Weather Data for Simplified Energy Calculation Methods

**Volume I. Eastern United States:
TRY Data**

August 1984

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WEATHER DATA FOR SIMPLIFIED
ENERGY CALCULATION METHODS

VOLUME I: EASTERN 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 Data

TABLE 1.1 Cities with Weather Summaries in Each Volume

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

TABLE 1.2 Weather Data Summaries for Each City

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

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

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

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

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

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

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

TABLE E. ANNUAL COOLING WET BULB DEGREE HOUR SUMMARY

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

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

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

TABLE G. PERCENT DIFFUSE SOLAR RADIATION AND PERCENT POSSIBLE SUNSHINE

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

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

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

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

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

2.0 PRIMARY WEATHER DATA SOURCES

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

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

2.1 TRY WEATHER DATA

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

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

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

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

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

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

2.2 TMY WEATHER DATA

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

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

2.3 WYEC WEATHER DATA

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

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

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

2.4 TRY DATA REPRESENTATIVENESS

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

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

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

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

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

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

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

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

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

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

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

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

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

3.0 WEATHER SUMMARIES FOR INCLUDED CITIES

ALBANY, NEW YORK
WBAN 14735
TABLE A:

TRY Data (1969)

Latitude 42.75 N
Longitude 73.80 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									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					
Jan														
40 to 44	1	0	0	3	3	1	0	1	9	36.1	744	15772	0	0
35 to 39	12	11	12	9	16	14	10	9	93	35.4	696	12108	48	56
30 to 34	4	7	6	12	13	15	13	11	81	30.4	600	8863	144	531
25 to 29	10	6	5	16	20	15	12	7	91	25.1	529	6035	215	1423
20 to 24	13	9	11	13	22	22	21	21	132	20.7	403	3665	341	2773
15 to 19	24	20	15	25	12	14	19	21	150	16.3	269	1937	475	4765
10 to 14	13	21	22	9	5	9	5	8	92	11.5	141	927	603	7475
5 to 9	7	6	6	6	2	3	10	7	47	6.4	81	402	663	10670
0 to 4	2	5	10	0	0	0	3	8	28	2.3	33	123	711	14111
-5 to -1	7	7	5	0	0	0	0	0	19	-1.9	6	15	738	17723
-10 to -6	0	1	1	0	0	0	0	0	2	-7.0	1	1	743	21429
Feb														
40 to 44	0	0	0	0	3	2	0	0	5	37.0	670	11730	2	1
35 to 39	2	0	0	7	20	11	2	3	45	32.7	663	8394	9	25
30 to 34	17	17	16	25	33	33	27	16	184	30.0	575	5259	97	250
25 to 29	18	10	20	27	17	23	24	25	164	25.5	371	2934	301	1285
20 to 24	19	24	12	11	4	9	13	10	102	20.8	226	1470	446	3181
15 to 19	15	11	16	10	7	5	15	19	98	16.1	126	580	546	5651
10 to 14	11	14	9	4	0	1	3	11	53	11.7	43	178	629	8609
5 to 9	2	5	8	0	0	0	0	0	15	6.5	17	46	655	11837
0 to 4	0	3	3	0	0	0	0	0	6	2.7	3	3	669	15154
Mar														
60 to 64	0	0	0	0	1	0	0	0	1	47.0	744	23375	0	0
55 to 59	0	0	0	1	2	2	0	0	5	45.4	742	19659	2	4
50 to 54	0	0	0	1	8	4	0	0	13	42.2	733	15968	11	33
45 to 49	0	0	0	9	10	13	0	0	32	39.5	716	12333	28	118
40 to 44	6	7	9	16	9	9	15	7	78	37.9	681	8853	63	358
35 to 39	15	12	17	19	28	21	12	15	139	33.3	558	5732	186	957
30 to 34	22	14	16	21	21	24	29	25	172	28.3	423	3276	321	2221
25 to 29	13	20	24	13	8	13	21	25	137	24.3	252	1632	492	4297
20 to 24	18	13	9	10	6	4	8	10	78	20.0	128	713	616	7098
15 to 19	11	13	8	3	0	3	7	9	54	15.7	62	241	682	10346
10 to 14	7	10	9	0	0	0	1	2	29	11.3	21	54	723	13879
5 to 9	1	4	1	0	0	0	0	0	6	7.3	3	4	741	17549

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

ALBANY, NEW YORK
WRAN 14735
TABLE A:

TRY Data (1969)

Latitude 42.75 N
Longitude 73.80 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*	
	1-3	4-6	7-9	Hour of Day			19-21	22-24	hours below			degree hours	hours above	degree hours	
				10-12	13-15	16-18									
Apr															
80 to 84	0	0	0	2	5	2	0	0	9	61.9	719	24624	1	1	
75 to 79	0	0	0	1	4	3	0	0	8	58.4	709	21060	11	37	
70 to 74	0	0	2	5	5	7	1	0	20	58.5	697	17537	23	114	
65 to 69	0	0	2	7	6	7	6	1	29	54.0	677	14109	43	286	
60 to 64	2	3	4	3	18	14	7	5	56	50.9	636	10824	84	601	
55 to 59	6	7	10	19	13	20	14	11	100	50.5	564	7804	156	1181	
50 to 54	10	5	6	20	19	14	17	14	105	45.7	455	5251	265	2228	
45 to 49	20	8	22	14	6	8	16	21	115	42.3	357	3223	363	3800	
40 to 44	17	29	20	11	10	9	16	8	120	38.1	230	1746	490	5923	
35 to 39	5	11	15	8	3	3	6	13	64	34.4	134	883	586	8660	
30 to 34	19	0	6	0	1	3	7	11	47	29.7	74	383	646	11760	
25 to 29	7	21	2	0	0	0	0	5	35	25.9	28	121	692	15098	
20 to 24	1	3	1	0	0	0	0	0	5	21.4	9	47	711	18624	
15 to 19	2	3	0	0	0	0	0	1	6	15.3	5	12	715	22189	
10 to 14	1	0	0	0	0	0	0	0	1	13.0	0	0	720	25777	
May															
85 to 89	0	0	0	0	3	2	0	0	5	73.2	744	23112	0	0	
80 to 84	0	0	0	2	1	0	0	0	3	68.7	739	19412	5	20	
75 to 79	0	0	0	2	10	12	0	0	24	64.2	733	15730	11	58	
70 to 74	2	3	4	9	13	14	8	1	54	61.4	690	12159	54	207	
65 to 69	5	2	6	15	20	19	13	12	92	58.7	635	8832	109	600	
60 to 64	8	11	12	17	21	22	19	9	119	55.2	530	5915	214	1403	
55 to 59	12	8	19	34	19	18	16	13	139	50.4	404	3594	340	2802	
50 to 54	15	18	27	14	5	2	20	17	118	47.0	255	1976	489	4904	
45 to 49	16	17	18	0	1	4	11	17	84	43.1	151	970	593	7618	
40 to 44	16	12	7	0	0	0	5	16	56	39.6	77	408	667	10776	
35 to 39	12	11	0	0	0	0	1	7	31	35.2	36	134	708	14222	
30 to 34	7	10	0	0	0	0	0	1	18	31.0	11	20	733	17828	
25 to 29	0	1	0	0	0	0	0	0	1	28.0	0	0	744	21528	
Jun															
90 to 94	0	0	0	0	2	1	0	0	3	77.7	720	18856	0	0	
85 to 89	0	0	0	6	10	7	0	0	23	75.4	709	15274	11	18	
80 to 84	0	0	2	9	13	11	6	0	41	72.5	676	11795	44	139	
75 to 79	3	0	6	14	14	18	10	4	69	68.5	629	8517	91	461	
70 to 74	10	9	17	27	30	23	15	13	144	64.5	533	5575	187	1119	
65 to 69	8	11	18	20	12	17	22	16	124	61.6	384	3282	336	2426	
60 to 64	17	14	32	11	6	9	20	17	126	57.8	275	1654	445	4398	
55 to 59	26	29	14	3	3	4	15	27	121	55.6	124	626	596	6970	
50 to 54	13	12	1	0	0	0	2	9	37	50.4	52	234	668	10178	
45 to 49	9	7	0	0	0	0	0	4	20	46.8	18	60	702	13604	
40 to 44	4	8	0	0	0	0	0	0	12	43.0	2	1	718	17145	

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

ALBANY, NEW YORK
WBAN 14735
TABLE A:

TRY Data (1969)

Latitude 42.75 N
Longitude 73.80 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														
90 to 94	0	0	0	1	5	3	0	0	9	77.9	744	17041	0	0
85 to 89	0	0	0	5	6	8	1	0	20	74.3	727	13358	17	37
80 to 84	0	0	3	11	17	13	4	0	48	70.4	709	9767	35	166
75 to 79	0	0	8	24	36	31	9	4	112	67.4	639	6384	105	503
70 to 74	14	15	26	42	29	33	35	22	216	66.4	465	3577	279	1416
65 to 69	26	33	33	9	0	5	31	29	166	63.4	271	1759	473	3318
60 to 64	25	19	16	1	0	0	10	20	91	59.0	134	793	610	6072
55 to 59	7	8	5	0	0	0	3	11	34	54.4	72	317	672	9316
50 to 54	17	14	2	0	0	0	0	7	40	51.0	25	67	719	12786
45 to 49	4	3	0	0	0	0	0	0	7	47.3	2	6	742	16445
40 to 44	0	1	0	0	0	0	0	0	1	44.0	0	0	744	20159
Aug														
90 to 94	0	0	0	0	1	0	0	0	1	71.0	744	16570	0	0
85 to 89	0	0	0	5	27	12	0	0	44	72.0	738	12857	6	7
80 to 84	0	0	1	30	31	35	1	0	98	70.3	664	9324	80	194
75 to 79	0	0	20	26	14	23	18	5	106	68.9	558	6266	186	856
70 to 74	18	15	26	17	19	12	31	24	162	66.0	437	3754	307	2064
65 to 69	17	16	25	13	1	10	26	25	133	63.4	277	1965	467	3995
60 to 64	31	28	14	2	0	1	11	21	108	59.5	150	905	594	6655
55 to 59	11	16	6	0	0	0	5	5	43	54.7	75	377	669	9847
50 to 54	10	8	1	0	0	0	1	12	32	49.3	31	118	713	13308
45 to 49	6	8	0	0	0	0	0	1	15	45.3	9	17	735	16927
40 to 44	0	2	0	0	0	0	0	0	2	42.0	0	0	744	20630
Sep														
85 to 89	0	0	0	2	5	2	0	0	9	73.7	717	19085	3	2
80 to 84	0	0	0	5	12	4	0	0	21	70.3	707	15528	13	45
75 to 79	0	0	2	11	14	10	0	0	37	66.4	679	12064	41	181
70 to 74	0	2	12	16	16	19	14	5	84	65.5	626	8775	94	492
65 to 69	24	24	19	18	25	19	14	20	163	61.9	513	5891	207	1208
60 to 64	13	10	12	16	14	17	15	15	112	56.7	369	3743	351	2660
55 to 59	13	6	13	20	4	14	11	10	91	52.4	264	2181	456	4698
50 to 54	10	13	13	2	0	5	21	12	76	48.6	166	1110	554	7227
45 to 49	9	12	14	0	0	0	15	12	62	44.9	97	448	623	10165
40 to 44	18	15	5	0	0	0	0	16	54	40.5	42	93	678	13410
35 to 39	3	8	0	0	0	0	0	0	11	36.0	4	3	716	16920

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

ALBANY, NEW YORK
WBAN 14735
TABLE A:

TRY Date (1969)

Latitude 42.75 N
Longitude 73.80 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*	
	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	3	1	0	0	4	65.3	742	21103	2	2	
70 to 74	0	0	0	3	19	10	0	0	32	59.6	733	17406	11	25	
65 to 69	0	0	0	14	11	14	6	0	45	59.2	687	13850	57	189	
60 to 64	9	8	9	15	7	6	12	12	78	56.6	636	10523	108	582	
55 to 59	5	1	9	17	23	17	8	11	91	50.1	547	7553	197	1332	
50 to 54	18	15	23	18	14	15	14	15	132	46.1	437	5066	307	2565	
45 to 49	9	13	14	11	7	14	18	9	95	42.0	323	3170	421	4389	
40 to 44	15	12	13	6	2	10	22	21	101	37.8	231	1790	513	6729	
35 to 39	19	24	10	6	7	1	2	10	79	33.8	130	892	614	9551	
30 to 34	5	4	7	3	0	4	8	5	36	29.3	71	411	673	12790	
25 to 29	9	10	5	0	0	1	2	7	34	24.9	36	144	708	16243	
20 to 24	2	3	3	0	0	0	1	3	12	20.6	11	33	733	19852	
15 to 19	2	3	0	0	0	0	0	0	5	17.0	2	1	742	23540	
Nov															
60 to 64	0	0	0	0	1	0	0	0	1	54.0	720	16426	0	0	
55 to 59	0	0	1	4	8	7	3	1	24	53.0	717	12830	3	4	
50 to 54	11	8	11	16	19	13	12	8	98	48.8	662	9339	58	113	
45 to 49	15	15	13	19	12	16	16	21	127	44.1	545	6295	175	669	
40 to 44	21	20	18	15	26	18	17	16	151	39.1	409	3860	311	1834	
35 to 39	9	11	13	19	13	15	13	10	103	33.6	281	2171	439	3745	
30 to 34	15	11	12	10	8	16	14	20	106	29.6	173	1043	547	6217	
25 to 29	10	11	11	6	3	3	11	8	63	25.6	78	435	642	9209	
20 to 24	5	6	6	1	0	2	3	3	26	21.3	32	176	688	12550	
15 to 19	1	5	3	0	0	0	1	0	10	17.5	15	58	705	16032	
10 to 14	3	3	2	0	0	0	0	3	11	12.7	6	5	714	19579	
Dec															
50 to 54	0	0	0	3	0	0	0	0	3	51.7	742	22229	2	2	
45 to 49	0	0	0	0	3	0	0	0	3	41.7	740	18523	4	16	
40 to 44	1	1	4	2	4	3	3	2	20	37.8	733	14834	11	47	
35 to 39	7	7	5	7	7	8	8	7	56	34.4	696	11238	48	171	
30 to 34	11	11	11	17	21	12	5	7	95	30.5	626	7913	118	566	
25 to 29	16	15	16	19	33	27	24	13	163	25.7	496	5042	248	1415	
20 to 24	11	14	13	23	9	25	27	27	149	20.9	339	2939	405	3032	
15 to 19	24	16	20	13	8	6	13	19	119	16.7	194	1605	550	5418	
10 to 14	7	15	12	1	3	5	3	7	53	11.5	113	868	631	8401	
5 to 9	9	6	3	4	5	5	7	6	45	6.5	69	424	675	11677	
0 to 4	4	5	6	3	0	2	1	2	23	2.3	28	201	716	15174	
-5 to -1	0	0	0	1	0	0	2	3	6	-2.8	12	110	732	18803	
-10 to -6	3	0	0	0	0	0	0	0	3	-8.7	8	61	736	22474	
-15 to -11	0	1	1	0	0	0	0	0	2	-13.5	5	28	739	26161	
-20 to -16	0	2	2	0	0	0	0	0	4	-18.7	4	5	740	29858	

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

ALBANY, NEW YORK
WBAN 14735
TABLE B:

TRY Data (1969)

Latitude 42.75 N
Longitude 73.80 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	
90 to 94	0	0	0	1	8	4	0	0	13	0.0	0.0	0.0	77.0	76.8	78.5	0.0	0.0	0.0	77.3	
85 to 89	0	0	0	18	51	31	1	0	101	0.0	0.0	0.0	74.7	73.1	73.4	74.0	0.0	0.0	73.5	
80 to 84	0	0	6	59	79	65	11	0	220	0.0	0.0	73.7	70.9	69.3	70.3	73.7	0.0	0.0	70.4	
75 to 79	3	0	36	78	95	98	37	13	360	74.7	0.0	70.4	68.1	65.6	66.2	70.0	71.8	67.5		
70 to 74	44	44	87	119	131	118	104	65	712	68.7	69.2	67.1	63.9	61.7	62.1	66.1	68.0	64.9		
65 to 69	80	86	103	96	75	91	118	103	752	64.6	64.6	62.8	59.2	57.3	58.8	61.7	63.4	61.6		
60 to 64	105	93	99	65	68	69	94	99	692	59.5	59.6	57.7	54.9	51.2	53.2	57.0	58.4	56.9		
55 to 59	80	75	77	98	72	82	75	89	648	54.5	55.0	52.7	49.7	49.6	50.0	52.3	54.0	52.2		
50 to 54	104	93	84	74	65	53	87	94	654	48.9	49.7	47.3	45.8	45.2	45.6	47.4	48.4	47.6		
45 to 49	88	83	81	53	39	55	76	85	560	44.3	44.9	42.8	41.5	40.9	42.0	43.0	43.8	43.2		
40 to 44	99	107	76	53	57	52	78	87	609	39.3	39.7	39.1	38.1	37.2	37.5	38.1	39.2	38.7		
35 to 39	84	95	72	75	94	73	54	74	621	35.2	34.9	34.5	33.0	32.7	33.0	33.9	34.8	34.0		
30 to 34	100	74	74	88	97	107	103	96	739	29.7	30.4	29.8	29.6	28.9	29.4	29.6	29.7	29.6		
25 to 29	83	94	83	81	81	82	94	90	688	25.3	25.9	25.9	24.9	24.6	24.8	25.3	25.3	25.3		
20 to 24	69	72	55	58	41	62	73	74	504	21.1	21.2	21.4	20.2	19.8	20.2	20.5	20.8	20.7		
15 to 19	79	71	62	51	27	28	55	69	442	16.4	16.5	16.3	16.0	15.9	16.4	16.6	16.4	16.3		
10 to 14	42	63	54	14	8	15	12	31	239	11.8	11.8	11.7	10.2	9.9	10.7	11.3	12.2	11.6		
5 to 9	19	21	18	10	7	8	17	13	113	7.3	6.5	6.7	5.7	6.4	6.0	6.2	6.3	6.5		
0 to 4	6	13	19	3	0	2	4	10	57	3.2	2.5	1.9	2.0	0.0	2.5	2.5	2.2	2.3		
-5 to -1	7	7	5	1	0	0	2	3	25	-1.1	-2.3	-2.4	-2.0	0.0	0.0	-2.0	-3.7	-2.1		
-10 to -6	3	1	1	0	0	0	0	0	5	-8.7	-6.0	-8.0	0.0	0.0	0.0	0.0	0.0	-8.0		
-15 to -11	0	1	1	0	0	0	0	0	2	0.0	-12.0	-15.0	0.0	0.0	0.0	0.0	0.0	-13.5		
-20 to -16	0	2	2	0	0	0	0	0	4	0.0	-18.0	-19.5	0.0	0.0	0.0	0.0	0.0	-18.7		

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Month	Dry Bulb Temperature (F)			Wet Bulb		Percent Relative Humidity					Average Humidity Ratio					Average wind	
	Daily Ave			Ave		Average					(lb moisture/lb dry air)					MPH	
	Ave	Max	Min	Max	Min	4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day		
Jan	21.3	41	-8	29	13	93	85	73	87	85	0.0019	0.0019	0.0021	0.0021	0.0020	9.7	
Feb	25.0	43	1	32	17	93	80	72	84	83	0.0021	0.0022	0.0024	0.0023	0.0022	10.4	
Mar	31.1	60	6	39	23	78	68	56	69	70	0.0022	0.0026	0.0025	0.0024	0.0025	11.6	
Apr	48.3	83	14	60	36	82	61	53	65	66	0.0044	0.0049	0.0051	0.0049	0.0048	10.4	
May	56.4	87	29	68	44	86	61	51	68	68	0.0064	0.0069	0.0071	0.0070	0.0068	9.0	
Jun	66.3	91	42	77	55	93	70	62	76	76	0.0095	0.0113	0.0114	0.0110	0.0107	7.8	
Jul	69.6	92	44	79	59	91	70	60	77	76	0.0111	0.0124	0.0125	0.0119	0.0119	6.8	
Aug	70.2	91	43	82	59	91	68	55	77	74	0.0107	0.0126	0.0124	0.0120	0.0118	5.7	
Sep	61.0	88	36	73	51	87	70	60	80	76	0.0083	0.0095	0.0095	0.0088	0.0090	5.4	
Oct	49.1	79	17	61	37	79	61	52	70	67	0.0047	0.0054	0.0057	0.0054	0.0053	6.6	
Nov	39.7	60	11	46	33	84	77	73	81	80	0.0041	0.0043	0.0044	0.0043	0.0043	8.1	
Dec	22.6	54	-20	29	15	91	87	78	87	87	0.0021	0.0023	0.0022	0.0021	0.0022	9.7	
Year	46.8	92	-20	56	37	87	72	62	77	76	0.0057	0.0064	0.0065	0.0062	0.0061	8.4	

ALBANY, NEW YORK
WBAN 14735
TABLE D:

TRY Data (1969)

Latitude 42.75 N
Longitude 73.80 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			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*
93	0	532	0		0	460	0		0	422	0		0	444	0		0	505	0		0	1681	0		8760	4045	0	0
92	0	521	0		0	449	0		1	411	0		0	433	0		0	494	0		0	1648	0		8758	3957	2	0
91	0	511	0		0	438	0		3	401	0		2	422	0		0	483	0		0	1615	0		8754	3869	6	0
90	0	500	0		0	427	0		6	390	0		4	411	0		0	472	0		0	1582	0		8749	3782	11	0
89	0	489	0		1	416	0		10	379	0		5	401	0		0	461	0		0	1549	0		8744	3694	16	0
88	0	478	0		3	405	0		16	368	0		9	390	0		0	450	0		0	1516	0		8732	3607	28	0
87	0	467	0		5	394	0		26	357	0		14	379	0		0	439	0		0	1484	0		8715	3520	45	1
86	0	456	0		9	383	0		36	347	1		21	368	0		0	428	0		0	1451	0		8693	3433	67	1
85	0	445	0		16	372	0		49	336	1		30	357	1		1	417	0		0	1418	0		8663	3346	97	2
84	0	434	0		22	362	0		67	326	2		38	347	1		2	406	0		0	1385	0		8630	3259	130	3
83	0	423	0		29	351	1		80	315	3		48	336	1		4	396	0		0	1352	0		8598	3173	162	5
82	1	412	0		40	340	1		95	305	3		63	326	2		4	385	0		0	1319	0		8556	3087	204	7
81	2	401	0		54	330	2		109	295	4		76	316	3		7	374	0		0	1287	0		8511	3002	249	9
80	4	390	0		69	320	2		125	286	6		90	305	4		11	363	0		0	1254	0		8459	2917	301	11
79	8	379	0		84	309	3		148	276	7		108	295	5		12	352	0		0	1221	0		8398	2833	362	15
78	12	368	0		99	299	4		162	267	9		127	286	6		15	341	1		1	1188	0		8342	2749	418	19
77	16	358	0		116	289	5		176	257	10		148	276	7		23	330	1		3	1155	0		8276	2666	484	23
76	23	347	1		131	280	6		200	248	12		169	267	9		32	320	1		7	1122	0		8197	2584	563	28
75	35	336	1		146	270	7		223	240	14		189	258	10		42	309	1		13	1090	0		8110	2502	650	34
74	48	326	1		172	261	9		250	231	17		208	249	12		57	299	2		21	1057	0		8003	2422	757	41
73	62	315	2		196	252	11		282	223	19		231	240	15		79	288	2		35	1024	1		7873	2342	887	50
72	77	305	2		218	243	13		308	215	22		259	231	17		100	278	3		55	992	1		7742	2264	1018	59
71	95	295	3		245	234	15		328	207	25		284	223	20		116	269	4		88	960	2		7602	2187	1158	70
70	118	285	4		267	226	18		351	199	29		305	215	23		140	259	6		139	928	3		7439	2112	1321	82
69	135	275	6		285	218	21		373	192	32		324	207	26		163	249	7		191	897	4		7287	2038	1473	96
68	155	266	7		304	210	24		390	185	36		345	200	29		187	240	9		234	866	7		7144	1966	1616	112
67	183	257	9		324	202	27		404	178	40		366	192	33		215	231	11		280	836	9		6986	1896	1774	129
66	210	248	11		343	194	30		420	171	44		383	185	37		244	223	13		337	806	12		6821	1827	1939	147
65	227	239	13		361	187	34		434	164	49		400	178	40		264	214	16		403	777	16		6670	1759	2090	167
64	238	230	15		376	180	37		444	158	53		414	171	45		280	206	19		458	748	20		6547	1693	2213	189
63	256	222	18		390	172	41		456	151	57		428	165	49		294	198	21		511	720	25		6423	1628	2337	212
62	281	213	20		407	165	45		468	145	62		439	158	53		309	190	24		567	693	31		6288	1565	2472	236
61	302	205	23		422	159	49		484	139	67		451	151	58		331	182	28		621	666	36		6149	1502	2611	261
60	320	198	26		432	152	54		500	133	72		467	145	62		353	175	31		693	640	43		5993	1442	2767	288
59	338	190	30		445	145	58		514	127	77		482	139	67		369	167	35		757	614	50		5854	1383	2906	316
58	350	182	33		466	139	62		526	121	82		495	133	72		384	160	38		805	589	58		5733	1325	3027	346
57	364	175	37		488	133	67		538	116	87		511	127	77		403	153	42		862	565	66		5591	1268	3169	377
56	383	168	41		510	127	72		553	110	93		528	121	82		417	146	47		914	541	75		5454	1213	3306	409
55	400	161	44		527	121	77		569	105	98		547	116	87		431	140	51		957	517	85		5328	1159	3432	443
54	416	154	49		546	115	83		588	100	104		563	110	93		453	133	55		1002	494	94		5191	1106	3569	478
53	436	147	53		564	110	88		603	95	110		574	105	99		476	127	60		1058	471	105		5047	1055	3713	514
52	455	141	57		577	105	94		612	90	116		585	100	104		493	121	65		1119	450	116		4917	1005	3843	552
51	467	134	62		590	100	100		618	85	122		594	95	110		504	115	70		1173	428	127		4811	957	3949	591
50	482	128	67		602	95	106		632	80	129		605	90	116		517	109	75		1235	407	139		4685	909	4075	631
49	498	122	72		611	90	112		647	76	135		618	85	122		538	103	80		1299	387	152		4548	863	4212	673
48	514	116	77		618	85	118		655	71	142		630	80	129		556	98	86		1355	368	165		4431	818	4329	716

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

ALBANY, NEW YORK
WBAN 14735
TABLE 0:

TRY Data (1969)

Latitude 42.75 N
Longitude 73.80 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	Hrs	Deg	Hrs	Deg	
	(F)	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Below	Hrs	Above	Hrs	
	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	100s*	Base	100s*
47	530	111	82	628	80	124	663	67	148	642	76	135	569	92	91	1400	349	179	4326	774	4434	759
46	543	105	87	639	76	131	672	63	155	653	71	142	581	87	97	1443	330	193	4227	732	4533	804
45	561	100	93	652	71	137	680	58	162	662	67	148	595	82	103	1497	312	208	4112	690	4648	850
44	580	94	98	664	67	144	687	54	168	669	62	155	608	77	109	1557	294	223	3993	649	4767	897
43	594	89	104	673	63	150	698	50	175	678	58	161	621	72	115	1615	277	239	3879	610	4881	945
42	612	84	110	683	59	157	707	46	182	691	54	168	637	68	121	1673	261	255	3755	572	5005	995
41	629	80	117	693	54	164	717	43	190	704	50	175	657	63	128	1731	245	272	3627	535	5133	1045
40	642	75	123	707	50	171	732	39	197	714	46	182	675	59	134	1788	230	290	3501	499	5259	1097
39	655	71	129	719	47	178	747	35	204	721	43	190	685	55	141	1848	215	308	3383	465	5377	1151
38	670	66	136	732	43	185	766	32	212	730	39	197	692	51	148	1906	201	327	3263	432	5497	1205
37	688	62	143	749	39	193	786	29	219	743	35	204	701	47	155	1958	187	346	3134	400	5626	1261
36	702	58	150	768	36	200	806	26	227	762	32	212	712	43	162	2001	174	366	3007	369	5753	1318
35	714	54	157	784	33	208	825	23	236	782	29	219	726	39	169	2046	162	386	2881	339	5879	1376
34	725	50	164	796	30	216	846	20	244	806	26	227	744	36	177	2093	150	407	2749	311	6011	1435
33	738	47	171	813	27	224	865	18	253	831	23	236	760	32	184	2134	138	428	2616	284	6144	1496
32	756	43	179	836	24	232	882	16	261	850	20	244	781	29	192	2179	127	450	2474	259	6286	1558
31	771	40	186	854	22	241	904	14	270	867	18	253	805	26	200	2239	116	472	2319	235	6441	1622
30	786	37	194	868	19	249	923	12	279	886	16	261	826	23	208	2307	106	494	2161	213	6599	1687
29	804	34	202	885	17	258	939	10	289	909	14	270	848	20	216	2367	96	518	2006	192	6754	1754
28	824	31	210	905	15	267	958	9	298	929	12	280	866	18	225	2414	87	542	1862	172	6898	1822
27	843	28	219	924	13	276	978	8	308	945	10	289	887	16	234	2462	79	566	1719	154	7041	1892
26	858	26	227	939	12	286	995	6	318	960	9	298	907	14	243	2515	71	591	1585	138	7175	1963
25	871	24	236	952	10	295	1007	6	328	973	8	308	922	12	252	2576	63	617	1456	123	7304	2035
24	884	21	245	964	9	305	1017	5	338	987	7	318	942	11	261	2635	57	643	1330	109	7430	2109
23	899	19	254	978	8	314	1026	4	348	1000	6	328	959	9	271	2688	50	669	1209	96	7551	2184
22	914	18	263	992	7	324	1033	3	358	1012	5	338	972	8	280	2731	45	696	1104	85	7656	2260
21	923	16	272	1004	6	334	1040	3	369	1024	4	348	984	7	290	2767	39	724	1017	74	7743	2337
20	930	14	281	1013	5	344	1048	2	379	1035	3	358	997	6	300	2805	34	752	930	64	7830	2415
19	941	13	290	1021	4	354	1057	2	390	1045	3	369	1012	5	310	2851	30	780	831	55	7929	2493
18	955	11	300	1033	3	365	1063	1	400	1054	2	379	1029	4	320	2899	26	809	724	48	8036	2573
17	968	10	310	1044	3	375	1069	1	411	1062	2	390	1045	3	331	2947	22	838	624	41	8136	2654
16	979	9	319	1053	2	386	1075	1	422	1066	2	401	1055	3	341	2991	19	868	540	35	8220	2736
15	989	7	329	1062	2	396	1079	1	432	1069	1	411	1059	3	352	3025	16	898	475	30	8285	2818
14	1003	6	339	1068	2	407	1081	1	443	1072	1	422	1061	2	362	3062	14	928	412	26	8348	2902
13	1017	6	349	1071	1	418	1082	0	454	1074	1	433	1064	2	373	3099	12	959	351	22	8409	2985
12	1028	5	359	1073	1	428	1083	0	465	1076	1	443	1067	2	384	3131	10	990	300	19	8460	3070
11	1038	4	370	1074	1	439	1085	0	476	1080	1	454	1070	1	394	3152	9	1022	259	16	8501	3155
10	1046	4	380	1078	1	450	1087	0	487	1083	0	465	1072	1	405	3169	7	1053	224	14	8536	3240
9	1050	3	391	1082	1	461	1089	0	497	1085	0	476	1073	1	416	3184	6	1085	195	11	8565	3325
8	1053	3	401	1083	0	471	1091	0	508	1086	0	487	1075	1	426	3193	5	1117	177	10	8583	3411
7	1057	2	412	1085	0	482	1092	0	519	1088	0	498	1077	0	437	3202	5	1149	158	8	8602	3497
6	1061	2	422	1086	0	493	1094	0	530	1091	0	508	1081	0	448	3212	4	1181	133	6	8627	3583
5	1065	2	433	1089	0	504	1095	0	541	1092	0	519	1087	0	459	3225	3	1213	106	5	8654	3669
4	1069	1	444	1091	0	515	1095	0	552	1093	0	530	1090	0	470	3238	3	1245	82	4	8678	3756
3	1072	1	454	1091	0	526	1095	0	563	1094	0	541	1092	0	481	3247	2	1278	68	4	8692	3843
2	1077	1	465	1092	0	537	1095	0	574	1094	0	552	1092	0	492	3251	2	1310	58	3	8702	3930

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

ALBANY, NEW YORK
WBAN 14735
TABLE 0:

TRY Data (1969)

Latitude 42.75 N
Longitude 73.80 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BY TIME OF DAY														24-HOUR SUMMARY														
BASE	7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**				10PM-6AM**				HEATING		COOLING	
TEMP (F)	Hrs Above	Deg-Hrs (100s)*	Hrs Above	Deg-Hrs (100s)*	Hrs Above	Deg-Hrs (100s)*	Hrs Above	Deg-Hrs (100s)*	Hrs Above	Deg-Hrs (100s)*	Hrs Above	Deg-Hrs (100s)*	Hrs Above	Deg-Hrs (100s)*	Hrs Above	Deg-Hrs (100s)*	Hrs Above	Deg-Hrs (100s)*	Hrs Below	Deg-Hrs (100s)*	Hrs Above	Deg-Hrs (100s)*	Hrs Below	Deg-Hrs (100s)*	Hrs Above	Deg-Hrs (100s)*		
	Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool	
1 1081	1	476	1093	0	548	1095	0	585	1094	0	563	1092	0	503	3254	1	1343	49	2	8711	4017							
0 1084	1	487	1094	0	559	1095	0	596	1095	0	574	1092	0	513	3258	1	1375	41	2	8719	4104							
-1 1087	1	498	1094	0	570	1095	0	607	1095	0	585	1093	0	524	3265	1	1408	30	2	8730	4191							
-2 1088	1	508	1094	0	580	1095	0	618	1095	0	596	1094	0	535	3271	1	1441	21	1	8739	4279							
-3 1089	1	519	1095	0	591	1095	0	629	1095	0	607	1094	0	546	3274	1	1474	17	1	8743	4366							
-4 1090	0	530	1095	0	602	1095	0	640	1095	0	618	1095	0	557	3275	1	1506	14	1	8746	4454							
-5 1091	0	541	1095	0	613	1095	0	651	1095	0	629	1095	0	568	3277	0	1539	11	1	8749	4541							
-6 1091	0	552	1095	0	624	1095	0	662	1095	0	640	1095	0	579	3278	0	1572	10	1	8750	4629							
-7 1091	0	563	1095	0	635	1095	0	673	1095	0	651	1095	0	590	3279	0	1605	9	1	8751	4716							
-8 1091	0	574	1095	0	646	1095	0	684	1095	0	662	1095	0	601	3280	0	1637	8	1	8752	4804							
-9 1092	0	585	1095	0	657	1095	0	694	1095	0	673	1095	0	612	3280	0	1670	7	0	8753	4891							
-10 1092	0	596	1095	0	668	1095	0	705	1095	0	684	1095	0	623	3281	0	1703	6	0	8754	4979							
-11 1092	0	607	1095	0	679	1095	0	716	1095	0	695	1095	0	634	3282	0	1736	6	0	8754	5066							
-12 1092	0	618	1095	0	690	1095	0	727	1095	0	706	1095	0	645	3282	0	1769	5	0	8755	5154							
-13 1092	0	628	1095	0	701	1095	0	738	1095	0	716	1095	0	656	3283	0	1801	5	0	8755	5241							
-14 1092	0	639	1095	0	712	1095	0	749	1095	0	727	1095	0	667	3283	0	1834	5	0	8755	5329							
-15 1092	0	650	1095	0	723	1095	0	760	1095	0	738	1095	0	678	3283	0	1867	4	0	8756	5416							
-16 1093	0	661	1095	0	734	1095	0	771	1095	0	749	1095	0	689	3283	0	1900	4	0	8756	5504							
-17 1093	0	672	1095	0	745	1095	0	782	1095	0	760	1095	0	700	3283	0	1933	4	0	8756	5592							
-18 1093	0	683	1095	0	756	1095	0	793	1095	0	771	1095	0	711	3284	0	1966	3	0	8757	5679							
-19 1093	0	694	1095	0	767	1095	0	804	1095	0	782	1095	0	721	3285	0	1998	1	0	8759	5767							
-20 1094	0	705	1095	0	778	1095	0	815	1095	0	793	1095	0	732	3285	0	2031	0	0	8760	5854							
-21 1095	0	716	1095	0	789	1095	0	826	1095	0	804	1095	0	743	3285	0	2064	0	0	8760	5942							

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

ALBANY, NEW YORK
WBAN 14735
TABLE E:

TRY Data (1969)

Latitude 42.75 N
Longitude 73.80 E

Annual COOLING Wet Bulb Degree Hour Summary

Wet Bulb Temperature (F) Base:	50	53	56	59	62	65	68	71	74	77	80
Annual Wet Bulb hours ABOVE base:	3440	3064	2679	2222	1751	1226	751	380	101	24	4
Annual Wet Bulb Cooling deg-hrs:	43474	33509	24690	17057	10909	6143	2954	1101	252	58	8

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												
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	0	0	0	0	0	0	0	0	0	0	0	40	39	38	36	34	31	26	21	14	7	3	.001		
.002	2	2	2	2	2	2	2	2	2	2	2	34	33	33	31	30	27	24	19	13	7	3	.002		
.003	4	4	5	5	5	5	5	5	5	5	5	28	28	27	27	26	24	21	17	11	6	3	.003		
.004	6	7	8	8	8	8	8	9	9	9	9	23	23	23	23	22	21	18	15	10	5	3	.004		
.005	8	10	11	12	12	13	13	13	13	13	13	19	19	19	19	18	18	16	13	9	5	2	.005		
.006	10	13	15	16	17	17	18	18	18	18	18	15	15	15	15	15	15	13	11	8	4	2	.006		
.007	12	16	18	20	21	22	23	23	24	24	24	12	12	12	12	12	12	11	9	6	4	2	.007		
.008	14	18	22	24	26	28	29	29	30	30	30	9	9	9	9	9	9	9	8	5	3	2	.008		
.009	16	21	25	28	31	33	34	35	36	36	36	7	7	7	7	7	7	7	6	4	3	1	.009		
.010	18	24	28	32	35	38	40	42	42	43	43	5	5	5	5	5	5	5	4	3	2	1	.010		
.011	20	27	32	36	40	43	46	48	49	50	50	3	3	3	3	3	3	3	3	2	1	1	.011		
.012	22	30	35	40	44	49	52	55	56	57	58	2	2	2	2	2	2	2	2	2	1	1	.012		
.013	25	32	39	44	49	54	58	61	63	65	66	1	1	1	1	1	1	1	1	1	1	0	.013		
.014	27	35	42	48	54	59	64	68	71	73	74	1	1	1	1	1	1	1	1	1	0	0	.014		
.015	29	38	46	52	58	64	70	74	78	81	82	0	0	0	0	0	0	0	0	0	0	0	.015		
.016	31	41	49	57	63	70	76	81	85	89	90	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	33	44	52	61	68	75	82	88	93	97	99	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	35	47	56	65	72	80	88	94	100	105	107	0	0	0	0	0	0	0	0	0	0	0	.018		

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

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

TABLE G:

Percent Diffuse Solar Radiation*
and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
% Diffuse on surface													
HORIZONTAL	51	48	55	52	59	56	71	47	57	43	70	55	56
VERTICAL													
NORTH	100	100	100	99	94	92	95	97	100	100	100	100	97
WEST	57	53	63	68	69	73	78	63	65	55	73	61	67
SOUTH	37	41	56	64	78	81	88	64	61	40	56	39	61
EAST	58	62	64	64	73	68	84	62	69	53	71	62	68
% Possible Sun	46	51	52	54	55	59	63	61	56	52	36	38	53

FOOTNOTES: * Corrected For Cloud Cover.

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

ALBANY, NEW YORK
WBAN 14735
TABLE H:

TRY Data (1969)

Latitude 42.75 N
Longitude 73.80 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/ 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	1815	1686	1341	1002	583	276	154	135	135	1806	833	687	641	525	411	271	173	132	125	125	665	379	457
Feb	1952	1820	1517	1222	812	463	262	187	182	2134	1184	812	742	621	510	368	257	199	178	177	847	557	688
Mar	1833	1764	1588	1414	1079	736	472	306	256	2374	1680	892	860	787	714	584	458	366	309	290	1024	833	986
Apr	1488	1550	1540	1510	1305	1026	746	510	362	2422	2156	1061	1082	1055	1018	898	754	623	517	453	1410	1335	1335
May	1189	1331	1445	1527	1448	1250	982	724	527	2362	2474	997	1028	1048	1059	1001	899	782	676	602	1418	1514	1570
Jun	1064	1227	1392	1517	1497	1340	1091	832	640	2314	2608	940	1011	1068	1108	1078	985	861	737	646	1435	1613	1730
Jul	1112	1263	1403	1514	1467	1294	1042	788	595	2314	2532	924	954	972	988	946	868	778	694	641	1248	1391	1725
Aug	1337	1429	1466	1482	1331	1093	828	596	434	2339	2244	1035	1070	1067	1052	948	807	666	551	478	1479	1454	1499
Sep	1662	1639	1535	1419	1140	829	570	385	304	2321	1816	918	887	824	760	637	516	426	365	339	1093	944	1170
Oct	1866	1751	1490	1249	868	534	326	225	215	2156	1326	888	848	742	638	473	333	244	202	198	977	673	817
Nov	1838	1715	1382	1066	649	340	187	152	152	1879	927	510	485	413	342	249	179	146	138	138	491	332	457
Dec	1743	1614	1273	928	522	240	133	124	124	1693	742	599	560	457	351	228	147	117	113	113	571	324	356
Year	1572	1564	1447	1321	1059	787	568	415	328	2176	1713	856	848	799	747	642	533	446	385	351	1056	948	1066

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	1572	1439	1123	828	460	205	116	110	110	584	540	436	338	217	135	105	102	102
Feb	1666	1536	1269	1021	657	355	195	149	148	683	615	512	420	298	204	158	145	144
Mar	1500	1464	1323	1181	886	585	359	234	208	727	707	649	590	478	370	291	247	235
Apr	1142	1244	1267	1253	1078	834	587	389	285	841	875	863	837	736	613	499	411	366
May	861	1019	1170	1263	1198	1027	792	566	398	781	819	852	868	820	735	635	544	479
Jun	752	914	1111	1253	1239	1108	886	658	477	728	796	864	909	885	808	699	592	511
Jul	798	957	1131	1251	1216	1069	845	622	449	734	764	790	808	774	710	634	564	545
Aug	1007	1132	1202	1230	1103	896	663	462	337	811	862	875	868	780	658	536	439	384
Sep	1338	1355	1276	1185	942	671	445	296	248	745	728	678	626	523	420	342	293	276
Oct	1578	1472	1251	1043	709	421	244	180	175	744	708	619	530	388	266	191	164	161
Nov	1588	1459	1161	886	520	254	141	124	124	428	404	341	283	202	142	117	113	112
Dec	1513	1382	1066	768	408	174	104	101	101	510	472	378	288	182	115	94	92	92
Year	1274	1280	1195	1097	869	635	449	325	256	693	691	656	615	525	432	360	310	282

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

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

ATLANTA, GEORGIA
WDAH 13874
TABLE A2:

TRY Date (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	111	
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 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														
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	27.3	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	83	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	
Month	Ave	Max	Min	Daily Ave		Ave	Average					Day	4AM	10AM	4PM	10PM	Day	MPH
				Max	Min		4AM	10AM	4PM	10PM								
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 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)*			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*
94	0	411	0	0	334	0	0	286	0	0	295	0	0	356	0	0	1243	0	8760	2925	0	0
93	0	400	0	0	323	0	0	275	0	0	284	0	0	345	0	0	1210	0	8759	2837	1	0
92	0	390	0	0	312	0	1	264	0	0	273	0	0	334	0	0	1177	0	8758	2749	2	0
91	0	379	0	0	301	0	4	253	0	2	262	0	0	323	0	0	1144	0	8753	2662	7	0
90	0	368	0	1	290	0	9	242	0	7	251	0	0	312	0	0	1111	0	8742	2574	18	0
89	0	357	0	3	279	0	16	231	0	14	240	0	0	301	0	0	1079	0	8726	2487	34	0
88	0	346	0	5	268	0	25	221	0	20	229	0	0	290	0	0	1046	0	8708	2400	52	1
87	0	335	0	9	258	0	40	210	1	33	219	1	0	279	0	0	1013	0	8677	2313	83	1
86	0	324	0	16	247	0	68	200	1	53	208	1	0	268	0	0	980	0	8622	2226	138	2
85	0	313	0	30	236	0	101	189	2	77	198	2	2	257	0	0	947	0	8548	2140	212	4
84	0	302	0	47	225	1	137	180	3	104	188	3	5	246	0	0	914	0	8466	2055	294	7
83	1	291	0	69	215	1	169	170	5	137	178	4	10	235	0	0	881	0	8372	1971	388	10
82	2	280	0	94	205	2	204	161	7	177	169	5	19	224	0	0	849	0	8263	1888	497	14
81	6	269	0	120	195	3	247	153	9	218	160	7	32	214	0	0	816	0	8135	1806	625	20
80	12	258	0	158	185	5	290	144	12	259	151	10	51	203	1	0	783	0	7988	1725	772	27
79	20	247	0	197	176	6	328	136	15	292	143	12	76	193	2	1	750	0	7844	1646	916	35
78	31	237	1	230	167	9	355	129	18	317	135	16	103	183	2	5	717	0	7717	1568	1043	45
77	45	226	1	259	159	11	381	122	22	343	127	19	133	173	4	13	684	0	7585	1492	1175	56
76	58	216	1	285	151	14	410	115	26	369	120	22	166	164	5	29	652	0	7441	1417	1319	69
75	77	205	2	314	143	17	439	108	30	401	113	26	203	154	7	66	619	1	7258	1343	1502	83
74	105	195	3	351	135	20	470	102	35	432	106	30	242	146	9	116	587	2	7042	1271	1718	99
73	135	186	4	386	128	24	496	95	39	455	100	35	275	137	12	187	556	3	6825	1202	1935	117
72	173	176	6	412	121	28	518	90	45	486	93	40	306	129	15	288	525	5	6576	1135	2184	137
71	219	167	8	438	114	32	536	84	50	515	87	45	339	122	18	410	496	9	6301	1071	2459	161
70	270	159	10	465	108	37	559	78	55	541	82	50	382	114	21	556	468	14	5986	1009	2774	187
69	315	151	13	492	102	41	588	73	61	564	76	55	429	107	26	718	441	20	5653	951	3107	216
68	347	143	16	512	96	46	615	68	67	586	71	61	463	101	30	866	417	28	5370	896	3390	249
67	376	136	20	529	90	52	639	64	73	612	66	67	484	95	35	993	393	37	5125	843	3635	284
66	405	129	24	552	84	57	659	59	80	638	62	73	504	89	40	1096	371	48	4905	793	3855	321
65	430	122	28	577	79	63	682	55	86	666	57	80	529	83	45	1190	349	59	4683	745	4077	361
64	450	115	33	601	74	69	707	51	93	691	53	87	556	77	50	1298	329	72	4455	700	4305	403
63	471	109	37	621	69	75	728	47	101	709	49	94	581	72	56	1385	310	85	4264	656	4496	447
62	491	103	42	637	65	81	747	44	108	727	45	101	604	67	62	1450	291	99	4103	614	4667	493
61	513	97	47	656	60	87	765	40	116	750	42	108	624	62	68	1521	273	114	3930	574	4830	540
60	537	91	52	677	56	94	782	37	123	773	38	116	644	58	74	1601	256	130	3744	536	5016	590
59	555	86	58	696	52	101	797	34	131	791	35	124	667	53	81	1677	239	146	3576	499	5184	641
58	571	81	63	715	48	108	813	31	139	806	32	132	690	49	88	1741	223	163	3422	464	5338	693
57	589	75	69	733	44	115	829	28	147	824	29	140	713	45	95	1797	208	181	3273	431	5487	747
56	606	70	75	749	41	123	841	26	156	842	27	148	735	42	102	1853	194	199	3131	399	5629	803
55	624	66	81	769	37	130	853	23	164	858	24	157	755	38	109	1923	180	218	2976	368	5784	860
54	646	61	88	791	34	138	867	21	173	870	22	165	773	35	117	1992	166	238	2820	339	5940	919
53	666	57	94	806	31	146	880	19	182	878	20	174	791	32	125	2046	154	258	2692	312	6068	979
52	682	52	101	817	28	154	892	17	191	886	18	183	808	29	133	2101	142	279	2572	285	6188	1040
51	700	48	108	831	26	162	902	15	199	897	16	192	821	26	141	2161	130	300	2446	260	6314	1102
50	716	45	115	850	23	171	917	13	209	909	14	201	835	23	149	2222	119	322	2309	236	6451	1166
49	730	41	122	865	21	179	932	11	218	923	12	210	851	21	158	2273	109	344	2184	214	6576	1231

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

TRY Data (1975)

Latitude 33.70 N
Longitude 84.40 E

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

BASE TEMP (F)	BY TIME OF DAY														24-HOUR SUMMARY			
	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**				HEATING		COOLING	
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg	Hrs	Deg
	Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*				Below 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				
48	745	37	130	874	18	188	945	9	227	936	10	219	865	18	166	2312	99	367
47	762	34	137	880	16	197	960	8	237	950	9	229	880	16	175	2358	89	391
46	778	31	145	894	14	206	974	7	246	966	8	238	902	14	184	2422	80	414
45	790	27	153	915	12	215	989	6	256	980	6	248	920	12	193	2481	72	439
44	807	24	161	933	11	224	1002	5	266	995	5	258	938	10	202	2525	64	464
43	829	22	169	951	9	233	1015	4	276	1009	4	268	957	9	212	2572	57	490
42	855	19	177	968	8	243	1028	3	286	1019	4	278	968	8	222	2621	50	516
41	876	17	186	981	7	253	1035	2	297	1027	3	288	979	7	231	2670	44	542
40	891	15	195	994	5	263	1043	2	307	1037	2	299	990	5	241	2719	38	569
39	904	13	204	1006	4	273	1054	1	318	1050	2	309	1002	4	251	2774	32	596
38	918	11	213	1016	4	283	1063	1	328	1060	1	320	1018	4	261	2828	28	624
37	937	9	222	1028	3	293	1070	1	339	1065	1	330	1034	3	271	2877	23	653
36	958	8	232	1039	2	303	1077	1	350	1072	1	341	1047	2	282	2928	19	682
35	977	7	241	1052	2	314	1081	0	361	1078	0	352	1054	2	292	2978	16	711
34	994	5	251	1060	1	324	1084	0	371	1085	0	363	1058	2	303	3025	13	742
33	1011	5	261	1068	1	335	1088	0	382	1089	0	373	1064	1	314	3071	11	772
32	1024	4	271	1074	1	346	1091	0	393	1090	0	384	1069	1	324	3105	9	803
31	1033	3	282	1077	1	357	1091	0	404	1090	0	395	1074	1	335	3128	7	834
30	1040	3	292	1080	1	367	1092	0	415	1091	0	406	1080	1	346	3152	6	866
29	1048	2	302	1082	0	378	1092	0	426	1091	0	417	1084	0	357	3174	5	897
28	1056	2	313	1083	0	389	1093	0	437	1092	0	428	1087	0	367	3191	4	929
27	1063	1	324	1086	0	400	1094	0	448	1093	0	439	1090	0	378	3205	3	961
26	1068	1	334	1089	0	411	1095	0	459	1093	0	450	1091	0	389	3221	2	993
25	1073	1	345	1091	0	422	1095	0	470	1094	0	461	1091	0	400	3240	2	1025
24	1079	1	356	1092	0	432	1095	0	481	1094	0	472	1092	0	411	3254	1	1058
23	1084	0	366	1093	0	443	1095	0	492	1094	0	483	1092	0	422	3261	1	1090
22	1086	0	377	1094	0	454	1095	0	502	1095	0	494	1092	0	433	3266	1	1123
21	1087	0	388	1094	0	465	1095	0	513	1095	0	505	1093	0	444	3269	1	1156
20	1089	0	399	1095	0	476	1095	0	524	1095	0	516	1094	0	455	3272	0	1189
19	1090	0	410	1095	0	487	1095	0	535	1095	0	526	1094	0	466	3275	0	1221
18	1091	0	421	1095	0	498	1095	0	546	1095	0	537	1095	0	477	3276	0	1254
17	1092	0	432	1095	0	509	1095	0	557	1095	0	548	1095	0	488	3278	0	1287
16	1093	0	443	1095	0	520	1095	0	568	1095	0	559	1095	0	498	3280	0	1320
15	1093	0	454	1095	0	531	1095	0	579	1095	0	570	1095	0	509	3282	0	1352
14	1094	0	465	1095	0	542	1095	0	590	1095	0	581	1095	0	520	3284	0	1385
13	1095	0	476	1095	0	553	1095	0	601	1095	0	592	1095	0	531	3285	0	1418

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

WMA 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	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	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
WBAN 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/ 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	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.
 **** 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	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
 MEAN 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	3	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	6	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
 WRA 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*		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	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: * 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*	
	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	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*	
	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	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
WBAN 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

Dry Bulb Temperature (F)						Wet Bulb Ave	Percent Relative Humidity					Average Humidity Ratio (lb moisture/lb dry air)					Average wind MPH
Month	Ave	Max	Min	Daily Max	Ave Min		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

TRY Data (1965)

Latitude 33.60 N
Longitude 86.90 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	Above	(100s)*	Hrs	Deg-Hrs	Above	(100s)*	Hrs	Deg-Hrs	Above	(100s)*	Hrs	Deg-Hrs	Above	(100s)*	Hrs	Deg-Hrs	Above	(100s)*	Hrs	Deg-Hrs	Above	(100s)*	Hrs	Deg-Hrs	Above	(100s)*	
	Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		
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		1	246	0		0	278	0		0	354	0		0	1219	0		8759	2743	1		0
92	0	354	0		0	270	0		3	235	0		0	267	0		0	343	0		0	1186	0		8756	2656	4		0
91	0	343	0		0	259	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	175	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		6	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 Data (1965)

Latitude 33.60 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			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	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, 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

TRY Data (1965)

Latitude 33.60 N
Longitude 86.90 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:	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

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TABLE H:

TRY Data (1965)

Latitude 33.60 N

Longitude 86.90 E

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

Month	Under Clear Sky Assumption*											Corrected For Cloud Cover**											
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S-45 ***	horiz	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S-45 ***	horiz	Obs ****
Jan	1862	1739	1430	1140	749	416	240	185	184	2044	1153	1018	960	808	662	464	295	206	177	176	1090	682	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	633	454	2078	2229	926	993	1036	1061	1013	907	778	653	561	1382	1502	1724
Sep	1365	1388	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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BOSTON, MASSACHUSETTS
WBAN 14739
TABLE A:

TRY Data (1969)

Latitude 42.40 N
Longitude 71.00 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														
45 to 49	0	0	0	4	12	4	3	0	23	41.2	738	13535	6	5
40 to 44	6	3	6	15	10	15	7	7	69	38.1	702	9916	42	106
35 to 39	8	12	10	5	11	9	12	13	80	33.3	618	6605	126	515
30 to 34	21	19	21	25	27	29	21	21	184	28.3	488	3744	256	1374
25 to 29	26	19	14	19	21	24	33	27	183	23.1	335	1703	409	3053
20 to 24	23	26	29	19	9	9	11	19	145	18.9	147	563	597	5633
15 to 19	6	11	10	6	2	0	3	2	40	14.1	43	182	701	8972
10 to 14	0	0	1	0	1	3	3	4	12	9.4	16	49	728	12559
5 to 9	3	3	2	0	0	0	0	0	8	5.9	3	2	741	16232
Feb														
40 to 44	0	0	0	0	0	1	0	0	1	34.0	672	8743	0	0
35 to 39	8	8	6	13	25	22	10	9	101	33.2	666	5389	6	6
30 to 34	32	29	31	39	41	41	44	36	293	29.7	440	2494	232	471
25 to 29	22	21	21	22	15	16	20	22	159	24.7	197	953	475	2290
20 to 24	13	14	17	10	3	4	8	14	83	18.5	82	279	590	4976
15 to 19	8	8	8	0	0	0	2	0	26	14.8	18	52	654	8109
10 to 14	1	4	1	0	0	0	0	3	9	11.1	0	0	672	11417
Mar														
55 to 59	0	0	0	0	2	1	0	0	3	47.3	744	16678	0	0
50 to 54	0	0	0	5	7	5	1	0	18	44.0	734	12972	10	14
45 to 49	3	3	3	9	16	13	5	4	56	41.6	711	9351	33	113
40 to 44	4	5	14	17	14	21	22	15	112	37.0	638	5973	106	455
35 to 39	31	23	20	27	27	26	26	30	210	33.6	476	3127	268	1329
30 to 34	27	31	28	20	21	21	27	20	195	29.0	245	1321	499	3243
25 to 29	16	13	13	9	6	6	9	15	87	23.8	113	479	631	6121
20 to 24	8	12	10	6	0	0	3	8	47	19.4	44	103	700	9465
15 to 19	4	6	5	0	0	0	0	1	16	14.7	9	9	735	13091

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

BOSTON, MASSACHUSETTS
WBAN 14739
TABLE A:

TRY Data (1969)

Latitude 42.40 N
Longitude 71.00 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														
80 to 84	0	0	0	0	2	0	0	0	2	63.0	720	23422	0	0
75 to 79	0	0	0	3	4	2	0	0	9	62.0	716	19831	4	9
70 to 74	0	0	1	6	3	5	1	0	16	59.7	704	16276	16	54
65 to 69	0	0	3	3	8	6	6	3	29	55.6	687	12801	33	179
60 to 64	5	4	7	12	16	13	12	5	74	52.8	649	9455	71	433
55 to 59	10	11	8	10	12	15	13	14	93	50.9	545	6462	175	1040
50 to 54	12	5	17	24	15	19	12	14	118	45.9	460	3937	260	2115
45 to 49	18	26	22	11	10	8	21	18	134	42.5	326	1965	394	3743
40 to 44	26	17	20	17	20	20	19	26	165	37.8	172	700	548	6078
35 to 39	13	21	7	2	0	2	6	9	60	33.6	48	188	672	9166
30 to 34	3	3	3	2	0	0	0	0	11	27.1	14	66	706	12644
25 to 29	3	3	2	0	0	0	0	1	9	21.4	8	14	712	16192
May														
85 to 89	0	0	0	0	3	0	0	0	3	66.0	744	21990	0	0
80 to 84	0	0	0	1	1	3	0	0	5	62.4	740	18281	4	11
75 to 79	0	0	0	3	8	6	2	0	19	60.8	731	14602	13	52
70 to 74	2	1	3	10	10	10	4	2	42	59.9	706	11004	38	174
65 to 69	4	3	12	14	10	14	12	5	74	58.6	651	7612	93	502
60 to 64	11	15	14	19	18	17	18	22	134	54.2	543	4572	201	1182
55 to 59	21	16	28	27	27	22	15	13	169	49.6	401	2195	343	2525
50 to 54	33	31	34	16	16	21	40	43	234	46.2	234	597	510	4647
45 to 49	22	26	2	3	0	0	2	8	63	42.5	27	39	717	7809
40 to 44	0	1	0	0	0	0	0	0	1	40.0	0	0	744	11490
Jun														
90 to 94	0	0	0	3	7	2	0	0	12	76.2	715	17366	5	5
85 to 89	0	0	0	9	10	7	0	0	26	71.8	700	13822	20	61
80 to 84	0	0	6	10	7	15	8	0	46	71.7	670	10399	50	238
75 to 79	2	1	10	7	12	12	16	8	68	67.8	612	7196	108	635
70 to 74	16	17	20	19	19	18	13	17	139	64.2	518	4325	202	1364
65 to 69	14	12	20	24	23	17	25	18	153	60.0	366	2110	354	2749
60 to 64	25	24	26	17	11	16	20	32	171	56.6	216	665	504	4904
55 to 59	33	36	8	1	1	3	8	15	105	54.4	45	40	675	7879

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

BOSTON, MASSACHUSETTS

WBAN 14739

TABLE A:

TRY Data (1969)

Latitude 42.40 N

Longitude 71.00 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	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	5	9	6	0	0	20	75.4	736	16380	8	7
85 to 89	0	0	3	4	2	4	5	2	20	73.3	717	12750	27	97
80 to 84	1	0	4	4	11	10	6	1	37	70.6	694	9218	50	285
75 to 79	6	4	12	22	18	15	15	10	102	68.7	637	5871	107	658
70 to 74	21	22	23	23	19	20	20	21	169	64.8	488	3007	256	1514
65 to 69	27	20	29	26	31	33	28	31	225	61.6	311	969	433	3196
60 to 64	35	42	21	9	3	5	19	28	162	59.8	37	64	707	6011
55 to 59	3	5	1	0	0	0	0	0	9	50.9	0	0	744	9667
Aug														
90 to 94	0	0	0	2	8	5	0	0	15	72.0	742	13777	2	1
85 to 89	0	0	0	12	18	14	1	0	45	72.2	714	10129	30	73
80 to 84	0	0	7	32	26	31	12	0	108	70.7	657	6699	87	363
75 to 79	14	0	27	17	20	17	38	30	163	68.3	518	3728	226	1112
70 to 74	35	43	35	21	14	20	22	25	215	65.9	321	1585	423	2689
65 to 69	29	27	17	9	7	5	15	29	138	61.8	126	465	618	5289
60 to 64	9	14	6	0	0	1	5	8	43	55.2	33	103	711	8647
55 to 59	6	9	1	0	0	0	0	1	17	51.1	6	10	738	12274
Sep														
90 to 94	0	0	0	2	3	2	0	0	7	72.4	717	20925	3	3
85 to 89	0	0	1	1	0	1	1	0	4	72.0	712	17352	8	30
80 to 84	0	0	2	5	12	4	2	0	25	69.3	701	13807	19	85
75 to 79	6	5	7	8	5	10	4	4	49	68.4	672	10373	48	251
70 to 74	6	4	7	14	6	8	8	8	61	66.1	616	7157	104	635
65 to 69	10	6	20	17	33	20	22	12	140	61.2	530	4249	190	1327
60 to 64	23	27	16	23	23	28	22	30	192	57.7	366	1981	354	2659
55 to 59	21	18	27	20	8	17	25	19	155	53.5	154	655	566	4933
50 to 54	20	10	10	0	0	0	6	17	63	48.3	58	144	662	8022
45 to 49	4	20	0	0	0	0	0	0	24	45.9	3	3	717	11481

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

BOSTON, MASSACHUSETTS
WBAN 14739
TABLE A:

TRY Data (1969)

Latitude 42.40 N
Longitude 71.00 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Oct														
75 to 79	0	0	0	2	3	1	0	0	6	63.7	742	17405	2	1
70 to 74	0	0	1	3	5	3	3	1	16	61.1	736	13713	8	29
65 to 69	0	0	3	14	21	16	5	2	61	60.6	707	10089	37	125
60 to 64	9	11	16	27	20	17	14	9	123	57.0	627	6745	117	501
55 to 59	27	20	23	18	20	28	31	26	193	52.6	442	3992	302	1468
50 to 54	26	20	16	12	5	9	17	26	131	47.0	284	2216	460	3412
45 to 49	12	19	17	11	15	12	10	13	109	40.6	167	1082	577	5998
40 to 44	9	9	7	3	1	1	7	7	44	37.8	79	484	665	9120
35 to 39	3	5	6	3	3	4	3	6	33	33.1	48	168	696	12524
30 to 34	7	9	4	0	0	2	3	3	28	27.8	15	21	729	16097
Nov														
60 to 64	0	0	0	1	3	5	3	0	12	58.5	720	12552	0	0
55 to 59	9	8	5	8	10	2	3	6	51	54.8	699	8993	21	41
50 to 54	19	23	22	24	31	34	24	20	197	49.4	602	5683	118	331
45 to 49	22	18	20	28	24	16	21	22	171	44.2	382	3236	338	1484
40 to 44	7	3	13	15	14	18	8	11	89	37.3	258	1678	462	3526
35 to 39	19	20	14	8	5	9	24	23	122	32.7	154	644	566	6092
30 to 34	9	12	11	4	3	6	5	5	55	28.1	43	186	677	9234
25 to 29	2	3	3	2	0	0	2	2	14	23.7	16	52	704	12700
20 to 24	3	3	2	0	0	0	0	1	9	19.8	4	2	716	16250
Dec														
60 to 64	0	0	0	2	0	0	0	0	2	59.0	744	21747	0	0
55 to 59	0	1	3	1	3	0	0	0	8	56.1	737	18039	7	12
50 to 54	3	4	0	0	0	2	0	0	9	50.4	730	14369	14	62
45 to 49	5	4	4	9	9	9	11	8	59	43.7	709	10746	35	159
40 to 44	9	8	7	7	15	10	7	7	70	38.5	629	7386	115	519
35 to 39	10	8	14	22	23	21	18	16	132	33.2	566	4382	178	1235
30 to 34	33	30	29	33	31	36	31	30	253	28.7	356	2006	388	2579
25 to 29	15	20	19	11	6	6	18	19	114	24.2	163	766	581	5059
20 to 24	12	12	9	5	6	9	3	7	63	20.0	69	220	675	8233
15 to 19	3	3	6	3	0	0	5	6	26	16.1	12	41	732	11774
10 to 14	3	3	2	0	0	0	0	0	8	11.3	1	1	743	15454

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

BOSTON, MASSACHUSETTS
WBAN 14739

TRY Data (1969)

Latitude 42.40 N
Longitude 71.00 E

TABLE B:

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	12	27	15	0	0	54	0.0	0.0	0.0	74.1	74.2	74.5	0.0	0.0	74.3
85 to 89	0	0	4	26	33	26	7	2	98	0.0	0.0	73.8	72.5	71.6	71.4	73.7	75.0	72.1
80 to 84	1	0	19	52	59	63	28	1	223	74.0	0.0	71.2	70.7	69.7	70.2	71.8	75.0	70.5
75 to 79	28	10	56	62	70	63	75	52	416	69.9	69.9	69.2	66.9	65.0	65.4	69.3	70.2	67.8
70 to 74	80	87	90	96	76	84	71	74	658	67.3	67.8	65.6	62.6	62.2	62.2	63.2	66.4	64.7
65 to 69	84	68	104	107	133	111	113	100	820	62.8	63.6	60.2	59.5	59.3	59.7	60.7	61.9	60.7
60 to 64	117	137	106	110	94	102	113	134	913	58.0	58.7	57.0	55.1	53.9	55.5	57.1	57.7	56.8
55 to 59	130	124	104	85	83	88	95	94	803	54.1	53.4	52.1	51.0	50.2	50.3	51.9	53.7	52.3
50 to 54	113	93	99	81	74	90	100	120	770	47.6	48.9	47.1	46.3	47.4	47.1	46.7	46.9	47.3
45 to 49	86	116	68	75	86	62	73	73	639	43.6	43.3	42.9	42.2	41.3	41.4	43.0	43.9	42.7
40 to 44	61	46	67	74	74	86	70	73	551	38.4	39.0	38.4	37.4	36.7	37.2	37.5	37.7	37.7
35 to 39	92	97	77	80	94	93	99	106	738	34.0	34.5	34.0	32.6	32.2	32.6	33.2	33.2	33.3
30 to 34	132	133	127	123	123	135	131	115	1019	29.4	29.1	29.2	28.5	28.8	28.7	28.8	28.9	28.9
25 to 29	84	79	72	63	48	52	82	86	566	24.4	24.1	23.9	23.7	23.1	23.6	23.7	23.9	23.9
20 to 24	59	67	67	40	18	22	25	49	347	19.3	19.4	19.1	18.7	19.2	18.8	18.8	19.1	19.1
15 to 19	21	28	29	9	2	0	10	9	108	14.8	15.1	15.0	14.8	12.5	0.0	14.7	14.6	14.9
10 to 14	4	7	4	0	1	3	3	7	29	11.8	11.1	10.0	0.0	10.0	9.0	10.3	10.0	10.4
5 to 9	3	3	2	0	0	0	0	0	8	6.3	5.3	6.0	0.0	0.0	0.0	0.0	0.0	5.9

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			Ave	Average					4AM	10AM	4PM	10PM	
				Max	Min	4AM		10AM	4PM	10PM	Day						
Jan	29.3	49	7	35	24	25.7	65	61	57	62	62	0.0020	0.0020	0.0022	0.0020	0.0020	13.1
Feb	29.5	40	13	34	25	26.9	74	71	69	72	72	0.0022	0.0023	0.0025	0.0024	0.0024	15.9
Mar	35.1	56	16	41	30	31.4	76	65	58	67	68	0.0027	0.0028	0.0029	0.0029	0.0028	15.7
Apr	50.0	81	25	59	43	44.1	74	58	59	64	64	0.0049	0.0049	0.0054	0.0050	0.0050	16.1
May	57.9	87	43	66	51	50.7	70	58	54	64	62	0.0062	0.0064	0.0063	0.0064	0.0063	15.3
Jun	68.4	94	55	76	62	61.4	80	63	61	71	69	0.0098	0.0104	0.0109	0.0106	0.0103	13.4
Jul	70.5	94	58	76	65	63.9	79	67	64	74	72	0.0111	0.0113	0.0115	0.0118	0.0114	13.5
Aug	74.0	93	55	82	66	65.9	80	61	55	69	67	0.0119	0.0122	0.0120	0.0123	0.0121	13.4
Sep	63.4	94	46	70	57	58.3	85	69	66	76	75	0.0093	0.0096	0.0094	0.0096	0.0095	13.3
Oct	54.1	78	30	61	48	48.8	78	63	60	68	69	0.0064	0.0066	0.0064	0.0064	0.0065	14.6
Nov	45.1	61	22	50	40	41.9	82	75	70	75	76	0.0052	0.0051	0.0052	0.0051	0.0051	14.5
Dec	33.3	60	12	38	28	30.2	76	70	68	70	71	0.0029	0.0029	0.0029	0.0028	0.0029	13.3
Year	51.0	94	7	57	45	45.9	77	65	62	69	69	0.0062	0.0064	0.0065	0.0065	0.0064	14.3

BOSTON, MASSACHUSETTS

WBAN 14739

TABLE D:

TRY Data (1969)

Latitude 42.40 N

Longitude 71.00 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																24 HOUR SUMMARY			
	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**		HEATING				COOLING			
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg
	Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Below	Deg	Above	Deg	Below	Deg	Above	Deg
	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	100s*	Base	100s*	Base	100s*	Base	100s*
95	0	499	0	0	454	0	0	433	0	0	447	0	0	480	0	0	1543	0	8760	3855
94	0	488	0	0	443	0	3	422	0	0	436	0	0	469	0	0	1510	0	8757	3768
93	0	477	0	1	432	0	9	411	0	2	425	0	0	458	0	0	1477	0	8748	3680
92	0	466	0	4	421	0	15	400	0	6	414	0	0	447	0	0	1444	0	8735	3593
91	0	455	0	7	410	0	20	390	0	9	403	0	0	436	0	0	1411	0	8724	3505
90	0	444	0	10	399	0	24	379	1	12	393	0	0	425	0	0	1378	0	8713	3418
89	0	433	0	15	388	0	29	368	1	16	382	0	0	414	0	0	1345	0	8699	3331
88	0	422	0	21	378	0	34	358	1	19	371	1	1	403	0	0	1313	0	8683	3244
87	1	411	0	27	367	1	44	347	2	24	360	1	3	392	0	0	1280	0	8660	3157
86	2	400	0	32	356	1	52	337	2	31	350	1	4	381	0	0	1247	0	8638	3071
85	3	389	0	36	346	1	57	326	3	38	339	1	5	370	0	1	1214	0	8619	2985
84	5	379	0	39	335	2	64	316	3	45	328	2	8	359	0	2	1181	0	8595	2899
83	7	368	0	46	325	2	76	306	4	53	318	2	9	349	0	2	1148	0	8566	2813
82	9	357	0	56	314	3	90	295	5	62	308	3	13	338	0	3	1116	0	8525	2727
81	13	346	0	69	304	3	103	285	6	77	297	4	19	327	1	3	1083	0	8475	2642
80	19	335	1	83	294	4	114	276	7	95	287	4	27	316	1	3	1050	0	8417	2558
79	26	324	1	95	284	5	126	266	8	108	277	5	41	306	1	7	1017	0	8356	2474
78	35	314	1	106	274	6	140	256	9	120	267	7	52	295	2	16	984	0	8290	2391
77	44	303	1	117	264	7	152	247	11	136	258	8	64	285	2	27	952	0	8217	2308
76	53	293	2	128	254	8	165	237	12	152	248	9	81	275	3	46	919	1	8134	2226
75	68	282	2	143	245	10	180	228	14	163	239	11	100	265	4	77	887	1	8027	2145
74	88	272	3	159	235	11	198	219	16	173	230	13	113	255	5	124	855	2	7903	2066
73	103	262	4	179	226	13	214	210	18	188	221	14	122	245	6	178	824	4	7775	1987
72	119	252	5	202	217	15	227	201	20	204	212	16	132	235	7	224	793	6	7650	1910
71	140	243	7	220	208	17	239	193	23	223	203	18	142	226	9	270	763	8	7525	1834
70	160	233	8	237	199	19	255	184	25	242	194	21	164	216	10	314	733	11	7387	1760
69	176	224	10	255	191	22	277	176	28	261	186	23	190	207	12	356	703	15	7243	1687
68	193	215	12	277	182	24	303	168	31	280	177	26	211	198	14	405	674	18	7088	1615
67	211	206	14	301	174	27	329	160	34	300	169	29	231	189	16	463	646	23	6923	1545
66	233	197	16	322	167	30	358	153	37	322	162	32	253	181	19	518	618	28	6752	1476
65	259	189	18	344	159	34	387	145	41	347	154	35	280	172	21	565	590	33	6575	1410
64	282	181	21	367	152	37	405	138	45	374	147	39	308	164	24	634	563	39	6389	1345
63	304	172	24	390	144	41	423	132	49	394	140	43	333	157	27	724	537	46	6191	1282
62	327	165	27	410	138	45	443	125	53	414	133	47	352	149	31	805	512	54	6007	1221
61	346	157	31	430	131	49	458	119	58	433	126	51	368	142	34	873	488	62	5850	1162
60	366	150	34	452	124	54	478	112	63	452	119	56	392	135	38	940	464	71	5679	1104
59	391	143	38	478	118	58	501	106	67	472	113	60	420	128	42	1019	441	81	5477	1048
58	414	136	42	504	112	63	521	100	73	492	107	65	440	121	47	1105	418	91	5283	994
57	432	129	46	521	106	68	539	95	78	513	101	70	458	115	51	1183	397	103	5113	943
56	450	122	51	534	100	74	554	89	83	531	95	75	479	108	56	1248	376	115	4963	892
55	471	116	55	546	95	79	569	84	89	545	90	81	495	102	61	1300	356	128	4832	843
54	492	110	60	556	89	84	581	79	95	557	84	86	508	96	66	1342	337	141	4722	796
53	509	104	65	575	84	90	596	74	101	574	79	92	523	91	71	1388	317	155	4593	749
52	529	98	70	596	79	96	612	69	107	594	74	98	543	85	76	1442	299	169	4443	704
51	551	93	76	610	74	102	626	64	113	610	69	104	564	80	82	1507	281	183	4290	660
50	572	87	81	623	69	108	641	59	119	630	64	110	588	74	87	1596	263	199	4108	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

BOSTON, MASSACHUSETTS

TRY Date (1969)

Latitude 42.40 N

WBAN 14739

Longitude 71.00 E

TABLE D:

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE (F)	BY TIME OF DAY												24 HOUR SUMMARY									
	7-9AM**			10-12AM**			1-3PM**			4-6PM**			7-9PM**			10PM-6AM**			HEATING		COOLING	
	Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg	Hrs	Deg
	Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*			Below	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*	
49	591	82	87	640	65	114	658	55	126	646	60	116	609	70	93	1682	247	215	3933	578	4827	752
48	606	77	93	658	60	121	675	51	132	656	55	123	624	65	100	1743	231	233	3798	539	4962	801
47	617	72	99	670	56	128	687	47	139	668	51	129	637	60	106	1801	216	250	3678	502	5082	852
46	629	68	105	683	52	134	701	43	146	681	47	136	650	56	112	1853	201	269	3561	466	5199	903
45	643	63	112	698	48	141	723	39	153	696	43	143	667	51	119	1899	187	287	3433	431	5327	956
44	658	59	118	714	44	148	741	35	161	713	39	150	680	47	126	1945	174	307	3307	397	5453	1009
43	671	54	125	728	40	156	757	32	168	729	35	157	690	43	133	1985	161	326	3199	365	5561	1065
42	683	50	132	739	36	163	775	28	176	743	31	165	701	39	140	2013	148	346	3104	333	5656	1121
41	698	46	139	755	33	170	790	25	184	761	28	172	715	35	147	2043	135	367	2996	302	5764	1178
40	711	42	146	772	30	178	802	22	191	781	25	180	734	31	154	2084	123	387	2874	273	5886	1236
39	724	38	153	784	27	186	814	19	200	796	22	188	754	28	161	2125	111	408	2760	245	6000	1295
38	738	35	160	796	23	194	831	17	208	812	19	196	771	25	169	2169	100	430	2641	218	6119	1356
37	753	31	168	812	21	202	850	14	216	829	16	204	796	21	177	2225	89	452	2493	192	6267	1418
36	767	28	175	829	18	210	870	12	225	853	13	212	820	19	185	2290	79	474	2328	168	6432	1481
35	783	25	183	848	15	218	893	10	234	876	11	221	835	16	193	2361	69	497	2162	146	6598	1546
34	808	22	191	870	13	227	921	8	243	898	9	230	856	13	202	2445	60	521	1960	125	6800	1613
33	838	19	199	897	11	236	953	6	252	932	7	239	882	11	210	2534	52	546	1722	106	7038	1682
32	862	17	208	924	9	245	983	5	262	965	6	249	914	9	219	2606	45	572	1505	90	7255	1754
31	882	14	216	946	7	254	1009	4	272	989	5	258	944	7	229	2670	39	598	1318	76	7442	1827
30	907	12	225	971	6	264	1023	3	282	1008	4	268	966	6	238	2742	33	625	1142	64	7618	1903
29	926	11	234	990	5	274	1029	2	292	1024	3	278	981	5	248	2799	28	653	1009	53	7751	1980
28	935	9	244	1005	4	284	1039	2	302	1037	2	289	998	4	258	2848	23	681	896	44	7864	2058
27	950	7	253	1019	3	294	1050	1	313	1050	2	299	1019	3	268	2906	19	710	765	35	7995	2137
26	967	6	263	1032	2	304	1060	1	323	1060	1	310	1037	2	278	2952	15	740	651	29	8109	2218
25	983	5	273	1041	2	314	1070	1	334	1067	1	320	1051	2	289	2998	12	769	548	22	8212	2299
24	999	4	282	1050	1	325	1077	0	345	1071	1	331	1060	1	299	3049	10	800	453	18	8307	2382
23	1012	3	293	1056	1	335	1083	0	356	1075	1	342	1065	1	310	3086	8	830	380	13	8380	2465
22	1030	2	303	1066	1	346	1088	0	367	1083	0	353	1072	1	320	3126	6	861	293	10	8467	2550
21	1045	2	313	1077	0	357	1091	0	377	1089	0	364	1077	1	331	3170	4	893	210	8	8550	2635
20	1055	1	324	1083	0	368	1092	0	388	1091	0	374	1080	0	342	3196	3	925	162	6	8598	2721
19	1066	1	334	1088	0	378	1092	0	399	1092	0	385	1083	0	353	3213	3	957	124	4	8636	2807
18	1074	1	345	1092	0	389	1092	0	410	1092	0	396	1087	0	364	3230	2	989	93	3	8667	2893
17	1078	0	356	1093	0	400	1092	0	421	1092	0	407	1089	0	375	3240	2	1021	74	2	8686	2980
16	1084	0	367	1094	0	411	1093	0	432	1092	0	418	1090	0	385	3246	1	1054	60	2	8700	3067
15	1088	0	377	1094	0	422	1093	0	443	1092	0	429	1091	0	396	3255	1	1086	46	1	8714	3154
14	1089	0	388	1095	0	433	1094	0	454	1092	0	440	1092	0	407	3265	1	1119	31	1	8729	3241
13	1090	0	399	1095	0	444	1094	0	465	1092	0	451	1093	0	418	3273	0	1152	21	1	8739	3329
12	1091	0	410	1095	0	455	1095	0	476	1092	0	462	1094	0	429	3277	0	1184	15	0	8745	3416
11	1092	0	421	1095	0	466	1095	0	487	1094	0	473	1095	0	440	3277	0	1217	12	0	8748	3504
10	1092	0	432	1095	0	477	1095	0	498	1095	0	484	1095	0	451	3278	0	1250	9	0	8751	3591
9	1093	0	443	1095	0	488	1095	0	509	1095	0	495	1095	0	462	3279	0	1283	7	0	8753	3679
8	1094	0	454	1095	0	499	1095	0	520	1095	0	506	1095	0	473	3281	0	1315	4	0	8756	3766
7	1094	0	465	1095	0	510	1095	0	531	1095	0	517	1095	0	484	3284	0	1348	1	0	8759	3854
6	1095	0	476	1095	0	521	1095	0	542	1095	0	527	1095	0	495	3285	0	1381	0	0	8760	3941

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

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

BOSTON, MASSACHUSETTS
WBAN 14739

TRY Data (1969)

Latitude 42.40 N
Longitude 71.00 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:	3895	3464	3005	2331	1752	1173	803	418	99	16	0
Annual Wet Bulb Cooling deg-hrs:	46898.	35643.	25662.	17329.	10928.	6255.	3133.	1109.	198.	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	43	42	40	39	36	33	28	21	14	8	4	.001		
.002	1	1	2	2	2	2	2	2	2	2	2	36	35	35	34	32	30	25	19	13	7	3	.002		
.003	2	3	4	4	4	4	4	4	4	4	4	29	29	29	29	27	26	22	17	12	7	3	.003		
.004	3	5	6	7	7	7	7	7	7	7	7	24	24	24	24	23	22	19	15	10	6	3	.004		
.005	4	7	9	10	11	11	11	11	12	12	12	19	19	19	19	19	18	16	13	9	5	3	.005		
.006	5	9	12	13	15	15	16	16	16	16	16	15	15	15	15	15	15	13	11	8	5	2	.006		
.007	6	12	15	17	19	20	21	21	21	21	22	12	12	12	12	12	12	11	9	7	4	2	.007		
.008	7	14	18	20	23	25	26	27	27	27	27	9	9	9	9	9	9	8	7	6	3	2	.008		
.009	9	16	20	24	27	29	31	32	33	33	34	6	6	6	6	6	6	6	6	4	3	1	.009		
.010	10	18	23	27	31	34	37	39	40	40	40	4	4	4	4	4	4	4	4	3	2	1	.010		
.011	11	20	26	30	35	39	42	45	46	47	48	3	3	3	3	3	3	3	3	2	2	1	.011		
.012	12	22	29	34	39	44	48	51	54	55	55	2	2	2	2	2	2	2	2	2	1	1	.012		
.013	13	24	32	37	43	48	54	58	61	62	63	1	1	1	1	1	1	1	1	1	1	0	.013		
.014	14	26	34	40	47	53	59	64	68	70	71	0	0	0	0	0	0	0	0	0	0	0	.014		
.015	15	28	37	44	51	58	65	71	75	78	79	0	0	0	0	0	0	0	0	0	0	0	.015		
.016	16	30	40	47	55	63	70	77	83	86	88	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	17	32	43	51	59	68	76	84	90	94	96	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	18	34	46	54	63	72	81	90	97	102	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	38	47	44	39	47	47	62	41	37	32	50	46	45
VERTICAL													
NORTH	100	100	100	98	93	90	95	97	100	100	100	100	96
WEST	44	57	55	55	60	67	76	59	54	46	58	57	59
SOUTH	27	38	47	54	71	76	84	60	44	30	37	31	51
EAST	50	54	56	55	63	62	76	58	52	46	59	48	59
% Possible Sun	54	56	58	57	59	63	66	66	64	61	51	52	60

FOOTNOTES: * Corrected For Cloud Cover.

