Weather Data for Simplified Energy Calculation Methods

**Volume III. Western United States:
TRY Data**

August 1984

**Prepared for the U.S. Department of Energy
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WEATHER DATA FOR SIMPLIFIED
ENERGY CALCULATION METHODS

VOLUME III: WESTERN UNITED STATES: TRY DATA

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August 1984

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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

ALBUQUERQUE, NEW MEXICO
WBAN 23050
TABLE A:

TRY Data (1959)

Latitude 35.10 N
Longitude 106.60 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Jan														
60 to 64	0	0	0	0	2	0	0	0	2	44.0	744	21352	0	0
55 to 59	0	0	0	0	9	8	0	0	17	40.6	740	17639	4	7
50 to 54	0	0	0	3	11	11	4	0	29	37.9	721	14000	23	88
45 to 49	0	0	0	12	19	16	10	4	61	36.8	672	10503	72	311
40 to 44	10	2	4	18	12	16	22	14	98	33.7	605	7298	139	826
35 to 39	19	16	16	21	18	18	20	27	155	31.2	471	4569	273	1817
30 to 34	29	26	21	17	9	12	19	19	152	27.7	320	2585	424	3553
25 to 29	15	21	27	9	8	7	6	13	106	23.9	174	1369	570	6057
20 to 24	5	13	9	7	5	4	6	6	55	19.0	100	690	644	9098
15 to 19	6	2	4	4	0	1	5	6	28	15.0	56	309	688	12437
10 to 14	5	8	6	2	0	0	1	3	25	9.8	28	96	716	15944
5 to 9	4	5	6	0	0	0	0	1	16	6.2	5	6	739	19574
Feb														
60 to 64	0	0	0	0	4	4	0	0	8	44.5	671	15506	1	1
55 to 59	0	0	0	2	8	9	0	0	19	40.6	660	12178	12	33
50 to 54	0	0	0	7	30	38	7	1	83	38.5	621	8952	51	167
45 to 49	5	1	2	24	23	10	30	15	110	36.5	521	6078	151	653
40 to 44	14	12	11	22	9	11	22	19	120	34.4	395	3756	277	1691
35 to 39	21	14	20	17	4	4	12	27	119	30.3	276	2073	396	3368
30 to 34	22	25	22	5	0	2	4	11	91	27.2	179	934	493	5589
25 to 29	17	15	18	6	6	5	6	8	81	23.8	82	284	590	8299
20 to 24	5	17	11	1	0	1	3	3	41	19.7	24	24	648	11399
Mar														
70 to 74	0	0	0	0	1	4	0	0	5	46.2	744	20080	0	0
65 to 69	0	0	0	1	12	11	0	0	24	44.3	736	16374	8	14
60 to 64	0	0	0	8	27	25	7	0	67	42.0	698	12777	46	137
55 to 59	0	0	1	17	16	15	17	6	72	39.7	628	9477	116	557
50 to 54	8	1	3	15	13	16	20	11	87	37.2	543	6550	201	1350
45 to 49	14	13	13	22	14	13	21	22	132	35.3	435	4081	309	2601
40 to 44	26	12	23	16	5	4	16	26	128	32.8	320	2214	424	4454
35 to 39	24	33	22	11	2	2	6	19	119	29.8	180	979	564	6939
30 to 34	12	15	19	1	3	2	3	3	58	26.3	79	361	665	10041
25 to 29	7	16	10	2	0	1	3	6	45	23.9	33	76	711	13476
20 to 24	2	3	2	0	0	0	0	0	7	21.9	2	3	742	17123

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

ALBUQUERQUE, NEW MEXICO
WBAN 23050
TABLE A:

TRY Data (1959)

Latitude 35.10 N
Longitude 106.60 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Apr															
80 to 84	0	0	0	0	7	10	0	0	17	51.6	715	18796	5	4	
75 to 79	0	0	0	4	17	15	3	0	39	50.3	689	15272	31	80	
70 to 74	0	0	0	10	15	9	11	3	48	48.4	645	11931	75	339	
65 to 69	1	0	4	21	15	20	15	8	84	46.1	587	8832	133	840	
60 to 64	8	8	10	12	14	17	13	9	91	44.7	494	6113	226	1721	
55 to 59	20	7	16	17	10	7	17	21	115	43.2	401	3873	319	3081	
50 to 54	16	17	21	11	5	6	15	19	110	41.3	274	2179	446	4987	
45 to 49	16	22	16	11	7	1	7	10	90	39.1	175	1053	545	7461	
40 to 44	12	15	13	4	0	5	8	15	72	36.6	99	381	621	10389	
35 to 39	17	15	9	0	0	0	1	5	47	32.6	32	69	688	13677	
30 to 34	0	6	1	0	0	0	0	0	7	29.0	1	2	719	17210	
May															
85 to 89	0	0	0	0	4	9	0	0	13	52.7	742	16505	2	1	
80 to 84	0	0	0	4	22	19	4	0	49	51.8	716	12842	28	58	
75 to 79	0	0	0	18	25	19	14	1	77	50.2	656	9399	88	335	
70 to 74	2	0	7	32	25	23	28	8	125	49.1	554	6345	190	1001	
65 to 69	3	0	21	23	10	16	18	22	113	48.0	434	3879	310	2255	
60 to 64	30	18	29	13	6	4	16	36	152	46.6	299	1997	445	4093	
55 to 59	36	30	19	3	1	1	10	17	117	45.1	152	863	592	6679	
50 to 54	8	28	13	0	0	1	1	5	56	43.1	72	311	672	9847	
45 to 49	12	8	3	0	0	1	2	4	30	39.3	26	81	718	13337	
40 to 44	2	9	1	0	0	0	0	0	12	34.6	6	8	738	16984	
Jun															
95 to 99	0	0	0	0	3	5	0	0	8	62.0	720	15106	0	0	
90 to 94	0	0	0	1	35	34	3	0	73	59.0	695	11546	25	40	
85 to 89	0	0	0	21	34	22	19	0	96	58.8	597	8303	123	397	
80 to 84	0	0	3	41	6	9	26	8	93	57.8	510	5545	210	1239	
75 to 79	13	1	24	13	8	11	25	37	132	57.0	402	3254	318	2548	
70 to 74	30	14	28	14	2	5	7	26	126	55.6	268	1600	452	4494	
65 to 69	27	43	29	0	1	4	8	10	122	54.7	138	573	582	7067	
60 to 64	14	21	5	0	1	0	2	7	50	54.0	42	145	678	10239	
55 to 59	6	9	1	0	0	0	0	2	18	48.1	13	25	707	13719	
50 to 54	0	2	0	0	0	0	0	0	2	47.0	1	1	719	17295	

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

ALBUQUERQUE, NEW MEXICO
WBAN 23050
TABLE A:

TRY Data (1959)

Latitude 35.10 N
Longitude 106.60 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Jul														
95 to 99	0	0	0	0	3	7	0	0	10	61.7	744	15107	0	0
90 to 94	0	0	0	1	41	32	1	0	75	61.4	714	11436	30	49
85 to 89	0	0	0	19	37	28	15	0	99	61.6	622	8086	122	419
80 to 84	1	0	3	46	9	17	29	6	111	60.9	519	5235	225	1288
75 to 79	7	2	25	22	3	6	30	42	137	59.8	398	2939	346	2712
70 to 74	36	14	33	5	0	1	14	24	127	59.1	272	1284	472	4777
65 to 69	43	49	28	0	0	2	2	19	143	58.2	119	304	625	7517
60 to 64	6	25	4	0	0	0	2	2	39	57.3	15	21	729	10954
55 to 59	0	3	0	0	0	0	0	0	3	55.7	0	0	744	14653
Aug														
90 to 94	0	0	0	0	20	20	1	0	41	62.8	738	13164	6	4
85 to 89	0	0	0	11	32	28	4	0	75	62.6	675	9617	69	177
80 to 84	0	0	0	37	27	21	25	1	111	62.8	588	6441	156	721
75 to 79	1	0	12	27	9	18	28	28	123	61.7	476	3790	268	1790
70 to 74	30	6	37	17	3	1	20	34	148	60.9	343	1745	401	3465
65 to 69	48	62	36	1	1	3	14	26	191	60.8	171	445	573	5885
60 to 64	12	24	8	0	1	2	1	4	52	60.3	26	32	718	9192
55 to 59	2	1	0	0	0	0	0	0	3	58.3	0	0	744	12880
Sep														
90 to 94	0	0	0	0	14	16	0	0	30	57.4	715	15917	5	5
85 to 89	0	0	0	7	17	14	2	0	40	57.1	677	12439	43	127
80 to 84	0	0	0	16	27	35	15	1	94	55.5	625	9172	95	460
75 to 79	0	0	3	32	24	14	29	15	117	53.6	515	6319	205	1207
70 to 74	16	0	11	16	0	3	28	19	93	51.9	419	4014	301	2502
65 to 69	23	16	26	8	3	3	6	34	119	50.1	294	2228	426	4316
60 to 64	34	33	24	5	2	0	3	10	111	47.5	187	1039	533	6727
55 to 59	8	23	17	6	1	2	4	7	68	45.6	86	385	634	9673
50 to 54	5	12	7	0	2	3	1	2	32	43.2	34	102	686	12990
45 to 49	4	6	2	0	0	0	2	2	16	42.5	5	6	715	16494

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

ALBUQUERQUE, NEW MEXICO
WBAN 23050
TABLE A:

TRY Data (1959)

Latitude 35.10 N
Longitude 106.60 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	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	0	1	2	0	0	3	54.3	744	19181	0	0
75 to 79	0	0	0	0	18	16	0	0	34	52.1	731	15479	13	18
70 to 74	0	0	0	11	27	18	2	0	58	49.8	693	11919	51	178
65 to 69	0	0	0	18	20	24	22	2	86	48.2	621	8646	123	625
60 to 64	4	0	4	25	10	13	29	13	98	46.9	530	5765	214	1464
55 to 59	15	7	16	23	8	8	19	36	132	44.7	412	3391	332	2810
50 to 54	34	22	32	6	2	3	9	19	127	42.8	291	1643	453	4782
45 to 49	27	37	25	5	3	6	7	16	126	41.4	150	538	594	7397
40 to 44	13	27	15	3	4	2	5	7	76	39.1	48	74	696	10653
35 to 39	0	0	1	2	0	1	0	0	4	36.0	1	1	743	14300
Nov														
65 to 69	0	0	0	0	3	2	0	0	5	45.0	718	17198	2	2
60 to 64	0	0	0	0	20	15	0	0	35	46.5	713	13620	7	24
55 to 59	0	0	0	13	24	22	6	0	65	43.0	659	10187	61	191
50 to 54	0	0	1	22	18	21	24	8	94	39.9	587	7072	133	676
45 to 49	13	2	12	21	12	15	24	24	123	37.7	473	4420	247	1624
40 to 44	34	27	22	19	10	9	19	27	167	34.7	327	2375	393	3179
35 to 39	17	23	25	9	3	6	11	16	110	30.8	180	1124	540	5528
30 to 34	12	18	13	6	0	0	5	11	65	26.5	91	472	629	8476
25 to 29	11	8	9	0	0	0	1	3	32	22.6	44	164	676	11768
20 to 24	3	10	7	0	0	0	0	1	21	19.3	15	29	705	15233
15 to 19	0	2	1	0	0	0	0	0	3	17.0	0	0	720	18804
Dec														
55 to 59	0	0	0	0	7	3	0	0	10	38.4	742	14930	2	2
50 to 54	0	0	0	3	13	9	0	0	25	37.4	726	11254	18	46
45 to 49	0	0	1	12	33	35	8	0	89	36.1	685	7711	59	223
40 to 44	7	5	4	24	21	21	42	26	150	35.7	575	4545	169	777
35 to 39	30	14	13	36	13	15	22	36	179	32.7	408	2097	336	2049
30 to 34	45	48	46	16	6	9	18	27	215	29.1	185	577	559	4249
25 to 29	11	24	26	2	0	1	3	4	71	24.3	40	75	704	7467
20 to 24	0	2	3	0	0	0	0	0	5	20.8	3	3	741	11115

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

ALBUQUERQUE, NEW MEXICO
 MBAN 23050
 TABLE B:

