	401	1063	1	382	1036	3	320	2930	21	793	629	36	8131	2551
32	986	6	299	1062	1	377	1075	1	412	1068	1	393	1045	2	330	2966	18	822	556	30	8204	2633
31	1005	5	309	1070	1	387	1079	1	423	1073	1	403	1052	2	340	3003	15	852	476	25	8284	2715
30	1019	5	319	1076	1	398	1081	0	434	1076	1	414	1059	2	351	3048	12	882	398	20	8362	2798
29	1028	4	329	1079	1	409	1084	0	444	1077	1	425	1065	1	362	3086	10	913	339	17	8421	2882
28	1034	3	340	1081	1	420	1087	0	455	1080	0	436	1069	1	372	3111	8	944	297	14	8463	2967
27	1041	3	350	1083	0	430	1089	0	466	1084	0	447	1072	1	383	3133	7	975	257	11	8503	3052
26	1049	2	361	1085	0	441	1091	0	477	1087	0	457	1075	0	394	3151	5	1007	220	8	8540	3137
25	1057	2	371	1086	0	452	1093	0	488	1090	0	468	1080	0	405	3169	4	1038	184	6	8576	3222
24	1063	1	382	1087	0	463	1094	0	499	1092	0	479	1085	0	415	3189	3	1070	148	5	8612	3308
23	1066	1	392	1089	0	474	1095	0	510	1093	0	490	1089	0	426	3208	2	1102	119	3	8641	3395
22	1071	1	403	1091	0	485	1095	0	521	1094	0	501	1091	0	437	3222	2	1134	95	2	8665	3481
21	1078	1	414	1093	0	496	1095	0	532	1094	0	512	1092	0	448	3234	1	1167	73	2	8687	3568
20	1083	0	425	1094	0	507	1095	0	543	1095	0	523	1093	0	459	3250	1	1199	49	1	8711	3655
19	1085	0	435	1094	0	518	1095	0	554	1095	0	534	1095	0	470	3266	0	1232	29	1	8731	3742
18	1087	0	446	1094	0	528	1095	0	565	1095	0	545	1095	0	481	3274	0	1264	19	0	8741	3830
17	1089	0	457	1094	0	539	1095	0	576	1095	0	556	1095	0	492	3279	0	1297	12	0	8748	3917
16	1089	0	468	1095	0	550	1095	0	586	1095	0	567	1095	0	503	3283	0	1330	7	0	8753	4004
15	1090	0	479	1095	0	561	1095	0	597	1095	0	578	1095	0	514	3284	0	1363	5	0	8755	4092
14	1092	0	490	1095	0	572	1095	0	608	1095	0	589	1095	0	525	3285	0	1396	3	0	8757	4180
13	1094	0	501	1095	0	583	1095	0	619	1095	0	600	1095	0	536	3285	0	1429	1	0	8759	4267
12	1095	0	512	1095	0	594	1095	0	630	1095	0	611	1095	0	547	3285	0	1461	0	0	8760	4355

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

MEMPHIS, TENNESSEE
WBAN 13893
TABLE E:

TRY Data (1964)
Annual COOLING Wet Bulb Degree Hour Summary

Latitude 35.10 N
Longitude 90.00 E

Wet Bulb Temperature (F) Base:	50	53	56	59	62	65	68	71	74	77	80
Annual Wet Bulb hours ABOVE base:	5717	5345	4874	4373	3861	3253	2691	2031	1286	563	83
Annual Wet Bulb Cooling deg-hrs:	96505.	79737.	64152.	50033.	37400.	26433.	17183.	9710.	4315.	1238.	121.

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		71	71	70	68	66	63	59	53	44	32	19		.001
.002	0	0	0	0	0	0	0	0	0	0	0		63	63	62	61	60	57	54	49	41	29	18		.002
.003	1	1	1	1	1	1	1	1	1	1	1		55	55	55	55	54	52	49	44	37	27	17		.003
.004	1	2	2	3	3	3	3	3	3	3	3		48	48	48	48	48	46	44	40	34	25	15		.004
.005	1	2	3	4	5	5	5	6	6	6	6		42	42	42	42	42	41	39	36	31	23	14		.005
.006	2	3	4	6	7	8	8	8	9	9	9		36	36	36	36	36	36	34	32	28	21	13		.006
.007	2	4	6	8	9	10	11	12	12	12	12		31	31	31	31	31	31	30	28	25	18	12		.007
.008	2	5	7	9	12	13	14	15	16	16	16		26	26	26	26	26	26	24	22	16	10			.008
.009	3	5	8	11	14	16	18	19	20	20	20		21	21	21	21	21	21	21	21	19	14	9		.009
.010	3	6	9	13	16	19	21	23	24	25	25		17	17	17	17	17	17	17	17	16	12	8		.010
.011	3	7	10	15	18	22	25	27	29	29	30		14	14	14	14	14	14	14	14	13	10	7		.011
.012	4	8	11	16	21	25	29	31	33	35	35		11	11	11	11	11	11	11	11	10	8	5		.012
.013	4	9	12	18	23	28	32	36	39	40	41		8	8	8	8	8	8	8	8	8	6	4		.013
.014	5	9	14	20	25	31	36	40	44	46	47		5	5	5	5	5	5	5	5	5	5	3		.014
.015	5	10	15	21	28	34	40	45	49	52	54		4	4	4	4	4	4	4	4	4	3	2		.015
.016	5	11	16	23	30	37	44	49	54	58	60		2	2	2	2	2	2	2	2	2	2	1		.016
.017	6	12	17	25	32	40	47	53	60	64	67		1	1	1	1	1	1	1	1	1	1	1		.017
.018	6	12	18	27	35	43	51	58	65	71	75		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	34	31	38	48	50	43	42	47	36	25	31	49	41
VERTICAL													
NORTH	100	100	100	99	93	86	89	97	100	100	100	100	95
WEST	47	46	57	65	71	66	65	64	55	42	43	55	59
SOUTH	29	32	49	69	81	83	79	72	51	29	28	40	51
EAST	45	45	54	65	62	56	57	65	53	40	46	64	55
% Possible Sun	49	55	57	65	70	74	73	76	69	71	58	50	65

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

MEMPHIS, TENNESSEE

WBAN 13893

TABLE H:

TRY Data (1964)

Latitude 35.10 N

Longitude 90.00 E

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

Month	Under Clear Sky Assumption*											Corrected for Cloud Cover**											Dbs ****
	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	1872	1739	1417	1117	716	388	221	177	176	2024	1109	1140	1077	903	739	508	312	211	184	183	1198	720	683
Feb	1850	1742	1497	1264	902	564	334	227	217	2214	1418	1095	1045	913	787	587	399	273	213	207	1264	859	945
Mar	1602	1565	1465	1361	1097	794	534	347	282	2306	1829	1099	1092	1030	961	801	626	481	379	340	1451	1244	1278
Apr	1197	1300	1358	1392	1266	1041	781	547	380	2233	2191	940	979	990	991	912	787	655	542	466	1390	1421	1639
May	899	1074	1238	1358	1350	1206	984	741	534	2102	2409	878	988	1082	1153	1141	1047	908	756	620	1463	1679	1885
Jun	785	975	1183	1346	1391	1293	1092	851	653	2031	2501	793	938	1079	1191	1217	1142	996	824	668	1502	1825	2045
Jul	835	1016	1200	1341	1361	1246	1039	802	607	2045	2445	825	961	1082	1174	1180	1091	941	772	621	1536	1811	1972
Aug	1057	1187	1284	1356	1280	1093	860	630	449	2132	2245	937	1002	1040	1067	1007	888	752	622	525	1477	1580	1824
Sep	1420	1437	1402	1354	1149	884	632	431	330	2218	1927	1095	1118	1088	1045	901	726	566	443	378	1570	1434	1471
Oct	1729	1633	1440	1260	936	617	393	268	249	2192	1534	1345	1295	1159	1026	779	531	359	264	250	1656	1188	1205
Nov	1841	1721	1421	1151	762	436	254	193	192	2050	1189	1047	968	803	657	453	290	201	168	167	1144	704	817
Dec	1836	1715	1386	1072	671	352	200	167	166	1938	1020	744	680	554	441	306	207	164	153	152	756	475	629
Year	1408	1424	1357	1281	1074	827	612	450	354	2123	1820	994	1012	977	937	817	672	544	445	383	1368	1247	1366

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

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

*** South exposure tilt 45 degrees.

**** Cinquemani, V., J. R. Owenby, Jr. and R. G. Baldwin. 1978. Input Data for Solar Systems. NCC, Asheville, NC.

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	1608	1467	1183	927	575	293	165	144	143	970	904	753	616	411	242	163	150	149
Feb	1556	1454	1246	1056	735	437	248	180	176	916	868	758	655	478	314	210	171	168
Mar	1269	1279	1211	1132	902	635	407	264	229	876	891	846	793	656	503	378	299	276
Apr	867	1014	1106	1150	1044	849	620	417	299	722	779	806	813	747	640	526	430	375
May	615	791	985	1121	1115	995	791	576	399	667	767	873	948	940	861	735	602	489
Jun	535	699	927	1106	1148	1068	882	670	483	594	709	861	980	1005	942	808	655	516
Jul	572	740	950	1104	1126	1029	839	630	452	615	734	869	967	975	899	762	613	484
Aug	751	911	1042	1120	1058	899	688	487	348	713	791	846	876	827	726	606	495	419
Sep	1096	1162	1156	1125	949	716	494	330	268	856	905	894	863	740	588	450	349	307
Oct	1434	1358	1199	1049	766	490	298	212	203	1114	1077	966	855	638	423	276	211	204
Nov	1577	1451	1191	959	616	335	188	157	157	890	810	669	545	367	228	155	137	137
Dec	1581	1452	1157	890	534	264	150	136	135	629	565	455	362	245	164	130	124	124
Year	1119	1146	1112	1061	881	669	482	351	275	796	816	800	773	670	546	435	354	305

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

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

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MINNEAPOLIS, MINNESOTA
WBAH 14922
TABLE A:

TRY Data (1970)

Latitude 44.90 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*	
	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															
35 to 39	3	3	3	3	3	1	0	0	16	33.6	744	23070	0	0	
30 to 34	0	0	0	2	8	8	8	5	31	29.4	719	19408	25	58	
25 to 29	5	3	3	8	12	15	8	5	59	26.0	671	15911	73	281	
20 to 24	10	10	9	11	7	5	9	11	72	21.5	610	12719	134	809	
15 to 19	18	13	10	8	9	9	11	15	93	16.6	526	9863	218	1673	
10 to 14	7	10	11	11	10	7	7	4	67	11.1	442	7449	302	2979	
5 to 9	4	5	8	9	14	12	11	14	77	6.1	373	5391	371	4641	
0 to 4	13	9	5	11	4	8	6	4	60	1.4	302	3709	442	6679	
-5 to -1	5	10	15	9	14	11	10	8	82	-3.2	233	2352	511	9042	
-10 to -6	7	6	6	9	2	6	9	10	55	-7.8	160	1382	584	11792	
-15 to -11	11	7	10	2	10	10	7	8	65	-13.4	115	693	629	14823	
-20 to -16	3	8	4	5	0	1	7	5	33	-17.6	49	302	695	18152	
-25 to -21	4	3	0	5	0	0	0	4	16	-23.3	28	114	716	21684	
-30 to -26	3	6	9	0	0	0	0	0	18	-27.7	10	12	734	25302	
Feb															
35 to 39	0	0	0	7	16	17	11	4	55	33.7	654	14242	18	13	
30 to 34	10	4	8	15	10	10	12	12	81	29.0	599	11125	73	256	
25 to 29	12	15	10	7	17	10	13	15	99	25.1	497	8369	175	860	
20 to 24	15	9	10	12	8	12	7	8	81	20.8	400	6126	272	1977	
15 to 19	6	11	13	13	9	8	10	6	76	15.5	329	4305	343	3516	
10 to 14	8	10	15	12	10	7	4	8	74	10.6	246	2864	426	5435	
5 to 9	5	11	6	5	5	11	14	11	68	5.8	173	1804	499	7735	
0 to 4	11	6	6	3	3	2	4	9	44	1.0	122	1075	550	10366	
-5 to -1	10	6	3	3	0	1	1	3	27	-3.1	77	581	595	13232	
-10 to -6	1	4	5	1	4	4	5	5	29	-8.0	58	241	614	16252	
-15 to -11	6	5	5	6	2	2	3	3	32	-12.3	18	48	654	19419	
-20 to -16	0	3	3	0	0	0	0	0	6	-18.0	3	6	669	22737	
Mar															
40 to 44	0	0	0	2	9	7	0	0	18	33.7	738	12003	6	3	
35 to 39	2	3	4	17	24	25	11	3	89	32.3	693	8384	51	104	
30 to 34	16	13	13	20	25	27	36	29	179	28.7	562	5194	182	634	
25 to 29	18	10	13	23	20	19	17	20	140	24.0	392	2794	352	1954	
20 to 24	27	25	23	17	10	11	19	22	154	19.8	250	1146	494	4026	
15 to 19	27	25	26	12	5	4	10	16	125	15.1	103	270	641	6870	
10 to 14	3	17	14	2	0	0	0	3	39	10.8	14	11	730	10331	

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

MINNEAPOLIS, MINNESOTA
WBAN 14922
TABLE A:

TRY Data (1970)

Latitude 44.90 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*	
	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	0	1	0	0	0	1	69.0	720	33471	0	0	
85 to 89	0	0	0	1	3	1	0	0	5	66.4	718	29874	2	3	
80 to 84	0	0	0	2	5	5	1	0	13	65.2	705	26305	15	34	
75 to 79	0	0	0	3	2	5	3	0	13	62.9	700	22792	20	121	
70 to 74	0	0	1	3	4	5	5	2	20	61.8	679	19338	41	267	
65 to 69	1	0	3	7	5	3	3	6	28	58.2	658	15992	62	521	
60 to 64	7	6	7	2	1	4	6	5	38	54.3	627	12777	93	906	
55 to 59	5	1	3	4	14	8	3	4	42	47.3	590	9746	130	1475	
50 to 54	5	7	2	9	8	12	10	4	57	44.1	539	6913	181	2242	
45 to 49	6	7	15	17	17	18	14	12	106	40.9	466	4367	254	3296	
40 to 44	20	9	18	21	19	17	22	22	148	36.6	356	2320	364	4849	
35 to 39	26	35	24	12	8	6	12	25	148	33.3	189	942	531	7071	
30 to 34	11	15	9	7	3	6	8	6	65	29.2	63	339	657	10068	
25 to 29	5	2	3	2	0	0	3	2	17	22.8	29	130	691	13459	
20 to 24	4	6	4	0	0	0	0	2	16	19.3	10	29	710	16958	
15 to 19	0	2	1	0	0	0	0	0	3	15.3	2	2	718	20531	
May															
90 to 94	0	0	0	0	0	2	0	0	2	68.5	744	25291	0	0	
85 to 89	0	0	0	1	6	9	2	0	18	68.0	735	21583	9	12	
80 to 84	0	0	0	3	4	1	4	2	14	66.6	718	17948	26	97	
75 to 79	2	0	0	5	8	10	6	1	32	64.0	702	14393	42	262	
70 to 74	2	1	4	13	21	15	15	7	78	62.9	651	10984	93	573	
65 to 69	12	5	13	15	2	12	8	15	82	59.8	568	7932	176	1241	
60 to 64	16	18	13	11	25	16	16	18	133	55.8	463	5314	281	2343	
55 to 59	5	10	12	14	10	15	14	9	89	50.4	356	3309	388	4058	
50 to 54	15	10	15	11	9	4	13	12	89	47.3	261	1779	483	6248	
45 to 49	19	17	18	16	5	6	12	19	112	44.1	154	707	590	8896	
40 to 44	17	23	14	2	2	1	0	7	66	40.4	54	182	690	12091	
35 to 39	5	7	4	2	1	2	3	3	27	35.0	15	26	729	15655	
30 to 34	0	2	0	0	0	0	0	0	2	32.0	0	0	744	19349	
Jun															
95 to 99	0	0	0	0	2	5	0	0	7	79.1	720	18616	0	0	
90 to 94	0	0	0	3	11	7	3	0	24	74.3	706	15047	14	31	
85 to 89	0	0	3	9	14	11	7	8	52	72.3	674	11586	46	170	
80 to 84	5	1	4	18	16	21	13	0	78	69.1	611	8373	109	557	
75 to 79	4	3	11	18	17	16	15	14	98	66.8	524	5529	196	1313	
70 to 74	19	16	23	19	14	15	22	17	145	64.3	412	3173	308	2557	
65 to 69	20	23	24	10	13	12	17	19	138	61.1	235	1508	485	4492	
60 to 64	14	20	14	10	3	3	12	23	99	56.7	134	579	586	7163	
55 to 59	23	16	11	3	0	0	1	7	61	54.0	48	138	672	10322	
50 to 54	5	9	0	0	0	0	0	2	16	48.9	9	16	711	13800	
45 to 49	0	2	0	0	0	0	0	0	2	46.0	0	0	720	17384	

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

MINNEAPOLIS, MINNESOTA
WBAN 14922
TABLE A:

TRY Data (1970)

Latitude 44.90 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	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	2	0	0	0	2	69.0	744	16238	0	0
90 to 94	0	0	0	6	23	19	1	0	49	72.2	727	12537	17	19
85 to 89	0	0	2	27	21	29	11	1	91	71.9	657	9045	87	247
80 to 84	3	2	11	19	29	23	30	4	121	69.9	561	5988	183	910
75 to 79	9	5	28	25	10	12	25	27	141	67.7	433	3508	311	2150
70 to 74	36	30	31	13	2	4	14	29	159	66.2	272	1735	472	4097
65 to 69	17	25	12	0	3	6	8	19	90	61.6	127	742	617	6824
60 to 64	18	14	6	2	3	0	4	10	57	57.6	68	260	676	10062
55 to 59	8	13	3	1	0	0	0	3	28	54.6	21	50	723	13572
50 to 54	2	4	0	0	0	0	0	0	6	51.2	2	1	742	17243
Aug														
90 to 94	0	0	0	1	9	8	0	0	18	71.2	739	15233	5	4
85 to 89	0	0	0	7	18	14	2	0	41	70.4	715	11600	29	91
80 to 84	0	0	2	25	25	23	12	2	89	67.7	654	8158	90	369
75 to 79	3	0	14	27	24	32	20	6	126	65.5	554	5127	190	1058
70 to 74	22	15	30	24	14	13	40	37	195	65.1	406	2708	338	2359
65 to 69	29	33	28	7	2	0	10	20	129	62.4	204	1189	540	4560
60 to 64	23	15	15	2	1	3	9	24	92	58.2	103	414	641	7505
55 to 59	11	20	4	0	0	0	0	4	39	54.5	32	87	712	10898
50 to 54	5	10	0	0	0	0	0	0	15	50.6	5	5	739	14536
Sep														
85 to 89	0	0	0	2	10	5	0	0	17	71.3	718	18724	2	1
80 to 84	2	0	1	10	8	9	3	4	37	70.5	694	15199	26	76
75 to 79	4	3	4	6	15	15	9	2	58	68.0	643	11850	77	327
70 to 74	1	4	10	16	13	13	15	7	79	64.5	584	8778	136	855
65 to 69	16	17	12	15	10	10	7	15	102	61.6	472	6090	248	1767
60 to 64	9	2	7	7	6	8	14	10	63	55.4	410	3915	310	3192
55 to 59	12	15	19	21	19	20	19	20	145	52.4	321	2055	399	4932
50 to 54	19	16	21	7	8	10	15	12	108	48.9	178	854	542	7331
45 to 49	18	18	11	6	1	0	8	18	80	44.5	74	222	646	10299
40 to 44	9	15	4	0	0	0	0	2	30	40.8	13	23	707	13700
35 to 39	0	0	1	0	0	0	0	0	1	37.0	0	0	720	17277

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

MINNEAPOLIS, MINNESOTA
WBAN 14922
TABLE A:

TRY Data (1970)

Latitude 44.90 N
Longitude 93.20 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				22-24	hours below			degree hours	hours above	degree hours	
				10-12	13-15	16-18	19-21								
Oct															
80 to 84	0	0	0	0	3	2	0	0	5	68.8	741	24538	3	4	
75 to 79	0	0	0	2	3	3	1	0	9	65.6	739	20840	5	26	
70 to 74	2	0	0	6	6	5	3	3	25	61.5	717	17190	27	96	
65 to 69	1	3	3	5	5	2	1	0	20	57.2	699	13651	45	277	
60 to 64	1	0	3	5	19	15	5	3	51	53.1	672	10213	72	559	
55 to 59	17	13	14	23	18	21	14	16	136	52.1	587	7026	157	1092	
50 to 54	9	11	10	17	8	7	21	15	98	47.5	475	4408	269	2194	
45 to 49	13	9	10	14	15	18	20	19	126	42.9	356	2330	388	3836	
40 to 44	31	29	21	12	14	15	15	23	160	39.3	220	892	524	6118	
35 to 39	14	17	18	9	2	5	13	12	90	35.6	62	208	682	9154	
30 to 34	5	11	6	0	0	0	0	2	24	31.0	16	24	728	12690	
Nov															
50 to 54	0	0	0	0	2	1	0	0	3	44.0	720	14288	0	0	
45 to 49	3	1	3	3	11	7	3	3	34	41.8	706	10706	14	18	
40 to 44	4	5	4	22	24	20	17	13	109	38.1	664	7273	56	185	
35 to 39	31	21	26	31	29	31	32	29	230	33.9	506	4329	214	841	
30 to 34	22	30	26	15	9	13	18	22	155	30.2	247	2454	473	2566	
25 to 29	18	12	8	4	3	6	10	11	72	24.3	148	1452	572	5164	
20 to 24	0	10	11	7	6	6	1	2	43	20.0	100	847	620	8159	
15 to 19	3	2	4	4	5	1	3	2	24	14.5	64	454	656	11366	
10 to 14	3	0	2	3	1	4	3	5	21	9.8	44	186	676	14698	
5 to 9	6	9	5	1	0	1	3	3	28	5.6	19	30	701	18142	
0 to 4	0	0	1	0	0	0	0	0	1	3.0	0	0	720	21712	
Dec															
50 to 54	1	1	0	0	0	0	0	0	2	49.0	744	25493	0	0	
45 to 49	2	0	0	0	0	0	0	0	2	46.5	741	21782	3	9	
40 to 44	0	2	3	0	3	1	0	1	10	38.6	736	18084	8	31	
35 to 39	0	2	4	8	9	6	3	0	32	33.6	721	14431	23	98	
30 to 34	11	4	3	10	11	15	16	14	84	29.2	666	10940	78	327	
25 to 29	18	15	14	15	17	17	17	20	133	25.0	557	7840	187	947	
20 to 24	12	16	15	11	14	10	10	9	97	20.1	455	5346	289	2173	
15 to 19	13	17	11	15	6	11	18	17	108	14.9	346	3342	398	3889	
10 to 14	12	7	11	4	23	14	4	11	86	10.0	242	1892	502	6159	
5 to 9	7	8	7	24	10	16	11	5	88	5.3	155	889	589	8876	
0 to 4	5	12	16	5	0	3	11	13	65	1.3	74	314	670	12021	
-5 to -1	9	4	5	1	0	0	3	2	24	-3.1	26	91	718	15518	
-10 to -6	3	4	4	0	0	0	0	1	12	-7.9	8	13	736	19160	
-15 to -11	0	1	0	0	0	0	0	0	1	-11.0	0	0	744	22867	

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

MINNEAPOLIS, MINNESOTA
WBAN 14922
TABLE B:

TRY Data (1970)

Latitude 44.90 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	4	5	0	0	9	0.0	0.0	0.0	0.0	74.8	78.6	0.0	0.0	76.9
90 to 94	0	0	0	10	44	36	4	0	94	0.0	0.0	0.0	72.5	72.3	72.1	76.8	0.0	72.4
85 to 89	0	0	5	47	72	69	22	9	224	0.0	0.0	72.6	71.9	70.5	70.6	72.7	74.7	71.2
80 to 84	10	3	18	77	90	84	63	12	357	73.2	72.3	71.0	69.5	67.5	67.3	70.5	71.8	68.9
75 to 79	22	11	57	86	79	93	79	50	477	69.7	71.8	69.3	65.6	64.4	64.7	66.3	69.5	66.5
70 to 74	82	66	99	94	74	70	114	102	701	67.0	67.5	65.7	63.4	62.4	62.5	63.8	65.1	64.6
65 to 69	96	106	95	59	40	45	54	94	589	62.6	63.5	61.9	58.8	57.5	56.7	59.9	61.8	61.1
60 to 64	88	75	65	39	58	49	66	93	533	57.6	58.3	57.1	54.4	53.7	54.1	55.3	56.4	56.1
55 to 59	81	88	66	66	61	64	51	63	540	53.5	54.4	53.2	51.1	49.4	49.6	51.9	52.1	52.1
50 to 54	61	68	48	44	35	34	59	45	394	48.8	48.9	48.3	46.7	45.8	45.7	46.3	48.4	47.6
45 to 49	61	54	65	56	49	49	57	71	462	43.6	44.1	43.0	42.4	41.9	42.1	42.8	43.5	43.0
40 to 44	81	83	64	59	71	61	54	68	541	39.1	39.9	38.9	37.7	37.0	37.5	37.9	38.0	38.4
35 to 39	81	88	84	89	92	93	85	76	688	34.0	33.9	34.2	33.6	33.4	33.6	33.8	34.0	33.8
30 to 34	75	79	65	69	66	79	98	90	621	29.7	30.3	29.8	28.8	28.3	28.8	29.4	29.5	29.3
25 to 29	76	57	51	59	69	67	68	73	520	24.8	24.9	25.2	24.5	24.4	24.5	24.2	25.1	24.7
20 to 24	68	76	72	58	45	44	46	54	463	20.7	20.1	20.3	20.3	20.0	20.0	20.3	20.5	20.3
15 to 19	67	70	65	52	34	33	52	56	429	15.9	16.0	15.7	15.3	14.4	15.0	14.9	15.3	15.4
10 to 14	33	44	53	32	44	32	18	31	287	9.8	10.7	11.0	10.9	9.8	10.7	10.8	10.5	10.5
5 to 9	22	33	26	39	29	40	39	33	261	5.8	5.7	5.5	5.5	6.1	5.7	5.6	5.6	5.7
0 to 4	29	27	28	19	7	13	21	26	170	0.9	1.2	1.2	1.5	0.9	0.8	2.2	1.1	1.3
-5 to -1	24	20	23	13	14	12	14	13	133	-3.0	-3.3	-2.8	-3.0	-3.4	-3.5	-3.1	-3.6	-3.2
-10 to -6	11	14	15	10	6	10	14	16	96	-8.4	-8.1	-7.1	-7.2	-8.5	-8.3	-8.2	-7.8	-7.9
-15 to -11	17	13	15	8	12	12	10	11	98	-13.4	-12.9	-13.3	-13.0	-12.4	-13.1	-12.7	-13.1	-13.0
-20 to -16	3	11	7	5	0	1	7	5	39	-18.7	-16.7	-18.6	-17.4	0.0	-16.0	-18.1	-18.0	-17.7
-25 to -21	4	3	0	5	0	0	0	4	16	-24.0	-24.0	0.0	-22.8	0.0	0.0	0.0	-22.8	-23.3
-30 to -26	3	6	9	0	0	0	0	0	18	-26.7	-28.0	-27.9	0.0	0.0	0.0	0.0	0.0	-27.7

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	Ave	Average					Day	Day	Day	MPH		
	Ave	Max	Min	Max			Min	4AM	10AM	4PM	10PM						
Jan	6.5	37	-30	14	-2	5.8	95	91	82	89	89	0.0010	0.0011	0.0013	0.0012	0.0011	9.4
Feb	16.3	39	-20	26	6	14.8	85	80	70	77	79	0.0013	0.0016	0.0018	0.0017	0.0016	10.1
Mar	26.4	43	11	33	19	23.3	73	67	59	67	67	0.0017	0.0018	0.0021	0.0020	0.0019	9.8
Apr	46.0	90	16	55	37	40.0	70	61	54	62	62	0.0038	0.0046	0.0049	0.0048	0.0044	13.1
May	58.5	90	33	68	49	52.3	80	70	58	65	69	0.0068	0.0076	0.0082	0.0079	0.0076	11.6
Jun	71.6	97	49	81	62	63.3	81	64	51	62	66	0.0105	0.0117	0.0117	0.0115	0.0112	10.1
Jul	75.7	95	52	86	65	66.4	83	57	47	61	65	0.0121	0.0125	0.0122	0.0129	0.0124	9.4
Aug	72.0	94	51	82	62	63.7	83	61	49	65	67	0.0110	0.0115	0.0110	0.0115	0.0113	8.7
Sep	61.5	88	38	71	52	56.0	87	73	59	72	74	0.0087	0.0097	0.0092	0.0092	0.0091	9.5
Oct	49.5	84	30	58	42	45.3	86	74	63	75	75	0.0056	0.0061	0.0061	0.0059	0.0059	10.6
Nov	32.7	51	4	39	26	29.9	81	72	66	74	74	0.0028	0.0029	0.0032	0.0031	0.0030	11.5
Dec	18.2	51	-11	26	11	16.4	79	74	68	74	75	0.0016	0.0015	0.0017	0.0016	0.0016	9.9
Year	44.7	97	-30	53	36	39.9	82	70	60	70	72	0.0056	0.0061	0.0061	0.0061	0.0060	10.3

MINNEAPOLIS, MINNESOTA

TRY Data (1970)

Latitude 44.90 N

WBAN 14922

Longitude 93.20 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			
	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	Heat	Cool			Base	Heat	Cool			Base	Heat	Cool			Base	Heat	Cool			Base	Heat	Cool			Base	100s*	Base	100s*
98	0	621	0	0	555	0	0	515	0	0	524	0	0	569	0	0	1883	0	8760	4667	0	0	8758	4580	2	0	0	0	0	0	0
97	0	610	0	0	544	0	0	504	0	1	513	0	0	558	0	0	1850	0	8758	4580	2	0	8757	4492	3	0	0	0	0	0	0
96	0	599	0	0	534	0	0	493	0	3	502	0	0	547	0	0	1817	0	8757	4492	3	0	8754	4404	6	0	0	0	0	0	0
95	0	588	0	0	523	0	2	483	0	4	491	0	0	536	0	0	1784	0	8754	4404	6	0	8745	4317	15	0	0	0	0	0	0
94	0	578	0	0	512	0	8	472	0	6	480	0	0	525	0	0	1752	0	8745	4317	15	0	8732	4230	28	0	0	0	0	0	0
93	0	567	0	0	501	0	16	461	0	11	469	0	1	514	0	0	1719	0	8732	4230	28	0	8717	4142	43	1	0	0	0	0	0
92	0	556	0	0	490	0	23	450	0	18	458	0	1	503	0	0	1686	0	8717	4142	43	1	8699	4055	61	1	0	0	0	0	0
91	0	545	0	3	479	0	30	439	1	25	447	1	1	492	0	0	1653	0	8699	4055	61	1	8673	3968	87	2	0	0	0	0	0
90	0	534	0	8	468	0	41	429	1	35	437	1	2	481	0	0	1620	0	8673	3968	87	2	8638	3882	122	3	0	0	0	0	0
89	0	523	0	13	457	0	55	418	1	47	426	1	5	470	0	0	1587	0	8638	3882	122	3	8602	3796	158	4	0	0	0	0	0
88	1	512	0	21	446	0	66	408	2	60	416	2	8	459	0	0	1554	0	8602	3796	158	4	8561	3710	199	6	0	0	0	0	0
87	1	501	0	30	436	1	80	398	3	74	406	2	12	448	0	1	1522	0	8561	3710	199	6	8516	3624	244	8	0	0	0	0	0
86	2	490	0	39	425	1	95	388	4	87	395	3	16	438	0	3	1489	0	8516	3624	244	8	8464	3539	296	11	0	0	0	0	0
85	4	479	0	50	414	1	111	378	5	101	385	4	22	427	1	6	1456	0	8464	3539	296	11	8399	3455	361	14	0	0	0	0	0
84	6	468	0	63	404	2	130	368	6	120	376	5	30	416	1	10	1423	0	8399	3455	361	14									
83	7	457	0	78	394	3	148	358	7	137	366	7	40	406	1	12	1390	0	8337	3371	423	18									
82	10	446	0	96	384	4	164	349	9	154	356	8	51	395	2	14	1358	0	8270	3288	490	23									
81	16	436	0	110	374	5	184	340	11	172	347	10	66	385	2	19	1325	1	8192	3206	568	28									
80	21	425	1	123	364	6	203	331	13	186	338	11	81	374	3	29	1292	1	8114	3124	646	34									
79	24	414	1	143	354	7	215	322	15	200	329	13	93	364	4	39	1260	1	8045	3044	715	41									
78	32	403	1	161	345	9	230	313	17	217	320	15	103	354	5	49	1228	2	7967	2964	793	48									
77	46	393	1	178	336	10	245	305	19	235	311	18	119	345	6	65	1195	2	7871	2884	889	57									
76	59	382	2	192	327	12	260	296	22	254	303	20	137	335	7	86	1163	3	7771	2806	989	66									
75	73	372	3	209	318	14	280	288	24	276	295	23	156	325	9	106	1131	4	7658	2729	1102	77									
74	90	362	3	227	309	16	298	280	27	292	286	26	178	316	10	133	1100	5	7539	2653	1221	88									
73	111	352	4	243	300	19	315	272	30	309	278	29	198	307	12	170	1068	7	7412	2578	1348	101									
72	126	342	6	262	292	21	330	264	34	328	271	32	220	298	14	214	1037	8	7280	2505	1480	115									
71	139	333	7	279	284	24	345	257	37	338	263	35	242	290	17	261	1007	11	7154	2433	1606	131									
70	163	323	8	300	276	27	357	249	41	350	256	39	267	281	19	325	977	14	6996	2362	1764	147									
69	194	314	10	322	268	30	364	242	44	363	248	42	287	273	22	406	948	17	6823	2293	1937	166									
68	222	305	12	336	260	33	373	235	48	373	241	46	303	265	25	483	919	22	6668	2225	2092	186									
67	243	297	15	348	253	37	383	228	52	381	234	50	320	257	28	546	892	27	6538	2159	2222	208									
66	257	288	17	356	245	40	388	220	55	388	227	54	328	249	31	596	864	33	6445	2094	2315	230									
65	268	280	20	366	238	44	396	213	59	397	220	57	334	242	35	642	838	39	6355	2030	2405	254									
64	281	272	23	376	231	48	408	206	63	407	213	62	345	234	38	683	812	46	6259	1967	2501	278									
63	295	264	25	383	224	51	419	200	68	417	206	66	362	227	42	727	786	53	6155	1905	2605	304									
62	311	256	28	392	216	55	431	193	72	426	199	70	378	220	45	773	760	60	6047	1844	2713	331									
61	323	248	32	401	209	59	442	186	76	434	193	74	391	213	49	823	736	68	5944	1784	2816	358									
60	333	240	35	408	203	63	454	180	81	445	186	79	399	206	53	885	711	77	5835	1725	2925	387									
59	346	233	38	419	196	67	466	174	85	455	180	83	406	199	57	940	688	86	5726	1668	3034	417									
58	359	225	42	430	189	72	478	167	90	468	173	88	412	192	61	984	664	95	5628	1611	3132	448									
57	366	218	46	440	182	76	494	161	95	485	167	92	421	185	65	1027	642	105	5524	1555	3236	479									
56	380	211	49	455	176	80	509	155	100	497	161	97	435	178	70	1074	619	116	5408	1500	3352	512									
55	398	204	53	471	170	85	517	150	105	508	155	102	447	172	74	1126	597	127	5291	1447	3469	546									
54	408	197	57	483	163	90	524	144	110	516	149	108	457	165	79	1168	576	138	5202	1394	3558	582									
53	417	190	61	493	157	95	529	138	115	520	144	113	467	159	83	1202	555	150	5130	1343	3630	618									