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

BOSTON, MASSACHUSETTS

WBAN 14739

TABLE H:

TRY Data (1969)

Latitude 42.40 N

Longitude 71.00 E

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

Month	Under Clear Sky Assumption*										Corrected For Cloud Cover**										Obs ***		
	S	SSE/ SSW	SE/ 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	1811	1683	1341	1000	589	286	158	137	137	1808	842	897	823	658	501	316	185	134	126	126	877	462	476
Feb	1941	1812	1511	1222	817	463	268	187	184	2130	1190	845	808	695	580	418	279	206	176	174	878	558	710
Mar	1814	1746	1577	1409	1077	734	472	309	257	2359	1679	968	939	862	783	631	473	361	294	272	1162	912	1016
Apr	1468	1530	1522	1494	1295	1021	746	510	365	2401	2148	1119	1139	1117	1083	952	788	632	503	422	1599	1484	1326
May	1172	1315	1432	1510	1431	1240	978	721	523	2335	2460	990	1040	1078	1101	1043	934	794	661	568	1536	1641	1621
Jun	1046	1211	1375	1498	1475	1325	1077	822	634	2288	2590	932	1016	1084	1133	1100	1001	859	721	625	1537	1727	1817
Jul	1095	1249	1391	1494	1453	1286	1034	783	593	2290	2516	937	977	1011	1035	1001	919	810	708	631	1351	1502	1749
Aug	1319	1411	1451	1470	1327	1095	834	600	435	2318	2236	1139	1193	1195	1181	1064	899	733	592	504	1696	1669	1487
Sep	1645	1622	1516	1402	1125	819	565	383	305	2306	1813	1107	1089	1012	929	757	580	443	351	313	1421	1160	1260
Oct	1850	1739	1489	1250	869	545	332	229	216	2147	1330	1092	1028	886	750	536	359	251	202	196	1225	800	890
Nov	1835	1707	1375	1064	644	341	186	154	154	1883	936	740	694	573	454	298	194	147	139	138	729	426	503
Dec	1747	1619	1280	942	530	251	136	126	126	1701	752	746	716	597	469	298	176	122	116	116	715	378	403
Year	1559	1552	1438	1313	1054	786	567	415	328	2163	1710	960	956	898	835	703	567	459	384	341	1229	1063	1105

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	1564	1432	1119	829	463	210	119	111	111		766	692	544	412	249	142	106	102	102	
Feb	1649	1523	1260	1018	657	358	197	150	149		710	674	576	480	337	221	160	142	141	
Mar	1478	1444	1308	1170	880	583	360	235	208		785	770	710	646	513	378	284	233	220	
Apr	1120	1222	1248	1237	1067	827	584	389	287		872	913	912	890	780	638	503	395	338	
May	841	999	1150	1245	1180	1013	782	559	391		755	815	870	902	855	761	639	525	445	
Jun	734	895	1090	1231	1216	1087	870	647	471		706	787	870	927	900	815	693	574	490	
Jul	778	937	1111	1230	1197	1054	834	614	444		729	770	815	845	818	749	656	568	502	
Aug	985	1110	1184	1214	1093	891	662	462	337		882	953	974	968	869	728	584	467	401	
Sep	1312	1329	1252	1163	926	660	438	292	247		892	892	831	766	619	467	350	276	254	
Oct	1555	1454	1239	1036	710	424	247	181	175		915	855	734	619	435	281	193	162	159	
Nov	1577	1444	1150	878	517	252	141	125	125		628	582	475	372	239	150	118	112	112	
Dec	1512	1383	1070	777	417	181	108	103	103		636	607	499	387	239	133	97	94	94	
Year	1256	1263	1181	1086	861	630	446	323	254		774	776	735	686	572	457	366	305	272	

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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BUFFALO, NEW YORK
WBAN 14733
TABLE A:

TRY Data (1974)

Latitude 42.80 N
Longitude 78.70 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*	
	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														
55 to 59	1	1	0	0	0	0	0	0	2	51.5	744	22557	0	0
50 to 54	3	3	0	0	2	0	0	1	9	47.1	740	18845	4	8
45 to 49	2	5	5	6	3	4	4	3	32	42.9	722	15179	22	62
40 to 44	6	3	7	10	3	4	4	5	42	38.1	683	11665	61	268
35 to 39	11	13	13	19	34	33	25	12	160	33.9	632	8357	112	680
30 to 34	19	17	15	12	6	5	11	21	106	30.3	435	5703	309	1746
25 to 29	3	3	9	7	11	11	7	4	55	24.7	378	3682	366	3445
20 to 24	17	13	8	16	20	14	12	17	117	20.4	304	1956	440	5439
15 to 19	11	20	21	14	11	14	14	12	117	16.2	171	768	573	7971
10 to 14	13	6	9	9	3	6	13	12	71	11.3	64	215	680	11138
5 to 9	7	9	6	0	0	2	3	6	33	6.1	21	23	723	14666
Feb														
50 to 54	0	0	0	3	3	0	0	0	6	47.0	669	20085	3	3
45 to 49	0	0	1	3	1	2	0	0	7	39.4	665	16751	7	29
40 to 44	5	9	9	5	11	10	6	3	58	36.2	643	13456	29	94
35 to 39	7	4	2	4	9	3	6	10	45	33.3	582	10398	90	396
30 to 34	6	5	5	11	4	14	15	9	69	29.6	527	7610	145	968
25 to 29	7	4	9	7	11	8	10	9	65	24.3	468	5131	204	1849
20 to 24	14	15	13	21	27	24	3	10	127	19.7	382	2986	290	3064
15 to 19	20	17	18	13	6	8	28	20	130	16.4	234	1445	438	4883
10 to 14	10	13	13	13	12	13	7	11	92	10.8	133	549	539	7347
5 to 9	12	13	11	4	0	2	9	9	60	6.2	50	116	622	10274
0 to 4	3	4	3	0	0	0	0	3	13	2.5	4	5	668	13523
Mar														
70 to 74	0	0	0	0	0	1	0	0	1	59.0	744	29288	0	0
65 to 69	0	0	0	0	2	1	0	0	3	58.3	741	25573	3	5
60 to 64	1	0	0	1	1	2	2	2	9	54.4	736	21876	8	28
55 to 59	1	3	0	3	6	3	5	3	24	50.0	725	18219	19	91
50 to 54	4	0	3	4	0	2	2	4	19	48.3	696	14660	48	252
45 to 49	3	2	5	1	2	1	1	0	15	44.3	681	11214	63	526
40 to 44	2	6	8	11	14	14	7	3	65	38.8	647	7861	97	893
35 to 39	18	17	17	30	25	20	16	20	163	33.5	559	4803	185	1555
30 to 34	19	19	17	19	28	31	25	19	177	29.0	375	2443	369	2915
25 to 29	24	20	24	15	9	13	22	26	153	24.6	188	1030	556	5222
20 to 24	15	18	12	3	6	4	9	13	80	19.7	77	384	667	8296
15 to 19	3	2	4	6	0	1	1	0	17	15.4	25	159	719	11791
10 to 14	0	3	2	0	0	0	2	1	8	10.3	14	62	730	15414
5 to 9	3	3	1	0	0	0	1	2	10	5.8	7	8	737	19080

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

BUFFALO, NEW YORK
WBAN 14733
TABLE A:

TRY Data (1974)

Latitude 42.80 N
Longitude 78.70 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		16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
				10-12	13-15									
Apr														
75 to 79	0	0	0	0	1	0	0	0	1	61.0	720	22571	0	0
70 to 74	0	0	2	9	9	5	0	0	25	57.1	705	18986	15	15
65 to 69	3	1	3	8	11	8	2	0	36	55.4	686	15504	34	133
60 to 64	5	5	9	12	9	9	6	7	62	53.9	630	12201	90	430
55 to 59	5	7	10	5	11	12	12	12	74	51.5	574	9192	146	1021
50 to 54	6	9	4	8	7	11	16	8	69	46.3	495	6529	225	1958
45 to 49	14	7	12	12	9	16	9	11	90	40.8	428	4228	292	3257
40 to 44	15	11	16	12	15	4	15	16	104	38.5	324	2342	396	4971
35 to 39	14	21	16	15	12	15	18	18	129	34.8	179	1053	541	7282
30 to 34	19	19	11	3	0	4	6	12	74	30.5	90	374	630	10203
25 to 29	7	7	7	6	6	6	6	6	51	25.8	35	61	685	13490
20 to 24	2	3	0	0	0	0	0	0	5	23.0	0	0	720	17029
May														
85 to 89	0	0	0	0	1	0	0	0	1	63.0	744	25541	0	0
80 to 84	0	0	0	0	2	2	0	0	4	61.8	740	21827	4	6
75 to 79	0	0	0	7	6	6	0	0	19	63.5	734	18135	10	34
70 to 74	1	0	3	4	5	6	1	0	20	58.9	712	14516	32	135
65 to 69	2	1	7	4	10	17	7	4	52	56.6	684	11017	60	356
60 to 64	6	5	7	13	21	14	19	9	94	54.0	617	7745	127	804
55 to 59	13	16	22	25	14	10	18	18	136	52.3	499	4919	245	1698
50 to 54	18	12	14	22	17	12	18	19	132	47.1	371	2757	373	3256
45 to 49	27	26	20	10	11	17	10	17	138	43.1	225	1256	519	5475
40 to 44	8	15	12	8	6	9	17	15	90	39.7	99	439	645	8378
35 to 39	14	6	8	0	0	0	3	11	42	33.9	45	119	699	11778
30 to 34	4	12	0	0	0	0	0	0	16	31.1	3	3	741	15382
Jun														
85 to 89	0	0	0	0	1	4	0	0	5	69.6	720	15909	0	0
80 to 84	0	0	1	9	16	10	4	1	41	66.9	706	12334	14	25
75 to 79	3	1	5	8	10	13	9	2	51	64.1	658	8936	62	227
70 to 74	0	2	10	17	31	32	13	11	116	60.9	585	5792	135	683
65 to 69	16	20	21	36	20	19	21	11	164	59.6	450	3189	270	1680
60 to 64	16	8	25	16	11	12	32	26	146	56.7	276	1370	444	3461
55 to 59	35	34	27	4	1	0	11	35	147	53.5	125	326	595	6017
50 to 54	19	22	1	0	0	0	0	4	46	49.6	12	23	708	9314
45 to 49	1	3	0	0	0	0	0	0	4	46.5	0	0	720	12891

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

BUFFALO, NEW YORK
WBAN 14733
TABLE A:

TRY Data (1974)

Latitude 42.80 N
Longitude 78.70 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														
85 to 89	0	0	0	1	6	6	1	0	14	68.1	740	12611	4	4
80 to 84	0	0	1	17	29	30	4	0	81	66.7	709	8962	35	75
75 to 79	6	6	13	25	23	23	24	11	131	65.6	612	5655	132	488
70 to 74	19	12	34	34	26	27	27	19	198	63.6	443	2992	301	1545
65 to 69	20	21	22	16	7	6	33	33	158	61.1	250	1292	494	3565
60 to 64	32	21	22	0	2	1	4	29	111	58.6	110	386	634	6379
55 to 59	15	28	1	0	0	0	0	1	45	54.2	29	61	715	9774
50 to 54	1	5	0	0	0	0	0	0	6	50.0	2	2	742	13435
Aug														
85 to 89	0	0	0	0	4	8	0	0	12	67.7	744	13102	0	0
80 to 84	0	0	0	13	26	19	1	0	59	66.2	722	9425	22	43
75 to 79	1	1	7	25	33	29	16	2	114	66.2	634	6007	110	345
70 to 74	14	6	26	38	20	24	39	27	194	64.7	482	3169	262	1227
65 to 69	25	25	34	15	9	13	27	33	181	62.2	280	1255	464	3033
60 to 64	43	43	24	2	1	0	10	31	154	58.7	115	279	629	5777
55 to 59	10	18	2	0	0	0	0	0	30	55.4	15	19	729	9237
Sep														
75 to 79	0	0	1	8	11	9	0	0	29	66.4	715	12953	5	3
70 to 74	3	6	5	15	21	19	9	4	82	64.2	673	9473	47	123
65 to 69	12	7	13	18	22	25	19	10	126	59.8	557	6378	163	628
60 to 64	13	13	16	22	12	9	19	17	121	55.6	443	3874	277	1724
55 to 59	21	15	21	6	11	16	20	26	136	51.6	313	1999	407	3449
50 to 54	17	25	21	17	13	10	13	18	134	47.2	177	791	543	5841
45 to 49	17	16	9	4	0	1	6	9	62	43.9	50	253	670	8903
40 to 44	1	2	2	0	0	1	4	4	14	38.4	22	89	698	12339
35 to 39	6	6	2	0	0	0	0	2	16	34.0	8	11	712	15861

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

BUFFALO, NEW YORK
WBAN 14733
TABLE A:

TRY Data (1974)

Latitude 42.80 N
Longitude 78.70 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*	
	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															
70 to 74	0	0	0	2	14	5	1	0	22	57.0	742	17453	2	2	
65 to 69	2	0	0	9	3	10	3	4	31	55.4	714	13828	30	97	
60 to 64	10	10	12	12	14	8	13	10	89	54.6	662	10364	82	353	
55 to 59	7	7	8	11	27	23	11	9	103	49.9	562	7303	182	1012	
50 to 54	12	8	11	24	12	13	14	10	104	45.0	463	4741	281	2170	
45 to 49	17	20	20	16	8	15	24	19	139	41.9	343	2714	401	3863	
40 to 44	17	15	16	5	9	9	11	19	101	37.4	213	1345	531	6214	
35 to 39	14	12	13	13	4	6	6	9	77	33.4	111	529	633	9118	
30 to 34	7	13	10	1	2	4	10	9	56	28.8	47	129	697	12438	
25 to 29	7	8	3	0	0	0	0	4	22	26.2	4	3	740	16032	
Nov															
70 to 74	0	0	1	0	0	0	0	0	1	60.0	720	23220	0	0	
65 to 69	3	3	2	3	0	0	0	1	12	59.5	718	19624	2	4	
60 to 64	0	0	0	3	9	6	0	0	18	53.8	700	16077	20	57	
55 to 59	2	0	1	5	1	4	10	6	29	50.9	683	12616	37	196	
50 to 54	9	11	8	7	18	13	2	6	74	46.8	650	9282	70	462	
45 to 49	12	13	16	19	12	13	18	9	112	43.8	543	6286	177	1066	
40 to 44	15	13	14	15	15	20	25	31	148	39.5	410	3861	310	2241	
35 to 39	24	17	18	14	9	6	7	12	107	34.8	286	2158	434	4138	
30 to 34	11	21	16	10	16	13	10	9	106	30.0	174	1021	546	6601	
25 to 29	5	3	5	10	10	13	12	6	64	25.6	85	394	635	9574	
20 to 24	5	5	4	3	0	2	6	7	32	20.4	37	113	683	12893	
15 to 19	4	4	5	1	0	0	0	3	17	17.2	5	8	715	16388	
Dec															
45 to 49	2	2	2	3	1	0	0	1	11	42.7	744	11619	0	0	
40 to 44	1	1	4	8	14	6	2	2	38	38.0	725	7935	19	36	
35 to 39	18	17	16	20	35	34	26	20	186	34.8	651	4448	93	269	
30 to 34	35	30	32	32	27	37	48	39	280	30.5	423	1730	321	1271	
25 to 29	24	28	28	29	16	13	11	24	173	26.2	137	385	607	3646	
20 to 24	11	15	10	1	0	3	6	5	51	21.8	25	42	719	7023	
15 to 19	2	0	1	0	0	0	0	2	5	18.0	0	0	744	10701	

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

BUFFALO, NEW YORK
WBAN 14733
TABLE B:

TRY Data (1974)

Latitude 42.80 N
Longitude 78.70 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	
85 to 89	0	0	0	1	12	18	1	0	32	0.0	0.0	0.0	72.0	68.0	67.5	74.0	0.0	68.0		
80 to 84	0	0	2	39	73	61	9	1	185	0.0	0.0	70.0	67.3	66.5	65.5	68.1	70.0	66.5		
75 to 79	10	8	26	73	84	80	49	15	345	69.5	68.8	67.8	66.0	64.5	64.0	65.7	67.4	65.5		
70 to 74	37	26	81	119	126	119	90	61	659	66.0	66.3	64.5	62.0	61.0	61.5	63.7	65.0	62.9		
65 to 69	83	78	102	109	84	99	112	96	763	61.0	62.0	61.0	58.9	57.5	58.2	60.3	61.1	60.0		
60 to 64	126	105	115	81	80	61	105	131	804	58.1	58.0	56.9	54.7	53.2	53.5	55.7	57.6	56.3		
55 to 59	110	129	92	59	71	68	87	110	726	53.7	54.3	53.0	50.6	48.5	49.1	51.5	52.8	52.1		
50 to 54	89	95	62	85	72	61	65	70	599	48.5	48.6	47.3	45.4	45.2	45.3	46.4	47.6	46.9		
45 to 49	95	94	90	74	47	69	72	69	610	43.6	43.5	43.3	41.7	41.9	41.8	42.0	42.8	42.7		
40 to 44	70	75	80	74	87	77	91	98	660	38.6	39.1	38.5	37.8	37.8	38.5	38.7	38.8	38.5		
35 to 39	126	113	105	115	128	117	107	114	925	34.4	34.9	34.6	33.5	33.6	33.9	34.2	34.3	34.2		
30 to 34	120	136	106	88	83	108	125	118	884	30.5	30.3	29.9	29.2	29.0	29.9	30.0	30.2	29.9		
25 to 29	77	73	85	74	63	64	68	79	583	25.7	25.6	25.3	25.3	25.1	24.8	25.2	25.5	25.3		
20 to 24	64	69	47	44	53	47	36	52	412	20.7	20.6	20.3	19.7	19.7	19.6	20.6	20.7	20.3		
15 to 19	40	43	49	34	17	23	43	37	286	16.3	16.7	16.7	15.7	15.1	16.2	16.5	16.4	16.3		
10 to 14	23	22	24	22	15	19	22	24	171	10.9	11.3	10.9	11.0	10.9	10.3	11.0	11.6	11.0		
5 to 9	22	25	18	4	0	4	13	17	103	6.0	5.6	5.6	7.0	0.0	7.0	6.7	6.6	6.1		
0 to 4	3	4	3	0	0	0	0	3	13	2.7	2.3	2.0	0.0	0.0	0.0	0.0	3.0	2.5		

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	27.2	56	5	34	21	25.2	81	77	73	81	80	0.0025	0.0025	0.0025	0.0026	0.0026	13.6
Feb	22.6	54	0	29	16	20.5	81	74	70	81	77	0.0018	0.0018	0.0020	0.0020	0.0019	12.4
Mar	33.1	70	5	40	26	30.1	77	68	65	74	72	0.0029	0.0029	0.0031	0.0031	0.0030	13.7
Apr	46.2	75	23	55	38	41.2	80	63	61	72	70	0.0044	0.0049	0.0049	0.0047	0.0048	14.1
May	53.2	87	31	62	44	47.7	82	64	56	70	70	0.0061	0.0065	0.0059	0.0062	0.0062	11.6
Jun	65.4	86	49	74	57	58.1	80	63	53	66	67	0.0087	0.0092	0.0091	0.0092	0.0091	11.3
Jul	70.6	89	51	79	61	62.4	81	63	50	63	66	0.0104	0.0111	0.0101	0.0106	0.0106	11.4
Aug	69.9	87	55	78	61	62.9	82	64	56	70	70	0.0105	0.0112	0.0110	0.0114	0.0110	9.3
Sep	59.5	78	35	67	52	53.6	78	65	56	71	69	0.0076	0.0081	0.0080	0.0082	0.0079	10.5
Oct	49.0	74	26	58	41	43.0	73	64	49	63	64	0.0048	0.0052	0.0048	0.0049	0.0049	11.6
Nov	40.3	70	15	47	34	37.4	83	78	74	78	79	0.0043	0.0044	0.0046	0.0043	0.0044	11.6
Dec	31.9	46	18	36	27	30.5	90	88	83	85	87	0.0032	0.0033	0.0034	0.0032	0.0032	11.7
Year	47.5	89	0	55	40	42.8	81	69	62	73	73	0.0056	0.0059	0.0058	0.0059	0.0058	11.9

BUFFALO, NEW YORK
WBAN 14733
TABLE 0:

TRY Data (1974)

Latitude 42.80 N
Longitude 78.70 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	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	100s*	Base	100s*			
90	0	483	0	0	436	0	0	411	0	0	422	0	0	463	0	0	1505	0	0	0	0	8760	3719	0	0			
89	0	473	0	0	425	0	0	400	0	0	411	0	0	452	0	0	1472	0	0	0	0	8759	3632	1	0			
88	0	462	0	0	414	0	1	389	0	1	400	0	0	441	0	0	1439	0	0	0	0	8757	3544	3	0			
87	0	451	0	0	403	0	2	378	0	2	389	0	0	430	0	0	1406	0	0	0	0	8755	3456	5	0			
86	0	440	0	0	392	0	4	367	0	6	378	0	0	419	0	0	1374	0	0	0	0	8749	3369	11	0			
85	0	429	0	0	381	0	9	356	0	14	367	0	0	408	0	0	1341	0	0	0	0	8736	3281	24	0			
84	0	418	0	1	370	0	16	345	0	22	356	0	1	397	0	0	1308	0	0	0	0	8718	3194	42	1			
83	0	407	0	4	359	0	28	334	0	28	346	1	2	386	0	0	1275	0	0	0	0	8697	3107	63	1			
82	0	396	0	9	348	0	44	324	1	36	335	1	4	375	0	0	1242	0	0	0	0	8665	3020	95	2			
81	0	385	0	18	337	0	60	313	1	50	324	1	7	364	0	0	1209	0	0	0	0	8624	2934	136	3			
80	1	374	0	31	327	0	76	303	2	69	314	2	9	353	0	0	1177	0	0	0	0	8573	2848	187	5			
79	4	363	0	42	316	1	93	293	3	83	304	3	14	343	0	2	1144	0	0	0	0	8520	2762	240	7			
78	6	352	0	53	306	1	110	283	4	93	294	4	19	332	0	7	1111	0	0	0	0	8469	2677	291	9			
77	9	341	0	69	295	2	126	273	5	109	284	5	24	321	1	12	1078	0	0	0	0	8409	2593	351	13			
76	15	330	0	86	285	3	140	264	6	131	274	6	35	310	1	16	1045	0	0	0	0	8335	2509	425	16			
75	23	320	0	105	275	4	158	254	8	150	265	7	50	300	1	27	1013	0	0	0	0	8246	2426	514	21			
74	34	309	1	123	265	5	182	245	10	169	255	9	66	290	2	38	980	1	0	0	0	8147	2344	613	27			
73	48	298	1	149	256	6	208	236	12	193	246	11	79	279	3	51	948	1	0	0	0	8031	2263	729	33			
72	62	288	2	178	246	8	239	227	14	224	237	13	97	269	4	68	916	2	0	0	0	7891	2184	869	41			
71	75	278	2	201	237	10	268	219	16	248	229	15	118	259	5	96	883	3	0	0	0	7752	2105	1008	51			
70	95	268	3	221	228	12	288	211	19	266	220	18	138	250	6	137	852	4	0	0	0	7613	2029	1147	61			
69	116	258	4	243	220	14	306	203	22	289	212	20	162	240	7	182	821	5	0	0	0	7460	1953	1300	74			
68	133	248	6	263	211	17	325	195	25	313	204	23	187	231	9	227	790	7	0	0	0	7310	1879	1450	87			
67	155	239	7	282	203	19	339	187	29	333	196	27	212	222	11	270	759	10	0	0	0	7168	1807	1592	103			
66	178	229	9	305	195	22	355	180	32	350	189	30	232	213	13	317	729	13	0	0	0	7023	1736	1737	119			
65	199	220	11	329	187	25	371	173	36	368	182	34	250	205	16	378	700	16	0	0	0	6862	1667	1898	157			
64	223	211	13	348	180	29	389	165	39	381	174	37	272	196	18	447	671	20	0	0	0	6699	1599	2061	157			
63	247	203	15	366	172	32	406	158	43	393	167	41	294	188	21	517	643	25	0	0	0	6535	1533	2225	179			
62	269	194	18	385	165	36	419	152	48	407	160	45	315	180	24	588	616	31	0	0	0	6375	1468	2385	202			
61	292	186	20	399	158	40	432	145	52	416	153	49	334	173	28	662	589	37	0	0	0	6222	1405	2538	226			
60	316	178	23	413	151	44	449	138	56	429	147	54	355	165	31	739	564	44	0	0	0	6057	1344	2703	252			
59	336	171	27	430	145	48	466	132	61	443	140	58	372	158	35	808	538	52	0	0	0	5904	1284	2856	280			
58	357	163	30	442	138	53	480	126	66	456	134	62	390	151	38	873	514	60	0	0	0	5760	1226	3000	310			
57	375	156	34	451	132	57	495	120	70	474	127	67	411	144	42	945	490	69	0	0	0	5608	1169	3152	340			
56	391	149	38	460	125	62	507	114	75	490	121	72	424	137	47	1022	467	79	0	0	0	5464	1113	3296	373			
55	409	142	42	472	119	66	520	108	81	501	115	77	441	130	51	1093	445	90	0	0	0	5322	1059	3438	406			
54	423	135	46	489	113	71	534	102	86	512	109	82	457	124	55	1155	423	101	0	0	0	5188	1007	3572	441			
53	436	128	50	504	107	76	544	97	91	524	104	87	469	118	60	1207	402	113	0	0	0	5074	956	3686	478			
52	448	122	55	519	101	81	555	91	97	535	98	92	485	112	65	1257	382	125	0	0	0	4959	905	3801	515			
51	459	115	59	536	95	87	573	86	102	545	92	98	501	105	70	1309	362	138	0	0	0	4835	856	3925	554			
50	472	109	64	556	90	92	593	81	108	558	87	103	513	100	75	1357	342	151	0	0	0	4709	809	4051	594			
49	495	103	69	572	85	98	604	76	114	574	82	109	523	94	80	1404	323	165	0	0	0	4586	762	4174	635			
48	517	97	74	586	79	104	614	71	120	590	77	115	532	88	85	1457	305	179	0	0	0	4463	717	4297	677			
47	532	91	79	598	74	109	625	66	127	603	72	121	543	83	91	1504	287	194	0	0	0	4353	673	4407	721			
46	548	86	84	613	69	116	633	62	133	615	67	127	561	77	96	1549	269	209	0	0	0	4240	630	4520	765			
45	562	81	90	631	65	122	643	57	139	629	62	133	581	72	102	1606	252	225	0	0	0	4106	588	4654	811			

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

BUFFALO, NEW YORK
WBAN 14733
TABLE 0:

TRY Data (1974)

Latitude 42.80 N
Longitude 78.70 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																							
	7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**				10PM-6AM**			
	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)*		Above (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
44	580	75	96	645	60	128	658	53	146	644	57	140	602	67	108	1657	236	242	3972	548	4788	858		
43	600	70	101	657	56	135	675	48	152	664	53	146	624	62	114	1702	219	258	3836	509	4924	907		
42	619	65	108	674	51	141	693	44	159	683	49	153	642	57	120	1755	204	276	3693	471	5067	957		
41	638	61	114	690	47	148	708	40	166	695	45	160	656	53	127	1813	189	293	3558	435	5202	1008		
40	652	56	120	705	43	155	725	36	173	707	41	167	671	49	133	1862	174	312	3437	400	5323	1061		
39	668	52	127	721	39	162	744	33	181	722	37	174	688	45	140	1919	160	331	3295	366	5465	1115		
38	688	48	134	737	36	170	762	29	188	740	33	181	704	41	147	1994	147	350	3133	334	5627	1170		
37	709	44	141	759	32	177	786	26	196	755	30	189	727	37	154	2058	135	371	2963	303	5797	1227		
36	731	40	148	784	29	185	814	23	204	778	27	196	750	33	162	2117	123	391	2785	275	5975	1286		
35	752	36	155	812	26	193	846	21	212	812	24	204	772	30	169	2191	111	413	2574	248	6186	1347		
34	768	33	163	836	23	201	873	18	221	843	21	213	803	27	177	2271	101	435	2364	223	6396	1410		
33	792	30	171	854	21	209	894	16	230	868	19	221	827	24	185	2349	91	458	2175	200	6585	1475		
32	817	27	179	874	19	218	909	14	239	892	16	230	849	21	194	2423	82	482	1993	180	6767	1541		
31	833	24	187	893	17	227	920	12	248	916	15	239	873	19	202	2498	74	507	1825	161	6935	1610		
30	856	22	195	910	15	236	936	11	257	933	13	248	898	17	211	2573	66	532	1653	143	7107	1680		
29	877	20	204	926	13	245	955	9	267	947	11	258	919	15	220	2639	59	558	1495	128	7265	1752		
28	893	17	213	945	11	254	972	8	276	963	10	267	936	13	230	2690	53	585	1359	113	7401	1825		
27	910	16	222	963	10	264	988	7	286	976	9	277	952	12	239	2735	48	612	1234	100	7526	1900		
26	929	14	231	979	9	274	999	6	296	987	8	287	960	11	249	2779	42	640	1125	89	7635	1976		
25	946	12	241	989	8	284	1006	5	306	997	6	297	972	9	258	2818	37	668	1031	78	7729	2053		
24	959	11	250	993	6	293	1013	4	316	1004	6	307	986	8	268	2857	33	696	947	68	7813	2130		
23	969	10	260	1000	6	303	1021	3	326	1011	5	317	995	7	278	2895	29	725	867	59	7893	2209		
22	978	8	269	1009	5	314	1035	3	337	1020	4	327	1004	6	288	2931	25	754	781	51	7979	2288		
21	987	7	279	1017	4	324	1048	2	347	1031	3	337	1012	5	298	2966	22	783	697	43	8063	2369		
20	996	6	289	1028	3	334	1057	2	358	1044	3	347	1016	4	308	3003	19	813	615	37	8145	2450		
19	1007	5	299	1040	2	344	1064	1	368	1053	2	358	1023	4	318	3033	16	844	538	31	8222	2531		
18	1022	4	309	1049	2	355	1068	1	379	1059	2	369	1035	3	329	3058	14	874	469	26	8291	2614		
17	1034	4	320	1056	2	365	1072	1	390	1063	1	379	1043	2	339	3091	12	905	399	22	8361	2697		
16	1042	3	330	1062	1	376	1076	1	400	1068	1	390	1049	2	350	3118	10	936	343	18	8417	2781		
15	1047	3	340	1066	1	386	1079	0	411	1071	1	401	1056	2	360	3134	8	967	305	15	8455	2866		
14	1051	2	351	1072	1	397	1080	0	422	1073	1	411	1063	1	371	3148	7	998	271	12	8489	2950		
13	1056	2	362	1078	0	408	1084	0	433	1074	0	422	1068	1	381	3165	6	1030	233	9	8527	3035		
12	1062	1	372	1082	0	419	1089	0	444	1079	0	433	1071	1	392	3183	4	1062	192	7	8568	3121		
11	1066	1	383	1086	0	430	1092	0	454	1086	0	444	1076	0	403	3194	4	1094	158	5	8602	3207		
10	1071	1	393	1090	0	440	1095	0	465	1090	0	454	1080	0	414	3204	3	1126	129	4	8631	3293		
9	1074	1	404	1091	0	451	1095	0	476	1092	0	465	1083	0	424	3214	2	1158	109	3	8651	3379		
8	1076	0	415	1093	0	462	1095	0	487	1094	0	476	1087	0	435	3224	1	1190	90	2	8670	3466		
7	1080	0	426	1094	0	473	1095	0	498	1095	0	487	1091	0	446	3241	1	1222	63	1	8697	3553		
6	1083	0	437	1094	0	484	1095	0	509	1095	0	498	1094	0	457	3260	0	1255	38	1	8722	3640		
5	1088	0	447	1094	0	495	1095	0	520	1095	0	509	1095	0	468	3271	0	1287	20	0	8740	3727		
4	1092	0	458	1095	0	506	1095	0	531	1095	0	520	1095	0	479	3276	0	1320	11	0	8749	3815		
3	1093	0	469	1095	0	517	1095	0	542	1095	0	531	1095	0	490	3280	0	1353	7	0	8753	3902		
2	1094	0	480	1095	0	528	1095	0	553	1095	0	542	1095	0	501	3283	0	1386	3	0	8757	3990		
1	1094	0	491	1095	0	539	1095	0	564	1095	0	553	1095	0	512	3284	0	1419	1	0	8759	4077		
0	1094	0	502	1095	0	550	1095	0	575	1095	0	564	1095	0	523	3285	0	1451	0	0	8760	4165		
-1	1095	0	513	1095	0	561	1095	0	586	1095	0	575	1095	0	534	3285	0	1484	0	0	8760	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

BUFFALO, NEW YORK
WBAN 14733
TABLE E:

TRY Data (1974)

Latitude 42.80 N
Longitude 78.70 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:	3452	3016	2529	1875	1273	720	300	68	1	0	0
Annual Wet Bulb Cooling deg-hrs:	35994.	26107.	17545.	10611.	5597.	2419.	705.	99.	1.	0.	0.

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

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **												COOLING HUMIDITY RATIO HOURS **												Maintained Indoor Humidity Ratio
	Heating Degree Base												Cooling Degree Base												
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80			
.001	0	0	0	0	0	0	0	0	0	0	0	37	36	34	32	30	27	22	16	10	4	1	.001		
.002	1	1	1	1	1	1	1	1	1	1	1	30	30	29	27	26	24	20	15	9	4	1	.002		
.003	3	3	4	4	4	4	4	4	4	4	4	24	24	24	23	22	20	17	13	8	4	1	.003		
.004	4	6	7	7	7	7	7	7	7	7	7	19	19	19	19	18	17	15	11	7	3	1	.004		
.005	6	8	10	11	11	12	12	12	12	12	12	15	15	15	15	14	14	12	9	6	3	1	.005		
.006	7	11	13	15	16	16	17	17	17	17	17	11	11	11	11	11	11	10	7	5	2	1	.006		
.007	9	13	17	19	20	21	22	22	23	23	23	8	8	8	8	8	8	7	6	4	2	1	.007		
.008	11	16	20	23	25	27	28	28	29	29	29	6	6	6	6	6	6	5	4	3	1	0	.008		
.009	12	18	23	27	30	32	33	34	35	36	36	4	4	4	4	4	4	4	3	2	1	0	.009		
.010	14	20	27	31	34	37	39	41	42	43	43	2	2	2	2	2	2	2	2	1	1	0	.010		
.011	15	23	30	35	39	42	45	48	49	50	51	1	1	1	1	1	1	1	1	1	0	0	.011		
.012	17	25	34	39	44	48	51	54	57	58	59	1	1	1	1	1	1	1	1	0	0	0	.012		
.013	18	28	37	43	48	53	57	61	64	66	67	0	0	0	0	0	0	0	0	0	0	0	.013		
.014	20	30	40	47	53	58	63	68	72	74	75	0	0	0	0	0	0	0	0	0	0	0	.014		
.015	22	33	44	51	58	63	69	75	79	82	84	0	0	0	0	0	0	0	0	0	0	0	.015		
.016	23	35	47	55	62	69	75	82	87	91	92	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	25	38	50	59	67	74	81	88	94	99	101	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	26	40	54	63	72	79	87	95	102	107	109	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	72	71	60	60	64	64	56	66	61	51	74	65	62
VERTICAL													
NORTH	100	100	100	99	96	94	92	98	100	100	100	100	97
WEST	78	82	66	74	75	76	67	81	71	56	80	70	73
SOUTH	57	63	61	72	83	86	81	79	66	46	62	49	70
EAST	72	73	73	69	75	76	70	71	68	63	76	76	72
% Possible Sun	33	39	46	53	58	66	69	66	59	52	29	27	52

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

BUFFALO, NEW YORK
WBAN 14733

TRY Data (1974)

Latitude 42.80 N
Longitude 78.70 E

TABLE H:

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

Month	Under Clear Sky Assumption*											Corrected For Cloud Cover**											
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S-45 ***	horiz	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S-45 ***	horiz	Obs ***
Jan	1816	1690	1347	1019	593	292	158	136	135	1802	828	453	434	370	303	215	153	126	121	121	430	287	349
Feb	1926	1798	1491	1206	786	453	255	184	180	2107	1170	550	536	476	410	312	235	193	177	176	554	419	546
Mar	1824	1753	1579	1403	1067	731	472	303	256	2358	1668	794	753	683	616	506	404	334	289	277	899	745	889
Apr	1480	1540	1534	1505	1301	1023	743	513	363	2402	2138	964	994	978	951	849	724	607	514	454	1240	1201	1315
May	1185	1325	1436	1517	1430	1227	969	714	526	2344	2456	939	986	1013	1028	972	873	763	659	587	1294	1399	1597
Jun	1059	1218	1382	1516	1488	1332	1093	835	633	2297	2588	937	988	1031	1064	1028	944	839	732	664	1351	1521	1804
Jul	1110	1259	1396	1502	1446	1276	1033	781	589	2293	2511	974	1032	1083	1119	1076	981	859	734	645	1451	1614	1776
Aug	1330	1424	1466	1479	1327	1088	829	596	435	2321	2231	976	1033	1041	1031	945	823	702	599	531	1266	1295	1513
Sep	1651	1625	1514	1399	1125	821	565	382	304	2301	1801	872	873	829	777	663	541	441	372	343	1030	907	1152
Oct	1856	1743	1486	1243	873	535	325	226	215	2141	1316	769	711	613	524	400	293	227	196	193	831	584	784
Nov	1811	1687	1360	1039	636	323	185	151	151	1853	915	456	436	375	312	229	167	142	135	135	439	311	403
Dec	1725	1611	1276	942	531	242	138	124	124	1674	734	459	426	348	269	178	125	109	106	106	435	268	283
Year	1562	1555	1438	1314	1051	780	565	413	327	2158	1699	763	768	738	702	616	524	447	387	354	937	882	1034

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	1568	1439	1129	840	472	214	120	110	110	379	361	306	248	173	120	101	99	98
Feb	1643	1514	1248	1001	640	345	188	148	146	457	445	394	337	254	188	154	144	143
Mar	1489	1453	1312	1170	879	582	357	232	207	646	615	558	505	412	326	266	232	224
Apr	1132	1234	1259	1247	1075	832	587	390	285	762	801	798	780	695	589	489	408	365
May	856	1012	1157	1249	1182	1010	778	557	395	735	786	823	842	796	713	617	528	468
Jun	746	907	1100	1243	1230	1098	880	654	472	731	783	833	868	841	770	678	587	528
Jul	790	947	1116	1233	1196	1049	829	610	440	753	812	875	916	884	804	696	588	507
Aug	1000	1125	1197	1225	1100	893	662	462	338	774	835	853	849	777	672	567	480	428
Sep	1322	1334	1256	1164	926	659	437	293	246	702	714	682	642	544	438	351	297	279
Oct	1563	1460	1241	1038	708	418	244	178	174	639	587	504	432	325	234	179	159	156
Nov	1561	1432	1137	863	505	244	138	123	122	381	362	310	256	184	134	114	110	110
Dec	1495	1380	1070	775	417	179	105	100	100	387	356	286	217	142	100	88	86	86
Year	1261	1268	1185	1088	862	628	445	322	254	613	622	603	576	504	425	359	311	283

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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BURLINGTON, VERMONT
WBAN 14742
TABLE A:

TRY Data (1966)

Latitude 44.50 N
Longitude 73.20 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence In time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Jan														
55 to 59	0	1	1	0	0	0	0	0	2	48.5	744	30867	0	0
50 to 54	3	2	2	3	1	0	0	1	12	45.3	736	27159	8	12
45 to 49	0	0	0	0	2	1	0	0	3	38.0	728	23503	16	76
40 to 44	0	0	0	0	0	2	0	0	2	35.0	727	19866	17	159
35 to 39	0	0	0	3	6	4	6	1	20	32.5	725	16239	19	252
30 to 34	3	6	9	8	10	9	6	10	61	29.6	680	12697	64	430
25 to 29	17	12	11	15	13	13	16	13	110	25.7	602	9455	142	908
20 to 24	13	16	14	12	16	15	7	12	105	20.4	494	6732	250	1905
15 to 19	16	16	10	9	4	10	20	11	96	16.4	383	4529	361	3422
10 to 14	11	6	9	13	17	11	5	15	87	11.2	290	2836	454	5449
5 to 9	5	8	10	10	17	19	7	5	81	5.7	215	1567	529	7900
0 to 4	11	10	8	12	7	5	17	13	83	1.5	119	721	625	10774
-5 to -1	7	7	9	6	0	4	7	9	49	-3.5	63	275	681	14048
-10 to -6	6	5	7	1	0	0	2	3	24	-7.4	20	79	724	17572
-15 to-11	1	2	0	1	0	0	0	0	4	-12.0	6	24	738	21237
-20 to-16	0	2	3	0	0	0	0	0	5	-17.2	2	2	742	24935
Feb														
50 to 54	0	0	0	1	3	1	0	0	5	41.8	672	22525	0	0
45 to 49	0	0	0	0	0	2	0	0	2	37.0	666	19180	6	15
40 to 44	4	3	3	6	7	6	5	3	37	38.2	649	15862	23	57
35 to 39	3	5	3	8	8	8	5	7	47	32.3	611	12713	61	268
30 to 34	8	5	10	5	14	12	17	8	79	28.9	554	9790	118	705
25 to 29	9	9	7	14	8	11	8	7	73	24.6	482	7214	190	1489
20 to 24	0	4	4	16	22	18	5	6	75	20.2	399	5020	273	2655
15 to 19	20	15	15	12	9	7	17	17	112	15.5	305	3222	367	4217
10 to 14	13	13	17	8	4	7	6	12	80	11.6	200	1938	472	6293
5 to 9	8	12	9	3	4	6	9	6	57	6.3	137	1097	535	8812
0 to 4	9	4	4	6	5	3	4	9	44	1.6	84	552	588	11627
-5 to -1	3	5	3	5	0	3	8	4	31	-3.5	48	225	624	14660
-10 to -6	5	3	6	0	0	0	0	5	19	-8.1	23	63	649	17858
-15 to-11	2	6	3	0	0	0	0	0	11	-11.5	1	1	671	21156
Mar														
55 to 59	0	0	0	0	1	1	0	0	2	46.5	744	19815	0	0
50 to 54	1	0	0	3	6	3	3	2	18	45.4	735	16109	9	14
45 to 49	3	2	3	8	9	9	6	3	43	42.1	708	12486	36	111
40 to 44	6	11	10	12	19	18	4	9	89	37.0	656	9070	88	415
35 to 39	18	13	14	22	19	20	27	19	152	33.6	542	6039	202	1104
30 to 34	13	12	18	17	13	22	20	15	130	29.1	391	3745	353	2530
25 to 29	15	19	15	9	12	7	17	19	113	25.1	243	2155	501	4660
20 to 24	10	3	4	8	11	8	4	8	56	19.1	175	1138	569	7363
15 to 19	12	12	16	12	3	5	10	12	82	14.7	111	406	633	10351
10 to 14	14	17	12	2	0	0	2	6	53	11.0	33	64	711	13729
5 to 9	1	4	1	0	0	0	0	0	6	8.0	0	0	744	17385

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

BURLINGTON, VERMONT
WBAN 14742
TABLE A:

TRY Data (1966)

Latitude 44.50 N
Longitude 73.20 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														
65 to 69	0	0	0	1	3	3	0	0	7	55.7	720	18953	0	0
60 to 64	0	0	0	1	7	3	0	0	11	47.2	709	15380	11	27
55 to 59	0	0	2	9	16	17	3	0	47	44.4	693	11865	27	112
50 to 54	0	0	5	18	11	15	13	11	73	43.1	620	8568	100	415
45 to 49	11	8	15	17	19	14	19	6	109	41.3	534	5635	186	1082
40 to 44	4	7	14	19	17	21	16	6	104	36.9	433	3218	287	2265
35 to 39	20	15	25	16	12	14	31	37	170	32.9	311	1333	409	3980
30 to 34	48	47	26	9	5	3	8	28	174	29.7	121	239	599	6486
25 to 29	7	10	3	0	0	0	0	2	22	25.0	10	24	710	9871
20 to 24	0	3	0	0	0	0	0	0	3	19.0	0	0	720	13447
May														
80 to 84	0	0	0	3	9	8	0	0	20	63.7	739	22960	5	4
75 to 79	0	0	1	5	4	5	3	0	18	60.6	717	19319	27	83
70 to 74	0	0	3	9	10	8	8	2	40	57.4	690	15780	54	264
65 to 69	6	0	8	11	4	9	5	6	49	56.4	643	12434	101	638
60 to 64	4	10	16	11	18	10	16	5	90	54.1	591	9336	153	1260
55 to 59	9	7	11	18	16	8	7	13	89	50.7	499	6625	245	2269
50 to 54	16	15	11	9	9	20	15	18	113	47.2	393	4390	351	3754
45 to 49	16	15	12	8	9	11	12	11	94	42.3	283	2697	461	5781
40 to 44	12	11	10	8	8	10	13	10	82	38.0	203	1501	541	8305
35 to 39	6	7	10	6	3	1	10	9	52	33.7	123	692	621	11216
30 to 34	14	15	9	5	3	3	4	17	70	29.9	74	187	670	14431
25 to 29	10	13	2	0	0	0	0	2	27	25.6	11	11	733	17975
Jun														
90 to 94	0	0	0	0	1	0	0	0	1	69.0	720	19507	0	0
85 to 89	0	0	0	2	12	6	0	0	20	70.9	717	15912	3	5
80 to 84	0	0	0	16	13	16	3	0	48	69.6	679	12406	41	99
75 to 79	1	0	10	11	21	21	12	2	78	66.3	625	9137	95	430
70 to 74	5	5	15	26	18	15	20	11	115	64.1	521	6238	199	1131
65 to 69	9	8	20	16	7	12	26	17	115	60.9	417	3881	303	2374
60 to 64	27	26	19	6	12	14	13	28	145	58.0	287	2116	433	4209
55 to 59	18	22	18	11	6	5	7	13	100	54.6	141	1056	579	6749
50 to 54	12	11	3	2	0	1	5	6	40	50.3	78	525	642	9818
45 to 49	6	8	4	0	0	0	4	7	29	45.3	47	213	673	13106
40 to 44	8	5	1	0	0	0	0	6	20	42.0	17	49	703	16542
35 to 39	4	5	0	0	0	0	0	0	9	38.2	2	1	718	20094

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

BURLINGTON, VERMONT

WBAN 14742

TABLE A:

TRY Data (1966)

Latitude 44.50 N

Longitude 73.20 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day 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	3	2	0	0	5	73.2	743	20494	1	1
90 to 94	0	0	0	2	3	2	0	0	7	73.4	738	16794	6	25
85 to 89	0	0	1	6	14	10	2	0	33	70.1	724	13128	20	75
80 to 84	0	0	3	22	26	35	5	1	92	67.3	675	9616	69	283
75 to 79	1	0	13	26	20	20	23	7	110	64.4	568	6511	176	898
70 to 74	22	15	29	18	19	11	32	22	168	62.8	432	3979	312	2086
65 to 69	13	26	22	12	6	9	15	15	118	61.3	279	2234	465	4061
60 to 64	20	11	17	7	1	1	9	24	90	58.3	178	1112	566	6659
55 to 59	11	13	7	0	1	3	7	17	59	54.8	102	448	642	9715
50 to 54	22	19	1	0	0	0	0	7	49	50.7	42	102	702	13089
45 to 49	4	9	0	0	0	0	0	0	13	47.0	4	3	740	16710
Aug														
90 to 94	0	0	0	0	1	0	0	0	1	71.0	744	18623	0	0
85 to 89	0	0	0	2	10	5	0	0	17	70.4	741	14907	3	4
80 to 84	0	0	0	14	19	13	2	0	48	69.5	713	11271	31	88
75 to 79	0	0	6	20	18	18	11	3	76	66.6	651	7851	93	388
70 to 74	14	10	19	22	27	31	23	17	163	64.2	556	4811	188	1068
65 to 69	12	17	27	29	13	23	31	15	167	62.2	370	2488	374	2465
60 to 64	29	22	29	6	5	3	20	37	151	59.3	208	1040	536	4737
55 to 59	21	21	7	0	0	0	6	13	68	55.5	78	351	666	7768
50 to 54	14	17	5	0	0	0	0	8	44	51.5	35	69	709	11206
45 to 49	3	6	0	0	0	0	0	0	9	48.3	1	1	743	14858
Sep														
80 to 84	0	0	0	0	2	1	0	0	3	68.7	720	18973	0	0
75 to 79	0	0	0	3	9	8	0	0	20	66.3	711	15389	9	16
70 to 74	0	0	1	10	13	9	5	0	38	62.2	683	11897	37	124
65 to 69	0	0	5	16	18	16	7	3	65	59.5	634	8587	86	414
60 to 64	13	8	18	16	12	13	12	17	109	57.2	556	5597	164	1024
55 to 59	21	18	17	19	24	21	25	18	163	53.3	424	3110	296	2137
50 to 54	17	24	28	24	10	19	26	26	174	49.0	243	1420	477	4047
45 to 49	19	18	11	2	2	3	10	11	76	45.3	111	572	609	6799
40 to 44	14	11	8	0	0	0	4	11	48	41.3	53	179	667	10006
35 to 39	6	9	2	0	0	0	1	4	22	36.7	16	27	704	13454
30 to 34	0	2	0	0	0	0	0	0	2	33.5	0	0	720	17027

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

BURLINGTON, VERMONT

WBAN 14742

TABLE A:

TRY Data (1966)

Latitude 44.50 N

Longitude 73.20 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 10-12	13-15	16-18	19-21	22-24	hours below			degree hours	hours above	degree hours	
Oct															
70 to 74	0	0	0	1	6	1	0	0	8	58.9	742	18553	2	1	
65 to 69	0	0	0	4	4	7	2	0	17	56.6	733	14866	11	34	
60 to 64	5	2	6	10	17	8	9	5	62	53.6	700	11265	44	153	
55 to 59	5	7	9	24	16	19	9	10	99	50.3	620	7951	124	559	
50 to 54	17	18	18	21	26	25	16	13	154	46.4	496	5116	248	1444	
45 to 49	13	10	15	12	11	13	24	17	115	42.5	369	2992	375	3040	
40 to 44	22	25	19	13	10	15	18	22	144	38.9	238	1462	506	5230	
35 to 39	13	13	12	5	3	3	9	11	69	34.8	111	630	633	8118	
30 to 34	11	7	9	2	0	2	4	12	47	29.8	62	223	682	11431	
25 to 29	6	11	5	1	0	0	2	0	25	25.7	15	39	729	14967	
20 to 24	1	0	0	0	0	0	0	3	4	20.3	4	7	740	18655	
Nov															
65 to 69	3	3	1	1	2	0	0	0	10	61.6	719	19279	1	1	
60 to 64	1	0	3	5	8	10	6	6	39	59.1	685	15737	35	59	
55 to 59	7	3	2	9	13	8	9	6	57	52.9	655	12376	65	298	
50 to 54	6	9	11	9	3	9	8	8	63	49.3	588	9256	132	778	
45 to 49	6	11	11	18	22	8	7	6	89	43.1	522	6478	198	1600	
40 to 44	21	18	17	13	14	17	16	19	135	38.9	408	4128	312	2850	
35 to 39	21	12	14	15	12	17	11	17	119	33.8	290	2402	430	4724	
30 to 34	7	12	5	9	11	11	16	10	81	30.1	160	1275	580	7197	
25 to 29	1	4	13	10	5	10	9	1	53	24.5	102	613	618	10135	
20 to 24	8	9	7	1	0	0	8	11	44	20.9	58	217	662	13339	
15 to 19	9	6	5	0	0	0	0	6	26	16.7	19	38	701	16760	
10 to 14	0	3	1	0	0	0	0	0	4	13.8	0	0	720	20322	
Dec															
60 to 64	1	0	0	2	3	1	0	2	9	56.9	744	28066	0	0	
55 to 59	6	4	2	4	0	4	7	7	34	54.6	721	24389	23	43	
50 to 54	1	2	4	2	5	1	2	0	17	50.8	692	20855	52	229	
45 to 49	2	5	3	1	1	2	0	0	14	46.1	678	17428	66	522	
40 to 44	5	4	6	5	3	6	6	6	41	38.8	657	14075	87	889	
35 to 39	3	4	6	10	11	3	0	0	37	33.8	617	10903	127	1437	
30 to 34	9	8	7	8	14	14	7	9	76	29.3	561	7934	183	2188	
25 to 29	10	10	8	8	13	18	25	19	111	24.7	478	5314	266	3288	
20 to 24	12	14	18	22	20	16	10	8	120	20.2	361	3211	383	4905	
15 to 19	14	16	14	16	12	13	13	20	118	15.6	238	1726	506	7140	
10 to 14	11	14	11	10	11	8	11	7	83	10.8	138	801	606	9935	
5 to 9	8	3	6	5	0	7	10	6	45	6.6	67	320	677	13174	
0 to 4	7	4	5	0	0	0	2	9	27	2.2	25	100	719	16674	
-5 to -1	3	4	1	0	0	0	0	0	8	-2.4	8	23	736	20317	
-10 to -6	1	1	2	0	0	0	0	0	4	-7.3	1	3	743	24017	

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

BURLINGTON, VERMONT
WBAN 14742
TABLE B:

TRY Data (1966)

Latitude 44.50 N
Longitude 73.20 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	3	2	0	0	5	0.0	0.0	0.0	0.0	74.0	72.0	0.0	0.0	73.2
90 to 94	0	0	0	2	5	2	0	0	9	0.0	0.0	0.0	75.5	71.6	72.5	0.0	0.0	72.7
85 to 89	0	0	1	10	36	21	2	0	70	0.0	0.0	73.0	71.6	70.3	69.8	71.5	0.0	70.4
80 to 84	0	0	3	55	69	73	10	1	211	0.0	0.0	71.0	68.6	67.7	67.5	69.4	70.0	68.0
75 to 79	2	0	30	65	72	72	49	12	302	67.0	0.0	67.3	65.3	64.1	64.4	66.6	67.8	65.3
70 to 74	41	30	67	86	93	75	88	52	532	65.2	65.0	64.5	61.9	60.8	61.6	63.6	65.0	63.0
65 to 69	43	54	83	90	57	79	86	56	548	62.6	63.4	61.1	59.2	58.3	59.2	60.7	62.4	60.6
60 to 64	100	79	108	64	83	63	85	124	706	58.7	58.8	57.4	56.1	54.2	55.6	57.1	58.3	57.2
55 to 59	98	96	76	94	93	86	80	97	720	55.0	55.0	53.1	50.2	48.6	49.8	53.7	54.3	52.5
50 to 54	109	117	88	92	74	94	88	100	762	50.2	50.0	48.5	45.7	45.0	45.4	47.1	48.9	47.8
45 to 49	83	92	74	66	75	63	82	61	596	44.6	44.8	43.3	41.6	41.5	41.6	42.2	44.2	43.0
40 to 44	96	95	88	76	78	95	82	92	702	40.1	40.0	39.0	37.8	36.4	36.7	37.9	39.3	38.5
35 to 39	94	83	86	85	74	70	100	105	697	34.4	34.8	34.1	33.0	32.5	32.7	33.4	33.9	33.6
30 to 34	113	114	93	63	70	76	82	109	720	29.8	29.8	29.8	29.0	29.0	28.8	29.8	29.9	29.5
25 to 29	75	88	64	57	51	59	77	63	534	25.6	25.8	24.9	24.3	24.7	24.7	24.8	25.2	25.1
20 to 24	44	49	47	59	69	57	34	48	407	20.4	20.1	20.1	20.1	19.7	19.9	20.8	20.7	20.2
15 to 19	71	65	60	49	28	35	60	66	434	16.2	15.6	15.8	15.4	14.5	15.4	15.6	15.7	15.6
10 to 14	49	53	50	33	32	26	24	40	307	11.6	11.4	11.2	10.6	10.5	10.3	11.5	11.7	11.2
5 to 9	22	27	26	18	21	32	26	17	189	6.0	7.3	6.8	6.2	5.9	5.6	5.3	6.2	6.1
0 to 4	27	18	17	18	12	8	23	31	154	1.9	1.7	1.3	1.4	0.3	0.1	2.2	2.2	1.6
-5 to -1	13	16	13	11	0	7	15	13	88	-3.8	-3.1	-3.5	-3.1	0.0	-3.0	-3.3	-4.0	-3.4
-10 to -6	12	9	15	1	0	0	2	8	47	-7.9	-9.0	-7.1	-6.0	0.0	0.0	-7.0	-7.3	-7.7
-15 to -11	3	8	3	1	0	0	0	0	15	-11.3	-11.6	-12.0	-12.0	0.0	0.0	0.0	0.0	-11.7
-20 to -16	0	2	3	0	0	0	0	0	5	0.0	-17.5	-17.0	0.0	0.0	0.0	0.0	0.0	-17.2

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	Daily Min		4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	16.0	56	-19	23	8	14.7	84	81	75	81	81	0.0015	0.0015	0.0016	0.0015	0.0015	9.7
Feb	19.0	51	-13	28	10	17.1	84	77	66	77	78	0.0015	0.0017	0.0018	0.0017	0.0017	8.8
Mar	30.9	56	8	38	24	27.7	76	66	61	70	70	0.0024	0.0025	0.0028	0.0027	0.0026	9.7
Apr	41.2	67	23	50	32	35.9	76	55	48	63	63	0.0031	0.0033	0.0033	0.0035	0.0033	9.3
May	51.6	84	25	62	40	45.4	83	59	53	62	66	0.0052	0.0056	0.0056	0.0054	0.0055	9.5
Jun	65.4	90	37	77	54	59.4	92	65	58	72	74	0.0092	0.0102	0.0104	0.0101	0.0099	7.8
Jul	70.0	98	46	81	58	61.6	83	58	47	64	66	0.0094	0.0105	0.0101	0.0105	0.0102	9.1
Aug	67.5	90	47	77	57	61.8	88	68	60	77	75	0.0100	0.0109	0.0111	0.0113	0.0108	8.3
Sep	56.1	81	33	65	46	52.1	91	71	62	83	79	0.0072	0.0078	0.0079	0.0080	0.0077	8.4
Oct	47.6	73	20	56	38	42.9	81	67	58	71	71	0.0048	0.0052	0.0051	0.0050	0.0050	10.3
Nov	40.7	68	13	49	33	37.9	84	77	70	80	79	0.0043	0.0047	0.0047	0.0046	0.0046	10.5
Dec	24.8	61	-10	31	16	23.0	87	78	73	83	81	0.0024	0.0025	0.0025	0.0025	0.0025	9.8
Year	44.4	98	-19	53	35	40.1	84	69	61	73	73	0.0051	0.0055	0.0056	0.0056	0.0054	9.3

BURLINGTON, VERMONT
WBAN 14742

TRY Data (1966)

Latitude 44.50 N
Longitude 73.20 E

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

BASE TEMP (F)	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**		24 HOUR SUMMARY									
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	HEATING		COOLING							
	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Below Base 100s*	Deg Hrs Above 100s*	Below Base 100s*	Deg Hrs Above 100s*						
99	0	621	0	0	558	0	0	529	0	0	545	0	0	593	0	0	1941	0	8760	4786	0	0
98	0	610	0	0	548	0	0	518	0	0	534	0	0	582	0	0	1908	0	8759	4699	1	0
97	0	599	0	0	537	0	1	507	0	0	523	0	0	571	0	0	1875	0	8758	4611	2	0
96	0	588	0	0	526	0	2	496	0	1	512	0	0	560	0	0	1842	0	8757	4524	3	0
95	0	577	0	0	515	0	3	485	0	1	501	0	0	549	0	0	1810	0	8755	4436	5	0
94	0	566	0	0	504	0	3	474	0	2	490	0	0	538	0	0	1777	0	8754	4348	6	0
93	0	555	0	1	493	0	3	463	0	2	479	0	0	527	0	0	1744	0	8754	4261	6	0
92	0	544	0	1	482	0	3	452	0	2	468	0	0	516	0	0	1711	0	8753	4173	7	0
91	0	533	0	1	471	0	3	441	0	3	457	0	0	505	0	0	1678	0	8752	4086	8	0
90	0	522	0	2	460	0	5	430	0	3	446	0	0	494	0	0	1645	0	8749	3998	11	0
89	0	511	0	2	449	0	9	419	0	4	435	0	0	483	0	0	1613	0	8744	3911	16	1
88	0	500	0	3	438	0	12	409	0	5	424	0	1	472	0	0	1580	0	8738	3823	22	1
87	0	490	0	5	427	0	20	398	1	8	413	0	1	461	0	0	1547	0	8725	3736	35	1
86	0	479	0	7	416	0	31	387	1	15	403	0	1	450	0	0	1514	0	8705	3649	55	1
85	0	468	0	10	405	0	40	376	1	22	392	1	2	439	0	0	1481	0	8685	3562	75	2
84	1	457	0	14	395	0	50	366	2	28	381	1	2	429	0	0	1448	0	8663	3475	97	3
83	1	446	0	22	384	1	62	356	2	39	371	1	3	418	0	0	1415	0	8632	3389	128	4
82	1	435	0	32	373	1	75	345	3	54	360	2	5	407	0	0	1383	0	8591	3303	169	5
81	2	424	0	41	363	1	89	335	4	70	350	2	7	396	0	1	1350	0	8548	3217	212	7
80	4	413	0	56	352	2	104	325	5	88	340	3	10	385	0	1	1317	0	8496	3132	264	10
79	5	402	0	73	342	2	122	315	6	105	330	4	15	374	0	1	1284	0	8438	3047	322	13
78	6	391	0	84	332	3	138	306	7	121	320	5	23	363	1	1	1251	0	8385	2963	375	16
77	11	380	0	98	322	4	150	296	9	134	310	6	33	353	1	2	1218	0	8330	2879	430	20
76	19	369	0	111	312	5	166	287	10	146	301	8	43	342	1	6	1186	0	8268	2796	492	25
75	29	359	1	124	302	6	180	278	12	161	291	9	54	332	2	11	1153	0	8199	2714	561	30
74	38	348	1	139	292	8	194	269	14	178	282	11	68	321	2	21	1120	0	8120	2632	640	36
73	47	338	1	155	283	9	212	260	16	195	273	13	85	311	3	42	1088	1	8022	2551	738	43
72	61	327	2	172	274	11	230	251	18	211	264	15	100	301	4	66	1055	1	7918	2472	842	51
71	77	317	3	189	264	12	249	242	20	223	255	17	116	291	5	88	1023	2	7815	2393	945	60
70	93	307	3	208	255	14	268	234	23	237	246	19	137	282	6	119	991	3	7697	2315	1063	70
69	110	297	4	228	247	17	282	226	26	250	238	22	152	272	8	154	960	4	7582	2239	1178	81
68	128	287	6	250	238	19	294	218	29	267	230	24	161	263	9	182	929	6	7476	2164	1284	93
67	144	278	7	270	230	22	307	210	32	284	221	27	178	253	11	213	898	8	7363	2090	1397	107
66	157	268	9	286	222	24	318	202	35	299	213	30	199	244	13	244	867	10	7256	2017	1504	121
65	174	259	10	301	214	27	329	194	38	316	205	33	222	235	15	273	837	13	7143	1945	1617	137
64	195	250	12	315	206	30	343	187	41	330	198	36	245	227	17	316	807	16	7014	1874	1746	153
63	216	241	14	331	198	34	356	179	45	342	190	40	265	218	20	367	778	19	6881	1804	1879	172
62	238	232	16	344	190	37	370	172	48	354	183	43	285	210	23	423	749	23	6744	1736	2016	191
61	256	224	19	354	183	41	389	165	52	369	175	47	301	202	26	487	720	28	6603	1669	2157	212
60	277	215	22	365	176	44	408	158	56	381	168	51	313	194	29	557	693	33	6456	1604	2304	234
59	300	207	24	379	168	48	425	151	60	393	161	55	327	187	32	626	666	39	6308	1540	2452	258
58	315	199	28	397	161	52	443	144	65	407	154	59	342	179	35	688	640	45	6166	1478	2594	283
57	328	192	31	416	154	56	463	138	69	423	147	63	361	172	39	746	614	53	6022	1417	2738	310
56	342	184	34	433	148	60	481	132	74	439	141	67	378	164	43	801	589	60	5885	1357	2875	338
55	359	177	38	454	141	64	500	126	79	460	134	71	392	157	46	857	564	69	5737	1299	3023	367
54	376	169	41	478	135	69	520	120	84	486	128	76	408	150	50	909	540	77	5581	1243	3179	399

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

BURLINGTON, VERMONT
WBAN 14742

TRY Data (1966)

Latitude 44.50 N
Longitude 73.20 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	Above (100s)*	Base Heat	Cool	Below Base 100s*	Above Base 100s*	Below Base 100s*	Above Base 100s*
53	394	162	45	502	129	74	539	114	89	509	122	81	423	144	55	974	517	87	5417	1188	3343	431
52	415	155	49	519	123	79	554	109	95	524	116	86	436	137	59	1047	494	97	5263	1134	3497	465
51	433	149	53	534	117	84	566	103	100	538	111	92	454	130	63	1111	472	108	5123	1082	3637	501
50	447	142	58	550	112	90	579	98	106	556	105	97	477	124	68	1177	451	119	4972	1032	3788	538
49	463	136	62	565	106	95	594	93	112	571	100	103	497	118	73	1234	430	131	4835	983	3925	577
48	479	130	67	579	101	101	611	88	118	586	95	109	514	112	78	1277	410	144	4713	935	4047	616
47	495	123	72	594	96	107	624	83	124	601	90	115	529	106	83	1318	390	157	4597	889	4163	658
46	510	118	77	607	91	113	641	79	130	611	85	121	546	101	88	1363	370	170	4481	843	4279	700
45	524	112	82	618	86	119	655	74	137	624	80	127	562	95	94	1417	351	184	4358	799	4402	743
44	540	106	87	630	82	125	664	70	144	634	75	133	577	90	100	1478	333	199	4235	756	4525	788
43	559	101	93	644	77	132	676	66	150	647	71	139	592	85	106	1534	315	214	4106	714	4654	834
42	577	95	99	659	73	138	690	62	157	664	66	146	606	80	112	1591	298	229	3972	674	4788	881
41	593	90	104	673	68	145	705	58	164	681	62	153	624	75	118	1647	281	245	3834	635	4926	929
40	608	85	110	691	64	152	726	54	171	708	58	160	643	71	124	1701	265	262	3681	597	5079	979
39	624	81	117	710	60	159	744	50	179	735	54	167	662	66	131	1750	249	279	3533	561	5227	1031
38	639	76	123	729	57	166	761	47	186	751	51	174	677	62	137	1793	234	297	3409	527	5351	1084
37	655	71	129	744	53	173	777	43	194	764	48	182	693	58	144	1843	220	315	3282	493	5478	1138
36	674	67	136	760	50	181	791	40	202	777	44	190	714	54	151	1905	206	334	3137	461	5623	1193
35	694	63	143	777	46	189	806	37	210	789	41	197	739	50	158	1975	192	353	2978	430	5782	1250
34	717	59	150	788	43	196	819	35	218	800	38	205	766	47	166	2049	179	374	2819	401	5941	1309
33	738	55	157	802	40	204	829	32	226	813	35	213	790	44	174	2116	167	394	2670	374	6090	1369
32	756	52	165	819	37	212	842	29	234	830	33	222	805	41	182	2187	156	416	2520	348	6240	1431
31	775	49	172	831	35	221	859	27	243	846	30	230	813	38	190	2261	145	438	2373	324	6387	1494
30	790	46	180	842	32	229	874	25	252	862	28	239	825	35	198	2320	135	461	2245	300	6515	1559
29	804	43	188	851	30	238	886	22	260	878	25	247	841	33	206	2375	126	485	2122	279	6638	1624
28	817	40	196	863	27	246	898	20	269	888	23	256	857	30	215	2432	117	509	2004	258	6756	1691
27	832	37	205	876	25	255	910	19	278	897	21	265	870	28	223	2486	109	533	1888	239	6872	1759
26	845	35	213	886	23	264	921	17	287	908	19	274	885	26	232	2528	101	558	1785	220	6975	1829
25	855	32	221	898	21	273	930	15	297	922	18	283	902	24	241	2560	94	584	1691	203	7069	1899
24	865	30	230	910	19	282	939	13	306	934	16	293	916	22	250	2587	87	610	1606	186	7154	1970
23	872	27	239	920	17	291	954	12	316	946	14	302	925	20	260	2613	80	636	1529	171	7231	2042
22	878	25	248	933	15	300	967	11	325	956	13	311	931	18	269	2639	73	662	1454	156	7306	2115
21	888	23	256	948	14	309	979	9	335	965	12	321	937	17	278	2669	67	688	1372	142	7388	2188
20	901	21	265	959	12	319	994	8	345	979	10	331	942	15	288	2700	61	715	1283	128	7477	2262
19	917	19	274	969	11	329	1004	7	355	990	9	341	952	14	297	2734	55	742	1193	116	7567	2338
18	929	18	284	983	10	338	1008	6	365	998	8	351	962	12	307	2777	50	770	1101	104	7659	2414
17	939	16	293	996	9	348	1013	6	375	1005	7	361	972	11	316	2813	45	798	1020	94	7740	2491
16	950	14	302	1004	8	358	1019	5	385	1012	6	371	983	10	326	2840	41	826	950	84	7810	2569
15	962	13	312	1010	7	368	1026	4	395	1019	6	381	996	9	336	2885	36	855	860	75	7900	2647
14	974	12	322	1015	6	379	1034	3	406	1025	5	391	1009	8	346	2940	33	884	760	67	8000	2727
13	985	11	331	1023	5	389	1041	3	416	1031	4	401	1016	7	356	2974	29	913	688	60	8072	2807
12	993	10	341	1031	5	399	1047	2	426	1036	4	412	1020	6	366	2998	26	943	633	53	8127	2888
11	1003	9	351	1036	4	409	1054	2	437	1041	3	422	1024	6	376	3023	24	973	577	47	8183	2970
10	1013	8	361	1042	4	420	1060	2	448	1046	3	433	1027	5	387	3047	21	1004	523	42	8237	3052
9	1021	7	372	1048	3	430	1063	1	458	1050	2	443	1029	4	397	3066	19	1034	480	37	8280	3134
8	1027	6	382	1053	3	441	1069	1	469	1056	2	454	1031	4	407	3082	17	1065	441	32	8319	3217

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 is calculated by subtracting the Hrs Above from X times 365

BURLINGTON, VERMONT
WBAN 14742
TABLE D:

TRY Data (1966)

Latitude 44.50 N
Longitude 73.20 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BY TIME OF DAY																24 HOUR SUMMARY			
7-9AM**		10-12AM**				1-3PM**		4-6PM**		7-9PM**		10PM-6AM**				HEATING		COOLING	
TEMP	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg	Hrs	Deg	
(F)	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Below	Hrs	Above	Hrs	
Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	100s*	Base	100s*	
7	1034	6	392	1056	2	451	1076	1	480	1062	1	464	1035	3	418	3096	15	1096	
6	1038	5	403	1059	2	462	1080	1	490	1070	1	475	1042	2	428	3110	13	1127	
5	1041	5	413	1062	2	472	1082	0	501	1077	1	466	1050	2	438	3121	11	1158	
4	1046	4	423	1066	1	483	1083	0	512	1080	1	496	1060	1	449	3140	10	1189	
3	1050	4	434	1071	1	494	1085	0	523	1081	1	507	1069	1	460	3159	8	1221	
2	1053	3	444	1075	1	504	1087	0	534	1082	0	518	1074	1	470	3172	7	1253	
1	1056	3	455	1077	1	515	1090	0	545	1083	0	529	1076	1	481	3186	6	1284	
0	1059	2	465	1080	0	526	1094	0	555	1086	0	540	1078	1	492	3196	5	1316	
-1	1062	2	476	1083	0	537	1095	0	566	1089	0	550	1078	0	503	3204	4	1348	
-2	1065	2	487	1086	0	548	1095	0	577	1091	0	561	1081	0	514	3210	4	1380	
-3	1067	1	497	1089	0	559	1095	0	588	1093	0	572	1086	0	524	3220	3	1413	
-4	1070	1	508	1091	0	569	1095	0	599	1094	0	583	1090	0	535	3230	2	1445	
-5	1072	1	519	1093	0	580	1095	0	610	1095	0	594	1092	0	546	3239	2	1477	
-6	1077	1	530	1093	0	591	1095	0	621	1095	0	605	1093	0	557	3247	1	1510	
-7	1082	1	540	1094	0	602	1095	0	632	1095	0	616	1094	0	568	3252	1	1542	
-8	1085	0	551	1094	0	613	1095	0	643	1095	0	627	1095	0	579	3256	1	1575	
-9	1088	0	562	1094	0	624	1095	0	654	1095	0	638	1095	0	590	3262	1	1607	
-10	1089	0	573	1094	0	635	1095	0	665	1095	0	649	1095	0	601	3268	0	1640	
-11	1089	0	584	1094	0	646	1095	0	676	1095	0	660	1095	0	612	3275	0	1673	
-12	1090	0	595	1094	0	657	1095	0	687	1095	0	671	1095	0	623	3280	0	1705	
-13	1091	0	606	1095	0	668	1095	0	698	1095	0	682	1095	0	634	3282	0	1738	
-14	1092	0	617	1095	0	679	1095	0	709	1095	0	693	1095	0	645	3283	0	1771	
-15	1092	0	627	1095	0	690	1095	0	720	1095	0	704	1095	0	656	3283	0	1804	
-16	1093	0	638	1095	0	701	1095	0	731	1095	0	715	1095	0	667	3283	0	1837	
-17	1094	0	649	1095	0	712	1095	0	742	1095	0	726	1095	0	678	3283	0	1870	
-18	1094	0	660	1095	0	723	1095	0	753	1095	0	737	1095	0	688	3284	0	1902	
-19	1094	0	671	1095	0	734	1095	0	764	1095	0	748	1095	0	699	3285	0	1935	
-20	1095	0	682	1095	0	745	1095	0	774	1095	0	758	1095	0	710	3285	0	1968	

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

BURLINGTON, VERMONT
WBAN 14742
TABLE E:

TRY Data (1966)

Latitude 44.50 N
Longitude 73.20 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:	3219	2785	2305	1743	1183	719	367	135	10	0	0
Annual Wet Bulb Cooling deg-hrs:	34081	24877	16989	10622	5985	2908	1121	273	15	0	0

TABLE F:

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

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **												COOLING HUMIDITY RATIO HOURS **												Maintained Indoor Humidity Ratio
	Heating Degree Base												Cooling Degree Base												
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80			
.001	1	1	1	1	1	1	1	1	1	1	1	35	34	32	30	28	24	20	14	10	5	3	.001		
.002	2	3	3	3	3	3	3	3	3	3	3	28	28	27	26	24	21	17	13	9	5	2	.002		
.003	5	5	6	6	6	6	6	6	6	6	6	23	23	23	22	21	18	15	11	8	4	2	.003		
.004	7	8	9	9	10	10	10	10	10	10	10	18	18	18	18	17	16	13	10	7	4	2	.004		
.005	9	11	12	13	14	14	14	15	15	15	15	14	14	14	14	14	13	11	8	6	3	2	.005		
.006	11	14	16	18	19	19	20	20	20	20	20	11	11	11	11	11	10	9	7	5	3	1	.006		
.007	13	17	20	22	24	25	25	25	26	26	26	8	8	8	8	8	8	7	5	4	2	1	.007		
.008	16	20	23	26	28	30	31	32	32	32	32	5	5	5	5	5	5	5	4	3	2	1	.008		
.009	18	23	27	31	33	36	37	38	38	39	39	3	3	3	3	3	3	3	3	2	1	1	.009		
.010	20	25	30	35	38	41	44	45	45	46	46	2	2	2	2	2	2	2	2	1	1	0	.010		
.011	22	28	34	39	43	47	50	52	53	54	54	1	1	1	1	1	1	1	1	1	1	0	.011		
.012	24	31	38	44	48	53	56	59	60	61	62	1	1	1	1	1	1	1	1	1	0	0	.012		
.013	26	34	41	48	53	58	63	66	68	69	70	0	0	0	0	0	0	0	0	0	0	0	.013		
.014	29	37	45	52	58	64	69	73	75	78	79	0	0	0	0	0	0	0	0	0	0	0	.014		
.015	31	40	48	56	63	70	76	80	83	86	87	0	0	0	0	0	0	0	0	0	0	0	.015		
.016	33	43	52	61	68	75	82	87	91	94	96	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	35	46	56	65	72	81	88	94	98	102	104	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	37	49	59	69	77	87	95	101	106	110	112	0	0	0	0	0	0	0	0	0	0	0	.018		

FOOTNOTES: * Indoor Humidity Level is measured in pounds of moisture per pound of dry air. Indoor set points of 72 deg(F)-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	55	48	55	68	65	54	48	55	46	46	59	66	55
VERTICAL													
NORTH	100	100	100	99	95	92	92	98	100	100	100	100	96
WEST	60	53	62	79	76	71	65	72	59	54	63	65	67
SOUTH	40	39	54	78	82	79	72	70	54	41	44	47	61
EAST	66	59	66	75	74	67	67	66	58	58	65	70	67
% Possible Sun	42	48	51	51	56	60	65	61	54	49	31	33	51

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

BURLINGTON, VERMONT
WBAN 14742
TABLE H:

TRY Data (1966)