TRY Data (1959)

Latitude 35.10 N
 Longitude 106.60 E

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

Dry Bulb range(F)	Number of Hours of Occurrence in time period									Mean Coincident Wet Bulb Temperature (F)								
	Hour of day									Hour of day								
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year
95 to 99	0	0	0	0	6	12	0	0	18	0.0	0.0	0.0	0.0	62.3	61.6	0.0	0.0	61.8
90 to 94	0	0	0	2	110	102	5	0	219	0.0	0.0	0.0	61.5	60.6	59.9	60.2	0.0	60.3
85 to 89	0	0	0	58	124	101	40	0	323	0.0	0.0	0.0	60.6	60.8	59.5	58.5	0.0	60.1
80 to 84	1	0	6	144	99	113	99	16	478	61.0	0.0	59.7	60.4	57.7	56.5	58.1	57.9	58.4
75 to 79	21	3	64	116	104	99	129	123	659	57.0	58.3	59.3	57.4	53.5	54.5	56.7	57.6	56.4
70 to 74	114	34	116	105	73	64	110	114	730	56.7	57.1	58.4	53.6	49.8	50.7	53.2	56.1	54.7
65 to 69	145	170	144	72	65	85	85	121	887	56.7	56.7	55.6	48.2	47.5	48.1	51.0	53.3	53.3
60 to 64	108	129	84	63	87	80	73	81	705	49.4	52.6	49.0	46.0	45.6	45.4	46.2	47.7	48.2
55 to 59	87	80	70	81	84	75	73	89	639	45.1	44.9	44.8	44.2	41.7	41.9	43.4	43.9	43.7
50 to 54	71	82	77	67	94	108	81	65	645	41.2	42.8	42.2	40.4	38.4	38.7	39.9	41.1	40.5
45 to 49	91	89	74	107	111	97	111	97	777	38.9	38.8	39.6	37.4	37.5	37.3	37.1	38.2	38.0
40 to 44	118	109	93	106	61	68	134	134	823	35.2	36.3	35.9	34.0	34.4	35.3	34.3	34.8	35.0
35 to 39	128	115	106	96	40	46	72	130	733	31.2	31.5	31.3	31.4	31.3	31.1	31.4	30.7	31.2
30 to 34	120	138	122	45	18	25	49	71	588	27.7	27.8	27.9	28.0	28.4	28.3	27.8	27.8	27.9
25 to 29	61	84	90	19	14	14	19	34	335	23.5	23.9	23.8	24.2	23.1	23.1	24.8	24.2	23.8
20 to 24	15	45	32	8	5	5	9	10	129	19.6	20.0	19.5	19.3	19.4	19.4	18.2	18.5	19.5
15 to 19	6	4	5	4	0	1	5	6	31	14.5	16.0	16.0	14.8	0.0	17.0	15.8	14.3	15.2
10 to 14	5	8	6	2	0	0	1	3	25	9.2	9.6	10.7	9.5	0.0	0.0	10.0	10.0	9.8
5 to 9	4	5	6	0	0	0	0	1	16	6.5	6.0	5.8	0.0	0.0	0.0	0.0	8.0	6.2

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Month	Dry Bulb Temperature (F)					Wet Bulb Ave	Percent Relative Humidity Average					Average Humidity Ratio (lb moisture/lb dry air)					Average wind MPH
	Ave	Max	Min	Max	Min		4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	33.8	60	5	44	24	28.0	64	61	43	53	57	0.0022	0.0025	0.0026	0.0025	0.0024	7.4
Feb	39.4	63	20	51	29	31.7	61	52	34	43	50	0.0026	0.0028	0.0025	0.0025	0.0026	10.0
Mar	45.5	70	20	59	33	34.1	48	38	21	32	37	0.0022	0.0025	0.0019	0.0022	0.0022	10.6
Apr	56.4	84	31	70	45	42.4	49	38	23	34	38	0.0037	0.0039	0.0030	0.0035	0.0036	10.5
May	65.3	88	40	78	53	47.1	43	26	18	24	30	0.0044	0.0041	0.0032	0.0035	0.0039	11.5
Jun	76.5	96	52	90	64	56.5	48	32	21	27	34	0.0077	0.0078	0.0063	0.0065	0.0072	9.9
Jul	77.2	97	58	91	65	59.8	60	40	23	37	42	0.0101	0.0100	0.0075	0.0089	0.0093	10.1
Aug	74.8	94	59	87	65	61.5	71	52	33	48	53	0.0118	0.0117	0.0097	0.0106	0.0111	7.2
Sep	70.4	94	46	84	57	51.0	59	30	20	26	30	0.0050	0.0056	0.0049	0.0048	0.0051	8.9
Oct	56.7	81	37	69	45	44.7	57	45	31	41	46	0.0047	0.0050	0.0045	0.0046	0.0047	8.5
Nov	43.6	69	18	56	33	34.9	61	49	31	43	47	0.0030	0.0033	0.0030	0.0031	0.0031	6.7
Dec	37.4	59	21	47	30	32.5	73	67	51	63	64	0.0031	0.0033	0.0035	0.0035	0.0033	6.4
Year	56.5	97	5	69	45	43.7	56	44	29	39	44	0.0051	0.0052	0.0044	0.0047	0.0049	9.0

ALBUQUERQUE, NEW MEXICO

MBAN 23050

TABLE D:

TRY Data (1959)

Latitude 35.10 N

Longitude 106.60 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																24-HOUR SUMMARY											
	7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**				10PM-6AM**				HEATING		COOLING	
	Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg	Hrs	Deg
	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	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*				
98	0	521	0	0	417	0	0	348	0	0	356	0	0	430	0	0	1562	0	0	8760	3634	0	0					
97	0	510	0	0	406	0	0	337	0	1	345	0	0	419	0	0	1529	0	0	8759	3547	1	0					
96	0	499	0	0	395	0	0	326	0	3	334	0	0	408	0	0	1496	0	0	8756	3459	4	0					
95	0	489	0	0	384	0	3	315	0	8	323	0	0	397	0	0	1464	0	0	8748	3372	12	0					
94	0	478	0	0	374	0	11	304	0	17	312	0	0	386	0	0	1431	0	0	8732	3284	28	0					
93	0	467	0	0	363	0	20	293	0	32	302	0	0	375	0	0	1398	0	0	8708	3197	52	1					
92	0	456	0	0	352	0	36	282	0	54	291	1	0	364	0	0	1365	0	0	8669	3110	91	1					
91	0	445	0	1	341	0	66	272	1	75	281	1	1	354	0	0	1332	0	0	8617	3024	143	2					
90	0	434	0	2	330	0	99	262	2	99	271	2	3	343	0	0	1299	0	0	8556	2938	204	4					
89	0	423	0	4	319	0	128	252	3	123	261	3	6	332	0	0	1266	0	0	8498	2853	262	7					
88	0	412	0	10	308	0	159	243	4	144	251	5	9	321	0	0	1234	0	0	8437	2768	323	9					
87	0	401	0	19	297	0	189	233	6	165	242	6	15	310	0	0	1201	0	0	8371	2684	389	13					
86	0	390	0	36	286	1	209	224	8	185	233	8	25	299	0	0	1168	0	0	8304	2600	456	17					
85	0	379	0	53	276	1	229	216	10	206	224	10	37	289	1	0	1135	0	0	8234	2518	526	22					
84	0	368	0	74	266	2	247	207	13	226	215	12	52	278	1	0	1102	0	0	8160	2436	600	28					
83	0	357	0	100	256	2	266	199	15	246	206	15	66	268	2	0	1069	0	0	8081	2355	679	34					
82	0	346	0	127	246	4	283	190	18	264	198	17	87	257	3	2	1036	0	0	7995	2274	765	41					
81	1	335	0	157	236	5	302	182	21	286	190	20	112	248	4	6	1004	0	0	7894	2195	866	49					
80	4	324	0	188	227	7	326	175	24	313	182	23	134	238	5	13	971	0	0	7780	2116	980	59					
79	11	313	0	215	218	9	349	167	27	338	174	26	157	228	6	25	938	0	0	7663	2039	1097	69					
78	21	303	0	239	209	11	373	160	31	355	167	30	183	219	8	40	906	1	0	7547	1963	1213	81					
77	32	292	1	265	201	14	398	153	35	374	159	33	206	210	10	62	873	1	0	7421	1888	1339	93					
76	46	281	1	286	193	16	416	146	39	395	152	37	230	201	12	96	841	2	0	7289	1815	1471	107					
75	62	271	1	307	185	19	433	139	43	415	145	41	257	193	14	140	810	3	0	7144	1742	1616	123					
74	77	261	2	329	177	22	450	133	48	435	138	45	284	185	17	182	778	5	0	7001	1672	1759	140					
73	97	251	3	345	169	26	466	126	52	449	132	50	305	177	20	218	747	7	0	6878	1602	1882	158					
72	125	241	4	367	162	29	484	120	57	461	126	54	327	169	23	267	717	9	0	6727	1534	2033	177					
71	150	231	6	393	155	33	498	114	62	473	119	59	349	161	27	322	687	12	0	6574	1468	2186	198					
70	173	222	7	414	148	37	509	108	67	484	113	64	370	154	30	386	658	15	0	6422	1403	2338	221					
69	201	213	9	433	141	42	520	102	72	502	107	69	389	147	34	469	629	20	0	6244	1339	2516	245					
68	235	204	11	449	135	46	529	97	77	522	101	74	405	140	38	552	601	25	0	6067	1278	2693	271					
67	264	196	14	461	128	50	541	91	83	537	96	79	424	133	42	635	575	31	0	5896	1218	2864	299					
66	289	187	16	473	122	55	556	85	88	550	90	85	438	126	47	722	548	38	0	5730	1160	3080	329					
65	317	179	19	489	116	60	572	80	94	566	85	90	456	120	51	814	523	45	0	5545	1103	3215	360					
64	340	172	23	502	110	65	587	75	100	582	80	96	474	114	56	905	499	54	0	5369	1049	3391	393					
63	358	164	26	514	104	70	602	70	106	593	74	102	491	107	60	973	476	63	0	5228	996	3532	428					
62	374	157	30	528	98	75	620	65	112	608	70	108	506	101	65	1039	453	73	0	5083	944	3677	463					
61	389	150	34	543	93	81	638	61	118	626	65	114	516	96	71	1107	431	84	0	4939	894	3821	501					
60	405	143	38	555	87	86	657	56	124	645	60	120	531	90	76	1157	409	95	0	4808	846	3952	540					
59	420	136	42	568	82	92	675	52	131	660	56	127	549	84	81	1207	388	107	0	4679	798	4081	580					
58	435	129	46	586	77	97	687	48	138	674	51	134	563	79	87	1258	368	120	0	4555	752	4205	622					
57	450	123	51	602	72	103	700	44	145	693	47	140	575	74	93	1311	348	132	0	4428	707	4332	664					
56	462	117	55	616	67	109	719	40	152	708	43	147	587	69	98	1356	328	146	0	4311	663	4449	708					
55	476	110	60	632	62	116	741	36	159	722	40	155	604	64	104	1404	309	160	0	4180	621	4580	753					
54	493	104	65	646	58	122	760	33	167	743	36	162	621	59	110	1455	291	174	0	4041	580	4719	800					
53	511	98	70	655	53	129	778	29	175	763	33	169	635	54	117	1492	272	189	0	3925	540	4835	848					

ALBUQUERQUE, NEW MEXICO

TRY Data (1959)