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

MINNEAPOLIS, MINNESOTA

WBAN 14922

TABLE D:

TRY Data (1970)

Latitude 44.90 N

Longitude 93.20 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			
	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*	
52	426	183	66	500	151	100	533	132	121	526	138	118	478	153	88	1239	534	162		5056	1292	3704	654
51	436	176	70	508	145	105	539	127	126	534	132	123	489	147	93	1274	514	175		4977	1242	3783	692
50	448	170	74	518	140	110	550	121	132	544	127	129	503	141	98	1308	494	188		4889	1192	3871	730
49	455	164	79	524	134	115	562	116	137	554	121	134	518	135	103	1341	475	201		4805	1144	3955	769
48	464	157	83	535	128	120	575	111	143	566	116	140	531	129	108	1375	455	215		4713	1096	4047	809
47	475	151	88	550	123	126	589	106	149	579	111	145	546	124	113	1404	436	229		4615	1050	4145	850
46	490	145	93	564	117	131	598	101	155	588	105	151	557	118	119	1440	418	243		4522	1004	4238	892
45	508	139	98	574	112	137	604	96	161	594	100	157	564	113	125	1488	399	258		4426	959	4334	935
44	524	133	103	582	107	143	609	91	167	602	95	163	573	108	130	1536	382	273		4332	915	4428	979
43	536	127	108	590	102	149	617	86	173	612	91	169	584	102	136	1578	364	288		4241	873	4519	1023
42	548	122	114	602	97	155	628	81	179	624	86	175	595	97	142	1619	348	304		4142	831	4618	1069
41	562	116	119	614	92	161	642	77	185	635	81	182	604	92	148	1662	331	321		4039	790	4721	1116
40	575	111	125	627	87	167	664	72	192	649	77	188	616	88	154	1712	315	337		3915	750	4845	1163
39	588	106	131	645	83	173	688	68	199	668	72	195	632	83	160	1759	300	355		3778	711	4982	1213
38	605	101	137	665	78	180	710	64	206	691	68	202	645	78	167	1792	285	373		3650	674	5110	1263
37	622	96	143	683	74	187	733	60	213	711	64	209	656	74	173	1831	270	391		3522	638	5238	1315
36	633	92	149	701	70	193	750	57	220	727	60	216	674	69	180	1884	256	409		3390	604	5370	1368
35	652	87	156	719	66	201	762	53	228	744	57	223	697	65	187	1950	242	428		3235	571	5525	1422
34	675	83	162	736	63	208	774	50	236	762	53	231	722	62	194	2020	229	448		3070	539	5690	1478
33	690	79	169	749	59	215	786	47	243	779	50	238	746	58	201	2078	217	469		2930	509	5830	1536
32	702	75	176	759	56	223	801	44	251	793	47	246	762	55	209	2118	205	490		2823	480	5937	1595
31	713	71	183	773	52	231	815	41	259	805	44	254	776	51	216	2156	193	511		2720	453	6040	1655
30	724	67	190	788	49	238	827	38	268	821	41	262	794	48	224	2206	182	533		2598	426	6162	1716
29	736	63	198	802	46	246	843	36	276	838	39	271	810	45	232	2248	172	555		2482	401	6278	1778
28	752	60	205	815	43	254	861	33	284	855	36	279	819	42	240	2293	161	578		2364	376	6396	1841
27	764	57	213	827	41	263	874	31	293	871	34	288	831	40	249	2345	152	601		2246	353	6514	1906
26	770	53	220	837	38	271	886	29	302	882	32	296	847	37	257	2385	143	625		2152	331	6608	1971
25	778	50	228	847	35	279	899	27	311	893	30	305	864	35	266	2419	134	649		2058	310	6702	2038
24	787	47	236	858	33	288	910	25	320	903	28	314	881	33	274	2460	125	673		1958	290	6802	2106
23	801	44	244	870	31	296	922	23	329	912	26	323	892	31	283	2496	117	698		1866	271	6894	2174
22	817	41	252	885	29	305	931	22	338	922	24	333	899	29	292	2528	110	723		1776	253	6984	2243
21	833	38	260	895	26	314	939	20	348	933	22	342	905	27	301	2567	102	749		1686	236	7074	2314
20	847	36	269	905	25	323	946	18	357	940	21	351	914	25	310	2611	95	774		1596	219	7164	2385
19	861	33	277	918	23	332	950	17	367	945	19	361	923	23	319	2658	89	801		1503	204	7257	2457
18	875	31	286	930	21	342	956	16	376	952	18	370	931	21	329	2700	83	828		1415	189	7345	2530
17	885	29	295	939	19	351	962	14	386	960	16	380	941	20	338	2738	77	855		1332	176	7428	2604
16	897	27	304	949	18	360	968	13	395	967	15	389	955	18	348	2778	72	882		1244	163	7516	2679
15	911	25	313	960	16	370	977	12	405	972	14	399	968	17	357	2815	67	910		1155	151	7605	2754
14	926	23	322	969	15	380	987	11	415	981	13	409	974	16	367	2838	62	939		1083	139	7677	2831
13	940	22	331	978	14	389	995	9	425	991	11	419	978	14	377	2859	58	967		1018	129	7742	2908
12	950	20	341	984	13	399	1001	9	435	997	10	429	983	13	386	2879	54	996		965	119	7795	2985
11	961	19	350	989	12	409	1011	8	445	1000	10	439	986	12	396	2898	50	1025		913	110	7847	3064
10	970	17	360	994	11	419	1022	7	455	1004	9	449	988	11	406	2923	46	1054		857	101	7903	3142
9	973	16	369	1000	10	429	1033	6	465	1010	8	459	993	10	416	2945	43	1083		805	93	7955	3222
8	976	15	379	1009	9	439	1040	6	476	1020	7	469	1002	9	426	2962	39	1113		749	85	8011	3302
7	980	14	389	1015	8	449	1045	5	486	1030	6	479	1010	8	436	2976	36	1142		702	78	8058	3382

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 pr d are calculated by subtracting the Hrs Above from X times 365

MINNEAPOLIS, MINNESOTA
 WBAN 14922
 TABLE D:

TRY Date (1970)

Latitude 44.90 N
 Longitude 93.20 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		Above	
	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	100s*	Base	100s*
6	986	13	399	1023	7	459	1050	5	497	1038	6	489	1017	7	446	2994	33	1172	650	71	8110	3463
5	994	12	409	1032	7	470	1054	4	507	1045	5	500	1025	7	456	3015	30	1202	593	65	8167	3544
4	1001	11	419	1038	6	480	1057	4	518	1048	5	510	1032	6	467	3031	28	1233	552	59	8208	3626
3	1007	10	429	1042	5	490	1059	3	528	1050	4	521	1041	5	477	3044	25	1263	516	53	8244	3708
2	1013	9	439	1046	5	501	1059	3	539	1052	4	531	1048	5	488	3060	23	1293	481	48	8279	3791
1	1018	8	449	1050	4	511	1059	3	549	1054	3	542	1050	5	498	3079	21	1324	447	44	8313	3874
0	1023	7	459	1053	4	522	1061	2	560	1058	3	552	1050	4	509	3098	19	1355	415	40	8345	3957
-1	1029	7	469	1057	4	532	1066	2	571	1061	3	563	1050	4	519	3113	17	1386	381	36	8379	4041
-2	1034	6	480	1061	3	543	1070	2	581	1064	2	574	1054	3	530	3126	15	1417	349	32	8411	4125
-3	1040	6	490	1063	3	553	1071	2	592	1066	2	584	1059	3	540	3137	14	1449	322	29	8438	4209
-4	1046	5	501	1065	3	564	1073	1	603	1069	2	595	1062	2	551	3147	12	1480	297	25	8463	4293
-5	1048	5	511	1066	2	575	1076	1	614	1071	1	606	1063	2	561	3157	11	1512	276	23	8484	4378
-6	1052	4	522	1069	2	585	1077	1	624	1073	1	616	1065	2	572	3167	10	1543	255	20	8505	4463
-7	1057	4	532	1072	2	596	1077	1	635	1074	1	627	1067	2	583	3175	9	1575	235	17	8525	4548
-8	1060	3	543	1074	2	607	1078	1	646	1076	1	638	1070	1	593	3185	8	1607	216	15	8544	4634
-9	1062	3	553	1075	1	618	1081	0	657	1078	1	649	1073	1	604	3192	7	1639	197	13	8563	4719
-10	1063	3	564	1076	1	628	1083	0	668	1080	0	659	1076	1	615	3200	6	1671	180	11	8580	4805
-11	1064	2	575	1078	1	639	1086	0	678	1083	0	670	1079	1	626	3208	5	1703	160	10	8600	4891
-12	1066	2	585	1079	1	650	1089	0	689	1085	0	681	1082	1	636	3215	4	1735	141	8	8619	4977
-13	1070	2	596	1081	1	661	1090	0	700	1088	0	692	1084	0	647	3223	4	1767	123	7	8637	5063
-14	1074	2	607	1082	1	672	1092	0	711	1090	0	703	1085	0	658	3232	3	1799	103	6	8657	5150
-15	1078	1	617	1084	1	682	1094	0	722	1092	0	714	1087	0	669	3241	3	1832	83	5	8677	5236
-16	1079	1	628	1086	0	693	1095	0	733	1094	0	725	1089	0	680	3249	2	1864	67	4	8693	5323
-17	1080	1	639	1087	0	704	1095	0	744	1095	0	736	1090	0	691	3255	2	1897	56	3	8704	5410
-18	1081	1	650	1088	0	715	1095	0	755	1095	0	747	1091	0	702	3260	2	1929	49	3	8711	5497
-19	1082	1	661	1089	0	726	1095	0	766	1095	0	758	1092	0	713	3261	1	1962	44	2	8716	5584
-20	1084	1	671	1089	0	737	1095	0	777	1095	0	769	1094	0	724	3263	1	1994	38	2	8722	5672
-21	1086	1	682	1091	0	748	1095	0	788	1095	0	780	1095	0	734	3266	1	2027	32	2	8728	5759
-22	1086	1	693	1092	0	759	1095	0	799	1095	0	790	1095	0	745	3267	1	2060	29	1	8731	5846
-23	1086	0	704	1093	0	770	1095	0	810	1095	0	801	1095	0	756	3268	1	2092	27	1	8733	5933
-24	1086	0	715	1093	0	780	1095	0	821	1095	0	812	1095	0	767	3270	0	2125	25	1	8735	6021
-25	1086	0	726	1094	0	791	1095	0	832	1095	0	823	1095	0	778	3274	0	2158	21	0	8739	6108
-26	1087	0	737	1095	0	802	1095	0	842	1095	0	834	1095	0	789	3276	0	2191	16	0	8744	6195
-27	1089	0	748	1095	0	813	1095	0	853	1095	0	845	1095	0	800	3278	0	2223	12	0	8748	6283
-28	1090	0	758	1095	0	824	1095	0	864	1095	0	856	1095	0	811	3282	0	2256	7	0	8753	6370
-29	1092	0	769	1095	0	835	1095	0	875	1095	0	867	1095	0	822	3284	0	2289	3	0	8757	6458
-30	1094	0	780	1095	0	846	1095	0	886	1095	0	878	1095	0	833	3285	0	2322	1	0	8759	6546
-31	1095	0	791	1095	0	857	1095	0	897	1095	0	889	1095	0	844	3285	0	2355	0	0	8760	6633

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

MINNEAPOLIS, MINNESOTA
WBAN 14922

TRY Data (1970)

Latitude 44.90 N
Longitude 93.20 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:	3473	3177	2798	2383	1976	1464	922	444	158	40	4
Annual Wet Bulb Cooling deg-hrs:	46981.	36847.	27681.	19688.	12941.	7508.	3642.	1403.	404.	71.	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 **												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	40	39	37	36	34	32	29	25	18	12	7	.001		
.002	3	3	3	3	3	3	3	3	3	3	3	34	33	33	32	30	29	26	23	17	11	7	.002		
.003	6	6	6	7	7	7	7	7	7	7	7	28	28	28	27	26	25	23	20	15	10	6	.003		
.004	8	9	10	10	11	11	11	11	11	11	11	23	23	23	23	22	20	18	13	9	5		.004		
.005	11	13	14	15	15	15	15	15	15	15	15	19	19	19	19	19	17	16	12	8	5		.005		
.006	13	16	18	19	20	20	20	20	20	20	20	16	16	16	16	16	15	14	13	10	7	4	.006		
.007	16	19	22	23	25	25	25	26	26	26	26	12	12	12	12	12	12	12	11	8	6	3	.007		
.008	18	22	25	28	29	30	31	31	32	32	32	10	10	10	10	10	10	9	9	7	5	3	.008		
.009	21	25	29	32	34	35	37	37	38	38	38	7	7	7	7	7	7	7	7	5	4	2	.009		
.010	23	28	33	37	39	41	42	43	44	44	45	5	5	5	5	5	5	5	5	4	3	2	.010		
.011	26	31	37	41	44	46	48	50	51	51	52	4	4	4	4	4	4	4	3	3	2	1	.011		
.012	29	35	41	45	49	51	54	56	57	58	59	2	2	2	2	2	2	2	2	2	1	1	.012		
.013	31	38	45	50	54	56	60	62	64	66	66	1	1	1	1	1	1	1	1	1	1	1	.013		
.014	34	41	48	54	58	62	65	69	71	73	74	1	1	1	1	1	1	1	1	1	1	0	.014		
.015	36	44	52	58	63	67	71	75	78	80	82	0	0	0	0	0	0	0	0	0	0	0	.015		
.016	39	47	56	63	68	72	77	81	85	88	90	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	41	50	60	67	73	77	83	88	92	96	98	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	44	53	64	72	78	83	89	94	99	103	106	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	35	33	49	59	49	41	38	41	34	59	54	44
VERTICAL													
NORTH	100	100	100	98	96	89	88	95	100	100	100	100	95
WEST	51	49	48	66	70	64	56	54	53	50	62	61	58
SOUTH	29	29	36	61	76	75	68	57	46	32	44	36	50
EAST	51	45	49	59	75	65	57	53	57	45	68	58	58
% Possible Sun	51	57	55	56	59	63	71	68	61	57	39	40	58

FOOTNOTES: * Corrected For Cloud Cover.

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

MINNEAPOLIS, MINNESOTA

WBAN 14922

TABLE H:

TRY Data (1970)

Latitude 44.90 N

Longitude 93.20 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	1772	1651	1309	977	553	262	142	123	123	1718	747	757	707	572	437	270	161	118	111	111	724	371	464
Feb	1938	1806	1487	1187	759	426	235	173	170	2068	1099	1005	956	813	668	455	287	195	165	163	1054	628	764
Mar	1879	1800	1607	1412	1058	714	455	291	248	2364	1617	1184	1135	1014	890	682	493	362	281	261	1420	1039	1104
Apr	1559	1609	1583	1535	1310	1018	734	503	358	2447	2119	1070	1106	1081	1040	906	748	604	495	428	1405	1293	1442
May	1268	1401	1498	1565	1460	1243	971	713	526	2412	2466	993	1014	1018	1014	942	837	727	632	572	1375	1440	1737
Jun	1142	1294	1446	1567	1521	1346	1096	834	635	2372	2611	1006	1071	1135	1186	1147	1043	908	767	656	1571	1739	1928
Jul	1191	1332	1458	1551	1479	1289	1037	781	589	2364	2528	1046	1136	1209	1260	1205	1073	908	742	621	1695	1832	1970
Aug	1407	1490	1514	1511	1339	1086	818	586	429	2371	2221	1103	1163	1171	1157	1035	865	693	548	458	1632	1567	1687
Sep	1712	1678	1547	1415	1122	807	550	370	296	2319	1761	1066	1033	947	863	701	540	417	336	304	1325	1064	1255
Oct	1879	1763	1491	1232	850	509	306	213	204	2115	1251	1009	973	848	717	516	339	235	190	184	1120	732	860
Nov	1785	1662	1332	1003	598	295	166	139	139	1784	837	571	528	432	338	231	158	130	123	123	552	337	480
Dec	1675	1562	1231	896	491	215	123	112	112	1588	654	581	548	448	344	214	131	103	99	99	543	289	353
Year	1598	1586	1458	1321	1046	769	554	404	320	2160	1662	949	948	891	827	693	558	451	375	332	1202	1030	1170

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

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

*** South exposure tilt 45 degrees.

**** Cinquemani, V., J. R. Owenby, Jr. and R. G. Baldwin. 1978. Input Data for Solar Systems. NCC, Asheville, NC.

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	1537	1415	1103	807	440	191	108	100	100	649	600	477	359	215	124	94	90	90
Feb	1659	1526	1247	986	617	323	174	140	138	852	804	679	554	369	223	151	133	132
Mar	1549	1502	1342	1182	874	568	344	224	201	976	943	840	738	558	395	283	223	212
Apr	1208	1298	1303	1275	1083	828	578	382	281	849	898	888	857	744	607	483	391	344
May	932	1080	1211	1291	1207	1022	782	558	396	780	808	824	827	769	682	589	508	456
Jun	818	974	1156	1288	1259	1113	885	656	475	773	836	915	972	945	860	739	616	514
Jul	863	1014	1171	1278	1226	1064	836	613	442	796	889	979	1038	995	883	736	592	482
Aug	1072	1186	1240	1253	1110	890	654	454	334	857	934	959	957	854	706	556	433	363
Sep	1384	1385	1288	1181	925	648	425	284	240	866	848	782	713	575	436	331	267	247
Oct	1589	1481	1247	1029	688	398	229	169	166	847	814	707	596	417	267	182	152	150
Nov	1541	1415	1114	831	472	220	124	113	113	482	440	355	276	184	126	104	100	100
Dec	1456	1342	1034	737	383	158	94	91	91	497	465	374	281	170	103	83	81	81
Year	1298	1300	1204	1095	858	620	438	316	249	768	773	732	681	567	452	362	300	265

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

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

NASHVILLE, TENNESSEE
WBAN 13897
TABLE A:

TRY Data (1972)

Latitude 36.10 N
Longitude 86.90 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														
75 to 79	0	0	0	0	2	1	0	0	3	64.0	744	26794	0	0
70 to 74	0	0	0	3	1	2	2	0	8	63.9	740	23083	4	9
65 to 69	0	0	2	5	11	4	0	0	22	61.1	726	19416	18	62
60 to 64	3	6	8	13	11	9	5	1	56	58.5	700	15850	44	216
55 to 59	11	7	8	8	15	16	17	19	101	53.7	613	12541	131	627
50 to 54	18	18	12	11	5	9	11	16	100	49.0	505	9732	239	1538
45 to 49	6	4	4	7	12	11	6	5	55	41.8	438	7410	306	2936
40 to 44	3	1	4	10	4	6	8	2	38	37.9	381	5375	363	4621
35 to 39	1	7	10	10	15	11	8	5	67	32.1	338	3568	406	6534
30 to 34	22	18	18	12	8	14	17	20	129	28.7	244	2075	500	8761
25 to 29	13	13	10	5	2	1	11	10	65	24.4	131	1165	613	11571
20 to 24	10	10	9	3	3	5	2	9	51	19.0	75	643	669	14769
15 to 19	3	3	2	0	3	1	3	3	18	13.5	42	364	702	18210
10 to 14	0	2	0	5	1	1	0	0	9	8.3	26	197	718	21763
5 to 9	0	1	3	1	0	2	3	0	10	4.6	18	83	726	25369
0 to 4	3	2	2	0	0	0	0	3	10	0.1	9	21	735	29027
-5 to -1	0	1	1	0	0	0	0	0	2	-2.0	0	0	744	32726
Feb														
70 to 74	0	0	0	0	3	1	0	0	4	55.0	672	21292	0	0
65 to 69	0	0	0	2	6	4	2	0	14	59.1	663	17954	9	22
60 to 64	1	1	0	2	9	7	3	3	26	55.1	646	14676	26	104
55 to 59	3	0	1	8	5	7	4	5	33	49.2	613	11516	59	304
50 to 54	2	2	5	6	10	8	7	6	46	45.3	573	8539	99	687
45 to 49	13	13	10	12	13	13	12	7	93	42.2	527	5774	145	1282
40 to 44	13	13	16	25	27	24	20	18	156	38.2	399	3433	273	2301
35 to 39	16	16	18	17	3	11	21	19	121	33.5	247	1834	425	4062
30 to 34	17	13	11	7	8	3	6	14	79	28.0	146	875	526	6463
25 to 29	10	15	16	4	0	6	6	6	63	24.1	72	337	600	9285
20 to 24	4	3	3	1	0	0	3	5	19	19.3	28	119	644	12427
15 to 19	5	8	4	0	0	0	0	1	18	15.2	10	18	662	15686
Mar														
75 to 79	0	0	0	3	13	8	0	0	24	61.5	736	20077	8	7
70 to 74	0	0	0	10	3	6	1	0	20	61.0	714	16458	30	108
65 to 69	0	0	5	8	10	14	7	1	45	58.3	689	12944	55	314
60 to 64	8	6	14	6	14	10	19	15	92	56.0	618	9649	126	739
55 to 59	18	14	4	17	20	15	5	12	105	50.3	513	6794	231	1604
50 to 54	9	13	13	15	12	14	18	11	105	44.2	419	4470	325	3000
45 to 49	13	8	15	17	10	9	18	16	106	40.2	317	2632	427	4882
40 to 44	15	17	19	9	5	10	12	15	102	36.4	207	1328	537	7298
35 to 39	17	15	15	6	6	4	9	10	82	32.4	116	533	628	10223
30 to 34	8	10	5	2	0	3	4	10	42	29.0	42	158	702	13568
25 to 29	5	7	3	0	0	0	0	3	18	24.5	10	23	734	17153
20 to 24	0	3	0	0	0	0	0	0	3	21.0	0	0	744	20850

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

NASHVILLE, TENNESSEE
WBAN 13897
TABLE A:

TRY Data (1972)

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*	
	1-3	4-6	7-9	Hour of Day				hours below			degree hours	hours above	degree hours	
				10-12	13-15	16-18	19-21	22-24						
Apr														
80 to 84	0	0	0	2	14	4	0	0	20	67.7	715	16023	5	4
75 to 79	0	0	2	19	15	16	2	1	55	66.3	688	12508	32	89
70 to 74	9	11	15	19	25	24	17	12	132	65.4	594	9245	126	426
65 to 69	12	10	12	13	11	19	16	14	107	60.6	467	6603	253	1384
60 to 64	13	6	12	10	11	12	18	7	89	53.7	374	4518	346	2899
55 to 59	9	12	14	12	7	6	11	14	85	50.0	275	2899	445	4880
50 to 54	10	11	12	6	4	4	13	17	77	44.1	201	1714	519	7295
45 to 49	14	7	8	6	2	4	8	10	59	40.3	135	899	585	10080
40 to 44	11	19	9	1	1	1	3	7	52	36.9	75	383	645	13164
35 to 39	6	6	2	1	0	0	2	5	22	32.7	33	131	687	16512
30 to 34	6	8	4	1	0	0	0	3	22	28.5	11	12	709	19993
May														
85 to 89	0	0	0	1	12	5	0	0	18	69.2	743	14887	1	1
80 to 84	0	0	1	16	27	20	1	0	65	68.0	701	11252	43	86
75 to 79	0	0	6	29	25	25	9	0	94	65.8	623	7905	121	459
70 to 74	0	0	23	29	14	24	29	4	123	64.9	522	5035	222	1309
65 to 69	9	6	30	8	12	16	33	27	141	62.9	386	2754	358	2748
60 to 64	45	39	19	7	0	0	11	41	162	59.9	228	1195	516	4909
55 to 59	23	29	12	3	3	3	7	12	92	54.7	99	400	645	7834
50 to 54	9	11	2	0	0	0	3	8	33	49.4	30	100	714	11254
45 to 49	7	8	0	0	0	0	0	1	16	44.9	7	9	737	14883
Jun														
90 to 94	0	0	0	2	7	4	0	0	13	75.2	720	14331	0	0
85 to 89	0	0	2	17	33	25	0	0	77	70.1	685	10797	35	66
80 to 84	0	0	8	27	25	31	6	0	97	69.0	594	7600	126	469
75 to 79	3	0	18	20	13	19	35	9	117	67.2	493	4871	227	1340
70 to 74	22	15	34	15	7	8	26	35	162	66.0	355	2733	365	2802
65 to 69	32	36	17	5	5	2	17	17	131	62.1	189	1355	531	5024
60 to 64	10	11	5	3	0	1	4	18	52	56.3	95	671	625	7940
55 to 59	11	13	5	0	0	0	2	7	38	52.1	54	297	666	11166
50 to 54	7	10	1	0	0	0	0	3	21	48.2	28	107	692	14576
45 to 49	4	3	0	0	0	0	0	1	8	45.5	8	31	712	18100
40 to 44	1	2	0	0	0	0	0	0	3	42.3	1	10	719	21679
30 to 34	0	0	0	1	0	0	0	0	1	33.0	0	0	720	28869

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

NASHVILLE, TENNESSEE

WBAN 13897

TABLE A:

TRY Data (1972)

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 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															
90 to 94	0	0	0	4	20	10	0	0	34	75.7	740	11674	4	2	
85 to 89	0	0	3	40	40	44	4	0	131	73.8	659	8134	85	182	
80 to 84	1	0	23	21	12	16	23	4	100	72.7	537	5163	207	931	
75 to 79	14	9	29	10	18	14	36	28	158	71.4	428	2733	316	2221	
70 to 74	47	41	27	18	3	8	20	45	209	69.6	243	1035	501	4243	
65 to 69	16	27	7	0	0	1	9	6	66	65.6	58	334	686	7262	
60 to 64	9	8	4	0	0	0	1	10	32	59.2	34	98	710	10746	
55 to 59	6	7	0	0	0	0	0	0	13	54.9	8	10	736	14378	
50 to 54	0	1	0	0	0	0	0	0	1	51.0	0	0	744	18088	
Aug															
90 to 94	0	0	0	2	17	8	0	0	27	76.9	743	11656	1	1	
85 to 89	0	0	1	28	37	35	5	0	106	74.7	689	8053	55	118	
80 to 84	0	0	14	38	28	31	20	0	131	72.4	565	4932	179	717	
75 to 79	8	0	37	22	6	14	44	35	166	71.2	426	2450	318	1955	
70 to 74	51	42	30	3	5	5	22	44	202	68.9	217	794	527	4019	
65 to 69	27	38	11	0	0	0	2	14	92	65.3	63	146	681	7091	
60 to 64	7	13	0	0	0	0	0	0	20	60.7	6	5	738	10670	
Sep															
90 to 94	0	0	0	0	12	4	0	0	16	74.0	720	12146	0	0	
85 to 89	0	0	0	28	42	21	0	0	91	73.0	683	8612	37	66	
80 to 84	0	0	4	36	15	30	10	1	96	72.0	582	5464	138	518	
75 to 79	4	0	34	14	20	26	36	10	144	70.6	472	2824	248	1478	
70 to 74	59	41	37	12	1	9	37	63	259	68.4	267	896	453	3150	
65 to 69	20	38	14	0	0	0	7	14	93	64.1	64	172	656	6026	
60 to 64	7	9	1	0	0	0	0	2	19	58.3	13	25	707	9479	
55 to 59	0	2	0	0	0	0	0	0	2	54.0	2	2	718	13056	

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

NASHVILLE, TENNESSEE

WBAN 13897

TABLE A:

TRY Data (1972)

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 Blns)

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	1	7	0	0	0	8	66.5	744	16940	0	0	
75 to 79	0	0	0	6	20	13	0	0	39	64.6	726	13257	18	37	
70 to 74	6	1	0	23	22	24	12	6	94	63.9	667	9750	77	250	
65 to 69	4	6	11	17	14	13	19	7	91	60.1	577	6659	167	879	
60 to 64	17	17	24	25	17	26	15	24	165	57.7	456	4037	288	1977	
55 to 59	22	14	22	9	4	4	22	14	111	53.8	302	2187	442	3847	
50 to 54	16	25	20	6	6	8	15	21	117	49.5	176	981	568	6361	
45 to 49	19	12	7	3	3	4	6	15	69	45.4	82	342	662	9442	
40 to 44	6	15	7	3	0	1	3	3	38	40.9	19	83	725	12903	
35 to 39	3	3	2	0	0	0	1	3	12	35.1	10	18	734	16558	
Nov															
75 to 79	0	0	0	0	3	1	0	0	4	69.0	720	20973	0	0	
70 to 74	3	2	1	6	6	5	5	6	34	66.9	703	17399	17	26	
65 to 69	3	4	4	7	11	7	4	1	41	61.8	665	13978	55	205	
60 to 64	4	2	3	7	10	8	3	4	43	56.5	625	10748	95	575	
55 to 59	5	5	11	11	11	9	10	7	69	52.8	567	7743	153	1170	
50 to 54	8	11	10	18	8	10	13	12	90	48.4	503	5063	217	2090	
45 to 49	16	11	13	6	20	14	11	13	104	43.9	404	2796	316	3423	
40 to 44	31	23	24	29	20	31	32	28	218	39.3	269	1080	451	5307	
35 to 39	13	22	13	6	1	5	9	13	82	35.8	75	305	645	8132	
30 to 34	4	7	6	0	0	0	3	6	26	30.5	22	92	698	11519	
25 to 29	2	0	2	0	0	0	0	0	4	26.5	8	28	712	15055	
20 to 24	1	3	1	0	0	0	0	0	5	21.8	3	2	717	18629	
Dec															
70 to 74	0	0	0	0	2	1	0	0	3	63.0	744	22404	0	0	
65 to 69	0	0	0	2	7	5	3	3	20	61.9	738	18694	6	10	
60 to 64	3	0	3	7	5	3	5	0	26	57.4	709	15074	35	110	
55 to 59	6	6	10	15	12	12	8	12	81	51.1	668	11597	76	353	
50 to 54	6	4	5	9	9	13	8	9	63	48.2	591	8468	153	944	
45 to 49	15	13	9	6	11	9	15	12	90	42.5	516	5689	228	1885	
40 to 44	24	25	15	18	17	23	20	20	162	38.2	416	3336	328	3252	
35 to 39	19	25	31	23	16	6	13	16	149	35.3	217	1720	527	5356	
30 to 34	6	2	5	7	9	13	10	9	61	29.5	124	916	620	8272	
25 to 29	5	7	6	2	5	6	7	4	42	24.3	67	443	677	11519	
20 to 24	5	4	3	2	0	2	4	4	24	19.5	34	185	710	14981	
15 to 19	2	4	3	1	0	0	0	4	14	15.9	14	66	730	18582	
10 to 14	2	3	1	1	0	0	0	0	7	10.1	7	17	737	22253	
5 to 9	0	0	2	0	0	0	0	0	2	8.5	0	0	744	25956	

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

NASHVILLE, TENNESSEE
WBAN 13897
TABLE B:

TRY Data (1972)

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
90 to 94	0	0	0	8	56	26	0	0	90	0.0	0.0	0.0	76.6	75.6	75.5	0.0	0.0	75.7
85 to 89	0	0	6	114	164	130	9	0	423	0.0	0.0	75.7	73.7	72.3	72.9	76.0	0.0	73.0
80 to 84	1	0	50	141	128	132	60	5	517	75.0	0.0	72.8	71.2	69.4	70.0	73.3	75.8	70.9
75 to 79	29	9	126	123	135	137	162	83	804	72.2	73.8	70.9	67.6	65.8	66.8	70.4	72.2	69.0
70 to 74	197	153	167	138	92	117	171	215	1250	68.9	69.4	67.8	64.4	63.1	64.2	66.8	68.7	67.1
65 to 69	123	165	113	67	87	85	119	104	863	65.1	65.4	62.9	59.8	57.5	58.8	61.5	63.5	62.4
60 to 64	127	118	95	80	77	76	84	125	782	59.6	59.8	58.1	55.2	54.0	53.2	57.0	59.0	57.5
55 to 59	114	109	87	83	77	72	86	102	730	54.4	55.0	53.3	50.3	47.5	49.5	52.2	53.5	52.3
50 to 54	85	106	80	71	54	66	88	103	653	48.7	49.5	48.1	46.2	45.3	44.4	46.7	47.6	47.3
45 to 49	107	79	66	57	71	64	76	80	600	43.9	44.2	43.1	40.1	39.8	40.9	42.0	43.9	42.4
40 to 44	104	115	94	95	74	96	98	93	769	38.4	39.0	38.4	37.9	37.5	38.1	38.3	38.6	38.3
35 to 39	75	94	91	63	41	37	63	71	535	34.7	35.1	35.0	33.5	33.8	32.5	32.3	33.8	34.1
30 to 34	63	58	49	30	25	33	40	62	360	28.7	28.8	29.2	28.3	28.4	29.3	29.3	28.8	28.9
25 to 29	35	42	37	11	7	13	24	23	192	24.8	25.1	24.7	22.8	22.7	23.7	23.4	24.0	24.3
20 to 24	20	23	16	6	3	7	9	18	102	19.1	19.7	19.5	19.7	17.3	18.7	19.2	19.7	19.4
15 to 19	10	15	9	1	3	1	3	8	50	14.2	15.7	15.7	17.0	11.0	14.0	13.0	14.5	14.8
10 to 14	2	5	1	6	1	1	0	0	16	11.5	9.0	9.0	8.5	9.0	9.0	0.0	0.0	9.1
5 to 9	0	1	5	1	0	2	3	0	12	0.0	6.0	6.2	5.0	0.0	5.5	3.3	0.0	5.3
0 to 4	3	2	2	0	0	0	0	3	10	-0.7	-1.0	1.0	0.0	0.0	0.0	0.0	1.0	0.1
-5 to -1	0	1	1	0	0	0	0	0	2	0.0	-2.0	-2.0	0.0	0.0	0.0	0.0	0.0	-2.0