Latitude 44.50 N
Longitude 73.20 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	1629	1514	1203	892	513	243	140	125	125	1587	711	564	520	420	321	206	135	113	108	108	540	313	385
Feb	1789	1668	1383	1106	728	411	238	175	171	1913	1036	757	700	588	480	342	235	178	157	155	777	491	607
Mar	1726	1658	1483	1311	993	674	434	290	246	2174	1509	800	763	689	619	497	383	306	263	249	908	720	940
Apr	1444	1492	1469	1429	1225	960	701	486	355	2260	1978	886	905	882	849	756	648	554	481	438	1080	1055	1296
May	1189	1311	1402	1467	1378	1185	934	696	519	2236	2303	920	967	989	1001	947	852	741	639	568	1246	1334	1574
Jun	1080	1222	1361	1466	1432	1276	1037	798	625	2209	2445	936	1003	1054	1088	1051	955	827	704	618	1423	1576	1729
Jul	1124	1256	1373	1465	1406	1236	995	760	586	2205	2372	983	1033	1067	1094	1038	929	796	674	589	1521	1640	1721
Aug	1320	1397	1418	1420	1267	1038	792	577	431	2204	2082	944	980	974	957	865	744	624	523	455	1274	1252	1475
Sep	1589	1561	1451	1332	1062	769	533	369	298	2149	1654	884	878	828	772	644	508	399	322	289	1103	931	1122
Oct	1731	1624	1377	1146	789	487	301	214	206	1952	1178	818	757	644	543	399	283	215	186	182	876	593	741
Nov	1663	1549	1245	952	572	299	168	143	142	1665	799	550	516	429	343	234	159	125	118	118	529	320	375
Dec	1552	1437	1132	819	453	209	119	115	115	1477	627	426	394	321	249	168	115	95	93	93	396	233	283
Year	1484	1473	1358	1234	986	734	534	397	319	2003	1560	789	785	741	694	597	497	416	357	323	974	874	1021

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. Dwenby, 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	1412	1295	1008	737	404	180	107	102	102	480	438	348	261	163	107	91	88	88
Feb	1532	1412	1160	925	589	316	178	141	139	639	585	487	396	278	187	141	127	126
Mar	1422	1380	1237	1096	815	536	333	223	200	655	628	569	510	405	308	244	211	203
Apr	1122	1205	1211	1187	1013	780	553	374	281	708	734	722	698	620	528	447	385	354
May	876	1013	1138	1213	1139	972	752	544	394	725	772	805	821	777	696	601	514	453
Jun	780	924	1092	1211	1184	1052	843	633	472	725	791	853	894	864	782	671	566	490
Jul	821	960	1107	1206	1161	1017	806	600	446	757	813	862	894	849	759	645	541	466
Aug	1006	1110	1161	1175	1046	847	631	448	336	746	789	797	787	710	607	504	417	366
Sep	1284	1290	1204	1108	874	621	416	284	242	712	721	684	639	530	412	318	256	235
Oct	1462	1362	1151	952	642	380	225	171	167	685	627	532	447	324	225	169	150	148
Nov	1434	1317	1043	788	456	222	129	116	116	465	432	355	282	188	125	100	96	96
Dec	1347	1232	947	676	353	151	95	93	93	361	330	265	204	134	90	77	75	75
Year	1206	1207	1121	1023	807	591	424	312	250	638	638	607	570	488	403	335	286	259

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

CHARLESTON, SOUTH CAROLINA
WBAN 13880
TABLE A:

TRY Data (1955)

Latitude 32.90 N
Longitude 80.00 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														
75 to 79	0	0	0	0	4	0	0	0	4	62.8	743	22622	1	1
70 to 74	0	0	0	6	10	3	0	0	19	60.8	734	18923	10	22
65 to 69	0	0	0	7	4	6	2	0	19	58.3	711	15312	33	131
60 to 64	5	3	4	7	10	12	1	4	46	54.5	686	11806	58	345
55 to 59	7	4	7	8	10	8	16	13	73	51.4	635	8496	109	755
50 to 54	20	17	14	15	31	25	13	15	150	46.3	523	5558	221	1537
45 to 49	10	18	16	25	12	19	11	12	123	41.9	369	3312	375	3011
40 to 44	7	6	12	20	10	17	26	10	108	38.5	267	1724	477	5143
35 to 39	19	17	24	5	2	3	19	25	114	35.0	153	662	591	7801
30 to 34	19	18	10	0	0	0	5	14	66	30.1	62	155	682	11014
25 to 29	6	10	6	0	0	0	0	0	22	26.7	6	7	738	14586
Feb														
75 to 79	0	0	0	2	3	0	0	0	5	64.8	672	17117	0	0
70 to 74	0	0	0	8	15	7	0	0	30	61.6	660	13783	12	26
65 to 69	0	0	3	18	22	19	6	0	68	58.9	611	10590	61	193
60 to 64	15	9	14	16	14	16	16	17	117	57.0	527	7721	145	684
55 to 59	12	15	13	10	14	12	13	15	104	52.1	413	5405	259	1728
50 to 54	9	11	12	15	6	14	15	9	91	47.9	312	3605	360	3288
45 to 49	9	11	10	4	4	7	15	6	66	43.2	229	2257	443	5300
40 to 44	14	9	12	4	2	4	8	18	71	38.9	162	1277	510	7680
35 to 39	10	13	8	3	3	4	4	7	52	33.8	101	626	571	10389
30 to 34	7	7	5	3	1	1	4	6	34	28.9	46	263	626	13386
25 to 29	5	4	3	1	0	0	3	6	22	23.5	27	78	645	16561
20 to 24	3	5	4	0	0	0	0	0	12	20.5	3	3	669	19846
Mar														
85 to 89	0	0	0	0	7	0	0	0	7	67.4	744	20519	0	0
80 to 84	0	0	0	8	10	6	0	0	24	66.3	730	16831	14	32
75 to 79	0	0	1	20	21	7	0	0	49	65.0	695	13252	49	173
70 to 74	1	0	6	20	16	24	10	4	81	63.3	632	9919	112	560
65 to 69	14	5	22	14	16	17	23	24	135	60.5	539	6967	205	1328
60 to 64	28	33	19	8	8	10	10	14	130	57.8	391	4649	353	2730
55 to 59	7	13	13	7	6	15	15	9	85	51.1	281	3005	463	4806
50 to 54	12	8	5	10	4	10	15	10	74	46.7	203	1803	541	7324
45 to 49	8	5	13	1	5	4	10	10	56	41.0	129	965	615	10206
40 to 44	9	10	6	4	0	0	6	11	46	37.5	84	429	660	13390
35 to 39	12	11	4	1	0	0	4	9	41	33.7	40	120	704	16801
30 to 34	2	5	3	0	0	0	0	2	12	29.7	8	22	736	20423
25 to 29	0	3	1	0	0	0	0	0	4	23.3	1	1	743	24122

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

CHARLESTON, SOUTH CAROLINA
WBAN 13880
TABLE A:

TRY Data (1955)

Latitude 32.90 N
Longitude 80.00 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															
85 to 89	0	0	0	0	6	0	0	0	6	66.7	720	15235	0	0	
80 to 84	0	0	0	16	25	11	0	0	52	65.0	700	11668	20	33	
75 to 79	0	0	10	24	22	19	3	3	81	65.0	634	8327	86	292	
70 to 74	4	5	17	24	13	28	16	5	112	63.3	545	5383	175	948	
65 to 69	20	18	32	21	21	18	30	22	182	61.3	402	2984	318	2149	
60 to 64	29	22	16	3	3	12	29	32	146	58.7	220	1428	500	4193	
55 to 59	13	21	11	2	0	2	6	17	72	53.3	109	654	611	7019	
50 to 54	14	13	1	0	0	0	5	6	39	49.1	52	276	668	10241	
45 to 49	5	5	1	0	0	0	1	4	16	45.2	20	105	700	13670	
40 to 44	5	0	2	0	0	0	0	1	8	41.1	11	31	709	17196	
35 to 39	0	6	0	0	0	0	0	0	6	37.7	0	0	720	20765	
May															
90 to 94	0	0	0	2	6	0	0	0	8	73.4	740	14300	4	4	
85 to 89	0	0	0	18	26	5	0	0	49	71.9	727	10617	17	41	
80 to 84	0	0	14	40	35	31	0	0	120	69.1	649	7154	95	298	
75 to 79	6	4	33	21	19	37	30	10	160	69.1	505	4255	239	1119	
70 to 74	35	30	22	10	7	17	35	35	191	68.0	321	2138	423	2722	
65 to 69	18	20	17	2	0	3	22	25	107	63.5	179	952	565	5256	
60 to 64	14	18	6	0	0	0	6	13	57	60.1	79	342	665	8366	
55 to 59	18	16	1	0	0	0	0	10	45	54.7	35	69	709	11813	
50 to 54	2	5	0	0	0	0	0	0	7	51.4	0	0	744	15464	
Jun															
90 to 94	0	0	0	2	6	4	0	0	12	69.3	720	12760	0	0	
85 to 89	0	0	0	22	24	8	0	0	54	72.6	699	9208	21	48	
80 to 84	0	0	17	43	43	35	5	0	143	69.2	597	5909	123	349	
75 to 79	10	6	35	17	14	37	37	15	171	70.0	450	3288	270	1328	
70 to 74	28	23	25	3	0	2	33	40	154	68.7	276	1508	444	3148	
65 to 69	29	32	13	3	3	4	12	23	119	63.5	129	524	591	5764	
60 to 64	14	20	0	0	0	0	3	8	45	60.1	42	130	678	8970	
55 to 59	9	9	0	0	0	0	0	4	22	55.7	13	16	707	12456	

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

CHARLESTON, SOUTH CAROLINA
WBAN 13880
TABLE A:

TRY Data (1955)

Latitude 32.90 N
Longitude 80.00 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence In time period									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						
Jul														
90 to 94	0	0	0	3	13	3	0	0	19	77.5	743	10026	1	1
85 to 89	0	0	3	54	54	24	0	0	135	76.9	680	6406	64	101
80 to 84	0	0	44	32	13	46	29	0	164	76.2	516	3393	228	808
75 to 79	27	17	45	4	9	16	51	66	235	74.6	343	1197	401	2332
70 to 74	58	67	1	0	4	4	13	26	173	72.1	72	125	672	4980
65 to 69	8	9	0	0	0	0	0	1	18	67.0	6	5	738	8580
Aug														
90 to 94	0	0	0	7	16	3	0	0	26	77.0	741	10107	3	2
85 to 89	0	0	6	58	54	27	0	0	145	76.6	670	6518	74	133
80 to 84	3	0	37	18	13	39	23	4	137	75.4	516	3560	228	895
75 to 79	30	27	36	6	9	22	54	54	238	74.0	354	1328	390	2383
70 to 74	52	57	13	4	1	2	16	32	177	71.6	101	190	643	4965
65 to 69	8	9	1	0	0	0	0	3	21	66.9	11	14	733	8509
Sep														
85 to 89	0	0	0	5	14	1	0	0	20	74.3	717	9791	3	3
80 to 84	0	0	6	43	31	20	0	0	100	74.3	656	6303	64	115
75 to 79	1	0	25	24	32	50	24	4	160	73.2	552	3261	168	673
70 to 74	56	50	42	15	12	13	60	65	313	70.9	329	965	391	1977
65 to 69	32	37	16	3	1	6	5	21	121	66.1	80	119	640	4731
60 to 64	1	3	1	0	0	0	1	0	6	63.2	1	1	719	8213

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

CHARLESTON, SOUTH CAROLINA
WBAN 13880
TABLE A:

TRY Data (1955)

Latitude 32.90 N
Longitude 80.00 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence In time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Oct															
80 to 84	0	0	2	14	19	2	0	0	37	71.1	737	14112	7	4	
75 to 79	0	0	8	19	28	14	1	0	70	67.5	682	10547	62	159	
70 to 74	3	0	8	20	22	35	19	8	115	65.5	603	7331	141	663	
65 to 69	25	23	17	23	20	16	18	27	169	62.0	453	4688	291	1740	
60 to 64	12	13	13	15	4	17	13	11	98	57.2	302	2822	442	3594	
55 to 59	14	12	23	2	0	7	22	16	96	54.0	217	1522	527	6014	
50 to 54	16	15	11	0	0	2	13	13	70	49.7	121	677	623	8889	
45 to 49	17	19	9	0	0	0	6	13	64	45.0	65	203	679	12135	
40 to 44	4	8	1	0	0	0	1	5	19	41.8	11	37	733	15689	
35 to 39	2	3	1	0	0	0	0	0	6	36.7	3	4	741	19376	
Nov															
80 to 84	0	0	0	3	6	0	0	0	9	68.8	719	20255	1	1	
75 to 79	0	0	0	8	7	3	0	0	18	67.4	706	16694	14	40	
70 to 74	0	0	3	14	18	5	0	0	40	61.3	683	13219	37	165	
65 to 69	6	7	14	21	22	19	13	9	111	60.1	615	9944	105	490	
60 to 64	10	13	10	11	20	21	8	9	102	56.8	502	7168	218	1314	
55 to 59	4	1	8	16	8	19	13	5	74	50.9	406	4909	314	2655	
50 to 54	13	10	13	8	3	11	23	20	101	48.0	324	3067	396	4413	
45 to 49	22	16	20	4	5	5	15	20	107	44.1	215	1690	505	6636	
40 to 44	12	14	7	2	1	5	8	12	61	38.9	132	835	588	9381	
35 to 39	14	18	9	3	0	2	4	7	57	34.9	74	322	646	12468	
30 to 34	6	6	4	0	0	0	6	5	27	30.2	24	88	696	15834	
25 to 29	3	5	2	0	0	0	0	3	13	24.6	7	12	713	19358	
Dec															
75 to 79	0	0	0	3	4	0	0	0	7	67.6	743	22958	1	1	
70 to 74	0	0	0	5	9	4	0	0	18	65.3	731	19266	13	29	
65 to 69	3	3	4	4	2	6	3	3	28	64.2	714	15659	30	142	
60 to 64	2	0	2	9	15	10	7	3	48	56.4	674	12186	70	389	
55 to 59	13	11	6	13	16	10	10	11	90	51.7	621	8952	123	875	
50 to 54	7	8	12	12	12	17	11	8	87	47.3	519	6113	225	1756	
45 to 49	15	13	13	22	27	20	21	15	146	41.2	408	3757	336	3120	
40 to 44	6	7	15	14	2	15	11	15	85	38.2	280	2059	464	5142	
35 to 39	20	23	23	11	6	9	18	25	135	32.7	185	861	559	7664	
30 to 34	21	18	11	0	0	2	9	8	69	28.9	64	278	680	10801	
25 to 29	2	7	5	0	0	0	2	2	18	25.1	21	94	723	14337	
20 to 24	1	3	2	0	0	0	1	2	9	21.4	8	20	736	17983	
15 to 19	3	0	0	0	0	0	0	1	4	18.5	0	0	744	21683	

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

CHARLESTON, SOUTH CAROLINA
WBAN 13880
TABLE B:

TRY Date (1955)

Latitude 32.90 N
Longitude 80.00 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
90 to 94	0	0	0	14	41	10	0	0	65	0.0	0.0	0.0	75.6	75.3	74.7	0.0	0.0	75.3
85 to 89	0	0	9	157	185	65	0	0	416	0.0	0.0	77.1	75.6	74.6	75.7	0.0	0.0	75.2
80 to 84	3	0	120	217	195	190	57	4	786	78.3	0.0	74.8	71.3	70.2	72.0	75.8	77.5	72.1
75 to 79	74	54	193	148	172	205	200	152	1198	73.8	73.8	72.1	67.7	67.9	70.2	73.1	74.1	71.2
70 to 74	237	232	137	129	127	144	202	215	1423	71.1	71.2	68.0	63.8	62.1	65.4	68.9	70.5	68.4
65 to 69	163	163	139	116	111	114	134	158	1098	65.2	65.2	63.0	57.9	56.7	59.0	63.0	64.4	62.2
60 to 64	130	134	85	69	74	98	94	111	795	60.2	60.5	58.3	53.9	51.4	54.7	58.5	59.3	57.7
55 to 59	97	102	82	58	54	73	95	100	661	54.4	54.7	53.5	47.6	46.8	49.0	53.4	54.4	52.4
50 to 54	93	87	68	60	56	79	95	81	619	50.1	50.0	48.8	44.4	42.6	44.7	47.8	49.8	47.6
45 to 49	86	87	82	56	53	55	79	80	578	44.5	44.6	43.4	39.5	38.0	40.2	43.2	44.1	42.6
40 to 44	57	54	55	44	15	41	60	72	398	39.9	40.2	38.4	36.2	37.9	36.9	38.3	39.8	38.7
35 to 39	77	91	69	23	11	18	49	73	411	34.9	34.7	33.7	31.6	31.4	32.5	34.2	34.0	34.0
30 to 34	55	54	33	3	1	3	24	35	208	29.9	29.7	28.8	25.3	27.0	26.7	29.2	30.0	29.5
25 to 29	16	29	17	1	0	0	5	11	79	24.7	25.1	25.4	22.0	0.0	0.0	24.4	24.7	24.9
20 to 24	4	8	6	0	0	0	1	2	21	22.5	20.5	20.3	0.0	0.0	0.0	22.0	20.5	20.9
15 to 19	3	0	0	0	0	0	0	1	4	18.3	0.0	0.0	0.0	0.0	0.0	0.0	19.0	18.5

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	47.1	78	25	58	37	42.5	83	63	53	78	71	0.0049	0.0048	0.0047	0.0053	0.0049	10.9
Feb	52.0	77	21	63	41	47.2	83	65	52	75	72	0.0059	0.0065	0.0063	0.0063	0.0062	12.2
Mar	59.9	87	27	72	49	53.4	83	55	46	71	67	0.0077	0.0079	0.0072	0.0077	0.0077	13.3
Apr	66.3	87	38	77	56	59.6	88	57	52	75	70	0.0095	0.0096	0.0092	0.0099	0.0096	12.2
May	73.3	94	53	84	64	66.5	91	59	57	78	73	0.0125	0.0124	0.0123	0.0132	0.0126	10.8
Jun	74.8	92	55	84	65	67.6	89	57	57	77	72	0.0127	0.0126	0.0129	0.0138	0.0131	11.4
Jul	79.0	93	66	88	72	74.7	96	71	73	88	83	0.0164	0.0178	0.0180	0.0181	0.0175	8.8
Aug	78.9	93	65	88	72	74.1	96	68	68	88	82	0.0167	0.0170	0.0170	0.0177	0.0171	9.8
Sep	73.9	89	62	82	68	71.1	97	80	78	92	89	0.0150	0.0162	0.0161	0.0161	0.0158	8.6
Oct	63.5	83	36	75	53	58.5	92	61	55	87	77	0.0093	0.0097	0.0097	0.0104	0.0098	9.5
Nov	54.4	83	25	67	43	49.4	86	59	54	81	73	0.0064	0.0071	0.0070	0.0070	0.0068	10.3
Dec	46.6	78	18	57	37	42.1	76	61	55	75	69	0.0045	0.0050	0.0053	0.0052	0.0050	10.2
Year	64.2	94	18	75	55	59.0	88	63	59	80	75	0.0102	0.0106	0.0105	0.0109	0.0105	10.6

CHARLESTON, SOUTH CAROLINA
WBAN 13880

TRY Data (1955)

Latitude 32.90 N
Longitude 80.00 E

TABLE 0:

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)		BY TIME OF DAY																				24 HOUR SUMMARY							
		7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**				10PM-6AM**				HEATING		COOLING	
		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs	
		Above 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	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	Above Base	(100s)* Heat Cool	Above Base	(100s)* Heat Cool
95	0	355	0	0	267	0	0	242	0	0	286	0	0	353	0	0	1193	0	0	0	0	8760	2696	0	0				
94	0	344	0	0	256	0	0	231	0	0	275	0	0	342	0	0	1160	0	0	0	0	8759	2609	1	0				
93	0	333	0	0	245	0	0	220	0	0	264	0	0	331	0	0	1127	0	0	0	0	8755	2521	5	0				
92	0	322	0	0	234	0	0	209	0	0	253	0	0	320	0	0	1095	0	0	0	0	8747	2434	13	0				
91	0	312	0	0	223	0	0	198	0	0	242	0	0	309	0	0	1062	0	0	0	0	8734	2346	26	0				
90	0	301	0	0	212	0	0	188	0	0	232	0	0	298	0	0	1029	0	0	0	0	8710	2259	50	1				
89	0	290	0	0	201	0	0	177	1	12	221	0	0	287	0	0	996	0	0	0	0	8673	2172	87	1				
88	0	279	0	0	191	1	86	167	2	17	210	0	0	276	0	0	963	0	0	0	0	8616	2086	144	2				
87	0	268	0	0	180	1	126	157	3	26	199	0	0	265	0	0	930	0	0	0	0	8540	2000	220	4				
86	2	257	0	0	170	2	168	147	4	41	189	1	0	254	0	0	898	0	0	0	0	8446	1915	314	7				
85	6	246	0	0	161	3	208	138	6	63	178	1	0	243	0	0	865	0	0	0	0	8336	1831	424	10				
84	15	235	0	0	151	5	246	130	8	92	168	2	1	233	0	0	832	0	0	0	0	8209	1748	551	15				
83	37	224	0	0	143	7	288	121	11	131	158	3	3	222	0	0	799	0	0	0	0	8060	1667	700	21				
82	62	214	1	282	134	10	325	113	14	171	149	5	7	211	0	0	766	0	0	0	0	7912	1587	848	29				
81	79	204	2	321	126	13	366	106	17	212	140	7	20	200	0	0	733	0	0	0	0	7760	1508	1000	38				
80	109	194	2	364	119	16	405	99	21	249	131	9	44	189	0	3	700	0	0	0	0	7564	1432	1176	49				
79	147	184	4	407	112	20	440	92	25	286	123	12	73	179	1	13	668	0	0	0	0	7392	1357	1368	62				
78	184	175	5	440	105	24	477	86	30	332	115	15	106	169	2	33	635	0	0	0	0	7185	1284	1575	77				
77	223	166	7	470	99	29	512	80	35	375	107	18	150	159	3	77	603	1	0	0	0	6952	1213	1808	93				
76	264	157	10	498	92	34	544	74	40	411	100	22	195	150	5	139	571	2	0	0	0	6707	1145	2053	113				
75	304	149	13	523	87	39	576	69	46	450	94	26	236	141	7	229	540	4	0	0	0	6442	1079	2318	134				
74	331	141	16	547	81	44	604	64	52	492	87	31	285	133	10	349	510	6	0	0	0	6150	1016	2610	159				
73	356	134	19	571	76	50	627	59	58	532	82	36	335	125	13	492	481	11	0	0	0	5846	956	2914	187				
72	389	127	23	597	71	56	657	54	64	561	76	42	377	118	16	677	454	16	0	0	0	5500	899	3260	217				
71	421	120	27	621	66	62	686	50	71	583	71	48	417	111	20	835	429	24	0	0	0	5195	846	3565	252				
70	447	113	32	649	61	68	708	46	78	603	66	53	447	104	25	930	405	33	0	0	0	4975	795	3785	289				
69	471	107	36	677	57	75	732	42	85	625	61	60	471	98	29	1016	382	43	0	0	0	4766	746	3994	328				
68	493	101	41	701	53	81	760	39	93	651	57	66	495	91	34	1103	359	53	0	0	0	4555	700	4205	369				
67	520	95	46	728	49	89	788	36	101	676	52	73	524	86	39	1192	338	65	0	0	0	4331	655	4429	412				
66	557	89	51	751	45	96	810	33	109	699	48	80	556	80	45	1292	318	77	0	0	0	4093	613	4667	457				
65	587	84	57	770	42	104	825	30	117	720	44	87	583	75	50	1400	298	91	0	0	0	3873	573	4887	505				
64	605	79	63	789	39	111	840	27	125	738	41	94	601	70	56	1495	280	105	0	0	0	3690	536	5070	555				
63	620	74	69	807	36	119	860	25	134	758	37	101	620	65	62	1578	262	120	0	0	0	3515	500	5245	606				
62	637	69	75	825	33	128	876	23	142	780	34	109	644	60	69	1675	246	137	0	0	0	3321	465	5439	660				
61	657	65	82	838	31	136	887	21	151	798	31	117	665	56	75	1758	230	154	0	0	0	3155	433	5605	715				
60	676	61	89	846	28	144	899	19	160	815	28	125	679	52	82	1808	215	172	0	0	0	3036	402	5724	772				
59	688	57	95	857	26	153	908	17	169	836	25	133	695	48	89	1856	201	190	0	0	0	2919	372	5841	830				
58	703	53	102	869	23	162	916	15	178	855	23	142	711	44	96	1910	187	209	0	0	0	2795	344	5965	889				
57	725	49	110	880	21	170	928	13	187	870	21	150	730	40	103	1971	173	228	0	0	0	2654	317	6106	949				
56	745	45	117	890	19	179	942	11	197	882	18	159	750	36	110	2036	160	248	0	0	0	2513	291	6247	1011				
55	758	42	124	901	17	188	953	10	206	893	16	168	771	33	118	2099	148	269	0	0	0	2383	266	6377	1074				
54	772	38	132	912	15	197	965	9	216	904	14	177	789	30	126	2163	137	290	0	0	0	2254	243	6506	1138				
53	787	35	140	925	13	206	977	7	226	918	13	186	804	27	134	2226	126	312	0	0	0	2122	221	6638	1204				
52	804	32	148	939	12	216	986	6	235	933	11	195	821	24	142	2272	115	335	0	0	0	2002	201	6758	1271				
51	817	29	156	951	10	225	997	5	245	947	9	205	840	21	150	2312	106	358	0	0	0	1895	181	6865	1339				
50	827	27	164	963	9	235	1009	4	255	965	8	214	863	19	159	2362	96	381	0	0	0	1769	163	6991	1408				

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

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

CHARLESTON, SOUTH CAROLINA
WBAN 13880
TABLE D:

TRY Data (1955)

Latitude 32.90 N
Longitude 80.00 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																24 HOUR SUMMARY											
	7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**				10PM-6AM**				HEATING		COOLING	
	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg		
	Above (100s)*	Base	Heat	Cool	Above (100s)*	Base	Heat	Cool	Above (100s)*	Base	Heat	Cool	Above (100s)*	Base	Heat	Cool	Above (100s)*	Base	Heat	Cool	Above (100s)*	Base	Heat	Cool	Below Base 100s*	Above Base 100s*		
49	843	24	173	973	8	244	1019	4	265	982	7	224	885	17	168	2419	87	405							1638	146	7122	1479
48	867	22	181	984	6	254	1031	3	276	993	6	234	901	15	176	2476	79	430							1506	130	7254	1551
47	885	20	190	995	5	264	1043	2	286	1004	5	244	917	13	186	2528	71	455							1386	116	7374	1624
46	898	18	199	1004	4	274	1054	2	297	1014	4	254	933	11	195	2573	64	480							1283	102	7477	1698
45	910	16	208	1016	4	284	1064	1	307	1026	3	264	948	10	204	2619	57	506							1175	90	7585	1774
44	923	14	217	1029	3	294	1069	1	318	1038	2	275	963	8	214	2668	50	532							1069	79	7691	1850
43	935	12	226	1041	2	305	1070	1	329	1046	2	285	975	7	223	2710	44	559							982	69	7778	1927
42	942	11	236	1051	2	315	1073	1	339	1053	1	296	985	6	233	2743	39	587							912	59	7848	2006
41	949	9	245	1059	1	326	1078	0	350	1060	1	306	997	5	243	2778	34	614							837	50	7923	2084
40	961	8	255	1066	1	336	1082	0	361	1068	1	317	1010	4	253	2812	29	642							760	42	8000	2164
39	975	6	264	1071	1	347	1085	0	372	1075	1	327	1022	3	263	2845	24	670							685	35	8075	2244
38	987	5	274	1077	1	358	1088	0	383	1080	0	338	1033	3	274	2892	20	699							602	29	8158	2325
37	1004	4	284	1082	0	369	1089	0	393	1084	0	349	1045	2	284	2944	16	728							510	23	8250	2408
36	1020	4	294	1087	0	379	1092	0	404	1087	0	360	1055	2	295	2996	13	758							422	19	8338	2490
35	1033	3	304	1089	0	390	1093	0	415	1090	0	371	1062	1	305	3046	10	788							345	15	8415	2574
34	1043	2	315	1091	0	401	1094	0	426	1092	0	382	1067	1	316	3090	8	819							281	12	8479	2659
33	1052	2	325	1091	0	412	1094	0	437	1093	0	393	1071	1	327	3129	7	850							227	9	8533	2744
32	1058	1	336	1092	0	423	1095	0	448	1094	0	404	1077	0	337	3158	5	882							185	7	8575	2829
31	1063	1	347	1092	0	434	1095	0	459	1094	0	415	1084	0	348	3183	4	913							148	5	8612	2915
30	1069	1	357	1093	0	445	1095	0	470	1094	0	425	1088	0	359	3202	3	945							117	4	8643	3002
29	1075	1	368	1094	0	456	1095	0	481	1095	0	436	1089	0	370	3218	2	977							93	3	8667	3088
28	1082	0	379	1094	0	467	1095	0	492	1095	0	447	1091	0	381	3230	2	1010							72	2	8688	3175
27	1085	0	390	1094	0	478	1095	0	503	1095	0	458	1093	0	392	3240	1	1042							56	2	8704	3262
26	1087	0	400	1095	0	489	1095	0	514	1095	0	469	1093	0	403	3250	1	1074							45	1	8715	3349
25	1088	0	411	1095	0	500	1095	0	525	1095	0	480	1093	0	414	3261	1	1107							32	1	8728	3436
24	1090	0	422	1095	0	511	1095	0	536	1095	0	491	1094	0	424	3270	0	1140							20	0	8740	3524
23	1092	0	433	1095	0	522	1095	0	547	1095	0	502	1095	0	435	3274	0	1172							13	0	8747	3611
22	1093	0	444	1095	0	532	1095	0	558	1095	0	513	1095	0	446	3277	0	1205							9	0	8751	3699
21	1094	0	455	1095	0	543	1095	0	569	1095	0	524	1095	0	457	3279	0	1238							6	0	8754	3786
20	1095	0	466	1095	0	554	1095	0	579	1095	0	535	1095	0	468	3280	0	1271							4	0	8756	3874
19	1095	0	477	1095	0	565	1095	0	590	1095	0	546	1095	0	479	3282	0	1303							2	0	8758	3961
18	1095	0	488	1095	0	576	1095	0	601	1095	0	557	1095	0	490	3284	0	1336							0	0	8760	4049
17	1095	0	499	1095	0	587	1095	0	612	1095	0	568	1095	0	501	3285	0	1369							0	0	8760	4136

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

CHARLESTON, SOUTH CAROLINA
WBAN 13880
TABLE E:

TRY Data (1955)
Annual COOLING Wet Bulb Degree Hour Summary

Latitude 32.90 N
Longitude 80.00 E

Wet Bulb Temperature (F) Base:	50	53	56	59	62	65	68	71	74	77	80
Annual Wet Bulb hours ABOVE base:	6443	6054	5594	5132	4512	3809	3113	2381	1324	389	18
Annual Wet Bulb Cooling deg-hrs:	109811.	90857.	73183.	56830.	41996.	29083.	18372.	9726.	3579.	638.	19.

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	79	79	78	77	75	72	68	61	50	30	15	.001
.002	0	0	0	0	0	0	0	0	0	0	0	71	71	70	69	68	66	62	56	46	28	14	.002
.003	0	0	1	1	1	1	1	1	1	1	1	63	63	62	62	61	59	57	51	43	26	13	.003
.004	0	1	1	1	2	2	2	2	2	2	2	55	55	55	55	54	53	51	46	39	24	12	.004
.005	0	1	2	2	3	3	4	4	4	4	4	48	48	48	48	48	47	45	42	35	21	11	.005
.006	0	1	3	4	5	5	6	6	6	6	6	42	42	42	42	41	41	40	37	32	19	10	.006
.007	1	2	3	5	6	7	8	8	9	9	9	36	36	36	36	36	35	35	32	28	17	9	.007
.008	1	2	4	6	8	10	11	11	12	12	12	30	30	30	30	30	30	30	28	24	15	8	.008
.009	1	2	5	7	10	12	13	14	15	15	16	25	25	25	25	25	25	25	24	21	13	7	.009
.010	1	3	5	8	11	14	16	18	19	19	20	20	20	20	20	20	20	20	20	18	11	6	.010
.011	1	3	6	9	13	17	19	21	23	23	24	16	16	16	16	16	16	16	16	15	9	5	.011
.012	1	3	7	10	15	19	22	25	27	28	29	12	12	12	12	12	12	12	12	8	4	.012	
.013	1	3	8	11	16	21	25	29	32	33	34	9	9	9	9	9	9	9	9	6	3	.013	
.014	1	4	8	13	18	23	28	32	36	38	40	6	6	6	6	6	6	6	6	4	2	.014	
.015	1	4	9	14	20	26	31	36	41	44	46	4	4	4	4	4	4	4	4	3	1	.015	
.016	2	4	10	15	22	28	34	40	46	50	52	2	2	2	2	2	2	2	2	2	1	.016	
.017	2	5	11	16	23	30	37	44	51	56	59	1	1	1	1	1	1	1	1	1	0	.017	
.018	2	5	11	17	25	33	40	48	56	62	66	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	48	48	50	53	56	63	52	72	30	25	42	50
VERTICAL													
NORTH	100	100	100	98	94	91	93	96	100	100	100	100	96
WEST	51	60	63	66	71	75	79	69	80	47	42	51	65
SOUTH	33	47	58	72	83	90	91	78	80	34	24	35	58
EAST	51	57	62	67	69	68	72	63	82	48	40	55	63
% Possible Sun	58	61	66	71	71	67	68	65	62	67	65	59	65

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

CHARLESTON, SOUTH CAROLINA
WSAN 13880
TABLE H:

TRY Data (1955)

Latitude 32.90 N
Longitude 80.00 E

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

Month	Under Clear Sky Assumption*										Corrected For Cloud Cover**										Obs ****		
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S-45 ***	horiz	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N		S-45 ***	horiz
Jan	1880	1750	1427	1143	736	414	232	187	187	2089	1197	1064	998	833	687	478	312	220	197	196	1141	728	744
Feb	1836	1723	1490	1278	916	583	354	237	227	2259	1498	943	908	817	729	568	417	315	260	254	1066	806	995
Mar	1557	1531	1451	1363	1112	815	554	361	289	2318	1892	1082	1070	1018	959	818	663	534	439	399	1408	1267	1339
Apr	1127	1245	1326	1379	1268	1058	808	566	387	2205	2221	949	987	1006	1015	942	826	703	586	504	1429	1494	1732
May	828	1018	1196	1339	1341	1220	998	755	548	2055	2422	866	952	1028	1092	1077	1000	876	745	635	1439	1666	1860
Jun	718	918	1134	1309	1360	1286	1086	857	662	1976	2498	830	942	1059	1157	1179	1128	1006	868	748	1426	1747	1844
Jul	767	961	1159	1322	1350	1261	1053	822	621	1997	2451	864	953	1047	1128	1135	1081	969	842	732	1361	1637	1799
Aug	989	1135	1254	1346	1283	1121	889	654	463	2099	2269	911	1008	1075	1125	1080	974	830	686	565	1428	1571	1585
Sep	1365	1385	1367	1332	1142	886	639	438	335	2212	1975	863	853	823	788	703	607	529	469	440	1041	1027	1394
Oct	1703	1618	1438	1275	967	652	415	279	258	2224	1607	1287	1221	1084	956	732	519	371	293	281	1589	1189	1193
Nov	1861	1738	1452	1186	809	475	277	205	204	2124	1278	1274	1205	1021	841	586	362	235	191	190	1433	895	934
Dec	1870	1733	1401	1099	694	375	213	179	178	2023	1113	925	856	704	571	395	256	188	174	174	965	605	721
Year	1373	1394	1340	1281	1082	847	628	463	364	2131	1870	989	997	961	922	809	680	566	480	427	1312	1222	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	1608	1469	1191	944	594	310	173	152	152	899	831	691	566	386	242	172	160	159
Feb	1532	1430	1236	1059	748	455	261	189	184	776	748	676	603	464	333	245	209	206
Mar	1214	1243	1196	1134	919	657	425	272	235	855	866	832	789	671	537	424	347	324
Apr	798	960	1074	1136	1049	863	637	430	303	724	780	814	828	770	671	563	465	404
May	557	737	947	1095	1107	999	802	586	405	658	738	826	891	883	816	707	593	502
Jun	487	646	881	1065	1121	1054	876	668	482	639	723	844	943	967	923	815	691	584
Jul	521	688	911	1080	1117	1036	851	642	457	674	744	844	924	936	888	789	676	578
Aug	687	858	1011	1107	1064	917	710	505	356	694	793	875	926	892	799	671	545	448
Sep	1035	1112	1122	1105	943	719	499	334	272	689	692	673	646	575	494	427	378	358
Oct	1399	1336	1194	1061	789	513	312	218	209	1061	1007	897	790	594	410	287	234	228
Nov	1583	1455	1208	988	653	364	206	166	166	1079	1008	849	699	472	280	180	155	154
Dec	1606	1460	1168	908	556	279	160	145	145	784	712	582	470	317	198	149	141	141
Year	1083	1114	1094	1057	889	682	494	360	281	795	804	784	757	662	551	454	384	341

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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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*	
	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	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	16	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	75	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	685	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	38.5	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

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		Ave	4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	
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**				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		HEATING		COOLING					
	Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Below		Above							
	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	100s*	Base	100s*						
97	0	508	0	0	437	0	0	393	0	0	396	0	0	446	0	0	1527	0	8760	3707	0	0						
96	0	497	0	0	426	0	0	382	0	0	385	0	0	435	0	0	1494	0	8759	3620	1	0						
95	0	486	0	0	415	0	0	371	0	0	374	0	0	424	0	0	1462	0	8758	3532	2	0						
94	0	475	0	0	404	0	0	360	0	0	363	0	0	413	0	0	1429	0	8756	3444	4	0						
93	0	464	0	0	393	0	0	349	0	0	352	0	0	402	0	0	1396	0	8750	3357	10	0						
92	0	453	0	0	382	0	0	338	0	0	341	0	0	391	0	0	1363	0	8740	3269	20	0						
91	0	442	0	0	371	0	0	327	0	0	331	0	0	380	0	0	1330	0	8724	3182	36	1						
90	0	431	0	0	360	0	0	316	1	27	320	0	0	369	0	0	1297	0	8699	3095	61	1						
89	0	421	0	0	350	0	0	306	1	42	309	1	2	359	0	0	1264	0	8668	3008	92	2						
88	0	410	0	0	339	0	0	295	1	57	299	1	5	348	0	0	1232	0	8628	2922	132	3						
87	0	399	0	0	328	0	0	285	2	74	288	2	11	337	0	0	1199	0	8579	2836	181	4						
86	0	388	0	0	317	1	0	275	3	87	278	3	16	326	0	0	1166	0	8533	2750	227	6						
85	1	377	0	0	307	1	106	265	4	100	268	4	20	315	0	0	1133	0	8489	2665	271	9						
84	1	366	0	0	296	2	127	255	5	119	258	5	29	304	1	0	1100	0	8428	2580	332	12						
83	3	355	0	0	286	2	150	246	6	141	249	6	40	294	1	0	1067	0	8354	2496	406	16						
82	4	344	0	0	276	3	177	236	8	173	239	8	55	283	2	0	1035	0	8264	2413	496	20						
81	8	333	0	0	266	4	209	227	10	207	230	9	71	273	2	3	1002	0	8154	2331	606	25						
80	15	322	0	0	256	5	240	219	12	237	222	12	92	263	3	7	969	0	8041	2250	719	32						
79	22	311	0	0	246	6	267	210	15	265	213	14	113	253	4	15	936	0	7931	2170	829	40						
78	30	301	1	1	237	8	294	202	17	286	205	17	133	243	5	26	904	0	7821	2091	939	49						
77	37	290	1	1	228	10	316	194	20	309	197	20	156	234	7	41	871	1	7703	2014	1057	59						
76	45	280	1	1	222	12	337	186	24	337	189	23	180	224	8	68	839	1	7570	1937	1190	70						
75	57	269	2	2	210	14	362	179	27	363	182	27	205	215	10	99	807	2	7420	1862	1340	82						
74	76	259	3	3	202	17	384	172	31	382	175	30	233	207	12	139	775	3	7258	1789	1502	97						
73	98	249	3	3	194	20	401	165	35	400	168	34	262	198	15	193	744	5	7088	1717	1672	112						
72	126	239	5	5	187	23	416	158	39	419	161	38	291	190	18	271	713	7	6895	1647	1865	130						
71	156	229	6	6	179	27	431	151	43	435	154	43	319	182	21	362	683	10	6695	1579	2065	150						
70	185	220	8	8	172	30	450	145	48	451	148	47	345	175	24	445	655	14	6506	1513	2254	171						
69	219	211	10	10	165	34	466	138	52	470	141	52	369	167	28	520	627	19	6326	1449	2434	195						
68	251	203	12	12	158	38	481	132	57	484	135	57	385	160	31	600	599	25	6151	1387	2609	220						
67	278	194	15	15	151	42	496	126	62	493	129	61	401	153	35	693	573	31	5973	1326	2787	247						
66	302	186	18	18	144	47	510	120	67	503	123	66	420	146	39	784	548	39	5801	1267	2959	276						
65	325	178	21	21	138	51	525	114	72	515	117	72	440	139	44	864	523	47	5633	1210	3127	306						
64	347	171	24	24	132	56	539	109	77	524	111	77	458	133	48	949	499	56	5469	1155	3291	338						
63	366	164	28	28	125	61	550	103	83	533	106	82	470	127	53	1033	476	66	5322	1101	3438	372						
62	383	156	31	31	119	66	560	98	88	547	100	87	483	121	58	1102	454	77	5186	1048	3574	407						
61	401	149	35	35	113	71	572	92	94	560	95	93	497	114	63	1161	433	88	5056	997	3704	443						
60	418	142	39	39	108	76	587	87	100	576	89	99	510	109	68	1215	412	100	4927	947	3833	481						
59	433	136	44	44	102	81	603	82	106	591	84	104	524	103	73	1272	391	112	4793	898	3967	520						
58	448	129	48	48	97	87	618	78	112	604	79	110	536	97	78	1318	371	125	4679	851	4081	560						
57	463	123	53	53	91	92	632	73	118	620	75	117	549	92	84	1362	352	139	4563	805	4197	602						
56	478	117	57	57	86	98	646	68	125	636	70	123	564	86	89	1411	333	152	4438	760	4322	644						
55	493	110	62	62	81	104	661	64	131	652	65	129	580	81	95	1461	314	167	4311	716	4449	688						
54	512	105	67	67	76	110	676	60	138	665	61	136	599	76	101	1520	296	182	4169	674	4591	733						
53	534	99	73	73	72	116	686	55	145	676	57	143	618	71	107	1580	279	197	4030	633	4730	780						
52	549	93	78	78	67	123	697	51	152	690	53	149	634	66	113	1636	262	213	3905	593	4855	828						

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 56

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

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	Base 100s*	Base 100s*	Base 100s*	
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 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

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

BASE TEMP (F)	7-9AM**		10-12AM**		1-3PM**		BY TIME OF DAY				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	Hrs	Deg-Hrs	Hrs	Deg	Hrs	Deg
	Above (100s)*		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				
5	1088	0	499	1094	0	570	1095	0	615	1094	0	611	1092	0	561	3275	1	1496
4	1089	0	510	1094	0	581	1095	0	626	1094	0	622	1092	0	572	3275	1	1528
3	1091	0	521	1095	0	592	1095	0	637	1095	0	633	1092	0	583	3276	1	1561
2	1092	0	532	1095	0	603	1095	0	648	1095	0	644	1092	0	594	3276	0	1594
1	1093	0	543	1095	0	614	1095	0	659	1095	0	655	1093	0	605	3276	0	1627
0	1093	0	554	1095	0	625	1095	0	670	1095	0	666	1094	0	616	3276	0	1659
-1	1094	0	565	1095	0	636	1095	0	680	1095	0	677	1094	0	627	3276	0	1692
-2	1095	0	576	1095	0	647	1095	0	691	1095	0	688	1094	0	638	3278	0	1725
-3	1095	0	587	1095	0	658	1095	0	702	1095	0	699	1094	0	649	3280	0	1758
-4	1095	0	598	1095	0	669	1095	0	713	1095	0	710	1095	0	660	3283	0	1791
-5	1095	0	609	1095	0	680	1095	0	724	1095	0	721	1095	0	671	3284	0	1823
-6	1095	0	620	1095	0	691	1095	0	735	1095	0	732	1095	0	682	3285	0	1856

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)
Annual COOLING Wet Bulb Degree Hour Summary

Latitude 39.10 N
Longitude 84.70 E

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 **												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	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/ 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	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, 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	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								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														
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*	
	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	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	14636

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	57.8	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	25	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

Dry Bulb Temperature (F)						Wet Bulb Ave	Percent Relative Humidity					Average Humidity Ratio (lb moisture/lb dry air)					Average wind MPH
Month	Ave	Max	Min	Daily Max	Ave Min		4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	25.9	59	0	32	19	23.2	72	72	67	69	70	0.0022	0.0023	0.0024	0.0022	0.0023	12.5
Feb	28.1	48	7	33	23	25.1	74	74	60	69	70	0.0020	0.0021	0.0022	0.0022	0.0021	10.8
Mar	34.1	70	12	42	27	29.1	66	61	52	58	60	0.0022	0.0023	0.0026	0.0024	0.0024	11.5
Apr	49.6	81	26	59	40	43.4	72	60	56	62	64	0.0048	0.0051	0.0051	0.0050	0.0050	10.7
May	59.2	88	32	68	48	51.7	73	57	54	62	63	0.0062	0.0073	0.0074	0.0071	0.0070	8.9
Jun	65.2	91	41	74	57	59.3	81	69	65	71	73	0.0094	0.0108	0.0107	0.0101	0.0102	9.7
Jul	72.3	91	56	80	65	65.7	81	68	62	70	72	0.0116	0.0133	0.0134	0.0126	0.0126	7.7
Aug	72.1	89	49	82	61	64.2	82	61	53	64	68	0.0106	0.0127	0.0118	0.0115	0.0116	7.6
Sep	63.1	86	41	72	55	57.8	84	70	64	75	75	0.0090	0.0100	0.0101	0.0096	0.0095	8.4
Oct	51.8	82	22	60	43	46.8	78	69	59	71	70	0.0058	0.0066	0.0068	0.0064	0.0063	10.4
Nov	40.3	57	20	45	35	36.9	77	78	68	73	74	0.0042	0.0043	0.0042	0.0040	0.0041	10.1
Dec	27.9	42	7	32	23	25.1	70	74	68	68	71	0.0021	0.0022	0.0022	0.0022	0.0021	11.4
Year	49.2	91	0	57	41	44.1	76	68	61	68	69	0.0059	0.0066	0.0066	0.0063	0.0063	10.0

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
	Above (100s)*	Base	Heat	Above (100s)*	Base	Heat	Above (100s)*	Base	Heat	Above (100s)*	Base	Heat	Above (100s)*	Base	Heat	Above (100s)*	Base	Below Base	100s*	Above Base	100s*	
92	0	493	0	0	436	0	0	411	0	0	421	0	0	462	0	0	1523	8760	3745	0	0	
91	0	482	0	0	425	0	2	400	0	1	410	0	0	451	0	0	1490	8757	3658	3	0	
90	0	471	0	0	414	0	6	389	0	3	399	0	0	440	0	0	1457	8749	3570	11	0	
89	0	460	0	1	403	0	13	379	0	5	388	0	0	429	0	0	1424	8739	3483	21	0	
88	0	449	0	3	392	0	22	368	0	9	377	0	0	418	0	0	1392	8725	3395	35	0	
87	0	438	0	6	381	0	33	357	1	17	367	0	0	407	0	0	1359	8702	3308	58	1	
86	0	427	0	12	370	0	44	347	1	27	356	0	1	396	0	0	1326	8674	3221	86	2	
85	0	416	0	22	360	0	57	336	1	39	345	1	2	385	0	0	1293	8638	3135	122	3	
84	1	405	0	33	349	1	73	326	2	53	335	1	4	374	0	0	1260	8595	3049	165	4	
83	2	394	0	43	338	1	88	316	3	69	324	2	6	363	0	0	1227	8551	2963	209	6	
82	4	383	0	57	328	1	101	306	4	87	314	3	9	352	0	0	1194	8500	2878	260	8	
81	7	372	0	77	318	2	117	296	5	103	304	4	18	341	0	2	1162	8434	2793	326	11	
80	9	361	0	102	307	3	139	286	6	120	294	5	29	331	1	5	1129	8355	2709	405	15	
79	13	351	0	126	298	4	159	277	8	137	285	6	40	320	1	7	1096	8276	2626	484	19	
78	20	340	0	149	288	6	181	267	9	158	275	7	52	310	1	9	1063	8189	2543	571	24	
77	31	329	1	166	279	7	203	258	11	181	266	9	65	299	2	13	1031	8100	2462	660	31	
76	45	318	1	182	270	9	218	250	13	197	257	11	84	289	3	21	998	8012	2381	748	38	
75	58	308	2	201	260	11	240	241	16	213	248	13	105	279	4	33	965	7909	2302	851	46	
74	75	298	2	218	252	13	265	233	18	235	239	15	124	269	5	50	933	7791	2223	969	55	
73	94	288	3	236	243	15	285	224	21	260	231	18	145	260	6	80	901	7658	2146	1102	65	
72	109	278	4	252	234	18	300	216	24	274	223	21	163	250	8	117	869	7544	2070	1216	77	
71	128	268	5	273	226	20	313	208	27	282	214	23	183	241	9	164	837	7415	1995	1345	89	
70	151	258	7	297	218	23	331	201	30	297	206	26	208	232	11	223	806	7251	1922	1509	104	
69	171	249	8	315	210	26	351	193	34	319	198	29	228	223	14	280	776	7094	1850	1666	119	
68	191	240	10	328	202	29	368	186	37	339	191	33	254	215	16	343	746	6936	1780	1824	137	
67	210	231	12	339	195	33	384	179	41	351	183	36	277	206	19	420	717	6776	1711	1984	156	
66	228	222	14	355	187	36	398	172	45	369	176	40	293	198	21	498	689	6618	1644	2142	177	
65	246	214	17	374	180	40	411	165	49	392	169	43	308	190	24	564	661	6463	1579	2297	199	
64	267	205	19	391	173	44	425	158	53	407	162	47	322	183	28	627	634	6319	1515	2441	223	
63	287	197	22	404	166	48	437	151	58	422	155	52	336	175	31	678	608	6194	1452	2566	248	
62	304	189	25	418	159	52	453	145	62	438	148	56	353	167	34	734	582	6058	1391	2702	274	
61	321	181	28	435	152	56	465	138	67	449	142	60	372	160	38	800	557	5917	1331	2843	302	
60	342	174	31	451	146	60	475	132	71	459	135	65	388	153	42	867	533	5776	1273	2984	331	
59	371	166	35	469	140	65	488	126	76	475	129	70	403	146	46	940	509	5612	1216	3148	361	
58	397	159	39	485	133	70	504	120	81	491	123	74	417	139	50	1003	486	5462	1161	3298	394	
57	412	152	43	500	127	75	519	114	86	505	117	79	433	132	54	1062	463	5327	1107	3433	427	
56	427	145	47	512	121	80	534	109	91	524	111	84	457	126	59	1124	441	5181	1054	3579	462	
55	440	139	51	522	116	85	551	103	97	545	106	90	481	120	63	1185	420	5035	1003	3725	499	
54	461	132	56	535	110	90	568	98	102	563	100	95	498	114	68	1248	399	4885	953	3875	537	
53	480	126	61	549	105	96	582	92	108	575	95	101	512	108	73	1309	379	4751	905	4009	576	
52	495	120	65	561	99	101	597	87	114	581	90	107	530	102	78	1365	360	4628	858	4132	617	
51	514	114	71	576	94	107	609	83	120	593	85	113	546	96	84	1427	341	4493	813	4267	659	
50	528	108	76	591	89	113	618	78	126	607	80	119	562	91	89	1494	323	4358	768	4402	702	
49	540	103	81	604	84	119	631	73	133	618	75	125	577	86	95	1550	305	4238	725	4522	747	
48	556	97	87	622	79	125	647	68	139	635	70	131	593	81	101	1597	288	4108	684	4652	793	
47	572	92	92	639	74	131	662	64	145	650	66	138	609	76	107	1642	271	3984	643	4776	840	

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 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			
	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
46	590	87	98	652	70	138	672	60	152	656	61	144	619	71	113	1684	255	243	3886	604	4874	888	
45	604	82	104	662	65	144	682	56	159	663	57	151	628	66	119	1722	239	260	3797	566	4963	937	
44	615	77	110	675	61	151	695	52	166	678	53	157	637	62	126	1758	224	278	3699	528	5061	987	
43	626	72	116	687	57	158	707	48	173	694	49	164	647	57	132	1790	209	295	3607	492	5153	1031	
42	640	68	123	692	53	165	723	44	180	708	45	171	659	53	139	1839	194	313	3497	456	5263	1091	
41	653	63	129	702	49	172	739	40	187	724	41	178	675	48	145	1899	180	332	3366	422	5394	1144	
40	668	59	136	720	45	179	754	37	195	741	37	186	695	44	152	1960	166	351	3220	389	5540	1198	
39	683	55	143	740	42	186	769	33	202	763	34	193	719	40	159	2022	153	371	3061	357	5699	1255	
38	690	51	149	750	38	193	783	30	210	781	31	201	739	37	166	2060	141	392	2954	327	5806	1312	
37	702	47	156	759	35	201	798	27	218	793	28	209	761	33	174	2105	129	413	2841	298	5919	1371	
36	719	43	163	770	31	209	810	24	226	806	25	217	782	30	182	2161	117	434	2710	270	6050	1431	
35	735	39	171	787	28	216	821	21	234	820	22	225	794	27	190	2205	106	456	2597	244	6163	1492	
34	752	36	178	809	25	224	839	19	243	839	19	233	805	24	198	2258	96	478	2457	219	6303	1554	
33	773	32	186	826	22	233	863	16	251	862	17	242	823	21	206	2339	86	501	2272	195	6488	1618	
32	794	29	194	844	20	241	887	14	260	881	15	251	843	19	214	2418	77	525	2091	173	6669	1684	
31	809	26	202	869	17	249	911	12	269	905	12	259	861	16	223	2479	69	549	1923	153	6837	1751	
30	822	23	210	894	15	258	934	10	278	925	11	269	882	14	231	2537	61	574	1764	135	6996	1821	
29	844	21	218	916	13	267	954	9	287	946	9	278	909	12	240	2595	54	600	1594	118	7166	1891	
28	866	18	227	934	12	277	970	8	297	968	8	288	938	10	249	2653	47	626	1429	103	7331	1964	
27	882	16	235	948	10	286	982	6	307	982	7	297	958	9	259	2710	41	653	1297	89	7463	2038	
26	905	14	244	965	9	296	998	5	317	1001	6	307	973	8	269	2779	35	681	1137	77	7623	2113	
25	930	12	254	980	8	305	1014	5	327	1016	5	317	988	6	278	2839	31	709	992	66	7768	2190	
24	946	11	263	990	6	315	1024	4	337	1023	4	328	999	5	288	2881	27	737	896	57	7864	2268	
23	964	9	272	1003	5	325	1033	3	347	1028	3	338	1007	4	298	2932	23	766	791	48	7969	2348	
22	983	8	282	1017	5	335	1040	3	358	1033	3	348	1016	4	309	2975	19	796	695	41	8065	2428	
21	994	7	292	1025	4	345	1044	2	368	1042	2	358	1030	3	319	3017	17	826	606	35	8154	2509	
20	1007	6	302	1035	3	356	1051	2	379	1052	2	369	1042	2	329	3069	14	856	502	29	8258	2591	
19	1016	5	312	1044	3	366	1060	1	389	1061	1	380	1051	2	340	3101	12	887	425	25	8335	2674	
18	1023	5	322	1049	2	377	1067	1	400	1071	1	390	1061	1	350	3115	10	918	372	21	8388	2758	
17	1032	4	333	1054	2	387	1074	1	411	1077	1	401	1067	1	361	3127	9	950	327	17	8433	2842	
16	1040	3	343	1060	1	398	1081	0	421	1079	1	412	1071	1	372	3136	7	981	292	14	8468	2926	
15	1046	3	354	1067	1	408	1086	0	432	1082	0	423	1075	1	382	3150	6	1012	252	11	8508	3011	
14	1050	2	364	1074	1	419	1088	0	443	1085	0	433	1078	1	393	3174	5	1044	209	9	8551	3096	
13	1056	2	375	1079	1	430	1089	0	454	1087	0	444	1080	0	404	3197	4	1076	171	7	8589	3182	
12	1062	2	385	1083	1	441	1089	0	465	1089	0	455	1084	0	415	3211	3	1108	140	6	8620	3268	
11	1065	1	396	1084	0	452	1091	0	476	1090	0	466	1089	0	425	3227	2	1140	112	4	8648	3355	
10	1070	1	406	1086	0	462	1093	0	487	1091	0	477	1091	0	436	3242	2	1172	85	3	8675	3441	
9	1072	1	417	1088	0	473	1094	0	498	1094	0	488	1092	0	447	3251	1	1205	68	3	8692	3528	
8	1076	1	428	1089	0	484	1094	0	508	1095	0	499	1092	0	458	3259	1	1237	53	2	8707	3615	
7	1081	0	439	1090	0	495	1094	0	519	1095	0	510	1093	0	469	3265	1	1270	40	1	8720	3702	
6	1084	0	450	1091	0	506	1095	0	530	1095	0	521	1094	0	480	3266	1	1303	34	1	8726	3789	
5	1085	0	460	1091	0	517	1095	0	541	1095	0	532	1095	0	491	3266	0	1335	32	1	8728	3877	
4	1086	0	471	1092	0	528	1095	0	552	1095	0	543	1095	0	502	3269	0	1368	27	0	8733	3964	
3	1088	0	482	1093	0	539	1095	0	563	1095	0	554	1095	0	513	3274	0	1401	18	0	8742	4051	
2	1091	0	493	1094	0	550	1095	0	574	1095	0	565	1095	0	524	3280	0	1434	9	0	8751	4139	
1	1092	0	504	1094	0	561	1095	0	585	1095	0	575	1095	0	535	3284	0	1466	3	0	8757	4226	

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

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

BY TIME OF DAY																24 HOUR SUMMARY											
7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**				10PM-6AM**				HEATING		COOLING	
TEMP	Hrs	Deg	Hrs	Hrs	Deg	Hrs	Hrs	Deg	Hrs	Hrs	Deg	Hrs	Hrs	Deg	Hrs	Hrs	Deg	Hrs	Hrs	Deg	Hrs	Deg	Hrs	Deg			
(F)	Above	(100s)*		Above	(100s)*		Above	(100s)*	Above	(100s)*		Above	(100s)*	Above	(100s)*		Above	(100s)*	Below	Hrs	Above	Hrs	Deg				
	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	100s*	Base	100s*					
0	1094	0	515	1095	0	572	1095	0	596	1095	0	586	1095	0	546	3285	0	1499	1	0	8759	4314					
-1	1095	0	526	1095	0	582	1095	0	607	1095	0	597	1095	0	557	3285	0	1532	0	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	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.

**** 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	1507	1384	1093	824	474	226	128	116	116	381	355	295	237	166	121	104	100	100
Feb	1554	1436	1192	968	629	350	195	153	151	590	542	457	381	281	208	167	153	152
Mar	1386	1361	1240	1117	850	573	360	236	210	769	743	680	616	491	368	281	236	226
Apr	1045	1148	1183	1182	1029	807	577	390	290	772	798	795	778	693	583	479	397	353
May	789	942	1088	1182	1127	972	757	547	391	730	805	870	909	864	765	641	522	435
Jun	691	846	1034	1173	1167	1050	849	638	467	679	731	788	830	809	747	654	565	500
Jul	734	887	1055	1173	1145	1014	809	602	439	704	759	811	846	814	741	641	545	480
Aug	927	1051	1132	1169	1061	874	657	465	343	795	880	921	931	841	703	555	430	360
Sep	1233	1251	1185	1106	890	642	432	294	251	702	703	668	626	530	427	344	291	275
Oct	1472	1383	1187	1003	700	425	253	186	180	627	601	532	462	349	253	194	170	167
Nov	1500	1371	1095	840	504	250	145	129	129	420	401	343	282	200	141	118	114	114
Dec	1454	1336	1043	768	426	192	115	108	108	299	285	245	201	146	110	96	93	93
Year	1189	1198	1127	1042	834	616	441	323	257	622	634	618	593	517	432	357	302	272

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

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

JACKSONVILLE, FLORIDA
WBAH 13889
TABLE A:

TRY Data (1965)

Latitude 30.50 N
Longitude 81.70 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															
80 to 84	0	0	0	0	1	0	0	0	1	68.0	744	20412	0	0	
75 to 79	0	0	0	5	14	9	1	0	29	64.6	738	16701	6	9	
70 to 74	1	0	0	10	9	13	7	1	41	64.1	697	13107	47	135	
65 to 69	3	3	8	17	26	19	10	10	96	59.6	640	9728	104	476	
60 to 64	20	12	10	13	11	13	15	18	112	57.3	516	6801	228	1269	
55 to 59	8	13	10	22	17	20	22	12	124	50.2	425	4451	319	2639	
50 to 54	23	19	22	12	9	10	15	19	129	48.0	290	2647	454	4555	
45 to 49	12	13	15	5	2	4	11	12	74	43.1	184	1511	560	7139	
40 to 44	11	11	8	3	2	4	5	10	54	38.6	105	785	639	10133	
35 to 39	6	10	5	4	2	1	6	4	38	33.2	68	349	676	13417	
30 to 34	5	5	9	2	0	0	1	7	29	29.4	33	97	711	16885	
25 to 29	4	7	6	0	0	0	0	0	17	25.9	4	2	740	20510	
Feb															
80 to 84	0	0	0	0	5	2	0	0	7	65.9	672	17298	0	0	
75 to 79	0	0	0	6	7	4	1	0	18	66.2	656	13971	16	33	
70 to 74	0	0	0	5	12	15	4	3	39	63.5	633	10732	39	154	
65 to 69	13	5	5	10	13	15	14	16	91	61.4	576	7687	96	469	
60 to 64	12	12	11	13	17	11	12	8	96	57.1	479	5045	193	1187	
55 to 59	9	17	16	25	20	24	18	14	143	52.3	377	2886	295	2388	
50 to 54	21	15	21	17	7	9	24	22	136	48.6	214	1415	458	4277	
45 to 49	12	15	17	2	2	4	8	14	74	42.3	103	658	569	6880	
40 to 44	9	9	5	6	1	0	3	5	38	37.8	48	281	624	9863	
35 to 39	5	2	4	0	0	0	0	1	12	31.8	25	113	647	13055	
30 to 34	3	9	5	0	0	0	0	1	18	28.6	12	14	660	16316	
Mar															
85 to 89	0	0	0	0	7	6	0	0	13	69.9	744	19293	0	0	
80 to 84	0	0	0	7	12	14	2	0	35	69.3	719	15631	25	58	
75 to 79	0	0	1	11	20	13	8	0	53	66.4	674	12136	70	283	
70 to 74	5	3	6	17	8	6	11	13	69	65.8	618	8898	126	765	
65 to 69	22	21	21	14	9	15	12	18	132	62.8	531	6012	213	1599	
60 to 64	14	18	16	12	19	20	15	14	128	57.7	373	3751	371	3058	
55 to 59	11	9	13	10	8	9	28	16	104	52.3	276	2132	468	5159	
50 to 54	15	13	14	13	4	4	9	16	88	48.6	163	1045	581	7792	
45 to 49	12	8	6	5	6	6	6	9	58	42.2	86	418	658	10885	
40 to 44	13	15	10	4	0	0	2	7	51	37.6	39	89	705	14276	
35 to 39	1	6	6	0	0	0	0	0	13	35.2	2	1	742	17908	

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

JACKSONVILLE, FLORIDA

WBAN 13889

TABLE A:

TRY Data (1965)

Latitude 30.50 N

Longitude 81.70 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*	
	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	2	2	0	0	4	69.3	720	15885	0	0	
85 to 89	0	0	0	3	22	16	0	0	41	67.6	708	12304	12	19	
80 to 84	0	0	0	23	31	22	7	0	63	67.5	651	8904	69	219	
75 to 79	0	0	6	31	12	21	17	4	91	65.9	554	5896	166	811	
70 to 74	21	16	29	19	14	11	32	30	172	65.4	453	3365	267	1880	
65 to 69	29	24	27	10	5	12	22	27	156	62.4	268	1605	452	3720	
60 to 64	22	23	13	1	2	6	7	19	93	57.9	135	649	585	6364	
55 to 59	10	15	8	1	2	0	5	9	50	53.9	55	201	665	9516	
50 to 54	8	12	7	2	0	0	0	1	30	49.5	19	25	701	12940	
May															
95 to 99	0	0	0	0	0	1	0	0	1	72.0	744	15522	0	0	
90 to 94	0	0	0	3	26	7	0	0	36	72.5	734	11811	10	9	
85 to 89	0	0	0	33	47	27	2	0	109	70.4	684	8257	60	175	
80 to 84	0	0	13	45	19	51	15	0	143	68.8	529	5212	215	850	
75 to 79	8	3	31	12	1	7	50	34	146	68.8	407	2872	337	2230	
70 to 74	49	25	26	0	0	0	26	47	173	67.2	233	1252	511	4330	
65 to 69	21	27	10	0	0	0	0	11	69	63.8	98	458	646	7256	
60 to 64	13	26	12	0	0	0	0	1	52	59.2	42	104	702	10622	
55 to 59	2	12	1	0	0	0	0	0	15	55.3	4	3	740	14241	
Jun															
90 to 94	0	0	0	2	6	3	0	0	11	73.7	718	11158	2	2	
85 to 89	0	0	0	26	39	19	0	0	84	73.6	694	7609	26	53	
80 to 84	0	0	19	42	21	33	19	0	134	72.5	568	4436	152	480	
75 to 79	22	16	44	15	14	20	50	47	228	72.3	428	1929	292	1573	
70 to 74	53	50	20	3	10	14	20	37	207	70.0	132	490	588	3734	
65 to 69	7	12	7	2	0	1	1	5	35	65.0	39	130	681	6974	
60 to 64	8	12	0	0	0	0	0	1	21	61.3	10	9	710	10453	

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

JACKSONVILLE, FLORIDA

WBAN 13889

TABLE A:

TRY Data (1965)

Latitude 30.50 N

Longitude 81.70 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	1	1	0	0	2	75.5	744	13199	0	0	
90 to 94	0	0	0	15	32	10	0	0	57	76.1	725	9504	19	25	
85 to 89	0	0	2	42	36	27	3	0	110	75.2	651	6040	93	281	
80 to 84	0	0	32	27	15	33	36	8	151	74.8	511	3123	233	1084	
75 to 79	59	33	50	9	9	18	46	69	293	73.2	335	949	409	2630	
70 to 74	30	54	8	0	0	4	8	15	119	71.0	38	86	706	5487	
65 to 69	4	6	1	0	0	0	0	1	12	65.3	6	9	738	9130	
Aug															
90 to 94	0	0	0	15	49	20	0	0	84	77.4	725	8962	19	18	
85 to 89	0	0	3	55	23	23	8	0	112	76.3	627	5593	117	369	
80 to 84	0	0	36	20	9	29	33	16	143	75.4	501	2788	243	1284	
75 to 79	70	54	45	3	9	18	49	65	313	73.7	306	701	438	2917	
70 to 74	23	39	9	0	3	3	3	12	92	71.7	9	7	735	5943	
Sep															
90 to 94	0	0	0	3	7	1	0	0	11	77.3	720	9731	0	0	
85 to 89	0	0	0	35	41	23	0	0	99	75.3	679	6191	41	60	
80 to 84	4	0	26	36	28	43	23	5	165	74.8	559	3086	161	555	
75 to 79	71	57	43	10	8	16	58	74	337	73.4	292	818	428	1887	
70 to 74	13	33	20	6	6	7	9	11	105	70.9	48	70	672	4739	
65 to 69	2	0	1	0	0	0	0	0	3	68.7	0	0	720	8269	

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

JACKSONVILLE, FLORIDA
WBAN 13889
TABLE A:

TRY Data (1965)

Latitude 30.50 N
Longitude 81.70 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	Hour of Day		16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
				10-12	13-15									
Oct														
90 to 94	0	0	0	0	3	1	0	0	4	77.0	744	16949	0	0
85 to 89	0	0	0	6	15	10	0	0	31	72.8	735	13246	9	17
80 to 84	0	0	1	21	21	12	7	0	62	71.0	699	9672	45	163
75 to 79	13	8	12	29	23	25	14	12	136	69.9	608	6384	136	595
70 to 74	13	17	25	15	20	23	36	27	176	66.6	444	3737	300	1668
65 to 69	37	34	24	12	5	12	13	27	164	63.7	268	1964	476	3615
60 to 64	10	11	9	10	6	9	12	6	73	58.0	138	1004	606	6375
55 to 59	5	6	13	0	0	1	8	7	40	53.5	80	483	664	9574
50 to 54	7	8	4	0	0	0	3	13	35	48.9	46	169	698	12980
45 to 49	8	7	4	0	0	0	0	1	20	44.9	15	29	729	16560
40 to 44	0	2	1	0	0	0	0	0	3	42.3	0	0	744	20251
Nov														
80 to 84	0	0	0	0	2	1	0	0	3	67.3	720	14184	0	0
75 to 79	0	0	0	13	29	10	0	0	52	64.7	707	10600	13	16
70 to 74	0	0	1	27	25	30	6	0	89	64.0	630	7247	90	263
65 to 69	6	8	15	27	25	28	39	24	172	61.7	534	4329	186	945
60 to 64	36	29	28	14	3	15	22	31	178	59.7	307	2195	413	2411
55 to 59	24	24	21	5	4	4	15	19	116	53.7	184	1010	536	4826
50 to 54	12	15	12	2	2	1	5	8	57	49.0	75	382	645	7798
45 to 49	11	7	7	2	0	1	1	6	35	44.9	31	114	689	11130
40 to 44	1	7	5	0	0	0	2	0	15	39.3	9	20	711	14636
35 to 39	0	0	1	0	0	0	0	2	3	34.7	1	1	719	18217
Dec														
75 to 79	0	0	0	0	2	1	0	0	3	63.7	744	17046	0	0
70 to 74	0	0	0	6	18	7	0	0	31	61.8	729	13545	15	19
65 to 69	1	0	0	15	29	25	3	4	77	59.3	676	9802	68	196
60 to 64	7	6	8	27	22	26	24	5	125	56.7	591	6607	153	721
55 to 59	21	19	22	19	11	20	24	27	163	54.1	434	4005	310	1839
50 to 54	17	18	14	19	10	7	20	21	126	48.6	295	2200	449	3754
45 to 49	20	14	16	5	1	7	13	16	92	44.6	174	1051	570	6325
40 to 44	14	18	18	2	0	0	8	13	73	39.7	92	375	652	9369
35 to 39	13	13	11	0	0	0	1	7	45	34.5	29	78	715	12792
30 to 34	0	5	4	0	0	0	0	0	9	30.3	4	3	740	16437

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

JACKSONVILLE, FLORIDA
WBAN 13889
TABLE B:

TRY Data (1965)

Latitude 30.50 N
Longitude 81.70 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	2	0	0	3	0.0	0.0	0.0	0.0	75.0	74.0	0.0	0.0	74.3
90 to 94	0	0	0	38	125	44	0	0	207	0.0	0.0	0.0	76.3	75.8	75.3	0.0	0.0	75.8
85 to 89	0	0	5	200	230	151	13	0	599	0.0	0.0	77.0	74.7	72.5	73.3	75.2	0.0	73.6
80 to 84	4	0	127	221	164	240	142	29	927	76.8	0.0	74.7	71.8	70.7	71.7	73.9	75.2	72.4
75 to 79	243	171	232	144	148	162	294	305	1699	73.2	73.2	72.6	68.4	67.3	69.2	71.5	72.9	71.5
70 to 74	208	237	144	108	125	133	162	196	1313	69.7	70.4	68.7	64.0	63.6	65.1	67.2	68.3	67.7
65 to 69	145	140	119	107	112	127	114	143	1007	64.3	64.9	64.2	60.4	57.6	59.0	62.4	63.4	62.2
60 to 64	142	149	107	90	80	100	107	103	878	59.8	60.3	60.0	55.9	52.9	54.7	58.1	59.6	58.1
55 to 59	90	115	104	82	62	78	120	104	755	54.4	54.7	54.9	50.7	49.7	50.0	52.2	53.3	52.8
50 to 54	103	100	94	65	32	31	76	100	601	50.1	50.1	49.5	46.5	43.9	44.8	48.0	49.0	48.6
45 to 49	75	64	65	19	11	22	39	58	353	44.1	45.1	44.6	39.3	40.3	40.5	42.0	43.7	43.5
40 to 44	48	62	47	15	3	4	20	35	234	39.0	39.9	39.3	35.5	34.7	35.8	37.2	38.2	38.7
35 to 39	25	31	27	4	2	1	7	14	111	33.4	34.6	34.1	31.0	32.0	33.0	32.7	34.0	33.8
30 to 34	8	19	16	2	0	0	1	8	56	29.0	29.2	29.2	27.0	0.0	0.0	31.0	30.5	29.3
25 to 29	4	7	6	0	0	0	0	0	17	26.5	26.0	25.5	0.0	0.0	0.0	0.0	0.0	25.9

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	55.1	81	27	66	45	82	68	51	71	70	0.0064	0.0069	0.0067	0.0071	0.0067	9.3
Feb	56.8	82	30	67	48	83	72	56	73	72	0.0072	0.0074	0.0073	0.0076	0.0074	9.9
Mar	61.6	87	37	72	53	85	70	54	72	72	0.0088	0.0089	0.0087	0.0088	0.0088	10.4
Apr	70.4	91	50	81	61	86	63	49	68	69	0.0108	0.0109	0.0101	0.0107	0.0106	10.1
May	76.6	95	56	88	65	86	55	45	66	65	0.0122	0.0125	0.0119	0.0128	0.0124	8.8
Jun	77.0	94	61	86	70	89	67	66	79	77	0.0147	0.0151	0.0148	0.0155	0.0151	8.6
Jul	79.8	95	65	90	73	90	68	64	79	77	0.0162	0.0167	0.0163	0.0165	0.0164	8.2
Aug	80.5	94	71	90	74	91	68	66	81	78	0.0169	0.0174	0.0171	0.0173	0.0171	7.6
Sep	79.0	92	69	86	74	89	71	69	82	79	0.0166	0.0166	0.0165	0.0169	0.0167	9.9
Oct	69.7	90	43	79	62	89	69	60	77	76	0.0119	0.0122	0.0117	0.0120	0.0120	9.0
Nov	62.8	80	37	73	54	89	71	59	79	77	0.0091	0.0096	0.0094	0.0098	0.0094	7.6
Dec	54.6	76	31	65	46	86	75	60	81	77	0.0066	0.0074	0.0074	0.0075	0.0071	7.6
Year	68.7	95	27	79	60	87	68	58	76	74	0.0115	0.0118	0.0115	0.0119	0.0116	8.9

JACKSONVILLE, FLORIDA

WBAN 13889

TABLE D:

TRY Data (1965)

Latitude 30.50 N

Longitude 81.70 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	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	
	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
96	0	338	0	0	247	0	0	213	0	0	240	0	0	300	0	0	1053	0	8760	2391	0	0							
95	0	327	0	0	236	0	0	202	0	1	229	0	0	289	0	0	1020	0	8758	2303	2	0							
94	0	316	0	0	225	0	10	191	0	4	218	0	0	278	0	0	987	0	8746	2216	14	0							
93	0	305	0	0	214	0	30	180	0	7	207	0	0	267	0	0	955	0	8722	2128	38	0							
92	0	294	0	2	203	0	55	170	1	15	196	0	0	256	0	0	922	0	8687	2041	73	1							
91	0	283	0	8	192	0	82	159	1	25	186	0	0	245	0	0	889	0	8645	1955	115	2							
90	0	272	0	24	182	0	110	149	2	37	175	1	0	234	0	0	856	0	8587	1868	173	3							
89	0	261	0	48	171	1	141	140	4	52	165	1	0	223	0	0	823	0	8517	1783	243	5							
88	0	250	0	73	161	1	175	130	5	66	154	2	1	212	0	0	790	0	8443	1698	317	8							
87	0	239	0	112	151	2	224	121	7	93	144	2	2	202	0	0	758	0	8327	1614	433	12							
86	0	228	0	163	141	3	284	113	10	138	134	4	5	191	0	0	725	0	8168	1531	592	17							
85	3	217	0	214	132	5	335	105	13	180	125	5	10	180	0	0	692	0	8017	1451	743	23							
84	10	206	0	267	123	8	375	98	16	221	116	7	18	169	0	0	659	0	7868	1371	892	31							
83	26	196	0	320	115	11	410	91	20	272	107	10	30	158	1	0	626	0	7701	1293	1059	41							
82	50	185	1	367	108	14	440	84	24	326	99	13	48	148	1	1	593	0	7526	1217	1234	53							
81	77	175	1	407	101	18	471	78	29	375	92	16	80	137	1	6	560	0	7343	1143	1417	66							
80	111	165	2	440	94	22	504	71	34	417	85	20	127	127	2	21	528	0	7137	1070	1623	81							
79	153	155	3	475	88	27	535	66	39	456	78	25	188	118	4	58	495	0	6894	1000	1866	98							
78	200	146	5	509	82	32	566	60	45	490	72	29	253	109	6	135	463	1	6606	932	2154	118							
77	246	137	7	539	76	37	597	55	50	524	66	34	316	101	9	256	432	3	6280	868	2480	141							
76	288	129	10	564	71	42	628	50	57	559	61	40	374	94	13	420	403	6	5925	807	2835	168							
75	337	121	13	589	65	48	656	46	63	587	56	46	425	87	17	633	375	12	5531	749	3229	198							
74	384	114	17	614	60	54	683	42	70	616	51	51	472	80	21	858	350	19	5131	696	3629	232							
73	421	107	21	635	56	61	716	38	77	646	46	58	510	74	26	1030	326	29	4800	647	3960	271							
72	450	100	25	657	51	67	745	34	84	673	42	64	540	69	31	1150	304	40	4543	600	4217	312							
71	472	94	30	682	47	74	767	31	92	700	38	71	572	63	37	1252	284	52	4314	556	4446	355							
70	494	88	35	702	43	81	785	27	99	722	34	78	600	58	43	1346	264	65	4109	514	4651	401							
69	521	82	40	723	39	88	803	24	107	745	30	86	619	53	49	1432	245	79	3916	474	4844	448							
68	546	76	45	746	36	95	826	22	115	771	27	93	634	49	55	1507	227	93	3728	435	5032	497							
67	567	71	51	768	32	103	850	19	124	796	24	101	655	44	61	1586	209	109	3535	399	5225	549							
66	588	66	56	787	29	110	872	17	132	823	21	109	684	40	68	1671	193	125	3333	365	5427	602							
65	613	61	62	806	26	118	894	15	141	848	18	118	712	36	75	1767	177	142	3119	332	5641	657							
64	640	56	69	828	23	127	914	13	150	870	16	126	739	32	82	1878	162	160	2890	302	5870	715							
63	666	52	75	847	21	135	931	11	160	893	14	135	767	29	90	1971	149	180	2683	275	6077	775							
62	691	47	82	866	18	144	945	9	169	913	12	144	790	26	98	2048	136	200	2505	249	6255	836							
61	712	44	89	884	16	152	956	8	178	929	10	153	807	23	106	2126	124	221	2344	224	6416	900							
60	727	40	96	900	14	161	974	7	188	948	9	163	823	20	114	2189	113	242	2198	202	6562	965							
59	748	36	104	918	12	170	992	6	198	966	7	172	843	17	122	2246	102	265	2045	181	6715	1031							
58	770	33	111	935	11	180	1005	5	208	981	6	182	866	15	131	2302	92	287	1899	161	6861	1099							
57	790	30	119	953	9	189	1016	4	218	995	5	192	891	13	140	2360	83	311	1753	143	7007	1168							
56	814	27	127	969	8	199	1027	3	228	1009	4	202	915	11	149	2422	74	335	1602	126	7158	1239							
55	832	24	135	982	6	208	1039	2	239	1026	3	212	940	9	158	2487	65	359	1452	110	7308	1311							
54	847	21	144	995	5	218	1049	2	249	1039	3	222	962	8	167	2558	58	384	1307	97	7453	1385							
53	868	19	152	1009	4	228	1057	1	260	1045	2	233	983	6	177	2623	51	410	1172	84	7588	1460							
52	894	17	161	1026	4	238	1067	1	270	1052	2	243	1000	5	187	2697	45	437	1023	73	7737	1537							
51	913	15	170	1038	3	249	1073	1	281	1059	1	254	1013	4	197	2761	39	464	901	64	7859	1615							

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

JACKSONVILLE, FLORIDA
WBAN 13889
TABLE D:

TRY Data (1965)

Latitude 30.50 N
Longitude 81.70 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		Deg	Hrs	Deg	
(F)	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	100s*	Base	100s*			
50	926	13	179	1049	3	259	1077	1	292	1065	1	265	1024	4	207	2804	34	492	814	55	7946	1694	
49	941	12	189	1056	2	270	1081	1	302	1071	1	275	1031	3	218	2852	29	520	726	48	8034	1774	
48	958	10	198	1061	2	280	1085	0	313	1079	0	286	1040	2	228	2899	25	549	637	41	8123	1855	
47	973	9	208	1065	2	291	1087	0	324	1084	0	297	1050	2	238	2936	22	578	563	35	8197	1936	
46	985	8	218	1069	1	302	1089	0	335	1087	0	308	1059	2	249	2967	18	608	504	30	8256	2019	
45	993	7	228	1073	1	312	1090	0	346	1089	0	319	1065	1	260	3003	15	638	446	25	8314	2102	
44	1001	6	238	1075	1	323	1090	0	357	1090	0	329	1069	1	270	3042	13	668	390	21	8370	2185	
43	1014	5	248	1079	1	334	1091	0	368	1091	0	340	1075	1	281	3081	11	698	327	17	8433	2269	
42	1025	4	258	1083	0	345	1092	0	379	1091	0	351	1078	1	292	3116	9	729	273	14	8487	2354	
41	1032	3	268	1086	0	356	1092	0	390	1092	0	362	1081	0	303	3143	7	761	233	11	8527	2439	
40	1039	3	278	1088	0	366	1092	0	400	1093	0	373	1085	0	313	3162	6	792	199	9	8561	2524	
39	1048	2	289	1089	0	377	1093	0	411	1094	0	384	1088	0	324	3181	5	824	166	8	8594	2610	
38	1055	2	299	1089	0	388	1094	0	422	1095	0	395	1089	0	335	3199	4	856	136	6	8624	2696	
37	1060	2	310	1091	0	399	1095	0	433	1095	0	406	1090	0	346	3210	3	888	117	5	8643	2782	
36	1064	1	321	1092	0	410	1095	0	444	1095	0	417	1092	0	357	3218	2	920	103	4	8657	2869	
35	1068	1	331	1093	0	421	1095	0	455	1095	0	428	1093	0	368	3230	2	952	84	3	8676	2956	
34	1073	1	342	1093	0	432	1095	0	466	1095	0	439	1094	0	379	3242	1	985	67	2	8693	3042	
33	1077	1	353	1093	0	443	1095	0	477	1095	0	450	1095	0	390	3249	1	1017	55	1	8705	3129	
32	1080	0	364	1094	0	454	1095	0	488	1095	0	461	1095	0	401	3258	1	1050	42	1	8718	3217	
31	1084	0	374	1094	0	465	1095	0	499	1095	0	472	1095	0	412	3267	0	1082	29	1	8731	3304	
30	1087	0	385	1094	0	476	1095	0	510	1095	0	483	1095	0	423	3272	0	1115	20	0	8740	3391	
29	1089	0	396	1095	0	487	1095	0	521	1095	0	494	1095	0	434	3277	0	1148	13	0	8747	3479	
28	1090	0	407	1095	0	498	1095	0	532	1095	0	505	1095	0	445	3283	0	1181	6	0	8754	3566	
27	1093	0	418	1095	0	508	1095	0	543	1095	0	515	1095	0	455	3285	0	1213	2	0	8758	3654	
26	1095	0	429	1095	0	519	1095	0	554	1095	0	526	1095	0	466	3285	0	1246	0	0	8760	3741	

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

JACKSONVILLE, FLORIDA

WBAN 13889

TABLE E:

TRY Data (1965)

Latitude 30.50 N

Longitude 81.70 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:	7460	6984	6530	6040	5474	4691	3848	2982	1561	297	17
Annual Wet Bulb Cooling deg-hrs:	130013.	108084.	87577.	68492.	50904.	35212.	22051.	11343.	3725.	478.	18.