Latitude 35.10 N

WBAN 23050

Longitude 106.60 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*	
52	525	93	75	667	49	135	797	26	182	781	29	177	651	50	123	1540	255	204	3797	501	4963	896	
51	537	87	80	682	45	142	817	23	190	802	26	185	667	45	130	1594	238	219	3659	464	5101	947	
50	553	81	86	699	41	149	836	21	199	825	23	193	684	41	136	1636	221	236	3525	428	5235	998	
49	569	76	91	713	37	156	859	18	207	849	21	202	704	37	143	1680	205	252	3384	394	5376	1051	
48	586	71	97	732	33	163	884	16	216	871	19	210	724	33	151	1735	189	269	3226	360	5534	1106	
47	600	66	103	757	30	171	906	14	225	890	16	219	744	30	158	1791	174	287	3071	329	5689	1162	
46	611	61	109	779	26	178	930	12	234	906	14	228	763	26	165	1848	159	305	2921	299	5839	1220	
45	626	56	115	802	23	186	950	11	243	925	13	237	790	23	173	1904	145	324	2761	271	5999	1279	
44	641	52	122	824	20	194	964	9	253	944	11	246	817	20	181	1960	131	343	2609	244	6151	1340	
43	660	47	128	845	18	203	977	8	263	960	10	256	842	17	189	2017	118	363	2457	218	6303	1402	
42	680	43	135	874	15	211	990	7	273	975	8	266	872	15	198	2085	106	384	2282	195	6478	1466	
41	698	39	142	897	13	220	1002	6	283	987	7	275	902	13	207	2162	94	405	2110	173	6650	1531	
40	719	35	149	912	11	229	1012	5	293	998	6	285	927	11	216	2246	84	427	1944	152	6816	1599	
39	739	31	156	933	10	238	1021	4	303	1008	5	295	949	10	225	2331	74	450	1777	134	6983	1668	
38	760	28	163	954	8	248	1030	4	313	1017	4	306	968	8	235	2406	64	473	1623	117	7137	1738	
37	779	25	171	973	7	258	1039	3	323	1027	4	316	986	7	245	2482	56	498	1473	101	7287	1811	
36	796	22	179	993	6	267	1047	3	334	1038	3	326	995	6	255	2550	48	523	1339	87	7421	1864	
35	819	19	187	1010	5	277	1054	2	344	1047	3	337	1005	5	265	2622	41	549	1201	75	7559	1959	
34	846	16	195	1025	4	288	1060	2	355	1053	2	347	1019	4	275	2705	35	575	1051	63	7709	2035	
33	872	14	204	1035	3	298	1064	1	366	1059	2	358	1029	4	285	2783	30	603	917	54	7843	2113	
32	899	12	213	1042	3	308	1069	1	376	1064	1	368	1037	3	295	2854	25	631	792	45	7968	2192	
31	922	10	222	1050	2	319	1073	1	387	1069	1	379	1045	2	306	2916	21	660	682	38	8078	2272	
30	944	8	231	1057	2	329	1075	1	398	1073	1	390	1055	2	316	2969	18	689	585	31	8175	2354	
29	968	7	241	1064	2	340	1076	1	408	1076	1	400	1064	2	327	3019	15	719	491	26	8269	2436	
28	990	6	251	1070	1	351	1080	0	419	1079	1	411	1071	1	338	3059	12	750	409	22	8351	2519	
27	1006	5	261	1075	1	361	1085	0	430	1081	0	422	1075	1	348	3089	10	781	347	18	8413	2603	
26	1019	4	271	1077	1	372	1088	0	441	1084	0	433	1077	1	359	3119	8	812	294	15	8466	2687	
25	1036	3	281	1080	1	383	1089	0	452	1087	0	444	1079	1	370	3154	7	843	234	12	8526	2772	
24	1048	3	292	1082	1	394	1091	0	463	1090	0	455	1080	1	381	3181	6	875	186	10	8574	2858	
23	1053	2	302	1083	1	404	1093	0	474	1092	0	465	1082	0	392	3198	5	907	158	8	8602	2944	
22	1060	2	313	1085	0	415	1094	0	485	1093	0	476	1084	0	402	3214	4	939	129	7	8631	3030	
21	1069	2	323	1087	0	426	1095	0	496	1093	0	487	1085	0	413	3229	3	971	101	6	8659	3116	
20	1075	1	334	1088	0	437	1095	0	506	1093	0	498	1087	0	424	3240	3	1003	80	5	8680	3203	
19	1078	1	345	1089	0	448	1095	0	517	1094	0	509	1090	0	435	3245	3	1036	68	4	8692	3290	
18	1080	1	356	1090	0	459	1095	0	528	1094	0	520	1092	0	446	3248	2	1068	60	3	8700	3377	
17	1082	1	366	1091	0	470	1095	0	539	1095	0	531	1094	0	457	3251	2	1101	52	3	8708	3464	
16	1083	1	377	1092	0	481	1095	0	550	1095	0	542	1094	0	468	3254	2	1133	47	2	8713	3551	
15	1083	1	388	1092	0	492	1095	0	561	1095	0	553	1094	0	479	3257	1	1166	43	2	8717	3638	
14	1084	0	399	1093	0	503	1095	0	572	1095	0	564	1094	0	490	3260	1	1198	38	1	8722	3725	
13	1086	0	410	1094	0	513	1095	0	583	1095	0	575	1094	0	501	3263	1	1231	32	1	8728	3813	
12	1087	0	421	1094	0	524	1095	0	594	1095	0	586	1095	0	512	3267	1	1264	27	1	8733	3900	
11	1087	0	431	1094	0	535	1095	0	605	1095	0	597	1095	0	523	3269	0	1296	23	1	8737	3987	
10	1088	0	442	1095	0	546	1095	0	616	1095	0	608	1095	0	533	3273	0	1329	18	0	8742	4075	
9	1089	0	453	1095	0	557	1095	0	627	1095	0	619	1095	0	544	3277	0	1362	13	0	8747	4162	
8	1091	0	464	1095	0	568	1095	0	638	1095	0	630	1095	0	555	3280	0	1395	8	0	8752	4250	
7	1094	0	475	1095	0	579	1095	0	649	1095	0	641	1095	0	566	3282	0	1427	3	0	8757	4337	

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

1. 565 x 100 = 56500 Deg Hrs)
 are calculated by subtracting the Hrs Above from X times 365

ALBUQUERQUE, NEW MEXICO

TRY Data (1959)

Latitude 35.10 N

WBAN 23050

Longitude 106.60 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		Above		
	Base	Heat Cool	Base	Heat Cool	Base	Heat Cool	Base	Heat Cool	Base	Heat Cool	Base	Heat Cool	Base	100s*	Base	100s*	
6	1095	0 486	1095	0 590	1095	0 660	1095	0 652	1095	0 577	3283	0 1460	1	0	8759	4425	
5	1095	0 497	1095	0 601	1095	0 671	1095	0 662	1095	0 588	3284	0 1493	0	0	8760	4512	
4	1095	0 508	1095	0 612	1095	0 682	1095	0 673	1095	0 599	3285	0 1526	0	0	8760	4600	

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

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

ALBUQUERQUE, NEW MEXICO
WBAN 23050

TRY Data (1959)

Latitude 35.10 N
Longitude 106.60 E

TABLE E:

Annual COOLING Wet Bulb Degree Hour Summary

Wet Bulb Temperature (F) Base:	50	53	56	59	62	65	68	71	74	77	80
Annual Wet Bulb hours ABOVE base:	3075	2546	2051	1520	613	72	1	0	0	0	0
Annual Wet Bulb Cooling deg-hrs:	26441.	17830.	10677.	4921.	1268.	95.	1.	0.	0.	0.	0.

TABLE F:

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

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **												COOLING HUMIDITY RATIO HOURS **												Maintained Indoor Humidity Ratio
	Heating Degree Base												Cooling Degree Base												
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80			
.001	0	0	0	0	0	0	0	0	0	0	0	30	29	28	26	24	23	21	18	12	8	5	.001		
.002	0	1	1	1	1	1	1	1	1	1	2	23	22	22	21	20	19	17	15	10	7	4	.002		
.003	1	1	2	3	3	4	4	4	4	5	5	17	17	17	16	16	15	14	12	8	6	3	.003		
.004	1	2	4	5	6	7	7	8	8	9	9	13	13	13	13	12	12	11	10	7	4	3	.004		
.005	2	4	6	7	9	10	11	12	13	14	14	10	10	10	10	9	9	9	7	5	3	2	.005		
.006	2	5	7	10	12	14	16	17	18	19	20	7	7	7	7	7	7	7	6	4	2	1	.006		
.007	3	6	9	13	16	18	20	22	24	25	26	5	5	5	5	5	5	5	4	2	1	1	.007		
.008	4	7	11	15	19	22	25	27	30	31	33	3	3	3	3	3	3	3	3	1	1	0	.008		
.009	4	8	13	18	22	26	30	33	35	38	39	2	2	2	2	2	2	2	1	1	0	0	.009		
.010	5	9	15	21	26	30	34	38	41	44	46	1	1	1	1	1	1	1	1	0	0	0	.010		
.011	5	10	17	23	29	34	39	43	47	51	54	0	0	0	0	0	0	0	0	0	0	0	.011		
.012	6	11	19	26	33	39	44	49	53	57	61	0	0	0	0	0	0	0	0	0	0	0	.012		
.013	6	13	20	29	36	43	49	54	60	64	69	0	0	0	0	0	0	0	0	0	0	0	.013		
.014	7	14	22	31	40	47	53	60	66	71	76	0	0	0	0	0	0	0	0	0	0	0	.014		
.015	7	15	24	34	43	51	58	65	72	78	84	0	0	0	0	0	0	0	0	0	0	0	.015		
.016	8	16	26	37	47	55	63	71	79	86	92	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	8	17	28	39	50	59	68	76	85	93	99	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	9	18	30	42	54	63	72	82	91	100	107	0	0	0	0	0	0	0	0	0	0	0	.018		

FOOTNOTES: * Indoor Humidity Level is measured in pounds of moisture per pound of dry air. Indoor 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	26	30	25	44	41	23	27	33	24	27	19	32	30
VERTICAL													
NORTH	100	100	100	98	91	80	87	96	100	100	100	100	94
WEST	40	46	44	64	66	50	58	55	44	42	34	47	50
SOUTH	23	31	34	66	75	69	67	61	39	31	18	26	41
EAST	40	41	41	60	54	42	47	53	41	43	33	44	46
% Possible Sun	73	73	74	77	80	83	76	76	80	79	77	72	77

FOOTNOTES: * Corrected For Cloud Cover.

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

ALBUQUERQUE, NEW MEXICO
WBAN 23050
TABLE H:

TRY Data (1959)

Latitude 35.10 N
Longitude 106.60 E

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

Month	Under Clear Sky Assumption*											Corrected For Cloud Cover**											Obs ***
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S-45 ***	horiz	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S-45 ***	horiz	
Jan	1982	1837	1489	1171	741	398	220	178	178	2148	1170	1404	1309	1076	860	566	335	215	187	187	1502	865	1017
Feb	1960	1845	1583	1337	946	588	345	231	220	2352	1498	1226	1189	1056	921	689	470	315	236	228	1432	977	1342
Mar	1695	1654	1546	1433	1152	829	552	354	286	2450	1935	1439	1429	1339	1240	1005	745	531	382	336	1952	1567	1768
Apr	1252	1363	1427	1465	1330	1089	814	564	384	2360	2311	1049	1106	1126	1131	1040	896	741	601	505	1596	1627	2228
May	926	1113	1285	1413	1401	1247	1014	757	541	2211	2534	913	1066	1188	1278	1265	1148	977	788	617	1645	1882	2538
Jun	801	1004	1223	1393	1439	1337	1121	867	660	2129	2624	753	935	1115	1255	1287	1196	1009	792	590	1796	2164	2679
Jul	853	1047	1240	1392	1408	1289	1067	815	611	2144	2565	810	972	1109	1216	1214	1109	929	731	551	1750	2032	2489
Aug	1094	1235	1340	1419	1337	1140	894	647	453	2243	2359	959	1040	1091	1127	1055	914	751	592	470	1683	1768	2290
Sep	1489	1505	1469	1417	1199	917	649	437	331	2343	2028	1294	1337	1315	1271	1087	851	629	453	361	1956	1734	1972
Oct	1827	1723	1514	1323	979	640	400	269	250	2324	1617	1383	1313	1167	1034	796	557	385	289	274	1697	1232	1547
Nov	1959	1828	1511	1219	808	455	262	195	194	2184	1255	1554	1464	1225	998	673	391	238	183	183	1716	997	1134
Dec	1950	1812	1460	1125	698	357	201	168	168	2060	1075	1088	1028	848	669	437	256	176	157	157	1133	648	928
Year	1480	1495	1423	1342	1120	858	630	458	357	2245	1916	1155	1182	1138	1084	927	740	576	450	372	1655	1460	1828