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 Max	Daily Min		4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	41.5	76	-1	52	32	37.8	78	72	60	70	71	0.0045	0.0052	0.0049	0.0047	0.0046	10.2
Feb	40.8	72	15	52	30	36.5	78	69	54	63	68	0.0036	0.0040	0.0040	0.0039	0.0039	9.9
Mar	50.5	79	23	61	40	44.0	71	59	50	60	61	0.0047	0.0054	0.0056	0.0052	0.0052	10.6
Apr	60.3	84	30	71	49	53.0	75	60	48	62	63	0.0073	0.0084	0.0081	0.0078	0.0079	11.0
May	67.5	88	45	79	57	61.5	91	66	57	72	75	0.0097	0.0114	0.0110	0.0108	0.0108	8.3
Jun	72.6	92	33	84	60	64.2	85	57	46	66	66	0.0110	0.0117	0.0114	0.0119	0.0116	8.5
Jul	76.8	93	54	86	68	70.3	92	65	55	77	75	0.0144	0.0147	0.0143	0.0155	0.0149	7.6
Aug	76.8	93	60	86	68	70.5	89	69	58	74	75	0.0138	0.0156	0.0154	0.0152	0.0150	6.7
Sep	75.6	92	56	85	67	69.2	85	68	59	78	74	0.0131	0.0147	0.0145	0.0145	0.0142	7.0
Oct	59.7	82	35	69	50	55.0	91	70	58	80	77	0.0084	0.0084	0.0086	0.0090	0.0086	8.4
Nov	48.4	77	22	56	41	45.2	89	77	69	80	80	0.0060	0.0063	0.0063	0.0061	0.0062	9.5
Dec	42.4	70	9	50	35	39.0	80	75	69	74	75	0.0042	0.0047	0.0049	0.0049	0.0047	10.6
Year	59.5	93	-1	69	50	54.0	84	67	57	71	72	0.0084	0.0093	0.0091	0.0092	0.0090	9.0

NASHVILLE, TENNESSEE
WBAN 13897
TABLE 0:

TRY Data (1972)

Latitude 36.10 N
Longitude 86.90 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	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	Hrs	Deg-Hrs	Above (100s)*	Base Heat Cool	Hrs	Deg-Hrs	Above (100s)*	Base Heat Cool
94	0	406	0		0	330	0		0	292	0		0	315	0		0	376	0		0	1302	0		8760	3021	0	0
93	0	395	0		0	319	0		1	281	0		1	304	0		0	365	0		0	1269	0		8757	2934	3	0
92	0	384	0		0	308	0		12	270	0		4	293	0		0	354	0		0	1237	0		8743	2846	17	0
91	0	373	0		1	297	0		30	259	0		10	283	0		0	343	0		0	1204	0		8718	2759	42	0
90	0	362	0		5	286	0		47	249	1		20	272	0		0	333	0		0	1171	0		8687	2672	73	1
89	0	351	0		12	275	0		70	238	1		35	261	0		0	322	0		0	1138	0		8642	2585	118	2
88	0	340	0		25	265	0		96	228	2		57	251	1		0	311	0		0	1105	0		8581	2499	179	3
87	0	329	0		47	254	1		130	218	3		85	240	2		0	300	0		0	1072	0		8496	2413	264	5
86	0	318	0		73	244	1		168	209	5		113	230	3		1	289	0		0	1039	0		8404	2329	356	9
85	3	307	0		103	234	2		202	200	6		141	221	4		5	278	0		0	1007	0		8304	2245	456	12
84	8	296	0		137	224	3		234	191	9		173	211	5		10	267	0		0	974	0		8197	2163	563	18
83	12	285	0		168	214	5		261	182	11		197	202	7		15	256	0		0	941	0		8105	2081	655	24
82	21	274	0		192	205	7		287	174	14		218	193	9		27	245	0		0	908	0		8013	2001	747	31
81	32	264	1		213	196	9		312	166	17		241	185	12		42	235	1		2	875	0		7916	1921	844	39
80	46	253	1		244	188	11		336	159	20		270	176	14		59	224	1		4	842	0		7799	1842	961	48
79	64	243	2		274	179	14		360	151	24		298	168	17		85	214	2		9	810	0		7669	1765	1091	58
78	85	233	2		302	171	16		383	144	27		320	160	20		112	204	3		17	777	0		7540	1689	1220	69
77	110	223	3		323	163	20		410	137	31		350	153	24		137	194	4		37	744	0		7392	1614	1368	82
76	132	213	4		344	156	23		435	130	36		376	145	27		169	185	6		69	712	1		7233	1541	1527	97
75	162	203	6		373	148	26		464	124	40		405	138	31		208	176	8		106	680	2		7040	1470	1720	113
74	195	194	8		402	141	30		494	118	45		437	132	35		249	167	10		170	648	3		6812	1400	1948	131
73	229	185	10		432	135	35		516	112	50		460	125	40		289	159	13		265	618	5		6568	1333	2192	152
72	263	177	12		463	128	39		535	106	55		487	119	45		325	151	16		378	588	8		6308	1269	2452	175
71	297	169	15		491	122	44		551	100	61		511	113	50		353	144	19		492	560	13		6063	1207	2697	201
70	333	161	18		513	116	49		567	95	66		531	107	55		384	136	23		619	532	18		5812	1148	2948	229
69	361	154	22		530	110	54		583	90	72		552	102	60		413	129	27		756	506	25		5563	1091	3197	260
68	386	146	25		543	105	59		596	85	78		570	96	66		437	123	31		859	482	33		5368	1036	3392	293
67	407	139	29		555	99	65		610	80	84		584	91	72		459	116	36		936	458	42		5207	984	3553	328
66	426	133	34		567	94	71		630	75	90		600	86	77		481	110	40		1003	435	52		5052	932	3708	364
65	449	126	38		582	89	76		651	71	96		617	81	84		507	104	45		1058	412	62		4894	883	3866	402
64	469	120	43		599	84	82		671	66	103		634	77	90		530	98	50		1124	390	73		4731	834	4029	441
63	486	113	47		615	79	88		689	62	110		644	72	96		548	93	56		1201	369	85		4576	788	4184	482
62	507	107	52		631	74	94		703	58	117		653	68	103		563	87	61		1277	348	97		4425	743	4335	525
61	530	102	57		646	70	101		716	54	124		670	63	109		579	82	67		1345	329	110		4273	699	4487	569
60	549	96	63		661	65	107		731	51	131		692	59	116		596	77	73		1414	310	124		4115	657	4645	615
59	568	91	68		679	61	114		745	47	139		710	55	123		616	72	79		1488	291	139		3953	617	4807	662
58	588	86	74		696	57	121		762	44	146		725	51	130		636	67	85		1557	274	154		3794	578	4966	711
57	606	81	80		712	53	128		780	40	154		740	48	138		654	63	92		1636	257	170		3631	541	5129	761
56	623	76	86		728	49	135		795	37	162		756	44	145		669	59	98		1705	241	187		3482	506	5278	813
55	638	71	93		746	46	143		809	34	170		769	41	153		682	54	105		1755	225	204		3359	472	5401	867
54	652	67	99		759	42	150		823	32	178		780	38	161		701	50	112		1804	210	222		3238	439	5522	921
53	669	62	106		773	39	158		835	29	186		794	35	168		722	46	119		1865	196	240		3101	407	5659	977
52	684	58	113		790	36	166		843	26	195		808	32	176		737	43	126		1934	182	259		2962	377	5798	1035
51	701	54	119		808	33	174		854	24	203		819	29	185		750	39	134		1995	168	279		2831	348	5929	1093
50	717	50	127		821	30	182		866	22	212		832	26	193		769	36	141		2047	156	299		2706	320	6054	1153
49	728	47	134		833	27	190		875	19	220		846	24	201		783	33	149		2094	144	320		2599	293	6161	1211

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 D:

TRY Data (1972)

Latitude 36.10 N
Longitude 86.90 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 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	Deg 100s*	Above Base	Deg 100s*	Below Base	Deg 100s*		
48	739	43	141		846	25	198		887	17	229		857	21	210		797	30	157		2141	132	341		2492	268	6268	1276
47	752	39	149		854	22	207		899	15	238		868	19	218		815	27	165		2199	121	363		2370	244	6390	1340
46	764	36	156		863	20	216		912	13	247		882	17	227		833	24	173		2257	110	385		2246	221	6514	1404
45	781	33	164		875	18	224		930	12	256		897	15	236		849	22	182		2310	100	408		2117	199	6643	1470
44	796	30	172		891	16	233		950	10	266		914	13	245		863	19	190		2364	91	431		1981	178	6779	1537
43	811	27	180		910	14	242		964	9	275		934	11	254		882	17	199		2417	82	455		1840	159	6920	1605
42	826	24	188		928	12	251		977	7	285		955	10	264		903	15	208		2474	74	479		1695	141	7065	1675
41	844	22	196		947	10	261		994	6	295		977	8	273		921	13	217		2542	66	504		1553	125	7227	1747
40	870	19	205		968	9	270		1009	5	305		995	7	283		941	11	226		2615	59	530		1361	111	7399	1820
39	893	17	214		980	8	280		1021	5	315		1008	6	293		956	10	236		2678	52	557		1222	98	7538	1895
38	915	15	223		992	7	290		1032	4	325		1020	6	303		968	9	246		2731	47	584		1101	86	7659	1971
37	937	13	232		1007	6	300		1039	3	336		1026	5	314		984	8	255		2779	41	611		986	76	7774	2048
36	953	12	241		1022	5	310		1044	3	346		1030	4	324		998	6	265		2825	36	639		886	67	7874	2126
35	967	11	251		1034	4	320		1052	2	357		1035	4	334		1010	6	275		2869	32	668		790	58	7970	2205
34	980	9	261		1045	4	331		1061	2	367		1041	3	345		1020	5	285		2912	28	697		699	51	8061	2286
33	989	8	271		1053	3	341		1067	2	378		1049	2	355		1029	4	296		2950	25	726		622	44	8138	2367
32	1000	7	281		1058	3	352		1071	1	389		1058	2	366		1038	3	306		2979	21	756		554	38	8206	2440
31	1011	6	291		1063	2	362		1076	1	399		1066	2	376		1046	3	316		3010	18	786		487	33	8273	2531
30	1019	6	301		1067	2	373		1080	1	410		1070	1	387		1052	2	327		3051	16	816		419	29	8341	2614
29	1030	5	311		1071	2	384		1081	1	421		1073	1	398		1058	2	338		3086	14	847		359	25	8401	2698
28	1039	4	321		1074	2	394		1083	1	432		1078	1	408		1062	2	348		3111	12	878		311	21	8449	2782
27	1045	4	332		1076	1	405		1085	1	443		1081	1	419		1067	1	359		3135	10	909		268	19	8492	2866
26	1051	3	342		1078	1	416		1086	1	453		1083	1	430		1073	1	369		3152	9	940		236	16	8524	2952
25	1057	3	353		1080	1	427		1087	0	464		1084	1	441		1077	1	380		3166	8	972		208	14	8552	3037
24	1062	3	363		1082	1	438		1088	0	475		1085	1	452		1082	1	391		3180	7	1004		180	12	8580	3123
23	1065	2	374		1084	1	448		1089	0	486		1088	0	463		1085	1	402		3194	6	1036		154	10	8606	3209
22	1068	2	385		1086	1	459		1090	0	497		1090	0	474		1087	1	413		3208	5	1068		130	9	8630	3295
21	1072	2	395		1087	1	470		1090	0	508		1090	0	484		1088	1	424		3220	4	1100		113	8	8647	3381
20	1075	1	406		1087	1	481		1090	0	519		1090	0	495		1088	1	434		3230	3	1132		97	7	8663	3468
19	1078	1	417		1087	1	492		1091	0	530		1091	0	506		1089	0	445		3237	3	1164		85	6	8675	3554
18	1081	1	428		1088	0	503		1091	0	541		1092	0	517		1089	0	456		3244	2	1197		73	5	8687	3641
17	1083	1	439		1088	0	514		1092	0	552		1092	0	528		1091	0	467		3251	2	1229		62	4	8698	3728
16	1084	1	449		1088	0	524		1092	0	562		1092	0	539		1092	0	478		3258	2	1262		53	4	8707	3815
15	1085	1	460		1088	0	535		1093	0	573		1092	0	550		1092	0	489		3265	2	1294		44	3	8716	3902
14	1086	1	471		1088	0	546		1094	0	584		1092	0	561		1092	0	500		3268	1	1327		39	3	8721	3989
13	1086	1	482		1090	0	557		1094	0	595		1092	0	572		1092	0	511		3269	1	1360		35	2	8725	4077
12	1086	1	493		1091	0	568		1095	0	606		1093	0	583		1092	0	522		3270	1	1393		32	2	8728	4164
11	1086	0	504		1091	0	579		1095	0	617		1093	0	594		1092	0	533		3272	1	1425		30	2	8730	4251
10	1086	0	515		1093	0	590		1095	0	628		1093	0	605		1092	0	544		3274	1	1458		26	1	8734	4339
9	1088	0	525		1094	0	601		1095	0	639		1093	0	615		1092	0	555		3275	1	1491		22	1	8738	4426
8	1089	0	536		1094	0	612		1095	0	650		1094	0	626		1092	0	565		3276	1	1523		19	1	8741	4513
7	1090	0	547		1095	0	623		1095	0	661		1095	0	637		1092	0	576		3276	1	1556		16	1	8744	4601
6	1092	0	558		1095	0	634		1095	0	672		1095	0	648		1093	0	587		3276	0	1589		13	1	8747	4688
5	1092	0	569		1095	0	645		1095	0	683		1095	0	659		1094	0	598		3276	0	1622		12	0	8748	4776
4	1092	0	580		1095	0	656		1095	0	694		1095	0	670		1095	0	609		3276	0	1654		11	0	8749	4863
3	1093	0	591		1095	0	666		1095	0	705		1095	0	681		1095	0	620		3277	0	1687		9	0	8751	4951

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundred
** The Hours Below the Base Temp for any X-Hr pe,

eg. 565 x 100 = 56500 Deg Hrs)
are calculated by subtracting the Hrs Above from X times 365

NASHVILLE, TENNESSEE
 WBAN 13897
 TABLE D:

TRY Data (1972)

Latitude 36.10 N
 Longitude 86.90 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	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg			
(F)	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Below	Hrs	Above	Hrs	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*	Base	100s*	Base	100s*			
2	1093	0	602	1095	0	677	1095	0	716	1095	0	692	1095	0	631	3278	0	1720	8	0	8752	5038	7	0	8753	5126			
1	1093	0	613	1095	0	688	1095	0	727	1095	0	703	1095	0	642	3279	0	1753	8	0	8753	5126	7	0	8753	5126			
0	1094	0	624	1095	0	699	1095	0	738	1095	0	714	1095	0	653	3282	0	1786	4	0	8756	5213	4	0	8756	5213			
-1	1094	0	635	1095	0	710	1095	0	749	1095	0	725	1095	0	664	3284	0	1818	1	0	8759	5301	1	0	8759	5301			
-2	1095	0	646	1095	0	721	1095	0	759	1095	0	736	1095	0	675	3285	0	1851	0	0	8760	5388	0	0	8760	5388			

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:

TRY Data (1972)

Latitude 36.10 N
Longitude 86.90 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:	5414	5031	4623	4141	3631	2997	2268	1291	533	97	1
Annual Wet Bulb Cooling deg-hrs:	84475.	68595.	53942.	40572.	28664.	18430.	10118.	4245.	1215.	143.	1.

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	66	65	64	62	60	57	52	45	35	21	12	.001		
.002	0	1	1	1	1	1	1	1	1	1	1	58	57	57	55	54	51	47	42	32	19	11	.002		
.003	1	1	1	2	2	2	2	2	2	2	2	50	50	50	49	48	46	43	38	30	17	10	.003		
.004	1	2	2	3	3	4	4	4	4	4	4	43	43	43	43	42	41	38	34	27	16	9	.004		
.005	2	3	4	5	5	6	6	6	6	6	6	37	37	37	37	37	36	34	30	24	14	8	.005		
.006	2	3	5	7	8	9	9	9	9	9	9	31	31	31	31	31	31	29	27	21	13	7	.006		
.007	2	4	6	9	10	12	12	13	13	13	13	26	26	26	26	26	26	25	23	19	11	6	.007		
.008	3	5	8	11	13	15	16	16	17	17	17	22	22	22	22	22	21	21	20	16	9	5	.008		
.009	3	6	9	13	16	18	20	21	21	21	21	17	17	17	17	17	17	17	16	13	8	5	.009		
.010	3	6	10	15	18	21	24	25	26	26	26	13	13	13	13	13	13	13	13	11	6	4	.010		
.011	4	7	11	17	21	25	28	29	30	31	32	10	10	10	10	10	10	10	10	8	5	3	.011		
.012	4	8	13	19	24	28	32	34	36	37	37	7	7	7	7	7	7	7	7	6	4	2	.012		
.013	5	9	14	21	26	31	36	39	41	42	43	5	5	5	5	5	5	5	5	4	3	2	.013		
.014	5	9	15	23	29	35	40	44	46	48	50	3	3	3	3	3	3	3	3	3	2	1	.014		
.015	5	10	16	25	32	38	44	49	52	55	57	1	1	1	1	1	1	1	1	1	1	1	.015		
.016	6	11	18	27	34	41	48	53	58	62	64	1	1	1	1	1	1	1	1	1	0	0	.016		
.017	6	12	19	29	37	44	52	58	64	68	71	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	7	12	20	31	40	48	56	63	69	75	79	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	46	42	48	50	44	51	47	40	48	50	60	54	47
VERTICAL													
NORTH	100	100	100	98	91	89	90	96	100	100	100	100	95
WEST	52	55	63	65	65	69	67	58	64	62	67	65	63
SOUTH	38	40	54	69	77	85	81	65	61	52	53	44	60
EAST	58	57	62	67	59	63	62	57	61	59	68	61	61
\$ Possible Sun	41	46	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:

TRY Data (1972)
Average Daily Solar Radiation on Vertical and Horizontal Surfaces
(BTU/DAY.SQFT)

Latitude 36.10 N
Longitude 86.90 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	M	S-45 horiz ***	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	M	S-45 horiz ***			
Jan	1877	1752	1428	1118	715	383	218	172	171	2006	1076	832	766	631	508	360	242	182	164	164	854	533	580
Feb	1874	1756	1498	1260	890	545	321	220	213	2216	1393	961	899	774	656	488	341	257	221	218	1078	757	824
Mar	1633	1596	1488	1376	1102	792	529	343	279	2318	1813	1041	1010	938	863	713	562	447	373	349	1293	1098	1130
Apr	1236	1330	1378	1399	1265	1036	775	540	379	2261	2191	989	1010	1008	996	912	791	666	558	485	1429	1440	1544
May	936	1109	1270	1392	1370	1227	990	744	536	2138	2425	868	973	1064	1133	1113	1018	872	720	587	1499	1709	1825
Jun	819	1004	1210	1375	1408	1304	1095	853	647	2069	2518	873	987	1104	1198	1209	1138	1001	847	713	1505	1805	1963
Jul	870	1047	1230	1370	1383	1261	1048	808	605	2082	2460	846	953	1047	1119	1114	1029	896	749	629	1476	1727	1891
Aug	1093	1217	1307	1364	1282	1093	851	622	447	2162	2249	973	1054	1098	1122	1052	915	752	603	494	1588	1659	1737
Sep	1455	1465	1415	1357	1141	871	619	421	327	2237	1917	973	993	965	925	806	665	537	435	383	1305	1210	1398
Oct	1755	1660	1463	1273	937	619	394	266	245	2197	1512	866	845	777	705	566	430	331	271	259	1006	801	1114
Nov	1840	1719	1410	1133	733	418	238	187	186	2029	1156	640	606	522	445	334	247	195	176	175	662	474	711
Dec	1837	1719	1387	1070	659	346	191	162	161	1918	988	677	646	547	446	313	211	161	150	150	678	437	521
Year	1433	1446	1373	1291	1075	826	607	446	350	2135	1810	878	895	873	844	750	634	526	440	385	1198	1140	1270

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

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

*** South exposure tilt 45 degrees.

**** Cinqumani, V., J. R. Owenby, Jr. and R. G. Baldwin, 1978. Input Data for Solar Systems. MCC, Asheville, NC.

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	M	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	M
Jan	1613	1481	1193	932	572	291	161	140	139	704	638	520	420	290	191	143	134	133
Feb	1580	1469	1251	1053	723	423	239	175	173	804	746	640	542	394	270	203	179	177
Mar	1301	1307	1231	1144	905	633	404	262	226	840	826	770	710	581	451	354	298	283
Apr	902	1043	1124	1159	1043	842	612	411	298	765	804	818	816	746	643	535	443	390
May	643	819	1012	1147	1134	1009	799	580	400	651	750	856	930	917	836	707	573	459
Jun	558	724	951	1127	1162	1077	885	670	479	665	761	886	983	996	934	812	677	557
Jul	597	765	974	1128	1143	1042	846	653	458	638	735	841	920	917	845	725	596	492
Aug	783	958	1060	1130	1059	895	682	482	347	735	833	896	927	866	747	605	477	395
Sep	1129	1188	1170	1129	943	705	483	322	265	767	806	793	764	664	542	430	345	312
Oct	1457	1382	1216	1060	770	491	296	210	200	707	698	644	585	466	347	261	217	211
Nov	1576	1447	1179	939	594	316	178	152	151	535	501	431	367	273	197	154	143	142
Dec	1584	1458	1158	888	526	257	145	132	131	572	541	453	368	252	165	128	122	122
Year	1141	1167	1126	1070	882	666	479	348	272	698	720	713	695	615	515	422	351	307

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

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

NEW ORLEANS, LOUISIANA

WBAN 12916

TABLE A:

TRY Data (1958)

Latitude 29.98 N

Longitude 90.30 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															
70 to 74	0	0	0	0	1	0	0	0	1	63.0	744	17998	0	0	
65 to 69	0	0	0	3	7	6	0	0	16	56.1	738	14288	6	10	
60 to 64	0	0	1	9	18	14	7	3	52	54.6	711	10658	33	100	
55 to 59	9	6	9	18	18	18	16	15	109	51.1	649	7254	95	416	
50 to 54	15	10	10	18	23	26	19	16	137	46.6	521	4311	223	1193	
45 to 49	21	24	20	26	15	16	28	25	175	42.0	382	2081	362	2683	
40 to 44	33	33	32	11	8	10	17	25	169	39.1	168	698	576	5020	
35 to 39	9	12	14	5	3	3	6	6	58	33.7	50	199	694	8241	
30 to 34	5	5	5	3	0	0	0	3	21	28.0	18	41	726	11803	
25 to 29	1	3	2	0	0	0	0	0	6	26.0	0	0	744	15482	
Feb															
75 to 79	0	0	0	0	1	0	0	0	1	65.0	672	19817	0	0	
70 to 74	0	0	0	6	13	11	0	0	30	58.7	661	16470	11	13	
65 to 69	1	1	0	7	1	3	7	2	22	59.9	634	13237	38	140	
60 to 64	5	5	6	6	10	6	5	5	48	55.8	600	10139	72	402	
55 to 59	3	5	9	8	13	18	13	13	82	51.7	544	7263	128	886	
50 to 54	24	17	12	9	9	13	17	17	118	47.5	450	4773	222	1756	
45 to 49	8	6	9	9	11	13	14	10	80	39.6	344	2834	328	3177	
40 to 44	16	13	9	16	16	12	13	14	109	36.2	244	1348	428	5051	
35 to 39	15	23	28	19	7	5	12	17	126	32.6	123	396	549	7459	
30 to 34	11	11	10	4	3	3	3	6	51	29.4	29	59	643	10482	
25 to 29	1	3	1	0	0	0	0	0	5	24.8	2	3	670	13786	
Mar															
75 to 79	0	0	0	2	4	4	0	0	10	66.5	744	14258	0	0	
70 to 74	0	0	1	5	16	12	3	0	37	60.7	727	10577	17	39	
65 to 69	6	6	8	13	27	27	14	5	106	59.5	662	7069	82	251	
60 to 64	13	16	20	33	20	25	33	27	187	56.2	513	4077	231	979	
55 to 59	29	14	22	19	17	19	27	30	177	50.5	337	1964	407	2586	
50 to 54	24	30	23	16	6	3	12	19	133	47.0	171	703	573	5045	
45 to 49	17	19	13	5	3	3	2	9	71	42.5	68	158	676	8220	
40 to 44	4	8	6	0	0	0	2	3	23	40.3	0	0	744	11782	

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

NEW ORLEANS, LOUISIANA

MBAN 12916

TABLE A:

TRY Data (1958)

Latitude 29.98 N

Longitude 90.30 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	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	2	3	3	0	0	8	75.6	718	13396	2	2	
80 to 84	0	0	1	16	33	25	1	0	76	70.8	688	9847	32	53	
75 to 79	6	3	11	21	15	24	18	7	105	67.9	595	6615	125	421	
70 to 74	9	8	18	19	19	15	25	18	131	65.1	476	3920	244	1326	
65 to 69	19	18	22	21	14	14	23	23	154	61.0	327	1891	393	2897	
60 to 64	36	27	21	9	6	9	21	31	160	57.5	181	607	539	5213	
55 to 59	17	26	14	2	0	0	2	11	72	53.8	39	99	681	8305	
50 to 54	3	8	3	0	0	0	0	0	14	48.2	7	9	713	11815	
May															
90 to 94	0	0	0	2	4	1	0	0	7	75.1	744	12972	0	0	
85 to 89	0	0	1	10	19	15	0	0	45	73.6	722	9290	22	38	
80 to 84	0	0	9	40	47	25	12	0	133	71.5	660	5813	84	281	
75 to 79	10	6	42	32	16	38	30	19	193	70.2	482	2915	262	1103	
70 to 74	53	51	31	2	7	12	40	55	251	68.5	268	979	476	2887	
65 to 69	22	27	6	6	0	2	11	15	89	62.9	77	234	667	5862	
60 to 64	8	6	4	1	0	0	0	4	23	57.5	14	34	730	9382	
55 to 59	0	3	0	0	0	0	0	0	3	50.3	3	6	741	13074	
Jun															
90 to 94	0	0	0	10	23	9	0	0	42	77.1	720	8411	0	0	
85 to 89	0	0	13	51	42	45	3	0	154	75.2	641	4972	79	161	
80 to 84	8	6	51	20	17	25	59	22	208	75.0	457	2256	263	1045	
75 to 79	59	44	26	9	8	10	20	56	232	73.1	199	555	521	2944	
70 to 74	22	36	0	0	0	1	8	12	79	69.7	20	46	700	6035	
65 to 69	1	4	0	0	0	0	0	0	5	63.2	4	3	716	9592	

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

NEW ORLEANS, LOUISIANA

WBAW 12916

TABLE A:

TRY Data (1958)

Latitude 29.98 N

Longitude 90.30 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*	
	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	7	16	5	0	0	28	76.8	739	9151	5	4	
85 to 89	0	0	22	55	27	23	1	0	128	76.6	682	5557	62	130	
80 to 84	4	0	51	18	22	34	41	12	182	75.8	531	2525	213	818	
75 to 79	79	78	18	9	27	31	50	81	373	74.3	255	416	489	2429	
70 to 74	10	15	2	4	1	0	1	0	33	71.2	4	2	740	5735	
Aug															
90 to 94	0	0	0	10	29	18	0	0	57	76.2	738	8635	6	4	
85 to 89	0	0	20	47	39	40	6	0	152	75.1	638	5169	106	258	
80 to 84	2	2	39	25	14	19	52	21	174	75.0	478	2401	266	1210	
75 to 79	73	65	29	8	11	12	29	64	291	73.6	239	536	505	3065	
70 to 74	17	25	5	3	0	4	6	8	68	70.1	21	30	723	6279	
65 to 69	1	1	0	0	0	0	0	0	2	65.5	0	0	744	9969	
Sep															
90 to 94	0	0	0	0	5	1	0	0	6	75.8	720	9937	0	0	
85 to 89	0	0	0	44	32	18	0	0	94	75.6	693	6372	27	35	
80 to 84	0	0	41	24	26	43	20	0	154	75.5	577	3198	143	461	
75 to 79	68	60	41	17	23	25	60	78	372	73.7	339	823	381	1686	
70 to 74	19	27	7	5	4	3	10	12	87	69.6	24	56	696	4519	
65 to 69	3	3	1	0	0	0	0	0	7	61.0	4	6	716	8069	

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

NEW ORLEANS, LOUISIANA

WBAN 12916

TABLE A:

TRY Data (1958)

Latitude 29.98 N

Longitude 90.30 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	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	1	5	1	0	0	7	72.0	744	13606	0	0
80 to 84	0	0	0	10	19	12	0	0	41	69.1	726	9916	18	30
75 to 79	1	0	0	32	38	35	8	4	126	66.6	656	6419	88	253
70 to 74	20	22	29	22	11	26	46	23	199	66.0	503	3502	241	1056
65 to 69	35	30	29	13	8	4	17	41	177	62.1	286	1539	458	2813
60 to 64	28	23	17	8	8	8	13	15	120	56.7	151	475	593	5469
55 to 59	9	14	9	7	4	7	9	10	69	54.5	28	43	716	8757
50 to 54	0	4	1	0	0	0	0	0	5	51.8	0	0	744	12434
Nov														
80 to 84	0	0	0	7	13	2	0	0	22	72.0	719	14137	1	1
75 to 79	0	0	3	16	17	17	1	0	54	69.4	680	10632	40	96
70 to 74	13	13	15	13	19	17	17	15	122	66.3	591	7403	129	467
65 to 69	12	12	14	19	16	21	16	12	122	61.5	482	4726	238	1390
60 to 64	14	17	20	21	14	21	16	14	137	57.2	343	2655	377	2919
55 to 59	20	15	17	5	5	5	28	27	122	52.1	213	1271	507	5135
50 to 54	20	18	11	6	5	3	7	16	86	48.0	97	494	623	7958
45 to 49	8	12	7	0	1	3	2	3	36	42.1	32	182	688	11246
40 to 44	0	0	0	3	0	1	3	2	9	37.0	14	74	706	14738
35 to 39	3	1	2	0	0	0	0	1	7	32.7	8	19	712	18283
30 to 34	0	2	1	0	0	0	0	0	3	30.3	0	0	720	21864
Dec														
75 to 79	0	0	0	2	3	1	0	0	6	68.8	741	18767	3	4
70 to 74	0	0	0	2	6	3	0	0	11	61.4	733	15077	11	34
65 to 69	3	0	1	11	18	11	4	3	51	59.4	717	11441	27	118
60 to 64	6	4	8	17	18	21	10	7	91	55.9	652	8013	92	410
55 to 59	19	20	16	17	12	10	20	18	132	52.6	525	5031	219	1148
50 to 54	18	13	19	19	20	32	27	25	173	47.5	400	2699	344	2536
45 to 49	22	25	26	16	10	7	20	21	147	43.4	218	1191	526	4748
40 to 44	14	17	9	5	6	8	9	13	81	38.5	99	439	645	7716
35 to 39	7	5	10	3	0	0	3	3	31	33.5	37	131	707	11128
30 to 34	4	9	4	1	0	0	0	3	21	29.0	12	14	732	14731

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

NEW ORLEANS, LOUISIANA
WBAN 12916
TABLE B:

TRY Data (1958)

Latitude 29.98 N
Longitude 90.30 E

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

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	29	77	34	0	0	140	0.0	0.0	0.0	77.7	76.3	76.1	0.0	0.0	76.5
85 to 89	0	0	56	210	167	145	10	0	588	0.0	0.0	77.1	76.0	74.7	74.6	76.4	0.0	75.4
80 to 84	14	8	192	160	191	185	185	55	990	77.4	77.8	75.7	73.2	71.7	73.5	75.0	76.5	74.1
75 to 79	296	256	178	148	163	197	216	309	1763	73.8	74.0	72.7	69.4	69.5	69.5	72.9	73.5	72.3
70 to 74	163	197	108	81	97	104	156	143	1049	69.5	69.6	67.4	63.8	61.0	63.6	67.4	68.8	67.1
65 to 69	103	102	81	93	91	88	92	101	751	64.1	64.5	62.7	58.5	56.6	57.7	61.1	62.9	61.1
60 to 64	110	98	97	104	94	104	105	106	818	57.9	58.7	57.6	54.9	54.2	54.8	56.4	57.9	56.6
55 to 59	106	103	96	76	69	77	115	124	766	53.1	53.8	52.6	50.9	49.4	49.7	51.9	52.6	52.0
50 to 54	104	100	79	68	63	77	82	93	666	48.3	48.9	48.8	46.1	44.9	45.8	46.8	47.6	47.3
45 to 49	76	86	75	56	40	42	66	68	509	42.9	43.2	42.8	41.3	40.2	40.0	41.7	42.5	42.1
40 to 44	67	71	56	35	30	31	44	57	391	38.7	39.2	38.8	36.3	36.5	37.8	37.8	38.4	38.2
35 to 39	34	41	54	27	10	8	21	27	222	33.2	33.6	33.3	31.7	32.0	32.8	32.7	33.3	33.0
30 to 34	20	27	20	8	3	3	3	12	96	28.8	28.8	28.6	28.6	30.3	30.0	30.7	29.9	29.0
25 to 29	2	6	3	0	0	0	0	0	11	26.5	25.7	24.3	0.0	0.0	0.0	0.0	0.0	25.5

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 Ave	Min		4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	48.3	71	28	56	41	43.6	80	66	56	70	69	0.0000	0.0000	0.0000	0.0000	0.0000	10.4
Feb	48.0	75	23	56	41	42.4	69	62	53	65	64	0.0000	0.0000	0.0000	0.0000	0.0000	12.5
Mar	58.3	77	43	66	51	52.2	77	65	55	67	68	0.0000	0.0000	0.0000	0.0000	0.0000	11.7
Apr	68.9	89	50	77	61	62.2	84	62	55	73	71	0.0000	0.0000	0.0000	0.0000	0.0000	11.2
May	75.1	92	55	83	68	68.8	86	67	61	76	74	0.0000	0.0000	0.0000	0.0000	0.0000	9.6
Jun	80.8	92	66	88	74	73.9	86	65	62	76	74	0.0000	0.0000	0.0000	0.0000	0.0000	8.1
Jul	80.2	94	72	88	75	75.0	90	70	74	83	80	0.0000	0.0000	0.0000	0.0000	0.0000	7.0
Aug	80.9	94	68	89	75	74.1	87	66	61	77	75	0.0000	0.0000	0.0000	0.0000	0.0000	7.5
Sep	78.7	91	65	86	74	73.7	89	73	72	83	80	0.0000	0.0000	0.0000	0.0000	0.0000	8.7
Oct	69.2	87	53	76	63	62.7	81	66	58	73	71	0.0000	0.0000	0.0000	0.0000	0.0000	10.9
Nov	62.9	83	34	71	55	57.5	84	67	56	77	73	0.0000	0.0000	0.0000	0.0000	0.0000	10.5
Dec	52.3	79	30	60	45	47.7	80	70	62	75	73	0.0000	0.0000	0.0000	0.0000	0.0000	10.7
Year	67.1	94	25	75	60	61.2	83	67	61	75	73	0.0000	0.0000	0.0000	0.0000	0.0000	9.9