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	89	89	89	88	86	83	78	70	61	41	20	.001		
.002	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	79	76	72	65	56	38	19	.002		
.003	0	0	0	0	0	0	0	0	0	0	0	72	72	72	71	71	69	65	59	52	35	17	.003		
.004	0	0	0	0	1	1	1	1	1	1	1	63	63	63	63	63	61	59	54	47	32	16	.004		
.005	0	0	0	1	1	1	2	2	2	2	2	56	56	56	56	55	54	53	48	43	29	14	.005		
.006	0	0	1	1	2	2	3	3	3	3	3	48	48	48	48	48	48	46	43	38	26	13	.006		
.007	0	0	1	2	3	3	4	4	5	5	5	41	41	41	41	41	41	40	38	34	23	11	.007		
.008	0	0	1	2	3	5	6	6	7	7	7	34	34	34	34	34	34	34	32	29	20	10	.008		
.009	0	1	1	2	4	6	7	8	9	9	9	28	28	28	28	28	28	28	27	25	17	8	.009		
.010	0	1	1	3	5	7	10	11	12	12	12	23	23	23	23	23	23	23	22	21	15	7	.010		
.011	0	1	2	3	6	9	12	14	15	15	16	18	18	18	18	18	18	18	17	17	12	6	.011		
.012	0	1	2	4	6	10	14	17	18	19	20	13	13	13	13	13	13	13	13	9	4	4	.012		
.013	0	1	2	4	7	11	16	20	22	24	25	10	10	10	10	10	10	10	10	9	7	3	.013		
.014	0	1	2	5	8	13	18	23	26	28	30	6	6	6	6	6	6	6	6	6	5	2	.014		
.015	0	1	2	5	9	14	20	26	30	33	35	4	4	4	4	4	4	4	4	4	3	1	.015		
.016	0	1	3	5	9	16	22	29	34	38	41	2	2	2	2	2	2	2	2	2	1	1	.016		
.017	0	1	3	6	10	17	24	32	38	43	47	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	0	1	3	6	11	18	27	35	42	49	54	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	25	48	58	46	38	57	57	54	60	39	36	38	48
VERTICAL													
NORTH	100	100	100	98	89	90	92	97	100	100	100	100	96
WEST	42	60	67	62	58	77	75	77	72	55	49	52	64
SOUTH	25	49	66	70	79	93	91	80	74	44	34	33	59
EAST	42	61	71	67	56	69	69	65	71	53	51	51	62
% Possible Sun	57	61	66	72	69	62	60	59	54	57	60	56	61

FOOTNOTES: * Corrected For Cloud Cover.

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

JACKSONVILLE, FLORIDA
WBAN 13889

TRY Data (1965)

Latitude 30.50 N
Longitude 81.70 E

TABLE H:

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

Month	Under Clear Sky Assumption*										Corrected For Cloud Cover**										Obs ****		
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NNW	NNE/ NNW	N	S-45 ***	horiz	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NNW	NNE/ NNW	N		S-45 ***	horiz
Jan	1812	1689	1391	1134	752	437	252	198	197	2066	1241	1182	1111	928	764	520	323	211	177	176	1330	830	900
Feb	1739	1632	1427	1241	912	589	366	247	235	2201	1520	886	847	761	679	534	398	307	260	253	1033	806	1164
Mar	1452	1442	1389	1326	1104	828	571	373	295	2239	1891	970	945	897	849	737	612	508	432	403	1217	1118	1522
Apr	1025	1152	1249	1317	1226	1045	806	572	391	2103	2183	917	954	977	989	918	808	681	568	489	1456	1535	1856
May	745	944	1137	1293	1314	1217	1007	773	562	1961	2377	824	973	1110	1221	1227	1146	983	804	648	1649	1972	1956
Jun	642	847	1077	1264	1332	1281	1100	875	678	1877	2441	755	855	969	1066	1096	1061	957	833	729	1314	1639	1885
Jul	691	890	1100	1274	1320	1252	1063	837	636	1901	2399	793	900	1012	1108	1129	1082	969	836	717	1359	1666	1802
Aug	897	1053	1184	1288	1244	1106	886	660	470	2000	2225	882	983	1051	1101	1060	963	824	684	568	1392	1546	1694
Sep	1267	1298	1300	1284	1116	882	646	446	341	2132	1964	911	926	916	897	810	699	593	501	446	1206	1200	1442
Oct	1619	1546	1395	1255	972	673	438	293	267	2177	1633	1081	1049	960	872	698	522	389	311	296	1339	1067	1223
Nov	1796	1684	1421	1179	823	500	294	217	214	2107	1327	940	881	753	636	464	313	222	189	187	1060	718	996
Dec	1806	1681	1369	1094	708	400	228	190	190	2007	1163	960	905	758	623	431	279	197	177	177	1034	656	818
Year	1288	1320	1286	1245	1069	852	640	475	374	2063	1865	926	945	926	902	804	686	572	482	425	1285	1232	1438

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	ESF/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N		
Jan	1546	1415	1161	939	608	331	187	161	161	1004	928	773	630	420	249	161	144	143		
Feb	1443	1351	1184	1030	744	464	272	196	191	727	696	627	559	435	319	241	209	206		
Mar	1117	1165	1144	1103	912	666	439	282	239	770	766	734	699	604	496	406	345	327		
Apr	712	881	1009	1085	1017	852	638	435	307	692	751	789	806	750	653	544	451	393		
May	501	678	898	1058	1089	1000	813	601	415	606	736	888	1000	1013	939	795	634	501		
Jun	447	596	835	1030	1102	1054	888	686	495	586	657	772	870	901	870	777	667	571		
Jul	474	633	861	1039	1093	1030	857	655	467	614	694	811	907	930	889	788	669	563		
Aug	617	790	952	1059	1033	906	710	510	361	672	774	854	905	875	788	665	543	456		
Sep	942	1033	1062	1061	922	715	503	339	276	712	745	748	737	666	571	477	398	362		
Oct	1316	1272	1156	1045	796	532	330	228	217	880	862	794	722	571	416	303	248	240		
Nov	1524	1407	1183	984	668	384	220	176	174	791	731	624	527	376	245	174	153	152		
Dec	1550	1413	1143	905	571	300	173	155	154	814	756	630	514	348	216	155	144	144		
Year	1013	1051	1048	1028	880	687	504	370	289	740	759	755	741	659	556	458	385	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	12	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

TRY Data (1972)

Latitude 38.20 N
Longitude 85.70 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	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	38	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	1828	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)					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	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	41.5	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

TRY Data (1972)

WBAN 93821

Latitude 38.20 N

Longitude 85.70 E

TABLE D:

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**		24 HOUR SUMMARY			
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	HEATING		COOLING	
	Above (100s)*		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
95	0	477	0	0	410	0	0	363	0	0	407	0	0	1415	0	0
94	0	466	0	0	399	0	0	352	0	0	396	0	0	1382	0	0
93	0	455	0	0	388	0	4	341	0	2	340	0	0	1349	0	0
92	0	444	0	0	377	0	11	331	0	7	329	0	0	1316	0	0
91	0	433	0	1	366	0	17	320	0	14	318	0	0	1283	0	0
90	0	422	0	4	355	0	27	309	0	26	307	0	0	1250	0	0
89	0	411	0	8	344	0	42	298	1	41	297	1	2	1218	0	0
88	0	400	0	15	333	0	57	288	1	56	286	1	6	1185	0	0
87	0	389	0	23	323	0	75	278	2	74	276	2	11	1152	0	0
86	0	378	0	33	312	1	100	268	3	97	266	3	14	1119	0	0
85	1	367	0	46	301	1	125	258	4	120	256	4	21	1086	0	0
84	3	356	0	60	291	2	146	248	5	141	246	5	35	1053	0	0
83	4	345	0	73	281	2	167	239	7	161	237	7	48	1020	0	0
82	6	335	0	90	271	3	190	230	9	184	228	8	64	988	0	0
81	12	324	0	111	261	4	216	221	11	209	219	10	84	955	0	0
80	18	313	0	132	251	5	240	212	13	231	210	12	110	922	0	0
79	24	302	1	154	241	7	262	204	15	256	201	15	134	890	0	0
78	33	292	1	180	232	8	290	195	18	280	193	18	155	857	1	0
77	45	281	1	206	223	10	312	188	21	305	185	20	177	825	2	0
76	58	271	2	229	214	12	331	180	24	336	177	24	201	793	3	0
75	73	260	2	256	206	15	354	172	28	362	170	27	228	762	5	0
74	93	250	3	283	198	18	376	165	32	383	163	31	258	731	6	0
73	114	240	4	311	190	21	400	158	35	403	156	35	287	701	9	0
72	137	230	5	338	182	24	424	151	40	424	149	39	313	671	12	0
71	164	221	7	363	174	27	445	144	44	446	142	43	339	643	16	0
70	195	212	9	383	167	31	465	138	48	465	136	48	362	615	22	0
69	221	203	11	401	160	35	480	132	53	481	130	53	381	588	28	0
68	247	194	13	419	153	39	498	126	58	500	124	58	402	562	34	0
67	273	186	16	439	147	43	520	120	63	520	118	63	425	537	42	0
66	299	178	19	457	140	48	536	114	68	539	112	68	445	512	50	0
65	325	170	22	473	134	53	548	109	74	551	107	73	467	488	59	0
64	351	163	25	490	128	57	562	103	79	559	101	79	491	465	69	0
63	380	155	29	505	122	62	575	98	85	571	96	85	513	443	79	0
62	404	148	33	520	116	67	587	93	91	583	91	90	530	421	90	0
61	423	141	37	537	110	73	601	88	97	596	86	96	544	400	102	0
60	441	135	41	553	105	78	612	83	103	611	81	102	555	380	115	0
59	458	128	46	567	100	84	623	78	109	629	76	109	568	361	128	0
58	479	122	50	582	94	90	637	74	115	643	71	115	583	342	142	0
57	496	116	55	594	89	95	648	69	122	659	67	121	597	323	157	0
56	510	110	60	606	84	101	661	65	128	677	63	128	609	305	171	0
55	525	104	66	617	79	108	678	60	135	692	59	135	621	288	187	0
54	541	99	71	628	75	114	695	56	142	707	55	142	637	271	203	0
53	555	93	76	637	70	120	709	52	149	722	51	149	657	254	219	0
52	564	88	82	648	66	127	720	49	156	736	47	156	676	238	236	0
51	574	83	88	664	61	133	734	45	163	750	44	164	693	223	254	0
50	591	78	93	678	57	140	749	41	171	760	40	171	711	208	272	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

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

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)*	Above	Base	(100s)*	Above	Base	(100s)*	Above	Base	(100s)*	Above	Base	(100s)*	Above	Base	(100s)*	Below	Hrs	Above	Hrs
	Heat	Heat	Cool	Heat	Heat	Cool	Heat	Heat	Cool	Heat	Heat	Cool	Heat	Heat	Cool	Heat	Heat	Cool	Base	100s*	Base	100s*
49	607	73	99	692	53	147	765	38	178	773	37	179	727	46	143	1882	194	290	3312	440	5448	1037
48	618	68	106	706	49	154	782	35	186	789	34	187	738	42	151	1923	180	309	3202	408	5558	1092
47	637	63	112	722	45	161	792	32	194	802	31	195	755	39	158	1982	167	329	3068	376	5692	1148
46	656	59	118	737	41	168	802	29	202	812	28	203	778	36	166	2059	154	349	2915	346	5845	1206
45	674	54	125	752	38	176	815	26	210	823	25	211	794	33	174	2128	142	370	2773	318	5987	1265
44	697	50	132	770	35	183	832	23	218	843	23	219	808	30	182	2178	131	391	2630	291	6130	1326
43	715	46	139	787	31	191	856	21	227	865	20	228	825	27	190	2224	120	413	2486	265	6274	1388
42	728	43	146	803	28	199	878	18	235	883	18	237	838	24	198	2283	110	436	2344	241	6416	1451
41	740	39	153	820	26	207	896	16	244	900	16	246	853	22	207	2342	100	459	2207	218	6553	1516
40	758	35	161	838	23	215	916	14	253	920	14	255	873	19	215	2393	91	483	2061	197	6699	1582
39	780	32	169	862	20	224	940	13	263	940	12	264	894	17	224	2461	82	507	1881	177	6879	1650
38	805	29	177	884	18	233	960	11	272	956	11	273	911	15	233	2537	74	532	1705	159	7055	1720
37	827	26	185	903	16	241	974	10	282	970	10	283	924	14	242	2597	67	558	1562	143	7198	1791
36	845	24	193	921	14	251	987	9	292	986	8	293	938	12	252	2639	60	584	1443	128	7317	1864
35	865	21	202	937	13	260	997	8	302	999	7	303	952	11	261	2681	54	611	1326	114	7434	1937
34	888	19	210	958	11	269	1004	7	312	1005	7	313	967	9	271	2728	48	638	1208	102	7552	2012
33	912	17	219	977	10	279	1010	6	322	1011	6	323	980	8	280	2776	43	665	1094	90	7666	2088
32	929	16	229	991	9	289	1015	5	332	1017	5	333	994	7	290	2825	38	693	988	80	7772	2166
31	938	14	238	1003	8	299	1024	4	342	1025	4	343	1012	6	300	2865	34	722	892	70	7868	2244
30	951	12	247	1011	7	309	1034	4	352	1035	3	354	1024	5	310	2900	30	750	804	62	7956	2323
29	964	11	257	1016	6	319	1041	3	363	1042	3	364	1031	5	321	2936	26	780	728	54	8032	2403
28	973	10	267	1022	6	329	1049	3	373	1047	2	374	1037	4	331	2974	23	809	656	47	8104	2484
27	984	9	276	1028	5	340	1057	2	384	1056	2	385	1040	3	341	3011	20	839	582	41	8178	2565
26	996	8	286	1033	4	350	1064	2	394	1065	2	396	1044	3	352	3048	17	869	508	36	8252	2647
25	1005	7	296	1042	4	360	1071	2	405	1073	1	406	1051	2	362	3073	15	900	443	31	8317	2730
24	1014	6	306	1050	3	371	1073	2	416	1078	1	417	1060	2	373	3096	13	931	386	27	8374	2814
23	1024	5	317	1055	3	381	1074	1	426	1079	1	428	1066	2	384	3117	11	962	343	23	8417	2898
22	1031	4	327	1059	2	392	1077	1	437	1080	1	439	1071	1	394	3134	10	993	306	20	8454	2982
21	1037	4	337	1063	2	402	1080	1	448	1083	1	449	1075	1	405	3155	8	1025	265	17	8495	3067
20	1046	3	348	1069	2	413	1083	1	459	1086	1	460	1077	1	416	3174	7	1056	223	15	8537	3152
19	1055	3	358	1073	2	424	1086	1	470	1088	1	471	1078	1	426	3187	6	1088	190	13	8570	3237
18	1060	2	369	1076	1	435	1088	1	480	1089	1	482	1082	1	437	3198	5	1120	165	11	8595	3323
17	1064	2	379	1081	1	445	1088	1	491	1089	0	493	1086	1	448	3211	4	1152	140	9	8620	3409
16	1068	2	390	1083	1	456	1088	1	502	1089	0	504	1088	1	459	3223	4	1184	119	8	8641	3496
15	1072	2	401	1084	1	467	1089	0	513	1090	0	515	1089	0	470	3234	3	1217	101	7	8659	3582
14	1075	1	412	1085	1	478	1089	0	524	1091	0	526	1091	0	481	3243	3	1249	84	6	8676	3669
13	1076	1	422	1087	1	489	1089	0	535	1092	0	537	1092	0	492	3251	2	1281	71	5	8689	3756
12	1079	1	433	1088	1	500	1090	0	546	1092	0	547	1092	0	503	3259	2	1314	60	5	8700	3843
11	1083	1	444	1088	1	510	1090	0	557	1092	0	558	1092	0	514	3264	2	1347	50	4	8710	3930
10	1085	1	455	1089	1	521	1090	0	568	1092	0	569	1092	0	524	3267	2	1379	43	4	8717	4017
9	1087	1	466	1089	0	532	1091	0	578	1092	0	580	1092	0	535	3270	2	1412	39	3	8721	4104
8	1088	1	476	1089	0	543	1091	0	589	1092	0	591	1092	0	546	3272	1	1445	35	3	8725	4191
7	1089	1	487	1089	0	554	1091	0	600	1092	0	602	1092	0	557	3272	1	1477	34	2	8726	4278
6	1089	1	498	1089	0	565	1092	0	611	1092	0	613	1092	0	568	3273	1	1510	32	2	8728	4366
5	1089	0	509	1089	0	576	1093	0	622	1093	0	624	1092	0	579	3273	1	1543	29	2	8731	4453
4	1089	0	520	1090	0	587	1094	0	633	1094	0	635	1092	0	590	3274	1	1576	26	2	8734	4540

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 56° 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

BASE TEMP (F)	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**		24 HOUR SUMMARY			
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	HEATING		COOLING	
	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Hrs Below Base 100s*	Deg Hrs	Hrs Above Base 100s*	Deg Hrs
3 1089	0	531	1091	0	598	1095	0	644	1094	0	646	1092	0	601	3275	1 1608
2 1089	0	542	1092	0	609	1095	0	655	1095	0	657	1092	0	612	3276	1 1641
1 1091	0	553	1092	0	619	1095	0	666	1095	0	668	1093	0	623	3276	1 1674
0 1092	0	564	1093	0	630	1095	0	677	1095	0	679	1094	0	634	3276	1 1707
-1 1092	0	575	1094	0	641	1095	0	688	1095	0	690	1095	0	645	3276	0 1739
-2 1092	0	585	1094	0	652	1095	0	699	1095	0	701	1095	0	656	3276	0 1772
-3 1092	0	596	1094	0	663	1095	0	710	1095	0	711	1095	0	667	3276	0 1805
-4 1092	0	607	1095	0	674	1095	0	721	1095	0	722	1095	0	678	3277	0 1838
-5 1092	0	618	1095	0	685	1095	0	732	1095	0	733	1095	0	688	3278	0 1870
-6 1093	0	629	1095	0	696	1095	0	743	1095	0	744	1095	0	699	3280	0 1903
-7 1094	0	640	1095	0	707	1095	0	754	1095	0	755	1095	0	710	3283	0 1936
-8 1095	0	651	1095	0	718	1095	0	765	1095	0	766	1095	0	721	3285	0 1969

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

TRY Data (1972)

Latitude 38.20 N
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.	52858.	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 **											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	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 (1972)

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 ***	horiz
Jan	1871	1748	1416	1094	682	356	199	160	160	1955	1003	829	799	678	552	383	247	179	161	161	836	512	546
Feb	1910	1785	1509	1254	868	516	303	208	204	2202	1333	829	784	682	586	443	320	251	222	220	894	650	789
Mar	1702	1654	1526	1395	1100	776	511	333	272	2345	1778	977	954	887	816	676	533	427	358	336	1167	978	1102
Apr	1316	1399	1429	1434	1277	1034	768	531	375	2317	2186	1023	1044	1034	1013	912	782	651	542	475	1448	1436	1467
May	1015	1179	1327	1436	1393	1235	988	736	531	2210	2447	961	1053	1123	1174	1132	1030	881	736	618	1552	1730	1720
Jun	894	1073	1266	1419	1431	1314	1088	842	640	2147	2551	931	1035	1141	1226	1227	1148	1009	856	718	1528	1795	1904
Jul	944	1115	1286	1416	1410	1275	1045	800	599	2158	2488	930	1029	1109	1168	1150	1062	930	791	676	1434	1649	1838
Aug	1170	1283	1359	1402	1301	1099	849	617	444	2222	2255	1017	1076	1100	1106	1027	894	746	615	527	1532	1587	1680
Sep	1524	1521	1450	1371	1134	851	598	407	320	2270	1891	956	945	896	843	726	602	501	429	394	1210	1121	1361
Oct	1798	1698	1482	1274	921	600	376	255	236	2193	1459	842	788	701	622	488	368	285	236	226	974	742	1042
Nov	1854	1727	1407	1115	705	393	219	177	176	1996	1089	576	549	473	397	292	215	172	160	160	585	415	653
Dec	1831	1707	1367	1041	623	318	173	151	151	1867	916	582	551	463	376	264	185	147	140	140	568	371	488
Year	1483	1489	1401	1304	1071	815	595	436	343	2156	1785	871	885	858	825	728	617	516	438	388	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. 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/ NN	NNE/ NNW	N	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	
Jan	1612	1483	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.

MADISON, WISCONSIN
WBAN 14837
TABLE A:

TRY Data (1974)

Latitude 43.10 N
Longitude 89.30 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence In time period 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														
45 to 49	0	0	0	1	4	1	0	0	6	40.3	743	20730	1	1
40 to 44	0	0	0	4	5	3	0	1	13	38.1	732	17036	12	27
35 to 39	8	8	11	16	13	17	12	7	97	33.7	710	13416	34	127
30 to 34	27	28	25	21	16	19	22	26	184	31.1	495	10273	249	704
25 to 29	11	12	9	4	6	9	9	8	68	26.1	416	8004	328	2155
20 to 24	6	6	6	5	5	2	8	9	47	21.3	351	6098	393	3969
15 to 19	2	0	3	5	11	8	3	3	35	14.4	318	4437	426	6028
10 to 14	3	2	2	11	10	13	5	2	48	9.7	280	2939	464	8250
5 to 9	11	9	10	10	11	11	21	15	98	6.2	199	1694	545	10725
0 to 4	8	8	5	7	3	4	3	9	47	1.7	123	905	621	13656
-5 to -1	5	9	12	5	4	5	3	4	47	-3.0	77	400	667	16871
-10 to -6	9	3	4	3	0	1	7	9	36	-7.3	33	117	711	20308
-15 to -11	3	6	4	1	0	0	0	0	14	-12.1	9	25	735	23936
-20 to -16	0	2	2	0	0	0	0	0	4	-17.3	1	1	743	27632
Feb														
40 to 44	0	0	0	9	12	5	0	0	26	37.3	665	15165	7	7
35 to 39	9	9	10	10	16	15	10	9	88	33.8	614	11929	58	131
30 to 34	10	4	2	7	4	13	12	9	61	30.1	530	9083	142	645
25 to 29	3	10	15	12	9	4	11	8	72	25.5	470	6584	202	1506
20 to 24	11	10	8	13	15	15	10	13	95	21.0	383	4446	289	2728
15 to 19	13	9	12	11	22	12	8	9	96	15.4	302	2745	370	4387
10 to 14	9	7	10	13	6	16	16	13	90	11.1	195	1499	477	6501
5 to 9	10	17	13	9	0	4	14	9	76	6.6	103	734	569	9096
0 to 4	10	5	5	0	0	0	1	11	32	1.8	54	354	618	12076
-5 to -1	4	7	3	0	0	0	2	0	16	-2.3	28	157	644	15239
-10 to -6	3	1	5	0	0	0	0	3	12	-8.1	16	56	656	18498
-15 to -11	2	5	1	0	0	0	0	0	8	-12.9	4	8	668	21810
Mar														
65 to 69	0	0	0	2	0	0	0	0	2	57.5	744	25713	0	0
60 to 64	0	0	0	1	3	1	0	0	5	54.4	741	22001	3	8
55 to 59	0	0	1	1	2	1	0	0	5	52.4	735	18314	9	41
50 to 54	3	3	2	1	5	3	1	3	21	48.0	725	14656	19	103
45 to 49	0	0	1	6	6	11	4	0	28	41.9	703	11090	41	257
40 to 44	0	0	3	18	28	9	8	2	68	37.5	666	7662	78	549
35 to 39	19	17	20	27	29	37	32	28	209	34.5	549	4560	195	1167
30 to 34	29	32	32	24	14	23	25	23	202	31.0	284	2414	460	2741
25 to 29	21	12	15	6	0	2	15	21	92	25.9	166	1325	578	5372
20 to 24	11	17	11	1	0	2	2	8	52	21.1	88	733	656	8500
15 to 19	1	6	2	1	3	1	3	3	20	14.7	54	402	690	11889
10 to 14	6	0	0	2	3	3	1	4	19	10.1	34	186	710	15393
5 to 9	1	3	3	2	0	0	2	1	12	6.7	13	68	731	18995
0 to 4	2	1	2	1	0	0	0	0	6	1.5	6	22	738	22669
-5 to -1	0	2	1	0	0	0	0	0	3	-3.3	2	2	742	26369

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

MADISON, WISCONSIN
WBAN 14837
TABLE A:

TRY Data (1974)

Latitude 43.10 N
Longitude 89.30 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	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	1	0	0	4	63.0	719	24422	1	1	
75 to 79	0	0	0	2	6	9	0	0	17	62.0	708	20843	12	22	
70 to 74	0	0	1	8	7	6	4	0	26	60.8	695	17342	25	121	
65 to 69	2	3	7	9	13	9	7	5	55	57.7	652	13951	68	330	
60 to 64	5	4	6	9	12	12	4	6	58	52.7	595	10840	125	819	
55 to 59	6	5	7	12	11	13	11	8	73	48.4	530	8019	190	1598	
50 to 54	15	8	9	15	9	9	18	21	104	46.0	445	5550	275	2729	
45 to 49	15	21	20	8	4	5	10	6	89	41.7	345	3571	375	4350	
40 to 44	6	5	10	12	12	14	9	9	77	38.0	266	2057	454	6436	
35 to 39	13	13	21	12	13	10	13	14	109	33.8	189	920	531	8899	
30 to 34	14	16	7	3	0	2	13	14	69	30.1	73	290	647	11869	
25 to 29	11	11	2	0	0	0	1	7	32	25.8	29	57	691	15236	
20 to 24	3	4	0	0	0	0	0	0	7	21.6	2	1	718	18780	
May															
85 to 89	0	0	0	2	1	0	0	0	3	71.7	743	24802	1	1	
80 to 84	0	0	0	1	2	2	0	0	5	70.2	738	21096	6	15	
75 to 79	0	0	1	1	4	3	0	0	9	64.2	731	17417	13	56	
70 to 74	0	0	2	2	8	9	1	0	22	63.2	719	13780	25	139	
65 to 69	2	3	5	21	27	24	12	0	94	58.4	679	10253	65	332	
60 to 64	11	10	14	19	19	10	14	18	115	55.8	562	7143	182	942	
55 to 59	11	4	21	15	6	17	14	9	97	50.9	463	4594	281	2113	
50 to 54	17	22	16	18	17	17	24	19	150	47.5	345	2552	399	3791	
45 to 49	19	21	18	8	3	4	14	24	111	44.1	182	1218	562	6177	
40 to 44	17	15	14	6	6	7	10	11	86	40.4	103	509	641	9188	
35 to 39	5	6	2	0	0	0	4	7	24	35.8	45	182	699	12581	
30 to 34	8	10	0	0	0	0	0	5	23	31.4	18	36	726	16155	
25 to 29	3	2	0	0	0	0	0	0	5	28.0	1	1	743	19840	
Jun															
85 to 89	0	0	0	1	3	1	0	0	5	73.6	719	16628	1	2	
80 to 84	0	0	0	12	19	19	0	0	50	65.1	702	13056	18	30	
75 to 79	0	0	6	19	18	14	8	0	65	64.9	637	9698	83	272	
70 to 74	0	0	13	21	26	23	12	4	99	61.4	567	6675	153	849	
65 to 69	13	11	30	19	11	19	25	18	146	60.3	454	4113	266	1887	
60 to 64	16	20	23	10	6	6	22	23	126	56.9	302	2255	418	3629	
55 to 59	19	18	13	5	6	8	12	15	96	53.3	191	1042	529	6016	
50 to 54	23	25	5	3	1	0	11	22	90	49.4	98	332	622	8906	
45 to 49	18	11	0	0	0	0	0	8	37	45.7	25	48	695	12222	
40 to 44	1	5	0	0	0	0	0	0	6	42.8	0	0	720	15774	

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

MADISON, WISCONSIN

WBAN 14837

TABLE A:

TRY Data (1974)

Latitude 43.10 N

Longitude 89.30 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Third Quarter
(5 Degrees(F)/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	1	0	0	7	74.7	744	18193	0	0	
90 to 94	0	0	0	10	13	11	0	0	34	74.2	723	14506	21	33	
85 to 89	0	0	6	14	14	11	2	0	47	72.0	682	10984	62	23	
80 to 84	3	0	14	20	26	33	17	7	120	69.0	612	7704	132	671	
75 to 79	9	11	13	28	20	21	22	8	132	66.8	481	4951	263	1638	
70 to 74	8	11	25	14	12	14	26	19	129	64.5	364	2853	380	3260	
65 to 69	22	20	28	7	2	2	15	29	125	62.1	226	1378	518	5505	
60 to 64	23	18	7	0	0	0	11	19	78	58.6	113	553	631	8400	
55 to 59	19	22	0	0	0	0	0	11	52	55.2	47	157	697	11724	
50 to 54	8	8	0	0	0	0	0	0	16	51.8	12	23	732	15310	
45 to 49	1	3	0	0	0	0	0	0	4	48.5	0	0	744	19007	
Aug															
90 to 94	0	0	0	0	2	0	0	0	2	75.0	744	19036	0	0	
85 to 89	0	0	0	3	8	4	0	0	15	72.3	735	15327	9	11	
80 to 84	0	0	1	9	14	16	0	0	40	69.3	714	11692	30	96	
75 to 79	0	0	8	29	30	23	8	0	98	66.1	654	8246	90	370	
70 to 74	5	3	22	32	29	33	19	12	155	64.2	549	5238	195	1082	
65 to 69	17	20	26	11	9	13	29	25	150	62.4	371	2956	373	2520	
60 to 64	18	5	22	9	1	4	30	23	112	59.0	239	1463	505	4747	
55 to 59	30	37	12	0	0	0	7	23	109	55.9	124	542	620	7546	
50 to 54	14	15	2	0	0	0	0	10	41	51.1	46	160	698	10884	
45 to 49	9	10	0	0	0	0	0	0	19	47.2	11	23	733	14467	
40 to 44	0	3	0	0	0	0	0	0	3	43.3	0	0	744	18164	
Sep															
85 to 89	0	0	0	0	2	1	0	0	3	63.7	720	21517	0	0	
80 to 84	0	0	0	3	12	6	0	0	21	67.3	711	17933	9	16	
75 to 79	0	0	1	11	6	10	1	0	29	65.6	688	14445	32	128	
70 to 74	3	1	4	8	27	10	10	3	66	61.1	653	11091	67	374	
65 to 69	5	4	10	23	14	25	7	11	99	57.9	560	8028	160	911	
60 to 64	9	12	19	21	13	12	11	9	106	55.3	454	5475	266	1958	
55 to 59	15	14	14	12	4	12	16	6	93	51.7	356	3470	364	3553	
50 to 54	13	9	17	7	9	7	23	29	114	47.6	248	1935	472	5618	
45 to 49	21	11	15	5	3	6	12	16	89	44.3	144	952	576	8235	
40 to 44	11	16	7	0	0	1	5	9	49	40.6	72	415	648	11298	
35 to 39	7	17	2	0	0	0	4	4	34	36.5	28	150	692	14633	
30 to 34	2	2	1	0	0	0	1	2	8	29.1	15	54	705	18137	
25 to 29	4	4	0	0	0	0	0	1	9	26.6	3	5	717	21688	

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

MAISON, WISCONSIN
WBAW 14837
TABLE A:

TRY Data (1974)

Latitude 43.10 N
Longitude 89.30 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	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	5	2	0	0	7	60.4	742	19775	2	2
70 to 74	0	0	0	6	13	4	3	0	26	59.0	732	16084	12	3
65 to 69	1	3	2	14	21	15	3	3	62	57.9	693	12515	51	182
60 to 64	11	9	10	18	12	17	10	10	97	54.5	609	9235	135	622
55 to 59	12	9	14	13	12	14	19	19	112	50.4	517	6433	227	1540
50 to 54	13	8	20	15	17	21	12	11	117	46.3	389	4167	355	2994
45 to 49	10	15	12	20	10	10	14	10	101	40.8	282	2479	462	5026
40 to 44	14	18	15	7	3	6	14	14	91	38.6	190	1312	554	7579
35 to 39	10	9	13	0	0	4	7	9	52	34.7	111	599	633	10586
30 to 34	15	11	4	0	0	0	11	14	55	30.9	47	192	697	13899
25 to 29	6	5	2	0	0	0	0	3	16	26.1	17	51	727	17478
20 to 24	1	6	1	0	0	0	0	0	8	22.8	1	1	743	21148
Nov														
70 to 74	0	0	0	0	1	0	0	0	1	59.0	720	25333	0	0
65 to 69	0	0	0	3	5	0	0	0	8	57.5	717	21738	3	5
60 to 64	1	0	0	2	3	2	0	1	9	55.0	705	18179	15	46
55 to 59	2	1	2	2	5	6	2	0	20	50.7	694	14671	26	138
50 to 54	0	2	3	5	9	7	4	0	30	46.4	674	11253	46	320
45 to 49	5	5	9	15	17	15	11	8	85	43.9	629	7968	91	635
40 to 44	17	10	6	17	10	16	16	24	116	39.3	528	5088	192	1355
35 to 39	19	21	21	19	18	12	16	13	139	34.5	406	2770	314	2637
30 to 34	19	18	24	19	18	22	22	24	166	29.7	257	1128	463	4595
25 to 29	18	24	18	8	4	8	16	17	113	25.6	94	277	626	7344
20 to 24	9	8	7	0	0	2	1	3	30	20.6	29	46	691	10713
15 to 19	0	1	0	0	0	0	2	0	3	17.3	1	1	719	14268
Dec														
40 to 44	0	0	0	0	3	0	0	0	3	34.3	744	11410	0	0
35 to 39	6	4	7	18	30	14	7	7	93	33.9	729	7711	15	21
30 to 34	27	24	24	30	29	40	37	27	238	31.2	516	4455	228	485
25 to 29	26	20	16	17	10	20	21	28	158	25.5	371	2270	373	2020
20 to 24	15	16	26	24	21	13	15	14	144	21.0	198	869	546	4339
15 to 19	14	19	13	4	0	6	10	13	79	16.8	72	243	672	7433
10 to 14	2	7	5	0	0	0	3	3	20	12.2	18	55	726	10965
5 to 9	3	3	2	0	0	0	0	1	9	7.6	5	3	739	14633

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

MADISON, WISCONSIN
 WBAN 14837
 TABLE B:

TRY Data (1974)

Latitude 43.10 N
 Longitude 89.30 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
95 to 99	0	0	0	0	6	1	0	0	7	0.0	0.0	0.0	0.0	74.7	75.0	0.0	0.0	74.7
90 to 94	0	0	0	10	15	11	0	0	36	0.0	0.0	0.0	74.7	74.1	74.0	0.0	0.0	74.3
85 to 89	0	0	6	20	28	17	2	0	73	0.0	0.0	73.3	72.1	71.5	71.2	74.5	0.0	71.8
80 to 84	3	0	15	45	76	77	17	7	240	70.0	0.0	70.5	68.4	66.6	67.8	70.3	71.0	68.0
75 to 79	9	11	29	90	89	82	39	8	357	69.1	69.0	66.7	65.7	64.9	64.7	67.4	67.1	65.8
70 to 74	16	15	67	91	123	99	75	38	524	66.1	67.1	64.4	62.0	60.9	61.9	63.9	66.1	62.9
65 to 69	62	64	108	109	102	107	98	91	741	63.0	63.2	61.3	58.4	56.8	57.4	60.9	61.9	60.0
60 to 64	94	78	101	89	69	64	102	109	706	58.7	58.7	57.1	54.0	51.0	52.5	57.1	58.3	56.3
55 to 59	114	110	84	60	46	71	81	91	657	54.4	54.9	52.4	48.5	47.5	49.1	51.3	53.9	52.2
50 to 54	106	100	74	64	67	64	93	115	683	49.5	49.6	47.9	45.4	44.9	44.7	48.1	48.0	47.6
45 to 49	98	97	75	63	47	52	65	72	569	44.4	44.7	42.6	41.6	41.3	41.7	43.1	44.3	43.2
40 to 44	66	72	55	73	79	61	62	70	538	40.2	40.5	39.1	37.9	37.8	38.2	38.7	39.5	39.0
35 to 39	96	104	107	102	124	109	105	98	845	35.0	35.2	34.6	33.6	33.1	33.7	34.8	34.8	34.3
30 to 34	151	145	119	104	81	119	143	144	1006	30.9	30.9	31.2	30.3	30.5	30.6	30.5	30.8	30.7
25 to 29	103	100	77	47	29	43	73	93	565	25.9	26.2	25.9	25.9	24.6	24.9	25.5	25.8	25.7
20 to 24	56	67	59	43	41	34	36	47	383	21.3	21.3	21.3	20.6	20.8	20.1	21.1	21.6	21.1
15 to 19	30	35	30	21	36	27	26	28	233	16.9	16.8	16.1	14.8	14.4	14.9	15.5	16.0	15.7
10 to 14	20	16	17	26	19	32	25	22	177	11.1	11.8	11.2	10.3	10.4	10.5	10.8	10.6	10.8
5 to 9	25	32	28	21	11	15	37	26	195	6.9	6.6	6.5	6.7	5.1	6.0	6.2	6.8	6.5
0 to 4	20	14	12	8	3	4	4	20	85	1.6	1.7	1.8	1.2	1.0	1.2	1.5	2.1	1.7
-5 to -1	9	18	16	5	4	5	5	4	66	-1.4	-2.7	-2.7	-3.0	-2.8	-3.8	-4.0	-4.0	-2.8
-10 to -6	12	4	9	3	0	1	7	12	48	-7.8	-7.3	-7.6	-7.3	0.0	-7.0	-7.3	-7.4	-7.5
-15 to -11	5	11	5	1	0	0	0	0	22	-12.4	-12.4	-12.6	-11.0	0.0	0.0	0.0	0.0	-12.4
-20 to -16	0	2	2	0	0	0	0	0	4	0.0	-17.0	-17.5	0.0	0.0	0.0	0.0	0.0	-17.3

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			Ave	4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM		Day
				Max	Min													
Jan	19.6	48	-18	26	13	18.2	87	81	75	85	82	0.0020	0.0020	0.0022	0.0021	0.0020	8.8	
Feb	19.9	44	-15	28	9	18.5	91	80	72	84	83	0.0018	0.0020	0.0021	0.0020	0.0019	9.6	
Mar	32.9	67	-4	41	25	30.8	90	78	71	80	81	0.0031	0.0034	0.0036	0.0033	0.0033	10.7	
Apr	48.6	83	22	60	37	42.8	80	61	51	67	67	0.0048	0.0052	0.0052	0.0051	0.0051	11.5	
May	54.2	88	27	63	45	49.2	88	66	60	75	73	0.0064	0.0071	0.0070	0.0069	0.0068	10.3	
Jun	64.4	89	43	75	52	57.5	89	61	53	68	69	0.0084	0.0096	0.0094	0.0090	0.0091	9.0	
Jul	73.0	96	48	84	60	64.6	85	58	51	68	67	0.0106	0.0121	0.0124	0.0121	0.0117	8.5	
Aug	66.9	90	43	78	55	61.3	93	65	57	79	76	0.0097	0.0113	0.0112	0.0112	0.0108	7.7	
Sep	57.6	85	26	70	45	51.4	86	58	50	74	69	0.0068	0.0075	0.0075	0.0072	0.0073	8.6	
Oct	50.9	79	22	62	39	45.2	80	60	50	70	68	0.0054	0.0056	0.0057	0.0056	0.0056	8.5	
Nov	37.3	70	17	45	30	34.7	88	77	67	82	80	0.0037	0.0041	0.0039	0.0039	0.0039	8.8	
Dec	27.2	41	7	33	21	26.1	93	88	82	89	89	0.0025	0.0028	0.0029	0.0027	0.0027	7.8	
Year	46.2	96	-18	56	36	41.8	87	69	61	77	75	0.0055	0.0061	0.0061	0.0060	0.0059	9.1	

MADISON, WISCONSIN
WBAN 14837

TRY Data (1974)

Latitude 43.10 N
Longitude 89.30 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	100s*	Base	100s*
97	0	576	0	0	507	0	0	473	0	0	498	0	0	1836	0	8760	4450
96	0	565	0	0	496	0	1	462	0	0	487	0	0	1803	0	8758	4362
95	0	554	0	0	485	0	4	452	0	1	476	0	0	1770	0	8755	4275
94	0	543	0	0	474	0	7	441	0	1	465	0	0	1737	0	8750	4187
93	0	532	0	2	463	0	10	430	0	3	454	0	0	1705	0	8743	4100
92	0	521	0	4	452	0	12	419	0	6	443	0	0	1672	0	8736	4012
91	0	510	0	5	441	0	15	408	0	9	432	0	0	1639	0	8729	3925
90	0	499	0	8	430	0	19	397	1	11	421	0	0	1606	0	8721	3838
89	0	488	0	13	419	0	25	387	1	12	410	0	0	1573	0	8708	3750
88	1	477	0	17	409	0	32	376	1	15	400	1	1	1540	0	8693	3663
87	2	466	0	20	398	1	36	365	1	19	389	1	1	1507	0	8681	3577
86	3	455	0	24	387	1	39	355	2	22	378	1	1	1475	0	8670	3490
85	5	444	0	28	376	1	44	344	2	26	367	1	1	1442	0	8654	3403
84	7	434	0	33	366	1	57	334	3	34	357	1	3	1409	0	8625	3317
83	8	423	0	40	355	2	72	323	3	47	346	2	5	1376	0	8585	3231
82	9	412	0	47	345	2	88	313	4	62	336	2	7	1343	0	8542	3145
81	13	401	0	55	334	3	104	303	5	77	325	3	10	1310	0	8494	3060
80	19	390	1	68	324	3	118	294	6	96	315	4	15	1278	0	8435	2975
79	22	379	1	83	314	4	136	284	8	113	305	5	22	1245	0	8369	2891
78	24	369	1	98	304	5	157	274	9	131	296	6	30	1212	0	8300	2808
77	30	358	1	117	294	6	173	265	11	149	286	8	36	1180	1	8228	2725
76	37	347	2	138	284	7	187	256	12	164	277	9	42	1147	1	8160	2643
75	45	337	2	156	275	9	204	247	14	179	268	11	51	1114	1	8087	2562
74	54	326	3	172	265	10	221	238	17	195	258	13	61	1082	2	8014	2481
73	62	316	3	186	256	12	241	229	19	209	250	15	69	1050	2	7942	2402
72	75	306	4	203	247	14	270	221	21	229	241	17	82	1017	3	7843	2323
71	92	296	5	221	238	16	295	213	24	250	232	19	99	985	3	7736	2245
70	108	286	6	243	230	19	321	205	27	272	224	22	120	953	4	7606	2168
69	127	276	7	264	221	21	344	197	31	296	216	25	142	921	5	7466	2093
68	147	266	8	284	213	24	364	190	34	318	208	28	161	890	6	7332	2018
67	171	257	10	306	205	27	389	183	38	341	200	31	182	858	8	7174	1946
66	196	248	12	329	197	30	413	176	42	359	193	35	203	828	10	7015	1875
65	216	239	14	353	190	33	432	169	46	380	186	38	222	798	13	6860	1806
64	236	230	16	375	182	37	450	163	51	402	179	42	244	768	16	6701	1738
63	257	222	18	396	175	41	470	156	55	415	172	46	265	739	20	6550	1672
62	281	214	21	419	168	45	484	150	60	429	165	51	282	710	24	6404	1607
61	302	206	24	438	162	49	495	144	65	443	158	55	305	682	29	6263	1543
60	317	198	27	449	155	54	504	138	70	453	152	60	326	655	34	6136	1482
59	332	190	30	461	149	58	510	132	75	465	146	64	340	628	41	6013	1421
58	350	182	34	474	143	63	516	126	80	480	139	69	355	602	47	5884	1361
57	370	175	37	486	136	68	525	121	85	495	133	74	371	577	55	5746	1303
56	386	168	41	500	130	73	537	115	91	509	127	79	388	552	63	5613	1246
55	402	161	45	510	125	78	548	110	96	522	122	84	406	527	71	5485	1191
54	416	154	49	521	119	83	561	104	102	533	116	89	427	504	80	5353	1137
53	430	147	53	536	113	88	576	99	107	542	110	95	452	481	90	5215	1084
52	448	141	58	549	108	94	587	94	113	554	105	100	473	458	100	5080	1032

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

MADISON, WISCONSIN
WBAN 14837
TABLE D:

TRY Data (1974)

Latitude 43.10 N
Longitude 89.30 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY												24 HOUR SUMMARY									
	7-9AM**			10-12AM**			1-3PM**			4-6PM**			7-9PM**			10PM-6AM**			HEATING		COOLING	
	Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		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*
51	466	134	62	560	102	99	596	89	119	567	99	106	487	121	65	1124	436	111	4958	982	3802	562
50	478	128	67	572	97	105	611	84	125	583	94	111	500	115	69	1197	415	123	4817	933	3943	601
49	491	122	72	585	92	111	625	79	131	598	89	117	514	109	75	1269	394	135	4676	886	4084	641
48	503	116	77	601	87	117	637	74	138	609	84	123	531	104	80	1329	375	148	4548	840	4212	682
47	515	110	82	614	82	123	648	70	144	623	80	129	550	98	85	1388	355	162	4421	795	4339	725
46	531	105	87	626	77	129	656	65	151	633	75	136	562	93	91	1439	337	176	4311	751	4449	769
45	550	99	93	637	72	135	664	61	157	640	70	142	569	87	96	1485	318	191	4213	709	4547	814
44	564	94	98	647	68	142	676	57	164	648	66	149	578	82	102	1532	301	206	4113	667	4647	860
43	574	88	104	660	64	148	692	53	171	656	61	155	589	77	108	1575	283	221	4012	626	4748	907
42	586	83	110	673	59	155	708	49	178	669	57	162	599	72	114	1615	266	237	3908	587	4852	955
41	598	78	116	686	55	162	726	45	185	687	53	169	611	67	120	1654	250	254	3798	548	4962	1004
40	608	73	122	703	51	169	741	41	192	701	49	175	625	62	126	1693	234	270	3687	511	5073	1054
39	621	68	128	719	47	176	754	38	200	714	45	183	643	58	132	1734	218	287	3574	474	5186	1106
38	638	64	134	734	44	183	770	35	207	732	41	190	661	53	139	1773	203	305	3450	439	5310	1158
37	662	59	141	751	40	190	793	31	215	748	38	197	681	49	146	1825	188	323	3297	405	5463	1212
36	685	55	147	769	37	198	820	29	223	767	34	205	702	45	153	1892	174	342	3123	373	5637	1267
35	707	51	154	797	34	206	852	26	231	797	31	213	726	41	160	1971	160	361	2908	343	5852	1324
34	740	47	162	832	31	214	884	24	240	832	28	221	761	38	167	2080	147	381	2629	315	6131	1384
33	774	44	169	860	28	222	906	22	249	868	26	229	801	35	175	2195	136	402	2354	290	6406	1447
32	799	41	177	882	26	231	924	20	258	897	24	238	829	32	183	2275	126	425	2153	268	6607	1512
31	818	38	185	900	24	240	937	18	268	915	22	247	849	29	192	2340	116	448	2000	247	6760	1579
30	834	35	193	913	22	249	947	17	277	928	20	256	870	27	200	2413	107	472	1853	228	6907	1648
29	845	33	202	928	20	258	954	15	287	937	19	266	887	25	209	2483	98	496	1724	210	7036	1717
28	861	30	210	939	19	268	958	14	296	943	17	275	901	23	218	2537	91	521	1619	194	7141	1788
27	880	28	219	950	17	277	966	13	306	951	16	285	917	21	227	2599	83	547	1495	178	7265	1860
26	896	26	228	959	16	287	975	11	315	961	14	294	933	19	236	2669	77	573	1364	164	7396	1934
25	910	24	237	964	15	296	979	10	325	972	13	304	948	18	246	2726	71	600	1259	151	7501	2008
24	923	22	246	971	13	306	986	9	335	979	12	314	958	16	255	2771	66	628	1170	138	7590	2084
23	935	21	255	982	12	316	997	8	345	984	11	323	966	15	265	2805	61	656	1090	127	7670	2160
22	948	19	265	990	11	326	1008	7	355	989	10	333	976	14	274	2838	56	684	1009	117	7751	2237
21	960	18	274	996	10	336	1016	6	365	998	8	343	983	13	284	2878	52	713	927	107	7833	2315
20	971	17	284	1004	9	346	1020	6	375	1007	8	353	988	11	294	2910	48	742	859	98	7901	2394
19	979	15	294	1011	8	356	1026	5	385	1013	7	363	993	10	304	2930	44	771	805	90	7955	2473
18	984	14	304	1013	7	366	1033	4	396	1018	6	373	998	9	314	2949	41	800	764	82	7996	2553
17	988	13	313	1016	7	376	1038	4	406	1023	5	384	1004	8	324	2968	38	830	722	75	8038	2633
16	992	12	323	1022	6	386	1045	3	417	1027	5	394	1009	8	334	2987	35	859	675	68	8085	2713
15	1001	11	333	1028	5	396	1053	3	427	1033	4	404	1014	7	344	3004	32	889	625	61	8135	2795
14	1007	10	343	1033	4	407	1061	2	438	1040	3	415	1018	6	354	3019	29	920	580	55	8180	2876
13	1011	9	353	1038	4	417	1065	2	448	1046	3	425	1023	5	365	3030	26	950	545	49	8215	2958
12	1014	9	364	1043	3	427	1068	2	459	1054	2	436	1028	5	375	3039	24	980	513	44	8247	3040
11	1016	8	374	1049	3	438	1070	1	470	1059	2	446	1032	4	385	3051	21	1011	482	39	8278	3123
10	1020	7	384	1055	2	448	1074	1	480	1065	2	457	1038	3	396	3064	19	1041	442	35	8318	3206
9	1025	6	394	1061	2	459	1077	1	491	1071	1	467	1046	3	406	3082	17	1072	396	30	8364	3289
8	1032	6	404	1068	2	470	1079	1	502	1074	1	478	1054	2	416	3106	15	1103	346	27	8414	3373
7	1039	5	415	1072	2	480	1081	1	513	1077	1	489	1063	2	427	3124	13	1134	301	23	8459	3458
6	1045	4	425	1075	1	491	1083	0	524	1081	1	500	1070	2	438	3136	12	1165	268	21	8492	3542

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

MADISON, WISCONSIN
WBAN 14837

TRY Data (1974)

Latitude 43.10 N
Longitude 89.30 E

TABLE 0:

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**		24 HOUR SUMMARY				
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	HEATING		COOLING		
	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Below Base	Hrs 100s*	Above Base	Hrs 100s*	
5 1049	4	436	1077	1	502	1086	0	534	1084	1	511	1075	1	448	3148	11	1197
4 1053	4	446	1079	1	513	1088	0	545	1085	1	521	1079	1	459	3160	9	1228
3 1056	3	457	1081	1	523	1089	0	556	1086	0	532	1080	1	470	3173	8	1260
2 1058	3	467	1083	1	534	1089	0	567	1087	0	543	1081	1	481	3186	7	1292
1 1061	2	478	1085	1	545	1090	0	578	1087	0	554	1082	1	492	3195	6	1324
0 1062	2	489	1086	0	556	1091	0	589	1088	0	565	1082	1	502	3203	5	1356
-1 1065	2	499	1087	0	567	1092	0	600	1089	0	576	1083	1	513	3214	4	1388
-2 1069	1	510	1089	0	578	1093	0	611	1090	0	587	1083	0	524	3222	4	1420
-3 1072	1	521	1089	0	589	1094	0	622	1091	0	598	1084	0	535	3228	3	1452
-4 1076	1	531	1089	0	599	1095	0	633	1092	0	608	1085	0	546	3234	3	1484
-5 1078	1	542	1090	0	610	1095	0	644	1093	0	619	1087	0	557	3238	2	1517
-6 1081	1	553	1091	0	621	1095	0	654	1094	0	630	1089	0	568	3243	2	1549
-7 1083	1	564	1092	0	632	1095	0	665	1094	0	641	1091	0	578	3250	1	1582
-8 1084	0	575	1093	0	643	1095	0	676	1095	0	652	1093	0	589	3257	1	1614
-9 1086	0	585	1094	0	654	1095	0	687	1095	0	663	1094	0	600	3262	1	1647
-10 1087	0	596	1094	0	665	1095	0	698	1095	0	674	1095	0	611	3265	1	1680
-11 1089	0	607	1094	0	676	1095	0	709	1095	0	685	1095	0	622	3270	0	1712
-12 1090	0	618	1095	0	687	1095	0	720	1095	0	696	1095	0	633	3275	0	1745
-13 1091	0	629	1095	0	698	1095	0	731	1095	0	707	1095	0	644	3277	0	1778
-14 1092	0	640	1095	0	709	1095	0	742	1095	0	718	1095	0	655	3279	0	1810
-15 1092	0	651	1095	0	720	1095	0	753	1095	0	729	1095	0	666	3282	0	1843
-16 1093	0	662	1095	0	731	1095	0	764	1095	0	740	1095	0	677	3283	0	1876
-17 1093	0	673	1095	0	742	1095	0	775	1095	0	751	1095	0	688	3284	0	1909
-18 1094	0	684	1095	0	753	1095	0	786	1095	0	762	1095	0	699	3285	0	1942
-19 1095	0	695	1095	0	764	1095	0	797	1095	0	773	1095	0	710	3285	0	1975

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

MADISON, WISCONSIN
WBAN 14837
TABLE E:

TRY Data (1974)

Latitude 43.10 N
Longitude 89.30 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:	3342	2927	2448	1904	1383	823	390	173	62	1	0
Annual Wet Bulb Cooling deg-hrs:	36860.	27247.	18972.	12126.	6943.	3416.	1416.	498.	103.	1.	0.

TABLE F:

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

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **												COOLING HUMIDITY RATIO HOURS **												Maintained Indoor Humidity Ratio*
	Heating Degree Base												Cooling Degree Base												
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80			
.001	0	0	0	0	0	0	0	0	0	0	0	38	36	34	33	30	27	23	17	11	7	3	.001		
.002	2	2	2	2	2	2	2	2	2	2	2	31	30	29	28	26	24	20	16	10	6	3	.002		
.003	3	4	4	4	4	4	4	4	4	4	4	25	25	24	24	22	21	18	14	9	6	3	.003		
.004	5	6	7	7	7	8	8	8	8	8	8	20	20	20	19	19	17	15	12	8	5	2	.004		
.005	7	9	11	11	12	12	12	12	12	12	12	16	16	16	15	15	14	13	10	7	4	2	.005		
.006	9	12	14	15	16	17	17	17	17	17	17	12	12	12	12	12	11	10	8	6	4	2	.006		
.007	10	15	18	20	21	22	22	23	23	23	23	9	9	9	9	9	9	8	7	4	3	2	.007		
.008	12	17	22	24	26	27	28	29	29	29	29	6	6	6	6	6	6	6	5	3	2	1	.008		
.009	14	20	25	28	30	33	34	35	35	36	36	4	4	4	4	4	4	4	4	3	2	1	.009		
.010	16	23	29	32	35	38	40	41	42	43	43	3	3	3	3	3	3	3	2	2	1	1	.010		
.011	18	26	32	36	40	43	46	48	49	50	50	1	1	1	1	1	1	1	1	1	1	1	.011		
.012	19	29	36	40	45	49	52	55	57	58	58	1	1	1	1	1	1	1	1	1	1	0	.012		
.013	21	31	40	45	49	54	58	62	64	66	67	0	0	0	0	0	0	0	0	0	0	0	.013		
.014	23	34	43	49	54	60	64	68	72	74	75	0	0	0	0	0	0	0	0	0	0	0	.014		
.015	25	37	47	53	59	65	70	75	79	82	83	0	0	0	0	0	0	0	0	0	0	0	.015		
.016	26	40	51	57	63	70	76	82	87	90	92	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	28	43	54	61	68	76	82	89	94	98	100	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	30	45	58	65	73	81	89	95	102	106	108	0	0	0	0	0	0	0	0	0	0	0	.018		

FOOTNOTES: * Indoor Humidity level is measured in pounds of moisture per pound of dry air. Indoor set points of 72 deg(F)-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	45	62	59	70	55	51	64	39	46	50	60	55
VERTICAL													
NORTH	100	100	100	99	97	91	91	98	100	100	100	100	96
WEST	55	55	74	71	82	72	70	76	55	59	58	62	69
SOUTH	35	38	62	72	85	81	77	77	46	42	38	44	60
EAST	59	55	70	71	80	65	63	73	50	55	56	69	65
% Possible Sun	49	52	54	53	59	65	69	68	62	57	41	39	57

FOOTNOTES: * Corrected For Cloud Cover.

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

MADISON, WISCONSIN
WBAN 14837
TABLE H:

TRY Data (1974)

Latitude 43.10 N
Longitude 89.30 E

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

Month	Under Clear Sky Assumption*										Corrected For Cloud Cover**										Obs ****		
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ 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	1715	1595	1270	951	554	265	151	133	133	1699	784	735	682	552	425	274	173	135	128	128	712	403	515
Feb	1850	1726	1437	1158	768	441	252	184	179	2013	1116	896	843	717	593	423	286	212	185	182	940	604	804
Mar	1752	1686	1516	1348	1030	705	456	299	252	2252	1593	769	759	700	634	516	407	331	287	272	861	714	1136
Apr	1438	1494	1483	1452	1254	988	722	499	358	2311	2054	947	962	937	903	803	685	578	493	442	1220	1183	1398
May	1163	1296	1401	1478	1399	1208	953	708	523	2266	2368	906	934	944	948	896	810	715	632	571	1195	1282	1743
Jun	1050	1201	1355	1475	1452	1300	1063	816	633	2229	2503	907	993	1065	1117	1092	999	869	734	627	1396	1571	1948
Jul	1094	1236	1367	1471	1422	1255	1015	773	590	2227	2430	931	1024	1087	1134	1090	981	841	703	603	1438	1585	1934
Aug	1303	1389	1422	1433	1287	1058	806	585	433	2242	2149	964	999	996	982	897	783	669	575	509	1252	1264	1708
Sep	1600	1576	1475	1363	1096	800	554	379	303	2212	1731	1066	1076	1021	955	795	616	467	359	309	1367	1124	1299
Oct	1779	1669	1420	1190	828	511	316	222	212	2042	1257	852	819	718	618	459	323	241	202	197	933	644	911
Nov	1738	1623	1309	1007	615	324	182	150	150	1769	873	684	646	538	431	294	193	144	131	131	678	404	504
Dec	1644	1524	1203	878	494	230	130	122	122	1590	697	517	477	386	295	196	134	110	107	107	490	289	389
Year	1508	1500	1388	1267	1018	759	552	407	325	2071	1632	847	850	805	753	645	534	444	379	341	1039	923	1191

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	1487	1363	1066	786	438	197	114	108	108	627	574	458	348	218	136	108	105	105
Feb	1579	1457	1203	966	622	338	189	147	145	755	705	595	490	342	226	167	149	148
Mar	1436	1400	1263	1126	845	560	347	230	205	629	625	577	521	421	327	265	231	221
Apr	1105	1199	1217	1202	1034	801	568	381	283	750	776	764	740	658	557	465	393	356
May	847	994	1134	1220	1156	992	768	554	396	717	747	766	774	732	661	580	509	458
Jun	746	898	1082	1215	1200	1073	861	644	474	699	780	861	917	898	821	705	587	494
Jul	789	938	1100	1212	1176	1035	821	610	447	718	806	881	932	896	805	682	563	475
Aug	983	1099	1163	1186	1064	865	644	454	337	765	805	814	807	737	640	542	461	410
Sep	1285	1299	1223	1135	903	646	432	292	246	857	885	845	793	656	500	370	282	252
Oct	1501	1400	1188	990	674	401	237	177	173	712	682	597	511	374	257	189	163	160
Nov	1499	1379	1097	836	491	242	137	122	122	580	542	447	356	238	151	114	107	106
Dec	1429	1307	1009	727	387	167	102	100	100	440	401	318	241	157	106	89	87	87
Year	1222	1226	1145	1050	834	611	436	319	253	687	694	660	620	528	433	357	304	273

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

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

MIAMI, FLORIDA
WBAN 12839

TRY Data (1964)

Latitude 25.80 N
Longitude 80.30 E

TABLE A:

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	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														
85 to 89	0	0	0	0	1	0	0	0	1	71.0	744	14930	0	0
80 to 84	0	0	0	6	12	1	0	0	19	72.8	742	11214	2	4
75 to 79	0	0	4	32	25	21	1	0	83	70.4	702	7580	42	90
70 to 74	26	21	31	27	32	38	42	37	254	67.2	563	4341	181	571
65 to 69	40	41	26	10	10	18	32	32	209	63.7	264	2250	480	2200
60 to 64	8	8	12	8	9	11	5	9	70	56.4	148	1279	596	4949
55 to 59	4	8	9	5	1	1	9	6	43	52.9	90	693	654	8083
50 to 54	9	9	5	1	0	0	1	6	31	48.5	55	345	689	11455
45 to 49	3	3	1	3	3	3	0	0	16	42.3	27	158	717	14988
40 to 44	0	0	4	1	0	0	3	0	8	38.9	13	59	731	18609
35 to 39	3	3	1	0	0	0	0	3	10	34.5	7	6	737	22276
Feb														
85 to 89	0	0	0	0	4	1	0	0	5	73.8	672	14367	0	0
80 to 84	0	0	0	7	14	5	0	0	26	71.8	662	11027	10	20
75 to 79	3	1	4	18	16	21	4	1	68	70.2	623	7801	49	154
70 to 74	16	15	17	19	18	22	29	20	156	67.2	512	4918	160	631
65 to 69	16	11	16	13	21	20	19	24	140	61.6	360	2762	312	1835
60 to 64	24	22	14	15	10	15	20	21	141	57.0	201	1328	471	3761
55 to 59	6	11	10	10	1	0	11	10	59	52.0	103	592	569	6385
50 to 54	15	13	12	2	0	0	1	8	51	48.1	51	200	621	9353
45 to 49	4	8	8	0	0	0	0	0	20	44.3	20	41	652	12554
40 to 44	0	3	3	0	0	0	0	0	6	42.5	0	0	672	15873
Mar														
85 to 89	0	0	0	3	6	6	0	0	15	72.9	742	10097	2	3
80 to 84	0	0	0	29	44	15	2	0	90	72.8	709	6448	35	74
75 to 79	23	15	31	42	31	56	43	28	269	70.7	552	3212	192	558
70 to 74	46	52	40	12	7	12	38	48	255	67.8	240	1190	504	2256
65 to 69	14	12	9	4	5	4	6	10	64	60.3	88	479	656	5265
60 to 64	3	5	7	3	0	0	4	4	26	55.3	40	172	704	8678
55 to 59	7	8	4	0	0	0	0	3	22	52.0	19	32	725	12258
50 to 54	0	1	2	0	0	0	0	0	3	46.3	2	1	742	15947

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

MIAMI, FLORIDA
WBAN 12839
TABLE A:

TRY Data (1964)

Latitude 25.80 N
Longitude 80.30 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	5	9	2	0	0	16	75.8	720	8305	0	0
80 to 84	0	0	10	44	51	33	1	0	139	72.5	681	4772	39	67
75 to 79	33	24	54	32	24	48	71	52	338	70.6	447	1876	273	771
70 to 74	47	54	19	7	6	6	13	31	183	67.1	109	524	611	3019
65 to 69	3	6	1	2	0	1	4	2	19	59.4	35	233	685	6328
60 to 64	2	0	3	0	0	0	1	4	10	55.9	19	97	701	9792
55 to 59	5	6	2	0	0	0	0	1	14	51.5	12	18	708	13313
50 to 54	0	0	1	0	0	0	0	0	1	50.0	0	0	720	16895
May														
90 to 94	0	0	0	0	1	0	0	0	1	77.0	744	11060	0	0
85 to 89	0	0	0	11	14	8	0	0	33	75.8	735	7349	9	9
80 to 84	2	0	21	56	68	53	16	5	221	71.9	660	3790	84	170
75 to 79	48	32	44	21	7	30	70	65	317	71.2	355	1208	389	1308
70 to 74	37	46	24	5	3	2	7	21	145	69.0	80	195	664	4015
65 to 69	6	15	4	0	0	0	0	2	27	64.1	14	17	730	7557
Jun														
90 to 94	0	0	0	1	4	0	0	0	5	75.8	720	8603	0	0
85 to 89	0	0	5	57	48	38	1	0	149	76.0	690	5038	30	35
80 to 84	21	7	55	26	24	32	60	47	272	75.3	488	2094	232	691
75 to 79	52	60	30	6	14	19	25	36	242	74.3	201	421	519	2618
70 to 74	17	23	0	0	0	1	4	7	52	72.3	7	5	713	5802

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

MIAMI, FLORIDA
WBAN 12839
TABLE A:

TRY Data (1964)

Latitude 25.80 N
Longitude 80.30 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Jul														
90 to 94	0	0	0	3	9	0	0	0	12	77.7	744	7565	0	0
85 to 89	0	0	16	77	65	63	5	0	226	77.2	675	3923	69	78
80 to 84	44	30	60	8	14	22	66	62	306	76.2	388	1272	356	1147
75 to 79	49	61	17	4	5	7	22	31	196	74.6	101	119	643	3714
70 to 74	0	2	0	1	0	1	0	0	4	72.8	0	0	744	7315
Aug														
90 to 94	0	0	0	11	25	5	0	0	41	77.8	744	7032	0	0
85 to 89	1	0	27	74	51	65	19	7	244	77.6	613	3510	131	198
80 to 84	49	40	50	7	14	11	59	66	296	76.8	357	1055	387	1463
75 to 79	43	53	16	1	3	12	15	20	163	75.0	63	73	681	4201
Sep														
90 to 94	0	0	0	3	7	1	0	0	11	76.5	720	7805	0	0
85 to 89	0	0	6	65	66	38	1	0	176	76.5	673	4268	47	63
80 to 84	35	25	50	17	12	48	74	55	316	76.0	414	1525	306	920
75 to 79	48	56	33	5	5	3	15	35	200	74.4	132	231	588	3226
70 to 74	7	9	1	0	0	0	0	0	17	72.7	0	0	720	6595

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

MIAMI, FLORIDA
WBAN 12839
TABLE A:

TRY Data (1964)

Latitude 25.80 N
Longitude 80.30 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	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	2	15	20	8	0	0	45	77.4	742	7883	2	1
80 to 84	19	18	20	39	45	39	24	19	223	74.3	649	4343	95	181
75 to 79	29	22	28	31	24	38	43	37	252	71.3	368	1800	376	1358
70 to 74	27	23	29	8	4	8	24	34	157	68.5	152	547	592	3825
65 to 69	15	25	12	0	0	0	2	1	55	64.5	36	107	708	7105
60 to 64	3	4	1	0	0	0	0	2	10	56.6	7	15	737	10733
55 to 59	0	1	1	0	0	0	0	0	2	53.0	0	0	744	14438
Nov														
80 to 84	0	0	2	37	60	15	0	0	114	70.6	719	5544	1	1
75 to 79	25	21	32	44	28	66	53	37	306	70.4	494	2392	226	449
70 to 74	40	36	36	9	2	8	34	42	207	68.4	223	680	497	2337
65 to 69	25	31	19	0	0	1	3	11	90	64.8	43	47	677	5304
60 to 64	0	2	1	0	0	0	0	0	3	59.0	0	0	720	8857
Dec														
80 to 84	0	0	0	11	11	2	0	0	24	73.1	742	7955	2	1
75 to 79	10	12	22	50	65	54	20	13	246	69.2	672	4351	72	117
70 to 74	43	29	26	17	15	32	52	48	262	67.0	340	1810	404	1296
65 to 69	25	29	26	13	2	5	19	20	139	64.3	143	628	601	3834
60 to 64	8	14	13	1	0	0	2	9	47	60.2	43	186	701	7112
55 to 59	5	6	3	1	0	0	0	3	18	55.9	9	52	735	10698
50 to 54	2	2	2	0	0	0	0	0	6	46.5	6	14	738	14380
45 to 49	0	1	1	0	0	0	0	0	2	44.5	0	0	744	18086

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

MIAMI, FLORIDA
WBAN 12839
TABLE B:

TRY Data (1964)

Latitude 25.80 N
Longitude 80.30 E

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

Dry Bulb range(F)	Number of Hours of Occurrence In time period Hour of day									Mean Coincident Wet Bulb Temperature (F) 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	18	46	6	0	0	70	0.0	0.0	0.0	76.3	77.8	77.8	0.0	0.0	77.4
85 to 89	1	0	56	307	284	229	26	7	910	78.0	0.0	77.4	76.9	76.7	76.6	77.3	78.0	76.8
80 to 84	170	120	268	287	369	276	302	254	2046	76.2	76.3	76.2	75.1	72.2	73.6	75.8	76.1	74.6
75 to 79	363	357	315	286	247	375	382	355	2680	73.4	73.7	72.3	70.0	69.5	70.3	71.5	72.5	71.8
70 to 74	306	310	223	105	87	130	243	288	1692	69.0	69.4	68.5	65.2	64.4	65.3	67.5	68.2	67.9
65 to 69	144	170	113	42	38	49	85	102	743	64.0	64.5	64.1	60.1	59.6	61.0	62.3	63.6	63.2
60 to 64	48	55	51	27	19	26	32	49	307	58.5	59.7	58.5	55.3	53.1	53.0	55.7	57.4	57.2
55 to 59	27	40	29	16	2	1	20	23	158	53.2	54.2	53.9	50.2	49.5	47.0	49.6	52.6	52.7
50 to 54	26	25	22	3	0	0	2	14	92	48.5	48.8	48.0	48.0	0.0	0.0	47.0	46.3	48.1
45 to 49	7	12	10	3	3	3	0	0	38	45.0	44.3	44.3	41.0	40.3	39.3	0.0	0.0	43.5
40 to 44	0	3	7	1	0	0	3	0	14	0.0	42.3	41.0	39.0	0.0	0.0	37.7	0.0	40.4
35 to 39	3	3	1	0	0	0	0	3	10	34.0	34.3	36.0	0.0	0.0	0.0	0.0	34.7	34.5

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	Max	4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	67.4	85	36	74	61	62.8	87	74	69	79	78	0.0115	0.0117	0.0116	0.0115	0.0115	8.8
Feb	66.1	86	43	74	58	60.7	86	71	61	74	74	0.0104	0.0106	0.0108	0.0107	0.0105	8.8
Mar	73.9	89	52	80	68	67.9	84	70	65	75	75	0.0136	0.0136	0.0136	0.0135	0.0135	9.2
Apr	76.0	87	54	81	71	69.3	80	66	64	74	72	0.0137	0.0139	0.0140	0.0141	0.0140	11.0
May	77.6	90	65	83	72	70.9	84	69	63	73	73	0.0148	0.0149	0.0143	0.0147	0.0148	7.9
Jun	80.6	91	71	86	76	74.9	88	69	71	79	78	0.0173	0.0173	0.0171	0.0172	0.0173	6.3
Jul	82.3	90	74	88	77	76.1	85	69	69	77	76	0.0180	0.0178	0.0176	0.0178	0.0179	8.7
Aug	83.0	91	75	89	78	76.7	87	69	68	77	76	0.0188	0.0184	0.0180	0.0183	0.0184	7.9
Sep	81.7	91	74	88	77	75.6	88	69	68	78	77	0.0180	0.0177	0.0175	0.0179	0.0177	8.9
Oct	76.9	88	59	83	71	71.3	86	71	70	77	77	0.0153	0.0154	0.0153	0.0155	0.0154	10.8
Nov	74.8	83	63	80	70	69.1	86	70	66	78	76	0.0141	0.0141	0.0138	0.0142	0.0140	8.5
Dec	71.8	83	49	77	66	66.5	85	74	68	78	77	0.0126	0.0130	0.0128	0.0130	0.0128	10.1
Year	76.1	91	36	82	71	70.2	86	70	67	77	76	0.0149	0.0149	0.0147	0.0149	0.0148	8.9

MIAMI, FLORIDA

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TABLE D:

TRY Data (1964)

Latitude 25.80 N

Longitude 80.30 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY												24-HOUR SUMMARY									
	7-9AM**			10-12AM**			1-3PM**			4-6PM**			7-9PM**			10PM-6AM**			HEATING		COOLING	
	Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg	Hrs	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				
92	0	193	0	0	136	0	0	124	0	0	144	0	0	177	0	0	622	0	8760	1395	0	0
91	0	182	0	2	125	0	4	113	0	0	133	0	0	166	0	0	589	0	8752	1308	8	0
90	0	171	0	11	114	0	27	102	0	3	123	0	0	155	0	0	556	0	8717	1220	43	0
89	0	160	0	30	103	0	69	92	1	12	112	0	0	144	0	0	523	0	8647	1133	113	1
88	0	149	0	68	93	1	119	82	1	34	101	0	0	133	0	0	490	0	8537	1047	223	2
87	2	138	0	137	83	2	185	72	3	74	90	1	0	122	0	0	457	0	8361	963	399	5
86	14	127	0	217	74	3	254	63	5	129	80	2	2	111	0	0	424	0	8143	880	617	10
85	40	116	0	289	65	6	307	55	8	197	71	3	15	100	0	4	392	0	7907	800	853	18
84	86	106	1	344	57	9	349	48	11	254	63	6	52	90	0	12	359	0	7661	722	1099	27
83	140	96	2	388	50	13	394	40	15	297	54	8	121	79	1	43	326	0	7376	646	1384	40
82	187	87	4	435	43	17	454	34	19	342	47	12	200	70	3	140	294	1	7001	574	1759	55
81	236	78	6	495	37	22	542	28	24	397	39	15	263	62	5	298	263	3	6528	506	2232	75
80	293	70	8	571	31	27	647	23	30	471	33	20	309	54	8	468	234	7	5999	444	2761	100
79	355	62	12	649	26	33	736	19	37	552	27	25	351	46	11	637	207	12	5479	386	3281	130
78	418	55	15	726	22	40	798	15	45	633	22	31	412	39	15	804	181	20	4967	334	3793	165
77	480	48	20	794	19	47	849	13	53	714	18	37	493	32	20	994	157	29	4435	287	4325	206
76	544	43	25	845	16	56	892	10	62	788	14	45	582	27	25	1226	136	40	3882	245	4878	252
75	609	37	31	883	14	64	927	9	71	853	11	53	670	22	31	1488	116	53	3328	209	5432	303
74	667	33	37	911	12	73	960	7	80	904	9	62	749	18	38	1758	100	69	2810	179	5950	360
73	714	29	44	938	10	83	985	6	90	937	8	71	809	15	46	1980	86	88	2396	153	6364	422
72	756	25	52	963	9	92	1003	5	100	966	6	81	852	12	54	2145	73	109	2073	131	6687	488
71	797	22	59	985	8	102	1015	4	110	989	5	91	901	10	63	2291	63	131	1781	112	6979	556
70	838	19	67	999	7	112	1027	3	120	1006	4	101	940	8	72	2446	54	155	1502	95	7258	627
69	876	17	76	1010	6	122	1036	3	131	1023	3	111	960	7	82	2594	46	180	1260	82	7500	701
68	902	15	85	1019	5	132	1048	2	141	1038	3	121	980	6	92	2701	40	207	1070	70	7690	777
67	929	13	94	1025	4	142	1060	2	152	1050	2	131	1004	5	102	2777	34	234	913	60	7847	855
66	952	12	104	1032	4	153	1065	1	162	1057	2	142	1020	4	112	2848	30	262	784	52	7976	934
65	967	10	113	1040	3	163	1068	1	173	1063	1	153	1032	3	122	2917	26	291	671	45	8089	1015
64	980	9	123	1048	3	173	1073	1	184	1067	1	163	1043	3	132	2968	22	320	579	38	8181	1096
63	992	8	133	1054	2	184	1079	1	194	1073	1	174	1051	2	143	3010	19	350	498	33	8262	1178
62	1003	7	143	1060	2	194	1085	1	205	1080	1	185	1058	2	153	3042	17	381	431	28	8329	1261
61	1011	6	153	1066	1	205	1088	0	216	1086	1	196	1063	2	164	3066	14	411	378	24	8382	1345
60	1021	5	163	1070	1	216	1090	0	227	1090	0	206	1067	1	175	3089	12	442	332	21	8428	1429
59	1028	5	173	1074	1	226	1090	0	238	1091	0	217	1072	1	185	3109	11	473	293	18	8467	1513
58	1034	4	184	1079	1	237	1091	0	249	1092	0	228	1077	1	196	3132	9	504	254	15	8506	1598
57	1041	3	194	1083	1	248	1092	0	260	1092	0	239	1081	1	207	3153	7	536	217	13	8543	1683
56	1048	3	204	1086	1	259	1092	0	271	1092	0	250	1085	0	218	3170	6	567	185	11	8575	1769
55	1053	2	215	1087	0	270	1092	0	282	1092	0	261	1089	0	229	3184	5	599	162	9	8598	1855
54	1057	2	225	1088	0	281	1092	0	292	1092	0	272	1091	0	240	3198	4	631	141	7	8619	1941
53	1061	2	236	1089	0	292	1092	0	303	1092	0	283	1092	0	250	3212	3	663	121	6	8639	2027
52	1067	1	247	1090	0	302	1092	0	314	1092	0	294	1092	0	261	3224	3	695	101	5	8659	2114
51	1073	1	257	1091	0	313	1092	0	325	1092	0	305	1092	0	272	3238	2	728	82	4	8678	2201
50	1075	1	268	1091	0	324	1092	0	336	1092	0	316	1092	0	283	3249	2	760	68	3	8692	2287
49	1078	1	279	1091	0	335	1092	0	347	1092	0	327	1092	0	294	3256	2	792	58	3	8702	2374
48	1080	1	290	1091	0	346	1092	0	358	1092	0	337	1092	0	305	3261	1	825	50	2	8710	2461
47	1082	0	301	1092	0	357	1093	0	369	1092	0	348	1092	0	316	3266	1	858	43	2	8717	2549

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

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

MIAMI, FLORIDA
WBAN 12839
TABLE D:

TRY Data (1964)

Latitude 25.80 N
Longitude 80.30 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	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)*	Below	Hrs	Above	Hrs				
	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	100s*	Base	100s*			
46	1084	0	311	1092	0	368	1094	0	380	1093	0	359	1092	0	327	3269	1	890	34	1	8726	2636
45	1086	0	322	1093	0	379	1095	0	391	1094	0	370	1092	0	338	3272	1	923	27	1	8733	2723
44	1088	0	333	1094	0	390	1095	0	402	1095	0	381	1092	0	349	3274	1	956	20	1	8740	2810
43	1091	0	344	1094	0	401	1095	0	413	1095	0	392	1093	0	360	3276	1	989	15	1	8745	2898
42	1093	0	355	1095	0	412	1095	0	424	1095	0	403	1093	0	371	3276	0	1021	12	1	8748	2985
41	1093	0	366	1095	0	423	1095	0	435	1095	0	414	1094	0	382	3276	0	1054	12	0	8748	3073
40	1093	0	377	1095	0	434	1095	0	446	1095	0	425	1094	0	393	3276	0	1087	11	0	8749	3160
39	1094	0	388	1095	0	445	1095	0	456	1095	0	436	1095	0	403	3276	0	1120	9	0	8751	3248
38	1094	0	399	1095	0	455	1095	0	467	1095	0	447	1095	0	414	3277	0	1152	8	0	8752	3335
37	1095	0	410	1095	0	466	1095	0	478	1095	0	458	1095	0	425	3280	0	1185	4	0	8756	3423
36	1095	0	421	1095	0	477	1095	0	489	1095	0	469	1095	0	436	3284	0	1218	1	0	8759	3510
35	1095	0	432	1095	0	488	1095	0	500	1095	0	480	1095	0	447	3285	0	1251	0	0	8760	3598

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

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

MIAMI, FLORIDA
WBAN 12839
TABLE E:

TRY Data (1964)

Latitude 25.80 N
Longitude 80.30 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:	8589	8503	8360	8136	7891	7395	6423	5045	3367	1264	21
Annual Wet Bulb Cooling deg-hrs:	186522.	160817.	135442.	110569.	86363.	63118.	41809.	23809.	10141.	1953.	26.