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	1709	1555	1248	973	597	298	165	145	145	1203	1104	899	713	457	257	167	153	152
Feb	1652	1543	1321	1117	775	457	255	183	179	1024	992	881	770	567	372	241	189	185
Mar	1344	1355	1282	1197	951	666	422	268	233	1153	1175	1111	1033	827	598	411	298	273
Apr	907	1066	1166	1214	1102	893	647	430	302	803	880	918	931	856	733	595	476	406
May	628	816	1023	1164	1158	1029	814	586	401	678	816	956	1052	1043	945	789	623	480
Jun	541	715	958	1144	1189	1103	907	682	485	527	679	878	1031	1063	985	815	623	446
Jul	579	757	980	1143	1164	1061	861	639	452	575	719	880	995	999	908	747	575	426
Aug	776	948	1090	1174	1110	940	715	500	350	712	813	887	927	870	750	604	468	375
Sep	1149	1219	1212	1179	991	743	507	334	269	1004	1085	1085	1056	898	691	496	351	294
Oct	1519	1435	1264	1104	802	506	302	212	204	1146	1090	973	863	654	446	298	230	224
Nov	1682	1545	1268	1020	654	351	194	159	159	1332	1238	1028	835	545	304	178	150	149
Dec	1689	1543	1224	937	557	269	151	137	137	936	872	711	556	350	199	137	128	128
Year	1179	1206	1169	1114	921	694	496	357	277	924	955	934	897	762	600	457	356	296

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

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

AMARILLO, TEXAS
WBAN 23047
TABLE A:

TRY Data (1968)

Latitude 35.20 N
Longitude 101.70 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															
65 to 69	0	0	0	0	3	5	0	0	8	54.4	744	22883	0	0	
60 to 64	0	0	0	0	11	13	0	0	24	50.1	728	19196	16	33	
55 to 59	0	0	0	4	12	8	2	0	26	45.8	697	15628	47	185	
50 to 54	1	3	0	9	9	10	11	0	43	44.7	672	12198	72	475	
45 to 49	5	0	6	10	12	15	14	18	80	42.3	611	8972	133	969	
40 to 44	19	16	12	17	21	19	20	17	141	38.7	506	6148	238	1865	
35 to 39	18	16	14	16	15	13	15	18	125	32.9	368	3980	376	3417	
30 to 34	11	16	18	16	4	4	13	4	86	28.2	258	2432	486	5589	
25 to 29	15	16	16	10	3	3	9	19	91	24.5	179	1341	565	8218	
20 to 24	15	10	9	5	0	0	4	11	54	20.4	102	675	642	11272	
15 to 19	3	10	12	2	0	1	1	0	29	16.4	54	307	690	14624	
10 to 14	3	3	3	4	3	2	2	3	23	11.6	26	113	718	18150	
5 to 9	1	0	2	0	0	0	2	3	8	5.8	11	31	733	21788	
0 to 4	2	3	1	0	0	0	0	0	6	3.5	0	0	744	25477	
Feb															
65 to 69	0	0	0	0	2	3	0	0	5	49.0	672	20620	0	0	
60 to 64	0	0	0	0	7	14	0	0	21	46.2	665	17280	7	20	
55 to 59	0	0	0	1	19	17	1	0	38	43.4	634	14032	38	132	
50 to 54	1	0	0	9	19	14	9	1	53	40.8	591	10971	81	431	
45 to 49	2	0	0	16	5	9	20	11	63	38.4	532	8165	140	985	
40 to 44	17	9	3	18	4	3	16	17	87	35.8	457	5676	215	1856	
35 to 39	11	17	25	7	3	0	14	17	94	32.7	364	3601	308	3141	
30 to 34	21	25	21	11	8	9	7	16	118	29.5	272	2013	400	4913	
25 to 29	15	10	16	10	9	9	9	12	90	25.1	165	953	507	7213	
20 to 24	8	12	7	3	2	0	2	1	35	21.3	87	348	585	9968	
15 to 19	9	11	12	9	6	6	6	9	68	16.9	29	34	643	13014	
Mar															
80 to 84	0	0	0	0	8	5	0	0	13	53.8	741	26043	3	2	
75 to 79	0	0	0	3	5	7	0	0	15	53.9	723	22375	21	54	
70 to 74	0	0	0	5	4	6	4	0	19	51.8	709	18789	35	188	
65 to 69	0	0	0	4	13	14	6	0	37	48.8	690	15290	54	409	
60 to 64	1	0	2	12	20	23	9	7	74	47.5	630	11975	114	814	
55 to 59	9	4	2	15	11	10	13	9	73	46.3	566	8997	178	1556	
50 to 54	8	6	13	15	10	3	23	11	89	43.8	474	6385	270	2664	
45 to 49	15	10	11	11	2	6	11	23	89	40.3	391	4217	353	4216	
40 to 44	29	33	21	6	5	10	5	16	125	37.0	282	2523	462	6242	
35 to 39	4	10	16	4	9	2	8	5	58	32.4	184	1406	560	8845	
30 to 34	11	9	7	9	3	4	11	15	69	28.6	132	614	612	11773	
25 to 29	13	13	11	9	3	3	3	7	62	24.9	56	153	688	15032	
20 to 24	3	8	8	0	0	0	0	0	19	20.2	7	13	737	18612	
15 to 19	0	0	2	0	0	0	0	0	2	16.0	0	0	744	22319	

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

AMARILLO, TEXAS
WBAN 23047
TABLE A:

TRY Data (1968)

Latitude 35.20 N
Longitude 101.70 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	1	8	5	0	0	14	56.1	719	19858	1	1	
75 to 79	0	0	0	5	6	14	3	0	28	53.0	698	16315	22	58	
70 to 74	0	0	1	8	19	14	8	0	50	51.2	660	12907	60	250	
65 to 69	0	0	2	14	19	27	13	5	80	49.4	596	9748	124	691	
60 to 64	4	0	5	18	11	4	21	10	73	47.8	521	6966	199	1509	
55 to 59	9	6	10	15	11	10	20	18	99	44.7	441	4552	279	2695	
50 to 54	18	10	16	13	6	9	7	25	104	42.7	331	2616	389	4359	
45 to 49	31	26	26	10	10	6	11	14	134	40.1	221	1219	499	6562	
40 to 44	18	28	20	5	0	1	5	13	90	36.2	92	449	628	9392	
35 to 39	4	14	6	1	0	0	2	0	27	30.4	40	160	680	12703	
30 to 34	5	3	3	0	0	0	0	5	16	25.5	16	41	704	16184	
25 to 29	1	3	1	0	0	0	0	0	5	23.4	0	0	720	19743	
May															
90 to 94	0	0	0	0	4	4	0	0	8	61.1	744	22562	0	0	
85 to 89	0	0	0	2	8	6	1	0	17	60.8	730	18875	14	33	
80 to 84	0	0	0	6	11	19	3	0	39	58.1	707	15278	37	156	
75 to 79	0	0	0	11	19	20	11	0	61	57.5	654	11860	90	458	
70 to 74	0	0	6	16	17	7	15	5	66	57.1	599	8736	145	1054	
65 to 69	3	1	8	18	10	18	16	6	80	54.2	528	5932	216	1970	
60 to 64	12	14	17	14	11	10	21	27	126	53.4	441	3514	303	3272	
55 to 59	32	19	27	10	5	3	17	28	141	51.4	296	1686	448	5164	
50 to 54	33	36	21	9	5	3	6	21	134	47.6	159	553	585	7751	
45 to 49	11	22	12	5	3	3	3	6	65	43.9	53	83	691	11001	
40 to 44	2	1	2	2	0	0	0	0	7	42.0	0	0	744	14638	
Jun															
100 to 104	0	0	0	1	5	6	1	0	13	64.3	713	20168	7	6	
95 to 99	0	0	0	2	2	5	3	0	12	65.0	704	16626	16	64	
90 to 94	0	0	0	4	19	22	4	1	50	66.8	688	13144	32	182	
85 to 89	0	0	0	15	22	14	12	3	66	67.1	618	9868	102	506	
80 to 84	2	0	2	28	24	21	23	4	104	64.8	540	6955	180	1193	
75 to 79	8	2	15	14	7	8	13	24	91	64.0	450	4493	270	2331	
70 to 74	14	4	23	14	6	7	16	19	103	62.6	345	2514	375	3952	
65 to 69	32	41	29	9	5	7	14	19	156	61.1	221	1059	499	6097	
60 to 64	18	21	13	3	0	0	4	17	76	57.4	89	342	631	8980	
55 to 59	16	16	7	0	0	0	0	3	42	53.5	26	61	694	12299	
50 to 54	0	5	1	0	0	0	0	0	6	49.2	4	6	716	15844	
45 to 49	0	1	0	0	0	0	0	0	1	45.0	0	0	720	19438	

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

AMARILLO, TEXAS

WBAN 23047

TABLE A:

TRY Data (1968)

Latitude 35.20 N

Longitude 101.70 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	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	2	6	0	0	8	69.3	744	15530	0	0
90 to 94	0	0	0	7	32	27	8	0	74	68.9	706	11866	38	56
85 to 89	0	0	0	23	28	26	15	1	93	68.4	629	8519	115	429
80 to 84	2	0	11	32	17	16	27	12	117	67.6	526	5628	218	1258
75 to 79	17	3	18	14	5	6	21	26	110	65.5	416	3281	328	2631
70 to 74	29	25	30	10	6	6	10	27	143	64.4	291	1516	453	4586
65 to 69	27	39	23	6	3	6	9	18	131	62.5	146	431	598	7221
60 to 64	18	26	11	1	0	0	3	9	68	59.6	22	26	722	10536
Aug														
95 to 99	0	0	0	0	7	3	0	0	10	69.5	744	16206	0	0
90 to 94	0	0	0	11	34	30	1	0	76	68.4	705	12549	39	63
85 to 89	0	0	1	25	12	17	17	0	72	68.4	629	9225	115	459
80 to 84	1	0	7	19	17	8	27	5	84	67.6	553	6261	191	1215
75 to 79	11	1	18	14	10	16	14	30	114	65.7	458	3725	286	2399
70 to 74	39	32	24	16	9	14	16	24	174	63.7	329	1738	415	4132
65 to 69	28	36	30	3	4	5	15	24	145	62.8	146	563	598	6677
60 to 64	8	18	7	3	0	0	3	8	47	59.3	43	143	701	9977
55 to 59	6	6	6	2	0	0	0	2	22	54.8	13	21	731	13575
Sep														
90 to 94	0	0	0	0	9	7	0	0	16	63.1	715	17202	5	4
85 to 89	0	0	0	5	12	8	0	0	25	65.4	694	13681	26	83
80 to 84	0	0	0	15	36	32	4	0	87	61.9	648	10287	72	289
75 to 79	0	0	0	27	24	27	13	0	91	60.7	557	7284	163	886
70 to 74	4	0	6	30	5	13	28	9	95	58.8	465	4725	255	1927
65 to 69	17	9	26	8	4	3	31	25	123	57.8	363	2655	357	3457
60 to 64	31	21	24	4	0	0	12	41	133	55.0	235	1166	485	5568
55 to 59	31	36	20	1	0	0	2	11	101	51.5	106	344	614	8346
50 to 54	6	20	13	0	0	0	0	4	43	47.3	22	44	698	11646
45 to 49	1	4	1	0	0	0	0	0	6	42.8	1	2	719	15204

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

AMARILLO, TEXAS
WBAN 23047
TABLE A:

TRY Data (1968)