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Longitude 90.30 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	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
95	0	323	0	0	269	0	0	246	0	0	261	0	0	308	0	0	1041	0	8760	2448	0	0
94	0	312	0	0	258	0	2	235	0	0	250	0	0	297	0	0	1008	0	8758	2360	2	0
93	0	301	0	0	247	0	6	224	0	5	239	0	0	286	0	0	975	0	8749	2273	11	0
92	0	290	0	2	236	0	22	213	0	8	228	0	0	275	0	0	942	0	8728	2185	32	0
91	0	279	0	6	225	0	47	202	0	17	217	0	0	264	0	0	909	0	8690	2098	70	0
90	0	269	0	29	214	0	77	192	1	34	207	0	0	253	0	0	876	0	8620	2011	140	1
89	0	258	0	54	204	0	111	182	2	54	196	1	0	242	0	0	844	0	8541	1925	219	3
88	0	247	0	89	193	1	137	172	3	70	186	1	2	231	0	0	811	0	8462	1839	298	5
87	11	236	0	142	183	2	191	162	4	99	175	2	4	220	0	0	778	0	8313	1755	447	8
86	23	225	0	188	174	3	217	153	6	139	165	3	5	209	0	0	745	0	8188	1671	572	12
85	56	214	0	239	165	5	244	144	8	179	156	4	10	199	0	0	712	0	8032	1590	728	18
84	96	204	1	275	156	7	269	136	11	203	147	6	25	188	0	0	679	0	7892	1509	868	25
83	124	194	2	305	148	10	305	127	13	234	138	8	52	177	0	0	646	0	7740	1430	1020	34
82	164	184	3	334	140	13	347	120	16	271	129	10	93	167	1	4	614	0	7547	1353	1213	44
81	203	175	5	356	132	17	384	112	20	323	121	13	132	157	2	21	581	0	7341	1278	1419	56
80	248	166	7	399	125	20	435	105	24	364	113	16	195	147	3	77	548	0	7042	1204	1718	70
79	295	157	9	430	118	24	474	98	28	401	106	20	252	138	5	182	516	1	6726	1134	2034	88
78	332	149	12	464	111	28	507	92	33	457	99	24	301	129	8	353	485	3	6346	1066	2414	108
77	363	142	16	499	105	33	544	86	38	486	93	29	338	122	11	562	456	6	5968	1003	2792	132
76	392	134	19	525	99	38	575	81	43	517	86	33	373	114	14	787	428	12	5591	943	3169	160
75	426	127	23	547	94	43	598	76	49	561	81	39	411	107	18	938	403	20	5279	887	3481	192
74	448	121	27	576	88	49	616	71	55	585	75	44	446	100	22	1075	380	29	5014	835	3746	226
73	466	114	32	590	83	55	639	66	61	607	70	50	490	93	26	1196	358	40	4772	784	3988	264
72	493	108	36	600	78	60	665	61	67	627	65	56	521	87	31	1286	337	52	4568	737	4192	304
71	517	102	41	614	73	66	681	57	74	645	61	62	551	82	37	1352	317	65	4400	691	4360	346
70	534	96	47	628	68	73	695	53	81	665	56	69	567	76	42	1441	298	78	4230	647	4530	389
69	553	90	52	644	63	79	711	49	88	677	52	76	590	71	48	1510	279	93	4075	605	4685	435
68	571	85	57	660	59	85	728	45	95	700	48	82	604	66	54	1566	262	108	3931	564	4829	481
67	587	80	63	684	55	92	749	41	102	713	44	89	612	61	60	1630	244	124	3785	525	4975	530
66	601	75	69	700	50	99	763	38	110	735	40	96	636	56	66	1685	228	140	3640	487	5120	580
65	615	70	75	721	46	106	786	35	117	753	36	104	659	52	72	1747	212	157	3479	450	5281	631
64	630	65	81	741	43	113	808	31	125	776	33	111	674	47	79	1806	196	174	3325	416	5435	684
63	651	60	87	761	39	120	825	29	133	796	30	119	695	43	85	1867	182	192	3165	382	5595	738
62	668	56	94	783	36	128	840	26	142	820	27	127	718	39	92	1933	167	211	2998	351	5762	794
61	693	52	101	808	33	136	857	23	150	840	24	135	746	35	100	2005	154	230	2811	321	5949	851
60	712	48	108	825	30	144	880	21	159	857	21	144	764	32	107	2061	141	250	2661	293	6099	911
59	729	44	115	840	27	152	888	19	167	877	19	152	787	28	115	2133	129	271	2506	266	6254	972
58	757	40	122	856	25	161	902	17	176	895	17	161	817	25	123	2195	117	292	2338	241	6422	1034
57	773	37	130	864	22	169	916	15	185	906	15	170	836	23	131	2258	106	314	2207	218	6553	1099
56	789	34	137	879	20	178	929	13	194	919	13	179	854	20	139	2312	96	337	2078	196	6682	1164
55	808	30	145	901	18	187	949	11	204	934	11	188	879	18	148	2394	86	360	1895	175	6865	1231
54	824	28	153	911	16	196	960	10	213	950	10	197	894	15	156	2452	78	384	1769	156	6991	1300
53	837	25	162	924	14	205	968	9	223	966	8	207	910	13	165	2509	69	408	1646	138	7114	1370
52	858	22	170	950	12	214	981	7	232	989	7	217	930	12	174	2583	61	433	1469	122	7291	1441
51	873	20	178	958	11	223	996	6	242	998	6	227	947	10	184	2641	54	459	1347	107	7413	1514
50	887	18	187	969	9	233	1012	5	252	1011	5	237	961	8	193	2691	48	486	1229	93	7531	1581

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

** The Hours Below the Base Temp for

NEW ORLEANS, LOUISIANA

TRY Data (1958)

Latitude 29.98 N

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Longitude 90.30 E

TABLE D:

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

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		Hrs	Deg		
	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*
49	902	16	196	976	8	243	1019	4	262	1018	4	247	970	7	203	2724	42	513	1151	81	7609	1663
48	915	14	205	992	7	252	1034	4	273	1030	3	257	981	6	213	2764	36	540	1044	70	7716	1739
47	927	12	214	998	6	262	1041	3	283	1041	3	267	1004	5	222	2818	31	567	931	59	7829	1816
46	942	10	224	1012	5	272	1046	2	293	1048	2	278	1017	4	232	2865	27	596	830	50	7930	1895
45	962	9	233	1025	4	282	1052	2	304	1053	2	288	1027	3	243	2921	22	624	720	42	8040	1974
44	976	7	243	1033	3	293	1060	1	314	1068	1	299	1040	2	253	2961	19	653	622	34	8138	2054
43	991	6	252	1037	3	303	1071	1	325	1077	1	309	1054	2	263	3005	15	683	525	28	8235	2136
42	1003	5	262	1046	2	313	1078	1	336	1080	1	320	1064	1	274	3043	13	713	446	23	8314	2218
41	1008	4	272	1054	2	324	1080	1	346	1081	1	331	1068	1	284	3082	10	744	387	19	8373	2301
40	1018	3	282	1060	1	334	1082	1	357	1084	0	342	1071	1	295	3116	8	774	329	15	8431	2385
39	1035	3	293	1065	1	345	1083	0	368	1085	0	352	1076	1	306	3135	7	806	281	11	8479	2469
38	1045	2	303	1075	1	356	1085	0	379	1091	0	363	1084	0	317	3162	5	837	218	9	8542	2554
37	1054	1	313	1079	0	366	1089	0	390	1092	0	374	1088	0	327	3184	4	868	174	6	8586	2639
36	1064	1	324	1083	0	377	1091	0	401	1092	0	385	1092	0	338	3204	3	900	134	5	8626	2725
35	1072	1	334	1087	0	388	1092	0	411	1092	0	396	1092	0	349	3218	2	932	107	3	8653	2812
34	1076	1	345	1090	0	399	1092	0	422	1092	0	407	1092	0	360	3241	1	965	77	2	8683	2898
33	1084	0	356	1090	0	410	1092	0	433	1092	0	418	1092	0	371	3251	1	997	59	1	8701	2985
32	1087	0	367	1092	0	421	1092	0	444	1093	0	429	1094	0	382	3263	1	1029	39	1	8721	3072
31	1088	0	378	1095	0	432	1094	0	455	1095	0	440	1095	0	393	3270	0	1062	23	0	8737	3159
30	1092	0	389	1095	0	443	1095	0	466	1095	0	451	1095	0	404	3277	0	1095	11	0	8749	3247
29	1094	0	399	1095	0	454	1095	0	477	1095	0	462	1095	0	415	3279	0	1128	7	0	8753	3334
28	1094	0	410	1095	0	464	1095	0	488	1095	0	473	1095	0	426	3284	0	1160	2	0	8758	3422
27	1094	0	421	1095	0	475	1095	0	499	1095	0	484	1095	0	437	3285	0	1193	1	0	8759	3509
26	1094	0	432	1095	0	486	1095	0	510	1095	0	494	1095	0	448	3285	0	1226	1	0	8759	3597
25	1095	0	443	1095	0	497	1095	0	521	1095	0	505	1095	0	459	3285	0	1259	0	0	8760	3684

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

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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:	6835	6287	5734	5271	4812	4421	3902	3235	2050	572	17
Annual Wet Bulb Cooling deg-hrs:	122540.	102595.	84262.	67516.	52176.	38114.	25319.	14210.	5519.	955.	17.

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	1	2	3	4	5	6	8	11	0	0	0	0	0	0	0	0	0	0	0	.001		
.002	0	0	1	2	3	5	7	9	11	13	18	0	0	0	0	0	0	0	0	0	0	0	.002		
.003	0	0	1	3	4	7	9	12	15	18	25	0	0	0	0	0	0	0	0	0	0	0	.003		
.004	0	0	1	3	6	9	12	16	19	24	32	0	0	0	0	0	0	0	0	0	0	0	.004		
.005	0	1	2	4	7	10	15	19	23	29	39	0	0	0	0	0	0	0	0	0	0	0	.005		
.006	0	1	2	5	8	12	17	23	27	34	46	0	0	0	0	0	0	0	0	0	0	0	.006		
.007	0	1	2	5	9	14	20	26	32	40	53	0	0	0	0	0	0	0	0	0	0	0	.007		
.008	0	1	3	6	10	16	23	30	36	45	60	0	0	0	0	0	0	0	0	0	0	0	.008		
.009	0	1	3	7	12	18	25	33	40	50	67	0	0	0	0	0	0	0	0	0	0	0	.009		
.010	0	1	3	8	13	20	28	37	44	55	74	0	0	0	0	0	0	0	0	0	0	0	.010		
.011	0	1	4	8	14	22	31	40	49	61	81	0	0	0	0	0	0	0	0	0	0	0	.011		
.012	0	1	4	9	15	24	33	43	53	66	88	0	0	0	0	0	0	0	0	0	0	0	.012		
.013	0	1	4	10	17	26	36	47	57	71	95	0	0	0	0	0	0	0	0	0	0	0	.013		
.014	0	2	5	10	18	27	39	50	61	77	102	0	0	0	0	0	0	0	0	0	0	0	.014		
.015	0	2	5	11	19	29	41	54	66	82	109	0	0	0	0	0	0	0	0	0	0	0	.015		
.016	0	2	5	12	20	31	44	57	70	87	116	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	0	2	6	13	22	33	47	61	74	92	123	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	0	2	6	13	23	35	49	64	78	98	130	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	37	44	56	49	44	56	41	57	38	39	43	47
VERTICAL													
NORTH	100	100	100	99	93	87	92	96	100	100	100	100	96
WEST	58	53	62	68	67	66	83	63	76	52	53	59	65
SOUTH	43	40	56	78	85	89	91	73	70	44	37	38	60
EAST	56	55	61	73	69	61	64	58	65	57	53	53	62
% Possible Sun	44	62	54	69	59	67	57	55	60	69	55	56	59

FOOTNOTES: * Corrected For Cloud Cover.

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

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TABLE H:

TRY Data (1958)

Latitude 29.98 N
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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	1767	1653	1377	1125	768	452	265	202	201	2017	1224	935	890	772	662	500	351	256	219	218	1005	696	835
Feb	1687	1598	1405	1226	915	603	374	250	236	2146	1499	1046	986	864	751	578	419	311	258	252	1250	942	1112
Mar	1403	1392	1344	1288	1078	810	561	372	296	2177	1855	1004	986	937	887	760	615	490	401	367	1352	1222	1415
Apr	998	1130	1231	1299	1227	1040	807	575	394	2063	2160	901	937	961	975	923	823	712	605	526	1348	1452	1780
May	722	916	1104	1252	1281	1178	984	755	549	1913	2336	743	822	901	964	968	905	802	687	594	1339	1600	1968
Jun	629	831	1051	1239	1316	1261	1081	867	674	1842	2416	678	795	926	1037	1080	1041	926	791	665	1365	1727	2004
Jul	671	870	1076	1241	1298	1226	1039	823	627	1866	2375	738	856	975	1072	1105	1058	942	807	669	1272	1563	1814
Aug	878	1037	1173	1272	1246	1099	889	662	468	1974	2213	813	912	994	1053	1030	929	788	638	501	1454	1624	1717
Sep	1238	1282	1292	1288	1135	904	664	460	346	2096	1948	900	949	951	939	846	717	590	484	427	1209	1191	1514
Oct	1573	1499	1359	1227	954	662	436	296	268	2124	1609	1049	991	897	808	644	482	368	301	287	1320	1061	1335
Nov	1733	1615	1359	1135	790	478	292	217	216	2042	1302	952	900	774	660	488	333	240	204	202	1074	741	973
Dec	1765	1648	1357	1089	725	411	244	194	194	1963	1148	850	816	700	584	417	274	199	176	175	909	598	779
Year	1253	1287	1260	1223	1062	845	638	474	373	2018	1842	883	903	888	867	779	663	553	465	408	1241	1203	1437

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
 ** Derived according to DOE-2.1 LOADS Algorithms and TRY cloud cover data.
 *** South exposure tilt 45 degrees.
 **** Cinquemanl, V., J. R. Owenby, Jr. and R. G. Baldwin. 1978. Input Data for Solar Systems. NCC, Ashville, NC.

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	1382	1145	936	620	345	198	164	163		782	737	640	550	409	278	199	178	177	
Feb	1395	1320	1164	1022	747	471	277	197	191		864	809	708	618	469	331	242	208	205	
Mar	1076	1121	1103	1066	885	651	432	281	240		791	796	765	728	620	495	388	317	298	
Apr	691	862	994	1072	1011	851	639	438	308		688	741	777	796	754	670	573	481	423	
May	485	658	869	1025	1054	969	790	586	405		560	631	718	784	789	737	646	547	466	
Jun	438	583	817	1009	1082	1036	876	678	489		515	598	734	846	887	854	753	629	512	
Jul	463	619	841	1016	1070	1007	841	643	461		571	655	780	880	911	870	768	645	525	
Aug	601	775	940	1048	1028	902	710	511	359		600	704	802	866	849	763	635	503	397	
Sep	918	1018	1058	1065	934	732	520	350	280		704	768	780	774	695	583	471	383	347	
Oct	1274	1229	1122	1016	779	525	330	231	218		851	809	735	663	523	385	289	240	233	
Nov	1464	1344	1129	940	638	370	215	176	175		797	745	640	545	395	262	186	165	164	
Dec	1508	1382	1128	906	582	314	181	158	157		717	682	582	483	336	215	155	143	142	
Year	983	1023	1025	1010	870	682	502	369	288		702	722	722	712	637	538	443	371	325	

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

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OKLAHOMA CITY, OKLAHOMA
WBAN 13967
TABLE A:

TRY Data (1951)

Latitude 35.40 N
Longitude 97.60 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															
70 to 74	0	0	0	0	5	2	0	0	7	51.3	742	26224	2	1	
65 to 69	0	0	0	0	6	7	0	0	13	49.2	731	22536	13	33	
60 to 64	0	0	0	2	4	6	6	3	21	47.1	715	18912	29	129	
55 to 59	7	0	0	6	7	6	0	5	31	46.9	693	15383	51	320	
50 to 54	4	1	1	15	19	15	13	8	76	44.0	643	12021	101	678	
45 to 49	8	5	9	13	19	18	10	5	87	39.8	562	8998	182	1375	
40 to 44	10	11	11	15	7	13	22	19	108	36.9	474	6414	270	2511	
35 to 39	20	21	17	11	6	6	12	14	107	32.9	363	4339	381	4156	
30 to 34	17	23	19	10	5	4	11	14	103	29.1	243	2819	501	6356	
25 to 29	10	13	14	7	0	1	4	8	57	24.7	165	1818	579	9075	
20 to 24	5	3	8	2	3	3	3	6	33	20.0	121	1117	623	12094	
15 to 19	2	4	2	0	5	8	0	0	21	14.2	92	598	652	15295	
10 to 14	5	3	3	9	7	4	11	7	49	9.9	62	195	682	18612	
5 to 9	5	9	7	3	0	0	1	4	29	6.4	9	20	735	22157	
0 to 4	0	0	2	0	0	0	0	0	2	2.0	0	0	744	25857	
Feb															
75 to 79	0	0	0	0	1	1	0	0	2	60.0	672	24438	0	0	
70 to 74	0	0	0	0	3	4	0	0	7	56.9	668	21084	4	6	
65 to 69	1	0	0	5	10	6	3	2	27	56.0	654	17770	18	52	
60 to 64	5	6	3	5	13	11	8	4	55	55.4	619	14578	53	220	
55 to 59	0	0	6	16	14	13	9	3	61	48.7	553	11646	119	648	
50 to 54	10	4	6	11	6	8	15	17	77	47.5	494	9021	178	1383	
45 to 49	20	19	12	8	8	8	6	9	90	43.6	392	6780	280	2502	
40 to 44	2	10	12	11	9	12	11	11	78	39.0	320	4989	352	4071	
35 to 39	12	8	14	3	4	6	9	9	65	33.4	250	3567	422	6009	
30 to 34	4	4	3	5	4	3	4	4	31	28.1	195	2476	477	8278	
25 to 29	6	9	3	5	0	0	7	10	40	23.8	168	1569	504	10731	
20 to 24	9	10	7	6	3	3	3	5	46	20.5	118	855	554	13377	
15 to 19	9	8	12	6	7	9	6	6	63	16.9	57	393	615	16275	
10 to 14	0	0	1	0	1	0	3	0	5	10.2	27	210	645	19452	
5 to 9	4	2	2	1	1	0	0	4	14	5.3	23	83	649	22685	
0 to 4	2	4	1	2	0	0	0	0	9	1.4	6	13	666	25975	
-5 to -1	0	0	2	0	0	0	0	0	2	-2.0	0	0	672	29322	
Mar															
85 to 89	0	0	0	0	0	1	0	0	1	55.0	744	30198	0	0	
80 to 84	0	0	0	0	2	2	0	0	4	54.5	741	26484	3	6	
75 to 79	0	0	0	0	3	8	1	0	12	56.5	738	22786	6	28	
70 to 74	0	0	0	2	11	8	5	5	31	54.2	717	19145	27	107	
65 to 69	1	0	0	10	8	8	2	1	30	52.4	686	15650	58	332	
60 to 64	3	2	4	8	15	15	12	0	59	49.4	652	12297	92	699	
55 to 59	12	8	10	12	10	11	13	14	90	47.0	568	9231	176	1353	
50 to 54	7	10	7	10	10	8	12	6	70	43.5	493	6599	251	2441	
45 to 49	10	8	14	16	13	11	12	17	101	40.3	403	4331	341	3893	
40 to 44	9	10	16	16	9	9	16	12	97	36.2	306	2557	438	5839	
35 to 39	26	18	15	6	3	3	9	21	101	33.0	216	1260	528	8262	
30 to 34	13	19	12	4	8	9	9	10	84	29.2	108	455	636	11177	
25 to 29	9	12	10	8	1	0	2	7	49	25.5	34	91	710	14533	
20 to 24	3	6	5	1	0	0	0	0	15	20.7	5	5	739	18167	

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

OKLAHOMA CITY, OKLAHOMA
WBAN 13967
TABLE A:

TRY Data (1951)

Latitude 35.40 N
Longitude 97.60 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	5	4	0	0	9	65.2	720	22139	0	0	
80 to 84	0	0	0	3	7	6	0	0	16	65.4	705	18569	15	30	
75 to 79	0	0	0	9	12	9	7	2	39	61.8	679	15095	41	156	
70 to 74	3	0	3	8	6	12	8	8	48	59.7	646	11785	74	446	
65 to 69	12	13	12	8	11	15	11	9	91	59.3	572	8711	148	972	
60 to 64	7	4	10	9	13	11	14	12	80	52.9	484	6082	236	1943	
55 to 59	16	7	9	20	15	13	15	14	109	49.8	394	3874	326	3335	
50 to 54	7	17	18	17	13	11	13	14	110	44.4	273	2186	447	5247	
45 to 49	19	18	17	10	5	4	11	11	95	40.0	184	1038	536	7699	
40 to 44	11	9	14	6	3	5	10	16	74	36.6	94	360	626	10621	
35 to 39	12	18	7	0	0	0	1	4	42	33.2	28	63	692	13924	
30 to 34	3	4	0	0	0	0	0	0	7	28.9	4	4	716	17465	
May															
90 to 94	0	0	0	0	2	5	0	0	7	76.7	744	18714	0	0	
85 to 89	0	0	0	3	8	4	1	0	16	73.4	727	15024	17	30	
80 to 84	0	0	1	9	16	15	6	0	47	68.6	708	11420	36	146	
75 to 79	1	0	7	16	23	25	10	7	89	65.1	647	8018	97	464	
70 to 74	8	6	13	23	20	27	17	10	124	63.6	549	5027	195	1193	
65 to 69	19	15	27	25	16	7	31	27	167	60.9	393	2652	351	2538	
60 to 64	34	26	24	13	5	7	23	28	160	57.7	235	1094	509	4700	
55 to 59	18	29	16	3	2	3	5	17	93	52.8	96	315	648	7641	
50 to 54	13	12	5	1	1	0	0	4	36	49.0	21	49	723	11095	
45 to 49	0	5	0	0	0	0	0	0	5	46.2	1	1	743	14767	
Jun															
90 to 94	0	0	0	0	7	6	0	0	13	75.4	719	12629	1	1	
85 to 89	0	0	0	9	32	37	3	0	81	74.6	682	9099	38	71	
80 to 84	0	0	12	36	24	17	35	1	125	73.4	585	5907	135	479	
75 to 79	26	13	34	18	10	11	22	45	179	71.2	434	3336	286	1508	
70 to 74	25	35	18	11	9	12	15	19	144	68.1	255	1622	465	3394	
65 to 69	27	24	13	7	2	4	8	16	101	64.0	138	668	582	6040	
60 to 64	6	12	7	7	6	3	5	4	50	59.4	53	216	667	9188	
55 to 59	3	3	5	2	0	0	2	5	20	54.0	20	41	700	12613	
50 to 54	3	3	1	0	0	0	0	0	7	51.9	0	0	720	16172	

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

OKLAHOMA CITY, OKLAHOMA

TRY Data (1951)

Latitude 35.40 N

WBAN 13967

Longitude 97.60 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*	
	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	1	16	11	0	0	28	76.0	744	12315	0	0	
90 to 94	0	0	0	16	39	34	2	0	91	75.1	691	8700	53	105	
85 to 89	0	0	6	53	24	30	28	0	141	74.9	562	5514	182	639	
80 to 84	2	0	41	11	4	13	36	21	128	73.8	438	3015	306	1860	
75 to 79	52	29	33	8	7	2	21	55	207	72.3	281	1179	463	3744	
70 to 74	31	57	7	1	0	0	3	13	112	70.4	86	295	658	6580	
65 to 69	8	7	3	0	2	3	3	4	30	64.2	30	73	714	10078	
60 to 64	0	0	3	2	1	0	0	0	6	60.0	4	10	740	13735	
55 to 59	0	0	0	1	0	0	0	0	1	57.0	0	0	744	17445	
Aug															
105 to 109	0	0	0	0	1	0	0	0	1	73.0	744	17731	0	0	
100 to 104	0	0	0	1	17	15	0	0	33	74.8	733	14022	11	11	
95 to 99	0	0	0	15	25	33	2	0	75	73.8	676	10455	68	164	
90 to 94	0	0	2	32	28	26	23	0	111	73.8	593	7250	151	679	
85 to 89	5	1	19	23	7	7	33	16	111	72.8	481	4573	263	1722	
80 to 84	18	12	27	9	6	3	18	39	132	71.6	362	2439	382	3308	
75 to 79	39	39	26	5	5	5	8	24	151	70.6	220	979	524	5568	
70 to 74	22	30	14	6	3	3	8	10	96	69.3	82	237	662	8546	
65 to 69	9	11	5	2	1	1	1	4	34	65.2	11	15	733	12044	
Sep															
100 to 104	0	0	0	0	7	5	0	0	12	75.1	719	21647	1	1	
95 to 99	0	0	0	4	5	7	2	0	18	74.5	702	18095	18	49	
90 to 94	0	0	1	8	5	4	5	0	23	72.9	682	14637	38	191	
85 to 89	0	0	4	4	21	15	5	4	53	71.3	655	11289	65	443	
80 to 84	6	0	4	13	16	18	8	9	74	69.1	587	8178	133	932	
75 to 79	13	11	10	24	13	14	16	12	113	67.9	493	5454	227	1808	
70 to 74	18	20	25	16	11	11	20	17	138	65.6	367	3273	353	3227	
65 to 69	15	12	16	10	9	11	14	14	101	61.1	249	1739	471	5293	
60 to 64	15	17	16	8	3	5	14	20	98	56.0	148	738	572	7892	
55 to 59	16	18	8	3	0	0	6	8	59	52.4	64	240	656	10994	
50 to 54	6	10	5	0	0	0	0	5	26	49.9	18	43	702	14397	
45 to 49	1	2	1	0	0	0	0	1	5	47.4	0	0	720	17954	

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

OKLAHOMA CITY, OKLAHOMA
WBAN 13967
TABLE A:

TRY Data (1951)

Latitude 35.40 N
Longitude 97.60 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															
95 to 99	0	0	0	0	4	1	0	0	5	66.0	744	26981	0	0	
90 to 94	0	0	0	2	2	3	0	0	7	66.4	734	23282	10	21	
85 to 89	0	0	0	3	5	6	1	0	15	68.1	726	19625	18	84	
80 to 84	0	0	0	5	10	10	3	0	28	66.8	712	16031	32	210	
75 to 79	0	0	4	14	23	19	11	6	77	63.8	661	12578	83	477	
70 to 74	8	5	6	19	6	10	11	10	75	61.7	587	9469	157	1088	
65 to 69	14	12	15	6	8	6	16	10	87	60.2	498	6743	246	2082	
60 to 64	11	7	10	8	18	12	10	15	91	55.1	407	4456	337	3515	
55 to 59	13	15	12	11	6	13	14	14	98	52.9	306	2633	438	5412	
50 to 54	22	21	17	13	4	7	17	16	117	48.9	211	1311	533	7810	
45 to 49	17	18	18	6	1	1	4	17	82	45.9	100	538	644	10757	
40 to 44	5	8	6	3	3	2	3	3	33	41.6	42	196	702	14135	
35 to 39	3	7	5	3	3	3	0	0	24	36.4	18	48	726	17707	
30 to 34	0	0	0	0	0	0	3	2	5	32.8	0	0	744	21379	
Nov															
75 to 79	0	0	0	0	2	1	0	0	3	57.0	720	24761	0	0	
70 to 74	0	0	0	0	1	2	0	0	3	55.3	716	21171	4	10	
65 to 69	1	0	0	5	2	2	3	0	13	58.8	714	17598	6	37	
60 to 64	8	7	4	7	23	12	4	8	73	54.5	672	14097	48	136	
55 to 59	0	2	6	15	13	14	6	1	57	50.2	604	10911	116	550	
50 to 54	3	4	8	15	7	10	15	8	70	46.0	549	8021	171	1260	
45 to 49	13	7	5	6	13	18	13	16	91	41.8	472	5466	248	2305	
40 to 44	16	14	15	12	11	7	16	16	107	38.9	364	3364	356	3803	
35 to 39	12	13	13	17	6	12	15	14	102	34.8	273	1776	447	5815	
30 to 34	19	23	23	7	9	8	8	12	109	30.0	145	698	575	8337	
25 to 29	12	13	12	6	3	4	10	9	69	25.1	64	173	656	11412	
20 to 24	6	6	3	0	0	0	0	6	21	21.5	9	20	711	14859	
15 to 19	0	1	1	0	0	0	0	0	2	17.5	0	0	720	18439	
Dec															
75 to 79	0	0	0	0	4	3	0	0	7	56.4	743	27585	1	2	
70 to 74	0	0	0	3	7	5	4	3	22	56.7	732	23896	12	33	
65 to 69	3	1	0	5	2	6	5	2	24	54.2	708	20301	36	158	
60 to 64	7	3	3	4	10	5	4	4	40	52.2	681	16830	63	407	
55 to 59	9	8	6	9	10	10	4	5	61	49.1	631	13547	113	844	
50 to 54	5	7	8	12	13	13	13	11	82	45.1	559	10570	185	1587	
45 to 49	1	0	4	11	4	8	12	13	53	40.5	486	7972	258	2709	
40 to 44	16	10	12	8	12	7	9	10	84	36.5	423	5683	321	4140	
35 to 39	9	23	13	6	12	12	4	4	83	32.3	341	3776	403	5953	
30 to 34	12	7	13	15	10	15	13	9	94	28.3	264	2282	480	8179	
25 to 29	9	4	6	12	4	2	16	20	73	24.2	167	1230	577	10847	
20 to 24	13	18	15	1	2	3	1	3	56	20.7	90	581	654	13918	
15 to 19	0	3	6	6	2	1	5	5	28	15.2	56	236	688	17293	
10 to 14	8	6	6	1	1	3	3	4	32	10.9	22	40	722	20817	
5 to 9	1	3	1	0	0	0	0	0	5	7.0	0	0	744	24497	

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

OKLAHOMA CITY, OKLAHOMA
WBAN 13967
TABLE B:

TRY Data (1951)

Latitude 35.40 N
Longitude 97.60 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
105 to 109	0	0	0	0	1	0	0	0	1	0.0	0.0	0.0	0.0	73.0	0.0	0.0	0.0	73.0
100 to 104	0	0	0	1	24	20	0	0	45	0.0	0.0	0.0	74.0	75.2	74.6	0.0	0.0	74.9
95 to 99	0	0	0	20	50	52	4	0	126	0.0	0.0	0.0	73.8	73.9	74.4	74.3	0.0	74.1
90 to 94	0	0	3	58	83	78	30	0	252	0.0	0.0	73.7	73.9	74.4	74.4	73.3	0.0	74.2
85 to 89	5	1	29	95	102	104	71	20	427	70.0	70.0	72.7	73.9	73.0	73.5	73.6	72.1	73.3
80 to 84	26	12	85	86	85	84	106	70	554	70.6	68.8	72.7	72.0	68.9	69.2	73.5	72.0	71.4
75 to 79	131	92	114	94	103	98	96	151	879	70.9	70.4	71.2	67.0	63.5	63.6	70.2	71.6	68.9
70 to 74	115	153	86	89	82	96	91	95	807	69.3	69.4	67.1	62.1	59.2	60.3	63.6	66.4	65.2
65 to 69	110	95	91	83	77	76	97	89	718	63.0	64.2	61.9	58.0	57.0	55.7	60.0	61.3	60.4
60 to 64	96	84	84	73	111	87	100	98	733	56.2	58.5	56.9	53.8	51.6	53.1	54.2	56.3	55.0
55 to 59	94	90	78	98	77	83	74	86	680	52.4	52.8	51.5	49.0	46.6	47.5	51.0	51.9	50.4
50 to 54	80	89	76	94	73	72	98	89	671	47.9	48.6	47.9	44.8	43.4	44.5	45.5	46.9	46.2
45 to 49	89	82	80	70	63	68	68	89	609	43.6	44.1	42.7	40.2	39.1	39.5	41.1	42.3	41.8
40 to 44	69	72	86	71	54	55	87	87	581	37.9	38.4	38.0	36.9	36.7	37.0	37.5	37.8	37.6
35 to 39	94	108	84	46	34	42	50	66	524	33.9	34.3	34.0	32.4	32.4	32.9	32.6	33.0	33.4
30 to 34	68	80	70	41	36	39	48	51	433	29.1	29.8	29.6	28.5	28.3	28.5	28.9	29.6	29.2
25 to 29	46	51	45	38	8	7	39	54	288	24.8	25.0	24.8	24.3	25.1	24.1	24.5	24.5	24.7
20 to 24	36	43	38	10	8	9	7	20	171	20.8	20.4	20.2	20.3	20.3	20.7	21.1	21.4	20.6
15 to 19	11	16	21	12	14	18	11	11	114	17.4	17.2	16.9	15.6	14.2	14.3	16.5	15.8	16.0
10 to 14	13	9	10	10	9	7	17	11	86	10.0	10.6	10.4	9.6	11.1	12.0	10.2	9.4	10.3
5 to 9	10	14	10	4	1	0	1	8	48	5.7	5.9	6.3	5.5	7.0	0.0	9.0	6.8	6.1
0 to 4	2	4	3	2	0	0	0	0	11	2.5	1.0	1.3	2.0	0.0	0.0	0.0	0.0	1.5
-5 to -1	0	0	2	0	0	0	0	0	2	0.0	0.0	-2.0	0.0	0.0	0.0	0.0	0.0	-2.0