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	117	117	117	117	117	116	115	112	102	78	39	.001		
.002	0	0	0	0	0	0	0	0	0	0	0	108	108	108	108	108	108	107	104	95	73	37	.002		
.003	0	0	0	0	0	0	0	0	0	0	0	99	99	99	99	99	99	98	96	88	67	34	.003		
.004	0	0	0	0	0	0	0	0	0	0	0	91	91	91	91	91	90	90	88	81	62	32	.004		
.005	0	0	0	0	0	0	0	0	0	0	0	82	82	82	82	82	82	81	80	74	57	30	.005		
.006	0	0	0	0	0	0	0	0	0	0	0	73	73	73	73	73	73	73	72	67	52	27	.006		
.007	0	0	0	0	0	0	0	1	1	1	1	65	65	65	65	65	65	65	64	60	47	25	.007		
.008	0	0	0	0	0	0	1	1	1	1	1	57	57	57	57	57	57	57	56	53	42	22	.008		
.009	0	0	0	0	0	1	1	1	2	2	2	48	48	48	48	48	48	48	48	46	37	20	.009		
.010	0	0	0	0	0	1	1	2	2	3	3	41	41	41	41	41	41	41	40	39	31	17	.010		
.011	0	0	0	0	0	1	2	2	3	4	4	33	33	33	33	33	33	33	33	32	26	15	.011		
.012	0	0	0	0	0	1	2	3	4	5	5	26	26	26	26	26	26	26	26	25	22	12	.012		
.013	0	0	0	0	1	1	2	4	5	7	8	20	20	20	20	20	20	20	20	19	17	10	.013		
.014	0	0	0	0	1	1	3	4	7	9	10	14	14	14	14	14	14	14	14	14	13	7	.014		
.015	0	0	0	0	1	2	3	5	8	11	14	9	9	9	9	9	9	9	9	9	8	5	.015		
.016	0	0	0	0	1	2	3	5	9	14	18	5	5	5	5	5	5	5	5	5	5	3	.016		
.017	0	0	0	0	1	2	3	6	11	17	23	2	2	2	2	2	2	2	2	2	2	2	.017		
.018	0	0	0	0	1	2	4	7	12	20	28	1	1	1	1	1	1	1	1	1	1	0	.018		

FOOTNOTES: * Indoor Humidity Level is measured in pounds of moisture per pound of dry air. Indoor set points of 72 deg(F)-30%RH and 78 deg(F)-50%RH yield humidity ratios of .005 and .010 respectively.
** Heating (Cooling) Humidity Ratio Hours are defined as the summation of the differences between the maintained indoor humidity ratio and the observed outdoor humidity ratio when both the 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	57	40	54	57	56	61	63	58	59	54	42	41	55
VERTICAL													
NORTH	100	100	100	98	92	90	91	96	100	100	100	100	96
WEST	70	59	74	73	73	78	80	74	75	67	59	57	72
SOUTH	55	46	67	82	93	98	97	87	75	61	42	38	69
EAST	66	51	63	67	69	74	72	73	70	66	52	53	66
% Possible Sun	61	61	78	80	66	76	78	74	73	70	63	60	70

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

MIAMI, FLORIDA
WBAN 12839
TABLE H:

TRY Data (1964)

Latitude 25.80 N
Longitude 80.30 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	1769	1655	1395	1170	815	501	297	221	219	2126	1381	716	689	611	537	416	311	245	217	216	784	604	1057
Feb	1643	1556	1400	1255	962	653	416	273	253	2206	1633	1053	1043	969	887	712	531	392	309	295	1310	1056	1314
Mar	1300	1315	1307	1283	1102	856	607	398	307	2170	1950	980	1018	1009	981	867	725	591	481	434	1310	1260	1603
Apr	865	1026	1160	1261	1216	1066	838	604	402	1995	2196	846	932	992	1038	1003	912	785	658	549	1318	1472	1859
May	602	820	1040	1213	1279	1216	1032	807	588	1819	2338	711	810	915	999	1028	989	890	773	665	1253	1550	1844
Jun	523	737	981	1186	1297	1279	1123	916	724	1736	2398	690	776	888	983	1034	1021	942	845	763	1205	1557	1708
Jul	561	776	1008	1200	1287	1252	1088	875	674	1768	2366	724	819	934	1032	1076	1055	966	857	754	1218	1547	1763
Aug	751	936	1102	1233	1231	1124	920	696	488	1897	2233	787	864	931	988	976	913	808	698	601	1284	1501	1630
Sep	1123	1185	1228	1253	1127	918	689	479	353	2064	2018	897	925	929	925	850	740	628	528	468	1240	1269	1456
Oct	1499	1439	1332	1232	986	706	472	315	282	2152	1724	946	927	871	813	686	549	441	369	353	1164	1027	1303
Nov	1717	1615	1389	1190	866	551	333	238	235	2129	1448	916	894	801	708	544	384	275	227	225	1066	779	1119
Dec	1768	1659	1384	1141	785	470	274	214	212	2067	1300	793	756	648	549	399	271	195	171	170	886	601	1019
Year	1174	1225	1226	1218	1080	884	675	504	396	2009	1917	837	870	874	869	799	701	597	512	459	1168	1186	1473

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	1495	1374	1158	970	664	385	220	179	178	593	567	504	442	339	247	193	176	175
Feb	1339	1279	1158	1045	791	519	311	214	206	854	859	802	737	585	426	304	246	240
Mar	965	1048	1072	1066	913	691	467	299	249	764	826	828	810	713	588	469	379	353
Apr	576	766	930	1034	1005	868	665	459	313	643	733	804	850	823	744	632	520	440
May	415	579	812	994	1058	1000	832	627	427	552	627	734	819	847	813	724	619	521
Jun	393	513	756	969	1073	1056	910	718	517	553	603	710	804	851	840	768	680	597
Jul	407	544	780	977	1063	1031	877	683	485	577	635	748	844	886	868	788	689	590
Aug	505	687	878	1011	1021	921	738	537	371	605	676	751	807	802	747	656	559	479
Sep	801	927	1000	1033	930	746	539	363	286	696	742	758	760	698	603	504	420	380
Oct	1190	1170	1096	1019	806	560	355	243	229	758	755	715	670	560	442	348	295	286
Nov	1440	1338	1154	992	704	427	249	193	191	761	741	666	589	444	303	214	185	183
Dec	1502	1381	1148	946	635	357	205	173	173	667	627	537	453	323	212	152	139	138
Year	917	966	994	1004	889	714	532	392	303	667	698	712	715	656	570	480	410	366

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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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 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	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								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	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 Bins)

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day 10-12	13-15	16-18	19-21	22-24	hours below			degree hours	hours above	degree hours	
Oct															
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	5	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	35.5	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	49.3	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

Dry Bulb Temperature (F)						Wet Bulb Ave	Percent Relative Humidity					Average Humidity Ratio (lb moisture/lb dry air)					Average wind MPH
Month	Ave	Max	Min	Daily Max	Ave Min		Average					Day					
							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	0.0048	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 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)	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	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	Hrs Below Base 100s*	Hrs Above Base 100s*						
94	0	406	0	0	330	0	0	292	0	0	315	0	0	376	0	0	8760	3021	0	0
93	0	395	0	0	319	0	1	281	0	1	304	0	0	365	0	0	8757	2934	3	0
92	0	384	0	0	308	0	12	270	0	4	293	0	0	354	0	0	8743	2846	17	0
91	0	373	0	1	297	0	30	259	0	10	283	0	0	343	0	0	8718	2759	42	0
90	0	362	0	5	286	0	47	249	1	20	272	0	0	333	0	0	8687	2672	73	1
89	0	351	0	12	275	0	70	238	1	35	261	0	0	322	0	0	8642	2585	118	2
88	0	340	0	25	265	0	96	228	2	57	251	1	0	311	0	0	8581	2499	179	3
87	0	329	0	47	254	1	130	218	3	85	240	2	0	300	0	0	8496	2413	264	5
86	0	318	0	73	244	1	168	209	5	113	230	3	1	289	0	0	8404	2329	356	9
85	3	307	0	103	234	2	202	200	6	141	221	4	5	278	0	0	8304	2245	456	12
84	8	296	0	137	224	3	234	191	9	173	211	5	10	267	0	0	8197	2163	563	18
83	12	285	0	168	214	5	261	182	11	197	202	7	15	256	0	0	8105	2081	655	24
82	21	274	0	192	205	7	287	174	14	218	193	9	27	245	0	0	8013	2001	747	31
81	32	264	1	213	196	9	312	166	17	241	185	12	42	235	1	2	7916	1921	844	39
80	46	253	1	244	188	11	336	159	20	270	176	14	59	224	1	4	7799	1842	961	48
79	64	243	2	274	179	14	360	151	24	298	168	17	85	214	2	9	7669	1765	1091	58
78	85	233	2	302	171	16	383	144	27	320	160	20	112	204	3	17	7540	1689	1220	69
77	110	223	3	323	163	20	410	137	31	350	153	24	137	194	4	37	7392	1614	1368	82
76	132	213	4	344	156	23	435	130	36	376	145	27	169	185	6	69	7233	1541	1527	97
75	162	203	6	373	148	26	464	124	40	405	138	31	208	176	8	106	7040	1470	1720	113
74	195	194	8	402	141	30	494	118	45	437	132	35	249	167	10	170	6812	1400	1948	131
73	229	185	10	432	135	35	516	112	50	460	125	40	289	159	13	265	6568	1333	2192	152
72	263	177	12	463	128	39	535	106	55	487	119	45	325	151	16	378	6308	1269	2452	175
71	297	169	15	491	122	44	551	100	61	511	113	50	353	144	19	492	6063	1207	2697	201
70	333	161	18	513	116	49	567	95	66	531	107	55	384	136	23	619	5812	1148	2948	229
69	361	154	22	530	110	54	583	90	72	552	102	60	413	129	27	756	5563	1091	3197	260
68	386	146	25	543	105	59	596	85	78	570	96	66	437	123	31	859	5368	1036	3392	293
67	407	139	29	555	99	65	610	80	84	584	91	72	459	116	36	936	5207	984	3553	328
66	426	133	34	567	94	71	630	75	90	600	86	77	481	110	40	1003	5052	932	3708	364
65	449	126	38	582	89	76	651	71	96	617	81	84	507	104	45	1058	4894	883	3866	402
64	469	120	43	599	84	82	671	66	103	634	77	90	530	98	50	1124	4731	834	4029	441
63	486	113	47	615	79	88	689	62	110	644	72	96	548	93	56	1201	4576	788	4184	482
62	507	107	52	631	74	94	703	58	117	653	68	103	563	87	61	1277	4425	743	4335	525
61	530	102	57	646	70	101	716	54	124	670	63	109	579	82	67	1345	4273	699	4487	569
60	549	96	63	661	65	107	731	51	131	692	59	116	596	77	73	1414	4115	657	4645	615
59	568	91	68	679	61	114	745	47	139	710	55	123	616	72	79	1488	3953	617	4807	662
58	588	86	74	696	57	121	762	44	146	725	51	130	636	67	85	1557	3794	578	4966	711
57	606	81	80	712	53	128	780	40	154	740	48	138	654	63	92	1636	3631	541	5129	761
56	623	76	86	728	49	135	795	37	162	756	44	145	669	59	98	1705	3482	506	5278	813
55	638	71	93	746	46	143	809	34	170	769	41	153	682	54	105	1755	3359	472	5401	867
54	652	67	99	759	42	150	823	32	178	780	38	161	701	50	112	1804	3238	439	5522	921
53	669	62	106	773	39	158	835	29	186	794	35	168	722	46	119	1865	3101	407	5659	977
52	684	58	113	790	36	166	843	26	195	808	32	176	737	43	126	1934	2962	377	5798	1035
51	701	54	119	808	33	174	854	24	203	819	29	185	750	39	134	1995	2831	348	5929	1093
50	717	50	127	821	30	182	866	22	212	832	26	193	769	36	141	2047	2706	320	6054	1153
49	728	47	134	833	27	190	875	19	220	846	24	201	783	33	149	2094	2599	293	6161	1214

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

TRY Date (1972)

Latitude 36.10 N
Longitude 86.90 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**				HEATING		COOLING	
	Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg	Hrs	Deg
	Above (100s)*	(100s)*	Base	Heat	Above (100s)*	(100s)*	Base	Heat	Above (100s)*	(100s)*	Base	Heat	Above (100s)*	(100s)*	Base	Heat	Below	Base	Above	Base
																	100s*	100s*	100s*	100s*
48	739	43	141	846	25	198	887	17	229	857	21	210	797	30	157	2141	132	341	2492	268
47	752	39	149	854	22	207	899	15	238	868	19	218	815	27	165	2199	121	363	2370	244
46	764	36	156	863	20	216	912	13	247	882	17	227	833	24	173	2257	110	385	2246	221
45	781	33	164	875	18	224	930	12	256	897	15	236	849	22	182	2310	100	408	2117	199
44	796	30	172	891	16	233	950	10	266	914	13	245	863	19	190	2364	91	431	1981	178
43	811	27	180	910	14	242	964	9	275	934	11	254	882	17	199	2417	82	455	1840	159
42	826	24	188	928	12	251	977	7	285	955	10	264	903	15	208	2474	74	479	1695	141
41	844	22	196	947	10	261	994	6	295	977	8	273	921	13	217	2542	66	504	1533	125
40	870	19	205	968	9	270	1009	5	305	995	7	283	941	11	226	2615	59	530	1361	111
39	893	17	214	980	8	280	1021	5	315	1008	6	293	956	10	236	2678	52	557	1222	98
38	915	15	223	992	7	290	1032	4	325	1020	6	303	968	9	246	2731	47	584	1101	86
37	937	13	232	1007	6	300	1039	3	336	1026	5	314	984	8	255	2779	41	611	986	76
36	953	12	241	1022	5	310	1044	3	346	1030	4	324	998	6	265	2825	36	639	886	67
35	967	11	251	1034	4	320	1052	2	357	1035	4	334	1010	6	275	2869	32	668	790	58
34	980	9	261	1045	4	331	1061	2	367	1041	3	345	1020	5	285	2912	28	697	699	51
33	989	8	271	1053	3	341	1067	2	378	1049	2	355	1029	4	296	2950	25	726	622	44
32	1000	7	281	1058	3	352	1071	1	389	1058	2	366	1038	3	306	2979	21	756	554	38
31	1011	6	291	1063	2	362	1076	1	399	1066	2	376	1046	3	316	3010	18	786	487	33
30	1019	6	301	1067	2	373	1080	1	410	1070	1	387	1052	2	327	3051	16	816	419	29
29	1030	5	311	1071	2	384	1081	1	421	1073	1	398	1058	2	338	3086	14	847	359	25
28	1039	4	321	1074	2	394	1083	1	432	1078	1	408	1062	2	348	3111	12	878	311	21
27	1045	4	332	1076	1	405	1085	1	443	1081	1	419	1067	1	359	3135	10	909	268	19
26	1051	3	342	1078	1	416	1086	1	453	1083	1	430	1073	1	369	3152	9	940	236	16
25	1057	3	353	1080	1	427	1087	0	464	1084	1	441	1077	1	380	3166	8	972	208	14
24	1062	3	363	1082	1	438	1088	0	475	1085	1	452	1082	1	391	3180	7	1004	180	12
23	1065	2	374	1084	1	448	1089	0	486	1088	0	463	1085	1	402	3194	6	1036	154	10
22	1068	2	385	1086	1	459	1090	0	497	1090	0	474	1087	1	413	3208	5	1068	130	9
21	1072	2	395	1087	1	470	1090	0	508	1090	0	484	1088	1	424	3220	4	1100	113	8
20	1075	1	406	1087	1	481	1090	0	519	1090	0	495	1088	1	434	3230	3	1132	97	7
19	1078	1	417	1087	1	492	1091	0	530	1091	0	506	1089	0	445	3237	3	1164	85	6
18	1081	1	428	1088	0	503	1091	0	541	1092	0	517	1089	0	456	3244	2	1197	73	5
17	1083	1	439	1088	0	514	1092	0	552	1092	0	528	1091	0	467	3251	2	1229	62	4
16	1084	1	449	1088	0	524	1092	0	562	1092	0	539	1092	0	478	3258	2	1262	53	4
15	1085	1	460	1088	0	535	1093	0	573	1092	0	550	1092	0	489	3265	2	1294	44	3
14	1086	1	471	1088	0	546	1094	0	584	1092	0	561	1092	0	500	3268	1	1327	39	3
13	1086	1	482	1090	0	557	1094	0	595	1092	0	572	1092	0	511	3269	1	1360	35	2
12	1086	1	493	1091	0	568	1095	0	606	1093	0	583	1092	0	522	3270	1	1393	32	2
11	1086	0	504	1091	0	579	1095	0	617	1093	0	594	1092	0	533	3272	1	1425	30	2
10	1086	0	515	1093	0	590	1095	0	628	1093	0	605	1092	0	544	3274	1	1458	26	1
9	1088	0	525	1094	0	601	1095	0	639	1093	0	615	1092	0	555	3275	1	1491	22	1
8	1089	0	536	1094	0	612	1095	0	650	1094	0	626	1092	0	565	3276	1	1523	19	1
7	1090	0	547	1095	0	623	1095	0	661	1095	0	637	1092	0	576	3276	1	1556	16	1
6	1092	0	558	1095	0	634	1095	0	672	1095	0	648	1093	0	587	3276	0	1589	13	1
5	1092	0	569	1095	0	645	1095	0	683	1095	0	659	1094	0	598	3276	0	1622	12	0
4	1092	0	580	1095	0	656	1095	0	694	1095	0	670	1095	0	609	3276	0	1654	11	0
3	1093	0	591	1095	0	666	1095	0	705	1095	0	681	1095	0	620	3277	0	1687	9	0

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 l re 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	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)*		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	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
1	1093	0	613	1095	0	688	1095	0	727	1095	0	703	1095	0	642	3279	0	1753	7	0	8753	5126
0	1094	0	624	1095	0	699	1095	0	738	1095	0	714	1095	0	653	3282	0	1766	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
-2	1095	0	646	1095	0	721	1095	0	759	1095	0	736	1095	0	675	3285	0	1851	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	48	52	59	62	67	65	66	63	64	50	41	58

FOOTNOTES: * Corrected For Cloud Cover.

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

NASHVILLE, TENNESSEE
WBAN 13897
TABLE H:

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	N	S-45 ***	horiz	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N		S-45 ***	horiz
Jan	1877	1752	1428	1118	715	383	218	172	171	2006	1076	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	1136	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.
**** Cinquemani, V., J. R. Dwyer, 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	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	633	450	638	735	841	920	917	845	725	596	492
Aug	783	938	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 YORK CITY, NEW YORK
WBAN 14732
TABLE A:

TRY Data (1951)

Latitude 40.80 N
Longitude 73.90 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): First Quarter
(5 Degrees(F)/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															
60 to 64	0	0	0	0	5	3	0	0	8	52.6	742	19071	2	2	
55 to 59	0	0	4	8	5	2	2	0	21	50.7	731	15387	13	38	
50 to 54	3	3	7	11	9	9	7	7	56	47.3	703	11792	41	163	
45 to 49	12	10	8	9	8	10	14	12	83	42.4	627	8447	117	538	
40 to 44	14	13	8	10	26	15	11	12	109	37.0	537	5533	207	1344	
35 to 39	18	19	20	29	11	21	22	20	160	32.7	415	3129	329	2660	
30 to 34	22	21	18	8	16	20	19	21	145	28.8	256	1468	488	4719	
25 to 29	15	15	17	9	7	8	12	13	96	24.1	119	557	625	7528	
20 to 24	6	6	5	7	6	5	3	5	43	19.3	44	175	700	10866	
15 to 19	3	4	3	2	0	0	3	3	18	14.2	14	42	730	14453	
10 to 14	0	2	3	0	0	0	0	0	5	11.6	3	2	741	18133	
Feb															
65 to 69	0	0	0	0	1	0	0	0	1	54.0	672	21099	0	0	
60 to 64	0	0	0	1	5	2	0	0	8	50.6	668	17744	4	5	
55 to 59	1	0	1	7	6	1	3	2	21	48.3	656	14427	16	48	
50 to 54	2	2	6	6	6	8	3	2	35	46.3	636	11207	36	188	
45 to 49	9	9	4	7	9	14	15	11	78	42.6	582	8149	90	490	
40 to 44	9	11	16	12	17	14	10	14	103	37.5	503	5452	169	1153	
35 to 39	20	18	18	24	23	20	19	18	160	34.1	346	3264	326	2325	
30 to 34	17	15	11	10	2	10	19	17	101	28.8	227	1859	445	4280	
25 to 29	8	12	14	5	3	5	2	4	53	23.4	144	966	528	6747	
20 to 24	10	7	4	6	8	7	10	13	65	18.8	92	382	580	9523	
15 to 19	5	7	7	6	4	3	1	0	33	14.2	36	89	636	12590	
10 to 14	3	3	3	0	0	0	2	3	14	10.2	3	3	669	15864	
Mar															
60 to 64	0	0	0	1	5	0	0	0	6	49.2	744	15352	0	0	
55 to 59	0	0	0	7	10	10	3	0	30	50.3	731	11655	13	23	
50 to 54	4	5	10	12	14	11	11	10	77	48.2	677	8103	67	191	
45 to 49	11	9	11	24	30	33	12	11	141	40.9	592	4915	152	723	
40 to 44	17	15	27	26	18	21	40	32	196	37.1	423	2352	321	1880	
35 to 39	44	43	29	13	13	14	17	28	201	33.8	214	753	530	4001	
30 to 34	14	11	10	10	3	4	9	9	70	28.2	58	165	686	7133	
25 to 29	3	10	6	0	0	0	1	3	23	23.6	9	16	735	10704	

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

NEW YORK CITY, NEW YORK
WBAN 14732
TABLE A:

TRY Data (1951)

Latitude 40.80 N
Longitude 73.90 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Apr														
80 to 84	0	0	0	0	2	2	0	0	4	66.5	718	21556	2	1
75 to 79	0	0	1	1	1	1	0	0	4	63.8	716	17974	4	19
70 to 74	0	0	1	2	4	2	0	0	9	56.6	710	14408	10	53
65 to 69	2	3	1	5	7	6	2	3	29	56.7	696	10890	24	135
60 to 64	3	1	4	16	22	13	6	0	65	51.7	652	7499	68	344
55 to 59	1	5	16	29	28	29	19	11	138	48.4	558	4425	162	870
50 to 54	23	14	32	22	14	23	44	41	213	46.4	400	1990	320	2035
45 to 49	40	37	24	12	12	11	15	24	175	42.3	179	574	541	4219
40 to 44	21	29	11	3	0	3	4	11	82	38.4	44	57	676	7302
35 to 39	0	1	0	0	0	0	0	0	1	34.0	0	0	720	10845
May														
90 to 94	0	0	0	0	1	0	0	0	1	64.0	744	22553	0	0
85 to 89	0	0	0	2	5	2	0	0	9	63.8	742	18836	2	3
80 to 84	0	0	1	7	11	6	0	0	25	62.9	729	15157	15	44
75 to 79	0	0	3	11	7	10	5	1	37	60.4	695	11591	49	198
70 to 74	1	0	11	9	15	12	6	3	57	60.4	650	8219	94	546
65 to 69	9	8	14	22	21	18	15	14	121	56.6	574	5137	170	1184
60 to 64	18	15	15	27	22	27	26	18	168	54.1	444	2587	300	2354
55 to 59	34	40	32	11	9	14	34	38	212	51.5	240	857	504	4344
50 to 54	26	22	15	4	2	4	7	17	97	48.3	77	146	667	7353
45 to 49	5	8	2	0	0	0	0	2	17	43.6	5	4	739	10931
Jun														
90 to 94	0	0	0	0	1	0	0	0	1	68.0	720	16638	0	0
85 to 89	0	0	0	8	8	3	0	0	19	68.7	714	13046	6	8
80 to 84	0	3	6	12	17	18	3	3	62	70.2	681	9535	39	97
75 to 79	5	0	10	22	28	18	15	6	104	66.6	598	6310	122	472
70 to 74	12	14	29	23	16	31	15	18	158	64.6	494	3588	226	1350
65 to 69	34	29	25	14	9	6	34	26	177	62.2	299	1591	421	2953
60 to 64	25	32	16	10	8	7	13	25	136	57.4	146	494	574	5456
55 to 59	12	8	4	1	3	7	10	12	57	52.7	38	79	682	8641
50 to 54	2	4	0	0	0	0	0	0	6	50.0	0	0	720	12162

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

NEW YORK CITY, NEW YORK
WBAN 14732
TABLE A:

TRY Data (1951)

Latitude 40.80 N
Longitude 73.90 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence In time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Jul															
90 to 94	0	0	0	2	8	3	0	0	13	71.1	742	12310	2	1	
85 to 89	0	0	1	23	24	11	3	0	62	70.8	722	8639	22	50	
80 to 84	2	0	14	30	31	34	11	4	126	69.4	643	5233	101	364	
75 to 79	14	10	41	23	21	31	45	33	218	68.2	477	2421	267	1272	
70 to 74	56	57	29	9	9	12	27	42	241	66.4	236	642	508	3213	
65 to 69	20	19	8	6	0	2	7	13	75	63.4	35	64	709	6355	
60 to 64	1	7	0	0	0	0	0	1	9	57.0	0	0	744	10011	
Aug															
90 to 94	0	0	0	1	4	0	0	0	5	72.2	743	13662	1	1	
85 to 89	0	0	0	12	17	6	0	0	35	73.0	727	9970	17	29	
80 to 84	0	0	5	28	33	24	4	0	94	71.8	676	6439	68	218	
75 to 79	10	7	31	23	27	46	38	20	202	69.2	539	3342	205	841	
70 to 74	39	37	34	26	7	12	40	48	243	66.4	287	1199	457	2418	
65 to 69	34	35	20	3	3	5	9	20	129	61.5	105	270	639	5209	
60 to 64	10	14	3	0	2	0	2	5	36	57.7	13	15	731	8674	
Sep															
80 to 84	0	0	0	14	19	0	0	0	33	67.7	713	10371	7	7	
75 to 79	0	0	10	30	31	27	2	1	101	64.8	658	6916	62	152	
70 to 74	19	15	24	17	20	40	38	24	197	65.4	522	3927	198	763	
65 to 69	33	26	26	15	7	10	30	36	183	61.0	310	1863	410	2299	
60 to 64	25	29	19	6	8	6	9	18	120	57.2	142	737	578	4773	
55 to 59	7	14	5	7	5	7	9	5	59	49.5	60	255	660	7891	
50 to 54	1	0	4	1	0	0	2	6	14	43.5	22	84	698	11320	
45 to 49	5	6	2	0	0	0	0	0	13	41.2	6	5	714	14841	

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

NEW YORK CITY, NEW YORK

WBAN 14732

TABLE A:

TRY Data (1951)

Latitude 40.80 N

Longitude 73.90 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	0	0	0	3	70.0	743	17446	1	1
75 to 79	0	0	1	8	5	3	2	0	19	65.4	735	13745	9	20
70 to 74	3	5	6	5	16	7	3	3	48	63.0	713	10120	31	115
65 to 69	9	2	9	19	18	23	16	9	105	61.8	642	6713	102	428
60 to 64	9	12	19	25	28	25	23	14	155	55.6	521	3795	223	1230
55 to 59	31	29	22	24	14	27	33	34	214	51.6	312	1666	432	2821
50 to 54	23	16	22	7	6	5	13	22	114	46.3	154	536	590	5411
45 to 49	18	27	13	5	3	3	3	11	83	43.2	30	43	714	8638
40 to 44	0	2	1	0	0	0	0	0	3	36.3	0	0	744	12315
Nov														
65 to 69	0	0	0	3	5	1	0	0	9	56.6	720	17132	0	0
60 to 64	0	4	7	9	7	8	6	3	44	58.1	699	13568	21	36
55 to 59	12	8	5	4	15	12	9	11	76	51.5	633	10209	87	277
50 to 54	7	8	10	10	9	6	7	5	62	46.0	564	7221	156	889
45 to 49	19	13	9	23	11	16	17	19	127	41.5	480	4565	240	1833
40 to 44	10	13	18	15	23	25	19	10	133	36.4	355	2488	365	3356
35 to 39	17	14	16	13	14	13	21	27	135	32.2	211	1077	509	5545
30 to 34	16	18	15	11	6	9	3	6	84	27.7	93	334	627	8402
25 to 29	6	9	9	2	0	0	8	9	43	23.8	28	49	692	11717
20 to 24	3	3	1	0	0	0	0	0	7	19.4	3	2	717	15270
Dec														
60 to 64	4	4	4	9	13	5	3	3	45	55.8	733	17481	11	7
55 to 59	3	6	3	8	11	16	8	4	59	52.3	679	13948	65	194
50 to 54	9	5	9	10	5	7	9	13	67	48.1	615	10715	129	681
45 to 49	8	9	12	11	10	8	18	10	86	43.3	550	7807	194	1493
40 to 44	18	14	14	11	13	11	4	14	99	37.7	449	5307	295	2713
35 to 39	12	19	15	10	12	16	15	9	108	32.4	350	3305	394	4431
30 to 34	13	6	6	14	14	9	13	16	91	27.9	249	1817	495	6663
25 to 29	9	11	15	13	9	15	11	9	92	23.2	143	832	601	9398
20 to 24	12	12	9	3	6	0	6	12	60	18.4	71	312	673	12598
15 to 19	2	4	3	4	0	6	5	0	24	14.5	22	85	722	16091
10 to 14	3	3	2	0	0	0	1	3	12	9.4	8	16	736	19742
5 to 9	0	0	1	0	0	0	0	0	1	7.0	0	0	744	23446

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

NEW YORK CITY, NEW YORK
WBAN 14732
TABLE B:

TRY Data (1951)

Latitude 40.80 N
Longitude 73.90 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	19-24	22-24	Year
90 to 94	0	0	0	3	14	3	0	0	20	0.0	0.0	0.0	71.3	70.6	71.3	0.0	0.0	70.8
85 to 89	0	0	1	45	54	22	3	0	125	0.0	0.0	76.0	70.4	70.4	71.2	70.7	0.0	70.6
80 to 84	2	3	26	91	116	84	18	7	347	70.0	71.7	70.0	69.0	69.0	69.8	71.8	73.0	69.5
75 to 79	29	17	97	118	120	136	107	61	685	71.6	72.0	68.8	65.8	64.1	66.1	68.7	70.1	67.2
70 to 74	130	128	134	91	87	116	129	138	953	67.6	68.1	64.9	61.9	61.5	63.3	65.7	66.6	65.3
65 to 69	141	122	103	87	71	71	113	121	829	62.2	62.5	60.5	58.7	57.9	58.5	61.2	62.0	60.8
60 to 64	95	118	87	104	125	96	88	87	800	57.3	57.9	56.1	54.2	53.0	53.5	56.5	57.2	55.6
55 to 59	101	110	92	106	106	125	130	117	887	52.7	52.5	51.0	48.9	49.2	50.1	50.9	52.2	50.9
50 to 54	100	79	115	83	65	73	103	123	741	47.9	48.4	47.1	46.4	45.4	46.5	46.8	46.8	47.0
45 to 49	127	128	85	91	83	95	94	100	803	43.3	43.5	42.6	40.6	40.6	40.8	42.3	42.5	42.2
40 to 44	89	97	95	77	97	89	88	93	725	38.0	38.1	37.6	36.2	35.8	37.0	37.2	37.9	37.3
35 to 39	111	114	98	89	73	84	94	102	765	33.9	33.5	33.3	33.0	32.5	32.4	32.9	33.3	33.2
30 to 34	82	71	60	53	41	52	63	69	491	28.5	28.5	28.1	27.5	28.2	28.5	28.6	28.5	28.3
25 to 29	41	57	61	29	19	28	34	38	307	23.6	23.7	23.9	23.7	23.3	22.7	23.7	23.6	23.6
20 to 24	31	28	19	16	20	12	19	30	175	18.6	19.6	19.4	18.1	18.6	18.9	18.9	18.2	18.8
15 to 19	10	15	13	12	4	9	9	3	75	14.5	14.7	14.5	14.2	14.0	14.1	13.9	12.3	14.3
10 to 14	6	8	8	0	0	0	3	6	31	10.0	9.6	10.4	0.0	0.0	0.0	10.7	10.3	10.1
5 to 9	0	0	1	0	0	0	0	0	1	0.0	0.0	7.0	0.0	0.0	0.0	0.0	0.0	7.0

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Dry Bulb Temperature (F)						Wet Bulb	Percent Relative Humidity					Average Humidity Ratio (lb moisture/lb dry air)					Average wind MPH
Month	Daily				Ave		Average					Day					
	Ave	Max	Min	Max		Min	Ave	4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day
Jan	36.9	64	12	44	30	33.0	71	66	63	67	67	0.0030	0.0032	0.0032	0.0032	0.0031	14.5
Feb	36.1	65	11	44	30	32.3	73	64	61	70	68	0.0029	0.0030	0.0032	0.0032	0.0031	15.4
Mar	41.9	61	25	48	36	37.5	75	64	58	67	67	0.0037	0.0037	0.0038	0.0038	0.0038	16.6
Apr	52.6	83	39	61	46	46.1	77	56	51	65	63	0.0054	0.0051	0.0051	0.0055	0.0052	12.9
May	62.2	90	46	72	54	54.0	75	55	51	63	62	0.0073	0.0071	0.0070	0.0073	0.0072	11.8
Jun	69.4	90	53	77	63	62.5	81	59	60	75	70	0.0105	0.0102	0.0107	0.0111	0.0107	10.6
Jul	76.0	93	63	84	69	67.5	79	58	57	69	67	0.0127	0.0122	0.0125	0.0129	0.0126	9.7
Aug	74.1	93	60	82	68	66.9	82	62	58	74	70	0.0127	0.0124	0.0126	0.0132	0.0127	9.9
Sep	68.1	84	46	76	61	60.8	78	58	56	69	67	0.0101	0.0097	0.0096	0.0101	0.0099	11.3
Oct	59.1	83	44	66	53	55.2	75	65	61	71	69	0.0071	0.0076	0.0077	0.0079	0.0075	13.4
Nov	43.7	67	22	51	37	38.6	69	60	55	61	63	0.0040	0.0040	0.0039	0.0039	0.0040	13.7
Dec	39.0	64	9	46	33	35.0	71	65	62	66	66	0.0036	0.0037	0.0039	0.0037	0.0037	12.5
Year	55.0	93	9	63	48	49.0	75	61	58	68	67	0.0069	0.0068	0.0070	0.0072	0.0070	12.7

NEW YORK CITY, NEW YORK
WBAN 14732
TABLE D:

TRY Data (1951)

Latitude 40.80 N
Longitude 73.90 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																24 HOUR SUMMARY			
	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**		HEATING		COOLING					
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg
	Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Below	Deg	Above	Deg	Base	Deg	Base	Deg
	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	100s*	Base	100s*	Base	100s*	Base	100s*
94	0	442	0	0	393	0	0	371	0	0	393	0	0	427	0	0	1387	0	8760	3414
93	0	431	0	0	382	0	1	360	0	0	382	0	0	417	0	0	1354	0	8758	3326
92	0	420	0	0	371	0	4	349	0	0	372	0	0	406	0	0	1321	0	8755	3239
91	0	410	0	0	360	0	6	338	0	1	361	0	0	395	0	0	1289	0	8752	3151
90	0	399	0	1	349	0	10	327	0	2	350	0	0	384	0	0	1256	0	8745	3064
89	0	388	0	5	338	0	15	316	0	3	339	0	0	373	0	0	1223	0	8736	2976
88	0	377	0	10	327	0	22	305	0	5	328	0	0	362	0	0	1190	0	8722	2889
87	0	366	0	18	317	0	31	295	1	8	317	0	0	351	0	0	1157	0	8701	2802
86	0	355	0	28	306	0	41	284	1	12	306	0	1	340	0	0	1124	0	8676	2715
85	0	344	0	40	295	1	57	274	2	19	295	0	2	329	0	0	1092	0	8639	2628
84	3	333	0	52	285	1	76	263	2	31	285	1	3	318	0	0	1059	0	8593	2542
83	6	322	0	62	274	2	93	253	3	44	274	1	3	307	0	1	1026	0	8549	2456
82	11	311	0	79	264	3	113	243	4	58	264	2	6	296	0	2	993	0	8488	2371
81	17	300	0	98	254	3	138	234	5	77	253	2	8	285	0	4	960	0	8416	2287
80	23	290	0	123	244	5	167	224	7	98	243	3	15	274	0	8	927	0	8325	2203
79	33	279	1	150	235	6	198	215	9	119	233	4	26	264	1	14	895	0	8220	2120
78	47	268	1	177	225	8	223	206	11	143	224	5	41	253	1	21	862	0	8107	2038
77	66	258	2	200	216	9	248	198	13	172	214	7	60	243	1	35	829	1	7977	1958
76	86	248	2	221	207	12	273	189	16	200	205	9	82	232	2	57	797	1	7839	1879
75	110	238	3	246	199	14	294	181	19	229	196	11	112	222	3	94	765	2	7674	1801
74	135	228	5	267	190	16	311	173	22	258	188	13	142	213	4	147	733	3	7498	1725
73	160	219	6	287	182	19	325	165	25	281	180	16	169	203	6	213	702	5	7325	1651
72	188	209	8	306	174	22	341	158	28	301	172	19	190	194	8	310	672	7	7123	1579
71	213	200	10	322	166	25	359	150	32	322	164	22	213	185	10	396	643	11	6934	1509
70	240	192	12	338	159	29	379	143	35	347	156	26	242	177	12	469	614	15	6743	1440
69	269	183	15	357	151	32	400	136	39	364	149	29	278	168	14	557	586	20	6533	1374
68	291	175	18	376	144	36	417	129	43	373	142	33	307	160	17	633	559	26	6361	1310
67	314	167	21	394	137	40	433	123	48	387	134	37	324	152	21	700	533	33	6206	1247
66	334	160	24	411	130	44	443	116	52	400	127	41	339	145	24	765	508	40	6066	1185
65	351	152	27	427	123	48	454	109	56	418	121	45	358	137	27	847	483	48	5903	1125
64	371	145	31	443	117	52	474	103	61	439	114	49	379	130	31	930	459	57	5722	1067
63	388	138	35	460	110	57	498	97	66	456	107	53	398	123	35	985	436	67	5573	1011
62	402	131	39	481	104	61	520	91	71	476	101	58	414	116	39	1041	413	77	5424	956
61	416	124	43	502	98	66	541	86	76	493	95	63	430	109	43	1104	391	88	5273	902
60	435	117	47	524	92	71	569	80	82	514	89	68	448	103	48	1167	369	99	5101	850
59	454	111	51	551	86	77	600	75	88	542	83	73	474	96	52	1228	348	111	4909	800
58	470	104	56	574	81	82	626	70	94	572	78	79	503	90	57	1285	328	124	4727	752
57	490	98	61	590	76	88	651	66	100	602	73	85	526	85	62	1350	309	137	4549	706
56	508	92	66	606	71	94	671	61	107	626	68	91	547	79	68	1415	290	151	4386	661
55	528	86	71	630	66	100	686	57	114	644	64	97	573	74	73	1485	271	165	4212	618
54	548	81	76	656	62	107	698	53	121	661	59	104	599	69	79	1547	254	180	4049	577
53	569	75	82	671	58	114	709	49	128	676	55	110	620	64	85	1597	236	196	3916	537
52	593	70	88	685	53	120	722	45	135	692	51	117	643	59	92	1659	220	212	3764	499
51	615	65	94	704	49	127	733	42	142	707	47	124	665	55	98	1714	204	229	3621	462
50	641	61	100	720	45	134	747	38	149	719	43	131	682	51	105	1783	188	247	3467	426
49	664	56	107	735	42	142	765	35	157	733	39	139	696	46	112	1869	174	265	3296	393

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

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

NEW YORK CITY, NEW YORK
WBAN 14732
TABLE D:

TRY Data (1951)

Latitude 40.80 N
Longitude 73.90 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY												24 HOUR SUMMARY								
	7-9AM**			10-12AM**			1-3PM**			4-6PM**			7-9PM**			10PM-6AM**		HEATING		COOLING	
	Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs	Hrs	Deg	Hrs	Deg
	Above (100s)*	Base	Heat	Above (100s)*	Base	Heat	Above (100s)*	Base	Heat	Above (100s)*	Base	Heat	Above (100s)*	Base	Heat	Above (100s)*	Base	Below Base	100s*	Above Base	100s*
48	683	52	113	751	38	149	783	32	165	751	36	146	710	43	119	1945	160	3135	360	5625	976
47	701	48	120	767	35	157	802	29	173	769	32	154	730	39	126	2027	147	2962	330	5798	1033
46	717	44	127	782	32	164	819	26	181	785	29	161	751	35	133	2097	135	2806	301	5954	1092
45	733	40	135	804	29	172	834	23	189	807	26	169	773	32	141	2153	123	2655	274	6105	1152
44	746	37	142	823	26	181	848	21	198	829	24	178	790	29	149	2208	112	2513	248	6247	1214
43	763	34	150	835	23	189	868	18	206	849	21	186	804	26	157	2255	102	2384	223	6376	1277
42	785	30	157	848	21	197	888	16	215	868	19	195	824	23	165	2306	92	2240	200	6520	1342
41	803	27	165	861	18	206	902	14	224	882	16	203	843	20	173	2367	82	2100	179	6660	1408
40	822	24	173	883	16	214	923	12	233	899	14	212	862	18	182	2431	73	1938	158	6822	1475
39	843	22	182	906	14	223	946	11	242	919	13	221	883	16	191	2494	65	1767	140	6993	1544
38	862	19	190	926	12	233	962	9	252	936	11	231	904	14	199	2556	57	1613	123	7147	1615
37	883	17	199	945	11	242	975	8	262	952	9	240	925	12	209	2623	51	1455	108	7305	1687
36	904	15	208	958	9	251	987	7	271	969	8	250	941	10	218	2687	44	1311	94	7449	1761
35	923	13	217	973	8	261	1002	6	281	985	7	259	957	9	227	2753	39	1164	81	7596	1836
34	938	12	226	990	7	271	1017	5	291	999	6	269	975	8	237	2813	34	1026	71	7734	1913
33	950	10	236	1000	6	281	1025	4	302	1011	5	279	989	6	247	2856	29	928	61	7832	1991
32	964	9	245	1011	5	291	1032	4	312	1023	4	290	1002	5	257	2906	25	820	52	7940	2069
31	974	8	255	1024	4	301	1039	3	322	1033	3	300	1014	5	267	2949	22	725	44	8035	2149
30	985	6	265	1034	4	311	1046	2	333	1041	3	310	1024	4	277	2987	18	641	37	8119	2230
29	1000	5	275	1042	3	322	1057	2	343	1047	2	321	1036	3	287	3022	16	554	32	8206	2312
28	1014	5	285	1049	2	332	1063	2	354	1053	2	331	1047	3	298	3051	13	481	26	8279	2394
27	1028	4	295	1056	2	343	1066	1	364	1059	2	342	1053	2	308	3089	11	407	22	8353	2477
26	1039	3	305	1063	2	353	1068	1	375	1064	1	352	1057	2	319	3121	9	346	18	8414	2561
25	1048	3	316	1067	1	364	1070	1	386	1070	1	363	1061	1	330	3141	8	301	15	8459	2646
24	1056	2	326	1068	1	375	1073	1	397	1075	1	374	1066	1	340	3154	6	265	12	8495	2730
23	1061	2	337	1070	1	385	1079	0	407	1079	1	385	1072	1	351	3169	5	229	10	8531	2815
22	1065	2	348	1073	1	396	1083	0	418	1083	0	395	1077	1	362	3185	4	191	8	8569	2901
21	1068	1	358	1077	0	407	1085	0	429	1085	0	406	1080	1	372	3203	3	161	6	8599	2987
20	1071	1	369	1080	0	418	1088	0	440	1085	0	417	1082	0	383	3224	2	128	4	8632	3073
19	1075	1	380	1084	0	429	1091	0	451	1087	0	428	1085	0	394	3241	2	95	3	8665	3159
18	1078	1	391	1087	0	439	1093	0	462	1090	0	439	1087	0	405	3246	1	78	3	8682	3246
17	1080	1	401	1090	0	450	1094	0	473	1092	0	450	1088	0	416	3250	1	65	2	8695	3333
16	1082	0	412	1093	0	461	1095	0	484	1093	0	461	1089	0	427	3256	1	51	1	8709	3420
15	1084	0	423	1095	0	472	1095	0	495	1094	0	472	1091	0	438	3262	0	38	1	8722	3507
14	1087	0	434	1095	0	483	1095	0	505	1095	0	483	1093	0	449	3269	0	25	0	8735	3595
13	1088	0	445	1095	0	494	1095	0	516	1095	0	494	1094	0	459	3275	0	16	0	8744	3682
12	1090	0	456	1095	0	505	1095	0	527	1095	0	504	1095	0	470	3278	0	11	0	8749	3769
11	1093	0	466	1095	0	516	1095	0	538	1095	0	515	1095	0	481	3281	0	6	0	8754	3857
10	1094	0	477	1095	0	527	1095	0	549	1095	0	526	1095	0	492	3283	0	2	0	8758	3945
9	1094	0	488	1095	0	538	1095	0	560	1095	0	537	1095	0	503	3285	0	0	0	8760	4032
8	1095	0	499	1095	0	549	1095	0	571	1095	0	548	1095	0	514	3285	0	0	0	8760	4120

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

NEW YORK CITY, NEW YORK

TRY Data (1951)

Latitude 40.80 N

WBAN 14732

Longitude 73.90 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:	4437	3859	3385	2850	2273	1664	1121	533	160	3	0
Annual Wet Bulb Cooling deg-hrs:	56305.	43597.	32450.	22770.	14821.	8619.	4215.	1463.	294.	3.	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	48	48	46	45	42	39	34	28	21	11	4	.001		
.002	1	1	1	1	1	1	1	1	1	1	1	40	40	40	39	37	34	31	26	19	10	4	.002		
.003	1	2	3	3	3	3	3	3	3	3	3	34	34	33	33	32	30	27	23	17	9	3	.003		
.004	2	3	4	5	5	6	6	6	6	6	6	28	28	28	27	27	26	23	20	15	8	3	.004		
.005	2	4	6	7	8	9	9	9	9	9	9	22	22	22	22	22	21	20	17	13	7	3	.005		
.006	3	5	8	10	12	12	13	13	14	14	14	18	18	18	18	18	18	17	15	11	6	2	.006		
.007	4	6	10	13	15	16	18	18	18	19	19	14	14	14	14	14	14	14	12	9	5	2	.007		
.008	4	7	12	15	18	20	22	23	24	24	24	11	11	11	11	11	11	11	10	8	4	2	.008		
.009	5	8	13	18	22	25	27	29	29	30	30	8	8	8	8	8	8	8	8	6	3	1	.009		
.010	5	10	15	20	25	29	32	34	35	36	36	6	6	6	6	6	6	6	6	5	3	1	.010		
.011	6	11	17	23	28	33	37	40	41	43	43	4	4	4	4	4	4	4	4	4	2	1	.011		
.012	7	12	19	25	32	37	42	46	48	49	50	3	3	3	3	3	3	3	3	2	1	1	.012		
.013	7	13	21	28	35	41	47	52	54	56	58	2	2	2	2	2	2	2	2	2	1	0	.013		
.014	8	14	23	31	39	45	52	57	61	64	66	1	1	1	1	1	1	1	1	1	1	0	.014		
.015	8	15	25	33	42	49	57	63	68	71	73	0	0	0	0	0	0	0	0	0	0	0	.015		
.016	9	16	26	36	45	53	62	69	74	79	82	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	10	17	28	38	49	57	67	75	81	86	90	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	10	18	30	41	52	62	72	81	88	94	98	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	45	38	47	48	54	56	57	51	46	42	43	48	50
VERTICAL													
NORTH	100	100	100	98	94	92	93	97	100	100	100	100	96
WEST	56	50	55	63	67	71	71	65	62	52	57	56	63
SOUTH	33	33	51	65	77	82	82	70	53	40	34	34	56
EAST	52	49	57	61	69	73	70	67	56	56	50	56	63
% Possible Sun	50	55	56	59	61	64	65	64	63	61	52	49	59

FOOTNOTES: * Corrected For Cloud Cover.

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

NEW YORK CITY, NEW YORK
WBAN 14732
TABLE H:

TRY Data (1951)

Latitude 40.80 N
Longitude 73.90 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	1851	1718	1373	1038	619	303	169	146	145	1882	911	811	768	637	504	332	202	148	139	139	802	458	500
Feb	1949	1822	1529	1247	845	494	281	198	192	2181	1257	960	909	779	653	468	309	218	183	179	1041	664	721
Mar	1789	1727	1569	1412	1093	756	491	317	263	2379	1735	991	957	884	813	670	521	403	324	300	1196	966	1037
Apr	1422	1494	1500	1488	1301	1035	758	521	367	2393	2183	1032	1074	1070	1054	945	798	652	530	456	1441	1396	1364
May	1117	1269	1399	1491	1432	1247	986	730	529	2311	2476	987	1044	1081	1102	1048	939	806	686	605	1481	1606	1636
Jun	995	1165	1344	1480	1479	1336	1099	843	646	2256	2600	912	966	1018	1055	1034	953	843	730	654	1425	1621	1710
Jul	1043	1203	1357	1477	1448	1288	1048	795	599	2260	2527	940	1005	1063	1108	1079	990	869	743	644	1432	1611	1688
Aug	1270	1372	1424	1455	1322	1096	836	603	437	2302	2262	1019	1052	1057	1051	962	835	703	590	516	1456	1480	1483
Sep	1612	1599	1511	1412	1150	848	588	397	311	2315	1861	1090	1100	1048	985	829	655	511	408	365	1381	1183	1214
Oct	1850	1738	1492	1264	892	559	345	237	224	2188	1393	881	822	716	619	464	333	252	210	203	992	700	895
Nov	1862	1741	1411	1102	686	368	205	163	162	1947	1003	876	841	710	575	388	246	174	155	154	887	525	533
Dec	1790	1662	1318	975	563	269	149	135	135	1777	820	718	671	547	423	273	169	129	123	123	698	390	404
Year	1543	1541	1435	1320	1070	801	581	425	335	2182	1755	934	934	884	829	709	580	477	403	363	1186	1052	1099

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	1458	1145	856	488	224	127	118	118	689	646	529	415	265	155	117	112	112
Feb	1654	1530	1275	1040	683	378	209	157	155	807	757	646	541	378	242	170	147	145
Mar	1449	1424	1300	1174	894	600	372	242	213	797	782	727	672	549	418	316	257	243
Apr	1074	1189	1230	1231	1073	840	596	396	289	804	863	876	868	776	649	521	419	366
May	794	960	1125	1231	1181	1023	794	569	397	762	827	876	902	857	763	650	549	480
Jun	689	856	1065	1218	1220	1102	887	661	478	701	756	818	862	845	778	682	585	517
Jul	733	898	1084	1215	1196	1062	845	623	448	726	790	859	908	887	812	705	595	510
Aug	939	1074	1161	1201	1091	895	667	465	338	792	842	861	861	788	680	566	470	412
Sep	1279	1309	1248	1172	946	683	457	304	252	874	901	864	815	681	530	405	322	296
Oct	1551	1450	1242	1048	725	438	257	188	182	730	678	591	508	376	266	198	168	165
Nov	1599	1472	1180	913	548	275	152	132	132	744	708	592	475	312	190	136	126	125
Dec	1550	1418	1101	807	442	196	115	110	110	611	565	454	348	216	131	103	100	100
Year	1240	1251	1179	1092	875	644	458	331	260	752	759	724	682	578	469	382	322	290

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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NORFOLK, VIRGINIA

WBAN 13737

TABLE A:

TRY Data (1951)

Latitude 36.90 N

Longitude 76.20 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															
70 to 74	0	0	0	2	8	1	0	0	11	58.5	742	20893	2	2	
65 to 69	0	0	2	8	10	4	0	0	24	56.7	724	17222	20	51	
60 to 64	6	6	3	9	6	14	6	8	58	55.8	686	13670	58	219	
55 to 59	6	7	16	15	15	10	12	9	90	50.7	622	10389	122	658	
50 to 54	16	12	10	9	15	14	15	12	103	45.7	522	7524	222	1513	
45 to 49	3	6	5	7	10	11	10	4	56	41.2	434	5151	310	2860	
40 to 44	9	7	11	17	3	12	15	15	89	38.0	366	3124	378	4553	
35 to 39	15	22	17	12	13	8	13	15	115	33.4	267	1526	477	6675	
30 to 34	23	12	13	13	13	18	16	21	129	29.3	141	491	603	9360	
25 to 29	12	18	14	1	0	1	6	8	60	25.1	36	72	708	12661	
20 to 24	3	3	2	0	0	0	0	1	9	20.1	2	1	742	16310	
Feb															
75 to 79	0	0	0	0	2	0	0	0	2	59.0	671	23355	1	1	
70 to 74	0	0	0	4	11	2	0	0	17	56.6	663	20008	9	14	
65 to 69	0	0	0	6	5	8	0	0	19	57.2	647	16731	25	97	
60 to 64	2	1	6	7	7	7	9	4	43	53.9	618	13562	54	288	
55 to 59	1	7	8	12	5	6	3	3	45	51.0	577	10577	95	663	
50 to 54	6	4	5	6	9	10	8	8	56	46.2	532	7810	140	1256	
45 to 49	18	14	13	12	11	11	15	21	115	41.9	449	5339	223	2145	
40 to 44	15	9	12	10	13	12	19	11	101	39.0	330	3392	342	3558	
35 to 39	18	23	14	8	3	9	5	12	92	34.9	235	1980	437	5506	
30 to 34	3	5	5	4	10	9	10	4	50	28.8	172	1015	500	7901	
25 to 29	13	9	12	12	7	7	15	18	93	24.4	95	332	577	10578	
20 to 24	7	6	5	3	1	3	0	3	28	20.3	25	65	647	13671	
15 to 19	1	6	4	0	0	0	0	0	11	16.4	0	0	672	16966	
Mar															
70 to 74	0	0	0	2	6	2	0	0	10	63.4	744	18694	0	0	
65 to 69	3	2	5	9	7	10	4	2	42	59.5	720	15018	24	44	
60 to 64	1	4	4	6	7	10	7	4	43	53.7	675	11530	69	276	
55 to 59	9	3	3	6	10	11	11	15	68	51.1	626	8255	118	721	
50 to 54	5	3	5	18	28	13	12	4	88	45.6	565	5301	179	1487	
45 to 49	17	19	28	28	18	26	20	12	168	42.4	427	2765	317	2671	
40 to 44	31	28	27	18	17	19	27	33	200	38.0	259	1025	485	4651	
35 to 39	21	18	13	6	0	2	12	21	93	33.8	83	235	661	7581	
30 to 34	6	15	8	0	0	0	0	2	31	29.3	15	24	729	11090	
25 to 29	0	1	0	0	0	0	0	0	1	29.0	0	0	744	14786	

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

NORFOLK, VIRGINIA
WBAN 13737
TABLE A:

TRY Data (1951)

Latitude 36.90 N
Longitude 76.20 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									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	4	4	0	0	8	68.6	719	21779	1	1
80 to 84	0	0	0	4	5	3	0	0	12	63.4	707	18211	13	33
75 to 79	0	0	1	8	10	8	1	0	28	63.0	692	14710	28	132
70 to 74	0	1	7	13	10	5	4	0	40	60.9	662	11318	58	340
65 to 69	5	2	7	14	17	17	5	8	75	56.6	616	8124	104	746
60 to 64	9	9	14	17	11	12	23	10	105	54.5	519	5277	201	1499
55 to 59	18	11	23	13	19	19	12	18	133	49.7	412	2940	308	2762
50 to 54	15	25	18	17	14	20	26	19	154	46.4	262	1259	458	4681
45 to 49	27	27	17	4	0	2	17	30	124	43.2	109	314	611	7336
40 to 44	15	12	3	0	0	0	2	5	37	40.4	19	40	701	10662
35 to 39	1	3	0	0	0	0	0	0	4	37.0	1	1	719	14223
May														
90 to 94	0	0	0	1	0	0	0	0	1	72.0	744	20782	0	0
85 to 89	0	0	0	2	4	3	0	0	9	69.4	738	17069	6	7
80 to 84	0	0	1	5	17	10	0	0	33	64.7	729	13394	15	52
75 to 79	0	0	3	20	21	17	4	0	65	62.8	677	9867	67	245
70 to 74	2	1	16	15	16	18	11	3	82	61.6	607	6655	137	753
65 to 69	13	9	27	24	18	19	19	19	148	59.1	507	3843	237	1661
60 to 64	26	30	27	18	10	17	34	21	183	57.7	338	1709	406	3247
55 to 59	32	36	19	8	7	9	20	39	170	53.3	166	465	578	5723
50 to 54	16	15	0	0	0	0	5	11	47	50.6	28	61	716	9039
45 to 49	4	2	0	0	0	0	0	0	6	47.3	2	1	742	12699
Jun														
95 to 99	0	0	0	0	2	1	0	0	3	73.7	720	17527	0	0
90 to 94	0	0	0	8	15	9	0	0	32	76.8	708	13942	12	15
85 to 89	0	0	3	22	12	7	2	0	46	74.2	672	10501	48	174
80 to 84	0	0	17	9	16	15	10	2	69	71.8	620	7285	100	558
75 to 79	7	8	21	24	19	26	17	15	137	69.7	525	4394	195	1267
70 to 74	25	25	20	16	19	17	24	24	170	67.5	351	2158	369	2631
65 to 69	30	32	23	10	7	13	25	28	168	63.9	190	777	530	4850
60 to 64	19	18	6	1	0	2	10	12	68	59.4	65	202	655	7875
55 to 59	8	5	0	0	0	0	2	9	24	55.3	13	27	707	11300
50 to 54	1	2	0	0	0	0	0	0	3	52.3	0	0	720	14873

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

NORFOLK, VIRGINIA
WBAN 13737
TABLE A:

TRY Data (1951)

Latitude 36.90 N
Longitude 76.20 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														
90 to 94	0	0	0	5	15	9	0	0	29	78.0	738	11251	6	6
85 to 89	0	0	2	36	26	12	4	0	80	75.3	691	7661	53	136
80 to 84	0	0	37	33	35	38	9	6	158	73.0	581	4436	163	631
75 to 79	18	20	40	18	14	30	48	26	214	71.7	398	1949	346	1864
70 to 74	51	52	12	1	3	4	26	44	193	70.4	152	531	592	4166
65 to 69	19	16	2	0	0	0	6	14	57	63.8	42	104	702	7459
60 to 64	5	5	0	0	0	0	0	3	13	60.2	4	7	740	11082
Aug														
90 to 94	0	0	0	3	16	6	0	0	25	78.0	740	12040	4	3
85 to 89	0	0	2	20	11	16	0	0	49	78.1	702	8424	42	107
80 to 84	0	0	25	28	27	25	13	2	120	75.3	631	5052	113	455
75 to 79	32	33	41	31	35	33	33	28	266	71.7	487	2221	257	1344
70 to 74	42	38	17	11	4	13	37	51	213	68.8	180	582	564	3425
65 to 69	16	19	8	0	0	0	10	10	63	63.8	45	115	699	6678
60 to 64	2	2	0	0	0	0	0	2	6	59.2	7	17	737	10300
55 to 59	1	1	0	0	0	0	0	0	2	57.5	0	0	744	14003
Sep														
85 to 89	0	0	0	5	11	3	0	0	19	74.7	715	11873	5	7
80 to 84	0	0	4	26	22	13	1	0	66	71.7	681	8362	39	96
75 to 79	5	1	20	25	29	33	12	7	132	69.5	588	5155	132	489
70 to 74	25	19	35	25	22	22	36	29	213	67.1	425	2590	295	1524
65 to 69	32	38	21	6	3	15	30	33	178	63.4	204	1013	516	3547
60 to 64	11	15	5	3	3	3	6	11	57	57.8	85	366	635	6500
55 to 59	15	14	5	0	0	1	5	10	50	53.4	30	72	690	9806
50 to 54	2	1	0	0	0	0	0	0	3	49.3	4	12	716	13346
45 to 49	0	2	0	0	0	0	0	0	2	47.0	0	0	720	16934

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

NORFOLK, VIRGINIA
WBAN 13737
TABLE A:

TRY Data (1951)

Latitude 36.90 N
Longitude 76.20 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 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	2	0	0	8	72.5	741	17657	3	2	
80 to 84	0	0	1	9	6	3	0	0	19	70.6	732	13972	12	37	
75 to 79	0	0	4	8	10	5	3	0	30	67.7	711	10373	33	158	
70 to 74	6	9	14	14	14	12	13	9	91	67.1	666	6917	78	422	
65 to 69	28	18	24	34	31	33	26	26	220	63.1	543	3868	201	1093	
60 to 64	23	22	22	20	15	22	25	28	177	58.0	305	1770	439	2715	
55 to 59	22	26	18	4	9	11	12	16	118	53.2	129	671	615	5336	
50 to 54	5	7	7	3	3	5	10	8	48	49.7	56	235	688	8620	
45 to 49	9	7	3	0	0	0	4	6	29	45.9	21	42	723	12147	
40 to 44	0	4	0	0	0	0	0	0	4	43.3	0	0	744	15825	
Nov															
75 to 79	0	0	0	2	6	1	0	0	9	68.6	720	20785	0	0	
70 to 74	1	3	4	7	6	5	1	0	27	66.1	705	17221	15	36	
65 to 69	5	4	6	9	7	4	2	2	39	61.4	667	13782	53	197	
60 to 64	11	8	8	8	11	11	10	12	79	56.9	631	10536	89	551	
55 to 59	4	3	5	12	14	11	8	5	62	52.1	540	7618	180	1233	
50 to 54	9	9	7	14	10	14	8	8	79	46.7	484	5047	236	2262	
45 to 49	14	14	17	14	17	16	25	18	135	42.2	378	2854	342	3669	
40 to 44	22	19	22	14	13	17	16	20	143	38.1	223	1320	497	5735	
35 to 39	6	11	12	8	6	8	12	13	76	32.3	118	500	602	8515	
30 to 34	15	10	6	2	0	3	8	12	56	28.5	45	105	675	11720	
25 to 29	3	9	3	0	0	0	0	0	15	25.7	0	0	720	15215	
Dec															
75 to 79	0	0	0	0	6	0	0	0	6	66.5	744	23428	0	0	
70 to 74	0	0	0	6	6	6	1	0	19	64.1	730	19735	14	27	
65 to 69	2	3	4	6	9	7	6	2	39	61.4	705	16137	39	149	
60 to 64	13	9	7	12	9	9	7	15	81	58.2	661	12714	83	446	
55 to 59	8	7	10	8	2	5	14	7	61	54.1	577	9647	167	1099	
50 to 54	7	8	11	9	14	14	8	9	80	48.6	513	6914	231	2086	
45 to 49	8	13	18	24	19	13	7	8	110	42.6	416	4576	328	3468	
40 to 44	9	7	7	12	13	18	14	6	86	38.0	307	2759	437	5371	
35 to 39	16	10	14	7	5	8	17	24	101	32.8	232	1415	512	7747	
30 to 34	21	24	12	5	7	8	13	15	105	28.4	118	532	626	10584	
25 to 29	6	4	4	2	3	3	3	4	29	23.3	43	185	701	13957	
20 to 24	3	5	6	2	0	2	3	3	24	18.6	16	31	728	17523	
15 to 19	0	3	0	0	0	0	0	0	3	16.3	0	0	744	21212	

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

NORFOLK, VIRGINIA

WBAN 13737

TABLE B:

TRY Data (1951)

Latitude 36.90 N

Longitude 76.20 E

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

Dry Bulb range(F)	Number of Hours of Occurrence in time period									Mean Coincident Wet Bulb Temperature (F)								
	Hour of day									Hour of day								
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year
95 to 99	0	0	0	0	2	1	0	0	3	0.0	0.0	0.0	0.0	74.5	72.0	0.0	0.0	73.7
90 to 94	0	0	0	17	46	24	0	0	87	0.0	0.0	0.0	77.5	77.4	77.6	0.0	0.0	77.5
85 to 89	0	0	7	86	73	47	6	0	219	0.0	0.0	78.1	75.7	74.0	74.8	77.3	0.0	75.1
80 to 84	0	0	85	114	128	107	33	10	477	0.0	0.0	74.2	71.9	70.6	72.0	75.7	76.3	72.3
75 to 79	62	62	130	136	152	153	118	76	889	73.9	73.2	71.2	66.9	66.7	68.2	72.0	73.6	69.9
70 to 74	152	148	125	116	125	107	153	160	1086	69.9	70.0	66.6	63.6	62.2	64.6	67.9	69.2	67.1
65 to 69	153	143	129	126	114	130	133	144	1072	64.1	64.3	62.0	59.0	58.2	59.6	62.6	63.6	61.8
60 to 64	128	129	102	101	79	107	137	130	913	59.3	59.3	57.6	54.5	53.4	54.7	56.9	58.6	57.1
55 to 59	124	120	107	78	81	83	94	131	823	53.3	53.8	52.4	50.2	49.2	50.7	52.5	53.1	52.2
50 to 54	82	86	63	76	93	90	92	79	661	48.4	48.7	48.1	45.1	45.1	46.3	47.6	47.4	47.0
45 to 49	100	104	101	89	75	79	98	99	745	43.5	43.7	42.7	41.1	40.7	41.5	42.7	43.6	42.6
40 to 44	101	86	82	71	59	78	93	90	660	38.7	39.6	38.4	37.0	37.5	37.7	38.2	38.9	38.3
35 to 39	77	87	70	41	27	35	59	85	481	34.0	34.3	33.8	32.0	31.9	32.2	33.4	33.8	33.5
30 to 34	68	66	44	24	30	38	47	54	371	29.1	29.8	28.8	27.8	27.4	28.6	28.8	28.9	28.8
25 to 29	34	41	33	15	10	11	24	30	198	24.9	25.3	24.7	23.8	22.4	23.5	24.7	24.7	24.6
20 to 24	13	14	13	5	1	5	3	7	61	19.0	20.4	19.1	19.0	23.0	21.6	19.0	19.1	19.6
15 to 19	1	9	4	0	0	0	0	0	14	18.0	16.3	16.0	0.0	0.0	0.0	0.0	0.0	16.4

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					Day	4AM	10AM	4PM	10PM	Day	MPH
				Max	Min		4AM	10AM	4PM	10PM								
Jan	44.4	74	22	54	35	39.7	75	65	57	70	68	0.0042	0.0045	0.0044	0.0043	0.0043	12.3	
Feb	42.7	78	18	52	34	38.4	77	66	63	71	70	0.0038	0.0044	0.0045	0.0041	0.0042	13.2	
Mar	47.4	72	29	56	39	42.6	80	64	59	69	69	0.0048	0.0048	0.0052	0.0050	0.0049	12.2	
Apr	57.5	88	37	67	47	50.3	79	54	49	69	64	0.0062	0.0064	0.0064	0.0066	0.0064	11.7	
May	64.6	90	47	74	55	57.8	85	59	52	76	70	0.0087	0.0087	0.0085	0.0093	0.0088	9.2	
Jun	73.2	95	53	82	65	67.1	89	66	62	81	76	0.0126	0.0135	0.0132	0.0133	0.0131	9.0	
Jul	77.4	94	60	86	70	71.5	90	64	63	84	77	0.0149	0.0152	0.0153	0.0159	0.0154	7.8	
Aug	76.3	94	59	83	71	71.3	90	71	68	85	79	0.0152	0.0156	0.0158	0.0156	0.0155	7.9	
Sep	71.0	89	48	79	64	65.4	88	64	62	80	76	0.0120	0.0123	0.0122	0.0125	0.0124	7.9	
Oct	63.8	88	43	70	58	59.6	86	70	72	86	80	0.0096	0.0102	0.0104	0.0106	0.0102	11.6	
Nov	48.6	77	28	57	41	44.2	79	64	60	72	70	0.0055	0.0058	0.0055	0.0052	0.0056	11.7	
Dec	46.0	77	18	56	37	42.1	81	65	62	74	72	0.0052	0.0055	0.0055	0.0053	0.0053	9.6	
Year	59.5	95	18	68	51	54.3	83	64	61	76	73	0.0086	0.0089	0.0089	0.0090	0.0089	10.3	

NORFOLK, VIRGINIA
WBAN 13737
TABLE 0:

TRY Data (1951)

Latitude 36.90 N
Longitude 76.20 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	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*
96	0	409	0	0	350	0	0	350	0	0	412	0	0	1340	0	8760	3198	0	0	
95	0	398	0	0	339	0	1	319	0	0	401	0	0	1307	0	8758	3111	2	0	
94	0	387	0	0	328	0	4	308	0	2	337	0	0	1274	0	8753	3023	7	0	
93	0	376	0	1	317	0	10	297	0	4	326	0	0	1241	0	8744	2936	16	0	
92	0	365	0	3	306	0	19	286	0	9	315	0	0	1208	0	8728	2848	32	0	
91	0	354	0	7	295	0	30	276	0	16	304	0	0	1175	0	8706	2761	54	1	
90	0	343	0	14	284	0	42	265	1	22	294	0	0	1143	0	8682	2674	78	1	
89	0	332	0	22	273	0	54	254	1	29	283	1	0	1110	0	8654	2587	106	2	
88	0	321	0	32	263	1	68	244	2	37	272	1	0	1077	0	8620	2501	140	4	
87	1	310	0	47	252	1	83	234	3	45	262	1	2	1044	0	8581	2415	179	5	
86	1	299	0	65	242	2	98	224	4	50	251	2	4	1011	0	8541	2329	219	7	
85	4	288	0	89	231	2	113	214	5	62	241	2	5	978	0	8486	2244	274	9	
84	10	277	0	113	222	3	133	204	6	78	231	3	6	945	0	8418	2160	342	13	
83	19	267	0	135	212	5	156	195	7	92	221	4	11	913	0	8355	2076	415	16	
82	34	256	0	158	202	6	180	185	9	111	211	5	17	880	0	8257	1993	503	21	
81	52	245	1	177	193	8	203	176	11	133	201	6	23	847	0	8167	1911	593	26	
80	76	235	2	201	184	10	231	168	13	161	191	8	33	814	0	8050	1829	710	33	
79	102	225	2	230	175	12	263	159	16	192	182	9	45	781	0	7912	1750	848	41	
78	123	215	4	259	167	14	294	151	18	218	173	11	59	749	0	7775	1671	985	50	
77	148	206	5	294	158	17	326	143	21	248	165	14	77	716	1	7604	1594	1156	60	
76	174	196	7	322	151	20	353	136	25	277	156	16	102	684	2	7423	1519	1337	73	
75	205	187	8	343	143	23	383	128	28	311	148	19	136	653	3	7212	1446	1548	87	
74	236	178	11	362	136	27	414	121	32	341	141	23	177	622	5	6974	1375	1786	104	
73	259	170	13	382	128	31	436	115	37	365	133	26	212	592	8	6745	1306	2015	123	
72	280	162	16	407	121	35	457	108	41	392	126	30	242	563	12	6518	1240	2242	144	
71	304	154	19	433	115	39	482	102	46	412	119	34	270	536	17	6313	1176	2447	168	
70	332	146	22	457	108	43	510	96	51	429	112	38	296	509	23	6108	1114	2652	193	
69	359	138	25	481	102	48	538	90	56	451	106	43	322	482	30	5911	1054	2849	221	
68	384	131	29	506	96	53	563	85	62	480	100	47	345	457	37	5717	995	3043	250	
67	408	124	33	529	90	58	585	80	67	507	94	52	370	432	45	5500	939	3260	281	
66	431	117	37	554	85	63	603	75	73	528	88	57	401	408	54	5292	885	3468	315	
65	458	111	42	581	79	69	626	70	79	553	82	63	430	385	64	5060	833	3700	351	
64	486	105	46	603	74	75	647	65	86	579	77	68	456	364	75	4844	784	3916	389	
63	504	99	51	620	69	81	664	61	92	600	72	74	479	343	87	4678	737	4082	429	
62	524	93	57	640	65	87	685	57	99	619	67	80	500	322	99	4507	691	4253	471	
61	544	87	62	660	60	94	700	53	106	638	62	87	525	303	113	4337	646	4423	514	
60	565	82	67	682	56	101	712	49	113	663	58	93	559	284	127	4134	604	4626	559	
59	589	77	73	702	52	108	726	45	120	682	54	100	592	266	141	3939	564	4821	607	
58	613	72	79	715	48	115	743	41	128	696	50	107	615	248	157	3778	525	4982	656	
57	636	67	85	729	44	122	759	38	135	714	46	114	634	232	173	3608	488	5152	706	
56	652	63	92	744	41	129	774	35	143	731	42	121	652	216	191	3449	453	5311	759	
55	672	58	99	762	37	137	791	32	151	748	39	129	670	201	209	3282	419	5478	813	
54	693	54	105	778	34	145	805	29	159	766	35	136	687	187	227	3134	387	5626	868	
53	706	50	112	790	31	152	819	26	167	782	32	144	702	174	246	3022	356	5738	925	
52	717	46	119	804	28	160	836	23	175	802	29	152	718	160	266	2908	327	5852	983	
51	727	43	127	817	25	169	855	21	184	821	26	160	736	147	286	2789	298	5971	1042	

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

NORFOLK, VIRGINIA
WBAN 13737
TABLE D:

TRY Data (1951)

Latitude 36.90 N
Longitude 76.20 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	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*
50	740	39	134	837	23	177	879	18	192	839	23	168	757	33	125	2078	135	306	2629	271	6131	1102
49	756	36	142	860	20	185	902	16	201	856	21	177	778	30	133	2136	123	327	2471	246	6289	1165
48	778	32	149	880	18	194	920	14	210	873	19	185	794	27	141	2189	112	349	2324	222	6436	1228
47	802	29	157	898	16	203	934	13	219	890	17	194	814	24	149	2255	101	371	2165	199	6595	1293
46	818	26	165	914	14	212	942	11	229	905	15	203	831	21	157	2308	91	394	2041	178	6719	1360
45	837	24	173	930	12	221	956	10	238	920	13	212	853	18	165	2377	82	417	1886	158	6874	1428
44	856	21	182	946	11	231	977	8	248	937	11	222	878	16	174	2450	73	442	1715	141	7045	1498
43	871	19	191	962	9	240	992	7	258	956	10	231	895	14	183	2509	65	466	1574	124	7186	1569
42	887	17	199	979	8	250	1005	6	268	977	8	241	914	12	192	2565	58	492	1432	109	7328	1641
41	900	15	208	994	7	260	1014	6	278	994	7	251	932	10	201	2612	51	518	1311	95	7449	1715
40	918	13	217	1004	6	270	1022	5	288	1003	6	261	951	9	210	2666	44	544	1194	83	7566	1790
39	939	11	227	1013	5	280	1030	4	298	1008	5	271	969	7	220	2720	38	571	1080	72	7680	1867
38	953	10	236	1020	4	290	1035	3	309	1014	5	281	984	6	230	2767	33	598	985	61	7775	1944
37	965	8	246	1029	4	300	1041	3	319	1022	4	291	999	5	240	2819	28	626	884	52	7876	2022
36	979	7	255	1038	3	310	1048	2	330	1029	3	301	1010	4	250	2870	24	655	784	44	7976	2101
35	994	6	265	1046	3	321	1053	2	340	1037	2	312	1017	4	260	2922	20	684	689	36	8071	2182
34	1007	5	275	1052	2	331	1055	2	351	1047	2	322	1026	3	270	2967	16	713	604	30	8156	2263
33	1017	4	285	1056	2	342	1061	1	361	1054	2	332	1036	2	280	3007	13	743	527	24	8233	2345
32	1025	4	296	1062	1	353	1068	1	372	1060	1	343	1045	2	291	3049	11	773	448	19	8312	2427
31	1032	3	306	1066	1	363	1075	1	383	1069	1	354	1055	1	301	3086	9	804	375	15	8385	2511
30	1040	2	316	1071	1	374	1081	0	393	1076	1	364	1064	1	312	3118	7	835	309	12	8451	2595
29	1050	2	327	1077	1	385	1084	0	404	1081	0	375	1071	1	323	3149	5	867	247	9	8513	2680
28	1060	1	337	1081	0	395	1084	0	415	1084	0	386	1077	0	333	3175	4	898	197	7	8563	2765
27	1069	1	348	1084	0	406	1086	0	426	1085	0	397	1082	0	344	3197	3	930	155	5	8605	2851
26	1073	1	359	1086	0	417	1088	0	437	1086	0	408	1086	0	355	3217	2	962	123	4	8637	2937
25	1076	1	369	1088	0	428	1092	0	448	1088	0	419	1090	0	366	3234	2	994	92	3	8668	3024
24	1078	1	380	1091	0	439	1094	0	459	1092	0	430	1092	0	377	3243	1	1027	68	2	8692	3111
23	1080	0	391	1093	0	450	1095	0	470	1094	0	440	1093	0	388	3250	1	1059	52	1	8708	3198
22	1085	0	402	1094	0	461	1095	0	481	1095	0	451	1095	0	399	3260	1	1092	36	1	8724	3285
21	1088	0	413	1094	0	472	1095	0	491	1095	0	462	1095	0	410	3266	0	1124	26	0	8734	3372
20	1090	0	424	1095	0	483	1095	0	502	1095	0	473	1095	0	421	3271	0	1157	18	0	8742	3460
19	1091	0	435	1095	0	494	1095	0	513	1095	0	484	1095	0	432	3277	0	1190	11	0	8749	3547
18	1093	0	445	1095	0	505	1095	0	524	1095	0	495	1095	0	443	3282	0	1223	4	0	8756	3635
17	1095	0	456	1095	0	515	1095	0	535	1095	0	506	1095	0	453	3285	0	1255	0	0	8760	3722

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

NORFOLK, VIRGINIA

WBAN 13737

TABLE E:

TRY Data (1951)

Latitude 36.90 N

Longitude 76.20 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:	5520	5033	4479	3915	3322	2671	2010	1359	699	233	34
Annual Wet Bulb Cooling deg-hrs:	82219.	66125.	51583.	38645.	27540.	18217.	10908.	5463.	2087.	490.	60.