Latitude 35.20 N
Longitude 101.70 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															
90 to 94	0	0	0	0	7	5	0	0	12	61.2	742	23412	2	1	
85 to 89	0	0	0	2	12	9	0	0	23	59.9	728	19742	16	51	
80 to 84	0	0	0	9	17	14	1	0	41	60.3	692	16178	52	207	
75 to 79	0	0	0	18	16	17	6	0	57	58.4	648	12825	96	574	
70 to 74	1	0	2	13	10	12	15	7	60	58.1	586	9731	158	1200	
65 to 69	14	6	7	12	9	12	20	16	96	54.7	521	6948	223	2137	
60 to 64	9	9	16	11	12	13	9	14	93	51.1	420	4605	324	3514	
55 to 59	13	16	14	13	4	4	19	12	95	48.2	326	2753	418	5382	
50 to 54	26	14	17	10	3	6	12	24	112	44.4	224	1365	520	7714	
45 to 49	15	23	19	5	3	1	8	9	83	40.7	123	528	621	10597	
40 to 44	12	21	15	0	0	0	2	8	58	38.5	39	130	705	13919	
35 to 39	1	2	3	0	0	0	1	2	9	33.8	12	28	732	17537	
30 to 34	2	2	0	0	0	0	0	1	5	31.2	0	0	744	21229	
Nov															
80 to 84	0	0	0	0	1	0	0	0	1	54.0	720	26979	0	0	
75 to 79	0	0	0	0	5	3	0	0	8	52.9	716	23385	4	6	
70 to 74	0	0	0	2	9	5	0	0	16	51.3	706	19826	14	47	
65 to 69	0	0	0	4	10	10	0	2	26	50.0	687	16340	33	161	
60 to 64	1	0	0	4	11	8	6	1	31	47.6	660	12972	60	393	
55 to 59	5	1	1	19	9	12	8	5	60	45.5	615	9777	105	798	
50 to 54	8	7	5	12	7	10	9	8	66	43.7	559	6854	161	1475	
45 to 49	7	11	15	11	12	16	17	10	99	41.0	472	4259	248	2480	
40 to 44	24	21	24	13	18	19	22	22	163	37.3	352	2164	368	3985	
35 to 39	21	22	21	21	8	7	24	25	149	33.7	185	830	535	6251	
30 to 34	15	19	17	4	0	0	4	12	71	29.1	66	246	654	9267	
25 to 29	9	6	2	0	0	0	0	5	22	23.8	24	53	696	12674	
20 to 24	0	3	5	0	0	0	0	0	8	21.8	0	0	720	16221	
Dec															
70 to 74	0	0	0	0	4	1	0	0	5	47.4	744	27268	0	0	
65 to 69	0	0	0	1	3	3	0	0	7	45.9	738	23563	6	15	
60 to 64	0	0	0	3	7	6	0	0	16	43.6	730	19893	14	65	
55 to 59	0	0	0	3	12	15	2	0	32	41.8	704	16305	40	197	
50 to 54	1	0	0	5	19	12	1	3	41	39.8	670	12868	74	480	
45 to 49	6	3	1	14	13	17	9	4	67	36.3	622	9632	122	964	
40 to 44	6	10	7	15	13	14	19	10	94	33.6	541	6706	203	1758	
35 to 39	18	9	14	20	10	12	20	20	123	30.9	429	4254	315	3026	
30 to 34	6	8	15	12	7	9	26	17	100	26.7	329	2385	415	4877	
25 to 29	34	24	22	14	4	3	8	25	134	24.1	210	1023	534	7235	
20 to 24	13	26	24	6	1	1	5	8	84	20.0	82	314	662	10246	
15 to 19	6	10	6	0	0	0	3	4	29	15.4	26	70	718	13722	
10 to 14	3	3	4	0	0	0	0	2	12	11.5	5	3	739	17375	

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

AMARILLO, TEXAS
WBAN 23047
TABLE B:

TRY Data (1968)

Latitude 35.20 N
Longitude 101.70 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
100 to 104	0	0	0	1	5	6	1	0	13	0.0	0.0	0.0	62.0	63.6	64.8	67.0	0.0	64.3
95 to 99	0	0	0	2	11	14	3	0	30	0.0	0.0	0.0	66.5	69.3	67.4	63.7	0.0	67.6
90 to 94	0	0	0	22	105	95	13	1	236	0.0	0.0	0.0	68.5	67.4	66.8	67.5	64.0	67.2
85 to 89	0	0	1	72	94	80	45	4	296	0.0	0.0	67.0	67.9	66.4	66.2	66.6	66.8	66.8
80 to 84	5	0	20	110	139	120	85	21	500	65.8	0.0	66.7	66.1	62.7	61.6	65.6	65.2	64.0
75 to 79	36	6	51	106	97	118	81	80	575	64.2	64.2	65.9	62.2	58.6	59.3	62.6	64.8	61.9
70 to 74	87	61	92	114	89	85	112	91	731	63.1	63.0	63.5	59.7	56.0	57.0	59.3	63.0	60.4
65 to 69	121	132	125	79	85	113	124	115	894	61.5	61.7	60.8	55.2	51.3	51.9	56.3	59.4	57.7
60 to 64	102	109	95	73	90	91	88	134	782	56.1	58.3	56.1	49.7	47.6	47.6	50.7	54.0	52.9
55 to 59	121	104	87	83	83	79	84	88	729	51.1	52.1	51.1	46.3	44.6	43.7	46.2	48.4	48.3
50 to 54	102	101	86	82	78	67	78	97	691	44.6	46.8	46.2	43.6	41.5	41.9	43.8	44.7	44.3
45 to 49	93	100	91	82	60	73	93	95	687	41.1	41.4	42.0	40.2	39.4	38.4	40.1	40.2	40.4
40 to 44	127	139	104	76	61	66	89	103	765	37.6	37.6	37.5	36.5	35.6	35.4	35.8	37.3	36.9
35 to 39	77	90	99	69	45	34	84	87	585	32.8	33.3	33.4	32.3	31.5	30.4	31.8	32.5	32.5
30 to 34	71	82	81	52	22	26	61	70	465	28.7	29.0	28.5	27.9	27.9	29.3	27.3	28.0	28.3
25 to 29	87	72	68	43	19	18	29	68	404	24.6	24.3	24.3	24.9	25.2	24.5	24.0	24.6	24.5
20 to 24	39	59	53	14	3	1	11	20	200	20.5	20.2	20.5	20.9	23.3	18.0	20.5	20.0	20.4
15 to 19	18	31	32	11	6	7	10	13	128	16.9	16.2	16.0	15.8	17.3	17.3	16.4	17.3	16.5
10 to 14	6	6	7	4	3	2	2	5	35	11.2	12.2	12.0	11.0	11.7	11.0	11.5	11.4	11.6
5 to 9	1	0	2	0	0	0	2	3	8	4.0	0.0	6.0	0.0	0.0	0.0	7.5	5.0	5.8
0 to 4	2	3	1	0	0	0	0	0	6	3.0	3.7	4.0	0.0	0.0	0.0	0.0	0.0	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 Ave		Ave	4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	MPH
				Max	Min												
Jan	36.7	67	3	50	27	32.6	83	79	48	67	71	0.0034	0.0038	0.0039	0.0037	0.0037	12.9
Feb	36.8	67	16	49	27	31.6	79	70	49	65	66	0.0030	0.0030	0.0033	0.0033	0.0031	12.6
Mar	47.5	83	19	61	35	39.1	70	56	34	51	55	0.0041	0.0043	0.0034	0.0041	0.0040	15.1
Apr	54.9	83	28	68	42	43.2	60	42	28	37	44	0.0043	0.0045	0.0040	0.0039	0.0041	15.9
May	62.2	92	44	75	51	52.3	73	58	40	53	59	0.0073	0.0078	0.0070	0.0074	0.0074	12.8
Jun	74.5	104	49	87	62	62.3	75	55	38	51	57	0.0109	0.0118	0.0104	0.0112	0.0110	12.7
Jul	76.6	97	60	88	66	65.3	76	59	43	53	60	0.0125	0.0135	0.0124	0.0125	0.0126	12.6
Aug	75.7	97	55	88	66	64.8	74	59	45	57	61	0.0121	0.0132	0.0124	0.0126	0.0125	15.0
Sep	68.6	94	46	83	55	57.0	72	51	34	51	55	0.0087	0.0095	0.0086	0.0087	0.0088	14.1
Oct	61.0	93	33	76	48	49.8	68	49	29	49	51	0.0064	0.0069	0.0056	0.0065	0.0064	14.7
Nov	45.0	80	23	58	35	38.3	71	63	43	62	61	0.0039	0.0044	0.0041	0.0042	0.0041	13.5
Dec	35.8	71	12	51	23	29.3	69	58	32	51	55	0.0023	0.0024	0.0024	0.0023	0.0023	14.1
Year	56.4	104	3	70	45	47.2	72	58	39	54	58	0.0066	0.0071	0.0065	0.0067	0.0067	13.8

AMARILLO, TEXAS

TRY Data (1968)

Latitude 35.20 N

WBAN 23047

Longitude 101.70 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 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*	
105	0	605	0	0	493	0	0	418	0	0	421	0	0	513	0	0	1808
104	0	594	0	0	482	0	0	407	0	0	410	0	0	502	0	0	1775
103	0	583	0	0	471	0	2	396	0	2	400	0	0	491	0	0	1742
102	0	572	0	0	460	0	4	385	0	4	389	0	0	480	0	0	1709
101	0	561	0	0	449	0	4	374	0	5	378	0	0	469	0	0	1676
100	0	550	0	0	438	0	5	363	0	6	367	0	0	458	0	0	1643
99	0	539	0	1	427	0	5	352	0	6	356	0	1	447	0	0	1611
98	0	528	0	1	416	0	5	341	0	6	345	0	2	436	0	0	1578
97	0	517	0	1	405	0	8	330	0	9	334	0	2	425	0	0	1545
96	0	506	0	1	394	0	11	320	0	11	323	0	3	414	0	0	1512
95	0	495	0	2	383	0	14	309	1	16	312	1	4	403	0	0	1479
94	0	484	0	4	372	0	25	298	1	27	302	1	4	393	0	0	1446
93	0	473	0	5	361	0	46	287	1	40	291	1	5	382	0	0	1413
92	0	462	0	7	350	0	70	277	2	57	281	2	7	371	0	0	1381
91	0	451	0	12	340	0	92	267	2	80	270	2	9	360	0	0	1348
90	0	441	0	20	329	0	111	257	3	103	260	3	13	349	0	0	1315
89	0	430	0	31	318	1	129	247	5	126	251	4	21	338	1	1	1282
88	0	419	0	41	308	1	148	238	6	144	241	6	27	328	1	1	1249
87	0	408	0	51	297	2	168	228	8	161	232	7	34	317	1	2	1216
86	0	397	0	69	287	2	186	219	9	175	222	9	45	306	2	3	1184
85	0	386	0	89	277	3	205	210	11	187	213	11	57	296	2	4	1151
84	2	375	0	105	267	4	226	201	14	206	204	13	67	286	3	6	1118
83	4	364	0	124	257	5	253	193	16	231	195	15	80	275	3	9	1085
82	7	353	0	146	247	6	284	184	19	257	187	17	99	265	4	11	1052
81	11	342	0	167	238	8	314	176	22	278	179	20	115	255	5	15	1020
80	17	331	0	193	229	10	341	169	25	301	171	23	134	246	7	25	987
79	24	321	1	219	220	12	362	161	28	328	163	26	152	236	8	42	955
78	30	310	1	240	211	14	379	154	32	353	155	29	166	227	10	61	922
77	43	299	1	258	203	17	399	147	36	376	148	33	181	218	11	82	890
76	57	289	2	281	194	19	417	140	40	395	141	37	196	209	13	107	858
75	67	279	2	304	186	22	438	133	44	419	134	41	216	200	15	136	826
74	81	268	3	323	179	25	462	127	49	439	127	45	237	191	18	173	795
73	95	258	4	345	171	29	479	121	54	453	121	50	258	182	20	215	764
72	110	248	5	369	164	32	493	115	58	470	114	54	283	174	23	255	734
71	133	239	6	394	156	36	509	109	63	491	108	59	307	166	26	303	704
70	155	229	8	416	150	40	528	103	69	510	102	64	329	158	29	362	674
69	174	220	9	433	143	44	547	97	74	525	97	69	353	151	32	424	645
68	203	211	11	448	136	49	560	92	80	543	91	75	379	144	36	486	617
67	236	202	13	465	130	53	575	87	85	569	86	80	405	137	40	557	589
66	260	194	16	480	124	58	592	82	91	597	80	86	431	130	44	638	562
65	279	185	19	497	118	63	612	77	97	621	76	92	454	123	48	719	536
64	300	177	21	512	112	68	632	72	103	639	71	99	473	117	53	794	511
63	320	169	25	525	106	73	648	67	110	655	67	105	492	111	58	861	486
62	336	162	28	537	100	79	667	63	116	675	62	112	509	105	63	931	463
61	356	154	31	555	95	84	689	59	123	697	58	119	527	99	68	1007	439
60	376	147	35	573	90	90	708	55	130	714	54	126	545	94	74	1075	417