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	Max	Ave	Ave	4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	37.3	73	3	50	28	32.0	73	65	46	60	62	62	0.0027	0.0029	0.0030	0.0030	0.0029	17.8
Feb	41.1	75	-1	53	31	36.9	82	70	58	72	72	72	0.0042	0.0042	0.0047	0.0047	0.0044	17.8
Mar	46.9	85	21	60	35	39.5	68	58	41	55	57	57	0.0036	0.0039	0.0039	0.0041	0.0038	18.0
Apr	56.8	85	31	68	47	48.6	71	54	46	57	58	58	0.0062	0.0060	0.0063	0.0064	0.0062	20.2
May	67.3	92	47	77	59	60.4	85	63	54	71	70	70	0.0100	0.0103	0.0106	0.0112	0.0105	15.9
Jun	75.0	93	53	84	67	68.9	88	73	61	76	76	76	0.0141	0.0147	0.0151	0.0156	0.0148	14.3
Jul	80.9	97	58	91	72	72.8	86	62	54	71	71	71	0.0159	0.0162	0.0162	0.0171	0.0164	12.9
Aug	83.7	105	65	95	73	71.7	75	55	44	59	60	60	0.0146	0.0150	0.0145	0.0153	0.0148	12.6
Sep	72.4	103	48	84	62	63.6	80	58	46	65	66	66	0.0114	0.0114	0.0114	0.0119	0.0116	14.7
Oct	61.2	96	33	73	52	54.5	85	69	53	68	70	70	0.0082	0.0086	0.0084	0.0083	0.0083	16.0
Nov	43.1	76	18	53	34	39.1	83	71	60	75	74	74	0.0043	0.0047	0.0049	0.0048	0.0046	14.6
Dec	40.4	79	8	53	30	35.0	73	62	51	63	64	64	0.0036	0.0034	0.0037	0.0038	0.0036	16.8
Year	59.0	105	-1	70	49	52.0	79	63	51	66	67	67	0.0083	0.0085	0.0086	0.0089	0.0085	16.0

OKLAHOMA CITY, OKLAHOMA
WBAN 13967

TRY Data (1951)

Latitude 35.40 N
Longitude 97.60 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
	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	Below Base 100s*	Hrs	Above Base 100s*	Below Base 100s*	Hrs			
106	0	563	0	0	484	0	0	428	0	0	434	0	0	503	0	0	1708	0	0	8760	4121	0	0					
105	0	552	0	0	473	0	0	417	0	0	423	0	0	492	0	0	1675	0	0	8759	4033	1	0					
104	0	542	0	0	462	0	1	406	0	1	412	0	0	482	0	0	1642	0	0	8757	3945	3	0					
103	0	531	0	0	451	0	5	395	0	3	401	0	0	471	0	0	1609	0	0	8752	3858	8	0					
102	0	520	0	0	440	0	9	385	0	7	390	0	0	460	0	0	1577	0	0	8744	3770	16	0					
101	0	509	0	0	429	0	12	374	0	10	379	0	0	449	0	0	1544	0	0	8737	3683	23	0					
100	0	498	0	0	418	0	20	363	0	15	369	0	0	438	0	0	1511	0	0	8724	3596	36	1					
99	0	487	0	2	407	0	29	352	1	23	358	0	0	427	0	0	1478	0	0	8706	3508	54	1					
98	0	476	0	4	396	0	37	342	1	33	347	1	0	416	0	0	1445	0	0	8686	3421	74	2					
97	0	465	0	7	385	0	44	331	1	44	337	1	0	405	0	0	1412	0	0	8663	3335	97	3					
96	0	454	0	12	374	0	53	321	2	51	326	2	1	394	0	0	1379	0	0	8642	3248	118	4					
95	0	443	0	18	363	0	66	310	2	63	316	2	2	383	0	0	1347	0	0	8610	3162	150	5					
94	0	432	0	25	353	1	78	300	3	80	305	3	5	372	0	0	1314	0	0	8571	3076	189	7					
93	0	421	0	35	342	1	91	290	4	95	295	4	7	361	0	0	1281	0	0	8530	2990	230	9					
92	0	410	0	44	332	1	110	280	5	110	285	5	13	350	0	0	1248	0	0	8481	2905	279	11					
91	0	399	0	54	321	2	127	270	6	125	276	6	20	340	0	0	1215	0	0	8433	2821	327	14					
90	1	388	0	70	311	2	146	261	8	141	266	7	28	329	1	0	1182	0	0	8373	2737	387	18					
89	5	377	0	86	301	3	168	251	9	160	257	9	38	318	1	1	1149	0	0	8300	2653	460	22					
88	10	366	0	102	291	4	191	242	11	181	247	10	50	308	1	4	1117	0	0	8220	2571	540	27					
87	15	356	0	121	281	5	209	233	13	200	238	12	62	297	2	7	1084	0	0	8144	2489	616	33					
86	19	345	0	141	271	7	223	224	15	213	229	14	72	287	3	12	1051	0	0	8078	2408	682	39					
85	26	334	1	162	262	8	245	216	17	236	221	17	91	277	3	21	1018	0	0	7976	2327	784	46					
84	39	323	1	182	252	10	270	207	20	265	212	19	111	267	4	34	986	1	0	7857	2248	903	55					
83	57	313	1	201	243	12	285	199	23	283	204	22	125	257	6	45	953	1	0	7762	2170	998	64					
82	74	303	2	219	235	14	299	191	26	298	196	25	147	248	7	63	921	2	0	7658	2093	1102	75					
81	90	293	3	237	226	16	316	183	29	314	188	28	171	238	9	90	889	2	0	7539	2017	1221	87					
80	107	283	4	253	217	19	335	176	32	330	180	31	197	229	10	119	857	3	0	7417	1942	1343	99					
79	129	273	5	267	209	21	354	168	35	344	173	35	222	220	13	161	826	5	0	7281	1869	1479	113					
78	152	263	6	284	201	24	374	161	39	360	165	38	244	212	15	224	795	7	0	7120	1797	1640	129					
77	175	254	8	303	193	27	396	154	43	381	158	42	265	203	17	294	764	9	0	6944	1726	1816	146					
76	197	245	10	322	185	30	416	147	47	402	151	46	281	195	20	364	735	12	0	6777	1658	1983	165					
75	219	236	12	343	177	33	436	140	51	424	144	50	297	187	23	454	706	16	0	6586	1591	2174	186					
74	239	227	14	365	170	37	452	134	56	443	138	54	315	179	26	554	678	22	0	6390	1526	2370	209					
73	256	219	17	383	163	41	465	127	60	459	131	59	331	171	29	639	651	28	0	6225	1463	2535	233					
72	272	211	19	398	156	44	483	121	65	480	125	63	348	164	33	718	625	34	0	6059	1402	2701	259					
71	288	202	22	415	149	49	501	115	70	503	119	68	365	157	36	786	600	42	0	5900	1342	2860	287					
70	306	194	25	434	142	53	520	109	75	522	113	73	385	149	40	843	575	50	0	5749	1284	3011	317					
69	323	187	28	448	136	57	538	104	80	538	108	79	412	142	44	897	551	59	0	5602	1227	3158	347					
68	337	179	32	465	129	62	556	98	86	553	102	84	435	136	48	953	528	68	0	5460	1171	3300	380					
67	355	172	35	485	123	67	572	93	92	568	97	90	451	129	53	1013	505	78	0	5314	1118	3446	413					
66	377	164	39	501	117	71	585	88	97	584	91	96	466	123	57	1074	482	88	0	5171	1065	3589	449					
65	398	157	43	518	111	77	599	83	103	601	86	101	484	117	62	1134	460	99	0	5024	1014	3736	485					
64	416	150	47	534	105	82	615	78	109	614	82	108	504	111	67	1187	439	111	0	4889	965	3871	523					
63	435	144	51	548	100	87	635	73	116	630	77	114	523	105	72	1238	418	123	0	4748	916	4012	563					
62	453	137	55	563	95	93	659	69	122	648	72	120	541	99	77	1298	398	136	0	4596	870	4164	604					
61	466	131	60	576	89	98	683	64	129	666	68	127	560	94	83	1354	379	149	0	4454	825	4306	646					

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

OKLAHOMA CITY, OKLAHOMA
WBAN 13967
TABLE 0:

TRY Data (1951)

Latitude 35.40 N
Longitude 97.60 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)*				Below Base	Hrs 100s*	Above Base	Hrs 100s*			
	Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool	
60	482	125	65	590	84	104	706	60	136	685	64	133	583	88	89	1410	360	163			4302	781	4458	690				
59	499	118	70	611	79	110	727	57	143	708	60	140	604	83	95	1470	341	177			4139	738	4621	735				
58	512	113	75	635	74	117	742	53	150	727	56	148	621	79	101	1527	323	192			3995	698	4765	782				
57	528	107	80	653	70	123	756	49	158	740	52	155	632	74	107	1586	306	208			3863	659	4897	830				
56	543	101	85	669	66	130	774	46	165	755	49	162	643	69	113	1638	289	224			3736	621	5024	880				
55	559	96	91	687	61	136	789	43	173	771	46	170	659	65	120	1686	273	241			3607	584	5153	931				
54	581	91	97	707	57	143	803	40	181	785	42	178	676	61	127	1739	257	258			3467	548	5293	983				
53	601	86	102	728	54	151	816	37	189	802	39	186	693	57	133	1791	242	275			3328	514	5432	1037				
52	614	81	109	746	50	158	832	34	197	820	37	194	711	53	140	1839	228	293			3197	482	5563	1092				
51	623	76	115	761	47	165	851	32	206	833	34	202	731	49	148	1885	213	312			3075	451	5685	1148				
50	636	71	121	779	43	173	863	30	214	844	31	211	754	45	155	1939	200	331			2942	420	5818	1205				
49	654	67	127	793	40	181	872	27	223	854	29	219	776	42	163	2002	186	351			2806	392	5954	1264				
48	671	62	134	802	37	189	884	25	232	871	26	228	792	39	171	2066	174	371			2673	364	6087	1324				
47	691	58	141	816	35	197	897	23	241	889	24	236	806	36	179	2121	162	392			2539	338	6221	1386				
46	707	54	148	835	32	205	910	21	250	900	22	245	820	33	187	2158	151	414			2428	313	6332	1449				
45	720	51	155	853	29	214	924	19	259	911	20	254	830	30	195	2202	139	435			2318	290	6442	1513				
44	733	47	162	870	27	222	938	18	268	926	19	264	844	28	203	2252	129	458			2196	267	6564	1578				
43	748	43	170	884	25	231	950	16	278	941	17	273	860	25	212	2297	119	480			2078	246	6682	1644				
42	763	40	177	897	23	240	961	15	287	954	16	282	875	23	221	2341	109	504			1968	226	6792	1711				
41	777	37	185	913	21	249	972	14	297	962	14	292	896	21	229	2382	100	527			1856	206	6904	1780				
40	798	34	193	926	19	258	982	12	307	969	13	302	915	19	238	2431	91	551			1737	188	7023	1849				
39	819	31	201	935	18	268	987	11	317	977	12	311	926	17	248	2482	83	576			1633	172	7127	1920				
38	834	28	209	942	16	277	992	10	327	985	11	321	934	16	257	2533	75	601			1539	156	7221	1992				
37	851	25	218	951	14	286	999	9	337	992	10	331	943	14	266	2586	68	627			1436	141	7324	2065				
36	868	23	226	961	13	296	1007	8	347	1000	9	341	954	13	276	2639	61	653			1331	127	7429	2138				
35	885	21	235	971	12	306	1015	8	357	1010	8	351	965	11	285	2696	55	679			1215	114	7545	2213				
34	902	19	244	982	11	315	1022	7	367	1018	7	361	977	10	295	2753	49	707			1104	103	7656	2289				
33	918	17	253	989	10	325	1029	6	377	1025	6	372	987	9	305	2804	44	734			1007	92	7753	2366				
32	932	15	262	994	9	335	1035	5	387	1032	5	382	994	8	315	2846	40	763			925	83	7835	2444				
31	946	14	272	1003	8	345	1041	5	398	1041	5	392	1001	7	325	2878	35	791			848	74	7912	2523				
30	960	12	281	1014	7	355	1050	4	408	1050	4	403	1013	6	335	2909	32	820			762	66	7998	2603				
29	971	11	291	1023	6	366	1055	4	419	1054	4	413	1025	5	345	2942	28	849			689	58	8071	2683				
28	982	10	301	1031	5	376	1057	4	429	1055	4	424	1033	5	355	2973	25	879			628	52	8132	2764				
27	992	9	311	1040	5	386	1060	3	440	1056	3	434	1040	4	366	3005	22	909			565	46	8195	2846				
26	999	8	321	1048	4	397	1062	3	451	1058	3	445	1049	4	376	3037	19	939			506	40	8254	2928				
25	1006	7	331	1055	4	407	1062	3	461	1060	2	455	1056	3	387	3064	17	970			456	36	8304	3011				
24	1013	6	341	1058	3	418	1065	2	472	1063	2	466	1060	3	397	3090	15	1000			410	31	8350	3094				
23	1019	5	351	1060	3	428	1068	2	483	1066	2	477	1063	3	408	3116	13	1031			365	27	8395	3178				
22	1030	5	361	1063	3	439	1069	2	493	1068	2	487	1064	2	419	3141	11	1063			323	24	8437	3262				
21	1040	4	371	1065	2	450	1070	1	504	1069	1	498	1065	2	429	3157	10	1094			293	21	8467	3346				
20	1046	4	382	1066	2	460	1070	1	515	1070	1	509	1065	2	440	3169	9	1126			271	18	8489	3431				
19	1053	3	392	1067	2	471	1072	1	525	1072	1	519	1068	1	451	3182	8	1158			245	16	8515	3516				
18	1058	3	403	1068	1	482	1073	1	536	1075	1	530	1072	1	461	3195	7	1190			217	13	8543	3602				
17	1062	2	413	1072	1	492	1075	1	547	1078	0	541	1074	1	472	3203	6	1222			194	11	8566	3687				
16	1066	2	424	1077	1	503	1078	0	558	1081	0	552	1075	1	483	3206	5	1254			174	9	8586	3773				
15	1068	2	435	1079	1	514	1083	0	568	1085	0	563	1076	1	494	3211	4	1286			156	8	8604	3859				

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

OKLAHOMA CITY, OKLAHOMA
WBAN 13967
TABLE D:

TRY Data (1951)

Latitude 35.40 N
Longitude 97.60 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*
14	1071	1	445	1079	1	525	1088	0	579	1089	0	574	1078	0	504	3216	4	1318	137	6	8623	3945
13	1073	1	456	1081	1	535	1092	0	590	1092	0	584	1082	0	515	3219	3	1350	119	5	8641	4031
12	1074	1	467	1083	0	546	1093	0	601	1095	0	595	1087	0	526	3225	2	1382	102	4	8658	4118
11	1076	1	478	1085	0	557	1094	0	612	1095	0	606	1091	0	537	3234	2	1415	84	3	8676	4204
10	1079	1	488	1087	0	568	1094	0	623	1095	0	617	1093	0	548	3242	1	1447	68	2	8692	4291
9	1081	1	499	1090	0	579	1094	0	634	1095	0	628	1094	0	559	3253	1	1479	51	2	8709	4378
8	1085	0	510	1091	0	590	1095	0	645	1095	0	639	1095	0	570	3262	1	1512	37	1	8723	4465
7	1087	0	521	1091	0	601	1095	0	656	1095	0	650	1095	0	581	3267	0	1545	29	1	8731	4553
6	1087	0	532	1091	0	612	1095	0	667	1095	0	661	1095	0	592	3272	0	1577	24	1	8736	4640
5	1089	0	543	1092	0	622	1095	0	678	1095	0	672	1095	0	603	3276	0	1610	17	0	8743	4727
4	1090	0	554	1093	0	633	1095	0	689	1095	0	683	1095	0	613	3280	0	1643	11	0	8749	4815
3	1091	0	565	1094	0	644	1095	0	700	1095	0	694	1095	0	624	3281	0	1676	7	0	8753	4902
2	1092	0	575	1095	0	655	1095	0	711	1095	0	705	1095	0	635	3282	0	1709	5	0	8755	4990
1	1092	0	586	1095	0	666	1095	0	721	1095	0	716	1095	0	646	3283	0	1741	4	0	8756	5077
0	1093	0	597	1095	0	677	1095	0	732	1095	0	727	1095	0	657	3284	0	1774	2	0	8758	5165
-1	1094	0	608	1095	0	688	1095	0	743	1095	0	738	1095	0	668	3285	0	1807	1	0	8759	5253
-2	1095	0	619	1095	0	699	1095	0	754	1095	0	749	1095	0	679	3285	0	1840	0	0	8760	5340

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

OKLAHOMA CITY, OKLAHOMA
WBAN 13967

TRY Data (1951)

Latitude 35.40 N
Longitude 97.60 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:	4975	4495	4062	3578	3187	2811	2329	1738	786	95	2
Annual Wet Bulb Cooling deg-hrs:	79165.	64704.	51615.	39921.	29573.	20393.	12468.	5957.	1660.	149.	2.

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	61	61	60	58	56	53	49	44	38	27	17	.001		
.002	1	1	1	1	1	1	1	1	1	1	1	54	53	53	52	50	48	45	41	35	25	16	.002		
.003	1	2	2	2	2	3	3	3	3	3	3	47	47	46	46	45	43	41	37	32	25	15	.003		
.004	2	3	4	4	5	5	5	5	5	5	5	40	40	40	40	40	38	37	33	29	21	13	.004		
.005	3	4	5	6	7	8	8	8	8	8	8	35	35	35	35	34	34	32	30	26	19	12	.005		
.006	4	5	7	8	10	11	11	12	12	12	12	30	30	30	30	30	29	28	26	23	17	11	.006		
.007	4	6	9	11	12	14	15	15	16	16	16	25	25	25	25	25	25	24	23	20	15	10	.007		
.008	5	7	10	13	15	17	19	20	20	21	21	21	21	21	21	21	21	21	20	18	13	8	.008		
.009	6	9	12	15	18	21	23	24	25	25	26	17	17	17	17	17	17	17	17	15	11	7	.009		
.010	6	10	14	17	21	24	27	29	30	31	31	14	14	14	14	14	14	14	14	12	9	6	.010		
.011	7	11	15	20	24	28	31	34	35	36	37	11	11	11	11	11	11	11	11	10	8	5	.011		
.012	8	12	17	22	27	31	35	39	40	42	42	8	8	8	8	8	8	8	8	8	6	4	.012		
.013	9	13	19	24	30	35	40	44	46	47	48	5	5	5	5	5	5	5	5	5	4	3	.013		
.014	9	14	20	26	32	38	44	48	51	53	55	3	3	3	3	3	3	3	3	3	3	2	.014		
.015	10	16	22	29	35	42	48	53	57	60	61	2	2	2	2	2	2	2	2	2	2	1	.015		
.016	11	17	24	31	38	46	52	58	63	66	68	1	1	1	1	1	1	1	1	1	1	0	.016		
.017	11	18	25	33	41	49	56	63	68	72	75	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	12	19	27	35	44	53	61	68	74	79	83	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	38	46	49	44	49	55	42	33	33	31	34	41	42
VERTICAL													
NORTH	100	100	100	99	92	91	89	94	100	100	100	100	95
WEST	46	59	64	60	64	67	58	52	49	47	46	49	56
SOUTH	31	44	58	63	79	87	79	60	46	36	30	33	52
EAST	53	61	61	62	67	76	64	51	52	48	46	55	59
% Possible Sun	58	60	63	64	65	73	76	77	69	68	60	59	67

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

OKLAHOMA CITY, OKLAHOMA
WBAN 13967
TABLE H:

TRY Data (1951)

Latitude 35.40 N
Longitude 97.60 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	1850	1731	1410	1117	711	391	218	175	175	1994	1089	1035	947	768	614	418	272	196	176	176	1080	650	801
Feb	1835	1714	1461	1235	869	533	321	221	215	2187	1395	991	931	804	686	513	367	283	246	244	1100	790	1055
Mar	1598	1564	1464	1359	1093	788	530	347	280	2287	1806	1050	1042	986	926	784	628	500	409	372	1319	1154	1400
Apr	1198	1296	1353	1380	1246	1030	778	544	382	2217	2167	1025	1057	1062	1051	950	816	675	551	473	1545	1543	1725
May	905	1079	1239	1369	1345	1213	983	741	540	2095	2396	892	966	1035	1091	1062	979	849	719	618	1489	1700	1918
Jun	794	980	1177	1345	1371	1283	1075	841	643	2025	2483	810	865	930	990	983	931	834	730	666	1360	1629	2144
Jul	841	1020	1201	1352	1359	1254	1039	805	603	2040	2430	851	944	1040	1121	1114	1039	902	756	644	1584	1871	2128
Aug	1062	1191	1290	1357	1273	1099	863	633	456	2122	2228	946	1038	1098	1135	1063	929	757	593	472	1647	1729	1950
Sep	1418	1422	1378	1321	1112	851	608	417	327	2200	1903	1115	1105	1062	1011	863	688	532	412	354	1599	1423	1554
Oct	1720	1634	1442	1258	941	627	398	269	248	2171	1513	1086	1035	921	811	629	455	329	254	240	1335	996	1233
Nov	1823	1697	1400	1127	744	427	246	192	190	2023	1168	1081	1015	854	703	490	314	214	183	182	1168	722	901
Dec	1823	1695	1362	1058	649	345	193	166	166	1917	1004	1024	946	769	613	412	266	193	179	179	1047	625	725
Year	1403	1417	1347	1273	1060	822	606	447	353	2106	1800	992	991	945	897	775	642	524	435	386	1357	1239	1461

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
 ** Derived according to DOE-2.1 LOADS Algorithms and TRY cloud cover data.
 *** South exposure tilt 45 degrees.
 **** Cinquemani, V., J. R. Owenby, Jr. and R. G. Baldwin, 1978. Input Data for Solar Systems, NCC, Asheville, NC.

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

Month	S	Under Clear Sky*								N	Corrected For Cloud Cover**								N
		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	
Jan	1582	1455	1174	922	569	293	162	142	141	876	786	632	502	335	211	153	143	142	142
Feb	1538	1424	1213	1021	702	415	236	177	174	824	767	660	561	413	291	221	199	197	197
Mar	1262	1275	1206	1127	897	631	406	262	227	834	846	808	762	642	507	396	322	301	301
Apr	865	1006	1094	1136	1028	834	610	412	299	781	837	857	856	775	658	536	433	379	379
May	618	792	984	1119	1111	991	788	575	401	673	749	830	888	870	796	685	573	484	484
Jun	539	699	922	1094	1131	1051	866	656	471	619	671	743	801	801	756	673	584	522	522
Jul	576	740	948	1104	1121	1027	837	628	447	632	721	830	913	912	847	728	601	500	500
Aug	754	909	1038	1116	1052	895	687	488	352	700	807	887	932	875	756	605	464	371	371
Sep	1090	1147	1132	1096	917	687	472	318	265	868	891	869	834	709	557	420	322	287	287
Oct	1419	1352	1194	1047	768	492	298	210	201	890	850	758	670	513	362	254	201	194	194
Nov	1553	1422	1164	932	598	322	184	155	154	913	845	708	580	395	243	165	148	147	147
Dec	1563	1427	1134	870	519	254	146	134	134	867	787	634	501	331	205	152	145	145	145
Year	1111	1136	1100	1049	869	659	476	347	273	790	797	769	735	632	517	417	345	306	306

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

OMAHA, NEBRASKA
WBAN 14942
TABLE A:

TRY Data (1966)

Latitude 41.30 N
Longitude 95.90 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															
50 to 54	0	0	0	0	1	1	0	0	2	40.5	744	25449	0	0	
45 to 49	0	2	0	2	9	4	0	0	17	39.6	735	21741	9	12	
40 to 44	0	1	3	6	3	7	6	0	26	37.5	718	18103	26	94	
35 to 39	10	2	1	7	7	6	7	16	56	33.7	683	14586	61	297	
30 to 34	6	11	8	7	17	19	12	7	87	29.0	617	11340	127	771	
25 to 29	13	9	14	11	11	10	12	11	91	25.2	522	8493	222	1644	
20 to 24	13	11	7	13	11	9	11	6	81	20.3	425	6126	319	2997	
15 to 19	0	4	6	8	9	12	10	12	61	15.0	366	4163	378	4754	
10 to 14	19	17	10	16	13	10	11	14	110	10.3	284	2517	460	6828	
5 to 9	9	12	23	11	6	7	11	6	85	6.0	180	1359	564	9390	
0 to 4	8	9	7	4	3	3	7	9	50	1.4	107	672	637	12423	
-5 to -1	9	8	6	5	3	5	3	6	45	-3.1	54	271	690	15742	
-10 to -6	3	1	5	2	0	0	3	6	20	-7.7	23	93	721	19284	
-15 to -11	3	4	1	1	0	0	0	0	9	-12.2	8	22	736	22933	
-20 to -16	0	2	2	0	0	0	0	0	4	-16.8	0	0	744	26631	
Feb															
60 to 64	0	0	0	0	3	1	0	0	4	56.2	672	23008	0	0	
55 to 59	1	1	1	3	4	6	3	3	22	50.5	662	19665	10	17	
50 to 54	5	5	3	0	9	10	0	2	34	44.7	635	16415	37	127	
45 to 49	0	0	2	10	9	11	7	1	40	40.7	597	13340	75	412	
40 to 44	2	0	0	8	16	10	7	3	46	35.2	561	10452	111	884	
35 to 39	8	8	7	16	9	12	19	13	92	33.0	496	7789	176	1581	
30 to 34	12	8	8	8	2	3	8	15	64	29.0	403	5568	269	2720	
25 to 29	11	11	12	6	10	7	5	6	68	24.3	347	3685	325	4197	
20 to 24	7	12	13	16	19	19	12	11	109	19.2	259	2148	413	6020	
15 to 19	10	4	10	7	3	4	12	11	61	14.8	172	1100	500	8332	
10 to 14	16	19	12	6	0	1	9	14	77	10.6	101	423	571	11015	
5 to 9	8	12	12	4	0	0	2	3	41	6.0	34	101	638	14053	
0 to 4	4	4	3	0	0	0	0	2	13	1.8	7	14	665	17326	
-5 to -1	0	0	1	0	0	0	0	0	1	-1.0	0	0	672	20672	
Mar															
80 to 84	0	0	0	1	3	1	0	0	5	59.2	744	28649	0	0	
75 to 79	0	0	0	1	8	7	0	0	16	58.3	734	24951	10	22	
70 to 74	0	0	0	5	6	5	1	0	17	55.8	718	21320	26	111	
65 to 69	0	0	0	6	9	7	4	3	29	54.0	697	17775	47	286	
60 to 64	3	3	4	9	11	16	6	0	52	50.1	658	14373	86	604	
55 to 59	2	0	3	8	15	13	12	9	62	46.9	605	11221	139	1172	
50 to 54	19	4	10	19	8	11	22	15	108	45.5	520	8375	224	2046	
45 to 49	11	28	19	14	6	6	8	14	106	41.4	404	6057	340	3448	
40 to 44	13	12	15	6	7	6	7	11	77	37.5	316	4266	428	5377	
35 to 39	10	9	9	3	4	6	13	10	64	31.9	246	2873	498	7704	
30 to 34	8	7	9	4	1	1	4	12	46	29.5	188	1793	556	10344	
25 to 29	8	10	6	3	11	6	2	3	49	24.6	146	962	598	13233	
20 to 24	11	11	7	12	4	8	13	10	76	20.1	87	375	657	16366	
15 to 19	3	3	6	2	0	0	1	5	20	15.5	27	115	717	19826	
10 to 14	5	5	5	0	0	0	0	1	16	10.8	10	22	734	23453	
5 to 9	0	1	0	0	0	0	0	0	1	7.0	1	1	743	27152	

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

OMAHA, NEBRASKA
WBAN 14942
TABLE A:

TRY Data (1966)

Latitude 41.30 N
Longitude 95.90 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	3	4	0	0	7	59.7	718	24280	2	1	
75 to 79	0	0	0	5	6	5	1	0	17	58.0	705	20713	15	34	
70 to 74	0	0	1	3	0	0	4	1	9	57.0	693	17226	27	147	
65 to 69	1	0	2	1	2	6	3	3	18	55.0	681	13789	39	310	
60 to 64	2	0	4	11	19	18	5	3	62	50.1	648	10451	72	572	
55 to 59	3	4	3	17	22	15	10	6	80	46.8	579	7388	141	1109	
50 to 54	13	11	14	21	16	19	25	12	131	44.3	481	4702	239	2023	
45 to 49	15	13	15	15	10	9	20	25	122	41.0	357	2641	363	3562	
40 to 44	23	21	24	12	9	10	11	20	130	38.3	199	1218	521	5739	
35 to 39	18	19	19	3	3	4	10	10	86	33.2	119	452	601	8573	
30 to 34	8	16	7	2	0	0	1	9	43	29.3	38	109	682	11830	
25 to 29	7	4	1	0	0	0	0	1	13	25.9	9	16	711	15337	
20 to 24	0	2	0	0	0	0	0	0	2	22.0	1	1	719	18922	
May															
95 to 99	0	0	0	0	0	1	0	0	1	65.0	744	26485	0	0	
90 to 94	0	0	0	1	7	4	0	0	12	65.9	740	22771	4	6	
85 to 89	0	0	0	3	8	13	1	0	25	65.0	725	19102	19	57	
80 to 84	0	0	0	7	11	9	6	0	33	64.8	691	15560	53	235	
75 to 79	0	0	3	17	20	17	12	1	70	60.3	654	12187	90	582	
70 to 74	5	2	8	20	16	20	17	12	100	58.9	557	9126	187	1241	
65 to 69	11	5	14	11	7	6	14	18	86	56.3	464	6561	280	2396	
60 to 64	13	18	20	10	5	5	12	11	94	54.5	379	4451	365	4006	
55 to 59	10	11	19	5	6	3	9	14	77	50.6	291	2788	453	6063	
50 to 54	20	15	8	5	4	5	6	13	76	46.4	215	1515	529	8510	
45 to 49	10	23	9	10	9	10	13	8	92	42.8	142	624	602	11339	
40 to 44	18	7	8	4	0	0	3	15	55	39.6	49	157	695	14592	
35 to 39	6	10	3	0	0	0	0	1	20	34.3	9	25	735	18180	
30 to 34	0	2	1	0	0	0	0	0	3	31.3	0	0	744	21875	
Jun															
90 to 94	0	0	0	2	8	6	0	0	16	75.0	715	14315	5	6	
85 to 89	0	0	0	12	27	22	5	0	66	72.8	678	10804	42	95	
80 to 84	1	0	10	26	15	19	22	7	100	71.1	601	7583	119	474	
75 to 79	6	5	15	17	17	21	22	22	125	68.0	497	4828	223	1319	
70 to 74	31	20	27	17	9	13	19	22	158	64.9	351	2689	369	2780	
65 to 69	20	26	19	11	11	6	12	16	121	62.2	208	1298	512	4989	
60 to 64	9	15	13	4	1	1	6	9	58	58.4	106	544	614	7835	
55 to 59	15	16	6	1	2	2	4	12	58	53.8	50	146	670	11037	
50 to 54	7	6	0	0	0	0	0	2	15	50.9	8	20	712	14511	
45 to 49	1	2	0	0	0	0	0	0	3	47.0	1	1	719	18092	

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

OMAHA, NEBRASKA
WBAN 14942
TABLE A:

TRY Data (1966)

Latitude 41.30 N
Longitude 95.90 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		16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Jul														
95 to 99	0	0	0	0	8	5	0	0	13	81.2	743	13623	1	1
90 to 94	0	0	0	12	23	18	3	0	56	79.0	715	9964	29	62
85 to 89	0	0	7	29	28	38	22	3	127	76.0	618	6574	126	392
80 to 84	10	0	24	28	22	19	29	24	156	73.3	491	3785	253	1323
75 to 79	33	32	32	14	3	5	26	29	174	71.2	331	1744	413	3002
70 to 74	36	34	20	8	7	6	9	29	149	67.5	160	543	584	5521
65 to 69	9	21	10	2	2	2	4	8	58	63.4	36	86	708	8784
60 to 64	5	6	0	0	0	0	0	0	11	58.1	7	7	737	12425
Aug														
90 to 94	0	0	0	0	3	3	0	0	6	80.0	743	15884	1	2
85 to 89	0	0	0	6	20	15	1	0	42	74.3	730	12195	14	33
80 to 84	0	0	1	26	36	36	5	0	104	71.0	660	8692	84	250
75 to 79	2	2	11	30	15	18	25	5	108	68.5	547	5670	197	948
70 to 74	15	4	28	15	15	17	30	37	161	65.7	425	3211	319	2209
65 to 69	32	28	30	13	3	3	19	15	143	63.1	243	1508	501	4226
60 to 64	22	26	14	3	1	1	9	21	97	59.3	127	573	617	7011
55 to 59	17	29	8	0	0	0	4	11	69	55.6	45	125	699	10283
50 to 54	3	1	1	0	0	0	0	4	9	50.4	8	33	736	13911
45 to 49	2	3	0	0	0	0	0	0	5	45.6	4	2	740	17600
Sep														
85 to 89	0	0	0	0	4	1	0	0	5	70.4	720	17472	0	0
80 to 84	0	0	0	8	16	17	0	0	41	69.3	700	13899	20	27
75 to 79	0	0	0	15	26	21	2	0	64	64.8	659	10510	61	238
70 to 74	3	4	14	22	12	18	21	5	99	63.9	570	7427	150	755
65 to 69	15	8	11	12	10	10	15	23	104	61.4	461	4822	259	1750
60 to 64	16	19	17	15	12	15	17	10	121	57.1	368	2752	352	3280
55 to 59	14	10	21	17	10	4	20	22	118	53.6	233	1238	487	5366
50 to 54	27	26	21	1	0	4	12	19	110	50.0	104	373	616	8101
45 to 49	15	22	5	0	0	0	3	10	55	45.7	24	36	696	11364
40 to 44	0	1	1	0	0	0	0	1	3	41.7	0	0	720	14928

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

OMAHA, NEBRASKA
WBAN 14942
TABLE A:

TRY Data (1966)