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	64	64	63	61	59	56	50	43	33	19	9	.001		
.002	0	0	0	0	0	0	0	0	0	0	0	56	56	56	54	53	50	46	39	30	18	8	.002		
.003	0	1	1	1	1	2	2	2	2	2	2	49	49	48	48	47	45	41	36	28	16	8	.003		
.004	1	2	2	3	3	3	3	3	3	3	3	42	42	42	41	41	39	37	32	25	15	7	.004		
.005	1	2	3	4	5	6	6	6	6	6	6	35	35	35	35	35	34	32	29	23	14	7	.005		
.006	1	3	4	6	7	8	9	9	9	9	9	30	30	30	30	30	29	28	25	20	12	6	.006		
.007	2	3	6	8	10	11	12	12	13	13	13	25	25	25	25	25	25	24	22	18	11	5	.007		
.008	2	4	7	10	13	14	16	16	17	17	17	20	20	20	20	20	20	20	18	15	9	5	.008		
.009	2	5	8	11	15	18	19	21	21	22	22	16	16	16	16	16	16	16	15	13	8	4	.009		
.010	2	5	9	13	18	21	23	25	26	27	27	13	13	13	13	13	13	13	12	11	7	3	.010		
.011	3	6	10	15	20	24	27	30	31	32	33	10	10	10	10	10	10	10	10	9	6	3	.011		
.012	3	7	11	17	23	27	31	35	37	38	39	7	7	7	7	7	7	7	7	7	4	2	.012		
.013	3	7	12	19	25	30	35	40	43	44	45	5	5	5	5	5	5	5	5	5	3	2	.013		
.014	3	8	13	20	28	33	39	45	49	51	52	3	3	3	3	3	3	3	3	3	2	1	.014		
.015	4	9	15	22	30	37	43	50	55	57	59	2	2	2	2	2	2	2	2	2	2	1	.015		
.016	4	9	16	24	33	40	48	54	61	64	67	1	1	1	1	1	1	1	1	1	1	1	.016		
.017	4	10	17	26	35	43	52	59	67	71	74	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	5	11	18	28	38	46	56	64	73	78	82	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
Percent Diffuse on surface													
HORIZONTAL	38	33	44	42	42	50	42	46	48	42	35	43	43
VERTICAL													
NORTH	100	100	100	98	92	91	90	96	100	100	100	100	96
WEST	48	44	57	58	59	66	60	60	62	58	52	52	58
SOUTH	30	33	52	62	73	83	77	69	58	43	30	34	53
EAST	48	52	61	61	62	71	61	64	59	56	46	55	60
Percent Possible Sun	57	59	63	65	65	68	65	65	65	60	59	57	63

FOOTNOTES: * Corrected For Cloud Cover.

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

MORFOLK, VIRGINIA
WBAM 13737
TABLE H:

TRY Data (1951)

Latitude 36.90 N
Longitude 76.20 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	1890	1750	1411	1098	683	359	201	167	167	2006	1058	975	913	754	607	410	252	174	158	157	1006	582	678
Feb	1901	1786	1522	1273	889	545	318	219	209	2228	1381	1067	974	824	692	508	358	261	213	206	1215	824	932
Mar	1680	1633	1512	1389	1104	788	523	338	277	2358	1820	1035	997	922	844	696	548	434	357	331	1308	1108	1281
Apr	1277	1372	1416	1437	1290	1049	779	542	376	2306	2210	1039	1066	1066	1056	956	812	667	545	464	1564	1557	1677
May	970	1140	1293	1407	1380	1220	987	737	533	2187	2453	888	955	1023	1072	1043	941	809	672	567	1547	1734	1888
Jun	853	1039	1239	1395	1425	1312	1098	851	651	2119	2554	874	950	1029	1091	1087	1012	895	771	678	1504	1770	2000
Jul	902	1078	1252	1391	1392	1262	1043	799	604	2129	2492	853	956	1045	1114	1097	1004	866	718	604	1556	1796	1853
Aug	1130	1253	1339	1401	1305	1103	860	625	446	2205	2272	946	996	1025	1044	975	854	720	593	502	1470	1541	1680
Sep	1493	1499	1448	1383	1158	879	621	421	325	2271	1925	1024	1031	996	948	814	658	523	422	379	1345	1200	1396
Oct	1787	1684	1468	1271	930	600	376	258	241	2217	1506	930	890	793	696	536	388	295	244	237	1085	814	1083
Nov	1875	1752	1441	1152	752	419	242	184	183	2046	1143	1025	985	837	685	470	294	202	172	171	1088	660	811
Dec	1842	1715	1375	1047	637	320	182	157	156	1909	966	855	795	650	510	341	215	161	149	149	864	509	624
Year	1464	1473	1392	1303	1079	823	604	443	348	2164	1817	958	958	914	864	745	613	502	419	371	1296	1176	1325

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	1624	1476	1177	906	544	267	151	136	135	829	764	625	501	330	193	135	128	128
Feb	1603	1493	1267	1059	724	421	236	173	170	891	804	677	568	413	284	203	170	167
Mar	1341	1339	1251	1156	908	629	398	257	225	831	813	755	693	567	440	343	284	268
Apr	937	1076	1154	1187	1064	855	617	413	295	796	846	865	864	781	659	534	431	372
May	670	846	1033	1159	1139	1005	792	572	399	662	740	822	877	854	770	652	535	446
Jun	579	747	973	1145	1176	1082	886	668	481	662	734	822	888	887	826	724	617	533
Jul	619	789	994	1142	1150	1040	840	626	449	635	734	838	911	901	822	698	570	472
Aug	812	966	1086	1155	1078	905	686	482	345	721	788	833	856	801	698	579	471	400
Sep	1164	1218	1194	1149	955	710	484	322	264	811	842	820	784	670	533	415	335	309
Oct	1486	1398	1221	1055	756	473	283	203	196	768	736	655	573	435	310	231	196	192
Nov	1603	1475	1202	956	603	320	178	149	149	869	827	696	566	378	228	155	139	139
Dec	1591	1457	1149	868	505	239	137	127	127	728	668	538	420	273	168	127	121	121
Year	1166	1188	1141	1078	884	663	475	345	270	766	774	746	709	608	495	401	334	296

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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PHILADELPHIA, PENNSYLVANIA

TRY Data (1969)

Latitude 39.90 N

WBAN 13739

Longitude 75.30 E

TABLE A:

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Jan														
45 to 49	3	1	3	3	7	4	0	0	21	41.4	743	13158	1	1
40 to 44	8	8	8	14	21	18	13	12	102	39.0	674	9549	70	112
35 to 39	11	15	11	19	17	21	21	15	130	33.0	575	6426	169	709
30 to 34	13	7	15	15	20	14	18	15	117	28.1	443	3892	301	1895
25 to 29	23	21	13	23	20	23	9	19	151	23.2	314	1972	430	3695
20 to 24	12	15	20	14	5	10	26	18	120	18.5	168	774	576	6217
15 to 19	20	19	17	5	3	1	3	11	79	14.1	77	193	667	9356
10 to 14	3	7	6	0	0	2	3	3	24	10.3	10	10	734	12893
Feb														
40 to 44	0	0	0	4	18	12	1	0	35	35.4	669	7026	3	3
35 to 39	9	10	12	34	40	42	28	14	189	32.2	587	3825	85	162
30 to 34	44	35	37	31	23	24	37	44	275	28.5	320	1481	352	1178
25 to 29	20	17	16	14	3	6	17	19	112	23.0	118	463	554	3520
20 to 24	8	14	16	1	0	0	1	7	47	18.7	39	92	633	6509
15 to 19	3	8	3	0	0	0	0	0	14	15.2	5	3	667	9780
Mar														
65 to 69	0	0	0	0	4	1	0	0	5	49.0	743	20985	1	1
60 to 64	0	0	0	3	6	5	0	0	14	48.9	735	17286	9	22
55 to 59	0	0	0	5	14	10	0	0	29	45.6	717	13659	27	115
50 to 54	5	6	7	11	10	14	11	3	67	45.3	669	10173	75	349
45 to 49	7	2	4	18	14	13	11	12	81	39.2	605	6980	139	876
40 to 44	7	13	19	16	22	23	18	12	130	35.6	507	4182	237	1798
35 to 39	19	9	16	25	15	19	32	25	160	31.3	352	2022	392	3358
30 to 34	39	34	31	13	8	6	17	35	183	27.7	201	644	543	5700
25 to 29	13	22	13	2	0	2	2	3	57	24.6	31	125	713	8901
20 to 24	1	6	3	0	0	0	2	3	15	18.5	10	21	734	12517
15 to 19	2	1	0	0	0	0	0	0	3	15.7	0	0	744	16216

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

PHILADELPHIA, PENNSYLVANIA
WBAN 13739
TABLE A:

TRY Data (1969)

Latitude 39.90 N
Longitude 75.30 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									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	2	1	0	0	3	62.0	720	23197	0	0
80 to 84	0	0	0	0	4	3	0	0	7	63.3	715	19609	5	12
75 to 79	0	0	0	4	3	4	2	0	13	60.2	707	16057	13	60
70 to 74	0	0	1	10	10	8	2	0	31	58.0	693	12557	27	160
65 to 69	3	2	8	8	21	16	10	6	74	57.1	646	9202	74	405
60 to 64	9	8	11	25	18	22	16	11	120	54.5	560	6190	160	993
55 to 59	18	13	15	19	17	19	18	16	135	49.7	416	3747	304	2150
50 to 54	12	17	21	14	14	16	27	12	133	45.3	288	1994	432	3997
45 to 49	22	14	20	8	1	1	12	29	107	41.9	157	895	563	6498
40 to 44	13	19	8	2	0	0	3	12	57	37.6	70	346	650	9549
35 to 39	10	12	5	0	0	0	0	3	30	33.6	31	116	689	12919
30 to 34	0	2	1	0	0	0	0	1	4	28.8	8	37	712	16440
25 to 29	3	3	0	0	0	0	0	0	6	23.7	4	4	716	20007
May														
90 to 94	0	0	0	1	3	3	0	0	7	73.1	742	20668	2	1
85 to 89	0	0	0	4	3	4	1	0	12	66.8	732	16980	12	33
80 to 84	0	0	3	5	13	9	3	0	33	64.5	717	13352	27	125
75 to 79	1	0	3	10	15	14	7	4	54	63.1	670	9869	74	362
70 to 74	4	3	8	20	32	30	16	8	121	60.0	595	6675	149	888
65 to 69	16	15	17	30	14	21	20	17	150	58.1	462	4016	282	1949
60 to 64	8	13	24	16	12	10	29	13	125	53.5	323	2102	421	3755
55 to 59	28	24	28	7	1	2	13	36	139	50.9	187	823	557	6196
50 to 54	25	20	10	0	0	0	3	12	70	46.4	71	223	673	9316
45 to 49	10	18	0	0	0	0	1	3	32	42.8	19	27	725	12840
40 to 44	1	0	0	0	0	0	0	0	1	41.0	0	0	744	16533
Jun														
90 to 94	0	0	0	1	5	4	0	0	10	79.1	718	14051	2	2
85 to 89	0	0	0	9	25	19	2	0	55	73.8	697	10498	23	49
80 to 84	0	0	7	23	24	23	11	1	89	70.7	634	7187	86	338
75 to 79	2	1	14	25	24	17	25	14	122	66.9	528	4279	192	1030
70 to 74	34	29	33	26	11	24	29	33	219	65.6	360	1995	360	2346
65 to 69	25	29	30	6	1	2	20	25	138	61.0	176	725	544	4676
60 to 64	19	19	6	0	0	1	3	16	64	57.3	57	159	663	7710
55 to 59	10	12	0	0	0	0	0	1	23	53.5	7	12	713	11163

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

PHILADELPHIA, PENNSYLVANIA
WBAN 13739
TABLE A:

TRY Data (1969)

Latitude 39.90 N
Longitude 75.30 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	8	4	0	0	13	78.9	743	13343	1	1
85 to 89	0	0	0	9	19	15	4	0	47	74.5	725	9672	19	50
80 to 84	0	0	8	31	31	29	11	2	112	72.4	648	6218	96	316
75 to 79	12	9	28	28	20	26	35	21	179	70.9	507	3303	237	1121
70 to 74	49	47	35	15	9	11	29	44	239	69.0	298	1227	446	2765
65 to 69	17	17	22	9	6	8	12	14	105	64.3	110	303	634	5561
60 to 64	15	20	0	0	0	0	2	12	49	61.3	9	11	735	8989
Aug														
90 to 94	0	0	0	0	3	1	0	0	4	74.0	744	13095	0	0
85 to 89	0	0	0	12	34	16	0	0	62	74.5	732	9391	12	16
80 to 84	0	0	9	47	40	45	11	1	153	72.5	620	5972	124	317
75 to 79	7	6	28	20	13	25	45	25	169	70.5	473	3249	271	1314
70 to 74	41	39	38	13	3	6	30	33	203	68.4	264	1370	480	3155
65 to 69	23	23	12	1	0	0	5	24	88	63.5	108	499	636	6004
60 to 64	16	9	6	0	0	0	2	9	42	58.0	45	133	699	9358
55 to 59	6	15	0	0	0	0	0	1	22	54.0	5	10	739	12955
50 to 54	0	1	0	0	0	0	0	0	1	52.0	0	0	744	16665
Sep														
85 to 89	0	0	0	3	14	5	0	0	22	73.7	716	14918	4	4
80 to 84	0	0	1	18	13	12	1	0	45	72.0	683	11409	37	95
75 to 79	0	0	9	10	14	15	11	3	62	67.9	637	8111	83	397
70 to 74	24	20	19	19	29	26	23	22	182	66.6	549	5113	171	999
65 to 69	10	14	16	31	18	21	16	15	141	60.2	351	2933	369	2419
60 to 64	12	9	17	9	2	11	21	12	93	56.4	223	1510	497	4596
55 to 59	22	15	21	0	0	0	17	27	102	52.3	140	585	580	7271
50 to 54	16	24	6	0	0	0	1	9	56	49.0	51	148	669	10434
45 to 49	4	6	1	0	0	0	0	2	13	45.9	8	20	712	13906
40 to 44	2	2	0	0	0	0	0	0	4	42.3	0	0	720	17486

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

PHILADELPHIA, PENNSYLVANIA
WBAN 13739
TABLE A:

TRY Data (1969)

Latitude 39.90 N
Longitude 75.30 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														
80 to 84	0	0	0	2	2	0	0	0	4	71.0	744	20193	0	0
75 to 79	0	0	0	2	7	8	0	0	17	65.9	734	16491	10	18
70 to 74	3	3	3	9	14	7	7	6	52	64.1	714	12868	30	115
65 to 69	5	4	10	23	22	21	8	6	99	60.8	631	9481	113	448
60 to 64	8	11	15	24	26	19	14	7	124	55.0	537	6570	207	1257
55 to 59	16	9	15	15	6	13	15	14	103	51.6	400	4236	344	2643
50 to 54	16	20	17	7	9	12	21	24	126	46.9	289	2489	455	4616
45 to 49	18	13	12	5	5	7	11	9	80	41.4	189	1326	555	7173
40 to 44	4	12	11	5	2	5	12	15	66	36.8	112	587	632	10154
35 to 39	16	10	7	1	0	1	5	10	50	32.5	51	183	693	13470
30 to 34	5	8	2	0	0	0	0	2	17	28.9	11	41	733	17048
25 to 29	2	3	1	0	0	0	0	0	6	23.8	4	6	740	20733
Nov														
65 to 69	0	0	0	1	5	1	0	0	7	59.6	720	16623	0	0
60 to 64	3	0	2	10	13	10	7	2	47	55.9	706	13053	14	30
55 to 59	6	9	5	6	11	13	6	8	64	52.2	640	9677	80	254
50 to 54	5	6	13	20	18	12	13	7	94	46.0	574	6632	146	809
45 to 49	19	16	16	22	26	22	19	20	160	42.0	447	4047	273	1824
40 to 44	15	18	12	17	6	16	22	15	121	37.7	295	2213	425	3590
35 to 39	21	10	16	8	10	9	11	20	105	32.6	191	1008	529	5985
30 to 34	11	16	17	6	1	7	6	13	77	28.6	89	322	631	8899
25 to 29	7	12	8	0	0	0	6	2	35	24.5	21	53	699	12230
20 to 24	3	3	1	0	0	0	0	3	10	20.7	2	1	718	15778
Dec														
60 to 64	3	0	0	0	0	0	0	3	6	59.0	744	21668	0	0
55 to 59	0	2	0	0	0	0	0	0	2	55.5	737	17967	7	19
50 to 54	0	1	0	1	3	1	1	0	7	46.4	736	14284	8	56
45 to 49	0	0	6	10	10	5	5	1	37	42.9	719	10634	25	126
40 to 44	9	9	7	13	11	11	7	9	76	38.1	674	7155	70	367
35 to 39	15	13	14	21	36	34	19	9	161	32.5	580	4024	164	956
30 to 34	28	24	24	35	24	33	41	43	252	28.8	360	1618	384	2270
25 to 29	25	24	27	7	8	9	18	25	143	24.0	150	451	594	4823
20 to 24	11	17	12	6	1	0	2	3	52	20.7	23	57	721	8149
15 to 19	2	3	3	0	0	0	0	0	8	15.8	0	0	744	11812

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

PHILADELPHIA, PENNSYLVANIA
WBAN 13739
TABLE B:

TRY Data (1969)

Latitude 39.90 N
Longitude 75.30 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	3	19	12	0	0	34	0.0	0.0	0.0	77.7	77.2	77.1	0.0	0.0	77.2
85 to 89	0	0	0	37	97	60	7	0	201	0.0	0.0	0.0	74.1	73.6	72.9	76.9	0.0	73.6
80 to 84	0	0	28	126	127	121	37	4	443	0.0	0.0	73.1	72.3	70.1	70.9	71.8	74.5	71.3
75 to 79	22	16	82	99	96	109	125	67	616	72.2	72.4	71.3	67.6	65.0	66.3	70.1	71.3	68.6
70 to 74	155	141	137	112	108	112	136	146	1047	69.2	69.4	67.4	62.9	60.9	62.1	65.7	68.4	66.2
65 to 69	99	104	115	109	91	91	91	107	807	63.1	63.5	61.6	58.7	56.8	57.5	60.0	62.3	60.5
60 to 64	93	89	81	87	77	78	94	85	684	58.8	58.8	55.7	52.8	52.4	53.0	55.1	57.7	55.6
55 to 59	106	99	84	52	49	57	69	103	619	53.0	53.6	51.9	48.2	46.8	47.2	50.6	52.0	51.1
50 to 54	79	95	74	53	54	55	77	67	554	47.9	48.2	47.5	44.9	43.1	43.7	45.6	47.3	46.3
45 to 49	83	70	62	66	63	52	59	76	531	42.7	43.0	42.4	40.3	40.0	39.8	41.7	42.4	41.7
40 to 44	59	81	65	71	80	85	76	75	592	38.9	38.7	37.9	36.5	35.1	36.5	37.3	38.2	37.3
35 to 39	101	79	81	108	118	126	116	96	825	33.4	33.4	32.8	31.6	31.9	31.4	32.0	32.8	32.3
30 to 34	140	126	127	100	76	84	119	153	925	28.9	29.0	28.8	28.1	27.4	27.9	28.1	28.2	28.4
25 to 29	93	102	78	46	31	40	52	68	510	23.6	24.4	24.4	22.4	22.5	22.2	23.4	24.1	23.7
20 to 24	35	55	52	21	6	10	31	34	244	19.4	19.7	19.2	18.7	18.7	18.3	18.7	18.5	19.1
15 to 19	27	31	23	5	3	1	3	11	104	14.5	14.6	14.5	13.2	13.0	12.0	15.0	14.7	14.4
10 to 14	3	7	6	0	0	2	3	3	24	11.0	10.9	10.8	0.0	0.0	8.5	8.3	10.0	10.3

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	4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	29.8	48	11	36	24	26.2	70	62	55	63	63	0.0022	0.0021	0.0022	0.0022	0.0022	11.6
Feb	32.0	44	17	37	27	28.0	66	62	53	60	62	0.0021	0.0022	0.0023	0.0022	0.0022	12.8
Mar	39.3	68	19	48	31	33.5	67	53	43	55	56	0.0027	0.0027	0.0028	0.0027	0.0027	12.5
Apr	55.3	86	26	65	46	48.1	74	56	46	59	61	0.0055	0.0059	0.0057	0.0058	0.0057	11.0
May	64.7	93	44	75	54	55.4	72	52	44	58	58	0.0072	0.0076	0.0077	0.0076	0.0075	10.6
Jun	73.0	94	55	82	65	65.3	80	62	55	67	68	0.0110	0.0120	0.0123	0.0119	0.0118	9.0
Jul	74.6	93	61	82	68	69.3	89	76	67	78	79	0.0138	0.0150	0.0148	0.0143	0.0143	8.0
Aug	74.9	91	54	84	67	68.7	89	68	59	75	75	0.0133	0.0143	0.0141	0.0141	0.0139	8.0
Sep	66.8	89	43	76	58	60.8	86	64	55	75	72	0.0100	0.0106	0.0103	0.0106	0.0104	8.1
Oct	55.4	81	25	65	45	49.5	78	62	50	68	67	0.0063	0.0071	0.0066	0.0066	0.0066	8.4
Nov	44.4	67	22	52	37	39.9	75	65	58	68	68	0.0042	0.0044	0.0046	0.0045	0.0044	9.4
Dec	33.4	61	18	39	28	30.1	73	69	64	68	70	0.0027	0.0028	0.0028	0.0026	0.0027	11.7
Year	53.7	94	11	62	46	48.0	77	63	54	66	66	0.0068	0.0073	0.0072	0.0071	0.0071	10.1

PHILADELPHIA, PENNSYLVANIA
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TABLE D:

TRY Data (1969)

Latitude 39.90 N
Longitude 75.30 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 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	Hrs Above Base	Deg-Hrs (100s)* Heat Cool	Hrs Below Base	Deg 100s*	Hrs Above Base	Deg 100s*	
95	0	478	0	0	411	0	0	377	0	0	397	0	0	450	0	0	1500
94	0	468	0	0	400	0	0	366	0	0	386	0	0	439	0	0	1467
93	0	457	0	0	389	0	3	355	0	0	375	0	0	428	0	0	1435
92	0	446	0	0	378	0	6	344	0	1	364	0	0	417	0	0	1402
91	0	435	0	0	367	0	10	334	0	3	353	0	0	406	0	0	1369
90	0	424	0	2	357	0	15	323	0	8	342	0	0	395	0	0	1336
89	0	413	0	3	346	0	24	312	0	13	332	0	0	384	0	0	1303
88	0	402	0	6	335	0	34	301	1	17	321	0	1	374	0	0	1270
87	0	391	0	12	324	0	50	291	1	27	310	1	2	363	0	0	1238
86	0	380	0	21	313	0	77	280	2	44	299	1	3	352	0	0	1205
85	0	369	0	34	302	1	104	270	3	63	289	1	5	341	0	0	1172
84	1	358	0	49	292	1	130	261	4	78	279	2	8	330	0	0	1139
83	3	347	0	70	281	2	156	251	5	96	269	3	11	319	0	1	1106
82	4	336	0	97	271	2	175	242	7	123	259	4	15	308	0	1	1073
81	10	325	0	125	262	4	197	233	9	153	249	5	23	297	1	2	1040
80	21	315	0	152	252	5	227	224	11	180	240	7	36	287	1	3	1008
79	32	304	1	173	243	7	252	215	13	206	231	9	51	276	1	8	975
78	45	293	1	189	234	8	273	207	16	232	222	11	70	266	2	14	942
77	61	283	1	206	225	10	291	199	19	248	214	14	91	256	3	23	909
76	78	273	2	227	216	13	306	191	22	266	205	16	117	246	4	44	877
75	99	263	3	253	207	15	327	183	25	291	197	19	151	236	5	84	845
74	123	253	4	278	199	18	348	176	28	312	189	22	183	227	7	142	813
73	149	243	5	301	191	20	370	168	32	333	181	25	206	218	9	212	782
72	178	234	7	324	183	24	391	161	36	357	174	29	231	209	11	303	751
71	208	225	9	348	175	27	415	154	40	380	167	32	260	201	13	406	722
70	235	216	11	368	168	31	438	147	44	402	160	36	289	192	16	503	694
69	256	208	14	391	161	34	459	141	48	420	153	40	314	185	19	579	666
68	272	199	16	418	154	38	479	135	53	438	146	45	330	177	22	637	640
67	292	191	19	440	147	43	498	129	58	457	140	49	342	169	26	698	614
66	320	183	22	457	141	47	516	123	63	476	133	54	358	162	29	758	588
65	348	176	26	476	135	52	531	117	68	496	127	59	382	155	33	825	563
64	369	168	29	494	129	57	545	112	74	511	121	64	404	148	37	897	539
63	381	161	33	509	123	62	559	106	79	523	116	69	421	141	41	955	515
62	395	154	37	528	117	67	574	101	85	537	110	74	437	134	45	997	492
61	415	147	41	546	111	72	591	96	91	555	104	80	453	128	50	1038	470
60	435	140	45	563	106	78	607	91	97	574	99	85	476	121	54	1093	447
59	454	134	50	578	101	84	619	86	103	587	94	91	498	115	59	1165	426
58	472	128	54	588	96	89	627	81	109	597	89	97	515	109	64	1233	405
57	487	121	59	599	91	95	636	77	115	608	84	103	528	104	70	1293	385
56	505	115	64	609	86	101	649	72	122	619	79	109	539	98	75	1355	365
55	521	110	69	619	81	108	660	68	128	632	75	116	552	92	80	1412	346
54	536	104	74	631	76	114	666	63	135	646	70	122	566	87	86	1460	328
53	555	98	80	642	72	120	673	59	142	657	66	128	577	82	92	1509	310
52	572	93	85	651	67	127	685	55	149	668	61	135	589	77	97	1556	292
51	585	88	91	660	63	133	700	51	155	679	57	142	604	72	103	1603	275
50	595	83	97	671	58	140	713	47	163	689	53	149	624	67	110	1652	258

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

PHILADELPHIA, PENNSYLVANIA
WBAN 13739
TABLE D:

TRY Data (1969)

Latitude 39.90 N
Longitude 75.30 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	Hrs	Deg	Hrs	Deg	
(F)		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*		Base 100s*		Base 100s*		
49	605	78	103	683	54	147	724	43	170	701	49	156	643	62	116	1696	242	253	3707	529	5053	944
48	617	73	109	694	50	153	738	40	177	710	45	163	655	58	122	1736	227	270	3609	492	5151	995
47	629	68	116	707	46	160	752	36	185	719	41	170	666	54	129	1782	211	288	3503	457	5257	1047
46	640	64	122	724	42	168	766	33	192	730	38	177	677	49	136	1828	197	306	3393	422	5367	1100
45	655	59	128	739	39	175	777	30	200	741	34	184	588	45	143	1877	182	324	3281	389	5479	1154
44	670	55	135	752	35	182	786	26	208	758	30	192	701	41	149	1921	168	343	3171	357	5589	1210
43	684	51	142	766	32	190	795	23	216	777	27	200	715	37	157	1962	155	363	3060	326	5700	1266
42	697	47	149	779	29	198	805	20	224	793	24	207	733	34	164	2012	142	383	2939	296	5821	1324
41	709	43	156	794	26	206	824	18	232	809	21	215	750	30	171	2056	129	403	2816	267	5944	1383
40	722	39	163	808	23	214	849	15	240	824	18	224	764	27	179	2098	117	424	2693	239	6067	1443
39	734	35	170	820	20	222	874	13	249	841	16	232	780	23	187	2140	106	445	2569	213	6191	1504
38	743	32	178	835	17	230	899	11	258	861	13	240	800	20	194	2183	94	467	2436	188	6324	1567
37	755	28	185	853	15	238	926	9	267	885	11	249	821	18	203	2234	84	489	2284	164	6476	1630
36	771	25	193	874	12	247	949	7	276	912	9	258	842	15	211	2290	73	511	2120	142	6640	1696
35	794	22	200	905	10	256	968	6	286	942	7	267	869	13	219	2357	64	534	1923	122	6837	1763
34	818	19	209	933	9	265	986	5	295	971	6	277	900	10	228	2436	55	558	1714	104	7046	1833
33	840	16	217	953	7	275	1003	4	305	993	5	287	930	9	237	2513	47	583	1526	87	7234	1904
32	866	14	225	975	6	284	1023	3	315	1007	4	297	954	7	247	2596	39	609	1338	73	7422	1977
31	896	12	234	996	5	294	1038	2	326	1022	3	307	972	6	256	2689	33	635	1145	61	7615	2053
30	924	10	243	1014	4	304	1049	2	336	1037	3	317	994	5	266	2776	28	662	964	50	7796	2130
29	950	8	253	1027	3	314	1057	1	347	1044	2	328	1013	4	276	2852	23	691	816	41	7944	2209
28	970	7	262	1036	2	325	1063	1	357	1051	2	338	1025	3	287	2917	19	720	696	34	8064	2289
27	984	6	272	1047	2	335	1073	1	368	1058	1	349	1034	2	297	2969	16	749	594	28	8166	2370
26	996	5	282	1053	1	346	1080	1	379	1066	1	359	1044	2	307	3015	13	779	504	22	8256	2452
25	1007	4	292	1062	1	356	1084	0	390	1076	1	370	1054	1	318	3059	10	809	417	17	8343	2535
24	1020	3	302	1070	1	367	1087	0	401	1083	0	381	1062	1	328	3097	8	840	339	14	8421	2619
23	1033	2	312	1075	1	378	1089	0	411	1086	0	392	1071	1	339	3129	6	871	274	11	8486	2703
22	1046	2	323	1082	0	388	1091	0	422	1089	0	403	1077	1	350	3155	5	903	218	8	8542	2789
21	1055	1	333	1086	0	399	1091	0	433	1091	0	414	1082	0	361	3175	4	934	177	6	8583	2874
20	1062	1	344	1089	0	410	1092	0	444	1091	0	424	1088	0	371	3193	3	966	144	5	8616	2960
19	1067	1	355	1090	0	421	1092	0	455	1092	0	435	1090	0	382	3212	2	998	116	3	8644	3046
18	1071	1	365	1091	0	432	1092	0	466	1092	0	446	1091	0	393	3228	1	1030	93	2	8667	3133
17	1077	0	376	1092	0	443	1093	0	477	1092	0	457	1092	0	404	3243	1	1063	70	2	8690	3220
16	1083	0	387	1092	0	454	1094	0	488	1092	0	468	1092	0	415	3257	0	1095	49	1	8711	3307
15	1087	0	398	1093	0	465	1095	0	499	1092	0	479	1092	0	426	3268	0	1128	32	1	8728	3394
14	1090	0	409	1095	0	476	1095	0	510	1093	0	490	1092	0	437	3274	0	1161	20	0	8740	3481
13	1092	0	419	1095	0	487	1095	0	521	1093	0	501	1092	0	448	3279	0	1193	13	0	8747	3569
12	1094	0	430	1095	0	498	1095	0	532	1093	0	512	1092	0	459	3283	0	1226	7	0	8753	3656
11	1095	0	441	1095	0	509	1095	0	543	1094	0	523	1093	0	470	3284	0	1259	2	0	8758	3744
10	1095	0	452	1095	0	519	1095	0	554	1095	0	534	1095	0	481	3285	0	1292	0	0	8760	3831

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

PHILADELPHIA, PENNSYLVANIA

TRY Data (1969)

Latitude 39.90 N

WBAN 13739

Longitude 75.30 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:	4288	3846	3415	2960	2549	2011	1544	934	389	94	17
Annual Wet Bulb Cooling deg-hrs:	61782	49348	38248	28414	19965	12865	7305	3259	1017	215	25

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	47	46	44	42	38	33	26	14	7	.001		
.002	1	1	2	2	2	2	2	2	2	2	2	42	41	41	40	39	37	34	30	24	13	7	.002		
.003	2	3	4	4	4	4	4	4	4	4	4	35	35	35	35	34	33	31	27	21	12	6	.003		
.004	3	5	6	7	7	7	7	8	8	8	8	30	30	30	30	30	29	27	24	19	11	6	.004		
.005	4	7	9	10	11	11	11	11	12	12	12	25	25	25	25	25	25	24	21	17	10	5	.005		
.006	4	8	11	13	14	15	16	16	16	16	16	21	21	21	21	21	21	20	19	15	9	5	.006		
.007	5	10	14	16	18	19	20	21	21	21	21	17	17	17	17	17	17	17	16	13	7	4	.007		
.008	6	12	17	20	22	24	25	26	26	27	27	14	14	14	14	14	14	14	13	11	6	4	.008		
.009	7	14	19	23	26	28	30	31	32	32	33	11	11	11	11	11	11	11	11	9	5	3	.009		
.010	8	16	22	26	29	32	35	36	38	38	39	9	9	9	9	9	9	9	9	7	4	2	.010		
.011	9	17	25	29	33	37	40	42	44	45	45	7	7	7	7	7	7	7	7	6	3	2	.011		
.012	10	19	27	33	37	41	44	48	50	51	52	5	5	5	5	5	5	5	5	4	3	2	.012		
.013	11	21	30	36	41	45	49	53	56	58	59	3	3	3	3	3	3	3	3	3	2	1	.013		
.014	12	23	33	39	44	49	54	59	62	65	66	2	2	2	2	2	2	2	2	2	1	1	.014		
.015	12	25	35	42	48	54	59	64	69	72	74	1	1	1	1	1	1	1	1	1	1	0	.015		
.016	13	26	38	45	52	58	64	70	75	79	82	1	1	1	1	1	1	1	1	1	0	0	.016		
.017	14	28	40	49	56	62	69	76	82	87	89	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	15	30	43	52	59	67	74	81	88	94	98	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	54	38	50	43	58	69	44	41	33	46	45	48
VERTICAL													
NORTH	100	100	100	99	91	93	95	97	100	100	100	100	96
WEST	51	65	50	64	59	71	80	61	58	47	60	56	62
SOUTH	30	47	43	65	70	84	89	63	49	32	35	34	54
EAST	46	59	51	64	60	78	78	61	57	46	53	53	61
% Possible Sun	51	54	56	57	57	62	62	62	60	60	52	50	58

FOOTNOTES: * Corrected For Cloud Cover.

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

PHILADELPHIA, PENNSYLVANIA

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TABLE H:

TRY Data (1969)

Latitude 39.90 N

Longitude 75.30 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	1846	1711	1370	1044	629	314	176	151	151	1895	938	849	808	673	540	360	212	146	134	846	555
Feb	1917	1794	1511	1240	844	501	287	203	195	2167	1273	788	761	669	574	432	309	231	201	198	795
Mar	1748	1689	1541	1392	1085	758	496	320	266	2351	1738	1107	1072	985	897	728	552	414	322	295	1108
Apr	1377	1453	1469	1464	1289	1030	757	524	368	2349	2169	1040	1060	1048	1027	921	782	647	537	467	1434
May	1075	1229	1362	1461	1408	1230	979	727	529	2262	2449	984	1062	1119	1158	1108	988	836	690	588	1660
Jun	957	1129	1310	1453	1458	1321	1095	842	648	2205	2567	915	955	995	1026	1002	923	826	724	668	1811
Jul	1005	1166	1322	1447	1424	1269	1041	793	599	2210	2498	868	918	962	998	973	899	806	707	628	1758
Aug	1229	1335	1395	1432	1309	1089	836	605	438	2259	2245	1044	1087	1097	1095	1000	859	710	581	494	1575
Sep	1571	1562	1484	1394	1144	851	594	402	314	2282	1860	1116	1104	1037	958	788	612	477	387	351	1281
Oct	1819	1710	1472	1253	895	563	349	241	228	2174	1407	1088	1034	906	784	580	393	274	216	210	959
Nov	1845	1727	1406	1103	697	377	214	167	167	1948	1025	810	780	661	535	363	230	168	151	150	619
Dec	1779	1656	1316	980	574	276	156	140	140	1785	845	757	718	593	467	305	183	136	129	129	470
Year	1511	1511	1412	1305	1064	800	583	427	338	2157	1753	948	948	897	840	715	580	474	399	360	1169

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	1592	1451	1144	862	499	233	132	122	122	722	680	561	448	288	162	114	109	109
Feb	1625	1505	1259	1032	685	384	214	161	158	657	632	553	474	351	244	182	162	160
Mar	1413	1393	1279	1161	891	603	376	245	216	895	879	812	743	597	443	323	255	239
Apr	1035	1154	1203	1212	1064	838	598	398	290	812	851	855	843	754	636	519	426	376
May	761	927	1094	1204	1162	1011	787	567	398	745	830	904	949	908	806	674	548	461
Jun	661	826	1038	1194	1204	1092	884	661	479	706	750	799	854	816	753	668	583	530
Jul	704	868	1057	1190	1177	1049	839	621	448	683	730	779	817	798	738	656	570	502
Aug	905	1044	1137	1183	1082	893	668	468	340	807	867	894	900	821	700	571	462	396
Sep	1245	1279	1227	1159	942	686	462	308	255	898	906	854	788	643	493	378	308	286
Oct	1527	1429	1229	1043	728	444	262	191	186	909	861	755	651	472	312	212	174	171
Nov	1586	1462	1177	917	559	285	158	136	136	688	658	551	443	291	180	132	123	122
Dec	1538	1411	1099	810	451	203	119	113	113	645	604	493	386	242	142	108	104	104
Year	1214	1227	1161	1081	871	645	460	334	262	765	772	735	691	583	469	379	320	289

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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PITTSBURGH, PENNSYLVANIA

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TABLE A:

TRY Data (1957)

Latitude 40.50 N

Longitude 80.70 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														
55 to 59	2	0	0	0	0	2	3	3	10	53.9	744	24086	0	0
50 to 54	1	0	1	4	6	2	1	3	18	48.4	723	20408	21	42
45 to 49	2	3	2	1	0	2	2	0	12	44.8	706	16830	38	184
40 to 44	0	0	0	2	3	3	3	2	13	35.2	702	13310	42	384
35 to 39	8	9	9	7	9	4	0	2	48	33.3	682	9851	62	645
30 to 34	11	10	7	18	21	21	17	14	119	30.2	596	6613	148	1127
25 to 29	28	31	12	26	23	26	30	30	226	24.9	424	3967	320	2201
20 to 24	10	8	9	10	16	9	6	6	74	20.3	258	2330	486	4284
15 to 19	3	5	9	16	10	13	15	9	80	15.5	191	1191	553	6865
10 to 14	17	18	18	6	4	11	9	16	99	10.8	106	431	638	9825
5 to 9	8	6	3	2	1	0	7	5	32	6.5	27	136	717	13250
0 to 4	0	0	0	1	0	0	0	3	4	0.5	13	58	731	16892
-5 to -1	3	2	3	0	0	0	0	0	8	-3.8	7	11	737	20565
-10 to -6	0	1	0	0	0	0	0	0	1	-6.0	0	0	744	24274
Feb														
65 to 69	0	0	0	1	3	2	0	0	6	54.0	671	22107	1	1
60 to 64	0	0	0	1	4	4	1	0	10	54.1	666	18770	6	24
55 to 59	0	0	0	3	4	5	4	0	16	51.9	650	15479	22	93
50 to 54	5	5	6	5	4	3	7	6	41	45.7	628	12281	44	255
45 to 49	1	1	3	3	2	4	3	4	21	41.6	592	9242	80	576
40 to 44	11	5	0	5	17	13	7	10	68	38.9	557	6345	115	1039
35 to 39	9	15	18	25	21	16	15	8	127	34.1	465	3760	207	1814
30 to 34	27	22	19	20	17	25	25	27	182	30.1	307	1789	365	3203
25 to 29	13	16	19	17	12	9	14	15	115	24.9	154	698	518	5472
20 to 24	6	13	16	4	0	3	7	6	55	20.7	61	193	611	8327
15 to 19	12	7	3	0	0	0	1	8	31	16.7	15	14	657	11508
Mar														
70 to 74	0	0	0	0	0	1	0	0	1	51.0	744	24766	0	0
65 to 69	0	0	0	2	6	4	0	0	12	52.8	740	21051	4	5
60 to 64	2	0	0	3	0	3	3	3	14	51.1	727	17386	17	60
55 to 59	2	2	1	2	12	6	6	3	34	46.4	706	13793	38	187
50 to 54	2	4	5	6	17	18	5	2	59	42.9	664	10355	80	469
45 to 49	2	0	5	20	14	11	15	5	72	39.7	593	7207	151	1041
40 to 44	9	9	10	17	11	16	15	21	108	36.7	508	4417	236	1971
35 to 39	32	19	26	22	24	21	26	24	194	33.2	396	2158	348	3432
30 to 34	33	41	33	14	8	12	15	24	180	30.1	151	770	593	5764
25 to 29	2	6	6	6	1	1	5	5	32	24.3	56	331	688	9045
20 to 24	3	6	4	1	0	0	3	4	21	20.3	31	122	713	12556
15 to 19	6	4	2	0	0	0	0	2	14	16.1	11	22	733	16176
10 to 14	0	2	1	0	0	0	0	0	3	14.0	0	0	744	19874

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

PITTSBURGH, PENNSYLVANIA

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TABLE A:

TRY Data (1957)

Latitude 40.50 N

Longitude 80.70 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		16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Apr														
85 to 89	0	0	0	0	2	1	0	0	3	66.0	720	25578	0	0
80 to 84	0	0	0	6	11	3	0	0	20	65.8	710	21996	10	18
75 to 79	0	0	2	11	14	11	3	0	41	64.3	683	18506	37	128
70 to 74	0	0	8	12	9	16	10	1	56	61.1	635	15204	85	426
65 to 69	3	0	9	7	4	7	12	14	56	59.1	583	12180	137	1002
60 to 64	19	21	10	3	4	4	12	10	83	57.7	508	9431	212	1853
55 to 59	4	3	7	9	7	3	3	11	47	51.1	447	7072	273	3094
50 to 54	14	16	9	7	5	9	10	7	77	48.5	390	4981	330	4603
45 to 49	8	9	9	7	6	9	7	9	64	43.4	305	3259	415	6481
40 to 44	10	3	5	6	13	9	4	9	59	36.7	247	1881	473	8703
35 to 39	8	18	13	13	14	15	16	8	105	33.9	169	794	551	11216
30 to 34	14	8	15	9	1	3	12	14	76	30.4	67	206	653	14228
25 to 29	10	11	3	0	0	0	1	7	32	25.9	12	15	708	17637
20 to 24	0	1	0	0	0	0	0	0	1	23.0	0	0	720	21222
May														
80 to 84	0	0	0	1	11	8	0	0	20	66.1	742	16043	2	2
75 to 79	0	0	1	21	29	25	4	0	80	63.2	695	12421	49	100
70 to 74	1	0	8	21	15	13	20	1	79	60.9	615	9153	129	552
65 to 69	5	3	22	15	8	10	16	15	94	59.4	530	6302	214	1421
60 to 64	30	25	21	12	15	19	24	33	179	56.9	406	3915	338	2754
55 to 59	13	21	12	10	9	8	8	12	93	51.2	248	2345	496	4904
50 to 54	15	5	13	6	2	4	7	9	61	46.2	174	1309	570	7588
45 to 49	10	19	8	4	1	5	8	12	67	42.3	104	594	640	10593
40 to 44	9	8	5	3	3	1	4	7	40	37.2	55	208	689	13927
35 to 39	9	10	3	0	0	0	2	4	28	33.1	20	36	724	17475
30 to 34	1	2	0	0	0	0	0	0	3	30.3	0	0	744	21159
Jun														
90 to 94	0	0	0	0	1	2	0	0	3	73.0	720	15990	0	0
85 to 89	0	0	0	6	16	9	2	0	33	73.1	701	12415	19	25
80 to 84	0	0	1	16	21	20	9	1	68	69.2	663	8996	57	206
75 to 79	2	0	11	24	27	27	23	9	123	66.3	578	5879	142	689
70 to 74	23	16	23	28	16	20	30	25	181	65.5	433	3353	287	1763
65 to 69	20	22	31	9	6	8	15	27	138	62.2	253	1669	467	3679
60 to 64	23	22	14	4	0	1	8	18	90	57.8	135	716	585	6326
55 to 59	16	21	4	0	0	0	0	6	47	53.9	66	248	654	9458
50 to 54	6	9	5	3	3	3	3	4	36	50.1	26	36	694	12846
45 to 49	0	0	1	0	0	0	0	0	1	46.0	0	0	720	16410

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

PITTSBURGH, PENNSYLVANIA
WBAN 94823
TABLE A:

TRY Data (1957)

Latitude 40.50 N
Longitude 80.70 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														
90 to 94	0	0	0	1	6	6	0	0	13	73.3	744	15265	0	0
85 to 89	0	0	0	6	20	17	4	0	47	70.6	716	11597	28	52
80 to 84	0	0	2	16	24	23	16	2	83	68.6	660	8145	84	320
75 to 79	3	0	9	34	21	27	26	11	131	66.1	563	5087	181	982
70 to 74	26	20	26	21	20	19	26	36	194	65.2	406	2654	338	2269
65 to 69	28	29	32	12	2	1	17	23	144	62.6	204	1142	540	4477
60 to 64	17	16	17	3	0	0	4	16	73	57.8	95	410	649	7465
55 to 59	16	21	7	0	0	0	0	4	48	53.6	36	93	708	10868
50 to 54	3	7	0	0	0	0	0	1	11	50.1	6	7	738	14502
Aug														
90 to 94	0	0	0	0	5	4	0	0	9	73.8	744	16693	0	0
85 to 89	0	0	0	4	13	18	2	0	37	70.8	726	13009	18	36
80 to 84	0	0	0	19	32	30	10	0	91	67.4	674	9496	70	243
75 to 79	0	0	3	27	21	18	22	5	96	64.8	569	6390	175	857
70 to 74	14	4	19	24	13	15	26	24	139	64.0	447	3801	297	1988
65 to 69	17	22	30	18	9	7	26	24	153	61.3	294	1897	450	3804
60 to 64	30	24	26	1	0	1	6	28	116	57.7	159	750	585	6377
55 to 59	24	27	14	0	0	0	1	11	77	53.5	68	185	676	9532
50 to 54	8	16	1	0	0	0	0	1	26	49.3	12	12	732	13079
Sep														
90 to 94	0	0	0	0	0	1	0	0	1	72.0	720	20048	0	0
85 to 89	0	0	0	2	5	5	1	0	13	71.2	715	16456	5	8
80 to 84	0	0	0	3	14	10	4	1	32	70.4	694	12922	26	74
75 to 79	2	0	3	16	19	14	11	2	67	66.9	653	9541	67	293
70 to 74	11	4	13	22	23	28	12	17	130	64.9	569	6459	151	811
65 to 69	26	31	24	23	16	14	25	19	178	62.7	383	4009	337	1961
60 to 64	7	7	10	8	8	11	17	17	85	55.8	263	2442	457	3994
55 to 59	15	10	12	9	5	7	10	17	85	51.8	174	1342	546	6494
50 to 54	13	14	15	5	0	0	5	6	58	47.7	100	655	620	9407
45 to 49	8	13	4	2	0	0	5	6	38	43.7	51	273	669	12625
40 to 44	6	5	6	0	0	0	0	5	22	38.3	23	88	697	16040
35 to 39	2	6	3	0	0	0	0	0	11	33.8	9	13	711	19565

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

PITTSBURGH, PENNSYLVANIA
WBAN 94823
TABLE A:

TRY Data (1957)

Latitude 40.50 N
Longitude 80.70 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														
70 to 74	0	0	0	0	7	5	0	0	12	57.3	744	16908	0	0
65 to 69	0	0	0	6	16	12	1	0	35	55.6	723	13239	21	51
60 to 64	3	2	2	18	18	20	13	2	78	53.8	678	9739	66	271
55 to 59	15	12	11	18	18	17	18	17	126	51.7	565	6608	179	860
50 to 54	11	7	18	27	15	16	19	23	136	47.5	432	4090	312	2062
45 to 49	21	24	18	10	7	14	23	18	135	43.2	301	2248	443	3940
40 to 44	17	18	21	5	6	2	10	22	101	39.5	180	1074	564	6486
35 to 39	14	12	10	4	4	4	4	3	55	34.4	104	404	640	9536
30 to 34	12	17	10	5	2	3	5	8	62	31.0	33	50	711	12902
25 to 29	0	1	3	0	0	0	0	0	4	27.5	0	0	744	16572
Nov														
65 to 69	0	0	0	0	2	1	0	0	3	60.3	720	18122	0	0
60 to 64	1	1	0	7	15	10	2	0	36	54.0	703	14545	17	23
55 to 59	3	1	0	7	10	11	9	5	46	51.7	667	11120	53	198
50 to 54	10	11	9	14	13	14	14	14	99	47.8	597	7923	123	601
45 to 49	21	18	23	13	10	9	11	16	121	43.4	493	5210	227	1488
40 to 44	8	10	12	20	19	20	11	9	109	38.0	363	3050	357	2928
35 to 39	10	9	8	14	15	13	24	17	110	33.4	263	1488	457	4966
30 to 34	24	23	24	15	6	12	13	16	133	29.5	131	468	589	7546
25 to 29	11	12	10	0	0	0	6	13	52	24.5	37	86	683	10764
20 to 24	2	5	4	0	0	0	0	0	11	21.3	1	1	719	14279
Dec														
60 to 64	0	0	0	0	2	0	0	0	2	56.0	744	19947	0	0
55 to 59	1	0	0	6	7	9	4	4	31	51.6	733	16243	11	16
50 to 54	8	6	9	6	10	4	5	5	53	48.4	691	12666	53	159
45 to 49	9	14	5	7	4	9	10	8	66	42.6	641	9335	103	548
40 to 44	7	5	15	17	26	20	7	12	109	38.0	546	6338	198	1271
35 to 39	13	12	8	20	22	27	29	15	146	33.7	434	3869	310	2522
30 to 34	19	16	19	15	11	11	25	26	142	29.8	279	2113	465	4486
25 to 29	21	19	17	13	5	7	5	12	99	25.7	146	1072	598	7165
20 to 24	7	8	6	3	0	0	2	5	31	20.8	78	541	666	10354
15 to 19	5	6	10	5	5	4	3	3	41	14.9	54	207	690	13740
10 to 14	0	5	4	1	1	2	3	0	16	10.8	16	47	728	17300
5 to 9	3	2	0	0	0	0	0	3	8	7.9	0	0	744	20973

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

PITTSBURGH, PENNSYLVANIA
WBAN 94823
TABLE B:

TRY Data (1957)

Latitude 40.50 N
Longitude 80.70 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	1	12	13	0	0	26	0.0	0.0	0.0	75.0	73.4	73.2	0.0	0.0	73.4
85 to 89	0	0	0	18	56	50	9	0	133	0.0	0.0	0.0	72.6	71.1	70.6	72.8	0.0	71.2
80 to 84	0	0	3	61	113	94	39	4	314	0.0	0.0	72.3	69.1	67.7	67.2	70.2	72.0	68.2
75 to 79	7	0	29	133	131	122	89	27	538	70.3	0.0	68.9	66.0	63.5	63.8	66.8	69.9	65.4
70 to 74	75	44	97	128	103	117	124	104	792	67.6	67.6	65.6	62.6	61.2	62.2	63.6	66.5	64.2
65 to 69	99	107	148	93	72	66	112	122	819	63.8	64.7	62.6	58.4	57.5	58.1	59.8	61.6	61.2
60 to 64	132	118	100	60	66	73	90	127	766	58.3	59.3	57.1	53.3	52.5	54.3	55.9	57.3	56.6
55 to 59	111	118	68	64	72	68	66	93	660	53.9	53.9	52.0	49.8	49.2	49.5	50.9	52.5	51.9
50 to 54	96	100	91	83	75	73	76	81	675	48.0	49.0	48.0	47.0	45.1	46.1	47.3	47.8	47.4
45 to 49	82	101	78	67	44	63	84	78	597	44.0	44.0	44.0	41.0	41.1	41.0	41.7	43.0	42.7
40 to 44	77	63	74	75	98	84	61	97	629	38.6	39.4	38.4	36.9	37.1	37.2	38.3	38.0	37.9
35 to 39	105	110	98	105	109	100	116	81	824	34.0	33.7	33.9	33.5	33.1	33.3	33.9	33.7	33.6
30 to 34	141	139	127	96	66	87	112	129	897	30.2	30.2	30.2	30.0	29.3	29.6	30.0	30.5	30.1
25 to 29	85	96	90	62	41	43	61	82	560	25.2	25.1	25.2	24.5	24.8	25.0	25.0	25.3	25.1
20 to 24	28	41	39	18	16	12	18	21	193	21.0	21.0	21.1	19.8	19.3	19.8	20.5	20.3	20.6
15 to 19	26	22	24	21	15	17	19	22	166	16.2	16.0	15.8	15.2	14.4	15.2	15.6	16.0	15.6
10 to 14	17	25	23	7	5	13	12	16	118	11.2	11.2	11.3	12.3	10.6	9.9	9.8	10.8	10.9
5 to 9	11	8	3	2	1	0	7	8	40	7.0	7.4	7.3	4.0	6.0	0.0	5.7	7.5	6.8
0 to 4	0	0	0	1	0	0	0	3	4	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.3	0.5
-5 to -1	3	2	3	0	0	0	0	0	8	-3.7	-5.5	-2.7	0.0	0.0	0.0	0.0	0.0	-3.8
-10 to -6	0	1	0	0	0	0	0	0	1	0.0	-6.0	0.0	0.0	0.0	0.0	0.0	0.0	-6.0

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

Month	Dry Bulb Temperature (F)				Wet Bulb		Percent Relative Humidity					Average Humidity Ratio (lb moisture/lb dry air)					Average wind MPH
	Ave	Max	Min	Daily Max	Ave Min	Ave	4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	25.1	57	-6	32	18	23.2	82	79	72	75	78	0.0022	0.0022	0.0024	0.0023	0.0023	10.8
Feb	34.6	68	16	42	27	31.9	81	78	68	79	77	0.0030	0.0034	0.0036	0.0036	0.0034	10.0
Mar	39.2	70	14	48	31	34.5	78	65	57	67	67	0.0033	0.0032	0.0037	0.0035	0.0033	11.6
Apr	52.0	87	24	62	43	46.5	82	64	58	72	70	0.0060	0.0065	0.0066	0.0065	0.0064	11.3
May	60.9	84	33	72	50	53.6	82	59	50	65	65	0.0075	0.0081	0.0080	0.0082	0.0079	9.9
Jun	70.3	90	49	80	61	63.2	87	64	55	68	71	0.0112	0.0116	0.0114	0.0120	0.0116	9.6
Jul	72.0	92	51	81	62	64.0	84	63	50	63	68	0.0114	0.0119	0.0114	0.0119	0.0117	8.2
Aug	70.1	92	50	81	59	61.8	83	59	48	62	66	0.0102	0.0107	0.0110	0.0110	0.0106	7.0
Sep	64.7	90	35	75	55	58.5	84	68	58	69	71	0.0095	0.0101	0.0106	0.0100	0.0100	7.8
Oct	49.8	72	29	59	41	45.1	83	70	61	72	73	0.0055	0.0057	0.0061	0.0058	0.0058	7.2
Nov	42.3	66	22	51	35	38.5	80	71	61	71	73	0.0043	0.0044	0.0047	0.0044	0.0045	10.2
Dec	35.7	60	8	43	28	32.8	84	77	67	77	76	0.0035	0.0035	0.0037	0.0036	0.0036	12.1
Year	51.5	92	-6	60	43	46.2	82	68	59	70	71	0.0065	0.0068	0.0070	0.0069	0.0068	9.6

PITTSBURGH, PENNSYLVANIA

TRY Data (1957)

WBAN 94823

Latitude 40.50 N

Longitude 80.70 E

TABLE D:

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**		24 HOUR SUMMARY				
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	HEATING		COOLING		
	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Hrs Below Base 100s*	Deg Hrs	Hrs Above Base 100s*	Deg Hrs	
93	0	491	0	0	420	0	0	393	0	0	444	0	0	1510	0	0	0
92	0	480	0	0	409	0	0	382	0	0	433	0	0	1478	0	0	0
91	0	469	0	0	398	0	3	371	0	0	422	0	0	1445	0	0	0
90	0	458	0	0	387	0	8	360	0	0	411	0	0	1412	0	0	0
89	0	447	0	1	376	0	18	337	0	16	350	0	0	1379	0	0	0
88	0	436	0	4	365	0	29	326	0	24	339	0	0	1346	0	0	0
87	0	425	0	8	354	0	39	315	1	33	328	1	2	1313	0	0	1
86	0	415	0	11	344	0	51	305	1	43	318	1	5	1280	0	0	2
85	0	404	0	15	333	0	62	295	2	55	307	2	8	1248	0	0	3
84	0	393	0	24	322	1	75	284	2	69	297	2	12	1215	0	0	4
83	0	382	0	35	311	1	90	274	3	83	287	3	17	1182	0	0	5
82	1	371	0	45	301	1	113	264	4	99	277	4	23	1149	0	0	7
81	3	360	0	56	290	2	142	254	6	119	267	5	31	1116	0	0	10
80	3	349	0	70	280	2	169	245	7	144	257	6	41	1083	0	0	13
79	5	338	0	89	270	3	191	236	9	168	248	8	55	1051	0	0	17
78	9	327	0	114	260	4	216	227	11	190	238	10	65	1018	0	0	22
77	14	316	0	141	250	5	246	218	13	215	230	12	78	985	0	0	27
76	18	305	0	166	241	7	276	210	16	242	221	14	99	952	0	0	34
75	25	295	1	195	232	9	302	202	19	267	213	16	124	920	1	0	41
74	36	284	1	225	223	11	323	194	22	294	204	19	146	887	1	0	50
73	50	274	1	252	214	13	346	187	25	320	196	22	166	855	2	0	60
72	71	263	2	283	206	16	368	179	29	342	189	26	192	823	3	0	72
71	91	253	3	308	198	19	385	172	33	365	181	29	223	792	4	0	85
70	115	243	4	329	190	22	404	165	37	385	174	33	250	761	6	0	99
69	150	233	5	350	183	25	425	158	41	405	167	37	271	730	8	0	115
68	186	224	7	370	175	29	443	152	45	419	160	41	297	701	12	0	133
67	212	215	9	391	168	33	462	145	50	429	154	45	323	672	16	0	153
66	234	207	11	411	161	37	476	139	54	444	147	50	341	644	20	0	175
65	262	198	13	427	155	41	483	133	59	457	141	54	361	616	26	0	198
64	289	190	16	440	148	45	491	127	64	470	134	59	382	589	31	0	223
63	315	182	19	451	141	50	500	121	69	486	128	64	398	563	38	0	249
62	337	174	23	463	135	54	514	115	74	504	122	69	414	538	45	0	277
61	352	167	26	477	129	59	531	109	79	517	116	74	431	513	54	0	306
60	368	159	30	488	123	64	546	104	85	528	111	79	451	489	63	0	337
59	386	152	33	497	117	69	560	98	90	544	105	84	470	466	72	0	370
58	402	145	37	511	111	74	574	93	96	558	100	90	481	443	83	0	403
57	415	138	41	526	105	79	587	88	102	570	94	95	491	422	94	0	439
56	426	132	46	540	99	84	602	83	108	584	89	101	505	400	105	0	475
55	437	125	50	553	94	90	617	78	114	597	84	107	521	380	118	0	513
54	452	119	54	567	89	96	631	73	120	609	79	113	536	360	130	0	552
53	472	112	59	585	83	101	648	69	126	623	74	119	549	340	144	0	593
52	493	106	64	603	78	107	668	64	133	641	70	126	562	321	158	0	635
51	510	100	69	622	74	113	682	60	140	659	65	132	582	303	172	0	678
50	528	94	74	636	69	120	693	56	146	671	61	139	599	285	187	0	722
49	546	89	79	648	64	126	705	52	153	681	57	145	615	268	203	0	768
48	563	83	85	663	60	133	715	48	161	692	53	152	632	251	219	0	815

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

PITTSBURGH, PENNSYLVANIA

WBAN 94823

TABLE D:

TRY Data (1957)

Latitude 40.50 N

Longitude 80.70 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BY TIME OF DAY														24 HOUR SUMMARY						
7-9AM**		10-12AM**			1-3PM**			4-6PM**			7-9PM**			10PM-6AM**			HEATING		COOLING	
BASE	TEMP	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg	Hrs	Deg	
(F)	Above	(100s)*	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Below	Above	
																		Base	100s*	
47	578	78	91	674	56	139	724	44	168	703	49	159	647	61	121	1701	235	236	3730	523
46	592	73	97	684	52	146	732	41	175	716	45	166	662	56	127	1749	219	253	3623	486
45	606	68	103	699	48	153	740	37	182	731	41	174	678	52	134	1799	204	271	3505	451
44	623	63	109	715	44	160	754	34	190	745	38	181	698	48	141	1845	190	289	3378	416
43	640	59	115	727	40	167	778	30	198	760	34	189	714	44	148	1891	176	308	3249	383
42	655	54	121	739	36	175	804	27	205	776	31	196	725	41	155	1943	162	327	3117	351
41	666	50	128	755	33	182	824	25	214	794	28	204	736	37	163	1995	149	346	2987	321
40	679	46	135	774	29	190	837	22	222	814	25	212	746	33	170	2043	136	367	2866	291
39	697	42	142	793	26	198	849	19	230	829	22	220	760	30	177	2080	124	387	2750	263
38	712	38	149	813	23	206	866	17	239	846	20	229	781	27	185	2123	112	408	2616	236
37	728	34	156	835	21	214	890	15	248	869	17	237	806	24	193	2177	101	430	2453	211
36	751	30	163	855	18	222	914	13	257	890	15	246	830	21	201	2245	90	452	2273	187
35	775	27	171	875	16	231	938	11	266	911	13	255	852	18	210	2321	80	475	2085	166
34	800	24	179	900	14	240	956	10	275	935	11	264	878	16	218	2406	71	498	1882	146
33	827	21	187	926	12	249	972	8	285	954	10	274	904	14	227	2504	62	523	1671	128
32	854	19	195	948	11	258	989	7	295	974	9	283	928	12	236	2592	55	548	1473	112
31	882	16	204	964	9	268	1002	6	305	994	8	293	949	11	246	2673	48	575	1294	98
30	904	14	213	978	8	278	1012	5	315	1006	7	303	969	9	255	2742	43	602	1148	86
29	923	13	222	991	7	288	1025	5	325	1015	6	313	987	8	265	2791	38	630	1026	75
28	941	11	231	1005	6	298	1037	4	335	1027	5	324	1004	7	275	2847	33	658	896	66
27	961	9	241	1016	5	308	1043	4	346	1039	4	334	1014	6	285	2907	29	686	779	58
26	978	8	251	1026	4	318	1048	3	356	1047	4	344	1022	6	295	2961	25	716	675	50
25	994	7	261	1039	4	328	1054	3	367	1052	3	355	1033	5	306	3010	22	746	576	44
24	1010	6	271	1047	3	339	1059	2	377	1054	3	365	1041	4	316	3046	20	776	501	39
23	1022	5	281	1051	3	349	1061	2	388	1056	3	376	1046	4	327	3071	18	807	451	34
22	1029	5	291	1055	2	360	1064	2	399	1059	2	387	1050	3	337	3090	16	837	411	30
21	1035	4	301	1059	2	370	1067	1	409	1061	2	397	1053	3	348	3105	14	868	378	26
20	1040	4	312	1062	2	381	1071	1	420	1063	2	408	1055	3	358	3116	12	900	350	22
19	1044	3	322	1067	1	392	1074	1	431	1065	1	418	1058	2	369	3127	10	931	323	19
18	1050	3	333	1071	1	402	1076	1	441	1068	1	429	1061	2	379	3142	9	962	290	16
17	1055	2	343	1073	1	413	1080	0	452	1072	1	440	1066	1	390	3157	7	994	255	13
16	1057	2	354	1077	1	424	1084	0	463	1076	1	451	1070	1	401	3172	6	1025	223	11
15	1062	1	364	1082	0	434	1087	0	474	1080	0	461	1074	1	411	3185	5	1057	188	9
14	1068	1	375	1088	0	445	1090	0	485	1083	0	472	1076	1	422	3197	4	1089	156	7
13	1074	1	386	1091	0	456	1092	0	496	1085	0	483	1077	1	433	3209	3	1121	131	5
12	1078	1	396	1091	0	467	1092	0	507	1088	0	494	1078	0	444	3219	3	1153	111	4
11	1083	1	407	1092	0	478	1093	0	518	1091	0	505	1081	0	454	3229	2	1185	89	3
10	1088	0	418	1092	0	489	1093	0	529	1094	0	516	1085	0	465	3242	2	1218	65	2
9	1090	0	429	1092	0	500	1094	0	539	1095	0	527	1088	0	476	3255	1	1250	45	2
8	1091	0	440	1092	0	511	1095	0	550	1095	0	538	1090	0	487	3264	1	1283	32	1
7	1091	0	451	1092	0	522	1095	0	561	1095	0	549	1093	0	498	3271	1	1316	22	1
6	1092	0	462	1093	0	533	1095	0	572	1095	0	559	1094	0	509	3275	1	1348	16	1
5	1092	0	473	1093	0	544	1095	0	583	1095	0	570	1094	0	520	3276	1	1381	14	1
4	1092	0	484	1094	0	555	1095	0	594	1095	0	581	1095	0	531	3276	1	1414	13	1
3	1092	0	495	1094	0	565	1095	0	605	1095	0	592	1095	0	542	3276	0	1447	13	1
2	1092	0	505	1094	0	576	1095	0	616	1095	0	603	1095	0	553	3277	0	1479	11	1

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

PITTSBURGH, PENNSYLVANIA

TRY Data (1957)

Latitude 40.50 N

WBAN 94823

Longitude 80.70 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	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	100s*	Base	100s*
1	1092	0	516	1095	0	587	1095	0	627	1095	0	614	1095	0	564	3278	0 1512
0	1092	0	527	1095	0	598	1095	0	638	1095	0	625	1095	0	575	3278	0 1545
-1	1092	0	538	1095	0	609	1095	0	649	1095	0	636	1095	0	586	3279	0 1578
-2	1093	0	549	1095	0	620	1095	0	660	1095	0	647	1095	0	596	3279	0 1610
-3	1093	0	560	1095	0	631	1095	0	671	1095	0	658	1095	0	607	3281	0 1643
-4	1094	0	571	1095	0	642	1095	0	682	1095	0	669	1095	0	618	3282	0 1676
-5	1095	0	582	1095	0	653	1095	0	693	1095	0	680	1095	0	629	3283	0 1709
-6	1095	0	593	1095	0	664	1095	0	704	1095	0	691	1095	0	640	3284	0 1742
-7	1095	0	604	1095	0	675	1095	0	715	1095	0	702	1095	0	651	3285	0 1775

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

PITTSBURGH, PENNSYLVANIA
WBAN 94823
TABLE E:

TRY Data (1957)

Latitude 40.50 N
Longitude 80.70 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:	4051	3583	3082	2614	2015	1343	771	262	43	0	0
Annual Wet Bulb Cooling deg-hrs:	49035.	37379.	27106.	18352.	11107.	5764.	2326.	583.	58.	0.	0.

TABLE F:

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

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **											COOLING HUMIDITY RATIO HOURS **											Maintained Indoor Humidity Ratio*
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80	
.001	0	0	0	0	0	0	0	0	0	0	0	46	44	43	41	39	35	31	25	17	9	4	.001
.002	1	1	1	1	1	1	1	1	1	1	1	38	38	37	36	34	31	28	23	15	9	4	.002
.003	2	2	3	3	3	3	3	3	3	3	3	32	31	31	31	30	28	25	20	14	8	4	.003
.004	3	4	5	6	6	6	6	6	6	6	6	26	26	26	26	25	24	22	18	12	7	3	.004
.005	4	6	8	9	9	10	10	10	10	10	10	21	21	21	21	21	20	18	15	10	6	3	.005
.006	5	8	11	12	13	14	14	14	14	15	15	17	17	17	17	17	16	15	13	9	5	2	.006
.007	6	10	14	16	17	18	19	19	19	20	20	13	13	13	13	13	13	12	11	7	4	2	.007
.008	7	12	16	19	21	23	24	24	25	25	25	10	10	10	10	10	10	10	8	6	3	2	.008
.009	8	14	19	23	25	28	29	30	31	31	31	7	7	7	7	7	7	6	4	3	1	0	.009
.010	10	16	22	26	29	32	34	36	37	37	38	5	5	5	5	5	5	5	3	2	1	0	.010
.011	11	18	25	30	33	37	40	42	43	44	45	3	3	3	3	3	3	3	2	1	1	0	.011
.012	12	20	28	33	38	42	45	48	50	51	52	2	2	2	2	2	2	2	1	1	0	0	.012
.013	13	22	30	36	42	46	51	54	56	58	59	1	1	1	1	1	1	1	1	0	0	0	.013
.014	14	24	33	40	46	51	56	60	63	66	67	0	0	0	0	0	0	0	0	0	0	0	.014
.015	15	26	36	43	50	56	61	66	70	73	75	0	0	0	0	0	0	0	0	0	0	0	.015
.016	16	28	39	47	54	61	67	72	77	81	84	0	0	0	0	0	0	0	0	0	0	0	.016
.017	17	30	42	50	58	65	72	79	84	89	92	0	0	0	0	0	0	0	0	0	0	0	.017
.018	18	32	45	54	62	70	77	85	91	96	100	0	0	0	0	0	0	0	0	0	0	0	.018

FOOTNOTES: * Indoor Humidity Level is measured in pounds of moisture per pound of dry air. Indoor set points of 72 deg(F)-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	74	60	50	62	55	62	56	55	59	45	52	52	57
VERTICAL													
NORTH	100	100	100	99	95	93	92	96	100	100	100	100	97
WEST	77	66	62	75	72	78	70	72	72	59	61	57	70
SOUTH	62	54	53	77	78	86	82	75	65	45	42	38	65
EAST	78	76	62	71	68	72	71	63	69	55	59	63	68
% Possible Sun	35	39	45	49	52	58	59	58	59	54	39	30	49

FOOTNOTES: * Corrected For Cloud Cover.