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

AMARILLO, TEXAS
WBAN 23047
TABLE D:

TRY Data (1968)

Latitude 35.20 N
Longitude 101.70 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE	BY TIME OF DAY																		24-HOUR SUMMARY			
	7-9AM**			10-12AM**			1-3PM**			4-6PM**			7-9PM**			10PM-6AM**			HEATING		COOLING	
	Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg	Hrs	Deg
	(F) Above (100s)*	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*
59	391	140	39	587	84	95	726	51	137	726	51	133	560	88	79	1138	395	99	4631	809	4129	582
58	408	133	43	600	79	101	746	48	145	738	47	140	574	83	85	1200	374	110	4491	764	4269	624
57	426	126	47	612	74	107	762	44	152	760	43	148	591	78	91	1258	354	123	4349	719	4411	667
56	445	120	51	631	70	114	776	41	160	780	40	155	608	73	97	1314	334	136	4205	677	4555	712
55	462	113	56	652	65	120	791	38	168	794	37	163	625	68	103	1380	314	149	4055	635	4705	758
54	480	107	61	669	61	127	805	35	176	807	34	171	644	63	109	1444	295	163	3910	596	4850	806
53	499	101	65	683	57	133	820	32	184	818	31	179	656	59	116	1507	277	178	3776	557	4984	855
52	517	95	71	700	53	140	837	29	192	831	29	188	666	55	122	1576	260	193	3632	520	5128	906
51	533	89	76	720	49	147	853	27	201	846	26	196	682	50	129	1635	243	209	3489	484	5271	958
50	549	84	81	737	45	155	868	25	209	861	24	204	703	46	136	1689	227	226	3352	450	5408	1011
49	567	78	87	754	42	162	880	22	218	875	21	213	720	43	143	1743	211	243	3219	417	5541	1066
48	584	73	93	777	38	170	889	20	227	889	19	222	737	39	150	1790	196	261	3091	386	5669	1122
47	601	68	98	794	35	178	906	18	236	905	17	231	761	35	158	1851	181	279	2940	356	5820	1179
46	619	63	105	806	32	186	923	16	245	918	15	240	781	32	165	1919	167	298	2793	327	5967	1238
45	637	59	111	819	30	194	932	15	254	932	14	249	797	29	173	1977	154	317	2664	300	6096	1299
44	656	54	117	835	27	202	943	13	263	946	12	259	817	26	181	2039	141	337	2522	274	6238	1360
43	679	50	124	854	24	211	955	12	273	959	11	268	833	24	190	2119	129	358	2359	249	6401	1424
42	706	46	131	871	22	219	965	10	283	974	9	278	849	21	198	2204	118	380	2189	227	6571	1488
41	725	42	138	883	20	228	979	9	292	990	8	288	868	19	207	2273	107	402	2040	206	6720	1555
40	741	38	145	895	18	237	992	8	302	1003	7	298	887	16	215	2340	98	425	1901	186	6859	1623
39	763	35	153	908	16	246	1005	7	312	1012	6	308	907	14	224	2399	89	449	1765	167	6995	1692
38	783	32	161	922	14	255	1018	6	322	1023	6	318	927	13	234	2445	80	473	1640	150	7120	1763
37	801	29	169	939	12	264	1026	6	333	1029	5	328	945	11	243	2498	72	498	1521	135	7239	1835
36	823	26	177	955	11	274	1032	5	343	1031	4	339	959	10	252	2556	64	523	1402	120	7358	1908
35	843	23	185	966	10	283	1039	4	353	1037	4	349	973	8	262	2606	57	549	1295	107	7465	1982
34	856	21	194	978	8	293	1042	4	364	1046	3	359	985	7	272	2652	51	575	1198	94	7562	2057
33	869	19	202	990	7	303	1044	3	374	1054	3	370	995	6	282	2695	45	602	1111	83	7649	2133
32	884	16	211	1000	6	313	1047	3	384	1059	2	380	1006	5	292	2738	39	629	1025	72	7735	2210
31	897	14	220	1010	5	323	1052	2	395	1062	2	391	1020	4	302	2788	34	657	930	62	7830	2288
30	917	12	229	1019	5	333	1060	2	406	1064	2	402	1034	4	312	2833	29	685	832	53	7928	2366
29	935	11	238	1026	4	343	1066	2	416	1069	1	412	1044	3	323	2871	25	714	747	46	8013	2446
28	943	9	248	1035	3	354	1070	1	427	1073	1	423	1050	3	333	2914	21	742	674	38	8086	2527
27	955	8	257	1043	3	364	1075	1	438	1077	1	434	1054	2	344	2956	17	772	598	32	8162	2608
26	973	6	267	1053	2	375	1079	1	448	1080	1	445	1059	2	354	3007	14	802	508	26	8252	2690
25	992	5	277	1063	2	385	1082	1	459	1083	1	455	1065	2	365	3059	12	832	415	22	8345	2773
24	1007	4	287	1066	2	396	1084	1	470	1085	1	466	1070	1	376	3095	10	863	350	18	8410	2857
23	1021	4	297	1068	1	407	1086	1	481	1085	1	477	1073	1	386	3126	8	894	301	15	8459	2941
22	1032	3	307	1072	1	417	1086	0	492	1085	0	488	1076	1	397	3153	6	925	254	12	8506	3026
21	1042	2	317	1077	1	428	1086	0	503	1086	0	499	1079	1	408	3172	5	957	217	10	8543	3111
20	1049	2	328	1079	1	439	1086	0	513	1086	0	510	1080	1	419	3188	4	989	190	8	8570	3197
19	1056	1	338	1081	0	450	1088	0	524	1088	0	520	1083	0	429	3207	3	1021	155	6	8605	3283
18	1062	1	349	1083	0	460	1090	0	535	1091	0	531	1086	0	440	3224	3	1053	121	5	8639	3369
17	1068	1	360	1084	0	471	1091	0	546	1092	0	542	1087	0	451	3240	2	1085	96	4	8664	3455
16	1077	1	370	1088	0	482	1092	0	557	1092	0	553	1089	0	462	3253	2	1118	67	3	8693	3542
15	1084	0	381	1091	0	493	1092	0	568	1093	0	564	1091	0	473	3258	1	1150	50	2	8710	3629
14	1086	0	392	1091	0	504	1092	0	579	1093	0	575	1091	0	484	3261	1	1183	45	2	8715	3716

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

AMARILLO, TEXAS

TRY Data (1968)

Latitude 35.20 N

WBAN 23047

Longitude 101.70 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)*		Below	Hrs		Above	Hrs		
	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	100s*		Base	100s*		
13	1088	0	403	1091	0	515	1093	0	590	1094	0	586	1092	0	495	3265	1	1215	36	1	8724	3804
12	1091	0	414	1093	0	526	1094	0	601	1094	0	597	1092	0	506	3269	1	1248	25	1	8735	3891
11	1092	0	425	1095	0	537	1095	0	612	1095	0	608	1092	0	517	3272	1	1281	18	1	8742	3978
10	1092	0	436	1095	0	548	1095	0	623	1095	0	619	1092	0	527	3274	0	1314	16	1	8744	4066
9	1092	0	447	1095	0	559	1095	0	634	1095	0	630	1093	0	538	3276	0	1346	13	0	8747	4153
8	1092	0	457	1095	0	570	1095	0	644	1095	0	641	1094	0	549	3276	0	1379	12	0	8748	4241
7	1093	0	468	1095	0	580	1095	0	655	1095	0	652	1095	0	560	3276	0	1412	10	0	8750	4328
6	1093	0	479	1095	0	591	1095	0	666	1095	0	663	1095	0	571	3277	0	1445	9	0	8751	4416
5	1094	0	490	1095	0	602	1095	0	677	1095	0	674	1095	0	582	3279	0	1477	7	0	8753	4503
4	1094	0	501	1095	0	613	1095	0	688	1095	0	685	1095	0	593	3282	0	1510	3	0	8757	4591
3	1095	0	512	1095	0	624	1095	0	699	1095	0	696	1095	0	604	3284	0	1543	0	0	8760	4678
2	1095	0	523	1095	0	635	1095	0	710	1095	0	706	1095	0	615	3285	0	1576	0	0	8760	4766

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

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

AMARILLO, TEXAS
WBAN 23047
TABLE E:

TRY Data (1968)

Latitude 35.20 N
Longitude 101.70 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:	4032	3539	3087	2593	1980	1207	518	61	1	0	0
Annual Wet Bulb Cooling deg-hrs:	46930.	35340.	25195.	16429.	9209.	4046.	1107.	93.	1.	0.	0.

TABLE F:

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

HEATING HUMIDITY RATIO HOURS **												COOLING HUMIDITY RATIO HOURS **												Maintained
Indoor	Heating Degree Base											Cooling Degree Base											Indoor	
Humidity																							Humidity	
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	45	44	43	41	39	36	33	27	20	14	9	.001	
.002	0	1	1	1	1	1	1	1	1	1	1	38	37	37	35	34	32	29	24	18	12	8	.002	
.003	1	2	2	2	2	3	3	3	3	3	3	31	31	31	30	29	27	25	21	16	11	7	.003	
.004	2	3	4	4	5	5	5	6	6	6	6	25	25	25	25	24	23	22	18	14	9	6	.004	
.005	3	4	5	7	7	8	9	9	10	10	10	21	21	21	20	20	20	18	16	12	8	5	.005	
.006	3	5	7	9	11	12	13	13	14	14	14	16	16	16	16	16	16	15	13	10	7	4	.006	
.007	4	6	9	12	14	15	17	18	19	19	20	13	13	13	13	13	13	12	11	8	5	3	.007	
.008	5	8	11	14	17	19	21	23	24	24	25	10	10	10	10	10	10	9	8	6	4	3	.008	
.009	6	9	13	17	20	23	26	28	29	30	31	7	7	7	7	7	7	7	6	4	3	2	.009	
.010	7	10	14	19	24	27	30	33	35	36	37	5	5	5	5	5	5	5	4	3	2	1	.010	
.011	7	11	16	22	27	31	35	38	40	42	43	3	3	3	3	3	3	3	3	2	1	1	.011	
.012	8	13	18	25	30	35	40	44	46	48	50	1	1	1	1	1	1	1	1	1	1	0	.012	
.013	9	14	20	27	33	39	44	49	53	55	57	1	1	1	1	1	1	1	1	0	0	0	.013	
.014	10	15	22	30	37	43	49	54	59	62	64	0	0	0	0	0	0	0	0	0	0	0	.014	
.015	11	16	24	32	40	47	54	60	65	69	72	0	0	0	0	0	0	0	0	0	0	0	.015	
.016	11	18	25	35	43	51	59	65	72	76	80	0	0	0	0	0	0	0	0	0	0	0	.016	
.017	12	19	27	38	47	55	63	71	78	83	87	0	0	0	0	0	0	0	0	0	0	0	.017	
.018	13	20	29	40	50	59	68	76	84	90	95	0	0	0	0	0	0	0	0	0	0	0	.018	

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

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

TABLE G:

Percent Diffuse Solar Radiation*
and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
% Diffuse on surface													
HORIZONTAL	41	44	47	33	48	38	46	47	22	29	42	37	39
VERTICAL													
NORTH	100	100	100	97	93	86	90	96	100	100	100	100	95
WEST	50	58	59	49	64	59	65	68	41	43	54	48	56
SOUTH	34	42	56	55	78	79	81	72	36	33	36	30	51
EAST	52	57	64	55	68	59	62	62	40	47	56	51	57
% Possible Sun	69	69	72	72	72	77	77	77	73	75	72	68	73

FOOTNOTES: * Corrected For Cloud Cover.