Latitude 41.30 N
Longitude 95.90 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															
80 to 84	0	0	0	2	11	5	0	0	18	67.0	741	21641	3	4	
75 to 79	0	0	2	3	8	10	0	0	23	63.0	718	17996	26	79	
70 to 74	3	3	1	11	15	13	6	3	55	61.0	678	14485	66	288	
65 to 69	3	0	3	16	13	11	11	6	63	55.0	623	11216	121	739	
60 to 64	8	5	9	19	22	15	10	10	98	52.6	542	8265	202	1508	
55 to 59	7	9	11	17	12	18	12	8	94	48.5	457	5769	287	2732	
50 to 54	8	10	9	12	3	8	13	11	74	44.9	367	3726	377	4409	
45 to 49	16	8	19	8	6	9	20	15	101	42.4	284	2099	460	6502	
40 to 44	15	17	18	5	3	4	13	25	100	38.3	180	948	564	9071	
35 to 39	22	21	12	0	0	0	5	10	70	34.4	87	298	657	12141	
30 to 34	11	20	9	0	0	0	3	4	47	30.7	20	31	724	15594	
25 to 29	0	0	0	0	0	0	0	1	1	29.0	0	0	744	19283	
Nov															
70 to 74	0	0	0	0	0	1	0	0	1	57.0	720	23836	0	0	
65 to 69	0	0	0	4	10	4	0	0	18	55.4	713	20246	7	10	
60 to 64	0	0	0	5	9	5	1	0	20	53.2	697	16729	23	93	
55 to 59	0	0	0	7	14	10	7	2	40	48.5	670	13312	50	276	
50 to 54	3	3	3	11	10	14	10	7	61	46.2	625	10084	95	648	
45 to 49	11	7	9	13	14	13	9	11	87	41.5	553	7145	167	1309	
40 to 44	12	12	15	13	10	19	26	17	124	37.6	440	4636	280	2400	
35 to 39	18	13	10	8	5	4	12	22	92	33.5	330	2730	390	4094	
30 to 34	28	23	22	20	12	11	7	14	137	28.7	227	1321	493	6285	
25 to 29	7	17	15	7	6	7	7	5	71	25.0	107	538	613	9102	
20 to 24	6	4	10	2	0	2	11	12	47	19.5	52	154	668	12318	
15 to 19	5	11	6	0	0	0	0	0	22	16.7	9	8	711	15772	
Dec															
55 to 59	0	0	0	0	12	2	0	0	14	45.1	740	22051	4	4	
50 to 54	3	2	0	5	10	9	0	1	30	43.8	721	18396	23	69	
45 to 49	0	1	2	10	3	8	6	2	32	40.7	693	14871	51	264	
40 to 44	0	0	2	10	13	13	8	4	50	37.2	649	11507	95	620	
35 to 39	11	5	9	12	10	12	16	11	86	33.2	599	8386	145	1219	
30 to 34	11	20	16	10	5	6	13	17	98	29.2	481	5671	263	2224	
25 to 29	19	9	9	6	27	17	11	15	113	23.7	388	3473	356	3746	
20 to 24	13	18	15	25	13	20	16	12	132	19.5	272	1820	472	5813	
15 to 19	12	9	13	13	0	5	19	15	86	15.2	157	759	587	8472	
10 to 14	20	19	19	2	0	1	4	14	79	10.8	72	211	672	11644	
5 to 9	4	8	8	0	0	0	0	2	22	6.9	13	24	731	15177	
0 to 4	0	2	0	0	0	0	0	0	2	3.5	0	0	744	18873	

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

OMAHA, NEBRASKA
WBAN 14942
TABLE B:

TRY Data (1966)

Latitude 41.30 N
Longitude 95.90 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	8	6	0	0	14	0.0	0.0	0.0	0.0	81.2	78.3	0.0	0.0	80.0
90 to 94	0	0	0	15	41	31	3	0	90	0.0	0.0	0.0	77.1	76.0	76.8	81.0	0.0	76.6
85 to 89	0	0	7	50	87	89	29	3	265	0.0	0.0	75.7	75.1	73.2	72.5	76.3	76.7	73.8
80 to 84	11	0	35	98	117	110	62	31	464	75.4	0.0	73.1	71.6	68.9	69.5	71.2	74.4	70.8
75 to 79	41	39	63	102	103	104	88	57	597	71.6	71.6	70.1	65.8	63.6	63.7	68.3	69.8	67.0
70 to 74	93	67	99	101	80	93	107	109	749	66.5	67.5	65.6	63.0	60.1	60.7	63.8	65.5	64.1
65 to 69	91	88	89	76	67	55	82	92	640	61.9	63.3	61.5	58.4	57.0	55.5	59.7	60.8	60.1
60 to 64	78	92	81	76	83	77	66	64	617	58.1	58.4	57.0	53.2	51.4	50.8	54.7	56.3	55.0
55 to 59	69	80	72	75	97	73	81	87	634	53.3	53.9	52.6	49.7	46.6	47.1	50.7	51.7	50.6
50 to 54	108	83	69	74	61	81	88	86	650	48.0	48.3	47.6	43.9	43.3	43.7	45.5	47.9	46.2
45 to 49	81	109	80	82	66	70	86	86	660	43.4	43.7	42.4	40.7	39.9	40.4	41.4	42.9	42.0
40 to 44	83	71	86	64	61	69	81	96	611	38.7	39.3	38.6	37.4	37.0	36.9	36.7	37.8	37.8
35 to 39	103	87	70	49	38	44	82	93	566	33.7	33.7	33.5	33.3	31.9	32.8	33.2	33.3	33.3
30 to 34	84	107	80	51	37	40	48	78	525	29.7	29.7	29.6	28.5	27.5	27.0	29.8	29.6	29.2
25 to 29	65	60	57	33	65	47	37	42	406	25.4	25.7	25.9	24.2	22.7	23.1	24.0	25.2	24.6
20 to 24	50	58	52	68	47	58	63	51	447	20.5	20.7	20.5	19.1	18.9	19.3	19.2	19.4	19.7
15 to 19	30	31	41	30	12	21	42	43	250	15.1	15.6	15.7	15.1	15.1	14.7	15.0	15.0	15.2
10 to 14	60	60	46	24	13	12	24	43	282	10.9	10.4	10.2	10.5	9.9	10.2	11.2	10.7	10.5
5 to 9	21	33	43	15	6	7	13	11	149	5.9	6.2	6.5	6.0	5.8	5.9	5.8	6.5	6.2
0 to 4	12	15	10	4	3	3	7	11	65	2.2	1.9	1.2	1.2	0.7	0.7	0.6	2.0	1.6
-5 to -1	9	8	7	5	3	5	3	6	46	-2.7	-3.3	-2.7	-2.6	-4.0	-3.6	-5.7	-1.8	-3.0
-10 to -6	3	1	5	2	0	0	3	6	20	-8.7	-6.0	-7.8	-7.5	0.0	0.0	-6.7	-8.0	-7.7
-15 to -11	3	4	1	1	0	0	0	0	9	-11.7	-11.8	-15.0	-13.0	0.0	0.0	0.0	0.0	-12.2
-20 to -16	0	2	2	0	0	0	0	0	4	0.0	-16.5	-17.0	0.0	0.0	0.0	0.0	0.0	-16.8

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	Max	Min	4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	18.3	50	-17	28	9	16.4	83	78	66	76	77	0.0015	0.0016	0.0019	0.0018	0.0017	9.7
Feb	28.3	62	-1	40	18	24.9	80	69	50	66	68	0.0022	0.0023	0.0025	0.0025	0.0024	8.4
Mar	44.0	81	7	56	32	37.7	77	61	45	58	62	0.0037	0.0040	0.0040	0.0038	0.0039	12.4
Apr	48.8	83	22	59	38	41.7	74	55	44	54	59	0.0041	0.0045	0.0044	0.0042	0.0043	11.2
May	61.9	95	33	74	49	52.4	75	58	43	52	58	0.0064	0.0077	0.0073	0.0067	0.0069	11.6
Jun	72.6	94	47	82	63	65.0	82	66	58	67	69	0.0111	0.0130	0.0132	0.0125	0.0123	10.9
Jul	79.2	98	60	88	70	71.7	83	66	60	70	71	0.0146	0.0157	0.0169	0.0162	0.0158	8.4
Aug	71.2	94	47	82	61	64.8	86	70	57	76	74	0.0109	0.0133	0.0134	0.0127	0.0124	8.2
Sep	63.2	86	43	74	53	57.5	85	70	57	78	74	0.0086	0.0100	0.0100	0.0098	0.0094	7.9
Oct	53.4	84	29	68	40	46.4	77	58	44	64	63	0.0051	0.0062	0.0061	0.0057	0.0057	10.3
Nov	39.4	71	16	51	29	35.0	80	68	51	68	68	0.0033	0.0038	0.0039	0.0037	0.0036	10.2
Dec	27.9	59	3	38	18	24.7	78	71	56	69	70	0.0020	0.0023	0.0025	0.0023	0.0022	9.4
Year	50.8	98	-17	62	40	45.0	80	66	53	67	68	0.0062	0.0071	0.0072	0.0069	0.0067	9.9

OMAHA, NEBRASKA
WBAN 14942
TABLE D:

TRY Data (1966)

Latitude 41.30 N
Longitude 95.90 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)*			Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*			Below Base 100s*	Above Base 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	Base	Heat	Base	Heat
99	0	576	0	0	483	0	0	432	0	0	445	0	0	518	0	0	1768	0	8760	4222	0	0
98	0	565	0	0	472	0	0	421	0	0	434	0	0	508	0	0	1735	0	8759	4135	1	0
97	0	554	0	0	461	0	2	410	0	0	423	0	0	497	0	0	1702	0	8757	4047	3	0
96	0	543	0	0	450	0	4	399	0	1	412	0	0	486	0	0	1669	0	8754	3959	6	0
95	0	532	0	0	439	0	6	388	0	4	401	0	0	475	0	0	1636	0	8749	3872	11	0
94	0	521	0	0	428	0	12	378	0	8	391	0	0	464	0	0	1603	0	8739	3784	21	0
93	0	510	0	1	417	0	19	367	0	13	380	0	0	453	0	0	1571	0	8726	3697	34	1
92	0	499	0	4	406	0	25	356	1	19	369	0	0	442	0	0	1538	0	8711	3610	49	1
91	0	488	0	9	395	0	32	345	1	26	358	1	0	431	0	0	1505	0	8693	3523	67	2
90	0	478	0	13	384	0	42	335	1	33	347	1	1	420	0	0	1472	0	8670	3436	90	2
89	0	467	0	19	374	0	56	324	2	44	337	1	4	409	0	0	1439	0	8636	3349	124	3
88	1	456	0	27	363	1	76	314	2	60	326	2	7	398	0	0	1406	0	8587	3263	173	5
87	3	445	0	36	352	1	92	304	3	78	316	2	13	387	0	0	1374	0	8538	3178	222	7
86	5	434	0	48	342	1	105	294	4	94	306	3	19	376	0	1	1341	0	8488	3093	272	9
85	7	423	0	59	331	2	125	284	5	114	296	4	27	366	1	2	1308	0	8425	3008	335	12
84	10	412	0	74	321	3	149	275	7	136	287	6	38	355	1	3	1275	0	8348	2924	412	16
83	15	401	0	93	311	3	172	265	8	159	277	7	48	345	1	6	1242	0	8265	2841	495	20
82	18	390	1	113	301	4	196	256	10	180	268	9	60	334	2	13	1209	0	8178	2759	582	26
81	25	380	1	136	291	6	221	247	12	203	259	11	73	324	3	25	1177	0	8076	2677	684	32
80	36	369	1	155	282	7	243	239	15	226	250	13	86	314	3	38	1144	1	7974	2597	786	39
79	47	358	1	173	272	9	263	230	17	244	241	15	100	304	4	51	1112	1	7881	2518	879	48
78	59	348	2	194	263	11	282	222	20	262	233	18	115	294	5	66	1080	2	7780	2440	980	57
77	73	338	3	213	254	13	303	214	23	285	225	20	133	284	7	86	1047	2	7667	2362	1093	67
76	84	328	3	232	246	15	329	206	26	307	217	23	148	275	8	119	1016	3	7540	2286	1220	79
75	97	318	4	254	237	17	349	199	29	330	209	27	168	265	10	160	984	5	7400	2212	1360	92
74	112	308	5	278	229	20	367	191	33	350	201	30	194	256	11	201	953	7	7256	2138	1504	106
73	131	298	7	304	221	23	388	184	37	371	194	34	216	247	13	242	922	9	7107	2066	1653	122
72	149	288	8	323	213	26	403	177	41	391	187	37	234	238	16	287	892	11	6972	1996	1788	139
71	167	279	10	339	205	29	414	170	45	406	180	41	253	230	18	339	863	15	6839	1927	1921	158
70	191	270	11	357	198	33	428	163	49	423	173	46	276	222	21	410	833	18	6673	1859	2087	178
69	213	261	13	378	191	36	444	157	53	440	167	50	297	214	24	474	805	23	6512	1793	2248	199
68	236	252	16	399	184	40	459	150	58	452	160	54	317	206	27	531	777	28	6365	1729	2395	223
67	257	244	18	414	177	44	474	144	62	460	154	59	337	198	30	590	750	33	6226	1666	2534	247
66	272	235	21	427	170	49	488	138	67	470	147	64	353	191	33	642	723	40	6107	1605	2653	273
65	286	227	24	437	163	53	498	132	72	482	141	68	365	183	37	696	697	46	5994	1544	2766	300
64	302	219	26	449	157	57	512	126	77	496	135	73	378	176	41	745	671	53	5876	1485	2884	328
63	322	211	30	464	150	62	527	120	82	510	129	78	393	169	45	791	646	61	5751	1427	3009	358
62	338	204	33	477	144	67	540	115	88	520	123	83	406	162	49	839	622	69	5637	1370	3123	389
61	351	196	36	492	138	72	554	109	93	537	118	89	419	155	53	891	597	78	5515	1314	3245	420
60	366	189	40	509	132	77	574	104	99	557	112	94	431	148	57	936	574	87	5385	1259	3375	454
59	379	182	44	525	126	82	598	99	105	575	107	100	446	142	61	973	550	97	5262	1206	3498	488
58	394	175	48	540	121	87	619	94	111	592	102	106	461	135	66	1015	527	107	5138	1154	3622	524
57	409	168	52	555	115	92	636	89	117	605	97	112	476	129	71	1062	505	117	5015	1103	3745	560
56	423	161	56	571	110	98	653	85	124	618	92	118	491	123	75	1107	483	128	4894	1054	3866	598
55	438	154	60	586	105	104	672	80	130	632	87	124	507	117	80	1161	461	139	4762	1005	3998	638
54	453	148	64	601	100	110	692	76	137	647	83	130	524	111	86	1219	441	151	4621	959	4139	678

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, NEBRASKA
WBAN 14942
TABLE D:

TRY Data (1966)

Latitude 41.30 N
Longitude 95.90 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	Above (100s)*	Base	Heat	Above (100s)*	Base	Heat	Above (100s)*	Base	Heat	Above (100s)*	Base	Heat	Above (100s)*	Base	Heat	Below Base	Deg 100s*	Above Base	Deg 100s*
53	464	141	69	619	95	116	709	72	144	666	78	137	539	106	91	1271	420	164	4490	913	4270	720
52	475	135	74	636	90	122	724	69	151	684	74	144	558	100	96	1323	400	176	4357	869	4403	764
51	490	129	79	650	86	129	735	65	159	695	70	151	578	95	102	1380	381	190	4229	826	4531	808
50	507	123	84	661	81	135	741	61	166	709	66	158	597	90	108	1439	362	204	4106	784	4654	854
49	521	117	89	673	77	142	748	58	173	724	62	165	613	85	114	1499	344	219	3980	744	4780	902
48	535	112	94	686	73	149	760	55	181	736	59	172	627	80	120	1557	326	234	3857	705	4903	950
47	552	106	99	703	69	156	774	51	189	748	55	180	639	76	127	1611	309	250	3732	667	5028	1000
46	570	101	105	724	65	163	787	48	196	765	52	187	654	71	133	1663	293	266	3596	630	5164	1051
45	587	96	111	742	61	170	802	45	204	782	49	195	678	67	140	1717	277	283	3450	595	5310	1103
44	605	91	117	754	58	178	817	42	212	798	46	203	700	63	147	1773	262	301	3312	561	5448	1157
43	622	86	123	769	55	185	833	40	221	814	43	211	716	59	154	1827	247	319	3178	528	5582	1212
42	639	81	129	786	52	193	845	37	229	827	40	219	733	55	161	1879	232	337	3050	497	5710	1268
41	658	77	136	798	48	201	853	35	238	839	37	227	748	52	168	1929	219	356	2933	467	5827	1326
40	674	72	142	808	46	209	865	32	246	851	35	236	764	48	176	1974	205	376	2823	439	5937	1385
39	686	68	149	817	43	217	872	30	255	862	33	244	782	45	184	2019	192	396	2721	411	6039	1445
38	696	64	156	826	40	225	877	28	264	873	30	253	797	42	191	2069	180	416	2621	384	6139	1506
37	710	60	163	837	37	234	885	26	272	884	28	262	814	39	200	2116	168	437	2513	359	6247	1568
36	730	57	170	847	35	242	896	24	281	892	26	271	832	36	208	2183	157	458	2379	334	6381	1631
35	746	53	178	856	32	251	906	22	290	899	24	280	846	34	216	2253	146	481	2252	311	6508	1695
34	756	50	185	870	30	259	914	20	299	906	22	289	865	31	225	2310	136	504	2138	289	6622	1761
33	770	46	193	880	28	268	923	18	309	913	20	298	881	29	233	2368	127	527	2023	268	6737	1828
32	792	43	201	889	26	277	929	16	318	918	19	307	891	27	242	2422	118	551	1917	248	6843	1895
31	814	40	209	900	24	286	933	15	327	922	17	316	897	25	251	2471	109	575	1821	230	6939	1964
30	827	37	217	909	22	295	940	13	337	933	15	325	901	23	260	2519	101	600	1730	212	7030	2034
29	836	35	225	915	20	304	950	12	346	947	14	335	906	21	269	2566	94	626	1638	195	7122	2105
28	852	32	234	921	18	313	958	10	356	954	12	344	913	19	278	2602	87	652	1558	179	7202	2177
27	866	30	242	929	17	322	971	9	365	962	11	354	919	18	288	2634	80	678	1476	164	7284	2249
26	877	28	251	937	15	332	991	8	375	973	9	364	926	16	297	2664	74	704	1391	150	7369	2322
25	885	26	260	942	13	341	1006	7	385	983	8	373	935	14	306	2696	68	731	1311	136	7449	2396
24	892	24	269	954	12	351	1016	6	395	997	7	383	945	13	315	2728	62	758	1226	124	7534	2471
23	904	22	278	968	11	360	1024	5	405	1009	6	393	956	11	325	2759	57	786	1138	112	7622	2547
22	916	20	287	978	9	370	1030	5	416	1018	6	403	966	10	335	2789	52	813	1061	101	7699	2624
21	926	18	296	988	8	380	1036	4	426	1030	5	414	979	9	344	2824	47	841	976	90	7784	2701
20	936	16	305	1004	7	390	1049	3	436	1042	4	424	995	8	354	2858	43	870	875	81	7885	2779
19	944	15	315	1016	6	400	1059	3	447	1049	4	435	1004	7	364	2880	38	899	806	73	7954	2859
18	954	13	324	1023	6	410	1061	3	458	1052	3	445	1013	6	374	2895	34	928	759	65	8001	2939
17	965	12	334	1033	5	420	1063	2	468	1056	3	456	1025	5	384	2919	31	957	698	58	8062	3019
16	971	11	344	1039	4	431	1066	2	479	1061	3	466	1034	4	395	2948	27	986	639	51	8121	3100
15	976	9	353	1043	4	441	1068	2	489	1066	2	477	1041	4	405	2970	24	1016	594	45	8166	3181
14	986	8	363	1047	3	451	1070	1	500	1069	2	488	1049	3	416	2991	21	1045	546	39	8214	3263
13	993	7	373	1053	3	462	1074	1	511	1071	2	498	1055	3	426	3020	18	1075	492	34	8268	3346
12	997	6	383	1057	3	473	1078	1	522	1073	1	509	1060	3	437	3050	15	1106	444	29	8316	3428
11	1003	5	393	1060	2	483	1080	1	532	1075	1	520	1065	2	447	3081	13	1136	394	25	8366	3512
10	1016	4	403	1065	2	494	1082	1	543	1078	1	530	1067	2	458	3119	11	1167	330	22	8430	3596
9	1033	4	413	1069	2	504	1083	1	554	1081	1	541	1070	2	469	3146	10	1199	276	19	8484	3680
8	1043	3	424	1073	1	515	1086	1	565	1083	1	552	1073	1	479	3157	9	1230	243	16	8517	3765

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, NEBRASKA
WBAN 14942
TABLE D:

TRY Data (1966)

Latitude 41.30 N
Longitude 95.90 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 Hrs	Above Hrs	Below Hrs	Above Hrs					
													Base 100s*	Base 100s*	Base 100s*	Base 100s*					
7 1052	3	434	1077	1	526	1088	0	576	1084	1	563	1076	1	490	3171	7	1262	211	14	8549	3851
6 1062	2	445	1080	1	537	1088	0	587	1085	1	574	1078	1	501	3187	6	1294	179	12	8581	3936
5 1068	2	455	1082	1	548	1089	0	598	1086	0	585	1080	1	512	3199	5	1326	154	10	8606	4022
4 1071	2	466	1083	1	558	1089	0	608	1087	0	595	1082	1	523	3212	5	1358	135	9	8625	4109
3 1073	2	477	1084	1	569	1089	0	619	1088	0	606	1083	1	533	3222	4	1390	120	7	8640	4195
2 1075	1	488	1085	1	580	1090	0	630	1088	0	617	1084	1	544	3231	3	1422	105	6	8655	4281
1 1076	1	498	1086	0	591	1091	0	641	1089	0	628	1086	0	555	3238	3	1455	92	5	8668	4368
0 1078	1	509	1087	0	602	1092	0	652	1089	0	639	1088	0	566	3241	2	1487	84	4	8676	4455
-1 1081	1	520	1088	0	613	1092	0	663	1091	0	650	1089	0	577	3246	2	1519	72	4	8688	4541
-2 1083	1	531	1090	0	624	1092	0	674	1092	0	661	1089	0	588	3253	2	1552	60	3	8700	4628
-3 1085	1	542	1091	0	634	1093	0	685	1092	0	672	1089	0	599	3260	1	1584	48	2	8712	4715
-4 1086	1	552	1092	0	645	1094	0	696	1094	0	683	1089	0	610	3264	1	1617	40	2	8720	4803
-5 1086	0	563	1092	0	656	1095	0	707	1095	0	694	1090	0	620	3265	1	1650	35	2	8725	4890
-6 1087	0	574	1092	0	667	1095	0	718	1095	0	705	1093	0	631	3267	1	1682	30	1	8730	4977
-7 1089	0	585	1093	0	678	1095	0	729	1095	0	716	1094	0	642	3268	1	1715	25	1	8735	5064
-8 1090	0	596	1093	0	689	1095	0	740	1095	0	726	1095	0	653	3270	0	1748	21	1	8739	5152
-9 1090	0	607	1094	0	700	1095	0	751	1095	0	737	1095	0	664	3273	0	1780	17	1	8743	5239
-10 1091	0	618	1094	0	711	1095	0	761	1095	0	748	1095	0	675	3275	0	1813	14	0	8746	5327
-11 1092	0	629	1094	0	722	1095	0	772	1095	0	759	1095	0	686	3278	0	1846	10	0	8750	5414
-12 1092	0	640	1094	0	733	1095	0	783	1095	0	770	1095	0	697	3281	0	1879	8	0	8752	5502
-13 1092	0	650	1094	0	744	1095	0	794	1095	0	781	1095	0	708	3281	0	1912	7	0	8753	5589
-14 1092	0	661	1095	0	755	1095	0	805	1095	0	792	1095	0	719	3282	0	1944	5	0	8755	5677
-15 1092	0	672	1095	0	766	1095	0	816	1095	0	803	1095	0	730	3283	0	1977	4	0	8756	5764
-16 1093	0	683	1095	0	777	1095	0	827	1095	0	814	1095	0	741	3283	0	2010	3	0	8757	5852
-17 1094	0	694	1095	0	788	1095	0	838	1095	0	825	1095	0	752	3284	0	2043	1	0	8759	5939
-18 1095	0	705	1095	0	798	1095	0	849	1095	0	836	1095	0	763	3285	0	2076	0	0	8760	6027

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, NEBRASKA
WBAN 14942

TRY Data (1966)

Latitude 41.30 N
Longitude 95.90 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:	3868	3488	3084	2628	2174	1703	1239	788	410	165	53
Annual Wet Bulb Cooling deg-hrs:	54749.	43518.	33426.	24671.	17259.	11237.	6620.	3395.	1400.	457.	99.

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*
Ratio*	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80	Ratio*		
.001	1	1	1	1	1	1	1	1	1	1	1	46	45	44	43	41	38	34	30	24	17	10	.001		
.002	2	2	2	2	2	2	2	2	2	2	2	39	39	38	37	36	34	31	27	22	15	9	.002		
.003	4	4	4	4	5	5	5	5	5	5	5	33	33	33	32	31	30	28	25	20	14	9	.003		
.004	5	6	7	7	8	8	8	8	8	8	8	28	28	28	28	27	26	24	22	18	13	8	.004		
.005	7	8	10	11	11	12	12	12	12	12	12	23	23	23	23	23	22	21	19	16	11	7	.005		
.006	9	11	12	14	15	16	17	17	17	17	17	19	19	19	19	19	19	18	17	14	10	7	.006		
.007	10	13	15	17	19	21	21	22	22	22	22	16	16	16	16	16	16	15	14	12	9	6	.007		
.008	12	15	18	21	23	25	27	27	28	28	28	13	13	13	13	13	13	13	12	10	8	5	.008		
.009	14	17	21	24	27	30	32	33	33	34	34	10	10	10	10	10	10	10	10	9	7	4	.009		
.010	15	19	24	28	31	35	37	39	40	40	41	8	8	8	8	8	8	8	8	7	6	4	.010		
.011	17	22	26	31	35	39	42	44	46	47	47	6	6	6	6	6	6	6	6	6	4	3	.011		
.012	19	24	29	34	39	44	48	50	52	53	54	4	4	4	4	4	4	4	4	4	4	3	.012		
.013	20	26	32	38	43	49	53	56	59	60	62	3	3	3	3	3	3	3	3	3	3	2	.013		
.014	22	28	35	41	48	53	58	62	65	68	69	2	2	2	2	2	2	2	2	2	2	1	.014		
.015	24	30	37	44	52	58	64	68	72	75	77	1	1	1	1	1	1	1	1	1	1	1	.015		
.016	25	33	40	48	56	63	69	74	78	82	84	1	1	1	1	1	1	1	1	1	1	1	.016		
.017	27	35	43	51	60	67	74	80	85	89	92	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	29	37	46	55	64	72	80	86	92	97	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)-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	37	44	57	41	53	39	40	43	28	40	43	43
VERTICAL													
NORTH	100	100	100	99	91	90	89	95	100	100	100	100	95
WEST	53	47	61	72	57	66	56	56	54	42	54	53	57
SOUTH	30	32	49	72	68	81	70	60	52	29	31	30	50
EAST	47	50	55	66	60	69	60	55	59	41	49	50	57
% Possible Sun	55	54	55	58	62	68	75	72	67	67	52	49	62

FOOTNOTES: * Corrected For Cloud Cover.

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

OMAHA, NEBRASKA
WBAN 14942
TABLE H:

TRY Data (1966)

Latitude 41.30 N
Longitude 95.90 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	1861	1733	1387	1059	627	319	171	144	144	1877	894	913	867	719	570	371	226	157	144	143	901	501	634
Feb	1938	1811	1507	1231	816	475	272	191	188	2158	1233	1073	1005	853	713	503	334	236	197	195	1159	733	892
Mar	1802	1737	1577	1415	1084	749	487	315	262	2378	1720	1048	1038	964	881	710	538	412	333	307	1271	1025	1223
Apr	1437	1505	1512	1494	1302	1031	756	521	370	2393	2172	947	986	982	962	862	732	612	512	451	1255	1232	1558
May	1135	1284	1405	1494	1416	1227	975	719	526	2316	2471	1027	1094	1144	1177	1110	983	831	682	582	1688	1817	1873
Jun	1007	1174	1347	1487	1466	1327	1088	832	630	2260	2593	962	1027	1093	1146	1117	1033	906	778	691	1526	1750	2123
Jul	1059	1216	1364	1477	1429	1276	1033	782	587	2262	2520	993	1072	1147	1203	1157	1050	893	737	628	1728	1931	2107
Aug	1285	1388	1444	1469	1329	1104	847	609	441	2305	2257	1079	1144	1167	1167	1060	903	737	587	490	1642	1638	1859
Sep	1623	1600	1498	1391	1127	829	573	388	309	2311	1844	1062	1033	969	903	759	606	480	390	350	1373	1188	1373
Oct	1855	1747	1503	1265	901	566	343	237	222	2180	1375	1257	1192	1039	890	658	442	299	229	219	1452	967	1050
Nov	1850	1718	1389	1074	665	346	197	160	160	1923	981	978	931	779	623	415	255	181	163	163	998	585	644
Dec	1786	1664	1321	988	566	270	150	133	133	1761	799	821	776	636	493	309	184	132	123	123	796	424	511
Year	1551	1546	1437	1320	1062	795	576	421	332	2177	1741	1013	1014	959	895	754	609	491	407	363	1317	1152	1321

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

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

*** South exposure tilt 45 degrees.

**** Cinquemani, V., J. R. Owenby, Jr. and R. G. Baldwin, 1978. Input Data for Solar Systems. NCC, Asheville, NC.

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	878	503	235	130	118	117		780	733	601	472	300	173	124	117	117	
Feb	1654	1526	1266	1026	664	366	200	155	153		907	841	712	591	409	263	183	160	159	
Mar	1465	1438	1311	1180	896	601	372	240	212		850	856	798	730	582	433	325	264	249	
Apr	1090	1202	1241	1242	1081	844	599	399	291		745	796	804	792	709	598	492	408	363	
May	809	973	1129	1229	1173	1008	780	558	393		775	853	922	963	912	802	667	541	455	
Jun	702	867	1069	1218	1214	1090	877	653	469		738	803	879	936	916	843	733	623	543	
Jul	747	910	1089	1215	1186	1048	852	612	439		743	828	921	984	953	858	721	587	488	
Aug	956	1090	1177	1218	1104	905	675	472	342		831	914	954	964	876	739	591	464	389	
Sep	1292	1311	1243	1161	931	668	445	297	251		846	841	797	746	624	491	382	309	284	
Oct	1559	1463	1254	1058	735	442	258	186	180		1050	993	865	742	537	348	230	182	178	
Nov	1593	1456	1162	890	531	260	147	130	130		833	786	649	515	333	197	142	132	132	
Dec	1546	1421	1108	814	449	198	115	108	108		702	658	531	405	247	141	104	100	100	
Year	1249	1260	1184	1094	873	640	454	328	258		816	825	787	738	618	492	393	325	289	

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

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

ST. LOUIS, MISSOURI
 MBAN 13994
 TABLE A:

TRY Data (1972)

Latitude 39.00 N
 Longitude 90.03 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														
70 to 74	0	0	0	0	1	0	0	0	1	56.0	744	31822	0	0
65 to 69	0	0	0	1	0	0	0	0	1	58.0	743	28105	1	3
60 to 64	0	0	0	0	1	1	0	0	2	53.0	742	24393	2	11
55 to 59	0	0	0	4	12	5	4	0	25	49.1	731	20697	13	35
50 to 54	2	4	4	8	8	6	1	3	36	46.3	708	17101	36	159
45 to 49	4	8	9	11	18	15	8	6	79	42.1	652	13681	92	459
40 to 44	9	5	6	14	8	14	13	11	80	38.2	580	10633	164	1131
35 to 39	13	7	9	12	5	15	18	18	97	34.3	486	7984	258	2202
30 to 34	21	19	17	5	7	2	10	13	94	30.1	386	5819	358	3757
25 to 29	3	9	7	6	8	5	2	3	43	25.0	307	4101	437	5759
20 to 24	13	9	8	8	10	16	14	7	85	19.8	257	2656	487	8034
15 to 19	7	7	8	5	6	4	11	18	66	15.4	177	1604	567	10702
10 to 14	9	6	8	11	6	4	6	5	55	11.4	112	887	632	13705
5 to 9	3	10	8	4	0	2	0	3	30	7.6	57	472	687	17010
0 to 4	3	0	3	2	3	2	3	2	18	0.8	44	217	700	20475
-5 to -1	4	8	4	2	0	2	1	1	22	-3.3	21	55	723	24033
-10 to -6	2	1	2	0	0	0	2	3	10	-6.3	0	0	744	27698
Feb														
75 to 79	0	0	0	0	3	2	0	0	5	56.2	671	29902	1	1
70 to 74	0	0	0	1	2	2	0	0	5	53.6	666	26562	6	21
65 to 69	0	0	0	3	3	1	2	0	9	54.2	658	23249	14	68
60 to 64	0	0	0	1	3	2	1	0	7	49.6	652	19977	20	156
55 to 59	0	0	2	3	1	2	1	0	9	49.0	643	16738	29	277
50 to 54	3	3	2	2	3	5	2	3	23	43.9	632	13549	40	448
45 to 49	0	0	1	4	13	10	4	4	36	40.2	598	10464	74	723
40 to 44	8	6	3	15	17	14	16	12	91	37.2	546	7569	126	1188
35 to 39	11	7	12	14	10	13	9	11	87	34.0	454	5080	218	2059
30 to 34	25	23	25	20	11	14	22	19	159	30.3	343	3043	329	3382
25 to 29	13	15	9	4	4	2	9	17	73	26.0	203	1747	469	5446
20 to 24	7	9	9	6	14	13	8	3	69	20.2	139	881	533	7940
15 to 19	7	11	12	8	0	4	3	9	54	15.9	81	332	591	10751
10 to 14	9	4	4	3	0	0	7	6	33	11.4	26	79	646	13858
5 to 9	1	6	5	0	0	0	0	0	12	6.7	6	5	666	17144
Mar														
85 to 89	0	0	0	0	1	0	0	0	1	62.0	744	31199	0	0
80 to 84	0	0	0	0	7	5	0	0	12	61.9	737	27489	7	10
75 to 79	0	0	0	4	4	6	3	0	17	61.5	723	23830	21	71
70 to 74	0	0	0	5	2	1	4	2	14	59.3	710	20251	34	212
65 to 69	2	0	3	7	7	5	4	3	31	56.0	690	16744	54	425
60 to 64	5	9	8	3	2	2	3	4	36	54.8	656	13380	88	781
55 to 59	6	2	5	8	21	9	4	9	64	47.9	615	10193	129	1314
50 to 54	5	3	3	19	14	23	6	4	77	45.8	538	7306	206	2147
45 to 49	12	14	15	12	6	12	21	14	106	43.0	458	4804	286	3365
40 to 44	14	11	15	9	17	15	23	16	120	38.2	332	2818	412	5099
35 to 39	14	15	17	13	9	11	9	14	102	33.8	224	1435	520	7436
30 to 34	19	18	14	9	3	3	12	15	93	29.4	111	578	633	10299
25 to 29	8	11	5	4	0	1	2	9	40	24.7	49	203	695	13644
20 to 24	7	10	8	0	0	0	2	3	30	20.9	19	33	725	17194
15 to 19	1	0	0	0	0	0	0	0	1	19.0	0	0	744	20881

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

ST. LOUIS, MISSOURI
WBAN 13994
TABLE A:

TRY Date (1972)