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

PITTSBURGH, PENNSYLVANIA

WBAN 94823

TABLE H:

TRY Data (1957)

Latitude 40.50 N

Longitude 80.70 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 ***	horiz
Jan	1849	1723	1382	1061	534	327	177	149	148	1882	916	486	460	391	326	237	176	148	143	143	466	332	424
Feb	1909	1784	1490	1222	817	481	278	195	192	2145	1247	631	585	498	420	314	238	197	181	180	663	487	625
Mar	1761	1701	1550	1396	1077	749	491	318	264	2340	1720	959	928	855	778	633	495	392	324	303	1136	923	943
Apr	1394	1466	1487	1470	1288	1025	756	522	371	2357	2156	929	959	952	934	846	732	624	531	474	1211	1215	1317
May	1097	1247	1372	1466	1397	1215	970	716	526	2269	2444	996	1071	1117	1146	1088	975	842	710	617	1482	1613	1602
Jun	971	1139	1314	1458	1444	1312	1074	828	627	2212	2561	982	1059	1127	1182	1158	1079	955	830	726	1480	1702	1762
Jul	1023	1162	1237	1450	1410	1284	1077	780	585	2216	2442	1002	1071	1129	1174	1133	1042	910	782	692	1530	1730	1689
Aug	1217	1333	1414	1446	1315	1098	846	511	453	2264	2239	1018	1098	1132	1144	1062	931	785	648	551	1437	1493	1510
Sep	1584	1563	1472	1374	1120	825	535	392	302	2233	1841	909	937	927	863	732	598	494	424	395	1208	1081	1209
Oct	1824	1720	1482	1255	901	570	349	249	226	2153	1345	869	839	752	660	511	371	277	228	219	982	721	895
Nov	1836	1704	1383	1074	570	355	204	163	164	1894	1600	690	652	552	451	318	213	161	148	148	699	445	505
Dec	1761	1658	1346	991	575	274	150	137	137	1771	893	677	623	502	387	254	169	134	127	127	657	382	347
Year	1521	1518	1415	1305	1055	794	577	423	324	2152	1738	855	862	830	791	693	587	495	424	382	1082	1014	1069

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	1596	1463	1158	878	509	241	134	121	121	405	380	322	267	192	140	120	116	116
Feb	1624	1499	1248	1016	664	370	204	158	156	527	482	408	342	254	190	158	147	146
Mar	1427	1405	1286	1163	889	601	374	242	214	778	762	703	641	519	401	310	258	246
Apr	1053	1168	1214	1221	1069	840	599	401	292	732	772	778	768	695	598	502	425	382
May	779	943	1103	1207	1157	999	777	557	394	771	848	905	939	893	797	679	567	490
Jun	676	840	1043	1195	1196	1079	871	651	468	768	833	909	966	951	883	775	667	577
Jul	719	882	1065	1193	1171	1039	828	612	439	773	843	912	960	931	851	737	628	547
Aug	925	1062	1155	1201	1095	902	676	474	344	795	881	929	948	881	765	634	516	441
Sep	1258	1283	1222	1147	926	670	448	300	253	806	808	763	712	600	485	396	340	321
Oct	1535	1443	1241	1053	737	447	263	190	184	721	699	626	550	419	297	218	183	179
Nov	1579	1444	1156	892	538	268	153	134	133	583	547	459	373	257	168	129	121	120
Dec	1540	1413	1104	816	456	204	119	112	112	575	522	414	315	204	132	107	103	103
Year	1224	1236	1166	1082	868	640	455	330	260	687	699	679	650	568	477	398	340	307

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

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

PORTLAND, MAINE
WBAN 14764
TABLE A:

TRY Data (1965)

Latitude 43.70 N
Longitude 70.30 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															
45 to 49	0	0	0	2	5	0	0	0	7	41.7	743	20317	1	2	
40 to 44	0	0	3	1	7	5	0	2	18	36.8	734	16622	10	27	
35 to 39	3	2	0	10	13	12	9	1	50	33.3	702	13013	42	138	
30 to 34	6	3	4	11	8	14	11	10	67	29.0	645	9645	99	490	
25 to 29	9	13	16	15	30	16	17	16	132	23.8	568	6598	176	1163	
20 to 24	26	13	11	21	9	16	12	17	125	20.2	406	4150	338	2435	
15 to 19	27	27	20	9	9	14	21	25	152	15.4	287	2397	457	4402	
10 to 14	4	11	16	16	6	9	8	4	74	11.2	154	1355	590	7080	
5 to 9	3	7	8	2	2	1	6	10	39	5.1	110	723	634	10168	
0 to 4	5	6	7	1	3	6	8	4	40	1.1	64	289	680	13454	
-5 to -1	7	6	5	5	1	0	1	4	29	-3.6	17	77	727	16962	
-10 to -6	3	5	2	0	0	0	0	0	10	-9.3	8	14	736	20619	
-15 to -11	0	0	1	0	0	0	0	0	1	-12.0	0	0	744	24325	
Feb															
45 to 49	0	0	0	0	2	1	3	0	6	41.3	672	16713	0	0	
40 to 44	2	0	3	5	7	7	2	6	32	38.3	658	13378	14	25	
35 to 39	7	6	5	7	14	14	9	5	67	33.5	619	10181	53	188	
30 to 34	3	7	8	19	18	12	7	5	79	27.7	530	7295	142	662	
25 to 29	13	13	12	10	6	12	19	16	101	23.6	462	4811	210	1538	
20 to 24	18	12	9	17	24	18	12	16	126	19.1	346	2792	326	2879	
15 to 19	14	15	21	18	10	17	13	14	122	14.6	207	1423	465	4870	
10 to 14	5	10	7	7	3	3	16	9	60	9.7	109	658	563	7465	
5 to 9	17	8	9	1	0	0	3	11	49	5.3	56	246	616	10413	
0 to 4	5	9	4	0	0	0	0	2	20	1.5	19	73	653	13600	
-5 to -1	0	4	6	0	0	0	0	0	10	-3.2	5	9	667	16896	
Mar															
60 to 64	0	0	0	0	1	1	0	0	2	47.0	744	21481	0	0	
55 to 59	0	0	0	1	2	1	0	0	4	46.3	741	17768	3	7	
50 to 54	0	0	0	3	5	2	0	0	10	42.5	736	14075	8	34	
45 to 49	0	0	2	9	13	10	4	1	39	39.1	721	10427	23	106	
40 to 44	3	2	12	23	30	23	7	8	108	35.1	657	6967	87	366	
35 to 39	24	23	28	35	25	32	25	20	212	32.2	520	3992	224	1111	
30 to 34	11	19	18	14	8	15	27	18	130	27.7	301	1986	443	2825	
25 to 29	31	14	22	6	8	9	27	37	154	22.9	183	741	561	5300	
20 to 24	19	22	8	2	1	0	3	6	61	19.1	50	202	694	8481	
15 to 19	3	10	3	0	0	0	0	3	19	15.1	19	50	725	12049	
10 to 14	2	2	0	0	0	0	0	0	4	11.3	3	9	741	15728	
5 to 9	0	1	0	0	0	0	0	0	1	8.0	0	0	744	19439	

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

PORTLAND, MAINE
WBAN 14764
TABLE A:

TRY Data (1965)

Latitude 43.70 N
Longitude 70.30 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															
65 to 69	0	0	1	1	3	1	0	0	6	50.0	719	18634	1	1	
60 to 64	0	0	1	5	5	2	1	1	15	46.4	712	15053	8	20	
55 to 59	0	0	2	8	16	11	2	1	40	44.6	684	11549	36	116	
50 to 54	0	0	5	24	19	15	3	0	66	41.7	639	8231	81	398	
45 to 49	0	0	19	23	27	21	21	0	111	39.2	565	5218	155	985	
40 to 44	17	18	26	18	17	32	26	31	185	37.5	425	2738	295	2105	
35 to 39	29	25	28	11	3	8	32	34	170	34.2	218	1141	502	4108	
30 to 34	23	24	6	0	0	0	4	19	76	29.0	92	418	628	6985	
25 to 29	17	15	1	0	0	0	1	3	37	25.6	28	118	692	10285	
20 to 24	3	5	1	0	0	0	0	1	10	19.3	9	36	711	13803	
15 to 19	1	2	0	0	0	0	0	0	3	14.7	3	8	717	17375	
10 to 14	0	1	0	0	0	0	0	0	1	11.0	1	1	719	20968	
May															
85 to 89	0	0	0	0	3	1	0	0	4	68.3	744	24062	0	0	
80 to 84	0	0	0	4	5	5	0	0	14	64.9	734	20359	10	17	
75 to 79	0	0	3	0	6	6	0	0	15	59.8	721	16725	23	101	
70 to 74	0	0	1	7	8	5	3	0	24	57.4	700	13161	44	259	
65 to 69	0	3	3	14	15	15	7	2	59	52.9	673	9723	71	541	
60 to 64	6	3	12	29	20	10	6	6	92	52.2	595	6540	149	1078	
55 to 59	4	1	42	26	24	23	22	8	150	49.2	488	3822	256	2080	
50 to 54	26	34	24	13	12	21	33	35	198	47.5	320	1776	424	3754	
45 to 49	31	20	8	0	0	7	17	30	113	43.6	150	657	594	6355	
40 to 44	16	21	0	0	0	0	5	8	50	39.4	42	203	702	9621	
35 to 39	7	7	0	0	0	0	0	4	18	34.8	19	59	725	13197	
30 to 34	3	4	0	0	0	0	0	0	7	31.0	4	7	740	16865	
Jun															
85 to 89	0	0	0	5	12	3	0	0	20	70.1	717	17079	3	2	
80 to 84	0	0	2	23	20	11	1	0	57	65.9	682	13565	38	88	
75 to 79	0	0	12	10	12	19	4	0	57	64.8	616	10307	104	430	
70 to 74	4	3	20	21	21	19	10	8	106	61.4	559	7355	161	1078	
65 to 69	11	14	23	14	9	14	22	9	116	60.0	429	4876	291	2199	
60 to 64	11	12	11	3	4	12	23	20	96	56.4	333	2998	387	3921	
55 to 59	15	18	7	2	0	0	13	19	74	53.1	242	1568	478	6091	
50 to 54	14	17	15	10	11	11	12	21	111	49.7	155	574	565	8697	
45 to 49	28	21	0	2	1	1	5	12	70	46.1	35	97	685	11820	
40 to 44	7	5	0	0	0	0	0	1	13	42.0	7	6	713	15329	

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

PORTLAND, MAINE
WBAN 14764
TABLE A:

TRY Data (1965)

Latitude 43.70 N
Longitude 70.30 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	2	0	0	0	3	73.0	743	18899	1	1	
85 to 89	0	0	0	2	4	1	0	0	7	69.1	740	15192	4	14	
80 to 84	0	0	3	10	13	15	0	0	41	67.3	719	11522	25	64	
75 to 79	0	0	13	38	44	28	8	0	131	63.1	662	8045	82	307	
70 to 74	4	3	29	36	23	30	15	9	149	62.0	511	5135	233	1117	
65 to 69	11	8	33	3	4	15	41	21	136	60.9	366	2952	378	2654	
60 to 64	19	24	11	3	3	4	23	21	108	58.6	231	1470	513	4892	
55 to 59	34	30	4	0	0	0	6	31	105	54.8	128	565	616	7707	
50 to 54	15	16	0	0	0	0	0	9	40	50.5	44	177	700	11039	
45 to 49	6	10	0	0	0	0	0	2	18	45.9	14	37	730	14619	
40 to 44	4	2	0	0	0	0	0	0	6	41.2	2	3	742	18305	
Aug															
90 to 94	0	0	0	0	1	0	0	0	1	72.0	744	19580	0	0	
85 to 89	0	0	2	6	6	1	0	0	15	69.5	738	15866	6	6	
80 to 84	0	0	6	14	17	10	0	0	47	69.8	719	12223	25	83	
75 to 79	0	0	5	30	34	24	1	0	94	65.6	650	8781	94	361	
70 to 74	0	2	21	14	14	25	20	5	101	65.2	560	5776	184	1076	
65 to 69	25	26	24	16	12	17	35	29	184	63.4	413	3289	331	2309	
60 to 64	26	20	21	9	4	9	25	27	141	58.7	239	1677	505	4417	
55 to 59	16	16	9	4	5	4	3	20	77	53.3	127	780	617	7240	
50 to 54	18	18	3	0	0	3	6	6	54	49.4	59	323	685	10503	
45 to 49	2	5	2	0	0	0	1	0	10	44.8	26	145	718	14045	
40 to 44	4	3	0	0	0	0	2	6	15	38.7	14	45	730	17665	
35 to 39	2	2	0	0	0	0	0	0	4	34.3	5	11	739	21351	
30 to 34	0	1	0	0	0	0	0	0	1	33.0	0	0	744	25060	
Sep															
85 to 89	0	0	0	3	6	2	0	0	11	75.4	718	20851	2	1	
80 to 84	0	0	1	4	3	4	0	0	12	73.6	704	17300	16	50	
75 to 79	2	0	3	4	8	4	0	2	23	70.0	693	13810	27	160	
70 to 74	4	4	5	19	18	10	8	4	72	64.2	654	10423	66	373	
65 to 69	3	7	16	20	15	20	7	7	95	60.9	569	7349	151	899	
60 to 64	15	13	20	13	15	18	17	7	118	57.8	466	4748	254	1898	
55 to 59	15	15	18	18	16	20	27	23	152	53.9	336	2726	384	3476	
50 to 54	13	13	11	5	9	7	18	16	92	48.3	201	1408	519	5758	
45 to 49	17	9	10	4	0	4	7	21	72	44.4	112	627	608	8577	
40 to 44	15	19	5	0	0	1	4	6	50	39.5	55	225	665	11775	
35 to 39	3	7	0	0	0	0	2	2	14	35.9	13	63	707	15213	
30 to 34	2	0	1	0	0	0	0	2	5	31.8	5	20	715	18770	
25 to 29	1	3	0	0	0	0	0	0	4	26.8	1	2	719	22352	

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

PORTLAND, MAINE
WBAN 14764
TABLE A:

TRY Data (1965)

Latitude 43.70 N
Longitude 70.30 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														
75 to 79	0	0	0	1	3	0	0	0	4	65.8	743	22232	1	1
70 to 74	0	0	0	2	1	1	0	0	4	62.3	738	18530	6	19
65 to 69	0	0	0	5	4	1	0	1	11	60.0	730	14854	14	63
60 to 64	1	0	3	9	19	7	7	6	52	54.8	710	11236	34	165
55 to 59	7	3	9	27	24	18	10	6	104	51.4	644	7835	100	484
50 to 54	14	10	21	18	22	34	21	13	153	48.2	512	4935	232	1304
45 to 49	18	25	23	25	14	11	18	22	156	43.0	359	2777	385	2866
40 to 44	20	16	16	5	6	14	17	13	107	38.4	211	1374	533	5183
35 to 39	10	18	14	1	0	6	11	18	78	33.2	122	554	622	8083
30 to 34	16	13	7	0	0	1	8	11	56	29.9	44	138	700	11387
25 to 29	6	7	0	0	0	0	1	3	17	25.7	11	18	733	14987
20 to 24	1	1	0	0	0	0	0	0	2	22.5	0	0	744	18689
Nov														
65 to 69	0	0	0	2	0	0	0	0	2	50.0	720	21934	0	0
60 to 64	0	0	0	1	0	0	0	0	1	51.0	718	18342	2	8
55 to 59	0	0	1	0	3	1	0	0	5	47.6	715	14758	5	24
50 to 54	2	0	1	2	3	4	0	1	13	44.5	708	11200	12	66
45 to 49	7	4	10	21	24	12	11	7	96	43.2	679	7706	41	172
40 to 44	14	20	17	29	34	20	18	15	167	38.9	525	4640	195	706
35 to 39	13	11	19	25	23	32	16	19	158	33.4	377	2394	343	2060
30 to 34	28	22	23	9	3	19	29	26	159	29.3	187	949	533	4215
25 to 29	15	18	12	1	0	2	13	16	77	24.8	76	295	644	7161
20 to 24	9	11	5	0	0	0	3	6	34	21.1	24	62	696	10528
15 to 19	2	4	2	0	0	0	0	0	8	17.5	2	2	718	14068
Dec														
45 to 49	0	0	0	6	8	0	0	0	14	42.1	741	14565	3	3
40 to 44	4	3	3	12	15	13	6	7	63	39.0	710	10915	34	73
35 to 39	4	0	7	13	17	16	8	8	73	34.5	638	7556	106	434
30 to 34	18	23	17	23	29	26	28	20	184	29.9	520	4580	224	1178
25 to 29	28	22	26	22	15	26	19	24	182	25.3	323	2431	421	2749
20 to 24	10	16	19	13	8	7	20	9	102	20.8	176	1224	568	5262
15 to 19	13	16	12	3	1	3	6	13	67	15.5	98	558	646	8316
10 to 14	10	7	4	0	0	2	3	8	34	12.0	31	230	713	11708
5 to 9	2	1	1	1	0	0	3	1	9	5.7	21	104	723	15302
0 to 4	4	4	2	0	0	0	0	3	13	1.4	10	20	734	18938
-5 to -1	0	1	2	0	0	0	0	0	3	-1.3	0	0	744	22638

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

PORTLAND, MAINE
WBAN 14764
TABLE B:

TRY Date (1965)

Latitude 43.70 N
Longitude 70.30 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	1	3	0	0	0	4	0.0	0.0	0.0	73.0	72.7	0.0	0.0	0.0	72.8
85 to 89	0	0	2	16	31	8	0	0	57	0.0	0.0	71.5	71.3	70.7	69.6	0.0	0.0	70.7
80 to 84	0	0	12	55	58	45	1	0	171	0.0	0.0	70.1	68.4	67.5	66.8	68.0	0.0	67.8
75 to 79	2	0	36	83	107	81	13	2	324	70.0	0.0	66.8	64.0	63.6	64.7	66.2	71.0	64.5
70 to 74	12	12	76	99	85	90	56	26	456	67.4	67.3	63.5	61.8	60.4	61.5	64.6	66.4	62.7
65 to 69	50	58	100	75	62	83	112	69	609	64.1	64.7	61.0	58.1	56.4	57.5	60.8	63.6	60.5
60 to 64	78	72	79	72	71	63	102	88	625	59.8	59.8	57.1	52.3	52.5	55.0	56.6	58.3	56.5
55 to 59	91	83	92	86	90	78	83	108	711	54.6	54.9	50.3	49.8	49.4	50.5	51.9	53.6	51.9
50 to 54	102	108	80	75	81	97	93	101	737	49.4	49.5	48.5	45.7	45.1	46.2	47.8	48.7	47.7
45 to 49	109	94	74	92	94	67	87	95	712	44.6	44.9	42.9	40.8	39.8	41.6	42.9	44.5	42.8
40 to 44	106	109	85	93	116	115	87	103	814	39.8	39.9	38.2	36.3	36.2	36.8	38.3	39.2	38.1
35 to 39	102	101	101	102	95	120	112	111	844	34.7	34.5	33.6	32.2	32.2	32.4	34.0	33.9	33.4
30 to 34	110	116	84	76	66	87	114	111	764	30.3	30.1	28.7	28.2	28.6	28.1	28.4	29.3	29.0
25 to 29	120	105	89	54	59	65	97	115	704	24.7	25.1	24.6	23.7	22.9	23.8	23.9	24.1	24.2
20 to 24	86	80	53	53	42	41	50	55	460	20.0	20.2	20.6	19.2	18.6	19.5	20.6	20.2	19.9
15 to 19	60	74	58	30	20	34	40	55	371	15.6	15.2	15.1	13.9	14.5	14.2	15.5	16.0	15.2
10 to 14	21	31	27	23	9	14	27	21	173	11.7	11.1	10.7	10.2	11.4	10.9	10.5	10.7	10.8
5 to 9	22	17	18	4	2	1	12	22	98	5.5	5.2	5.1	6.5	2.5	7.0	5.9	5.1	5.3
0 to 4	14	19	13	1	3	6	8	9	73	1.1	1.5	1.6	-2.0	0.3	1.5	1.2	0.9	1.2
-5 to -1	7	11	13	5	1	0	1	4	42	-2.9	-3.1	-3.5	-3.6	-2.0	0.0	-2.0	-4.8	-3.3
-10 to -6	3	5	2	0	0	0	0	0	10	-9.0	-9.2	-10.0	0.0	0.0	0.0	0.0	0.0	-9.3
-15 to -11	0	0	1	0	0	0	0	0	1	0.0	0.0	-12.0	0.0	0.0	0.0	0.0	0.0	-12.0

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

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	Max		4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	20.2	49	-11	29	11	18.1	77	68	64	74	72	0.0014	0.0015	0.0017	0.0016	0.0015	9.0
Feb	22.6	46	-5	31	13	19.8	75	60	55	65	65	0.0015	0.0016	0.0018	0.0017	0.0016	8.6
Mar	33.6	60	9	41	26	28.8	70	50	48	58	58	0.0022	0.0023	0.0023	0.0022	0.0023	8.3
Apr	41.6	68	12	51	32	36.2	77	52	50	64	63	0.0030	0.0033	0.0034	0.0034	0.0033	8.3
May	55.2	85	30	66	43	48.3	79	55	52	68	64	0.0053	0.0060	0.0060	0.0057	0.0058	8.0
Jun	63.8	88	41	75	51	56.9	88	57	53	74	70	0.0078	0.0090	0.0087	0.0087	0.0086	7.6
Jul	67.1	93	40	78	54	59.7	91	53	51	69	69	0.0089	0.0094	0.0094	0.0095	0.0095	7.6
Aug	66.2	90	34	77	56	60.5	90	65	61	76	75	0.0097	0.0110	0.0105	0.0102	0.0104	7.7
Sep	58.5	88	26	68	48	54.3	91	69	63	83	78	0.0079	0.0090	0.0088	0.0085	0.0085	7.6
Oct	47.6	78	24	58	37	43.4	81	66	61	76	73	0.0046	0.0056	0.0056	0.0054	0.0053	8.6
Nov	37.0	67	16	45	29	33.8	81	67	65	76	73	0.0033	0.0035	0.0035	0.0034	0.0034	8.9
Dec	27.9	49	-2	36	20	25.9	84	75	72	81	79	0.0022	0.0026	0.0027	0.0025	0.0025	6.7
Year	45.2	93	-11	55	35	40.6	82	61	58	72	70	0.0048	0.0054	0.0054	0.0053	0.0052	8.1

PORTLAND, MAINE

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TABLE D:

TRY Data (1965)

Latitude 43.70 N

Longitude 70.30 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																24 HOUR SUMMARY			
	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**		HEATING		COOLING					
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg
	Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Below		Above		Base 100s*		Base 100s*	
	Base	Heat Cool	Base	Heat Cool	Base	Heat Cool	Base	Heat Cool	Base	Heat Cool	Base	Heat Cool	Base	100s*	Base	100s*	Base	100s*	Base	100s*
94	0	542	0	0	474	0	0	452	0	0	484	0	0	542	0	0	1778	0	8760	4271
93	0	531	0	0	463	0	0	441	0	0	473	0	0	531	0	0	1745	0	8759	4183
92	0	520	0	0	452	0	1	430	0	0	462	0	0	520	0	0	1712	0	8759	4096
91	0	509	0	0	441	0	1	419	0	0	451	0	0	509	0	0	1679	0	8758	4008
90	0	498	0	1	430	0	2	408	0	0	440	0	0	498	0	0	1647	0	8756	3920
89	0	487	0	1	419	0	3	397	0	0	429	0	0	487	0	0	1614	0	8755	3833
88	0	476	0	4	408	0	6	386	0	0	418	0	0	476	0	0	1581	0	8749	3745
87	0	465	0	8	397	0	11	375	0	1	407	0	0	465	0	0	1548	0	8739	3658
86	0	454	0	12	386	0	17	364	0	3	396	0	0	454	0	0	1515	0	8727	3571
85	1	443	0	15	375	0	27	354	1	6	385	0	0	443	0	0	1482	0	8710	3483
84	2	432	0	20	365	1	41	343	1	10	374	0	0	432	0	0	1449	0	8685	3396
83	2	422	0	28	354	1	54	333	1	16	364	0	0	421	0	0	1417	0	8659	3310
82	3	411	0	38	343	1	62	322	2	23	353	0	0	411	0	0	1384	0	8633	3223
81	6	400	0	50	333	2	73	312	3	31	342	1	0	400	0	0	1351	0	8599	3137
80	11	389	0	64	322	2	86	302	3	44	331	1	0	389	0	0	1318	0	8553	3051
79	16	378	0	79	312	3	101	292	4	59	321	2	1	378	0	0	1285	0	8503	2966
78	21	367	1	95	302	4	115	282	5	72	311	2	2	367	0	0	1252	0	8453	2881
77	29	357	1	113	292	5	131	272	7	86	301	3	5	356	0	0	1220	0	8394	2797
76	39	346	1	130	282	6	156	263	8	102	291	4	9	345	0	0	1187	0	8322	2713
75	47	335	2	146	273	7	185	253	10	122	281	5	12	334	0	2	1154	0	8244	2630
74	57	325	2	163	263	9	204	244	12	140	271	6	15	323	0	6	1121	0	8172	2548
73	71	315	3	181	254	11	215	236	14	154	262	8	23	313	1	11	1088	0	8103	2467
72	83	305	3	201	245	12	230	227	16	170	252	10	33	302	1	17	1056	0	8024	2386
71	96	294	4	217	236	15	250	218	18	186	243	11	46	291	1	25	1023	0	7939	2306
70	114	285	5	239	228	17	272	210	21	209	234	13	62	281	2	41	990	1	7822	2227
69	133	275	7	264	219	19	291	202	24	234	225	16	78	271	2	66	958	1	7692	2150
68	152	265	8	282	211	22	304	194	27	250	217	18	97	261	3	94	926	2	7579	2074
67	173	256	10	299	203	25	317	186	30	263	209	21	120	251	4	124	894	3	7462	1998
66	196	247	12	312	195	28	327	178	33	279	200	23	143	241	6	157	863	5	7344	1924
65	217	238	14	323	187	31	338	171	37	297	192	26	167	232	7	204	832	6	7213	1851
64	234	229	16	337	180	35	351	163	40	313	184	29	189	223	9	253	801	9	7081	1780
63	250	221	18	348	172	38	364	156	44	327	177	32	204	214	11	300	771	11	6965	1710
62	262	212	21	360	165	42	377	148	47	339	169	36	221	205	13	346	741	15	6853	1641
61	276	204	24	376	157	45	393	141	51	347	162	39	240	196	15	392	712	18	6733	1573
60	295	196	26	393	150	49	410	134	55	361	154	43	266	188	18	443	684	23	6591	1506
59	311	188	29	407	143	53	425	128	59	376	147	46	291	179	21	489	655	27	6460	1441
58	324	180	33	423	137	57	440	121	64	390	140	50	305	172	24	542	628	32	6335	1377
57	339	173	36	444	130	62	457	115	68	406	133	54	318	164	27	603	601	38	6191	1314
56	355	165	39	462	124	66	478	108	73	424	126	58	330	156	30	666	574	44	6043	1253
55	379	158	43	478	117	71	499	102	78	441	119	63	351	148	34	725	548	51	5885	1193
54	403	151	47	491	111	76	515	96	83	456	113	67	375	141	37	776	523	59	5743	1135
53	417	144	51	502	105	81	532	91	88	474	107	72	390	134	41	834	498	67	5609	1079
52	436	137	55	519	99	86	548	85	93	493	100	77	405	127	45	901	474	76	5455	1023
51	456	131	60	537	94	91	564	80	99	512	95	82	423	120	49	960	450	85	5306	969
50	472	125	64	553	88	96	580	75	105	533	89	87	447	114	53	1023	427	95	5150	917
49	482	118	69	571	83	102	595	69	111	549	83	92	463	107	58	1091	405	105	5008	866

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

PORTLAND, MAINE
WBAN 14764
TABLE D:

TRY Data (1965)

Latitude 43.70 N
Longitude 70.30 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)*		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	Heat	Cool	Base	100s*	Base	100s*	Base	100s*	Base	100s*
48	493	112	74	585	78	108	607	65	117	559	78	98	477	101	63	1154	383	117	4884	817	3876	576							
47	509	106	79	600	73	114	622	60	123	575	73	104	497	95	68	1216	362	128	4740	769	4020	615							
46	526	101	84	618	68	120	644	55	129	591	67	109	515	89	73	1274	342	141	4590	722	4170	656							
45	542	95	90	639	63	126	669	51	136	605	62	115	535	83	78	1332	322	154	4436	677	4324	699							
44	560	90	95	661	59	133	696	47	142	623	58	121	554	78	83	1385	303	168	4280	633	4480	743							
43	577	84	101	676	55	139	719	43	150	646	53	128	573	73	89	1445	284	182	4123	591	4637	788							
42	589	79	107	698	50	146	740	39	157	664	49	134	592	67	95	1517	266	196	3957	551	4803	835							
41	605	74	113	719	47	153	764	36	164	685	44	141	609	62	101	1585	249	212	3791	512	4969	884							
40	626	69	119	736	43	161	786	32	172	713	40	148	626	58	107	1647	232	228	3624	475	5136	935							
39	647	65	125	756	39	168	806	29	180	737	37	155	643	53	113	1703	216	245	3466	440	5294	987							
38	665	60	132	776	36	176	825	27	188	758	33	163	666	49	120	1757	201	262	3312	406	5448	1041							
37	681	56	138	795	33	184	851	24	197	784	30	171	686	44	127	1815	186	280	3145	373	5615	1096							
36	702	52	145	817	30	192	872	22	205	810	27	179	707	40	134	1881	171	299	2969	343	5791	1153							
35	724	48	152	839	27	200	885	20	214	834	24	187	733	37	141	1955	158	318	2788	314	5972	1212							
34	747	45	160	856	25	208	902	18	223	857	22	195	756	33	148	2037	145	338	2603	287	6157	1272							
33	767	41	167	871	23	217	920	16	232	879	20	204	779	30	156	2124	133	358	2419	262	6341	1335							
32	780	38	175	885	21	226	934	14	241	895	18	213	803	27	164	2185	121	380	2276	239	6484	1399							
31	792	35	183	900	19	235	944	12	251	910	16	222	825	24	172	2236	111	402	2152	216	6608	1465							
30	810	32	191	916	17	244	954	11	260	926	14	231	848	22	180	2298	100	425	2006	196	6754	1531							
29	830	29	199	930	15	253	963	10	270	938	12	240	871	19	189	2361	91	448	1864	176	6896	1600							
28	850	27	208	940	13	262	973	8	279	949	11	250	893	17	198	2430	82	472	1724	158	7036	1669							
27	869	25	216	949	12	272	984	7	289	964	9	259	910	15	207	2501	74	497	1581	142	7179	1740							
26	886	22	225	962	10	281	998	6	299	980	8	269	928	13	216	2567	66	522	1437	127	7323	1813							
25	902	20	234	974	9	291	1011	5	309	993	7	279	949	12	225	2633	59	548	1296	113	7464	1887							
24	919	19	243	982	8	301	1022	5	319	1005	6	289	964	10	235	2696	53	575	1170	101	7590	1962							
23	933	17	252	992	7	311	1029	4	330	1013	5	299	978	9	245	2751	48	602	1062	90	7698	2039							
22	941	15	262	1007	6	321	1039	3	340	1021	4	309	988	8	255	2799	43	630	963	80	7797	2116							
21	950	14	271	1020	5	331	1049	3	350	1031	4	319	994	7	265	2838	38	658	877	70	7883	2194							
20	959	12	281	1028	4	341	1056	2	361	1037	3	330	1001	6	274	2873	34	687	804	62	7956	2274							
19	967	11	290	1035	4	351	1062	2	372	1042	3	340	1013	5	285	2909	30	715	730	54	8030	2354							
18	978	10	300	1041	3	362	1066	2	382	1047	2	351	1023	4	295	2950	26	745	654	47	8106	2434							
17	991	9	310	1047	3	372	1070	1	393	1057	2	361	1034	4	305	2991	23	774	570	41	8190	2516							
16	1004	8	320	1051	2	383	1074	1	404	1067	1	372	1041	3	315	3028	20	805	493	36	8267	2598							
15	1016	7	330	1057	2	393	1078	1	414	1071	1	382	1044	3	326	3063	18	835	430	31	8330	2681							
14	1023	6	340	1066	2	404	1082	1	425	1076	1	393	1051	2	336	3090	16	866	370	27	8390	2765							
13	1029	5	351	1071	1	415	1085	1	436	1080	1	404	1059	2	347	3113	14	897	321	24	8439	2849							
12	1036	5	361	1075	1	425	1087	1	447	1084	1	415	1066	2	357	3128	12	928	282	21	8478	2933							
11	1042	4	371	1080	1	436	1089	1	458	1086	1	426	1071	1	368	3137	11	959	254	18	8506	3018							
10	1046	4	382	1083	1	447	1089	0	469	1087	0	437	1073	1	379	3147	9	991	233	16	8527	3104							
9	1049	3	392	1086	1	458	1089	0	480	1088	0	447	1074	1	390	3159	8	1022	213	14	8547	3189							
8	1052	3	403	1088	1	469	1089	0	490	1089	0	458	1077	1	400	3169	7	1054	195	12	8565	3275							
7	1054	2	413	1089	1	480	1089	0	501	1089	0	469	1081	0	411	3177	6	1086	180	10	8580	3360							
6	1059	2	424	1089	0	490	1089	0	512	1089	0	480	1083	0	422	3190	5	1118	159	8	8601	3446							
5	1064	2	434	1089	0	501	1090	0	523	1089	0	491	1085	0	433	3206	4	1150	135	7	8625	3532							
4	1068	1	445	1089	0	512	1091	0	534	1089	0	502	1087	0	444	3219	3	1182	116	5	8644	3619							
3	1071	1	456	1089	0	523	1091	0	545	1091	0	513	1090	0	455	3228	3	1214	99	4	8661	3705							

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 are calculated by subtracting the Hrs Above from X times 365

PORTLAND, MAINE
WBAN 14764
TABLE D:

TRY Data (1965)

Latitude 43.70 N
Longitude 70.30 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			
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg	Hrs	Deg	Deg
(F)	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Below	Hrs	Above	Hrs	Deg
	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	100s*	Base	100s*	
2 1073	1	466	1089	0	534	1091	0	556	1093	0	524	1091	0	466	3235	2	1246
1 1077	1	477	1089	0	545	1092	0	567	1095	0	535	1093	0	476	3242	2	1279
0 1079	1	488	1089	0	556	1093	0	578	1095	0	546	1094	0	487	3250	1	1311
-1 1080	0	499	1090	0	567	1094	0	589	1095	0	557	1094	0	498	3258	1	1344
-2 1084	0	510	1092	0	578	1094	0	600	1095	0	568	1095	0	509	3266	1	1376
-3 1088	0	520	1094	0	589	1095	0	611	1095	0	578	1095	0	520	3272	0	1409
-4 1089	0	531	1094	0	600	1095	0	622	1095	0	589	1095	0	531	3274	0	1442
-5 1091	0	542	1094	0	610	1095	0	632	1095	0	600	1095	0	542	3276	0	1474
-6 1092	0	553	1095	0	621	1095	0	643	1095	0	611	1095	0	553	3278	0	1507
-7 1092	0	564	1095	0	632	1095	0	654	1095	0	622	1095	0	564	3279	0	1540
-8 1092	0	575	1095	0	643	1095	0	665	1095	0	633	1095	0	575	3281	0	1573
-9 1093	0	586	1095	0	654	1095	0	676	1095	0	644	1095	0	586	3282	0	1606
-10 1093	0	597	1095	0	665	1095	0	687	1095	0	655	1095	0	597	3284	0	1638
-11 1094	0	608	1095	0	676	1095	0	698	1095	0	666	1095	0	608	3285	0	1671
-12 1095	0	619	1095	0	687	1095	0	709	1095	0	677	1095	0	619	3285	0	1704

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

PORTLAND, MAINE
WBAN 14764
TABLE E:

TRY Data (1965)

Latitude 43.70 N
Longitude 70.30 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:	2979	2501	2042	1567	1078	658	354	133	28	1	0
Annual Wet Bulb Cooling deg-hrs:	30946.	22526.	15480.	9818.	5576.	2793.	1131.	333.	51.	1.	0.

TABLE F:

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

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **												COOLING HUMIDITY RATIO HOURS **												Maintained Indoor Humidity Ratio*
	Heating Degree Base												Cooling Degree Base												
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80			
.001	1	1	1	1	1	1	1	1	1	1	1	33	32	30	28	26	22	18	13	8	5	2	.001		
.002	2	2	3	3	3	3	3	3	3	3	3	27	26	25	24	22	19	16	12	7	4	2	.002		
.003	4	5	5	6	6	6	6	6	6	6	6	21	21	21	20	19	17	14	10	6	4	2	.003		
.004	6	7	9	9	10	10	10	10	10	10	10	17	17	17	16	15	14	12	9	5	3	1	.004		
.005	8	10	12	13	14	15	15	15	15	15	15	13	13	13	13	12	11	10	7	5	3	1	.005		
.006	10	13	16	18	19	20	20	20	20	21	21	9	9	9	9	9	9	8	6	4	2	1	.006		
.007	12	16	19	22	24	25	26	26	26	27	27	7	7	7	7	7	7	6	5	3	2	1	.007		
.008	14	18	23	26	29	31	32	33	33	33	33	5	5	5	5	5	5	5	4	2	1	1	.008		
.009	16	21	26	31	34	37	38	39	40	40	41	3	3	3	3	3	3	3	3	2	1	1	.009		
.010	18	24	30	35	39	42	45	46	47	48	48	2	2	2	2	2	2	2	2	1	1	0	.010		
.011	20	26	33	40	44	48	51	53	54	55	56	1	1	1	1	1	1	1	1	1	1	0	.011		
.012	21	29	37	44	49	54	58	60	62	63	64	1	1	1	1	1	1	1	1	1	0	0	.012		
.013	23	32	40	48	54	60	64	67	70	71	72	0	0	0	0	0	0	0	0	0	0	0	.013		
.014	25	34	44	53	59	66	71	75	77	79	81	0	0	0	0	0	0	0	0	0	0	0	.014		
.015	27	37	48	57	64	71	77	82	85	87	89	0	0	0	0	0	0	0	0	0	0	0	.015		
.016	29	40	51	61	70	77	84	89	93	96	98	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	31	43	55	66	75	83	90	96	101	104	106	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	33	45	58	70	80	89	97	103	108	112	115	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	40	46	51	51	49	59	39	34	43	44	47
VERTICAL													
NORTH	100	100	100	98	95	90	91	98	100	100	100	100	96
WEST	48	45	52	63	69	66	66	72	51	48	52	51	60
SOUTH	28	30	43	58	72	78	75	74	46	31	32	29	51
EAST	46	47	52	56	65	67	62	70	56	45	49	52	59
% Possible Sun	56	59	57	57	56	59	65	65	61	59	47	53	58

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

PORTLAND, MAINE
WBAN 14764
TABLE H:

TRY Data (1965)

Latitude 43.70 N
Longitude 70.30 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	1818	1687	1338	989	570	270	146	130	130	1789	804	811	765	628	491	316	183	126	117	117	786	409	450
Feb	1976	1845	1529	1228	808	450	257	180	177	2137	1161	1020	953	802	656	459	293	206	172	171	1071	646	682
Mar	1876	1801	1617	1435	1085	729	465	304	253	2400	1671	1042	1006	915	823	654	486	366	293	266	1251	957	970
Apr	1536	1592	1572	1533	1317	1029	746	508	364	2462	2165	1131	1177	1156	1118	980	811	653	523	444	1530	1414	1304
May	1235	1374	1482	1551	1456	1252	982	720	522	2406	2496	1043	1101	1130	1140	1065	946	805	675	586	1537	1619	1567
Jun	1106	1268	1425	1542	1505	1344	1088	826	636	2362	2635	1028	1097	1161	1208	1173	1074	932	792	689	1609	1803	1712
Jul	1155	1305	1439	1534	1479	1301	1041	783	593	2360	2556	1046	1139	1205	1248	1199	1079	918	764	653	1629	1784	1659
Aug	1380	1470	1500	1510	1352	1107	839	599	433	2380	2259	1042	1072	1063	1041	947	821	696	593	532	1390	1397	1461
Sep	1705	1674	1554	1426	1131	816	557	376	301	2349	1811	1094	1053	968	885	720	559	435	351	317	1387	1136	1158
Oct	1893	1777	1514	1260	866	535	321	222	210	2164	1307	1045	1002	873	743	533	356	245	195	189	1159	746	822
Nov	1849	1718	1379	1058	630	325	175	147	147	1870	899	795	755	629	506	334	205	143	130	130	788	441	459
Dec	1738	1610	1269	924	507	233	127	119	119	1669	709	726	677	546	412	250	149	109	105	105	690	351	363
Year	1603	1592	1468	1333	1060	784	564	411	325	2195	1709	985	983	923	857	720	582	471	394	351	1236	1060	1051

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, 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	1577	1443	1122	822	449	198	112	106	106	694	647	526	409	253	140	100	95	95
Feb	1690	1560	1283	1028	653	350	189	145	144	864	799	667	546	372	231	160	140	139
Mar	1543	1500	1350	1198	891	584	357	232	206	852	831	757	681	536	392	290	232	217
Apr	1186	1284	1299	1278	1092	840	589	390	287	896	956	952	926	809	662	524	415	358
May	899	1057	1201	1288	1209	1029	789	561	392	810	875	919	938	876	773	650	539	465
Jun	784	947	1138	1274	1248	1107	881	652	475	790	859	936	992	965	881	757	636	543
Jul	830	989	1158	1271	1225	1071	842	617	445	803	897	979	1030	989	885	743	610	514
Aug	1043	1165	1232	1254	1120	906	668	464	336	822	865	870	857	777	668	560	474	428
Sep	1372	1382	1291	1189	936	660	434	288	244	884	863	797	730	592	453	346	278	257
Oct	1600	1494	1266	1050	711	417	240	177	171	878	839	729	617	436	280	190	157	154
Nov	1597	1462	1158	875	507	240	134	120	119	677	636	526	420	269	158	113	106	106
Dec	1513	1384	1066	765	400	167	101	97	97	623	575	455	339	199	114	88	86	86
Year	1301	1304	1213	1108	871	632	446	322	252	799	803	760	708	590	471	378	315	281

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

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

RALEIGH, NORTH CAROLINA
WBAN 13722
TABLE A:

TRY Data (1965)

Latitude 35.80 N
Longitude 78.80 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															
70 to 74	0	0	0	0	5	2	0	0	7	60.4	744	24227	0	0	
65 to 69	0	0	0	4	7	8	3	3	25	58.9	733	20534	11	27	
60 to 64	3	3	3	4	5	10	7	2	37	56.3	697	16962	47	175	
55 to 59	5	1	2	7	15	6	8	10	54	49.8	652	13579	92	512	
50 to 54	5	2	5	9	18	13	6	3	61	42.2	597	10454	147	1107	
45 to 49	8	8	3	19	12	14	8	9	81	39.5	529	7620	215	1993	
40 to 44	15	16	12	20	10	10	15	12	110	36.1	437	5192	307	3285	
35 to 39	10	12	18	7	1	10	11	13	82	32.4	330	3277	414	5090	
30 to 34	8	9	16	4	8	7	13	12	77	28.8	255	1800	489	7333	
25 to 29	27	21	14	14	10	8	11	16	121	24.7	166	732	578	9985	
20 to 24	6	12	15	5	2	5	10	8	63	20.5	64	210	680	13183	
15 to 19	5	9	3	0	0	0	1	4	22	16.7	15	34	729	16727	
10 to 14	1	0	1	0	0	0	0	1	3	12.0	2	4	742	20417	
5 to 9	0	0	1	0	0	0	0	0	1	9.0	0	0	744	24133	
Feb															
75 to 79	0	0	0	0	0	1	0	0	1	64.0	672	23716	0	0	
70 to 74	0	0	0	2	7	3	0	0	12	62.8	665	20366	7	10	
65 to 69	0	0	0	8	13	6	3	0	30	58.2	649	17074	23	78	
60 to 64	6	5	8	7	2	12	8	6	54	58.7	612	13908	60	272	
55 to 59	7	9	4	6	7	9	10	11	63	51.4	545	11014	127	738	
50 to 54	6	7	6	3	7	4	7	8	48	46.3	495	8416	177	1500	
45 to 49	5	3	8	12	8	8	9	6	59	41.2	438	6076	234	2520	
40 to 44	9	4	7	4	15	19	11	16	85	36.2	376	4030	296	3834	
35 to 39	12	9	6	16	14	11	10	4	82	31.6	289	2379	383	5543	
30 to 34	6	14	15	23	11	11	19	12	111	27.9	199	1153	473	7677	
25 to 29	20	10	17	3	0	0	7	15	72	23.9	92	448	580	10332	
20 to 24	8	15	9	0	0	0	0	5	37	19.7	32	142	640	13386	
15 to 19	2	6	4	0	0	0	0	0	12	16.2	11	40	661	16644	
10 to 14	3	2	0	0	0	0	0	1	6	11.0	4	7	668	19971	
Mar															
65 to 69	0	0	0	2	8	7	0	0	17	56.6	738	17416	6	3	
60 to 64	0	0	0	5	15	13	1	0	34	52.8	717	13769	27	76	
55 to 59	8	3	5	7	12	17	16	9	77	51.6	663	10286	81	313	
50 to 54	5	7	4	17	19	21	14	10	97	45.4	574	7174	170	921	
45 to 49	13	7	11	25	17	14	15	22	124	42.3	483	4535	261	2002	
40 to 44	21	20	24	20	13	8	18	11	135	38.0	337	2498	407	3685	
35 to 39	16	20	20	14	6	10	18	21	125	34.7	194	1160	550	6067	
30 to 34	13	13	14	3	3	3	11	11	71	29.6	101	448	643	9075	
25 to 29	14	18	12	0	0	0	0	9	53	25.4	40	97	704	12444	
20 to 24	3	4	2	0	0	0	0	0	9	21.3	4	12	740	16079	
15 to 19	0	1	1	0	0	0	0	0	2	17.5	0	0	744	19787	

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

RALEIGH, NORTH CAROLINA

TRY Data (1965)

Latitude 35.80 N

WBAN 13722

Longitude 78.80 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*	
	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	2	1	0	0	3	66.7	719	21369	1	1
80 to 84	0	0	0	1	12	6	0	0	19	62.7	709	17788	11	20
75 to 79	0	0	0	11	12	16	2	0	41	62.4	684	14299	36	131
70 to 74	0	0	2	11	11	13	10	1	48	59.2	642	10976	78	408
65 to 69	9	6	11	15	16	15	11	15	98	57.9	575	7897	145	929
60 to 64	12	4	12	14	18	15	20	11	106	54.1	464	5288	256	1920
55 to 59	12	18	15	16	6	6	16	18	107	51.7	359	3214	361	3446
50 to 54	14	18	19	11	10	15	19	12	118	47.7	246	1678	474	5510
45 to 49	22	15	16	8	3	0	7	21	92	43.4	127	712	593	8144
40 to 44	14	19	9	3	0	3	5	9	62	38.8	60	255	660	11287
35 to 39	2	2	4	0	0	0	0	2	10	34.6	22	91	698	14723
30 to 34	5	6	2	0	0	0	0	1	14	31.3	8	11	712	18243
25 to 29	0	2	0	0	0	0	0	0	2	27.5	0	0	720	21832
May														
85 to 89	0	0	0	5	30	17	0	0	52	68.2	736	12333	8	5
80 to 84	0	0	0	31	24	36	0	0	91	68.0	650	8852	94	244
75 to 79	0	0	9	26	31	28	19	0	113	66.3	567	5814	177	926
70 to 74	7	3	25	19	5	9	35	15	118	64.5	449	3290	295	2122
65 to 69	43	23	37	10	3	3	31	56	206	63.0	289	1395	455	3947
60 to 64	29	40	15	2	0	0	4	13	103	59.1	107	446	637	6718
55 to 59	10	17	7	0	0	0	4	8	46	54.2	37	105	707	10097
50 to 54	4	10	0	0	0	0	0	1	15	48.9	7	8	737	13720
Jun														
90 to 94	0	0	0	0	2	2	0	0	4	75.3	720	15452	0	0
85 to 89	0	0	0	10	27	18	0	0	55	71.7	704	11871	16	19
80 to 84	0	0	3	26	16	19	7	0	71	70.2	632	8528	88	276
75 to 79	0	0	18	21	21	23	22	6	111	68.5	561	5550	159	898
70 to 74	27	19	31	15	11	15	32	33	183	67.5	440	3058	280	2006
65 to 69	27	32	17	6	6	6	15	25	134	63.7	233	1434	487	3982
60 to 64	15	14	12	8	6	6	10	10	81	59.4	123	556	597	6704
55 to 59	16	18	9	4	1	1	4	14	67	55.3	50	118	670	9866
50 to 54	5	7	0	0	0	0	0	2	14	50.3	5	11	715	13359

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

RALEIGH, NORTH CAROLINA
WBAN 13722
TABLE A:

TRY Data (1965)

Latitude 35.80 N
Longitude 78.80 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														
90 to 94	0	0	0	0	2	0	0	0	2	79.0	744	13442	0	0
85 to 89	0	0	0	10	33	16	0	0	59	76.1	727	9740	17	18
80 to 84	0	0	2	36	33	31	11	0	113	72.9	642	6300	102	298
75 to 79	3	0	25	32	18	35	25	12	150	71.0	521	3397	223	1115
70 to 74	45	45	49	12	7	10	43	42	253	69.7	336	1225	408	2663
65 to 69	36	41	16	3	0	1	14	37	148	65.6	89	211	655	5369
60 to 64	8	3	1	0	0	0	0	2	14	59.4	11	33	733	8911
55 to 59	1	4	0	0	0	0	0	0	5	56.2	2	2	742	12600
Aug														
90 to 94	0	0	0	1	12	6	0	0	19	76.8	742	12442	2	1
85 to 89	0	0	0	27	40	37	0	0	104	74.9	689	8818	55	97
80 to 84	0	0	8	38	28	28	12	0	114	72.7	569	5655	175	654
75 to 79	8	2	33	21	9	15	39	18	145	71.3	456	3074	288	1793
70 to 74	57	53	39	3	4	7	32	54	249	69.0	279	1201	465	3640
65 to 69	18	24	6	3	0	0	6	15	72	65.3	72	436	672	6595
60 to 64	4	6	4	0	0	0	2	1	17	58.5	29	215	715	10094
55 to 59	3	4	2	0	0	0	2	2	13	54.2	16	92	728	13691
50 to 54	1	1	1	0	0	0	0	3	6	50.0	8	32	736	17351
45 to 49	2	3	0	0	0	0	0	0	5	45.2	3	4	741	21043
Sep														
90 to 94	0	0	0	1	1	0	0	0	2	77.5	720	15344	0	0
85 to 89	0	0	0	9	30	13	0	0	52	74.3	703	11761	17	17
80 to 84	0	0	3	30	24	26	0	0	83	72.2	631	8397	89	253
75 to 79	0	0	14	21	17	28	22	7	109	69.6	545	5438	175	894
70 to 74	31	22	31	18	10	10	28	35	185	68.2	408	3013	312	2069
65 to 69	23	26	14	8	8	13	19	21	132	63.8	223	1464	497	4120
60 to 64	11	15	17	3	0	0	17	12	75	59.2	129	612	591	6868
55 to 59	20	13	9	0	0	0	4	15	61	55.3	59	153	661	10009
50 to 54	5	14	2	0	0	0	0	0	21	51.5	8	6	712	13462

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

RALEIGH, NORTH CAROLINA

TRY Data (1965)

Latitude 35.80 N

WBAN 13722

Longitude 78.80 E

TABLE A:

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCNB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day		16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Oct														
80 to 84	0	0	0	1	5	0	0	0	6	67.2	744	18206	0	0
75 to 79	0	0	0	6	22	12	2	0	42	65.2	730	14510	14	24
70 to 74	1	0	3	22	26	19	1	3	75	61.7	666	11002	78	236
65 to 69	8	6	5	29	25	26	13	7	119	58.4	577	7870	167	824
60 to 64	5	5	17	14	4	19	21	14	99	55.3	469	5292	275	1966
55 to 59	28	25	23	12	8	8	23	27	154	52.8	342	3234	402	3628
50 to 54	18	8	15	5	1	4	14	13	78	47.2	218	1890	526	6004
45 to 49	8	18	12	3	2	4	9	16	72	42.6	136	993	608	8827
40 to 44	12	8	8	1	0	1	7	8	45	38.5	82	466	662	12020
35 to 39	10	16	5	0	0	0	1	2	34	34.5	35	179	709	15453
30 to 34	0	4	4	0	0	0	2	2	12	29.7	16	61	728	19055
25 to 29	3	2	1	0	0	0	0	1	7	25.6	6	11	738	22725
20 to 24	0	1	0	0	0	0	0	0	1	23.0	0	0	744	26434
Nov														
75 to 79	0	0	0	0	4	1	0	0	5	56.6	720	19086	0	0
70 to 74	0	0	0	7	18	6	0	0	31	57.3	703	15512	17	26
65 to 69	0	0	0	8	9	12	0	0	29	54.7	676	12070	44	184
60 to 64	6	4	4	16	25	19	12	7	93	52.5	624	8795	96	509
55 to 59	8	9	9	20	13	19	15	12	105	50.0	528	5912	192	1226
50 to 54	15	13	22	24	15	20	21	19	149	47.2	403	3564	317	2478
45 to 49	27	18	18	10	3	4	22	24	126	42.6	252	1955	468	4469
40 to 44	16	13	10	2	3	7	7	9	67	37.3	150	974	570	7088
35 to 39	10	19	17	2	0	2	7	13	70	33.7	80	381	640	10095
30 to 34	3	8	7	1	0	0	5	4	28	28.7	36	116	684	13430
25 to 29	5	6	2	0	0	0	1	2	16	25.6	7	11	713	16925
20 to 24	0	0	1	0	0	0	0	0	1	23.0	0	0	720	20514
Dec														
65 to 69	0	0	0	1	15	5	0	0	21	57.6	741	17698	3	3
60 to 64	3	1	6	11	9	10	3	3	46	55.1	714	14066	30	91
55 to 59	3	5	0	15	29	13	6	4	75	47.8	648	10652	96	397
50 to 54	6	1	5	20	9	23	20	15	99	45.4	568	7599	176	1064
45 to 49	11	11	11	15	19	18	16	11	112	40.8	458	5035	286	2220
40 to 44	14	13	12	15	11	14	17	19	115	36.6	343	3033	401	3938
35 to 39	15	16	16	12	1	10	12	10	92	32.8	239	1593	505	6218
30 to 34	13	15	22	4	0	0	17	19	90	29.1	140	632	604	8977
25 to 29	25	26	14	0	0	0	2	11	78	25.3	53	128	691	12193
20 to 24	3	5	7	0	0	0	0	1	16	21.6	3	6	741	15791

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

: 3 :

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

Lat+itude	35.80 N
Longitude	78.80 E

[illegible]

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

[illegible]

WBAN 13722

TRY Data (1965)

Latitude 35.80 N

Longitude 78.80 E

TABLE D:

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)		BY TIME OF DAY																24 HOUR SUMMARY													
		7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**				10PM-6AM**				HEATING			COOLING		
		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs			
		Above (100s)*		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			
94	0	434	0	0	336	0	0	289	0	0	313	0	0	392	0	0	1351	0	8760	3116	0	0	0	0	0	0	0	0			
93	0	423	0	0	325	0	0	278	0	0	302	0	0	381	0	0	1318	0	8759	3028	1	0	0	0	0	0	0	0			
92	0	412	0	0	314	0	1	267	0	1	291	0	0	370	0	0	1285	0	8757	2941	3	0	0	0	0	0	0	0			
91	0	401	0	0	304	0	4	256	0	2	280	0	0	359	0	0	1253	0	8753	2853	7	0	0	0	0	0	0	0			
90	0	390	0	1	293	0	12	246	0	5	269	0	0	349	0	0	1220	0	8741	2766	19	0	0	0	0	0	0	0			
89	0	380	0	4	282	0	25	235	0	12	258	0	0	338	0	0	1187	0	8718	2678	42	0	0	0	0	0	0	0			
88	0	369	0	9	271	0	49	224	1	26	247	0	0	327	0	0	1154	0	8675	2591	85	1	0	0	0	0	0	0			
87	0	358	0	18	260	0	87	214	1	48	237	1	0	316	0	0	1121	0	8606	2505	154	2	0	0	0	0	0	0			
86	0	347	0	31	249	0	126	204	2	70	226	1	0	305	0	0	1088	0	8531	2419	229	4	0	0	0	0	0	0			
85	0	336	0	50	239	1	161	194	4	96	216	2	0	294	0	0	1055	0	8452	2334	308	7	0	0	0	0	0	0			
84	0	325	0	75	228	1	196	185	6	126	206	3	0	283	0	0	1023	0	8362	2250	398	10	0	0	0	0	0	0			
83	0	314	0	105	218	2	235	176	8	159	197	5	1	272	0	0	990	0	8259	2167	501	15	0	0	0	0	0	0			
82	1	303	0	143	209	4	268	168	10	194	187	6	5	261	0	0	957	0	8147	2085	613	20	0	0	0	0	0	0			
81	5	292	0	177	199	5	290	160	13	223	179	8	13	250	0	0	924	0	8051	2004	709	27	0	0	0	0	0	0			
80	12	281	0	208	190	7	310	152	16	245	170	11	24	239	0	0	891	0	7960	1924	800	34	0	0	0	0	0	0			
79	20	270	0	239	181	9	333	144	19	272	162	13	37	229	1	0	858	0	7858	1845	902	43	0	0	0	0	0	0			
78	30	260	1	267	173	12	358	137	23	301	154	16	55	218	1	0	826	0	7747	1767	1013	52	0	0	0	0	0	0			
77	48	249	1	295	165	15	383	130	26	333	146	19	81	208	2	7	793	0	7611	1690	1149	63	0	0	0	0	0	0			
76	69	239	1	323	157	18	408	123	30	366	138	23	108	198	3	20	760	0	7464	1614	1296	75	0	0	0	0	0	0			
75	97	229	2	350	149	21	437	116	35	398	131	27	141	188	4	41	727	0	7293	1540	1467	89	0	0	0	0	0	0			
74	132	219	3	375	142	25	465	109	39	421	124	31	175	179	5	80	695	1	7109	1469	1651	105	0	0	0	0	0	0			
73	166	209	5	400	135	29	484	103	44	437	118	35	211	170	7	137	663	2	6922	1398	1838	122	0	0	0	0	0	0			
72	206	200	7	422	128	33	502	97	49	456	111	40	252	161	10	227	632	4	6692	1330	2068	141	0	0	0	0	0	0			
71	244	191	9	443	122	37	524	91	54	475	105	44	288	153	12	351	602	7	6434	1264	2326	163	0	0	0	0	0	0			
70	277	183	12	463	115	42	547	86	59	497	99	49	324	145	15	483	573	11	6168	1201	2592	188	0	0	0	0	0	0			
69	306	175	15	481	109	46	570	80	65	519	93	54	355	137	19	605	546	16	5923	1141	2837	215	0	0	0	0	0	0			
68	328	167	18	500	103	51	592	75	71	540	87	60	381	130	23	713	520	23	5704	1083	3056	245	0	0	0	0	0	0			
67	350	160	21	523	97	56	616	70	77	559	82	65	406	123	27	819	495	31	5485	1027	3275	276	0	0	0	0	0	0			
66	370	152	25	542	92	62	640	66	83	575	77	71	432	116	31	923	471	39	5276	973	3484	310	0	0	0	0	0	0			
65	391	145	29	559	86	67	659	61	90	597	72	77	452	110	35	1011	447	49	5089	921	3671	346	0	0	0	0	0	0			
64	413	138	33	577	81	73	678	57	96	622	67	83	463	104	40	1075	425	59	4929	871	3831	384	0	0	0	0	0	0			
63	434	132	37	595	76	79	697	53	103	641	62	89	480	97	44	1135	403	70	4776	823	3984	423	0	0	0	0	0	0			
62	451	125	41	612	71	85	714	49	110	660	58	95	502	91	49	1198	382	82	4621	776	4139	463	0	0	0	0	0	0			
61	466	119	46	627	66	91	726	45	117	679	53	102	523	85	54	1254	362	94	4483	730	4277	505	0	0	0	0	0	0			
60	486	113	51	645	61	97	742	42	125	700	49	109	547	80	60	1307	341	107	4331	686	4429	549	0	0	0	0	0	0			
59	509	107	56	663	57	104	761	38	132	726	45	116	572	74	65	1369	322	121	4157	644	4603	594	0	0	0	0	0	0			
58	526	101	61	684	53	111	777	35	140	743	42	124	599	69	71	1443	303	135	3986	603	4774	641	0	0	0	0	0	0			
57	544	95	66	704	49	118	795	32	148	757	38	131	626	65	77	1516	285	149	3817	564	4943	690	0	0	0	0	0	0			
56	563	90	72	719	45	125	813	29	156	771	35	139	644	60	84	1589	268	165	3660	527	5100	740	0	0	0	0	0	0			
55	578	85	77	733	41	132	832	26	164	785	32	147	661	56	90	1668	251	181	3501	491	5259	792	0	0	0	0	0	0			
54	590	79	83	753	38	139	853	24	173	805	29	154	675	51	97	1735	235	198	3347	457	5413	845	0	0	0	0	0	0			
53	601	75	89	773	34	147	872	21	181	828	26	163	694	47	104	1787	220	216	3203	424	5557	900	0	0	0	0	0	0			
52	617	70	95	791	31	155	886	19	190	849	24	171	720	43	111	1837	206	234	3058	393	5702	956	0	0	0	0	0	0			
51	637	65	102	807	28	163	899	17	199	867	21	180	741	40	118	1888	191	253	2919	363	5841	1014	0	0	0	0	0	0			
50	655	60	108	822	26	171	914	15	208	885	19	188	761	36	126	1941	178	272	2780	334	5980	1073	0	0	0	0	0	0			
49	670	56	115	839	23	179	933	14	217	900	17	197	781	33	133	1992	164	292	2643	307	6117	1133	0	0	0	0	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

RALEIGH, NORTH CAROLINA
HBN 13722

TRY Data (1965)

Latitude 35.80 N
Longitude 78.80 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	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	Cool		Base	100s*	Base	100s*					
48	684	52	121		858	20	188		949	12	227		910	15	206		803	30	141		2054	152	312		2501	281	6259	1195	
47	705	48	128		876	18	196		960	11	236		924	13	216		823	27	149		2123	140	333		2348	257	6412	1259	
46	724	44	136		896	16	205		969	9	246		939	12	225		839	25	158		2180	128	354		2211	234	6549	1325	
45	737	41	143		914	14	214		980	8	256		950	10	234		851	22	166		2230	118	376		2096	213	6664	1390	
44	754	37	150		928	12	224		990	7	265		963	9	244		865	20	175		2282	107	399		1976	193	6784	1457	
43	774	34	158		944	11	233		1001	6	275		977	8	254		882	17	184		2330	98	422		1849	173	6911	1525	
42	789	31	166		960	9	243		1014	5	285		990	6	263		899	15	193		2384	88	445		1722	156	7038	1595	
41	800	28	174		974	8	252		1025	5	296		1000	5	273		915	14	202		2447	80	470		1598	139	7162	1666	
40	815	25	182		984	7	262		1035	4	306		1012	5	283		929	12	211		2506	72	494		1478	124	7282	1738	
39	837	22	190		995	6	272		1042	3	316		1025	4	294		943	10	220		2564	64	520		1352	109	7408	1812	
38	856	20	198		1009	5	282		1046	3	327		1036	3	304		957	9	230		2618	57	546		1237	97	7523	1886	
37	873	17	207		1017	4	292		1050	2	337		1043	3	314		970	7	239		2666	51	572		1139	85	7621	1962	
36	891	15	216		1025	4	302		1054	2	348		1051	2	325		981	6	249		2711	45	599		1046	74	7714	2039	
35	905	13	225		1033	3	313		1058	2	358		1057	2	335		991	5	259		2750	39	626		964	64	7796	2116	
34	919	11	234		1042	2	323		1064	1	369		1064	1	346		1002	4	269		2781	34	654		887	54	7873	2195	
33	935	10	243		1051	2	333		1071	1	380		1069	1	357		1015	3	279		2815	29	682		802	46	7958	2274	
32	953	8	253		1061	1	344		1078	1	390		1075	1	367		1028	3	289		2853	25	710		710	38	8050	2354	
31	969	7	262		1068	1	355		1081	1	401		1080	1	378		1040	2	300		2886	21	739		635	32	8125	2435	
30	983	6	272		1071	1	365		1083	0	412		1081	1	389		1054	2	310		2923	17	768		563	26	8197	2516	
29	997	5	282		1075	1	376		1083	0	423		1083	0	400		1066	1	321		2973	13	797		482	21	8278	2599	
28	1011	4	292		1077	0	387		1085	0	434		1085	0	411		1071	1	331		3026	10	827		403	16	8357	2682	
27	1025	3	302		1080	0	398		1088	0	445		1086	0	421		1077	1	342		3074	8	858		328	12	8432	2766	
26	1035	2	313		1085	0	408		1090	0	455		1088	0	432		1081	1	353		3122	6	889		258	10	8502	2851	
25	1044	2	323		1089	0	419		1092	0	466		1089	0	443		1083	0	364		3163	5	920		198	7	8562	2936	
24	1056	1	333		1091	0	430		1093	0	477		1090	0	454		1084	0	375		3191	4	952		153	6	8607	3022	
23	1066	1	344		1093	0	441		1094	0	488		1090	0	465		1085	0	385		3212	3	984		118	4	8642	3108	
22	1074	1	355		1094	0	452		1095	0	499		1092	0	476		1086	0	396		3224	2	1016		93	3	8667	3195	
21	1078	1	366		1094	0	463		1095	0	510		1094	0	487		1089	0	407		3232	2	1049		76	2	8684	3281	
20	1082	0	376		1095	0	474		1095	0	521		1095	0	498		1092	0	418		3243	1	1081		57	2	8703	3368	
19	1087	0	387		1095	0	485		1095	0	532		1095	0	509		1094	0	429		3254	1	1114		40	1	8720	3455	
18	1089	0	398		1095	0	496		1095	0	543		1095	0	520		1094	0	440		3261	1	1146		30	1	8730	3543	
17	1091	0	409		1095	0	507		1095	0	554		1095	0	531		1094	0	451		3268	0	1179		21	1	8739	3630	
16	1092	0	420		1095	0	518		1095	0	565		1095	0	542		1095	0	462		3273	0	1212		14	0	8746	3717	
15	1093	0	431		1095	0	529		1095	0	576		1095	0	553		1095	0	473		3276	0	1244		11	0	8749	3805	
14	1093	0	442		1095	0	540		1095	0	587		1095	0	564		1095	0	484		3278	0	1277		9	0	8751	3892	
13	1093	0	453		1095	0	551		1095	0	598		1095	0	574		1095	0	495		3280	0	1310		7	0	8753	3980	
12	1093	0	464		1095	0	562		1095	0	609		1095	0	585		1095	0	506		3281	0	1343		5	0	8755	4068	
11	1094	0	475		1095	0	573		1095	0	620		1095	0	596		1095	0	517		3282	0	1375		3	0	8757	4155	
10	1094	0	486		1095	0	583		1095	0	631		1095	0	607		1095	0	527		3284	0	1408		1	0	8759	4243	
9	1094	0	496		1095	0	594		1095	0	642		1095	0	618		1095	0	538		3285	0	1441		0	0	8760	4330	
8	1095	0	507		1095	0	605		1095	0	652		1095	0	629		1095	0	549		3285	0	1474		0	0	8760	4418	

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

RALEIGH, NORTH CAROLINA

TRY Data (1965)

Latitude 35.80 N

WBAN 13722

Longitude 78.80 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:	5217	4801	4331	3773	3237	2666	1992	1151	444	61	5
Annual Wet Bulb Cooling deg-hrs:	77809.	62583.	48611.	36152.	25352.	16244.	8910.	3729.	1014.	121.	10.

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	60	60	58	56	53	48	42	31	17	10	.001		
.002	0	0	1	1	1	1	1	1	1	1	1	53	53	53	52	50	48	43	38	28	16	9	.002		
.003	1	1	2	2	2	2	2	2	2	2	2	46	46	46	45	44	42	39	35	26	15	8	.003		
.004	1	2	3	4	4	4	5	5	5	5	5	40	40	40	39	39	37	35	31	23	13	8	.004		
.005	2	3	4	5	6	7	7	8	8	8	8	34	34	34	34	33	33	31	28	21	12	7	.005		
.006	2	4	6	7	9	10	10	11	11	11	11	28	28	28	28	28	28	26	24	18	11	6	.006		
.007	3	5	7	10	12	13	14	14	15	15	15	24	24	24	24	24	23	23	21	16	9	5	.007		
.008	3	6	9	12	14	16	18	18	19	19	19	19	19	19	19	19	19	19	18	14	8	5	.008		
.009	4	7	10	14	17	20	22	23	23	24	24	15	15	15	15	15	15	15	14	11	7	4	.009		
.010	4	8	11	16	20	23	26	27	28	29	29	12	12	12	12	12	12	12	12	9	5	3	.010		
.011	5	9	13	18	22	27	30	32	34	35	35	9	9	9	9	9	9	9	9	7	4	3	.011		
.012	6	10	14	20	25	30	34	37	39	40	41	6	6	6	6	6	6	6	6	6	3	2	.012		
.013	6	10	16	22	28	33	39	42	45	46	47	4	4	4	4	4	4	4	4	4	2	1	.013		
.014	7	11	17	24	31	37	43	47	51	53	54	2	2	2	2	2	2	2	2	2	2	1	.014		
.015	7	12	18	26	33	40	47	52	57	60	61	1	1	1	1	1	1	1	1	1	1	1	.015		
.016	8	13	20	28	36	44	51	57	63	67	69	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	8	14	21	30	39	47	56	62	69	74	76	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	9	15	23	32	41	50	60	67	75	81	84	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	32	35	46	53	44	53	59	45	47	27	33	37	45
VERTICAL													
NORTH	100	100	100	98	93	91	94	97	100	100	100	100	96
WEST	43	50	61	70	61	71	74	62	59	45	43	50	60
SOUTH	27	35	52	71	75	86	86	68	59	30	29	29	52
EAST	49	50	62	65	62	71	76	65	62	42	49	47	61
% Possible Sun	55	60	63	65	59	61	62	61	60	62	61	56	60

FOOTNOTES: * Corrected For Cloud Cover.

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

RALEIGH, NORTH CAROLINA
WBAN 13722

TRY Data (1965)

Latitude 35.80 N
Longitude 78.80 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	1890	1755	1419	1116	698	378	209	173	173	2031	1098	1086	999	809	640	420	262	182	165	164	1148	676	694
Feb	1879	1763	1506	1268	885	550	327	223	214	2233	1412	1022	963	833	710	520	362	260	214	208	1166	805	943
Mar	1646	1605	1495	1381	1104	794	530	345	281	2347	1840	1050	1020	943	864	712	559	443	367	343	1317	1116	1276
Apr	1234	1336	1392	1423	1285	1050	790	550	380	2275	2211	981	1034	1049	1048	961	828	693	575	497	1394	1417	1644
May	930	1104	1261	1386	1362	1213	985	737	536	2148	2443	907	995	1064	1121	1086	983	843	700	587	1561	1752	1808
Jun	812	1003	1204	1367	1397	1298	1084	841	647	2075	2535	823	903	980	1044	1039	975	862	744	666	1390	1655	1864
Jul	861	1044	1222	1369	1373	1259	1039	798	603	2090	2479	865	919	971	1017	997	931	828	726	658	1366	1593	1776
Aug	1090	1221	1319	1390	1302	1113	874	637	454	2174	2271	961	1008	1032	1042	965	843	712	591	507	1515	1591	1611
Sep	1457	1463	1420	1363	1147	875	621	424	327	2253	1937	1023	1018	981	936	809	661	532	437	393	1362	1248	1377
Oct	1764	1667	1460	1272	942	618	387	263	246	2218	1533	1302	1248	1102	960	718	489	335	258	247	1583	1125	1105
Nov	1875	1748	1445	1159	769	432	252	190	189	2070	1181	1027	939	775	628	440	285	202	171	171	1110	683	812
Dec	1856	1719	1378	1060	649	332	190	163	163	1945	1007	1019	963	798	636	419	249	174	159	159	1046	601	636
Year	1439	1450	1376	1296	1077	827	609	447	352	2154	1831	1006	1001	946	888	759	620	507	427	384	1332	1191	1296

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, 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	1624	1480	1186	922	562	281	157	141	140		926	835	670	524	338	201	143	134	134	
Feb	1583	1473	1255	1055	725	427	241	178	174		854	799	689	586	425	285	202	172	169	
Mar	1309	1315	1239	1152	913	638	406	261	228		847	835	775	712	583	451	351	292	279	
Apr	899	1044	1134	1176	1064	860	626	420	299		760	828	857	862	789	674	556	457	400	
May	638	816	1008	1139	1127	999	791	573	400		681	773	859	917	892	804	680	556	463	
Jun	553	719	946	1118	1154	1067	877	661	477		630	700	784	850	850	794	697	595	525	
Jul	591	760	970	1123	1137	1035	840	627	449		669	721	781	828	815	758	670	585	524	
Aug	779	938	1069	1147	1080	914	698	493	351		733	798	837	853	791	687	572	470	407	
Sep	1129	1187	1171	1133	948	709	486	324	266		808	828	807	774	666	537	425	347	320	
Oct	1465	1385	1217	1061	769	486	291	207	200		1082	1039	917	797	583	385	259	206	201	
Nov	1605	1473	1207	968	619	333	187	155	154		871	783	641	520	355	225	157	139	139	
Dec	1601	1458	1153	877	517	248	143	133	133		869	812	666	526	335	192	137	130	130	
Year	1145	1169	1129	1072	885	668	480	349	273		811	813	774	730	619	501	405	341	308	

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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RICHMOND, VIRGINIA
WBAN 13740
TABLE A:

TRY Data (1969)

Latitude 37.50 N
Longitude 77.30 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															
60 to 64	2	0	0	0	7	7	3	1	20	54.8	741	21166	3	2	
55 to 59	1	3	1	6	4	2	1	2	20	51.3	714	17532	30	88	
50 to 54	3	3	5	8	2	3	3	3	30	48.6	695	14002	49	278	
45 to 49	2	1	3	4	11	7	5	2	35	42.7	664	10612	80	608	
40 to 44	11	15	15	10	17	16	18	16	118	39.1	590	7433	154	1149	
35 to 39	19	10	3	14	26	26	13	20	131	32.6	480	4755	264	2191	
30 to 34	12	11	14	29	17	20	16	10	129	27.6	327	2727	417	3883	
25 to 29	7	9	16	14	9	11	18	12	96	22.8	229	1369	515	6245	
20 to 24	23	19	21	8	0	1	13	21	106	19.1	132	494	612	9090	
15 to 19	10	15	9	0	0	0	3	4	41	16.4	33	119	711	12435	
10 to 14	3	7	5	0	0	0	0	2	17	11.4	9	18	735	16054	
5 to 9	0	0	1	0	0	0	0	0	1	9.0	0	0	744	19756	
Feb															
55 to 59	0	0	0	0	3	2	0	0	5	40.8	670	14148	2	1	
50 to 54	0	0	0	2	6	1	0	0	9	41.0	666	10809	6	22	
45 to 49	0	0	0	6	15	15	3	2	41	39.6	641	7519	31	92	
40 to 44	16	6	7	21	29	28	14	12	133	37.4	571	4439	101	372	
35 to 39	28	32	34	39	30	34	45	31	273	33.5	403	1961	269	1254	
30 to 34	23	22	23	13	1	4	16	29	131	27.9	155	699	517	3352	
25 to 29	8	15	13	3	0	0	6	3	48	23.5	55	226	617	6239	
20 to 24	9	7	6	0	0	0	0	7	29	19.7	21	42	651	9415	
15 to 19	0	2	1	0	0	0	0	0	3	17.3	0	0	672	12733	
Mar															
70 to 74	0	0	0	0	8	2	0	0	10	53.8	743	22530	1	2	
65 to 69	0	0	0	6	3	8	1	0	18	51.8	726	18852	18	44	
60 to 64	1	0	1	8	13	8	2	5	38	49.4	710	15262	34	174	
55 to 59	5	5	5	9	8	19	6	1	58	48.1	655	11840	89	472	
50 to 54	0	1	3	10	15	6	14	3	52	43.8	605	8708	139	1060	
45 to 49	11	6	14	14	24	27	15	19	130	39.5	517	5855	227	1927	
40 to 44	13	7	10	19	8	11	18	7	93	35.8	401	3597	343	3389	
35 to 39	10	17	19	17	8	5	19	17	112	32.8	304	1833	440	5345	
30 to 34	35	23	25	10	6	7	16	33	155	29.5	165	613	579	7845	
25 to 29	14	23	12	0	0	0	2	6	57	25.2	47	141	697	11093	
20 to 24	4	11	4	0	0	0	0	2	21	20.4	8	10	736	14682	

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

RICHMOND, VIRGINIA
WBAN 13740
TABLE A:

TRY Data (1969)

Latitude 37.50 N
Longitude 77.30 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	Hour of Day 10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Apr														
85 to 89	0	0	0	0	3	1	0	0	4	62.8	720	21071	0	0
80 to 84	0	0	0	3	11	11	0	0	25	61.2	714	17483	6	12
75 to 79	0	0	0	13	13	9	2	0	37	61.4	673	14003	47	132
70 to 74	0	0	3	12	10	10	7	3	45	59.9	642	10709	78	438
65 to 69	5	0	9	13	15	17	16	8	83	59.0	579	7636	141	965
60 to 64	18	13	21	14	23	28	19	20	156	54.9	478	4972	242	1901
55 to 59	13	18	11	23	9	8	17	18	117	50.6	319	2999	401	3528
50 to 54	18	18	19	6	6	6	18	14	105	47.9	227	1644	493	5773
45 to 49	9	8	17	6	0	0	8	8	56	43.8	126	804	594	8533
40 to 44	11	14	6	0	0	0	3	15	49	40.9	74	319	646	11648
35 to 39	12	14	3	0	0	0	0	3	32	37.0	29	82	691	15011
30 to 34	4	5	1	0	0	0	0	1	11	30.1	8	12	712	18541
May														
90 to 94	0	0	0	0	5	3	0	0	8	71.9	744	19916	0	0
85 to 89	0	0	0	5	7	6	0	0	18	69.1	729	16231	15	35
80 to 84	0	0	1	7	14	13	1	0	36	67.3	706	12639	38	163
75 to 79	0	0	3	17	31	26	10	4	91	65.1	651	9223	93	467
70 to 74	3	2	11	35	21	30	19	9	130	62.6	542	6225	202	1189
65 to 69	17	9	29	16	7	12	25	18	133	60.7	414	3842	330	2526
60 to 64	16	23	22	10	8	3	24	19	125	56.4	275	2130	469	4534
55 to 59	23	14	18	2	0	0	8	20	85	52.9	168	1035	576	7159
50 to 54	20	25	7	1	0	0	5	16	74	48.9	86	395	658	10239
45 to 49	9	8	2	0	0	0	1	7	27	44.4	34	132	710	13696
40 to 44	4	11	0	0	0	0	0	0	15	40.4	13	30	731	17314
35 to 39	1	1	0	0	0	0	0	0	2	36.5	1	1	743	21005
Jun														
95 to 99	0	0	0	0	2	2	0	0	4	77.5	720	16340	0	0
90 to 94	0	0	0	6	19	11	1	0	37	75.0	713	12756	7	16
85 to 89	0	0	2	16	21	23	3	0	65	74.4	652	9328	68	188
80 to 84	1	0	10	29	17	16	16	3	92	73.4	584	6242	136	702
75 to 79	8	6	24	15	22	23	25	14	137	69.7	478	3566	242	1626
70 to 74	35	24	31	17	5	12	23	42	189	68.3	323	1557	397	3217
65 to 69	31	37	18	7	4	3	21	21	142	64.4	133	447	587	5707
60 to 64	13	16	5	0	0	0	1	9	44	59.8	32	86	688	8946
55 to 59	2	4	0	0	0	0	0	1	7	55.7	4	12	716	12472
50 to 54	0	3	0	0	0	0	0	0	3	52.0	0	0	720	16060

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

RICHMOND, VIRGINIA
WBAN 13740
TABLE A:

TRY Data (1969)

Latitude 37.50 N
Longitude 77.30 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															
95 to 99	0	0	0	0	5	0	0	0	5	79.0	744	15534	0	0	
90 to 94	0	0	0	8	14	9	0	0	31	78.9	729	11834	15	20	
85 to 89	0	0	1	21	34	24	4	0	84	75.8	688	8274	56	180	
80 to 84	0	0	13	34	25	29	10	1	112	74.4	576	5097	168	723	
75 to 79	15	12	39	20	4	12	34	13	149	73.1	459	2483	285	1829	
70 to 74	57	43	31	5	11	19	43	65	274	70.1	242	631	502	3697	
65 to 69	21	38	9	5	0	0	2	14	89	66.2	29	35	715	6821	
Aug															
90 to 94	0	0	0	0	1	0	0	0	1	80.0	744	13817	0	0	
85 to 89	0	0	0	12	39	20	0	0	71	75.5	726	10116	18	19	
80 to 84	0	0	3	37	27	31	6	2	106	73.4	635	6714	109	337	
75 to 79	9	6	28	25	19	33	26	18	164	71.6	500	3841	244	1184	
70 to 74	36	34	32	17	7	9	38	26	199	70.2	286	1818	458	2881	
65 to 69	16	19	22	2	0	0	18	28	105	65.2	162	753	582	5536	
60 to 64	21	15	8	0	0	0	5	15	64	60.7	66	214	678	8717	
55 to 59	11	19	0	0	0	0	0	4	34	56.4	15	18	729	12241	
Sep															
85 to 89	0	0	0	4	16	5	0	0	25	75.1	715	14571	5	7	
80 to 84	0	0	0	22	19	17	0	0	58	73.3	670	11088	50	124	
75 to 79	1	0	8	16	20	15	10	3	73	69.0	609	7898	111	534	
70 to 74	12	6	19	20	19	27	19	23	145	67.1	516	5055	204	1291	
65 to 69	26	30	20	21	9	16	17	12	151	64.3	365	2885	355	2721	
60 to 64	11	11	20	7	7	10	28	17	111	59.7	235	1450	485	4886	
55 to 59	16	14	17	0	0	0	12	19	78	55.8	120	593	600	7629	
50 to 54	18	19	5	0	0	0	3	12	57	51.3	49	162	671	10798	
45 to 49	5	7	1	0	0	0	1	4	18	46.3	13	26	707	14262	
40 to 44	1	3	0	0	0	0	0	0	4	43.0	0	0	720	17836	

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

RICHMOND, VIRGINIA

WBAN 13740

TABLE A:

TRY Data (1969)

Latitude 37.50 N

Longitude 77.30 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	3	1	0	0	5	70.4	744	18167	0	0	
75 to 79	0	0	0	8	26	10	0	0	44	65.9	734	14467	10	20	
70 to 74	6	5	1	25	20	21	10	7	95	65.6	650	10974	94	247	
65 to 69	9	10	19	16	17	17	8	8	104	62.7	557	7932	187	925	
60 to 64	6	6	12	17	9	21	22	12	105	57.1	459	5411	285	2124	
55 to 59	16	19	22	10	11	9	17	20	124	53.7	341	3408	403	3841	
50 to 54	21	16	13	8	7	8	12	14	99	48.9	227	2013	517	6166	
45 to 49	10	13	10	8	0	2	9	8	60	43.3	147	1119	597	8992	
40 to 44	9	6	6	0	0	3	7	12	43	39.5	87	542	657	12135	
35 to 39	7	7	5	0	0	1	8	9	37	34.3	54	194	690	15507	
30 to 34	7	8	4	0	0	0	0	3	22	32.1	11	31	733	19064	
25 to 29	2	3	1	0	0	0	0	0	6	27.3	1	1	743	22754	
Nov															
70 to 74	0	0	0	0	3	1	0	0	4	65.0	716	18718	4	3	
65 to 69	0	0	0	8	15	4	1	0	28	59.9	707	15146	13	31	
60 to 64	3	3	6	10	12	13	6	6	59	56.4	679	11689	41	174	
55 to 59	10	6	6	16	22	12	3	7	82	50.6	596	8503	124	588	
50 to 54	3	8	12	21	19	24	18	4	109	45.7	510	5738	210	1423	
45 to 49	16	12	16	19	12	19	26	25	145	43.4	368	3523	352	2808	
40 to 44	20	17	12	8	3	9	16	21	106	38.6	248	2000	472	4885	
35 to 39	15	8	12	6	4	5	11	10	71	33.8	161	1002	559	7487	
30 to 34	12	16	13	2	0	3	6	13	65	29.5	90	383	630	10468	
25 to 29	8	15	9	0	0	0	3	3	38	25.6	35	90	685	13775	
20 to 24	3	5	4	0	0	0	0	1	13	22.2	4	5	716	17290	
Dec															
55 to 59	0	0	0	2	6	1	1	2	12	49.7	741	16619	3	3	
50 to 54	1	0	0	5	2	5	4	1	18	46.7	728	12948	16	52	
45 to 49	2	2	1	7	16	12	3	2	45	41.0	698	9365	46	189	
40 to 44	9	3	7	19	31	26	13	13	121	37.3	636	5996	108	540	
35 to 39	29	29	29	33	31	25	29	23	228	32.7	464	3198	280	1462	
30 to 34	20	18	17	22	6	17	17	26	143	28.5	255	1429	489	3413	
25 to 29	12	21	24	5	1	7	24	18	112	24.7	125	477	619	6181	
20 to 24	17	13	13	0	0	0	2	8	53	21.1	42	91	702	9515	
15 to 19	3	7	2	0	0	0	0	0	12	17.5	3	4	741	13148	

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

RICHMOND, VIRGINIA
WBAN 13740
TABLE B:

TRY Data (1969)

Latitude 37.50 N
Longitude 77.30 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
95 to 99	0	0	0	0	7	2	0	0	9	0.0	0.0	0.0	0.0	78.7	77.0	0.0	0.0	78.3
90 to 94	0	0	0	14	39	23	1	0	77	0.0	0.0	0.0	78.5	75.8	75.8	78.0	0.0	76.3
85 to 89	0	0	3	58	120	79	7	0	267	0.0	0.0	75.7	75.4	74.4	74.3	77.0	0.0	74.7
80 to 84	1	0	27	133	116	118	33	6	434	76.0	0.0	74.4	73.2	71.0	71.6	74.2	75.7	72.4
75 to 79	33	24	102	114	135	128	107	52	695	73.5	73.4	72.5	68.3	65.7	67.1	71.8	73.0	69.5
70 to 74	149	114	128	131	104	131	159	175	1091	69.9	70.1	68.8	63.9	62.1	64.9	68.7	69.9	67.5
65 to 69	125	143	126	94	70	77	109	109	853	65.5	65.7	63.4	60.1	58.7	58.4	62.6	64.6	62.9
60 to 64	91	87	95	66	79	90	110	104	722	59.6	60.3	58.1	54.2	51.2	53.5	57.5	58.8	56.9
55 to 59	97	102	80	68	63	53	65	94	622	55.0	55.6	54.1	47.8	47.0	47.1	52.5	53.8	52.3
50 to 54	84	93	64	61	57	53	77	67	556	50.1	50.1	48.5	45.5	43.5	44.4	46.9	49.4	47.7
45 to 49	64	57	64	64	78	82	71	77	557	43.7	44.6	43.7	40.9	39.6	40.1	42.5	43.3	42.2
40 to 44	94	82	63	77	88	93	89	96	682	39.7	40.1	39.0	37.2	36.0	36.2	37.8	39.3	38.1
35 to 39	121	118	105	109	99	96	125	113	886	34.3	35.1	34.5	32.2	31.2	31.8	32.9	33.5	33.3
30 to 34	113	103	97	76	30	51	71	115	656	28.9	29.5	29.6	27.8	28.3	27.2	27.9	28.8	28.7
25 to 29	51	86	75	22	10	18	53	42	357	24.8	24.9	24.4	23.1	22.4	23.1	23.7	24.0	24.2
20 to 24	56	55	48	8	0	1	15	39	222	20.0	20.1	20.1	19.1	0.0	18.0	19.8	20.0	20.0
15 to 19	13	24	12	0	0	0	3	4	56	16.8	16.7	16.7	0.0	0.0	0.0	16.7	16.3	16.7
10 to 14	3	7	5	0	0	0	0	2	17	11.3	11.0	11.6	0.0	0.0	0.0	0.0	12.0	11.4
5 to 9	0	0	1	0	0	0	0	0	1	0.0	0.0	9.0	0.0	0.0	0.0	0.0	0.0	9.0

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
Month	Daily Ave			Ave		Ave	Average					Day	Day				MPH
	Max	Min	Max	Min	4AM		10AM	4PM	10PM	4AM	10AM		4PM	10PM			
Jan	34.1	63	9	43	26	30.4	77	66	53	66	67	0.0028	0.0029	0.0030	0.0029	0.0029	8.2
Feb	36.4	58	18	43	30	32.3	77	66	54	64	66	0.0029	0.0029	0.0029	0.0028	0.0029	9.6
Mar	42.2	74	20	53	31	36.3	76	55	40	61	61	0.0032	0.0033	0.0031	0.0034	0.0033	9.1
Apr	58.2	86	30	70	46	51.6	88	60	48	67	68	0.0068	0.0071	0.0068	0.0071	0.0069	8.6
May	65.7	92	37	78	53	58.4	86	59	49	68	68	0.0082	0.0094	0.0096	0.0094	0.0091	7.4
Jun	74.8	96	54	84	66	68.7	90	69	58	78	76	0.0132	0.0142	0.0140	0.0143	0.0139	6.8
Jul	76.6	95	65	86	69	72.0	93	76	69	85	82	0.0150	0.0166	0.0166	0.0160	0.0160	5.9
Aug	73.9	90	55	84	66	69.3	94	73	64	87	81	0.0136	0.0150	0.0151	0.0151	0.0146	5.5
Sep	67.3	89	44	78	58	63.2	95	74	63	89	82	0.0109	0.0126	0.0121	0.0122	0.0119	5.4
Oct	58.1	82	27	70	47	53.7	92	69	55	82	77	0.0080	0.0086	0.0085	0.0084	0.0084	6.4
Nov	46.5	74	21	57	36	42.2	86	68	54	71	72	0.0048	0.0054	0.0052	0.0048	0.0050	6.8
Dec	35.2	59	15	43	28	31.5	78	69	56	71	69	0.0028	0.0030	0.0030	0.0029	0.0029	7.7
Year	55.8	96	9	66	47	50.9	86	67	55	74	73	0.0077	0.0085	0.0083	0.0083	0.0082	7.3

RICHMOND, VIRGINIA
 MBAN 13740
 TABLE D:

TRY Data (1969)