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

AMARILLO, TEXAS
WBAN 23047
TABLE H:

TRY Data (1968)

Latitude 35.20 N
Longitude 101.70 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	1973	1843	1505	1185	762	410	230	178	177	2133	1158	1024	954	790	638	446	288	209	185	185	1063	645	960
Feb	1951	1828	1563	1320	936	574	336	227	219	2336	1486	1074	1020	888	762	578	413	310	261	257	1202	859	1244
Mar	1679	1645	1540	1432	1152	830	553	355	284	2424	1914	1126	1090	1016	942	789	631	507	420	386	1424	1229	1631
Apr	1247	1353	1411	1440	1308	1074	802	556	384	2342	2291	1104	1142	1154	1151	1046	886	712	563	463	1794	1788	2019
May	926	1112	1288	1422	1407	1264	1021	764	543	2197	2519	882	947	1009	1056	1030	945	822	698	603	1484	1687	2212
Jun	802	1001	1220	1399	1440	1339	1125	874	655	2116	2606	859	982	1109	1212	1223	1141	996	831	698	1702	2048	2393
Jul	854	1044	1241	1395	1415	1294	1076	826	611	2132	2547	847	947	1040	1111	1105	1021	892	749	634	1505	1762	2281
Aug	1091	1227	1330	1394	1317	1126	876	636	450	2228	2340	967	1045	1089	1113	1056	936	789	650	542	1534	1645	2130
Sep	1483	1497	1454	1399	1183	904	641	432	330	2326	2010	1295	1312	1269	1214	1029	799	587	421	340	1955	1697	1761
Oct	1818	1722	1522	1330	984	652	412	274	251	2307	1603	1371	1289	1139	998	758	538	384	297	283	1671	1216	1404
Nov	1925	1798	1477	1191	774	442	249	193	192	2148	1238	948	890	745	614	431	291	213	189	188	1011	649	1033
Dec	1933	1810	1462	1134	702	369	201	167	167	2041	1065	1107	1028	839	663	441	278	198	179	179	1142	669	872
Year	1471	1488	1417	1337	1116	858	628	458	356	2227	1900	1050	1054	1008	957	829	682	553	455	397	1458	1326	1659

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	1692	1553	1254	986	609	310	169	144	144	866	795	653	527	359	226	163	150	150
Feb	1639	1524	1301	1100	758	445	249	180	178	895	844	732	628	468	328	243	211	208
Mar	1327	1341	1269	1186	943	661	420	268	230	899	883	828	770	642	508	401	334	313
Apr	899	1052	1146	1189	1075	870	631	420	301	829	897	933	942	853	715	567	441	369
May	627	813	1020	1166	1160	1036	820	592	402	664	733	807	859	840	769	663	556	473
Jun	540	712	953	1142	1185	1102	905	682	480	633	738	876	984	998	933	802	658	538
Jul	577	752	975	1142	1163	1064	863	643	450	634	725	830	907	904	834	718	594	483
Aug	767	933	1068	1147	1081	915	696	487	346	731	816	877	910	862	760	632	513	430
Sep	1136	1204	1194	1158	972	727	496	327	266	999	1056	1040	1002	843	643	458	323	275
Oct	1498	1424	1259	1102	805	514	308	214	203	1127	1060	936	822	619	427	296	236	229
Nov	1642	1506	1231	984	625	333	184	156	155	799	739	615	503	348	228	167	153	152
Dec	1681	1529	1217	937	559	273	151	136	135	940	859	692	544	352	215	155	145	145
Year	1164	1193	1156	1103	912	689	492	355	275	835	845	819	784	675	550	440	360	315

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

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

Number of Hours of Occurrence in time period																
Hour of Day																
1-3 4-6 7-9 10-12 13-15 16-18 19-21 22-24																
Month																
Temp(F)																
hours degree below																
hours degree above																
COOLING*																
 																
hours																

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

Bismarck, NORTH DAKOTA
WBAN 24011
TABLE A:

TRY Data (1970)

Latitude 46.80 N
Longitude 100.80 E

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

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

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

BISMARCK, NORTH DAKOTA
WBAN 24011
TABLE A:

TRY Data (1970)

Latitude 46.80 N
Longitude 100.80 E

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

Dry Bulb Range (F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	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	2	0	0	2		73.0	744	19402	0	0
90 to 94	0	0	0	2	15	17	1	0	35		69.5	734	15696	10	14
85 to 89	0	0	0	11	26	29	6	0	72		68.4	680	12145	64	183
80 to 84	0	0	1	22	22	16	23	0	84		66.4	600	8919	144	677
75 to 79	1	0	9	28	13	16	22	8	97		64.4	511	6130	233	1608
70 to 74	5	0	21	17	11	7	19	24	104		62.0	422	3798	322	2996
65 to 69	31	20	32	10	3	2	14	22	134		61.4	293	1989	451	4907
60 to 64	19	27	18	3	3	4	8	27	109		58.5	163	839	581	7477
55 to 59	27	27	10	0	0	0	0	9	73		54.4	70	260	674	10618
50 to 54	9	13	2	0	0	0	0	3	27		49.9	21	50	723	14128
45 to 49	1	6	0	0	0	0	0	0	7		46.4	2	1	742	17799
Aug															
100 to 104	0	0	0	0	2	0	0	0	2		69.0	744	24137	0	0
95 to 99	0	0	0	0	8	8	0	0	16		67.9	739	20426	5	9
90 to 94	0	0	0	2	10	12	4	0	28		67.0	719	16779	25	82
85 to 89	0	0	0	10	24	36	7	0	77		66.2	675	13281	69	304
80 to 84	0	0	0	20	19	11	14	2	66		64.8	594	10113	150	856
75 to 79	1	0	7	23	14	10	22	4	81		62.8	523	7310	221	1773
70 to 74	12	3	12	17	8	11	20	19	102		61.7	439	4893	305	3076
65 to 69	11	17	23	17	7	4	16	22	119		58.9	316	2992	428	4895
60 to 64	16	9	19	4	1	1	8	20	78		56.0	217	1672	527	7295
55 to 59	29	21	19	0	0	0	2	19	90		52.9	139	769	605	10112
50 to 54	10	24	10	0	0	0	0	5	49		49.9	63	275	681	13338
45 to 49	11	10	3	0	0	0	0	2	26		44.6	24	72	720	16855
40 to 44	1	9	0	0	0	0	0	0	10		40.9	4	5	740	20508
Sep															
95 to 99	0	0	0	0	1	2	0	0	3		67.7	720	28851	0	0
90 to 94	0	0	0	1	6	7	0	0	14		67.2	711	25269	9	18
85 to 89	0	0	0	5	12	11	2	0	30		63.3	693	21752	27	101
80 to 84	0	0	1	6	10	7	5	0	29		62.4	664	18359	56	308
75 to 79	1	0	2	5	3	6	5	4	26		60.8	639	15121	81	670
70 to 74	5	1	4	8	10	15	7	4	54		59.5	600	12016	120	1165
65 to 69	4	5	4	12	17	7	9	9	67		56.6	535	9172	185	1921
60 to 64	10	4	7	16	8	9	13	8	75		53.9	465	6671	255	3020
55 to 59	7	12	10	12	4	11	12	11	79		50.7	389	4528	331	4477
50 to 54	15	12	14	9	4	3	14	10	81		47.7	317	2760	403	6309
45 to 49	9	11	18	9	12	6	10	17	92		43.4	219	1408	501	8557
40 to 44	26	25	19	6	3	6	11	20	116		39.6	135	512	585	11261
35 to 39	6	9	8	1	0	0	2	7	33		35.2	42	144	678	14493
30 to 34	7	8	3	0	0	0	0	0	18		31.3	10	22	710	17971
25 to 29	0	3	0	0	0	0	0	0	3		28.0	0	0	720	21549

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

BISMARCK, NORTH DAKOTA
WBAN 24011
TABLE A:

TRY Data (1970)

Latitude 46.80 N
Longitude 100.80 E

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

Dry Bulb Range (F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
Oct														
85 to 89	0	0	0	0	2	3	0	0	5	58.4	743	32552	1	1
80 to 84	0	0	0	0	3	1	0	0	4	57.5	737	28852	7	21
75 to 79	0	0	0	0	1	2	0	0	3	56.0	734	25173	10	62
70 to 74	0	0	0	1	4	2	0	0	7	51.3	731	21513	13	122
65 to 69	0	0	0	4	6	7	2	0	19	50.2	720	17878	24	207
60 to 64	0	0	0	4	14	13	3	0	34	46.8	697	14345	47	394
55 to 59	2	3	2	14	10	12	5	7	55	46.6	657	10964	87	733
50 to 54	9	4	7	15	14	12	11	9	81	44.4	593	7844	151	1333
45 to 49	11	7	9	12	3	3	21	13	79	41.4	505	5088	239	2297
40 to 44	13	11	12	15	23	17	16	16	123	37.1	411	2772	333	3701
35 to 39	24	23	25	26	13	20	28	29	188	33.9	259	1057	485	5706
30 to 34	28	31	26	2	0	1	7	18	113	30.7	74	240	670	8609
25 to 29	6	11	10	0	0	0	0	1	28	25.8	21	36	723	12125
20 to 24	0	3	2	0	0	0	0	0	5	22.8	1	1	743	15810
Nov														
50 to 54	0	0	0	0	5	2	0	0	7	42.7	719	17933	1	1
45 to 49	0	0	0	1	5	4	0	0	10	40.2	712	14358	8	26
40 to 44	0	0	1	9	16	9	2	0	37	37.7	692	10832	28	100
35 to 39	8	12	19	19	16	20	19	12	125	34.5	650	7471	70	339
30 to 34	25	21	18	24	18	23	32	32	193	30.6	446	4660	274	1128
25 to 29	23	23	20	13	12	10	14	19	134	26.7	272	2856	448	2924
20 to 24	11	12	12	10	7	7	5	7	71	21.1	185	1740	535	5408
15 to 19	9	7	6	6	5	8	3	6	50	16.2	121	987	599	8255
10 to 14	4	4	5	2	0	1	8	6	30	11.2	83	493	637	11361
5 to 9	9	5	3	2	5	3	5	8	40	6.6	43	163	677	14631
0 to 4	1	5	3	3	1	3	2	0	18	1.9	11	37	709	18105
-5 to -1	0	1	3	1	0	0	0	0	5	-3.4	2	3	718	21671
Dec														
40 to 44	0	0	0	0	2	1	0	0	3	35.3	744	22625	0	0
35 to 39	0	0	0	3	9	6	3	1	22	33.8	733	18921	11	16
30 to 34	6	0	2	4	7	8	3	5	35	29.1	703	15319	41	134
25 to 29	2	10	8	9	4	8	9	3	53	25.3	665	11886	79	421
20 to 24	7	10	14	12	15	17	15	8	98	20.3	602	8712	142	967
15 to 19	14	6	9	12	21	10	7	11	90	16.2	492	5975	252	1950
10 to 14	11	16	11	16	11	19	20	22	126	11.1	387	3746	357	3441
5 to 9	20	17	8	15	12	8	13	16	109	6.6	265	2104	479	5519
0 to 4	14	9	16	8	9	12	8	6	82	1.6	172	1014	572	8149
-5 to -1	11	15	13	8	3	3	12	15	80	-3.1	96	354	648	11209
-10 to -6	6	5	9	5	0	1	3	6	35	-7.6	27	78	717	14653
-15 to -11	2	5	2	1	0	0	0	0	10	-12.3	6	7	738	18302
-20 to -16	0	0	1	0	0	0	0	0	1	-16.0	0	0	744	22015

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

BISMARCK, NORTH DAKOTA
WBAN 24011
TABLE B:

TRY Data (1970)