Latitude 39.00 N
Longitude 90.03 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										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	Month Total						
Apr															
85 to 89	0	0	0	0	7	2	0	0	9	67.4	720	23458	0	0	
80 to 84	0	0	0	3	7	8	0	0	18	66.7	705	19895	15	37	
75 to 79	0	0	1	8	6	8	8	2	33	65.8	678	16422	42	164	
70 to 74	4	1	2	9	6	6	6	7	41	62.2	642	13112	78	454	
65 to 69	8	4	6	13	17	10	6	6	70	58.1	595	10010	125	952	
60 to 64	14	4	11	8	2	15	12	11	77	56.7	534	7214	186	1756	
55 to 59	7	19	23	15	22	15	23	18	142	52.3	420	4805	300	2947	
50 to 54	18	20	17	12	10	10	7	13	107	47.4	270	3068	450	4810	
45 to 49	6	5	7	11	3	3	12	8	55	42.8	201	1915	519	7257	
40 to 44	11	10	8	4	4	6	2	10	55	38.1	144	1044	576	9986	
35 to 39	7	11	5	6	5	4	11	7	56	34.4	91	458	629	13000	
30 to 34	12	7	8	1	1	2	0	5	36	30.3	42	134	678	16276	
25 to 29	3	6	2	0	0	1	3	3	18	26.8	6	15	714	19757	
20 to 24	0	3	0	0	0	0	0	0	3	21.0	0	0	720	23342	
May															
90 to 94	0	0	0	0	4	1	0	0	5	68.4	744	18902	0	0	
85 to 89	0	0	0	10	21	16	0	0	47	67.1	715	15217	29	35	
80 to 84	0	0	3	20	15	17	5	0	60	65.4	673	11742	71	280	
75 to 79	0	0	11	16	18	14	14	1	74	64.3	604	8539	140	797	
70 to 74	0	0	20	15	13	24	23	18	113	62.3	515	5713	229	1691	
65 to 69	26	11	17	10	9	7	16	27	123	59.9	406	3427	338	3125	
60 to 64	25	33	21	17	8	8	16	15	143	57.5	266	1757	478	5175	
55 to 59	22	28	14	5	2	3	13	14	101	53.9	137	765	607	7903	
50 to 54	6	3	6	0	3	3	3	12	36	48.8	67	302	677	11160	
45 to 49	13	13	1	0	0	0	3	6	36	45.5	32	65	712	14643	
40 to 44	1	5	0	0	0	0	0	0	6	42.5	1	1	743	18299	
Jun															
95 to 99	0	0	0	0	2	0	0	0	2	71.5	720	17391	0	0	
90 to 94	0	0	0	5	12	11	0	0	28	73.4	709	13803	11	12	
85 to 89	0	0	1	15	34	22	8	0	80	71.1	667	10341	53	150	
80 to 84	0	0	11	33	22	33	15	4	118	68.4	561	7253	159	662	
75 to 79	10	7	23	15	10	14	26	14	119	65.8	446	4735	274	1744	
70 to 74	16	19	20	11	7	6	24	29	132	64.1	328	2814	392	3423	
65 to 69	24	16	17	7	3	4	11	19	101	59.8	194	1523	526	5732	
60 to 64	12	20	9	4	0	0	3	12	60	56.0	122	753	598	8562	
55 to 59	13	10	7	0	0	0	3	7	40	52.9	64	304	656	11713	
50 to 54	9	9	2	0	0	0	0	5	25	49.3	26	84	694	15093	
45 to 49	6	9	0	0	0	0	0	0	15	46.1	6	6	714	18615	

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

ST. LOUIS, MISSOURI

TRY Data (1972)

Latitude 39.00 N

WBAN 13994

Longitude 90.03 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	7	4	0	0	11	75.9	744	14820	0	0
90 to 94	0	0	0	19	26	27	8	0	80	74.5	704	11158	40	58
85 to 89	0	0	7	28	10	12	22	3	82	74.3	617	7850	127	470
80 to 84	10	2	25	6	19	12	12	24	110	72.4	535	4954	209	1294
75 to 79	22	26	25	26	22	26	22	18	187	70.4	397	2585	347	2645
70 to 74	27	26	20	8	8	11	18	26	144	67.4	213	1084	531	4864
65 to 69	23	21	10	5	1	1	9	17	87	63.9	81	362	663	7862
60 to 64	5	12	5	1	0	0	2	4	29	58.5	30	120	714	11340
55 to 59	5	1	1	0	0	0	0	1	8	54.4	11	32	733	14972
50 to 54	1	5	0	0	0	0	0	0	6	52.0	0	0	744	18660
Aug														
95 to 99	0	0	0	1	11	2	0	0	14	77.0	744	15978	0	0
90 to 94	0	0	0	13	21	16	0	0	50	77.1	718	12309	26	51
85 to 89	0	0	5	20	21	24	10	1	81	74.6	651	8875	93	337
80 to 84	5	1	11	20	15	23	22	13	110	73.2	562	5842	182	1024
75 to 79	16	12	25	18	12	10	31	25	149	71.2	446	3313	298	2215
70 to 74	30	35	23	14	13	17	12	22	166	68.8	254	1534	490	4156
65 to 69	22	12	21	7	0	1	14	21	98	64.1	132	592	612	6934
60 to 64	11	27	7	0	0	0	3	5	53	61.0	50	152	694	10214
55 to 59	9	6	1	0	0	0	1	6	23	56.6	10	11	734	13793
Sep														
90 to 94	0	0	0	3	14	4	0	0	21	77.6	716	15062	4	4
85 to 89	0	0	1	15	17	20	2	0	55	75.6	672	11568	48	110
80 to 84	1	0	6	13	9	9	19	5	62	73.8	622	8326	98	468
75 to 79	13	5	15	16	20	18	10	24	121	71.3	544	5385	176	1127
70 to 74	23	27	23	19	14	21	20	15	162	69.0	408	3000	312	2342
65 to 69	26	23	19	12	10	11	19	18	138	65.1	219	1413	501	4355
60 to 64	8	12	16	10	4	4	15	14	83	60.4	122	575	598	7117
55 to 59	16	17	9	2	2	1	2	12	61	56.2	46	157	674	10299
50 to 54	3	4	1	0	0	2	1	0	11	49.9	13	40	707	13782
45 to 49	0	2	0	0	0	0	2	2	6	44.8	3	4	717	17346

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

ST. LOUIS, MISSOURI
WBAN 13994
TABLE A:

TRY Data (1972)

Latitude 39.00 N
Longitude 90.03 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														
80 to 84	0	0	0	0	3	2	0	0	5	69.6	744	20412	0	0
75 to 79	0	0	0	3	15	5	1	0	24	64.4	736	16714	8	22
70 to 74	1	0	1	15	10	15	2	3	47	62.1	696	13124	48	152
65 to 69	5	6	10	11	10	10	15	5	72	60.3	652	9758	92	506
60 to 64	6	1	12	15	14	18	20	17	103	57.8	577	6710	167	1178
55 to 59	23	24	19	9	10	10	14	21	130	53.8	437	4161	307	2349
50 to 54	19	15	16	24	18	17	21	21	151	48.4	314	2279	438	4187
45 to 49	13	18	16	8	10	9	5	5	84	44.4	170	1138	574	6766
40 to 44	14	14	10	7	1	3	8	15	72	40.4	91	475	653	9823
35 to 39	6	9	6	1	2	4	6	2	36	35.4	41	169	703	13237
30 to 34	5	3	2	0	0	0	1	4	15	29.3	16	43	728	16831
25 to 29	1	3	1	0	0	0	0	0	5	26.0	2	3	742	20511
Nov														
65 to 69	0	0	0	0	0	0	0	1	1	65.0	720	19611	0	0
60 to 64	0	0	0	0	2	3	3	0	8	62.1	717	16016	3	5
55 to 59	0	0	0	7	13	8	4	3	35	52.4	700	12465	20	54
50 to 54	7	6	9	12	7	5	2	6	54	50.1	656	9071	64	260
45 to 49	8	7	10	18	23	21	17	6	110	45.0	582	5939	138	728
40 to 44	25	21	21	11	8	11	14	22	133	40.5	437	3363	283	1752
35 to 39	19	20	12	33	31	32	33	27	207	34.6	333	1413	387	3402
30 to 34	23	27	31	9	6	7	14	21	138	31.8	96	358	624	5947
25 to 29	4	4	4	0	0	3	2	1	18	26.9	24	124	696	9313
20 to 24	2	2	2	0	0	0	1	3	10	21.5	12	34	708	12823
15 to 19	2	3	1	0	0	0	0	0	6	18.8	0	0	720	16389
Dec														
65 to 69	0	0	0	0	2	0	0	0	2	51.0	744	27547	0	0
60 to 64	0	0	0	1	1	2	0	0	4	49.8	740	23835	4	8
55 to 59	3	2	2	2	4	3	2	2	20	50.0	734	20145	10	38
50 to 54	0	1	1	7	12	8	4	2	35	48.8	700	16544	44	157
45 to 49	1	0	1	6	2	5	4	5	24	42.8	674	13118	70	451
40 to 44	6	5	9	8	6	8	9	3	54	39.4	634	9826	110	879
35 to 39	9	7	5	5	6	6	12	14	64	35.3	587	6777	157	1550
30 to 34	31	29	31	24	25	26	20	19	205	31.2	487	4046	257	2539
25 to 29	16	20	11	13	17	14	23	28	142	26.6	275	2210	469	4423
20 to 24	9	8	11	7	11	12	5	5	68	21.5	169	1152	575	7085
15 to 19	6	3	4	18	7	6	5	6	55	16.4	103	488	641	10141
10 to 14	7	12	15	2	0	3	9	6	54	11.7	43	107	701	13480
5 to 9	5	6	3	0	0	0	0	3	17	7.5	4	2	740	17095

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

ST. LOUIS, MISSOURI
WBAN 13994
TABLE B:

TRY Data (1972)

Latitude 39.00 N
Longitude 90.03 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	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24
95 to 99	0	0	0	1	20	6	0	0	0.0	0.0	0.0	79.0	76.0	76.2	0.0	0.0
90 to 94	0	0	0	40	77	59	8	0	0.0	0.0	0.0	76.7	75.0	74.7	74.9	0.0
85 to 89	0	0	14	88	111	96	42	4	0.0	0.0	76.1	73.9	71.2	72.1	74.0	74.3
80 to 84	16	3	56	95	97	109	73	46	74.8	74.3	73.2	69.9	68.3	68.2	72.1	74.2
75 to 79	61	50	100	106	110	103	115	84	72.1	72.5	70.1	68.1	65.7	65.8	67.9	71.1
70 to 74	101	108	109	97	76	103	109	122	69.6	69.6	66.9	62.9	62.2	63.2	64.8	67.1
65 to 69	136	93	103	76	62	50	96	117	63.5	64.6	62.5	59.6	56.6	56.3	61.0	62.4
60 to 64	86	118	89	60	37	55	78	82	59.0	59.7	57.9	55.7	55.5	56.1	57.1	58.0
55 to 59	104	109	83	55	87	56	71	93	54.8	55.1	53.6	50.5	49.2	49.7	52.3	53.9
50 to 54	73	73	61	84	75	79	47	69	48.8	49.7	48.8	47.6	46.4	46.1	47.6	48.2
45 to 49	63	76	60	70	75	75	76	56	45.8	45.5	45.0	42.4	41.3	42.0	42.9	44.2
40 to 44	88	77	72	68	61	71	85	89	40.1	40.8	39.8	37.6	36.8	37.7	38.8	39.1
35 to 39	79	76	66	84	68	85	98	93	35.0	34.8	34.3	33.6	34.2	34.1	34.4	34.9
30 to 34	136	126	128	68	53	54	79	96	30.5	30.9	31.0	30.6	31.0	30.7	30.1	30.5
25 to 29	48	68	39	27	29	26	41	61	26.5	26.9	25.9	24.8	25.1	25.5	26.2	26.1
20 to 24	38	41	38	21	35	41	30	21	21.1	20.5	20.7	21.0	19.4	20.3	20.7	21.2
15 to 19	23	24	25	31	13	14	19	33	15.9	17.1	16.6	16.0	15.3	15.0	15.7	15.5
10 to 14	25	22	27	16	6	7	22	17	11.2	12.0	12.0	11.1	10.8	12.7	11.3	10.8
5 to 9	9	22	16	4	0	2	0	6	7.7	7.6	7.3	7.3	0.0	4.0	0.0	7.3
0 to 4	3	0	3	2	3	2	3	2	2.0	0.0	1.0	1.0	0.0	1.0	0.7	0.0
-5 to -1	4	8	4	2	0	2	1	1	-3.3	-3.5	-3.0	-3.0	0.0	-3.5	-5.0	-2.0
-10 to -6	2	1	2	0	0	0	2	3	-6.0	-7.0	-7.0	0.0	0.0	0.0	-6.0	-6.3

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	29.7	70	-7	40	20	27.1	85	78	59	74	76	0.0027	0.0031	0.0029	0.0028	0.0029	10.6
Feb	33.0	78	6	43	23	29.8	85	73	60	75	75	0.0027	0.0030	0.0032	0.0031	0.0030	11.0
Mar	45.6	85	19	57	34	40.2	84	66	50	65	67	0.0045	0.0048	0.0044	0.0045	0.0045	11.8
Apr	54.9	87	23	67	44	49.3	82	66	59	71	71	0.0063	0.0071	0.0073	0.0072	0.0069	10.9
May	67.1	91	42	78	56	59.0	87	58	48	63	66	0.0091	0.0096	0.0090	0.0090	0.0092	8.5
Jun	73.3	95	46	85	61	63.5	81	54	43	57	61	0.0104	0.0112	0.0109	0.0109	0.0109	9.1
Jul	77.6	97	53	87	69	69.5	86	65	55	65	70	0.0140	0.0147	0.0138	0.0136	0.0141	8.3
Aug	76.0	96	55	86	67	69.7	92	72	59	74	76	0.0142	0.0154	0.0149	0.0146	0.0147	7.0
Sep	71.6	94	45	81	63	67.2	95	77	66	83	82	0.0135	0.0142	0.0140	0.0140	0.0139	8.4
Oct	55.1	82	25	64	47	50.9	88	73	66	78	78	0.0070	0.0076	0.0078	0.0076	0.0075	8.5
Nov	40.3	65	18	46	35	38.6	95	86	79	88	88	0.0046	0.0048	0.0050	0.0049	0.0048	9.1
Dec	30.5	66	7	37	24	29.2	94	89	83	89	89	0.0031	0.0032	0.0036	0.0034	0.0033	10.2
Year	54.7	97	-7	64	45	49.6	88	71	61	73	75	0.0077	0.0083	0.0081	0.0080	0.0080	9.5

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TABLE D:

TRY Data (1972)

Latitude 39.00 N

Longitude 90.03 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)*	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*	Hrs	Above 100s*	Hrs
98	0	506	0	0	433	0	0	413	0	0	470	0	0	1581	0	0
97	0	495	0	0	422	0	0	402	0	0	459	0	0	1548	0	0
96	0	484	0	0	411	0	0	391	0	0	448	0	0	1515	0	0
95	0	473	0	0	400	0	13	361	0	3	380	0	0	1482	0	0
94	0	462	0	2	389	0	25	350	0	9	369	0	0	1450	0	0
93	0	451	0	7	378	0	37	339	1	19	358	0	0	1417	0	0
92	0	440	0	16	367	0	52	329	1	32	348	0	0	1384	0	2
91	0	429	0	26	357	0	67	318	2	42	337	1	1	1351	0	3
90	0	418	0	36	346	1	86	308	2	55	327	1	5	1318	0	4
89	0	407	0	49	335	1	110	298	3	74	316	2	9	1285	0	7
88	0	396	0	68	325	2	135	289	5	94	306	3	14	1253	0	9
87	2	385	0	87	315	2	158	279	6	114	296	4	23	1220	0	13
86	6	374	0	103	305	3	177	270	8	133	287	5	33	1187	0	17
85	11	364	0	120	295	5	196	261	10	152	277	7	43	1154	0	22
84	19	353	0	139	285	6	215	252	12	174	268	8	54	1121	0	27
83	28	342	1	159	276	7	231	243	14	199	259	10	65	1088	0	34
82	37	331	1	180	267	9	250	235	16	217	250	12	79	1056	0	41
81	48	321	1	194	258	11	271	226	19	236	241	14	93	1023	1	50
80	62	310	2	211	249	13	293	218	22	258	233	17	111	991	1	59
79	77	300	3	235	240	15	312	210	25	277	224	20	129	959	2	70
78	93	290	3	256	231	18	332	202	28	298	216	22	146	927	3	81
77	112	280	4	275	223	20	356	195	31	322	208	25	169	895	4	94
76	137	270	6	296	215	23	379	188	35	344	201	29	195	864	6	109
75	160	261	7	319	207	26	402	181	39	364	193	32	223	833	8	125
74	179	252	9	341	200	29	424	174	43	385	186	36	248	803	10	143
73	198	243	11	362	192	33	439	167	47	409	179	40	272	773	14	163
72	220	234	13	377	185	37	452	161	52	432	173	44	298	744	17	184
71	242	225	15	393	178	41	468	154	57	451	166	49	319	716	22	207
70	265	217	18	415	171	45	484	148	61	467	160	53	338	689	27	231
69	286	209	20	433	164	49	495	142	66	479	153	58	359	662	33	257
68	306	201	23	450	158	53	503	136	71	487	147	63	381	636	40	285
67	332	193	27	466	151	58	518	130	76	499	141	68	402	610	48	314
66	356	185	30	478	145	63	536	125	82	512	135	73	421	586	56	345
65	374	178	34	494	139	67	548	119	87	521	130	78	436	562	65	377
64	386	171	37	508	133	72	555	114	93	530	124	83	449	538	74	411
63	399	164	41	521	127	78	560	108	98	537	118	89	460	515	84	445
62	417	157	45	535	122	83	569	103	104	546	113	94	474	493	95	481
61	435	150	50	547	116	88	579	98	109	558	107	100	491	471	106	518
60	457	144	54	558	111	94	586	93	115	572	102	105	510	450	117	556
59	478	138	59	568	105	99	597	88	121	582	97	111	527	429	129	595
58	492	132	64	574	100	105	615	83	127	593	92	117	541	409	142	636
57	509	126	69	582	95	111	631	78	134	606	87	123	556	390	156	678
56	528	120	74	595	90	117	646	73	140	619	82	129	569	371	170	721
55	546	114	79	610	85	123	666	69	146	632	77	135	583	353	185	766
54	561	109	85	626	80	129	682	65	153	644	73	142	594	336	200	812
53	573	104	91	645	76	135	697	61	160	658	68	148	604	319	216	859

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

ST. LOUIS, MISSOURI
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TABLE D:

TRY Data (1972)

Latitude 39.00 N
Longitude 90.03 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				
	Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Below		Below		Above		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*		Base 100s*	
52	585	98	96	663	71	142	715	57	167	678	64	155	618	81	115	1640	302	232					3860	674	4900	908					
51	596	93	102	679	67	149	732	53	174	696	60	162	625	77	122	1687	286	249					3743	636	5017	957					
50	608	88	108	695	63	156	746	50	182	708	56	169	633	72	128	1730	270	266					3639	599	5121	1008					
49	623	84	114	707	59	163	758	46	189	721	52	176	643	67	134	1770	255	283					3537	563	5223	1060					
48	638	79	121	718	55	170	773	43	197	735	49	183	654	63	141	1810	240	301					3431	528	5329	1113					
47	653	74	127	733	51	177	794	40	205	752	45	191	671	58	147	1848	225	320					3308	494	5452	1166					
46	665	70	134	750	48	184	810	37	213	770	42	198	685	54	154	1888	211	338					3190	462	5570	1222					
45	671	66	140	764	44	192	821	34	221	785	39	206	702	50	161	1926	197	357					3089	431	5671	1278					
44	682	62	147	776	41	200	832	31	229	799	36	214	724	46	168	1969	184	377					2977	400	5783	1335					
43	697	58	154	787	38	207	845	29	238	816	33	222	745	43	176	2028	171	397					2841	371	5919	1394					
42	711	54	161	804	35	215	862	26	246	831	30	230	767	39	183	2082	159	417					2701	343	6059	1453					
41	723	50	168	822	32	224	877	24	255	844	27	239	780	36	191	2126	147	438					2586	317	6174	1515					
40	738	46	176	834	30	232	885	22	264	856	25	247	792	33	199	2173	136	460					2480	292	6280	1577					
39	751	43	183	847	27	240	895	20	273	868	23	256	807	30	207	2215	125	482					2375	267	6385	1640					
38	762	39	191	862	25	249	911	18	282	880	20	264	823	27	215	2250	114	504					2270	244	6490	1705					
37	774	36	198	880	22	257	926	16	291	899	18	273	838	25	223	2293	104	527					2147	222	6613	1770					
36	786	33	206	900	20	266	939	15	300	922	17	282	856	22	232	2339	94	550					2016	201	6744	1837					
35	802	30	214	917	19	275	951	13	310	939	15	292	882	20	240	2401	85	574					1866	182	6894	1905					
34	826	27	222	929	17	285	963	12	319	953	13	301	905	18	249	2476	77	598					1706	164	7054	1975					
33	853	25	231	940	15	294	976	11	329	966	12	311	920	16	258	2545	69	623					1558	148	7202	2046					
32	882	22	239	957	14	304	988	9	339	979	11	321	937	15	268	2631	62	649					1385	133	7375	2119					
31	907	20	248	975	12	313	997	8	349	988	10	330	955	13	277	2705	56	676					1231	120	7529	2194					
30	929	19	257	987	11	323	1005	7	359	996	9	340	970	12	287	2767	50	703					1105	108	7655	2269					
29	944	17	267	995	10	333	1011	7	369	1003	8	350	983	11	297	2830	46	731					991	98	7769	2347					
28	955	16	276	1000	9	343	1016	6	379	1009	7	360	993	10	307	2879	41	760					906	88	7854	2425					
27	966	14	286	1002	8	353	1020	5	389	1013	6	371	1000	9	316	2918	37	789					840	80	7920	2504					
26	974	13	296	1008	7	363	1027	4	399	1017	5	381	1006	8	327	2946	34	818					781	72	7979	2583					
25	979	12	305	1016	7	373	1035	4	410	1023	4	391	1014	7	337	2969	31	848					723	64	8037	2663					
24	982	11	315	1021	6	383	1040	3	420	1030	4	401	1020	6	347	2989	28	878					676	57	8084	2744					
23	988	10	325	1026	5	394	1046	3	430	1041	3	411	1026	5	357	3006	25	908					625	51	8135	2825					
22	998	9	335	1032	5	404	1053	2	441	1052	3	422	1030	5	367	3025	22	938					568	45	8192	2907					
21	1005	8	345	1036	4	414	1061	2	451	1058	2	433	1035	4	378	3049	20	968					513	39	8247	2989					
20	1012	7	355	1039	3	425	1069	1	462	1064	2	443	1043	3	388	3071	17	999					460	34	8300	3072					
19	1020	6	365	1043	3	435	1075	1	473	1068	2	454	1051	3	399	3089	15	1029					413	30	8347	3155					
18	1025	5	375	1050	2	445	1077	1	484	1071	1	465	1056	3	409	3102	13	1060					377	26	8383	3238					
17	1032	5	386	1056	2	456	1079	1	494	1074	1	475	1059	2	420	3116	12	1091					343	22	8417	3322					
16	1036	4	396	1062	2	467	1081	1	505	1077	1	486	1062	2	430	3132	10	1123					307	19	8453	3407					
15	1040	3	406	1069	1	477	1084	1	516	1081	1	497	1066	2	441	3150	9	1154					269	16	8491	3491					
14	1047	3	417	1073	1	488	1086	1	527	1083	1	508	1069	1	452	3167	7	1186					232	14	8528	3577					
13	1054	2	427	1078	1	499	1087	0	538	1086	1	518	1075	1	462	3182	6	1217					197	12	8563	3662					
12	1059	2	438	1081	1	509	1088	0	549	1088	1	529	1081	1	473	3197	5	1249					163	10	8597	3748					
11	1064	2	449	1084	1	520	1090	0	560	1089	1	540	1086	1	484	3209	5	1281					136	8	8624	3834					
10	1068	1	459	1086	0	531	1092	0	570	1089	0	551	1088	1	495	3218	4	1314					117	7	8643	3920					
9	1073	1	470	1088	0	542	1092	0	581	1089	0	562	1089	1	506	3229	3	1346					99	6	8661	4007					
8	1078	1	481	1089	0	553	1092	0	592	1089	0	573	1089	1	517	3243	3	1378					78	5	8682	4094					
7	1081	1	492	1090	0	564	1092	0	603	1090	0	584	1089	1	527	3256	2	1411					61	4	8699	4180					

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 1 are calculated by subtracting the Hrs Above from X times 365

ST. LOUIS, MISSOURI

TRY Data (1972)

Latitude 39.00 N

WBAN 13994

Longitude 90.03 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	Hrs	Deg	Hrs	Deg		
(F) 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 Hrs	Above Hrs	Below Hrs	Above Hrs		
Base Heat Cool	Base Heat Cool	Base Heat Cool	Base Heat Cool	Base Heat Cool	Base Heat Cool	Base Heat Cool	Base Heat Cool	Base Heat Cool	Base Heat Cool	Base Heat Cool	Base Heat Cool	Base 100s*	Base 100s*	Base 100s*	Base 100s*		
6 1084	1 502	1091	0 575	1092	0 614	1090	0 595	1089	0 538	3260	2 1443	54	4	8706	4268		
5 1086	1 513	1091	0 586	1092	0 625	1090	0 606	1089	0 549	3260	2 1476	51	3	8709	4355		
4 1086	1 524	1091	0 597	1092	0 636	1091	0 617	1089	0 560	3261	2 1508	49	3	8711	4442		
3 1086	0 535	1092	0 607	1092	0 647	1092	0 627	1090	0 571	3261	1 1541	46	2	8714	4529		
2 1087	0 546	1092	0 618	1093	0 658	1092	0 638	1091	0 582	3262	1 1574	41	2	8719	4616		
1 1087	0 557	1092	0 629	1094	0 669	1093	0 649	1092	0 593	3264	1 1606	37	2	8723	4703		
0 1088	0 568	1092	0 640	1095	0 680	1093	0 660	1092	0 604	3265	1 1639	33	1	8727	4790		
-1 1090	0 578	1093	0 651	1095	0 691	1093	0 671	1092	0 615	3268	1 1672	28	1	8732	4878		
-2 1091	0 589	1094	0 662	1095	0 702	1094	0 682	1092	0 626	3271	0 1704	22	1	8738	4965		
-3 1092	0 600	1094	0 673	1095	0 713	1094	0 693	1092	0 637	3273	0 1737	19	0	8741	5052		
-4 1092	0 611	1095	0 684	1095	0 723	1094	0 704	1092	0 647	3276	0 1770	16	0	8744	5140		
-5 1092	0 622	1095	0 695	1095	0 734	1094	0 715	1092	0 658	3278	0 1803	12	0	8748	5227		
-6 1093	0 633	1095	0 706	1095	0 745	1095	0 726	1094	0 669	3282	0 1835	6	0	8754	5315		
-7 1094	0 644	1095	0 717	1095	0 756	1095	0 737	1095	0 680	3285	0 1868	1	0	8759	5402		
-8 1095	0 655	1095	0 728	1095	0 767	1095	0 748	1095	0 691	3285	0 1901	0	0	8760	5490		

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

ST. LOUIS, MISSOURI
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TRY Data (1972)

Latitude 39.00 N
Longitude 90.03 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:	4627	4306	3903	3437	2892	2301	1770	1249	588	170	14
Annual Wet Bulb Cooling deg-hrs:	70957.	57360.	44844.	33551.	23792.	15765.	9388.	4629.	1585.	299.	15.

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	57	55	54	52	50	47	42	37	30	20	12	.001		
.002	1	1	1	1	1	1	1	1	1	1	1	49	48	48	46	45	42	38	34	28	19	11	.002		
.003	2	2	2	2	2	2	2	2	3	3	3	42	42	41	41	40	38	35	31	25	17	10	.003		
.004	3	4	4	5	5	5	5	5	5	5	5	36	36	36	35	35	33	31	28	23	16	9	.004		
.005	4	6	7	7	8	8	8	8	8	8	8	30	30	30	30	30	29	27	25	20	14	8	.005		
.006	5	7	9	10	11	12	12	12	12	12	12	25	25	25	25	25	25	23	22	18	12	7	.006		
.007	6	9	12	13	15	16	16	16	16	17	17	21	21	21	21	21	21	20	18	15	11	6	.007		
.008	7	11	14	16	18	20	20	21	21	21	21	17	17	17	17	17	17	17	16	13	9	6	.008		
.009	8	13	16	20	22	24	25	25	26	26	26	14	14	14	14	14	14	13	13	11	8	5	.009		
.010	9	14	19	23	25	28	30	30	31	32	32	10	10	10	10	10	10	10	9	6	4		.010		
.011	10	16	21	26	29	32	34	36	37	38	38	8	8	8	8	8	8	8	8	7	5	3	.011		
.012	11	18	24	29	33	36	39	41	43	44	45	6	6	6	6	6	6	6	6	5	4	2	.012		
.013	12	20	26	32	36	40	44	46	49	50	51	4	4	4	4	4	4	4	4	4	3	2	.013		
.014	13	21	29	35	40	44	49	52	55	57	58	3	3	3	3	3	3	3	3	3	2	1	.014		
.015	14	23	31	38	43	49	54	57	61	63	65	1	1	1	1	1	1	1	1	1	1	1	.015		
.016	15	25	33	41	47	53	58	63	67	70	72	1	1	1	1	1	1	1	1	1	1	0	.016		
.017	16	27	36	44	51	57	63	68	73	77	80	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	17	29	38	47	54	61	68	73	79	84	88	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	35	42	46	57	50	52	62	52	55	47	71	60	53
VERTICAL													
NORTH	100	100	100	99	93	89	93	97	100	100	100	100	96
WEST	45	55	61	76	70	68	78	68	71	62	75	67	68
SOUTH	27	39	51	72	77	83	87	71	64	47	61	47	61
EAST	49	56	59	65	63	65	69	65	66	56	71	67	63
% Possible Sun	53	53	55	57	61	68	72	65	64	63	48	44	59

FOOTNOTES: * Corrected For Cloud Cover.

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

ST. LOUIS, MISSOURI
WBAN 13994
TABLE H:

TRY Data (1972)

Latitude 39.00 N
Longitude 90.03 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	1817	1684	1352	1037	633	322	183	155	155	1883	954	973	894	721	558	360	218	157	144	143	993	553	627
Feb	1871	1754	1483	1225	843	507	294	207	199	2137	1279	900	850	729	612	451	317	235	198	194	983	668	886
Mar	1691	1637	1501	1364	1071	754	498	323	269	2299	1726	1045	1018	937	856	701	544	426	347	322	1271	1040	1205
Apr	1323	1402	1425	1428	1265	1018	753	524	370	2287	2138	993	1049	1053	1042	945	810	673	558	485	1337	1329	1564
May	1030	1185	1322	1422	1380	1212	970	724	528	2196	2404	956	1049	1112	1155	1114	1003	860	718	604	1508	1662	1871
Jun	917	1089	1272	1415	1429	1301	1084	839	647	2140	2517	916	1016	1110	1183	1179	1092	959	812	702	1507	1761	2093
Jul	964	1126	1285	1410	1396	1251	1031	790	600	2147	2452	888	984	1062	1123	1106	1020	897	763	652	1316	1510	2050
Aug	1182	1290	1355	1399	1286	1077	832	605	440	2200	2212	972	1036	1057	1065	986	859	721	598	510	1416	1459	1817
Sep	1519	1515	1447	1367	1130	847	596	406	317	2232	1844	931	941	901	849	723	588	480	404	372	1168	1065	1459
Oct	1772	1667	1442	1235	889	566	355	246	232	2139	1408	825	805	726	646	505	371	281	231	222	945	718	1100
Nov	1812	1697	1386	1095	700	385	220	172	172	1932	1040	524	504	440	377	288	213	171	158	157	517	376	718
Dec	1758	1638	1307	981	583	287	163	145	144	1780	864	576	544	454	363	253	174	139	132	132	561	358	531
Year	1469	1472	1381	1281	1051	795	583	429	340	2114	1739	875	891	859	820	719	602	501	423	376	1128	1044	1327

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
 ** Derived according to DOE-2.1 LOADS Algorithms and TRY cloud cover data.
 *** South exposure tilt 45 degrees.
 **** Cinquemani, Y., J. R. Owenby, Jr. and R. G. Baldwin. 1978. Input Data for Solar Systems, NCC, Ashville, NC.