Latitude 37.50 N
 Longitude 77.30 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																24-HOUR SUMMARY											
	7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**				10PM-6AM**				HEATING		COOLING	
	Hrs Deg-Hrs				Hrs Deg-Hrs				Hrs Deg-Hrs				Hrs Deg-Hrs				Hrs Deg-Hrs				Hrs Deg-Hrs				Hrs	Deg	Hrs	Deg
	Above (100s)*				Above (100s)*				Above (100s)*				Above (100s)*				Above (100s)*				Above (100s)*				Below	Above	Below	Above
	Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool	
97	0	484	0	0	399	0	0	358	0	0	380	0	0	455	0	0	1528	0	8760	3605	0	0						
96	0	474	0	0	388	0	0	347	0	0	370	0	0	444	0	0	1495	0	8759	3517	1	0						
95	0	463	0	0	377	0	4	336	0	1	359	0	0	433	0	0	1462	0	8754	3430	6	0						
94	0	452	0	0	366	0	7	325	0	3	348	0	0	422	0	0	1430	0	8749	3342	11	0						
93	0	441	0	2	355	0	10	314	0	5	337	0	0	411	0	0	1397	0	8742	3255	18	0						
92	0	430	0	4	344	0	17	303	0	9	326	0	0	400	0	0	1364	0	8729	3167	31	0						
91	0	419	0	6	333	0	27	293	1	13	315	0	0	389	0	0	1331	0	8712	3080	48	1						
90	0	408	0	10	323	0	39	282	1	20	304	0	1	378	0	0	1298	0	8689	2993	71	1						
89	0	397	0	16	312	0	54	272	1	31	294	1	1	367	0	0	1265	0	8657	2906	103	2						
88	0	386	0	24	301	0	72	261	2	42	283	1	2	356	0	0	1232	0	8619	2820	141	3						
87	0	375	0	38	290	1	95	251	3	56	273	2	3	345	0	0	1200	0	8567	2734	193	5						
86	1	364	0	52	280	1	121	241	4	73	262	2	5	334	0	0	1167	0	8507	2649	253	7						
85	2	353	0	65	270	2	149	232	5	93	252	3	7	323	0	0	1134	0	8443	2564	317	10						
84	5	342	0	87	259	3	178	222	7	116	242	4	9	313	0	0	1101	0	8363	2480	397	14						
83	9	331	0	115	249	4	199	213	9	137	232	5	12	302	0	0	1068	0	8286	2396	474	18						
82	13	320	0	139	240	5	217	205	11	158	223	7	16	291	0	0	1035	0	8216	2314	544	23						
81	18	310	0	167	230	6	239	196	13	184	214	8	23	280	1	0	1002	0	8127	2232	633	29						
80	25	299	1	193	221	8	267	187	16	211	205	10	34	270	1	3	970	0	8024	2151	736	36						
79	39	288	1	213	212	10	297	179	18	236	196	13	48	259	1	12	937	0	7912	2072	848	44						
78	60	278	1	235	204	12	322	171	22	267	188	15	63	249	2	22	904	0	7790	1993	970	53						
77	78	268	2	256	195	15	343	164	25	296	180	18	81	238	3	39	872	1	7665	1916	1095	63						
76	98	257	3	280	187	18	371	156	28	320	172	21	104	228	4	69	839	1	7517	1840	1243	75						
75	121	248	4	307	179	21	403	149	32	340	164	24	131	219	5	101	807	2	7355	1766	1405	88						
74	147	238	5	336	171	24	430	143	36	371	157	28	169	209	6	147	776	3	7158	1693	1602	103						
73	175	229	7	363	164	27	455	136	41	407	150	32	206	200	8	223	745	5	6929	1622	1831	120						
72	201	220	9	382	156	31	475	130	46	430	143	36	239	191	10	323	714	8	6708	1554	2052	139						
71	226	211	11	407	149	35	490	124	50	449	136	40	270	183	13	429	685	11	6487	1488	2273	161						
70	249	202	13	436	143	39	509	118	55	470	130	45	295	175	16	516	657	16	6283	1424	2477	185						
69	274	194	16	461	136	44	526	112	61	485	124	50	321	167	19	596	630	22	6095	1363	2665	211						
68	299	186	19	482	130	48	541	106	66	498	118	55	344	159	22	677	603	28	5917	1302	2843	238						
67	324	178	22	500	124	53	557	101	71	516	112	60	364	152	26	758	578	35	5739	1244	3021	267						
66	353	170	25	519	118	58	572	96	77	534	106	65	385	145	29	838	553	43	5558	1188	3202	299						
65	376	163	29	536	112	64	586	90	83	550	101	71	406	138	33	903	529	52	5401	1133	3359	331						
64	395	156	33	550	107	69	597	85	89	569	95	76	426	131	38	955	505	61	5267	1080	3493	366						
63	406	149	37	562	101	75	610	80	95	587	90	82	447	124	42	1001	482	71	5145	1028	3615	401						
62	422	142	41	571	96	80	627	76	101	603	85	88	469	118	47	1052	460	81	5014	977	3746	438						
61	448	136	45	585	91	86	647	71	107	622	80	94	492	112	51	1109	438	92	4856	927	3904	476						
60	471	129	50	602	86	92	663	67	114	640	76	100	515	106	56	1174	416	103	4693	880	4067	516						
59	492	123	55	612	81	98	675	62	121	651	71	107	536	100	62	1249	395	116	4543	834	4217	558						
58	512	117	60	621	76	104	687	58	127	662	67	113	553	95	67	1314	375	128	4409	789	4351	600						
57	528	112	65	633	72	111	704	54	134	674	62	120	565	89	73	1369	356	142	4286	745	4474	645						
56	541	106	70	648	67	117	718	50	141	684	58	127	574	84	78	1424	337	156	4169	703	4591	690						
55	553	100	76	668	63	124	728	47	149	695	54	134	584	79	84	1480	319	170	4050	662	4710	736						
54	565	95	82	682	59	130	738	43	156	705	50	141	598	74	90	1530	301	185	3940	622	4820	784						
53	576	90	87	692	54	137	747	40	163	713	46	148	611	69	96	1577	284	201	3842	583	4918	833						
52	591	85	93	707	51	144	757	36	171	721	43	155	629	64	102	1630	267	217	3723	545	5037	882						

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

RICHMOND, VIRGINIA
WBAN 13740
TABLE 0:

TRY Data (1969)

Latitude 37.50 N
Longitude 77.30 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)*		Below	Hrs		Above	Hrs			
	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	100s*		Base	100s*			
51	607	80	99	723	47	151	768	33	179	733	39	162	648	60	109	1683	251	234	3597	509	5163	933	
50	620	75	105	734	43	159	781	30	186	747	35	170	661	55	115	1729	235	251	3487	473	5273	986	
49	629	70	111	745	40	166	799	27	194	762	32	177	674	51	122	1765	219	268	3384	439	5376	1039	
48	639	66	118	761	36	174	815	24	202	782	29	185	688	47	129	1802	204	286	3271	406	5489	1093	
47	652	61	124	775	33	181	833	21	211	804	26	193	706	43	136	1842	190	304	3147	373	5613	1149	
46	668	57	131	787	30	189	850	19	219	819	23	201	723	39	143	1884	176	323	3026	343	5734	1205	
45	683	53	138	798	27	197	862	16	228	831	20	209	734	35	150	1928	162	342	2922	313	5838	1263	
44	695	49	144	809	24	205	876	14	236	845	18	218	747	32	158	1971	148	361	2816	284	5944	1322	
43	704	45	151	822	21	213	895	12	245	865	15	226	762	29	165	2023	135	381	2687	257	6073	1382	
42	714	41	159	836	18	221	913	10	254	884	13	235	781	25	173	2078	123	402	2553	230	6207	1444	
41	728	37	166	855	16	230	926	8	263	901	11	244	799	22	181	2125	111	423	2424	206	6336	1506	
40	744	33	173	873	14	239	943	6	273	919	9	253	817	19	189	2183	100	444	2279	182	6481	1570	
39	765	30	181	889	11	247	966	5	282	940	8	262	838	17	197	2249	89	467	2111	160	6649	1636	
38	783	27	188	907	9	256	983	4	292	960	6	272	863	14	206	2301	79	489	1962	140	6798	1703	
37	796	24	196	925	8	266	1003	3	302	978	5	281	892	12	214	2364	70	513	1800	121	6960	1772	
36	823	21	204	949	6	275	1029	2	312	999	4	291	917	10	223	2447	61	537	1594	104	7166	1843	
35	849	18	213	976	5	285	1049	2	322	1017	3	301	940	9	233	2530	53	562	1396	89	7364	1915	
34	869	16	221	998	4	294	1056	1	333	1030	2	312	959	7	242	2600	46	587	1245	76	7515	1990	
33	892	14	230	1017	3	304	1065	1	344	1042	2	322	976	6	252	2670	39	614	1096	64	7664	2066	
32	913	12	239	1036	2	315	1075	1	354	1056	1	332	995	5	262	2747	33	641	937	54	7823	2143	
31	931	10	248	1051	2	325	1080	0	365	1066	1	343	1008	4	272	2813	28	668	810	45	7950	2222	
30	946	9	258	1060	1	336	1083	0	376	1073	1	354	1018	3	282	2873	24	697	705	38	8055	2302	
29	962	7	267	1067	1	346	1086	0	387	1078	0	365	1029	2	292	2927	20	726	609	31	8151	2383	
28	980	6	277	1071	1	357	1088	0	398	1081	0	375	1039	2	302	2971	17	755	529	25	8231	2465	
27	995	5	287	1077	0	368	1091	0	409	1084	0	386	1052	1	313	3008	14	785	451	21	8309	2548	
26	1007	4	297	1083	0	379	1094	0	419	1089	0	397	1066	1	324	3037	11	816	382	16	8378	2631	
25	1021	3	307	1086	0	390	1095	0	430	1092	0	408	1074	1	334	3065	9	846	324	13	8436	2715	
24	1034	3	317	1088	0	400	1095	0	441	1094	0	419	1079	0	345	3097	7	877	273	10	8487	2800	
23	1043	2	328	1090	0	411	1095	0	452	1094	0	430	1083	0	356	3126	5	908	228	7	8532	2885	
22	1051	1	338	1093	0	422	1095	0	463	1094	0	441	1087	0	367	3158	4	939	181	5	8579	2971	
21	1060	1	349	1094	0	433	1095	0	474	1094	0	452	1090	0	378	3190	3	971	135	4	8625	3057	
20	1071	1	359	1094	0	444	1095	0	485	1095	0	463	1091	0	388	3218	2	1003	94	3	8666	3143	
19	1079	1	370	1095	0	455	1095	0	496	1095	0	474	1092	0	399	3240	1	1036	63	2	8697	3230	
18	1082	0	381	1095	0	466	1095	0	507	1095	0	485	1093	0	410	3254	1	1068	44	1	8716	3317	
17	1085	0	392	1095	0	477	1095	0	518	1095	0	496	1094	0	421	3263	1	1101	32	1	8728	3404	
16	1087	0	403	1095	0	488	1095	0	529	1095	0	506	1095	0	432	3268	1	1133	24	1	8736	3492	
15	1089	0	414	1095	0	499	1095	0	540	1095	0	517	1095	0	443	3271	0	1166	19	1	8741	3579	
14	1089	0	425	1095	0	510	1095	0	551	1095	0	528	1095	0	454	3274	0	1199	16	0	8744	3666	
13	1090	0	435	1095	0	521	1095	0	562	1095	0	539	1095	0	465	3277	0	1231	12	0	8748	3754	
12	1092	0	446	1095	0	532	1095	0	573	1095	0	550	1095	0	476	3279	0	1264	8	0	8752	3841	
11	1093	0	457	1095	0	543	1095	0	584	1095	0	561	1095	0	487	3280	0	1297	6	0	8754	3929	
10	1094	0	468	1095	0	554	1095	0	595	1095	0	572	1095	0	498	3283	0	1330	3	0	8757	4016	
9	1094	0	479	1095	0	565	1095	0	606	1095	0	583	1095	0	509	3285	0	1363	0	0	8760	4104	
8	1095	0	490	1095	0	575	1095	0	617	1095	0	594	1095	0	520	3285	0	1396	0	0	8760	4192	

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

RICHMOND, VIRGINIA

TRY Data (1969)

Latitude 37.50 N

WBAH 13740

Longitude 77.30 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:	4733	4360	3993	3583	3058	2572	1993	1362	629	192	20
Annual Wet Bulb Cooling deg-hrs:	74698.	60889.	48146.	36543.	26303.	17597.	10448.	5069.	1775.	388.	28.

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	58	58	56	54	53	50	46	40	31	18	10	.001
.002	1	1	1	1	1	1	1	1	1	1	1	51	51	50	49	47	45	42	37	29	17	9	.002
.003	1	2	3	3	3	3	3	3	3	3	3	44	44	44	43	42	41	38	34	26	15	8	.003
.004	2	3	5	5	5	6	6	6	6	6	6	38	38	38	38	37	36	34	30	24	14	8	.004
.005	2	5	7	8	8	9	9	9	9	9	9	33	33	33	33	32	32	30	27	21	13	7	.005
.006	3	6	9	11	12	13	13	13	13	13	13	28	28	28	28	28	27	26	24	19	11	6	.006
.007	4	7	11	13	15	16	17	17	17	17	17	23	23	23	23	23	23	21	17	10	6	4	.007
.008	4	8	13	16	19	20	21	22	22	22	22	19	19	19	19	19	19	18	15	9	5	3	.008
.009	5	10	15	19	22	24	25	26	27	27	27	16	16	16	16	16	16	16	15	12	8	4	.009
.010	6	11	18	22	25	28	30	31	32	32	33	12	12	12	12	12	12	12	12	10	6	4	.010
.011	6	12	20	25	29	32	34	36	37	38	39	10	10	10	10	10	10	10	10	8	5	3	.011
.012	7	14	22	28	32	36	39	42	43	44	45	7	7	7	7	7	7	7	7	6	4	2	.012
.013	8	15	24	31	36	40	44	47	49	50	51	5	5	5	5	5	5	5	5	5	3	2	.013
.014	8	16	26	34	39	44	48	52	55	57	58	3	3	3	3	3	3	3	3	3	2	1	.014
.015	9	18	29	36	43	48	53	58	61	63	65	2	2	2	2	2	2	2	2	2	1	1	.015
.016	10	19	31	39	46	52	57	63	67	71	72	1	1	1	1	1	1	1	1	1	1	1	.016
.017	10	20	33	42	49	56	62	68	74	78	80	0	0	0	0	0	0	0	0	0	0	0	.017
.018	11	22	35	45	53	60	67	74	80	85	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	45	53	36	49	38	59	62	46	51	35	40	36	47
VERTICAL													
NORTH	100	100	100	98	90	91	94	97	100	100	100	100	96
WEST	57	70	54	66	57	74	78	63	67	45	52	47	63
SOUTH	36	48	44	66	70	88	87	67	62	35	33	27	55
EAST	52	57	49	62	54	72	73	62	61	52	49	48	60
% Possible Sun	52	56	59	63	63	67	65	65	64	60	56	52	61

FOOTNOTES: * Corrected For Cloud Cover.

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

RICHMOND, VIRGINIA

WBAN 13740

TABLE H:

TRY Data (1969)

Latitude 37.50 N

Longitude 77.30 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	1882	1744	1403	1089	671	352	195	164	164	1984	1034	860	818	686	556	379	242	173	160	159	871	524	632
Feb	1899	1782	1513	1261	871	532	311	215	206	2211	1357	796	790	708	619	469	335	249	212	207	859	616	877
Mar	1693	1643	1517	1387	1098	780	517	334	275	2354	1802	1216	1213	1138	1051	857	650	486	375	336	1569	1282	1210
Apr	1296	1387	1427	1443	1290	1045	776	539	375	2311	2199	1045	1096	1105	1099	999	853	704	577	491	1498	1494	1566
May	990	1156	1302	1416	1380	1215	982	732	532	2199	2449	936	1052	1141	1209	1172	1048	884	712	578	1665	1859	1762
Jun	872	1055	1250	1405	1426	1311	1093	845	648	2133	2553	896	977	1058	1126	1122	1053	938	813	709	1405	1658	1872
Jul	921	1094	1262	1400	1392	1261	1038	794	600	2141	2490	888	964	1031	1088	1071	996	882	763	662	1342	1553	1774
Aug	1149	1270	1352	1409	1307	1102	859	623	447	2213	2265	1020	1083	1114	1130	1048	909	757	617	517	1559	1609	1601
Sep	1507	1508	1451	1380	1150	869	613	416	322	2270	1910	1036	1055	1021	974	841	686	552	453	403	1333	1210	1348
Oct	1792	1688	1467	1266	924	594	370	254	239	2206	1484	1069	986	854	739	556	386	281	232	227	1245	877	1033
Nov	1869	1745	1434	1139	742	409	237	181	180	2026	1118	951	906	767	629	437	275	194	169	169	990	604	733
Dec	1829	1699	1358	1030	620	307	176	153	153	1883	941	953	891	726	564	361	209	151	140	140	966	533	567
Year	1472	1479	1394	1302	1074	816	599	439	346	2160	1802	973	987	947	900	778	638	522	436	384	1278	1155	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.

**** Clineham, 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	1623	1477	1175	901	538	262	147	134	133	731	688	572	460	307	188	137	130	130
Feb	1606	1492	1261	1049	712	411	230	171	168	663	658	589	513	383	266	196	171	168
Mar	1358	1353	1260	1159	906	625	395	255	224	978	998	942	873	704	524	382	295	274
Apr	958	1094	1167	1195	1068	855	617	413	295	811	879	904	905	822	697	566	458	395
May	688	862	1044	1166	1142	1003	788	569	399	696	813	922	995	966	861	712	562	450
Jun	596	764	986	1154	1180	1082	884	665	480	695	764	853	922	923	865	764	655	560
Jul	637	806	1006	1151	1154	1039	858	623	448	692	759	835	892	881	818	717	615	526
Aug	832	984	1100	1165	1084	907	687	483	347	784	863	910	931	864	745	611	491	415
Sep	1181	1230	1200	1149	951	704	479	319	262	827	863	843	807	692	558	442	361	329
Oct	1498	1409	1226	1056	754	468	279	201	195	891	816	709	612	451	306	220	188	185
Nov	1605	1476	1201	952	597	314	176	147	147	809	762	641	524	354	216	152	138	138
Dec	1582	1446	1136	853	492	230	133	125	125	815	752	604	464	287	162	119	114	114
Year	1178	1198	1146	1079	882	660	472	343	269	784	802	778	743	638	518	419	349	308

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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TAMPA, FLORIDA
WBAN 12842
TABLE A:

TRY Data (1953)

Latitude 28.00 N
Longitude 82.50 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day 10-12 13-15 16-18			19-21	22-24	hours below			degree hours	hours above	degree hours	
Jan															
75 to 79	0	0	0	10	28	10	0	0	48	64.9	730	12246	14	14	
70 to 74	0	0	2	27	21	23	6	0	79	64.2	661	8736	83	224	
65 to 69	16	18	23	18	18	27	29	21	170	62.3	568	5628	176	836	
60 to 64	27	14	16	13	15	16	19	26	146	57.9	382	3276	362	2204	
55 to 59	13	16	15	17	11	13	20	15	120	52.4	251	1687	493	4335	
50 to 54	17	17	17	8	0	3	10	14	86	47.8	144	710	600	7078	
45 to 49	12	14	12	0	0	1	8	15	62	43.7	59	203	685	10291	
40 to 44	8	14	8	0	0	0	1	2	33	40.6	13	12	731	13820	
Feb															
80 to 84	0	0	0	4	6	0	0	0	10	71.2	671	12753	1	1	
75 to 79	0	0	0	10	22	16	0	0	48	67.2	653	9433	19	41	
70 to 74	3	0	6	20	26	25	11	0	91	63.9	575	6348	97	316	
65 to 69	18	14	18	25	16	24	28	27	170	62.1	473	3703	199	1031	
60 to 64	24	27	27	18	14	13	21	22	166	58.4	271	1827	401	2515	
55 to 59	17	13	15	6	0	5	16	20	92	53.5	150	807	522	4855	
50 to 54	13	15	8	1	0	1	7	9	54	49.6	60	278	612	7686	
45 to 49	7	12	9	0	0	0	1	6	35	44.1	24	64	648	10832	
40 to 44	2	3	1	0	0	0	0	0	6	40.7	3	3	669	14131	
Mar															
80 to 84	0	0	0	15	47	14	0	0	76	69.7	741	9865	3	3	
75 to 79	0	0	4	44	29	41	3	0	121	66.7	615	6451	129	309	
70 to 74	14	9	27	21	7	20	37	22	157	66.3	483	3689	261	1267	
65 to 69	37	39	39	10	7	13	31	37	213	63.4	297	1672	447	2970	
60 to 64	22	18	11	3	3	4	15	23	99	56.5	131	649	613	5667	
55 to 59	11	16	8	0	0	1	6	7	49	51.9	52	207	692	8945	
50 to 54	6	9	4	0	0	0	1	4	24	49.2	16	44	728	12502	
45 to 49	3	2	0	0	0	0	0	0	5	46.6	2	2	742	16180	

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

TAMPA, FLORIDA
WBAN 12842
TABLE A:

TRY Data (1953)

Latitude 28.00 N
Longitude 82.50 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence In time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day 10-12 13-15 16-18			19-21	22-24	hours below			degree hours	hours above	degree hours	
Apr															
85 to 89	0	0	0	2	10	1	0	0	13	72.4	719	12145	1	1	
80 to 84	0	0	1	26	32	21	0	0	80	70.3	687	8602	33	58	
75 to 79	9	4	21	37	33	36	25	12	177	69.4	576	5413	144	469	
70 to 74	18	26	31	13	9	18	23	23	161	66.8	376	3052	344	1708	
65 to 69	17	14	15	9	6	11	27	24	123	61.4	237	1519	483	3775	
60 to 64	20	16	10	3	0	3	10	18	80	57.6	122	619	598	6475	
55 to 59	18	17	11	0	0	0	5	11	62	52.5	55	167	665	9623	
50 to 54	8	11	1	0	0	0	0	2	22	48.5	9	16	711	13072	
45 to 49	0	2	0	0	0	0	0	0	2	44.0	0	0	720	16656	
May															
95 to 99	0	0	0	1	2	0	0	0	3	72.3	744	13764	0	0	
90 to 94	0	0	1	8	30	16	0	0	55	74.5	727	10064	17	20	
85 to 89	0	0	3	41	42	33	4	0	123	72.6	650	6595	94	271	
80 to 84	2	0	33	39	17	37	29	12	169	72.3	492	3729	252	1125	
75 to 79	26	19	41	4	2	7	46	36	181	71.3	330	1679	414	2795	
70 to 74	41	41	13	0	0	0	13	37	145	68.8	131	535	613	5371	
65 to 69	19	25	2	0	0	0	1	6	53	64.4	39	123	705	8679	
60 to 64	4	7	0	0	0	0	0	2	13	59.5	9	19	735	12295	
55 to 59	1	1	0	0	0	0	0	0	2	57.5	0	0	744	15996	
Jun															
95 to 99	0	0	0	0	2	1	0	0	3	76.3	720	12353	0	0	
90 to 94	0	0	0	4	16	6	0	0	26	75.5	714	8763	6	10	
85 to 89	0	0	3	58	53	43	3	0	160	75.3	634	5316	86	163	
80 to 84	6	3	48	26	12	28	41	11	175	75.5	473	2560	247	1007	
75 to 79	54	52	37	2	6	11	44	65	271	73.4	292	679	428	2726	
70 to 74	30	35	2	0	1	1	2	14	85	71.6	12	18	708	5665	

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

TAMPA, FLORIDA
WBAN 12842
TABLE A:

TRY Data (1953)

Latitude 28.00 N
Longitude 82.50 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									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					
Jul														
90 to 94	0	0	0	7	31	4	0	0	42	76.7	744	8558	0	0
85 to 89	0	0	13	68	40	48	8	0	177	76.0	619	5045	125	207
80 to 84	6	3	55	12	16	25	43	18	178	76.0	456	2343	288	1225
75 to 79	74	59	24	6	6	13	39	71	292	74.1	277	515	467	3117
70 to 74	13	31	1	0	0	3	3	4	55	71.9	4	6	740	6328
Aug														
90 to 94	0	0	0	1	14	3	0	0	18	77.6	744	9460	0	0
85 to 89	0	0	9	51	41	27	1	0	129	76.6	697	5824	47	84
80 to 84	1	0	46	32	29	42	34	7	191	76.2	516	2775	228	755
75 to 79	67	52	36	9	9	19	54	79	325	74.3	333	664	411	2364
70 to 74	25	41	2	0	0	2	4	7	81	72.5	2	2	742	5422
Sep														
85 to 89	0	0	0	32	48	16	0	0	96	75.1	703	6552	17	12
80 to 84	0	0	28	43	25	47	10	0	153	75.5	565	3357	155	417
75 to 79	52	45	55	14	12	21	71	70	340	74.1	392	929	328	1589
70 to 74	38	42	7	1	5	6	9	20	128	71.8	18	35	702	4295
65 to 69	0	3	0	0	0	0	0	0	3	66.7	1	1	719	7861

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

TAMPA, FLORIDA
WBAN 12842
TABLE A:

TRY Data (1953)

Latitude 28.00 N
Longitude 82.50 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day			16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
				10-12	13-15										
Oct															
85 to 89	0	0	0	2	4	2	0	0	8	70.4	744	11778	0	0	
80 to 84	0	0	1	40	55	26	1	0	123	69.5	699	8116	45	58	
75 to 79	3	0	22	30	15	34	21	7	132	68.9	573	4978	171	640	
70 to 74	24	27	35	8	6	16	37	31	184	68.6	397	2525	347	1907	
65 to 69	38	36	22	11	11	9	22	37	186	64.0	212	991	532	4093	
60 to 64	21	15	6	2	2	5	6	12	69	59.0	65	363	679	7185	
55 to 59	2	9	4	0	0	1	4	2	22	52.7	28	126	716	10668	
50 to 54	4	4	3	0	0	0	2	4	17	48.8	11	23	733	14285	
45 to 49	1	2	0	0	0	0	0	0	3	46.7	0	0	744	17982	
Nov															
80 to 84	0	0	0	7	16	2	0	0	25	69.4	720	11908	0	0	
75 to 79	0	0	1	31	34	27	0	0	93	67.2	663	8421	57	113	
70 to 74	4	3	16	14	16	28	18	8	107	66.4	565	5363	155	655	
65 to 69	28	24	19	15	13	17	37	36	189	63.0	416	2863	304	1755	
60 to 64	25	31	25	16	5	7	20	19	148	58.3	240	1215	480	3707	
55 to 59	20	14	19	7	6	8	12	22	108	54.0	112	352	608	6444	
50 to 54	10	15	9	0	0	1	3	2	40	50.5	23	61	697	9753	
45 to 49	3	3	1	0	0	0	0	3	10	44.8	7	6	713	13298	
Dec															
80 to 84	0	0	0	2	3	1	0	0	6	71.8	744	14362	0	0	
75 to 79	0	0	0	20	34	17	0	0	71	70.0	717	10677	27	35	
70 to 74	9	3	10	19	22	24	24	20	131	66.9	630	7316	114	394	
65 to 69	29	31	33	27	8	21	25	24	198	63.5	461	4561	283	1359	
60 to 64	22	26	22	6	12	12	16	16	132	58.9	251	2762	493	3280	
55 to 59	5	4	3	7	8	5	9	7	48	49.4	192	1681	552	5919	
50 to 54	14	8	4	9	6	8	7	12	68	46.5	130	863	614	8821	
45 to 49	2	7	9	2	0	5	7	2	34	40.6	79	372	665	12050	
40 to 44	9	8	8	1	0	0	5	12	43	38.3	39	76	705	15474	
35 to 39	3	6	4	0	0	0	0	0	13	34.3	3	2	741	19120	

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

TAMPA, FLORIDA
WBAN 12842
TABLE B:

TRY Data (1953)

Latitude 28.00 N
Longitude 82.50 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	1	4	1	0	0	6	0.0	0.0	0.0	72.0	74.5	76.0	0.0	0.0	74.3
90 to 94	0	0	1	20	91	29	0	0	141	0.0	0.0	74.0	75.7	76.0	75.2	0.0	0.0	75.7
85 to 89	0	0	28	254	238	170	16	0	706	0.0	0.0	76.2	75.3	74.7	75.1	74.9	0.0	75.1
80 to 84	15	6	212	246	258	243	158	48	1186	77.1	77.2	75.6	73.0	71.7	73.1	75.1	76.3	73.7
75 to 79	285	231	241	217	230	252	303	340	2099	73.7	74.0	72.9	68.8	67.7	69.5	73.0	73.6	71.8
70 to 74	219	258	152	123	113	166	187	186	1404	70.7	71.1	68.1	64.0	62.9	65.0	68.0	69.5	68.1
65 to 69	202	204	171	115	79	122	200	212	1305	65.1	65.0	63.8	59.2	56.8	59.8	63.2	64.4	63.0
60 to 64	165	154	117	61	51	60	107	138	853	59.7	60.5	58.7	54.5	53.9	54.4	57.5	58.5	58.1
55 to 59	87	90	75	37	25	33	72	84	503	53.4	54.1	53.1	50.7	49.4	50.9	52.0	53.0	52.6
50 to 54	72	79	46	18	6	13	30	47	311	48.8	49.6	49.3	45.4	42.2	45.4	48.3	48.2	48.4
45 to 49	28	42	31	2	0	6	16	26	151	44.6	43.4	42.5	35.0	0.0	40.2	42.6	44.8	43.4
40 to 44	19	25	17	1	0	0	6	14	82	40.2	40.2	38.9	33.0	0.0	0.0	37.7	38.8	39.4
35 to 39	3	6	4	0	0	0	0	0	13	34.0	34.2	34.8	0.0	0.0	0.0	0.0	0.0	34.3

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 wind
Month	Daily Ave					Ave	Average					4AM	10AM	4PM	10PM	Day	MPH
	Ave	Max	Min	Max	Min												
Jan	61.1	79	40	70	52	56.0	87	68	58	78	75	0.0084	0.0089	0.0087	0.0090	0.0087	10.1
Feb	63.5	83	41	73	55	58.6	90	68	60	80	77	0.0093	0.0096	0.0096	0.0100	0.0096	10.4
Mar	69.2	84	46	79	61	62.9	87	63	55	78	73	0.0110	0.0112	0.0108	0.0115	0.0111	9.9
Apr	70.6	88	48	80	61	64.1	85	61	56	77	72	0.0114	0.0117	0.0116	0.0122	0.0117	11.1
May	79.0	95	59	89	70	70.7	88	57	52	73	69	0.0143	0.0140	0.0140	0.0151	0.0144	10.1
Jun	80.3	95	70	88	74	74.2	91	68	64	80	77	0.0169	0.0169	0.0167	0.0169	0.0168	10.3
Jul	81.0	92	70	89	75	75.0	91	67	65	81	77	0.0173	0.0172	0.0171	0.0175	0.0173	7.5
Aug	79.8	92	71	88	74	75.1	93	71	71	85	82	0.0174	0.0178	0.0175	0.0178	0.0177	7.1
Sep	78.4	89	67	85	74	74.1	93	74	74	86	83	0.0171	0.0175	0.0169	0.0172	0.0172	9.2
Oct	71.7	87	48	80	64	65.8	90	64	58	78	75	0.0126	0.0125	0.0119	0.0126	0.0124	10.0
Nov	66.0	82	46	75	59	61.0	89	70	63	79	77	0.0104	0.0105	0.0108	0.0107	0.0105	10.5
Dec	63.2	81	37	71	56	58.5	87	70	63	77	76	0.0098	0.0100	0.0102	0.0100	0.0100	11.0
Year	72.0	95	37	81	65	66.4	89	67	62	79	76	0.0130	0.0132	0.0130	0.0134	0.0131	9.8

TAMPA, FLORIDA
WBAN 12842
TABLE D:

TRY Data (1953)

Latitude 28.00 N
Longitude 82.50 E

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	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	Below Base	Deg 100s*	Hrs	Deg	
	Base	Heat		Cool	Base		Heat	Cool		Base	Heat		Cool	Base		Heat	Cool		Base	Heat	Cool	Base
96	0	280	0	0	207	0	0	184	0	0	216	0	0	272	0	0	940	0	8760	2099	0	0
95	0	269	0	0	196	0	2	173	0	0	205	0	0	261	0	0	907	0	8757	2012	3	0
94	0	258	0	1	185	0	6	162	0	2	194	0	0	251	0	0	874	0	8751	1924	9	0
93	0	247	0	1	174	0	11	151	0	4	183	0	0	240	0	0	842	0	8742	1837	18	0
92	0	236	0	3	163	0	22	140	0	8	172	0	0	229	0	0	809	0	8725	1749	35	0
91	0	225	0	7	152	0	44	130	1	13	162	0	0	218	0	0	776	0	8695	1662	65	1
90	0	214	0	15	141	0	77	119	1	22	151	0	0	207	0	0	743	0	8644	1575	116	2
89	1	203	0	34	131	0	114	109	2	40	140	1	0	196	0	0	710	0	8570	1489	190	3
88	1	192	0	69	120	1	161	100	3	69	130	1	0	185	0	0	677	0	8458	1404	302	6
87	3	181	0	120	110	2	216	91	5	104	120	2	1	174	0	0	645	0	8315	1320	445	9
86	8	170	0	175	101	3	262	82	8	140	110	3	3	163	0	0	612	0	8171	1238	589	14
85	20	160	0	237	92	5	308	74	11	180	100	5	10	152	0	0	579	0	8004	1157	756	21
84	48	149	0	307	83	8	359	66	14	224	92	7	22	141	0	0	546	0	7799	1078	961	30
83	87	139	1	359	76	11	405	59	18	266	83	9	42	131	1	0	513	0	7600	1001	1160	40
82	130	129	2	401	69	15	454	53	22	315	75	12	74	120	1	7	480	0	7377	926	1383	53
81	177	119	4	451	62	19	514	47	27	370	67	16	111	110	2	29	448	0	7106	853	1654	68
80	220	110	6	500	56	24	568	41	32	418	60	20	152	101	3	57	415	1	6843	784	1917	86
79	257	102	8	538	50	29	616	36	38	460	54	24	195	91	5	95	383	1	6597	716	2163	106
78	295	94	11	581	45	35	667	32	45	501	48	29	245	83	7	156	351	3	6312	652	2448	129
77	355	86	14	638	40	41	726	27	52	553	42	34	321	74	10	298	320	4	5868	590	2892	155
76	418	79	18	689	36	48	774	24	59	611	37	40	394	67	14	527	292	8	5345	534	3415	187
75	463	72	22	724	32	55	805	21	67	668	32	46	449	60	18	786	265	15	4863	483	3897	223
74	504	66	27	754	28	62	839	18	75	718	28	53	499	54	23	1061	242	24	4383	437	4377	265
73	537	61	33	783	25	70	875	16	84	758	25	61	540	48	28	1266	221	36	3999	395	4761	311
72	560	55	38	803	22	78	899	14	93	789	22	68	575	43	33	1363	201	50	3769	357	4991	360
71	583	50	44	822	19	86	912	12	102	816	19	76	611	38	39	1430	182	63	3585	320	5175	411
70	614	45	50	848	16	94	925	10	111	846	16	85	646	33	46	1528	164	78	3352	285	5408	464
69	652	40	56	879	14	103	945	9	120	875	14	93	695	29	52	1655	147	94	3057	253	5703	519
68	683	36	63	904	12	112	963	7	130	900	12	102	738	25	60	1770	132	111	2800	224	5960	578
67	710	32	70	918	10	121	979	6	140	922	10	111	771	22	67	1875	117	129	2584	197	6176	638
66	741	28	77	938	9	130	992	5	149	947	8	121	808	19	75	1998	103	149	2335	172	6425	701
65	781	25	85	962	7	140	1005	4	159	971	7	130	845	16	83	2135	91	169	2059	150	6701	767
64	823	22	93	984	6	150	1020	3	170	991	6	140	880	14	92	2274	80	191	1786	131	6974	835
63	851	20	101	1001	5	160	1034	3	180	1005	5	150	909	12	101	2393	71	215	1565	115	7195	906
62	870	17	110	1017	4	170	1044	2	190	1015	4	160	934	10	110	2476	63	239	1402	100	7358	979
61	890	15	118	1027	3	180	1053	1	201	1026	3	170	949	9	119	2540	55	264	1273	87	7487	1053
60	912	13	127	1033	3	190	1061	1	211	1037	3	181	962	7	129	2617	48	290	1136	74	7624	1129
59	933	11	137	1043	2	201	1066	1	222	1047	2	191	978	6	139	2692	41	317	1000	64	7760	1206
58	950	10	146	1054	2	211	1073	1	233	1054	2	202	995	5	149	2743	36	344	890	54	7870	1284
57	965	8	156	1062	1	222	1079	0	243	1061	1	212	1012	4	159	2788	31	372	791	46	7969	1363
56	981	7	165	1067	1	232	1084	0	254	1067	1	223	1025	3	169	2836	26	400	698	39	8062	1443
55	992	6	175	1072	1	243	1087	0	265	1073	1	234	1037	3	179	2892	22	428	605	32	8155	1524
54	1005	5	185	1077	1	254	1090	0	276	1078	1	244	1048	2	190	2951	18	458	509	27	8251	1606
53	1019	4	195	1082	0	265	1092	0	287	1083	0	255	1057	2	200	2998	15	487	427	22	8333	1689
52	1030	4	206	1085	0	275	1092	0	298	1086	0	266	1063	1	211	3040	12	518	362	18	8398	1773
51	1038	3	216	1087	0	286	1093	0	309	1087	0	277	1067	1	221	3078	10	548	309	15	8451	1857

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

TAMPA, FLORIDA
WBAN 12842
TABLE D:

TRY Data (1953)

Latitude 28.00 N
Longitude 82.50 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*
50	1042	3	226	1089	0	297	1094	0	320	1088	0	288	1071	1	232	3108	8	579							266	12	8494	1942
49	1048	2	237	1092	0	308	1095	0	331	1091	0	299	1076	1	243	3134	7	610							224	9	8536	2027
48	1056	2	247	1092	0	319	1095	0	342	1093	0	310	1081	0	254	3156	5	642							186	7	8574	2113
47	1061	1	258	1092	0	330	1095	0	353	1093	0	320	1083	0	264	3175	4	673							159	6	8601	2199
46	1065	1	269	1093	0	341	1095	0	364	1094	0	331	1084	0	275	3192	3	705							135	4	8625	2285
45	1070	1	279	1093	0	352	1095	0	374	1095	0	342	1087	0	286	3209	2	737							109	3	8651	2371
44	1076	0	290	1094	0	363	1095	0	385	1095	0	353	1091	0	297	3222	1	769							86	2	8674	2458
43	1080	0	301	1094	0	374	1095	0	396	1095	0	364	1094	0	308	3235	1	802							66	1	8694	2545
42	1085	0	312	1094	0	385	1095	0	407	1095	0	375	1095	0	319	3255	0	834							40	1	8720	2632
41	1089	0	322	1095	0	395	1095	0	418	1095	0	386	1095	0	330	3270	0	867							21	0	8739	2719
40	1090	0	333	1095	0	406	1095	0	429	1095	0	397	1095	0	341	3275	0	900							14	0	8746	2806
39	1092	0	344	1095	0	417	1095	0	440	1095	0	408	1095	0	352	3279	0	932							8	0	8752	2894
38	1094	0	355	1095	0	428	1095	0	451	1095	0	419	1095	0	363	3282	0	965							3	0	8757	2982
37	1095	0	366	1095	0	439	1095	0	462	1095	0	430	1095	0	374	3283	0	998							1	0	8759	3069
36	1095	0	377	1095	0	450	1095	0	473	1095	0	441	1095	0	385	3285	0	1031							0	0	8760	3157

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

TAMPA, FLORIDA
WBAN 12842
TABLE E:

TRY Data (1953)

Latitude 28.00 N
Longitude 82.50 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:	8193	7851	7515	7039	6495	5698	4764	3792	2374	573	12
Annual Wet Bulb Cooling deg-hrs:	154751	130484	107280	85185	64595	45845	29645	16337	6031	860	19

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												
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	0	0	0	0	0	0	0	0	0	0	0	102	102	102	102	101	99	96	87	74	53	26	.001		
.002	0	0	0	0	0	0	0	0	0	0	0	93	93	93	93	92	91	88	81	69	49	24	.002		
.003	0	0	0	0	0	0	0	0	0	0	0	84	84	84	84	84	83	81	74	64	45	23	.003		
.004	0	0	0	0	0	0	0	0	0	0	0	76	76	76	76	76	75	73	68	58	42	21	.004		
.005	0	0	0	0	0	0	0	0	1	1	1	67	67	67	67	67	67	66	61	53	38	19	.005		
.006	0	0	0	0	0	1	1	1	1	1	1	59	59	59	59	59	59	58	55	48	34	17	.006		
.007	0	0	0	0	1	1	2	2	2	2	2	52	52	52	52	52	52	51	48	43	31	15	.007		
.008	0	0	0	0	1	2	2	3	3	3	4	44	44	44	44	44	44	44	42	37	27	14	.008		
.009	0	0	0	1	1	2	3	4	5	5	5	37	37	37	37	37	37	37	36	32	24	12	.009		
.010	0	0	0	1	1	3	4	6	6	7	7	31	31	31	31	31	31	31	30	27	20	10	.010		
.011	0	0	0	1	2	3	5	7	9	9	10	24	24	24	24	24	24	24	24	23	17	8	.011		
.012	0	0	0	1	2	4	6	9	11	12	13	19	19	19	19	19	19	19	19	18	14	7	.012		
.013	0	0	0	1	2	4	8	11	14	15	16	14	14	14	14	14	14	14	14	14	11	5	.013		
.014	0	0	0	1	2	5	9	13	17	19	21	10	10	10	10	10	10	10	10	8	4	.014			
.015	0	0	0	1	3	6	10	15	20	23	25	6	6	6	6	6	6	6	6	5	3	.015			
.016	0	0	0	1	3	6	11	17	23	27	30	3	3	3	3	3	3	3	3	3	1	.016			
.017	0	0	0	1	3	7	12	19	27	32	36	1	1	1	1	1	1	1	1	1	1	.017			
.018	0	0	0	1	3	7	13	21	30	36	42	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	31	34	36	41	35	65	57	67	69	39	42	42	47
VERTICAL													
NORTH	100	100	100	97	87	92	92	97	100	100	100	100	95
WEST	46	50	52	59	57	81	82	87	81	55	56	55	65
SOUTH	30	38	50	71	81	97	94	90	82	45	40	38	60
EAST	49	51	56	59	55	76	69	70	77	52	56	58	62
% Possible Sun	65	66	71	75	74	66	61	59	60	63	65	62	66

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

TAMPA, FLORIDA
WBAN 12842
TABLE H:

TRY Data (1953)

Latitude 28.00 N
Longitude 82.50 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	1754	1632	1357	1124	767	458	272	210	209	2055	1292	1010	940	790	659	466	307	214	181	180	1152	758	1011
Feb	1666	1567	1388	1227	923	611	384	258	244	2174	1562	1099	1048	940	834	644	461	337	269	261	1360	1039	1259
Mar	1356	1362	1335	1295	1100	843	591	387	301	2175	1901	1075	1054	1017	973	840	682	536	421	371	1551	1420	1594
Apr	935	1076	1190	1274	1205	1045	813	583	397	2032	2175	873	953	1016	1062	1012	906	758	614	495	1511	1648	1909
May	665	873	1081	1247	1287	1212	1018	790	577	1875	2343	711	858	1007	1128	1154	1093	947	776	617	1552	1909	1998
Jun	577	786	1026	1224	1312	1279	1113	897	702	1799	2413	740	822	922	1011	1046	1025	942	843	763	1220	1542	1847
Jul	618	825	1049	1233	1299	1246	1073	853	653	1825	2376	739	843	960	1062	1093	1058	956	831	709	1298	1613	1753
Aug	818	986	1133	1251	1228	1106	896	674	478	1940	2223	789	882	953	1011	996	931	822	704	590	1174	1357	1653
Sep	1184	1230	1254	1257	1110	894	664	460	347	2082	1980	844	865	863	853	782	689	596	513	462	1089	1121	1492
Oct	1544	1480	1355	1239	979	692	459	307	276	2144	1667	1120	1101	1027	950	777	588	436	338	319	1427	1165	1346
Nov	1725	1624	1386	1170	835	524	314	228	224	2082	1371	906	864	753	648	488	341	248	213	211	1028	732	1108
Dec	1750	1636	1346	1094	728	426	247	202	201	2000	1216	853	797	668	553	395	271	201	182	181	933	629	935
Year	1213	1255	1241	1219	1065	863	655	489	385	2014	1878	895	918	910	896	809	698	584	492	431	1275	1246	1492

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	1489	1360	1129	929	619	350	200	170	170	851	780	653	541	376	240	164	147	147
Feb	1370	1291	1149	1017	752	482	287	204	198	900	861	773	685	523	367	261	216	212
Mar	1024	1093	1097	1076	908	678	454	292	244	830	845	829	800	688	550	422	331	301
Apr	635	813	957	1046	998	850	644	442	310	643	741	821	870	833	737	608	482	394
May	450	620	846	1017	1064	994	818	612	422	519	637	796	919	950	895	763	611	472
Jun	413	548	789	993	1083	1052	897	701	505	587	639	736	823	858	839	765	677	599
Jul	434	583	816	1004	1074	1028	866	668	476	576	648	766	866	899	869	776	666	559
Aug	555	732	907	1026	1017	906	718	520	366	617	695	775	832	823	766	669	562	473
Sep	862	970	1021	1037	917	724	517	349	281	662	696	704	699	643	562	480	409	375
Oct	1239	1210	1119	1029	802	549	346	238	224	901	901	848	788	637	471	338	268	259
Nov	1452	1348	1149	973	678	403	234	184	182	757	714	621	536	396	267	194	173	171
Dec	1491	1365	1118	903	587	321	186	164	163	718	659	550	453	319	211	158	148	147
Year	949	993	1007	1004	876	696	515	380	296	712	734	739	735	663	566	468	392	343

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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WASHINGTON, DC (NATIONAL AIRPORT)
WBAN 13743
TABLE A:

TRY Data (1957)

Latitude 38.70 N
Longitude 77.00 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	Hour of Day		16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
				10-12	13-15									
Jan														
60 to 64	3	3	3	0	0	0	1	3	13	60.1	735	22143	9	7
55 to 59	0	0	0	1	0	0	2	0	3	51.3	730	18482	14	66
50 to 54	0	0	0	0	4	4	0	0	8	47.3	727	14840	17	144
45 to 49	0	0	3	9	8	5	5	0	30	41.8	712	11236	32	260
40 to 44	9	5	6	14	26	20	7	13	100	36.8	658	7768	86	512
35 to 39	24	20	29	30	25	30	26	24	208	33.6	523	4759	221	1223
30 to 34	18	23	12	11	16	13	26	19	138	29.3	319	2715	425	2899
25 to 29	14	15	15	16	8	12	10	14	104	23.4	207	1410	537	5314
20 to 24	9	9	11	6	1	4	9	7	56	19.3	113	645	631	8269
15 to 19	12	9	8	3	5	5	4	10	56	15.6	52	210	692	11554
10 to 14	2	7	6	3	0	0	3	3	24	10.4	20	39	724	15103
5 to 9	2	2	0	0	0	0	0	0	4	8.5	0	0	744	18784
Feb														
65 to 69	0	0	0	0	1	0	0	0	1	59.0	672	17866	0	0
60 to 64	1	0	0	2	3	1	0	2	9	58.2	669	14512	3	6
55 to 59	2	2	4	8	14	13	6	3	52	52.1	645	11204	27	58
50 to 54	7	4	5	4	8	13	9	4	54	46.7	590	8115	82	329
45 to 49	5	9	6	10	12	8	11	14	75	41.9	526	5305	146	879
40 to 44	13	9	11	26	21	19	16	12	127	38.5	422	2897	250	1831
35 to 39	26	30	32	20	21	23	26	21	199	34.4	272	1101	400	3395
30 to 34	25	15	17	13	4	7	16	28	125	30.2	93	226	579	5880
25 to 29	5	15	9	1	0	0	0	0	30	24.7	15	20	657	9034
Mar														
70 to 74	0	0	0	0	3	1	0	0	4	54.8	743	20222	1	1
65 to 69	0	0	0	2	8	9	0	0	19	51.5	738	16517	6	16
60 to 64	0	0	0	11	10	11	9	1	42	50.1	705	12907	39	126
55 to 59	2	3	4	10	5	5	7	5	41	48.1	662	9479	82	418
50 to 54	3	0	6	11	24	20	11	13	88	43.0	613	6280	131	939
45 to 49	15	6	21	24	19	13	21	16	135	40.3	512	3474	232	1853
40 to 44	37	40	33	22	17	29	31	34	243	38.0	292	1352	452	3451
35 to 39	22	25	16	7	7	5	12	18	112	33.2	109	390	635	6209
30 to 34	14	14	11	6	0	0	2	6	53	29.3	28	57	716	9596
25 to 29	0	5	2	0	0	0	0	0	7	24.6	0	0	744	13259

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

WASHINGTON, DC (NATIONAL AIRPORT)
WBAN 13743
TABLE A:

TRY Data (1957)

Latitude 38.70 N
Longitude 77.00 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*	
	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	2	0	0	0	2	68.5	720	24550	0	0	
85 to 89	0	0	0	4	10	7	0	0	21	68.6	709	20965	11	15	
80 to 84	0	0	0	7	0	5	1	0	13	68.8	692	17470	28	120	
75 to 79	0	0	5	4	8	14	9	1	41	63.7	665	14062	55	312	
70 to 74	6	1	6	7	13	6	14	15	68	61.7	618	10836	102	686	
65 to 69	12	10	8	11	19	18	11	7	96	59.2	540	7937	180	1387	
60 to 64	8	16	13	18	6	7	17	16	101	56.0	429	5491	291	2541	
55 to 59	17	9	13	6	4	7	4	12	72	50.9	360	3540	360	4190	
50 to 54	10	15	8	10	17	15	7	8	90	45.7	273	1965	447	6215	
45 to 49	11	11	20	17	8	8	19	16	110	41.2	174	838	546	8688	
40 to 44	17	16	13	6	3	3	8	13	79	36.7	74	237	646	11687	
35 to 39	9	10	2	0	0	0	0	2	23	32.7	17	31	703	15081	
30 to 34	0	2	2	0	0	0	0	0	4	30.8	0	0	720	18650	
May															
90 to 94	0	0	0	0	2	1	0	0	3	74.0	744	18936	0	0	
85 to 89	0	0	0	4	17	12	0	0	33	70.6	731	15236	13	20	
80 to 84	0	0	0	16	16	19	8	1	60	65.4	686	11687	58	191	
75 to 79	4	0	7	13	14	16	11	6	71	64.6	630	8400	114	624	
70 to 74	10	8	20	17	12	16	26	13	122	63.3	530	5475	214	1419	
65 to 69	20	20	19	17	14	12	22	25	149	59.6	396	3153	348	2817	
60 to 64	22	20	22	15	10	10	13	24	136	55.5	253	1549	491	4933	
55 to 59	18	23	14	3	8	7	9	15	97	51.2	128	631	616	7735	
50 to 54	11	11	5	8	0	0	4	5	44	47.1	48	223	696	11047	
45 to 49	4	6	5	0	0	0	0	4	19	40.4	21	58	723	14602	
40 to 44	4	5	1	0	0	0	0	0	10	38.1	3	3	741	18267	
Jun															
95 to 99	0	0	0	0	1	2	0	0	3	77.3	720	15603	0	0	
90 to 94	0	0	0	10	20	14	1	0	45	75.8	703	12024	17	21	
85 to 89	0	0	5	23	27	24	13	1	93	73.0	646	8637	74	234	
80 to 84	5	0	15	24	13	19	30	15	121	72.1	533	5685	187	882	
75 to 79	24	15	23	8	11	15	19	29	144	69.8	408	3340	312	2137	
70 to 74	25	33	19	10	8	4	11	20	130	67.0	255	1680	465	4077	
65 to 69	23	23	14	7	4	6	9	15	101	64.0	142	706	578	6703	
60 to 64	10	13	9	6	3	3	4	7	55	59.2	61	232	659	9829	
55 to 59	0	4	5	2	3	3	1	0	18	53.9	17	48	703	13245	
50 to 54	3	2	0	0	0	0	2	3	10	51.8	0	0	720	16797	

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

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TRY Data (1957)

Latitude 38.70 N

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Longitude 77.00 E

TABLE A:

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

Number of Hours of Occurrence In time period											HEATING*		COOLING*	
Dry Bulb Range(F)	Hour of Day								Month	MCWB Temp(F)	hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Total					
Jul														
100 to 104	0	0	0	0	0	2	0	0	2	73.0	744	17644	0	0
95 to 99	0	0	0	2	6	2	1	0	11	73.3	735	13936	9	12
90 to 94	0	0	0	5	23	21	2	0	51	72.3	724	10279	20	75
85 to 89	0	0	2	26	29	28	21	3	109	70.2	634	6849	110	365
80 to 84	7	3	19	33	25	30	36	20	173	68.4	511	3947	233	1183
75 to 79	27	10	27	20	10	8	26	37	165	67.5	331	1852	413	2808
70 to 74	37	42	33	7	0	2	7	26	154	65.2	166	588	578	5264
65 to 69	18	28	11	0	0	0	0	7	64	60.1	41	109	703	8505
60 to 64	4	10	1	0	0	0	0	0	15	55.5	5	7	739	12123
Aug														
95 to 99	0	0	0	0	1	3	0	0	4	70.5	744	16632	0	0
90 to 94	0	0	0	3	15	14	1	0	33	70.9	737	12931	7	19
85 to 89	0	0	1	13	23	21	11	0	69	69.8	688	9358	56	166
80 to 84	4	1	6	25	21	19	21	9	106	68.6	604	6122	140	650
75 to 79	12	5	21	22	25	26	20	24	155	66.2	462	3420	282	1668
70 to 74	34	28	27	20	2	4	34	32	181	64.6	291	1490	453	3458
65 to 69	28	29	30	7	4	4	5	26	133	61.7	148	419	596	6107
60 to 64	15	29	8	3	2	2	1	2	62	59.2	15	22	729	9430
55 to 59	0	1	0	0	0	0	0	0	1	57.0	0	0	744	13128
Sep														
90 to 94	0	0	0	0	3	0	0	0	3	73.0	720	15550	0	0
85 to 89	0	0	0	4	21	15	0	0	40	74.7	709	11968	11	18
80 to 84	0	0	2	23	14	22	15	1	77	72.8	644	8570	76	220
75 to 79	10	4	15	13	22	17	15	16	112	69.8	573	5532	147	782
70 to 74	34	32	25	27	9	15	31	37	210	67.9	391	3072	329	1922
65 to 69	25	31	28	10	9	9	14	13	139	63.0	201	1595	519	4045
60 to 64	5	2	5	4	7	8	6	9	46	54.4	125	838	595	6888
55 to 59	4	9	6	7	5	4	6	8	49	50.0	62	356	658	10006
50 to 54	9	6	5	2	0	0	3	3	28	46.4	38	120	682	13370
45 to 49	3	6	4	0	0	0	0	3	16	41.4	11	12	709	16862

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

WASHINGTON, DC (NATIONAL AIRPORT)

TRY Data (1957)

Latitude 38.70 N

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Longitude 77.00 E

TABLE A:

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	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														
70 to 74	0	0	0	2	10	5	0	0	17	58.7	740	12879	4	3
65 to 69	0	0	1	11	23	24	5	3	67	56.7	715	9238	29	82
60 to 64	12	11	13	34	32	33	31	16	182	55.9	583	5918	161	482
55 to 59	19	17	14	20	16	14	19	22	141	51.1	431	3420	313	1704
50 to 54	26	18	31	17	5	9	24	25	155	47.1	273	1662	471	3666
45 to 49	18	22	18	4	7	8	7	13	97	42.9	142	649	602	6373
40 to 44	14	11	9	5	0	0	6	11	56	38.2	61	182	683	9626
35 to 39	4	14	7	0	0	0	1	3	29	34.9	11	12	733	13176
Nov														
70 to 74	0	0	0	2	2	0	0	0	4	66.8	719	16653	1	1
65 to 69	0	2	3	3	9	5	0	0	22	59.9	711	13076	9	24
60 to 64	1	1	1	14	17	18	11	6	69	56.2	682	9592	38	140
55 to 59	15	15	15	18	18	24	19	14	138	52.3	576	6413	144	561
50 to 54	16	8	15	14	22	15	22	25	137	46.9	435	3921	285	1669
45 to 49	24	21	11	17	14	13	11	14	125	41.9	295	2073	425	3421
40 to 44	12	18	20	15	5	14	18	12	114	37.6	171	886	549	5834
35 to 39	11	12	14	7	3	1	9	13	70	33.6	73	277	647	8825
30 to 34	10	10	10	0	0	0	0	6	36	29.6	25	48	695	12196
25 to 29	1	3	1	0	0	0	0	0	5	26.8	1	1	719	15749
Dec														
60 to 64	0	0	1	2	6	5	2	0	16	56.9	741	15745	3	2
55 to 59	0	2	2	8	13	7	3	2	37	50.2	720	12090	24	67
50 to 54	14	14	11	8	7	17	13	14	98	47.5	652	8637	92	334
45 to 49	8	5	5	15	28	22	22	12	117	42.2	548	5619	196	1036
40 to 44	23	19	14	25	21	23	20	24	169	37.7	405	3190	339	2327
35 to 39	22	23	31	18	5	6	18	19	142	34.3	226	1592	518	4449
30 to 34	16	16	16	10	7	7	8	12	92	29.7	126	736	618	7313
25 to 29	3	8	7	4	5	4	1	4	36	24.5	54	328	690	10625
20 to 24	2	3	3	2	1	2	6	3	22	18.5	30	125	714	14142
15 to 19	5	0	1	1	0	0	0	3	10	14.4	10	26	734	17763
10 to 14	0	3	2	0	0	0	0	0	5	11.8	0	0	744	21457

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

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TABLE B:

TRY Data (1957)

Latitude 38.70 N
Longitude 77.00 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	0	2	0	0	2	0.0	0.0	0.0	0.0	0.0	73.0	0.0	0.0	73.0
95 to 99	0	0	0	2	8	7	1	0	18	0.0	0.0	0.0	73.0	73.5	73.3	73.0	0.0	73.3
90 to 94	0	0	0	18	65	50	4	0	137	0.0	0.0	0.0	74.9	73.1	72.5	73.0	0.0	73.1
85 to 89	0	0	8	74	127	107	45	4	365	0.0	0.0	74.9	72.5	70.6	70.5	72.3	74.3	71.3
80 to 84	16	4	42	128	89	114	111	46	550	73.1	71.3	71.9	69.2	67.1	68.1	70.7	72.7	69.6
75 to 79	77	34	98	80	90	96	100	113	688	70.6	71.7	69.5	65.6	63.8	64.9	67.2	69.3	67.5
70 to 74	146	144	130	92	59	53	123	143	890	66.9	68.1	65.8	62.7	61.5	61.6	64.2	66.0	65.3
65 to 69	126	143	114	68	91	87	66	96	791	62.1	63.0	61.4	58.7	57.0	58.2	60.4	61.8	60.7
60 to 64	81	105	76	109	96	98	95	86	746	58.2	57.9	56.6	54.9	54.1	54.1	56.0	57.4	56.1
55 to 59	77	85	77	83	86	84	76	81	649	53.5	53.4	53.0	49.9	48.3	48.6	50.8	52.4	51.2
50 to 54	99	78	86	74	87	93	95	100	712	48.6	48.7	47.5	44.5	43.4	44.4	46.6	47.3	46.4
45 to 49	88	86	93	96	96	77	96	92	724	42.7	43.3	42.8	40.8	40.3	39.8	41.0	42.2	41.6
40 to 44	129	123	107	113	93	108	106	119	898	38.1	38.2	37.9	37.5	37.2	37.4	37.6	37.7	37.7
35 to 39	118	134	131	82	61	65	92	100	783	34.2	34.4	34.3	33.7	33.4	33.3	33.5	33.8	33.9
30 to 34	83	80	68	40	27	27	52	71	448	29.7	30.4	30.0	29.4	28.2	29.1	29.4	29.7	29.7
25 to 29	23	46	34	21	13	16	11	18	182	24.6	24.8	24.2	23.1	23.3	23.3	22.4	23.8	24.0
20 to 24	11	12	14	8	2	6	15	10	78	19.9	19.4	19.2	19.5	19.0	18.7	18.5	18.0	19.0
15 to 19	17	9	9	4	5	5	4	13	66	15.1	15.4	14.9	15.0	14.4	16.0	17.0	16.0	15.4
10 to 14	2	10	8	3	0	0	3	3	29	11.0	11.1	10.4	10.3	0.0	0.0	11.0	9.3	10.6
5 to 9	2	2	0	0	0	0	0	0	4	8.5	8.5	0.0	0.0	0.0	0.0	0.0	0.0	8.5

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

Dry Bulb Temperature (F)						Wet Bulb	Percent Relative Humidity					Average Humidity Ratio (lb moisture/lb dry air)					Average wind
Month	Ave	Max	Min	Daily Max	Ave Min	Ave	4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	MPH
Jan	32.7	64	9	40	26	29.5	79	67	61	68	70	0.0028	0.0026	0.0027	0.0027	0.0027	8.5
Feb	40.9	66	25	48	35	37.5	81	77	65	72	75	0.0039	0.0042	0.0042	0.0040	0.0041	8.6
Mar	45.3	73	28	53	38	39.2	73	58	48	58	60	0.0037	0.0037	0.0036	0.0038	0.0037	10.5
Apr	58.4	91	33	69	49	51.0	75	58	48	59	62	0.0066	0.0066	0.0068	0.0069	0.0067	11.0
May	67.0	91	41	76	57	58.3	77	57	47	60	62	0.0085	0.0087	0.0087	0.0090	0.0088	10.6
Jun	75.8	96	53	85	68	68.2	85	64	56	69	70	0.0131	0.0133	0.0130	0.0138	0.0133	10.1
Jul	78.8	100	60	88	70	67.2	73	53	43	53	57	0.0120	0.0119	0.0111	0.0122	0.0118	9.5
Aug	75.1	97	59	84	67	65.3	76	59	46	61	62	0.0113	0.0114	0.0107	0.0117	0.0112	9.4
Sep	70.9	92	46	79	65	64.7	83	69	57	73	73	0.0119	0.0120	0.0118	0.0124	0.0121	9.4
Oct	55.2	74	36	63	48	49.5	80	64	53	68	68	0.0062	0.0063	0.0064	0.0067	0.0064	9.9
Nov	49.4	73	27	57	43	44.7	79	68	59	71	70	0.0053	0.0054	0.0055	0.0058	0.0054	9.6
Dec	41.3	63	13	48	34	37.4	77	69	61	69	70	0.0039	0.0038	0.0040	0.0041	0.0040	11.0
Year	57.7	100	9	66	50	51.1	78	64	54	65	67	0.0075	0.0075	0.0074	0.0078	0.0075	9.9

WASHINGTON, DC (NATIONAL AIRPORT)

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Latitude 38.70 N

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Longitude 77.00 E

TABLE D:

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)*	Above	(100s)*	Below	Hrs	Above	Hrs			
	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	100s*	Base	100s*			
101	0	510	0	0	446	0	0	408	0	0	417	0	0	462	0	0	1554	0	0			
100	0	499	0	0	435	0	0	397	0	1	406	0	0	451	0	0	1522	0	0			
99	0	488	0	0	424	0	1	386	0	2	395	0	0	440	0	0	1489	0	0			
98	0	477	0	0	413	0	4	375	0	3	384	0	0	429	0	0	1456	0	0			
97	0	466	0	0	402	0	5	364	0	4	373	0	0	418	0	0	1423	0	0			
96	0	455	0	0	391	0	6	353	0	6	362	0	0	407	0	0	1390	0	0			
95	0	444	0	1	381	0	7	342	0	8	351	0	1	396	0	0	1357	0	0			
94	0	433	0	2	370	0	11	332	0	9	341	0	1	385	0	0	1324	0	0			
93	0	422	0	4	359	0	17	321	0	12	330	0	2	374	0	0	1292	0	0			
92	0	411	0	8	348	0	26	310	1	20	319	1	2	363	0	0	1259	0	0			
91	0	400	0	11	337	0	42	299	1	32	308	1	3	353	0	0	1226	0	0			
90	0	389	0	17	326	0	62	289	1	49	298	1	4	342	0	0	1193	0	0			
89	0	378	0	23	315	1	84	279	2	65	287	2	8	331	0	0	1160	0	0			
88	2	367	0	33	305	1	107	269	3	83	277	3	15	320	0	0	1127	0	0			
87	3	356	0	48	294	1	132	259	4	109	267	3	22	309	0	0	1094	0	0			
86	4	346	0	64	284	2	160	249	6	132	257	5	31	298	1	0	1062	0	0			
85	6	335	0	82	274	2	187	240	8	153	248	6	43	288	1	2	1029	0	0			
84	10	324	0	104	264	3	211	231	10	180	239	8	59	277	2	6	996	0	0			
83	15	313	0	129	254	5	231	223	12	205	230	10	77	267	2	13	963	0	0			
82	24	302	1	157	244	6	249	214	14	225	221	12	99	257	3	24	931	0	0			
81	33	292	1	183	235	8	267	206	17	245	212	14	121	247	4	37	898	1	0			
80	43	281	1	210	226	10	282	197	20	267	204	17	145	238	6	57	866	1	0			
79	57	271	2	234	217	12	299	189	22	293	196	20	173	228	7	87	833	2	0			
78	71	260	2	256	209	14	317	182	26	312	188	23	192	219	9	120	802	3	0			
77	87	250	3	268	200	17	332	174	29	327	180	26	210	210	11	157	770	4	0			
76	107	240	4	281	192	20	347	166	32	347	172	29	230	201	13	205	739	6	0			
75	132	230	5	296	184	23	366	159	36	366	165	33	250	193	16	263	709	8	0			
74	163	221	7	312	176	26	390	152	40	380	158	37	274	185	18	344	679	11	0			
73	189	212	9	331	169	29	407	145	44	393	151	40	302	177	21	435	650	15	0			
72	213	203	11	355	161	32	417	138	48	407	144	44	332	169	24	513	622	20	0			
71	239	194	13	377	154	36	426	131	52	416	137	49	359	161	28	595	594	25	0			
70	265	186	15	389	147	40	434	125	56	424	130	53	377	154	31	683	568	32	0			
69	290	177	18	401	140	44	448	118	61	436	123	57	389	147	35	769	542	39	0			
68	315	170	21	414	133	48	464	112	65	451	117	61	399	140	39	850	518	47	0			
67	339	162	24	425	126	52	484	105	70	469	111	66	411	133	43	917	494	56	0			
66	360	154	28	442	119	56	505	99	75	488	104	71	425	126	47	989	470	66	0			
65	380	147	32	457	113	61	521	94	80	506	98	76	441	120	52	1062	448	76	0			
64	399	140	36	470	107	66	542	88	85	523	93	81	457	113	56	1125	426	87	0			
63	414	133	40	492	100	70	566	83	91	543	87	86	473	107	61	1186	404	98	0			
62	430	126	44	515	95	75	586	77	97	567	82	92	491	101	66	1237	384	111	0			
61	446	120	48	535	89	81	601	72	103	588	76	98	509	95	71	1283	363	123	0			
60	460	113	53	557	83	86	616	68	109	606	72	104	532	89	76	1335	344	136	0			
59	476	107	57	578	78	92	634	63	115	620	67	110	554	83	81	1382	325	150	0			
58	491	101	62	595	73	98	653	58	121	635	62	116	570	78	87	1421	306	164	0			
57	506	95	67	613	68	104	672	54	128	653	58	122	585	73	93	1477	287	178	0			
56	523	89	72	630	63	110	688	50	135	671	53	129	600	68	99	1540	269	193	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

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TRY Data (1957)

Latitude 38.70 N
Longitude 77.00 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)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Below		Above							
	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	100s*	Base	100s*						
55	539	84	78	646	59	116	703	46	142	689	49	136	614	63	105	1587	252	209	3981	553	4779	785
54	552	78	83	662	54	123	719	42	149	705	45	143	633	58	111	1638	236	225	3849	514	4911	834
53	567	73	89	679	50	130	735	38	156	721	41	150	656	54	117	1688	219	242	3712	476	5048	884
52	583	68	94	695	46	136	751	35	163	738	38	157	673	50	124	1735	204	259	3583	439	5177	935
51	600	63	100	707	42	143	768	31	171	757	34	165	685	45	131	1791	188	277	3450	404	5310	987
50	619	58	106	720	38	151	787	28	179	780	31	172	703	41	138	1851	174	295	3298	370	5462	1041
49	641	53	113	735	35	158	805	25	187	796	28	180	724	38	145	1907	160	314	3151	338	5609	1096
48	664	49	119	755	31	165	820	22	195	808	25	188	740	34	152	1956	146	333	3015	307	5745	1153
47	686	45	126	778	28	173	834	20	203	822	22	196	760	31	160	2013	133	353	2866	278	5894	1211
46	701	41	133	798	25	181	851	17	212	838	19	205	780	27	168	2068	121	373	2722	250	6038	1271
45	716	37	140	815	22	189	877	15	220	857	17	213	800	24	175	2122	109	394	2571	223	6189	1332
44	733	33	147	835	19	197	904	13	229	884	15	222	824	21	184	2183	97	416	2395	199	6365	1395
43	757	29	155	865	17	206	928	11	238	912	13	231	848	19	192	2255	87	438	2194	176	6566	1459
42	778	26	162	894	15	214	951	10	248	932	11	240	871	16	201	2330	77	461	2001	155	6759	1526
41	793	23	170	913	13	224	966	8	257	946	9	250	891	14	209	2397	68	484	1853	136	6907	1594
40	816	20	178	928	11	233	979	7	267	964	8	259	908	12	218	2473	59	509	1689	118	7071	1664
39	851	17	187	948	9	242	993	6	277	985	7	269	929	11	228	2558	51	534	1494	102	7266	1736
38	883	15	195	968	8	252	1008	5	287	1000	6	279	952	9	237	2633	45	560	1315	88	7445	1809
37	907	13	204	987	7	261	1023	4	297	1013	5	289	973	8	247	2721	38	586	1135	75	7625	1885
36	930	11	214	1003	6	271	1034	4	307	1026	4	299	991	7	256	2802	33	614	972	65	7788	1962
35	952	10	223	1013	5	282	1044	3	318	1037	4	309	1004	6	266	2853	29	643	855	56	7905	2041
34	969	9	233	1022	4	292	1051	2	328	1043	3	320	1014	5	276	2897	25	671	762	48	7998	2120
33	984	7	242	1031	4	302	1057	2	339	1049	3	330	1028	4	287	2956	21	700	654	41	8106	2200
32	1000	6	252	1041	3	312	1061	2	349	1056	2	341	1043	3	297	3018	18	730	538	35	8222	2282
31	1013	6	262	1049	3	323	1066	1	360	1063	2	351	1053	3	308	3059	16	761	455	30	8305	2365
30	1024	5	273	1056	2	333	1071	1	371	1067	1	362	1059	3	318	3089	14	792	392	26	8368	2448
29	1033	4	283	1063	2	344	1076	1	381	1070	1	373	1062	2	329	3116	12	823	339	22	8421	2532
28	1040	4	293	1069	1	355	1080	1	392	1073	1	383	1063	2	339	3135	10	854	298	19	8462	2617
27	1049	3	304	1072	1	365	1082	1	403	1077	1	394	1065	2	350	3156	9	885	258	16	8502	2702
26	1055	3	314	1075	1	376	1085	1	414	1080	1	405	1068	1	361	3175	8	917	220	14	8540	2787
25	1060	2	325	1078	1	387	1088	0	425	1083	1	416	1071	1	371	3189	7	949	189	12	8571	2872
24	1065	2	335	1082	1	398	1088	0	436	1085	0	427	1074	1	382	3197	6	981	168	10	8592	2958
23	1068	2	346	1084	1	408	1089	0	447	1087	0	437	1075	1	393	3204	5	1013	151	8	8609	3044
22	1071	1	357	1085	0	419	1089	0	457	1089	0	448	1079	1	404	3210	4	1045	136	7	8624	3130
21	1073	1	367	1086	0	430	1089	0	468	1089	0	459	1084	0	414	3214	3	1077	123	6	8637	3217
20	1076	1	378	1087	0	441	1090	0	479	1089	0	470	1086	0	425	3222	3	1109	108	5	8652	3303
19	1078	1	389	1089	0	452	1090	0	490	1090	0	481	1088	0	436	3231	2	1141	92	4	8668	3390
18	1080	1	400	1090	0	463	1091	0	501	1092	0	492	1090	0	447	3242	2	1174	74	3	8686	3476
17	1081	1	411	1091	0	474	1092	0	512	1094	0	503	1091	0	458	3252	1	1206	57	2	8703	3563
16	1082	0	421	1092	0	485	1093	0	523	1094	0	514	1092	0	469	3257	1	1239	48	2	8712	3650
15	1085	0	432	1092	0	496	1094	0	534	1095	0	525	1092	0	480	3262	1	1271	39	1	8721	3738
14	1088	0	443	1092	0	506	1095	0	545	1095	0	536	1092	0	491	3268	0	1304	29	1	8731	3825
13	1089	0	454	1093	0	517	1095	0	556	1095	0	547	1092	0	502	3272	0	1337	23	0	8737	3912
12	1090	0	465	1094	0	528	1095	0	567	1095	0	558	1093	0	513	3274	0	1370	17	0	8743	4000
11	1092	0	476	1095	0	539	1095	0	578	1095	0	569	1094	0	524	3275	0	1402	12	0	8748	4087
10	1094	0	487	1095	0	550	1095	0	589	1095	0	580	1095	0	534	3278	0	1435	7	0	8753	4175

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

WASHINGTON, DC (NATIONAL AIRPORT)

TRY Data (1957)

Latitude 38.70 N

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Longitude 77.00 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*
9	1095	0	498		1095	0	561		1095	0	600		1095	0	590		1095	0	545		3283	0	1468		2	0	8758	4262
8	1095	0	509		1095	0	572		1095	0	610		1095	0	601		1095	0	556		3285	0	1501		0	0	8760	4350

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:

TRY Data (1957)

Latitude 38.70 N
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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:	4696	4302	3862	3398	2836	2144	1544	968	339	38	0
Annual Wet Bulb Cooling deg-hrs:	67631.	53965.	41507.	30396.	20734.	12914.	7097.	3017.	683.	48.	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	53	52	51	49	46	44	40	35	28	18	11	.001		
.002	0	1	1	1	1	1	1	1	1	1	1	45	45	44	43	41	39	36	31	25	16	10	.002		
.003	1	1	2	2	2	2	2	2	2	2	2	38	38	37	37	36	34	32	28	23	15	9	.003		
.004	1	2	3	4	4	5	5	5	5	5	5	31	31	31	31	31	30	28	25	20	13	8	.004		
.005	1	3	4	6	7	8	8	8	8	8	8	26	26	26	26	26	25	24	22	18	12	7	.005		
.006	2	4	6	9	10	11	12	12	12	12	12	21	21	21	21	21	21	20	18	15	10	6	.006		
.007	2	4	8	11	13	15	16	16	17	17	17	17	17	17	17	17	17	17	15	13	9	5	.007		
.008	3	5	9	14	17	19	20	21	22	22	22	14	14	14	14	14	14	13	12	11	7	4	.008		
.009	3	6	11	16	20	23	25	26	27	27	27	10	10	10	10	10	10	10	10	9	6	4	.009		
.010	3	7	12	19	23	27	29	31	32	33	33	8	8	8	8	8	8	8	7	7	4	3	.010		
.011	4	8	14	21	26	31	34	36	38	39	39	5	5	5	5	5	5	5	5	5	3	2	.011		
.012	4	8	16	24	29	35	38	41	44	45	46	4	4	4	4	4	4	4	4	3	2	1	.012		
.013	4	9	17	26	33	38	43	47	50	52	53	2	2	2	2	2	2	2	2	2	2	1	.013		
.014	5	10	19	28	36	42	47	52	56	58	60	1	1	1	1	1	1	1	1	1	1	1	.014		
.015	5	11	20	31	39	46	52	57	62	65	67	1	1	1	1	1	1	1	1	1	0	0	.015		
.016	5	12	22	33	42	50	57	63	68	72	75	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	6	12	24	36	46	54	61	68	74	79	82	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	6	13	25	38	49	58	66	73	80	86	90	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	55	51	48	47	42	47	47	44	56	43	40	44	47
VERTICAL													
NORTH	100	100	100	98	94	89	91	96	100	100	100	100	96
WEST	61	60	63	60	61	66	65	61	65	57	52	55	62
SOUTH	43	46	53	65	70	80	79	66	64	42	33	33	57
EAST	64	63	60	63	61	63	63	60	75	54	51	53	62
% Possible Sun	49	53	56	58	58	64	63	63	62	60	52	47	58

FOOTNOTES: * Corrected For Cloud Cover.

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

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TRY Data (1957)

Latitude 38.70 N

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Longitude 77.00 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/ NNW	NE/ NN	NNE/ NNW	N	S-45 ***	horiz	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ NNW	NE/ NN	NNE/ NNW	N		S-45 ***	horiz
Jan	1878	1740	1396	1076	655	337	186	158	158	1952	991	717	668	553	445	308	208	164	155	155	711	446	572
Feb	1915	1794	1516	1254	857	517	298	209	201	2198	1320	788	738	637	544	410	299	232	203	199	852	603	815
Mar	1729	1674	1535	1395	1095	772	508	327	271	2364	1778	1048	1031	958	878	723	565	443	363	337	1274	1058	1125
Apr	1341	1425	1455	1460	1295	1042	769	533	372	2340	2193	1007	1030	1026	1012	912	776	640	528	458	1453	1432	1459
May	1035	1195	1334	1443	1396	1222	982	730	531	2239	2458	957	1035	1089	1130	1078	957	812	666	563	1604	1746	1718
Jun	916	1094	1282	1434	1445	1319	1097	845	648	2177	2569	866	962	1050	1121	1109	1023	893	751	642	1489	1732	1901
Jul	964	1131	1294	1426	1409	1267	1040	793	598	2183	2503	931	1032	1119	1190	1167	1070	927	775	652	1569	1797	1818
Aug	1192	1307	1379	1427	1313	1099	851	616	443	2245	2264	1007	1067	1095	1106	1020	880	732	596	505	1554	1598	1617
Sep	1544	1539	1472	1391	1150	862	605	410	318	2286	1892	948	902	839	776	659	544	458	402	378	1182	1071	1340
Oct	1814	1707	1476	1265	914	580	360	247	233	2201	1452	1018	978	870	767	589	420	311	257	249	1162	851	1004
Nov	1866	1744	1427	1124	723	393	226	174	174	1996	1076	872	825	694	561	382	244	176	154	153	914	551	651
Dec	1813	1686	1343	1011	599	291	166	146	146	1842	896	824	775	637	501	329	201	149	140	140	817	470	481
Year	1498	1501	1408	1309	1072	810	592	434	342	2168	1785	916	922	882	838	726	601	496	417	370	1218	1116	1208

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/NNW	NE/NN	NNE/NNW	N	S	SSE/SSW	SE/SW	ESE/WSW	E/W	ENE/NNW	NE/NN	NNE/NNW	N
Jan	1622	1477	1171	891	524	250	141	129	128	606	558	457	365	248	163	131	127	126
Feb	1626	1508	1267	1045	700	398	222	166	163	658	610	525	448	334	238	184	164	162
Mar	1392	1379	1275	1165	902	616	387	250	220	848	846	789	726	592	455	350	289	274
Apr	1000	1128	1190	1209	1071	850	610	407	293	779	824	836	830	748	631	514	419	368
May	725	896	1071	1187	1153	1007	787	567	398	720	808	880	925	883	781	652	528	445
Jun	628	796	1013	1176	1194	1088	885	664	479	653	743	842	917	910	838	721	598	502
Jul	669	836	1031	1170	1165	1043	837	620	446	704	800	901	974	960	878	750	617	511
Aug	869	1015	1121	1177	1086	902	679	476	343	771	847	891	908	838	718	587	473	402
Sep	1215	1256	1215	1155	947	695	470	313	258	760	732	683	633	535	439	367	323	308
Oct	1517	1423	1232	1053	743	456	270	195	190	844	811	723	636	480	335	244	206	203
Nov	1602	1474	1193	937	579	300	167	142	141	740	693	577	462	307	191	138	125	125
Dec	1567	1435	1123	835	473	216	126	119	119	702	653	529	412	262	156	117	113	113
Year	1200	1217	1157	1083	879	653	466	338	265	733	745	721	688	593	487	398	333	296

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.

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. RADSQL 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 DCE-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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