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/NN	NNE/NNW	N		S	SSE/SSW	SE/SW	ESE/WSW	E/W	ENE/NNW	NE/NN	NNE/NNW	N	
Jan	1567	1428	1130	857	503	240	138	126	126		831	752	597	458	287	169	123	117	117	
Feb	1586	1471	1237	1021	685	390	219	164	161		754	706	601	504	366	251	184	160	158	
Mar	1363	1348	1245	1136	879	600	378	247	218		848	835	771	706	573	437	336	276	262	
Apr	990	1112	1167	1182	1045	829	596	399	291		780	847	863	859	777	660	541	443	391	
May	726	892	1062	1174	1141	998	782	566	398		732	822	900	949	916	823	696	572	477	
Jun	631	794	1005	1163	1179	1075	875	659	479		699	787	893	971	969	897	778	650	548	
Jul	673	835	1024	1159	1153	1033	831	618	449		692	776	862	924	912	839	728	612	516	
Aug	868	1007	1106	1157	1065	885	666	470	343		757	829	864	878	812	704	584	478	409	
Sep	1199	1238	1195	1135	931	684	464	311	258		746	770	741	699	591	475	382	324	303	
Oct	1485	1392	1204	1027	725	447	267	195	189		682	667	602	535	413	298	222	186	181	
Nov	1558	1437	1161	911	562	292	164	140	140		437	418	364	313	236	170	136	129	128	
Dec	1521	1396	1092	812	460	212	125	118	117		486	455	375	298	204	137	111	108	107	
Year	1178	1194	1135	1061	861	642	460	335	265		704	722	703	675	589	490	403	339	301	

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

TULSA, OKLAHOMA
WBAN 13968
TABLE A:

TRY Data (1973)

Latitude 36.20 N
Longitude 97.90 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*	
	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														
60 to 64	3	1	0	1	7	5	3	3	23	55.7	743	21199	1	1
55 to 59	3	4	6	9	18	17	5	3	65	51.4	702	17580	42	102
50 to 54	2	4	3	8	11	8	8	4	48	46.2	640	14247	104	489
45 to 49	7	6	6	11	8	12	11	11	72	43.2	584	11177	160	1139
40 to 44	8	6	7	10	10	11	14	7	73	39.0	510	8450	234	2132
35 to 39	16	10	7	13	7	9	12	16	90	33.7	429	6109	315	3511
30 to 34	9	12	12	6	5	3	7	11	65	30.3	346	4174	398	5296
25 to 29	13	9	15	7	2	4	8	8	66	25.2	278	2629	466	7471
20 to 24	10	14	13	11	18	14	11	9	100	20.6	213	1408	531	9970
15 to 19	13	15	9	10	3	7	6	12	75	16.4	107	623	637	12905
10 to 14	0	3	6	4	4	3	8	1	29	11.0	59	233	685	16235
5 to 9	9	6	7	3	0	0	0	8	33	7.5	13	37	731	19759
0 to 4	0	3	2	0	0	0	0	0	5	2.2	2	3	742	23445
Feb														
65 to 69	0	0	0	0	2	0	0	0	2	50.0	672	19156	0	0
60 to 64	0	0	0	2	6	7	0	0	15	48.9	668	15803	4	7
55 to 59	0	0	0	3	7	9	3	0	22	46.7	649	12508	23	72
50 to 54	6	4	0	7	22	17	11	4	71	45.5	617	9331	55	255
45 to 49	2	2	6	20	15	15	7	7	74	42.4	536	6460	136	744
40 to 44	20	12	17	21	11	11	29	25	146	38.2	440	4009	232	1653
35 to 39	21	22	22	11	10	13	14	21	134	34.4	282	2208	390	3212
30 to 34	13	18	14	7	7	9	6	6	80	30.1	167	1089	505	5453
25 to 29	5	10	9	10	4	3	12	14	67	24.9	97	432	575	8156
20 to 24	14	12	14	3	0	0	2	7	52	20.5	41	95	631	11179
15 to 19	3	4	2	0	0	0	0	0	9	16.7	5	7	667	14451
Mar														
75 to 79	0	0	0	0	5	2	0	0	7	58.9	741	17783	3	2
70 to 74	0	0	0	3	12	11	0	0	26	57.9	729	14096	15	35
65 to 69	0	0	1	8	13	8	5	0	35	56.5	700	10527	44	186
60 to 64	7	2	6	16	19	20	12	8	90	53.6	656	7133	88	512
55 to 59	5	10	7	25	22	32	31	17	149	51.6	533	4146	211	1245
50 to 54	36	24	34	24	15	11	31	35	210	48.7	365	1878	379	2697
45 to 49	30	34	29	15	7	9	11	23	158	44.6	141	599	603	5138
40 to 44	9	16	12	2	0	0	3	7	49	39.9	47	173	697	8432
35 to 39	6	1	2	0	0	0	0	3	12	35.8	15	54	729	12033
30 to 34	0	6	2	0	0	0	0	0	8	31.6	5	6	739	15705

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

TULSA, OKLAHOMA
WBAN 13968
TABLE A:

TRY Data (1973)

Latitude 36.20 N
Longitude 97.90 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	2	3	4	0	0	9	70.4	717	18063	3	3	
75 to 79	0	0	2	2	12	10	2	0	28	63.9	705	14504	15	44	
70 to 74	4	3	2	17	20	17	6	5	74	62.6	649	11084	71	224	
65 to 69	5	3	6	13	11	14	20	12	84	58.9	575	8009	145	749	
60 to 64	17	6	17	18	24	19	14	19	134	55.9	485	5336	235	1676	
55 to 59	13	23	15	16	4	11	16	10	108	52.1	336	3297	384	3237	
50 to 54	15	8	14	10	9	6	16	15	93	45.9	245	1847	475	5387	
45 to 49	15	24	22	8	2	3	6	14	94	43.7	137	859	583	7999	
40 to 44	12	9	5	2	4	3	5	8	48	38.4	68	348	652	11088	
35 to 39	6	5	5	2	1	3	5	7	34	33.9	33	89	687	14429	
30 to 34	3	9	2	0	0	0	0	0	14	30.4	2	1	718	17941	
May															
90 to 94	0	0	0	0	3	2	0	0	5	71.0	744	18740	0	0	
85 to 89	0	0	0	1	15	11	0	0	27	69.9	738	15036	6	16	
80 to 84	0	0	0	14	13	13	9	0	49	68.0	693	11455	51	155	
75 to 79	0	0	4	16	18	24	11	5	78	64.8	635	8125	109	545	
70 to 74	12	7	20	31	28	27	21	20	166	61.3	527	5165	217	1305	
65 to 69	14	16	20	20	11	10	28	9	128	59.5	361	2954	383	2814	
60 to 64	24	13	30	9	5	4	16	27	128	56.4	249	1443	495	5023	
55 to 59	21	35	10	2	0	2	7	23	100	52.4	103	567	641	7867	
50 to 54	13	1	6	0	0	0	1	7	28	46.8	50	208	694	11228	
45 to 49	9	17	3	0	0	0	0	2	31	44.0	17	31	727	14771	
40 to 44	0	4	0	0	0	0	0	0	4	41.3	0	0	744	18460	
Jun															
90 to 94	0	0	0	2	17	14	0	0	33	74.8	717	11590	3	2	
85 to 89	0	0	0	24	32	32	7	0	95	73.4	665	8117	55	129	
80 to 84	1	0	18	29	27	28	32	14	149	71.7	536	5089	184	701	
75 to 79	20	9	24	20	6	7	25	17	128	70.3	404	2762	316	1974	
70 to 74	31	30	31	10	4	5	18	39	168	67.4	263	1115	457	3927	
65 to 69	30	38	14	5	4	3	8	17	119	64.0	103	246	617	6658	
60 to 64	8	12	3	0	0	1	0	3	27	59.7	12	21	708	10033	
55 to 59	0	1	0	0	0	0	0	0	1	57.0	0	0	720	13612	

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

TULSA, OKLAHOMA
WBAN 13968
TABLE A:

TRY Data (1973)

Latitude 36.20 N
Longitude 97.90 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	6	8	0	0	14	79.3	744	12461	0	0	
90 to 94	0	0	0	14	39	32	7	0	92	77.7	707	8808	37	67	
85 to 89	0	0	5	42	29	32	24	1	133	75.9	580	5563	164	542	
80 to 84	7	1	30	24	15	15	33	26	151	74.1	452	2978	292	1677	
75 to 79	36	32	34	8	4	6	19	45	184	72.0	285	1135	459	3554	
70 to 74	44	46	21	5	0	0	9	20	145	69.7	101	201	643	6340	
65 to 69	6	14	3	0	0	0	1	1	25	66.6	4	3	740	9862	
Aug															
95 to 99	0	0	0	0	4	3	0	0	7	76.0	744	13728	0	0	
90 to 94	0	0	0	9	36	33	1	0	79	76.1	712	10053	32	45	
85 to 89	0	0	0	38	36	36	19	1	130	74.3	606	6717	138	429	
80 to 84	1	0	12	35	15	18	40	12	133	71.6	478	4016	266	1448	
75 to 79	27	12	41	11	2	1	23	42	159	70.9	336	1973	408	3125	
70 to 74	39	48	30	0	0	2	10	25	154	68.6	173	722	571	5594	
65 to 69	17	17	7	0	0	0	0	11	52	64.6	59	216	685	8808	
60 to 64	9	10	3	0	0	0	0	2	24	60.8	17	36	727	12348	
55 to 59	0	6	0	0	0	0	0	0	6	57.8	0	0	744	16032	
Sep															
85 to 89	0	0	0	5	19	10	0	0	34	75.8	713	11644	7	6	
80 to 84	0	0	1	23	24	25	9	2	84	74.1	659	8190	61	152	
75 to 79	9	5	17	22	21	19	26	16	135	71.4	558	5142	162	704	
70 to 74	37	40	31	21	14	19	22	29	213	69.3	389	2743	331	1905	
65 to 69	18	16	18	10	8	11	17	17	115	64.3	209	1325	511	4087	
60 to 64	11	12	10	5	4	5	11	15	73	58.9	97	572	623	6934	
55 to 59	12	10	7	4	0	1	3	8	45	55.4	44	213	676	10175	
50 to 54	0	4	4	0	0	0	2	1	11	51.2	14	75	706	13637	
45 to 49	3	0	1	0	0	0	0	2	6	45.3	8	23	712	17185	
40 to 44	0	3	1	0	0	0	0	0	4	42.8	0	0	720	20762	

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

TULSA, OKLAHOMA
WBAN 13968
TABLE A:

TRY Data (1973)

Latitude 36.20 N
Longitude 97.90 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	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	3	13	5	0	0	21	73.4	743	17363	1	1
80 to 84	0	0	0	9	19	15	1	0	44	69.6	709	13727	35	85
75 to 79	1	0	4	19	19	20	16	9	88	67.1	646	10312	98	390
70 to 74	15	13	10	16	14	17	9	9	103	65.3	562	7292	182	1090
65 to 69	5	6	10	19	11	12	19	12	94	60.3	462	4765	282	2283
60 to 64	13	13	22	15	11	13	21	15	123	57.7	350	2733	394	3971
55 to 59	29	22	19	8	6	9	13	28	134	53.4	231	1299	513	6257
50 to 54	18	21	14	3	0	1	10	8	75	49.7	101	511	643	9189
45 to 49	7	12	11	1	0	1	2	9	43	44.6	41	165	703	12563
40 to 44	3	3	2	0	0	0	2	3	13	40.0	15	45	729	16163
35 to 39	2	3	1	0	0	0	0	0	6	35.7	3	4	741	19842
Nov														
75 to 79	0	0	0	0	6	2	0	0	8	62.0	720	17580	0	0
70 to 74	0	0	0	7	20	13	3	2	45	61.5	703	14014	17	34
65 to 69	3	0	4	11	9	14	11	7	59	58.7	648	10642	72	262
60 to 64	14	10	5	12	11	9	7	6	74	55.8	584	7564	136	784
55 to 59	10	11	11	16	14	12	11	15	100	51.2	494	4857	226	1677
50 to 54	18	22	22	17	21	22	27	17	166	47.4	391	2649	329	3069
45 to 49	17	18	24	23	9	16	16	21	144	43.6	219	1183	501	5203
40 to 44	10	10	12	4	0	2	12	11	61	39.7	97	459	623	8079
35 to 39	14	12	8	0	0	0	3	10	47	34.8	44	121	676	11341
30 to 34	4	7	3	0	0	0	0	1	15	31.7	5	11	715	14831
25 to 29	0	0	1	0	0	0	0	0	1	29.0	0	0	720	18420
Dec														
70 to 74	0	0	0	0	2	0	0	0	2	57.5	744	26065	0	0
65 to 69	0	0	0	3	6	3	0	0	12	56.9	736	22358	8	13
60 to 64	0	0	0	6	6	4	2	0	18	54.3	724	18705	20	80
55 to 59	4	3	4	4	4	10	7	4	40	51.9	700	15140	44	235
50 to 54	3	3	4	5	10	9	9	8	51	46.9	656	11753	88	568
45 to 49	9	8	7	13	20	9	4	6	76	41.5	603	8610	141	1145
40 to 44	11	8	8	14	22	27	9	11	110	36.9	506	5826	238	2081
35 to 39	13	12	14	22	11	13	30	20	135	33.6	391	3588	353	3563
30 to 34	22	24	21	14	3	8	16	20	128	29.7	243	1993	501	5688
25 to 29	14	16	20	3	1	3	5	9	71	25.8	136	1046	608	8461
20 to 24	9	11	7	3	5	4	4	7	50	21.2	78	504	666	11639
15 to 19	5	2	2	2	2	0	4	3	20	16.5	43	225	701	15080
10 to 14	3	6	1	3	1	3	2	3	22	10.8	25	61	719	18636
5 to 9	0	0	5	1	0	0	1	2	9	8.1	0	0	744	22295

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

TULSA, OKLAHOMA
WBAN 13968
TABLE B:

TRY Data (1973)

Latitude 36.20 N
Longitude 97.90 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	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24
95 to 99	0	0	0	0	10	11	0	0	0.0	0.0	0.0	0.0	77.8	78.5	0.0	0.0
90 to 94	0	0	0	25	95	81	8	0	0.0	0.0	0.0	0.0	77.6	76.5	77.6	0.0
85 to 89	0	0	5	113	144	126	50	2	0.0	0.0	77.2	75.4	73.9	73.7	75.0	77.0
80 to 84	9	1	61	136	116	118	124	54	74.4	74.0	74.0	72.2	70.7	70.7	72.8	74.0
75 to 79	93	58	126	98	93	91	122	134	71.8	72.3	71.4	68.5	65.6	66.0	70.2	71.3
70 to 74	182	187	145	110	114	111	98	149	69.1	69.1	68.0	63.8	61.0	61.4	65.4	68.0
65 to 69	98	110	83	89	75	75	109	86	64.3	64.7	63.0	58.5	56.9	57.7	60.8	62.9
60 to 64	106	79	96	84	93	87	86	98	58.3	59.6	57.8	54.9	53.1	53.1	56.0	58.2
55 to 59	97	125	79	87	75	103	96	108	54.2	54.3	53.6	50.7	48.4	49.9	51.9	53.0
50 to 54	111	91	101	74	88	74	115	99	48.6	49.4	48.7	46.4	45.2	46.0	47.0	48.3
45 to 49	99	121	109	91	61	65	57	95	44.3	44.5	44.4	42.8	41.8	41.9	42.9	43.9
40 to 44	73	71	64	53	47	54	74	72	39.6	40.5	39.4	37.8	35.6	36.2	38.3	38.8
35 to 39	78	65	59	48	29	38	64	77	34.1	34.6	34.9	33.5	33.4	33.2	34.0	34.0
30 to 34	51	76	54	27	15	20	29	38	30.9	31.0	30.6	29.3	26.5	28.3	29.0	30.5
25 to 29	32	35	45	20	7	10	25	31	25.9	26.1	25.8	24.1	24.3	24.4	24.6	25.1
20 to 24	33	37	34	17	23	18	17	23	20.9	21.1	20.9	21.1	20.7	20.3	20.2	20.4
15 to 19	21	21	13	12	5	7	10	15	17.0	17.0	16.7	16.1	14.8	14.9	15.9	16.9
10 to 14	3	9	7	7	5	6	10	4	11.0	11.2	11.4	11.3	10.6	10.7	9.8	12.3
5 to 9	9	6	12	4	0	0	1	10	7.6	7.8	7.4	7.5	0.0	0.0	7.0	8.1
0 to 4	0	3	2	0	0	0	0	0	0.0	2.7	1.5	0.0	0.0	0.0	0.0	0.0

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

Month	Dry Bulb Temperature (F)				Wet Bulb		Relative Humidity (%)					Average Humidity Ratio (lb moisture/lb dry air)				Average Wind MPH
	Ave	Max	Min	Daily Ave	Max	Ave	4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	
Jan	34.0	63	0	43	26	31.4	87	80	65	78	79	0.0032	0.0035	0.0038	0.0038	8.8
Feb	39.0	66	15	49	31	35.3	85	75	55	69	73	0.0036	0.0038	0.0038	0.0037	10.5
Mar	53.6	78	31	63	46	48.8	84	75	61	73	74	0.0062	0.0068	0.0068	0.0067	11.8
Apr	57.4	84	32	67	49	51.3	80	64	53	68	68	0.0070	0.0073	0.0073	0.0074	12.2
May	67.3	92	43	78	56	58.8	79	57	47	60	63	0.0088	0.0092	0.0094	0.0095	11.1
Jun	76.4	93	58	86	67	69.1	86	67	58	68	72	0.0133	0.0144	0.0147	0.0140	10.0
Jul	80.8	97	66	90	72	73.3	86	69	56	71	73	0.0157	0.0172	0.0169	0.0166	9.2
Aug	79.0	97	58	90	69	70.9	87	64	51	66	70	0.0141	0.0155	0.0151	0.0150	9.2
Sep	71.3	89	43	80	64	67.2	92	79	68	83	82	0.0134	0.0144	0.0144	0.0140	9.2
Oct	64.2	88	36	76	54	58.5	89	69	53	76	74	0.0096	0.0102	0.0099	0.0101	8.9
Nov	53.1	76	29	63	44	48.1	83	72	58	72	73	0.0063	0.0066	0.0066	0.0065	11.7
Dec	37.5	71	8	48	29	34.1	83	74	59	75	75	0.0035	0.0038	0.0039	0.0038	10.8
Year	59.6	97	0	69	51	54.0	85	70	57	71	73	0.0087	0.0094	0.0094	0.0093	10.3

TULSA, OKLAHOMA
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TABLE D:

TRY Data (1973)

Latitude 36.20 N
Longitude 97.90 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	Hrs	Deg	Hrs	Deg
	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*	Above	Base 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	Base	Heat
98	0	464	0	0	383	0	0	335	0	0	348	0	0	412	0	0	1423	0	8760	3366
97	0	454	0	0	372	0	1	324	0	1	338	0	0	401	0	0	1390	0	8757	3278
96	0	443	0	0	361	0	3	313	0	4	327	0	0	390	0	0	1357	0	8752	3191
95	0	432	0	0	350	0	7	302	0	8	316	0	0	379	0	0	1325	0	8744	3103
94	0	421	0	1	339	0	13	291	0	17	305	0	0	368	0	0	1292	0	8729	3016
93	0	410	0	2	328	0	25	281	0	29	294	0	0	357	0	0	1259	0	8703	2929
92	0	399	0	4	317	0	45	270	1	42	284	1	0	346	0	0	1226	0	8667	2842
91	0	388	0	8	306	0	64	260	1	58	273	1	3	336	0	0	1193	0	8626	2755
90	0	377	0	17	295	0	89	249	2	79	263	2	6	325	0	0	1160	0	8568	2669
89	0	366	0	29	285	0	116	239	3	104	253	3	10	314	0	0	1127	0	8500	2584
88	0	355	0	44	274	1	140	230	4	128	243	4	16	303	0	0	1095	0	8430	2499
87	0	344	0	66	264	1	170	220	6	156	233	5	25	292	0	1	1062	0	8340	2415
86	1	333	0	88	253	2	200	211	8	183	224	7	37	282	1	1	1029	0	8248	2332
85	3	322	0	119	243	3	231	202	10	205	215	9	50	271	1	1	996	0	8148	2250
84	9	311	0	150	234	5	259	194	12	231	206	11	68	261	2	3	963	0	8038	2169
83	17	300	0	178	225	6	283	186	15	258	198	14	90	251	3	6	930	0	7927	2090
82	30	290	0	206	216	8	312	178	18	284	190	16	115	241	4	11	898	0	7800	2011
81	44	279	1	231	207	10	333	170	21	308	182	19	142	231	5	26	865	0	7675	1934
80	58	269	1	258	198	13	352	162	25	327	174	23	168	222	6	51	832	1	7544	1857
79	78	258	2	287	190	15	372	155	28	345	166	26	190	212	8	85	800	1	7402	1783
78	99	248	3	307	182	18	390	148	32	363	159	29	209	203	10	128	768	2	7261	1709
77	120	238	4	324	174	22	409	141	36	382	152	33	239	195	12	184	737	4	7099	1637
76	143	229	5	342	167	25	428	134	40	398	145	37	269	186	15	254	706	6	6923	1567
75	173	219	7	361	159	28	448	128	45	416	138	41	293	178	18	321	677	9	6746	1499
74	206	210	9	381	152	32	468	121	49	436	131	45	311	170	21	398	647	13	6558	1432
73	235	202	11	402	145	36	491	115	54	457	125	50	327	162	24	489	619	17	6358	1368
72	265	193	13	424	138	40	516	109	59	484	118	55	346	155	27	593	591	22	6129	1305
71	294	185	16	446	132	45	542	104	64	507	112	60	368	148	31	712	565	29	5890	1245
70	321	177	19	470	125	49	563	98	70	526	107	65	390	140	35	820	540	37	5669	1187
69	342	170	23	488	119	54	579	93	76	546	101	70	411	133	39	900	516	45	5492	1132
68	356	162	26	504	113	59	595	88	82	564	96	76	431	127	43	960	492	55	5349	1078
67	377	155	30	523	107	64	612	83	88	581	90	81	456	120	47	1012	469	64	5198	1025
66	395	148	34	545	102	69	626	78	94	594	85	87	483	114	52	1065	447	75	5049	974
65	411	141	38	564	96	75	640	74	100	606	80	93	504	108	57	1128	425	86	4905	924
64	426	134	42	582	91	81	651	69	107	619	76	99	520	102	62	1187	404	97	4773	875
63	441	127	46	599	86	87	664	65	113	632	71	106	536	96	67	1238	383	109	4648	828
62	461	121	51	613	81	93	684	61	120	649	66	112	552	91	73	1291	363	122	4509	783
61	483	115	55	629	76	99	702	57	127	672	62	119	568	86	79	1350	343	135	4354	738
60	505	109	60	645	72	105	724	53	134	692	58	126	586	80	84	1415	324	149	4191	695
59	524	103	66	666	67	112	748	49	141	713	54	133	606	75	90	1481	306	164	4020	654
58	540	97	71	683	63	119	763	46	149	735	50	140	624	71	96	1552	288	179	3863	615
57	554	92	76	698	59	125	777	43	157	751	47	147	642	66	103	1625	271	195	3711	577
56	571	87	82	714	55	132	792	39	164	767	43	155	664	62	109	1688	255	211	3563	541
55	587	81	88	731	52	140	806	36	172	789	40	163	684	57	116	1745	239	228	3416	506
54	605	76	94	748	48	147	823	34	181	810	37	171	701	53	123	1798	224	246	3273	472
53	626	72	100	761	45	155	838	31	189	823	34	179	719	49	130	1846	209	264	3145	440

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

TULSA, OKLAHOMA
WBAN 13968
TABLE D:

TRY Data (1973)

Latitude 36.20 N
Longitude 97.90 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)*			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*
52	647	67	106	774	41	162	854	29	197	838	32	187	741	46	137	1899	195	283	3006	410	5754	1073	
51	666	63	113	790	38	170	872	26	206	851	29	196	764	42	145	1963	181	302	2852	380	5908	1132	
50	686	58	120	808	35	178	891	24	215	866	27	204	792	39	153	2038	169	322	2676	353	6084	1192	
49	710	54	127	826	32	186	908	22	224	881	25	213	813	36	161	2118	157	343	2503	327	6257	1253	
48	733	51	134	846	30	195	916	20	233	892	23	222	823	34	169	2194	145	365	2354	302	6406	1317	
47	753	47	141	866	27	203	932	19	242	906	21	231	832	31	177	2262	135	387	2207	280	6553	1381	
46	772	44	149	884	25	212	949	17	252	922	19	240	844	28	186	2315	125	410	2071	258	6689	1448	
45	793	41	157	900	23	221	959	16	261	935	17	249	858	26	194	2364	115	433	1950	238	6810	1515	
44	811	38	165	914	21	230	965	14	271	946	16	259	874	24	203	2414	106	457	1834	219	6926	1584	
43	822	35	173	926	20	239	973	13	280	957	14	268	890	21	212	2457	98	482	1733	202	7027	1654	
42	833	32	181	936	18	249	985	12	290	971	13	278	903	19	221	2508	90	506	1623	185	7137	1725	
41	848	30	190	945	16	258	994	11	300	981	12	287	917	18	230	2554	82	532	1520	169	7240	1796	
40	863	28	198	954	15	267	1005	10	310	990	11	297	931	16	239	2589	75	557	1427	154	7333	1869	
39	874	25	207	966	14	277	1012	9	320	1001	10	307	948	14	248	2627	68	584	1329	141	7431	1943	
38	886	23	216	979	12	287	1016	8	330	1010	9	317	965	13	258	2663	62	610	1239	128	7521	2016	
37	899	21	225	988	11	297	1022	8	341	1017	8	328	979	12	268	2698	56	637	1157	116	7603	2094	
36	910	19	234	995	10	307	1027	7	351	1021	7	338	990	11	277	2745	50	664	1071	105	7689	2170	
35	921	17	243	1003	9	316	1034	6	361	1028	7	348	999	10	287	2800	45	692	972	94	7788	2247	
34	932	16	252	1011	8	327	1041	6	371	1035	6	358	1006	9	297	2847	41	720	887	85	7873	2326	
33	944	14	261	1017	8	337	1043	5	382	1039	5	369	1013	8	307	2892	36	749	811	77	7949	2405	
32	959	13	271	1022	7	347	1047	5	392	1043	5	379	1019	7	318	2933	33	778	736	69	8024	2485	
31	969	11	281	1028	6	357	1051	4	403	1048	4	390	1023	6	328	2959	29	807	682	62	8078	2565	
30	977	10	290	1033	6	367	1053	4	413	1052	4	400	1028	6	338	2981	26	837	634	55	8126	2646	
29	989	9	300	1037	5	378	1056	3	424	1056	3	411	1034	5	348	3005	23	867	581	49	8179	2728	
28	999	8	310	1042	4	388	1059	3	434	1059	3	421	1038	4	359	3029	21	897	532	44	8228	2810	
27	1005	7	320	1046	4	399	1060	3	445	1061	3	432	1044	4	369	3051	18	928	491	39	8269	2892	
26	1013	6	330	1049	3	409	1061	2	456	1063	2	442	1050	3	380	3069	16	958	454	34	8306	2975	
25	1023	6	340	1052	3	420	1061	2	466	1064	2	453	1055	3	390	3083	14	989	420	29	8340	3058	
24	1030	5	351	1057	3	430	1063	2	477	1064	2	464	1058	3	401	3101	12	1020	385	25	8375	3142	
23	1036	4	361	1061	2	441	1066	1	488	1064	2	474	1061	2	411	3120	10	1051	349	22	8411	3226	
22	1044	4	371	1064	2	451	1072	1	498	1067	1	485	1062	2	422	3137	9	1082	312	18	8448	3310	
21	1051	3	382	1068	2	462	1078	1	509	1073	1	496	1064	2	433	3157	7	1114	268	15	8492	3395	
20	1058	3	392	1071	1	473	1082	1	520	1079	1	506	1070	1	443	3176	6	1145	222	13	8538	3480	
19	1063	2	403	1073	1	484	1085	1	531	1082	1	517	1075	1	454	3194	5	1177	186	11	8574	3566	
18	1065	2	414	1075	1	494	1086	0	542	1083	1	528	1077	1	465	3209	4	1209	163	9	8597	3652	
17	1067	2	424	1079	1	505	1086	0	552	1084	0	539	1078	1	476	3219	4	1241	146	8	8614	3738	
16	1070	2	435	1082	1	516	1086	0	563	1085	0	550	1079	1	486	3229	3	1274	128	6	8632	3824	
15	1072	1	446	1083	0	527	1088	0	574	1087	0	561	1082	0	497	3238	3	1306	108	5	8652	3910	
14	1074	1	456	1085	0	538	1090	0	585	1089	0	571	1084	0	508	3243	2	1338	92	4	8668	3997	
13	1075	1	467	1086	0	548	1091	0	596	1090	0	582	1085	0	519	3246	2	1371	85	3	8675	4084	
12	1077	1	478	1087	0	559	1091	0	607	1091	0	593	1086	0	530	3249	1	1403	78	3	8682	4170	
11	1079	1	489	1089	0	570	1093	0	618	1093	0	604	1087	0	541	3252	1	1436	67	2	8693	4257	
10	1080	0	500	1090	0	581	1094	0	629	1094	0	615	1090	0	551	3255	1	1468	54	1	8706	4344	
9	1084	0	510	1092	0	592	1095	0	640	1095	0	626	1094	0	562	3262	0	1501	37	1	8723	4431	
8	1088	0	521	1093	0	603	1095	0	651	1095	0	637	1094	0	573	3273	0	1534	20	0	8740	4519	
7	1089	0	532	1094	0	614	1095	0	662	1095	0	648	1095	0	584	3280	0	1566	11	0	8749	4606	

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 per are calculated by subtracting the Hrs Above from X times 365

TULSA, OKLAHOMA

TRY Data (1973)

Latitude 36.20 N

WBAN 13968

Longitude 97.90 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		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*
6 1090	0	543	1095	0	625	1095	0	672	1095	0	659	1095	0	595	3281	0	1599		8	0	8752	4694
5 1092	0	554	1095	0	636	1095	0	683	1095	0	670	1095	0	606	3282	0	1632		6	0	8754	4781
4 1093	0	565	1095	0	647	1095	0	694	1095	0	681	1095	0	617	3282	0	1665		5	0	8755	4869
3 1093	0	576	1095	0	658	1095	0	705	1095	0	692	1095	0	628	3283	0	1698		3	0	8757	4956
2 1094	0	587	1095	0	669	1095	0	716	1095	0	703	1095	0	639	3284	0	1731		1	0	8759	5044
1 1094	0	598	1095	0	679	1095	0	727	1095	0	714	1095	0	650	3285	0	1763		1	0	8759	5131
0 1094	0	609	1095	0	690	1095	0	738	1095	0	725	1095	0	661	3285	0	1796		0	0	8760	5219
-1 1095	0	620	1095	0	701	1095	0	749	1095	0	736	1095	0	672	3285	0	1829		0	0	8760	5307

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

TULSA, OKLAHOMA

WBAN 13968

TABLE E:

TRY Data (1973)

Latitude 36.20 N

Longitude 97.90 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:	5383	4912	4367	3907	3479	2978	2422	1711	846	279	30
Annual Wet Bulb Cooling deg-hrs:	85481	69799	55622	42986	31691	21737	13364	6729	2461	563	33

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	67	66	66	64	61	57	53	47	39	27	16	.001		
.002	0	0	1	1	1	1	1	1	1	1	1	59	59	58	57	55	52	48	43	36	25	15	.002		
.003	1	1	1	1	2	2	2	2	2	2	2	51	51	51	51	49	47	44	40	33	23	14	.003		
.004	2	2	3	3	3	3	3	3	3	3	3	44	44	44	44	43	42	39	36	30	21	13	.004		
.005	2	3	4	5	5	5	6	6	6	6	6	38	38	38	38	38	37	35	32	27	19	12	.005		
.006	3	4	5	7	7	8	8	9	9	9	9	32	32	32	32	32	32	31	28	25	17	11	.006		
.007	3	5	7	8	10	11	12	12	12	12	13	27	27	27	27	27	27	26	25	22	15	10	.007		
.008	4	6	8	10	13	14	15	16	16	17	17	23	23	23	23	23	23	22	21	19	13	8	.008		
.009	5	7	9	12	15	18	19	20	21	21	21	19	19	19	19	19	19	19	18	16	12	7	.009		
.010	5	8	11	14	18	21	23	25	26	26	26	15	15	15	15	15	15	15	15	13	10	6	.010		
.011	6	9	12	16	20	24	27	29	31	31	32	12	12	12	12	12	12	12	12	11	8	5	.011		
.012	7	9	14	18	23	28	31	34	36	37	37	9	9	9	9	9	9	9	9	8	6	4	.012		
.013	7	10	15	20	25	31	36	39	41	43	43	6	6	6	6	6	6	6	6	6	5	3	.013		
.014	8	11	16	22	28	34	40	44	47	49	50	4	4	4	4	4	4	4	4	4	3	2	.014		
.015	8	12	18	23	31	38	44	49	52	55	56	2	2	2	2	2	2	2	2	2	2	1	.015		
.016	9	13	19	25	33	41	48	54	58	62	63	1	1	1	1	1	1	1	1	1	1	1	.016		
.017	10	14	20	27	36	44	52	58	63	68	71	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	10	15	22	29	38	48	56	63	69	75	78	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	43	59	51	41	50	49	29	68	32	41	30	45
VERTICAL													
NORTH	100	100	100	99	91	89	91	93	100	100	100	100	95
WEST	55	55	70	67	58	66	64	49	75	47	48	43	60
SOUTH	38	40	64	69	73	85	82	57	75	34	36	24	55
EAST	56	58	68	66	61	67	67	47	77	45	59	44	61
% Possible Sun	53	55	57	57	59	67	72	72	65	65	58	54	62

FOOTNOTES: * Corrected For Cloud Cover.

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

TULSA, OKLAHOMA
WBAN 13968
TABLE H:

TRY Data (1973)

Latitude 36.20 N
Longitude 97.90 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	1906	1783	1450	1141	720	390	215	172	171	2037	1090	883	828	690	561	391	261	193	175	174	912	575	732
Feb	1902	1776	1508	1268	885	535	319	218	213	2248	1410	920	863	746	639	474	332	251	214	211	1024	716	978
Mar	1666	1627	1516	1401	1119	800	533	347	279	2362	1841	962	950	895	833	706	574	470	399	372	1149	1016	1306
Apr	1254	1351	1402	1424	1278	1050	787	546	381	2297	2221	1015	1054	1059	1048	952	823	690	574	497	1449	1462	1603
May	948	1123	1283	1412	1379	1238	998	746	539	2173	2462	925	1009	1087	1149	1113	1015	866	715	600	1638	1847	1822
Jun	828	1017	1215	1386	1405	1309	1089	847	641	2100	2552	862	953	1049	1136	1138	1076	950	812	704	1495	1794	2021
Jul	877	1058	1242	1391	1393	1277	1052	809	601	2113	2495	939	1029	1115	1185	1168	1088	953	810	705	1604	1880	2031
Aug	1108	1237	1333	1395	1303	1117	871	635	454	2195	2282	1021	1126	1196	1239	1160	1009	814	627	488	1822	1913	1865
Sep	1477	1478	1424	1358	1135	862	611	416	325	2271	1940	920	913	876	833	731	619	526	459	430	1108	1056	1473
Oct	1784	1692	1488	1290	957	632	396	266	245	2232	1532	1282	1231	1099	966	737	516	361	279	265	1522	1092	1164
Nov	1878	1747	1435	1147	748	423	239	188	187	2068	1172	922	835	682	550	386	263	197	179	178	974	621	827
Dec	1875	1744	1398	1081	656	343	189	162	162	1955	1002	1084	1015	827	649	414	245	162	146	146	1116	615	659
Year	1456	1468	1390	1308	1082	833	610	447	351	2170	1835	979	985	945	901	783	654	538	450	398	1321	1219	1373

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

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

*** South exposure tilt 45 degrees.

**** Cinquemani, V., J. R. Owenby, Jr. and R. G. Baldwin. 1978. Input Data for Solar Systems. NCC, Asheville, NC.

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	1641	1510	1214	949	579	293	160	140	139	749	693	573	464	316	205	152	142	142
Feb	1604	1483	1258	1054	717	418	235	175	173	769	715	618	526	383	264	197	173	171
Mar	1325	1332	1254	1165	920	642	409	262	227	772	775	734	685	578	465	376	318	301
Apr	915	1057	1141	1179	1060	854	620	415	300	785	841	861	859	781	669	553	455	400
May	649	828	1023	1157	1143	1014	802	580	402	687	777	872	938	915	828	698	568	469
Jun	562	730	958	1132	1164	1076	881	663	471	656	733	841	928	936	882	772	650	548
Jul	600	771	983	1139	1151	1049	849	633	446	712	797	895	968	958	889	771	646	552
Aug	791	949	1077	1152	1079	913	695	490	350	751	875	969	1022	959	824	652	490	382
Sep	1143	1197	1174	1130	939	698	475	316	264	734	742	718	685	600	503	423	368	349
Oct	1481	1407	1238	1079	785	497	297	208	199	1062	1023	914	805	604	409	279	222	216
Nov	1604	1467	1195	950	602	318	180	152	151	778	691	559	449	311	206	156	145	144
Dec	1615	1476	1169	892	526	253	143	132	131	927	855	688	533	332	186	126	119	118
Year	1158	1182	1140	1082	890	670	480	348	272	782	794	772	740	641	529	431	359	317

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

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

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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 RADOBS, 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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