Latitude 46.80 N
Longitude 100.80 E

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

Dry Bulb range(F)	Number of Hours of Occurrence in time period										Mean Coincident Wet Bulb Temperature (F)									
	Hour of day										Hour of day									
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year		
100 to 104	0	0	0	0	2	0	0	0	2	0.0	0.0	0.0	0.0	69.0	0.0	0.0	0.0	69.0		
95 to 99	0	0	0	0	9	12	0	0	21	0.0	0.0	0.0	0.0	68.4	68.3	0.0	0.0	68.4		
90 to 94	0	0	0	5	35	43	5	0	88	0.0	0.0	0.0	70.2	68.3	67.1	67.4	0.0	67.8		
85 to 89	0	0	0	35	86	102	21	0	244	0.0	0.0	0.0	68.5	66.7	65.9	66.6	0.0	66.6		
80 to 84	0	0	3	62	75	50	57	5	252	0.0	0.0	69.7	66.6	63.3	63.6	66.3	68.6	65.0		
75 to 79	7	0	27	75	54	58	66	20	307	66.1	0.0	66.5	63.3	61.4	61.5	64.0	64.9	63.2		
70 to 74	25	8	49	71	63	70	68	58	412	64.1	66.4	63.8	61.0	57.9	57.8	60.2	64.0	60.9		
65 to 69	63	48	84	80	59	49	68	78	529	61.8	62.5	60.7	56.9	55.5	54.7	58.3	59.3	58.8		
60 to 64	72	59	69	47	50	49	64	83	493	57.1	59.2	57.3	53.1	52.0	50.9	54.9	56.9	55.6		
55 to 59	88	91	73	48	41	50	48	75	514	53.7	53.9	52.6	48.6	46.6	46.5	48.4	52.7	51.2		
50 to 54	82	94	65	54	46	35	58	64	498	48.4	49.4	47.9	44.5	43.3	43.9	44.7	47.4	46.7		
45 to 49	73	73	61	53	46	37	54	63	460	43.4	45.0	43.9	41.5	42.0	42.2	41.7	42.7	42.9		
40 to 44	78	86	68	56	68	61	52	80	549	39.7	39.9	38.8	37.4	36.6	37.0	37.7	38.8	38.4		
35 to 39	76	89	85	86	103	101	83	84	707	33.8	34.3	34.1	33.5	33.5	33.7	33.6	33.3	33.7		
30 to 34	122	111	96	78	68	86	116	113	790	30.6	30.7	30.4	29.9	29.2	29.8	30.4	30.8	30.3		
25 to 29	79	91	66	53	53	44	52	64	502	26.1	26.0	25.5	25.2	24.9	25.2	25.7	26.2	25.7		
20 to 24	47	58	67	74	55	66	49	42	458	21.1	21.1	21.0	20.6	19.8	20.0	20.7	20.9	20.6		
15 to 19	54	55	63	57	50	40	39	41	399	16.1	16.2	16.0	15.7	15.8	15.7	16.3	16.2	16.0		
10 to 14	52	47	50	34	30	35	64	61	373	11.4	11.7	11.3	10.9	10.7	10.7	11.0	11.2	11.2		
5 to 9	48	51	32	35	35	29	40	58	328	6.3	6.6	6.6	6.0	5.8	5.7	6.3	6.5	6.3		
0 to 4	50	39	41	30	33	43	25	26	287	1.4	1.2	1.6	1.0	1.2	1.8	1.5	2.0	1.5		
-5 to -1	23	42	39	23	17	18	35	31	228	-3.3	-3.0	-3.1	-3.2	-4.1	-3.6	-3.1	-3.6	-3.3		
-10 to -6	18	15	24	19	8	6	16	25	131	-8.0	-7.3	-8.0	-8.2	-8.9	-8.2	-7.0	-8.1	-7.9		
-15 to -11	22	16	8	7	4	6	5	15	83	-13.2	-13.0	-12.4	-12.6	-12.5	-12.2	-12.6	-12.9	-12.8		
-20 to -16	9	9	9	9	5	5	5	1	52	-17.4	-18.6	-18.7	-18.3	-16.4	-17.4	-17.4	-16.0	-17.9		
-25 to -21	3	7	10	2	0	0	4	4	30	-23.7	-22.3	-22.9	-23.0	0.0	0.0	-22.8	-23.5	-22.9		
-30 to -26	1	2	0	2	0	0	1	1	7	-26.0	-28.0	0.0	-28.0	0.0	0.0	-30.0	-27.0	-27.9		
-35 to -31	3	4	6	0	0	0	0	3	16	-33.0	-33.5	-33.5	0.0	0.0	0.0	0.0	-32.7	-33.3		

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

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	Min	4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	5.3	41	-34	13	-4	4.4	88	87	80	85	86	0.0010	0.0010	0.0012	0.0012	0.0011	10.0
Feb	16.8	44	-25	29	4	15.3	88	74	72	84	82	0.0015	0.0016	0.0021	0.0019	0.0017	10.9
Mar	20.0	44	-4	29	10	18.3	88	76	68	83	80	0.0016	0.0018	0.0021	0.0019	0.0018	9.3
Apr	39.5	84	13	48	32	34.7	78	61	56	69	67	0.0034	0.0033	0.0035	0.0036	0.0034	14.0
May	53.7	90	32	65	44	47.2	82	64	53	58	67	0.0056	0.0062	0.0064	0.0060	0.0060	11.8
Jun	68.0	92	43	80	55	59.9	87	62	49	59	67	0.0093	0.0106	0.0104	0.0104	0.0101	10.0
Jul	71.4	96	47	85	58	61.9	83	57	42	57	63	0.0098	0.0111	0.0104	0.0112	0.0106	9.7
Aug	70.1	102	40	86	54	59.2	82	54	33	49	59	0.0089	0.0100	0.0085	0.0092	0.0092	9.1
Sep	57.4	96	28	72	45	49.6	82	65	41	61	65	0.0062	0.0074	0.0065	0.0067	0.0067	9.4
Oct	43.7	88	22	56	34	38.0	77	68	47	62	65	0.0037	0.0043	0.0039	0.0038	0.0039	9.5
Nov	27.6	53	-4	34	21	26.1	91	86	76	86	86	0.0027	0.0028	0.0031	0.0029	0.0029	9.7
Dec	12.1	41	-16	21	1	11.1	93	84	75	87	85	0.0012	0.0012	0.0016	0.0014	0.0013	9.6
Yea	40.6	102	-34	52	30	35.6	85	70	7	70	73	0.0046	0.0051	0.0050	0.0050	0.0049	10.2

BISMARCK, NORTH DAKOTA

TRY Data (1970)

Latitude 46.80 N

WRAN 24011

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

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

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

BISMARCK, NORTH DAKOTA
WBAN 24011

TRY Data (1970)

Latitude 46.80 N
Longitude 100.80 E

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

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

Bismarck, NORTH DAKOTA
WBAN 24011
TABLE D:

TRY Data (1970)

Latitude 46.80 N
Longitude 100.80 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	7-9AM**		10-12AM**		1-3PM**		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 Above Base 100s*	Deg
11	910	25 300	961	17 376	987	11 423	979	11 423	945	16 360	2713	70 860	1263	150	7497	2742
10	921	24 309	966	15 385	991	10 433	985	10 432	957	14 370	2742	65 887	1196	138	7564	2817
9	932	22 318	972	14 395	996	9 443	989	9 442	968	13 379	2776	59 915	1124	126	7636	2893
8	940	20 327	981	13 405	1004	8 453	993	8 452	977	12 389	2810	54 943	1053	115	7707	2970
7	945	19 337	988	12 415	1011	7 463	999	7 462	986	11 399	2843	50 971	986	105	7774	3047
6	951	17 346	995	11 425	1017	6 474	1006	6 472	992	10 409	2875	46 1000	923	96	7837	3125
5	956	16 356	1001	10 434	1024	5 484	1013	5 482	999	9 419	2903	42 1029	863	87	7897	3204
4	961	15 366	1006	9 445	1031	5 494	1024	5 493	1007	8 429	2927	38 1058	802	78	7958	3283
3	970	13 375	1011	8 455	1039	4 504	1038	4 503	1013	7 439	2947	34 1087	741	71	8019	3363
2	980	12 385	1016	7 465	1046	3 515	1047	3 513	1017	6 449	2971	31 1117	681	63	8079	3444
1	988	11 395	1023	6 475	1051	3 525	1052	3 524	1022	5 459	2994	28 1147	629	57	8131	3525
0	995	10 405	1029	6 485	1057	3 536	1057	3 534	1027	5 470	3016	25 1177	577	51	8183	3606
-1	1003	9 415	1036	5 496	1063	2 546	1063	2 545	1033	4 480	3039	23 1207	522	45	8238	3688
-2	1012	8 425	1042	4 506	1066	2 557	1066	2 556	1043	4 490	3057	20 1237	472	40	8288	3771
-3	1020	7 435	1046	4 516	1069	2 568	1069	2 566	1050	3 501	3077	18 1268	426	36	8334	3854
-4	1028	6 445	1051	4 527	1071	1 578	1073	1 577	1055	3 511	3097	16 1299	383	32	8377	3938
-5	1035	5 455	1054	3 537	1075	1 589	1076	1 588	1061	2 522	3117	15 1330	339	28	8421	4022
-6	1040	5 466	1058	3 548	1078	1 600	1079	1 598	1067	2 532	3135	13 1361	302	25	8458	4106
-7	1045	5 476	1063	2 559	1079	1 611	1080	1 609	1073	2 543	3148	12 1393	271	22	8489	4191
-8	1050	4 487	1066	2 569	1080	1 622	1080	1 620	1077	2 554	3159	10 1424	245	20	8515	4276
-9	1056	4 497	1069	2 580	1081	1 632	1081	1 631	1079	1 565	3169	9 1456	223	17	8537	4361
-10	1060	4 508	1073	2 591	1083	0 643	1083	1 642	1080	1 576	3179	8 1488	201	15	8559	4447
-11	1063	3 519	1076	1 601	1087	0 654	1085	0 653	1080	1 586	3188	7 1520	180	13	8580	4532
-12	1065	3 529	1078	1 612	1088	0 665	1087	0 663	1081	1 597	3200	6 1551	160	12	8600	4618
-13	1067	3 540	1080	1 623	1088	0 676	1088	0 674	1083	1 608	3213	5 1584	139	10	8621	4704
-14	1069	2 551	1081	1 634	1089	0 687	1089	0 685	1084	1 619	3222	5 1616	125	9	8635	4791
-15	1070	2 561	1081	1 645	1089	0 698	1090	0 696	1085	1 630	3231	4 1648	112	8	8648	4877
-16	1070	2 572	1083	1 655	1091	0 708	1090	0 707	1086	0 641	3239	3 1680	98	7	8662	4964
-17	1071	2 583	1085	0 666	1094	0 719	1091	0 718	1088	0 651	3244	3 1713	85	6	8675	5050
-18	1073	2 593	1085	0 677	1095	0 730	1094	0 729	1088	0 662	3249	3 1745	75	5	8685	5137
-19	1075	1 604	1086	0 688	1095	0 741	1095	0 740	1088	0 673	3252	2 1778	67	4	8693	5224
-20	1077	1 615	1089	0 699	1095	0 752	1095	0 751	1089	0 684	3255	2 1810	58	4	8702	5311
-21	1079	1 626	1091	0 710	1095	0 763	1095	0 762	1090	0 695	3258	2 1843	51	3	8709	5398
-22	1081	1 636	1091	0 721	1095	0 774	1095	0 773	1091	0 706	3261	1 1875	45	3	8715	5485
-23	1084	1 647	1092	0 732	1095	0 785	1095	0 784	1092	0 717	3264	1 1908	36	2	8724	5572
-24	1087	1 658	1093	0 742	1095	0 796	1095	0 795	1093	0 728	3267	1 1941	29	2	8731	5660
-25	1088	1 669	1093	0 753	1095	0 807	1095	0 805	1094	0 739	3270	1 1973	24	2	8736	5747
-26	1089	0 680	1093	0 764	1095	0 818	1095	0 816	1094	0 750	3271	1 2006	22	1	8738	5834
-27	1089	0 691	1093	0 775	1095	0 829	1095	0 827	1094	0 761	3273	1 2039	20	1	8740	5922
-28	1089	0 702	1094	0 786	1095	0 840	1095	0 838	1094	0 771	3274	1 2072	19	1	8741	6009
-29	1089	0 713	1094	0 797	1095	0 851	1095	0 849	1094	0 782	3274	0 2104	18	1	8742	6096
-30	1089	0 723	1095	0 808	1095	0 862	1095	0 860	1094	0 793	3275	0 2137	16	1	8744	6184
-31	1089	0 734	1095	0 819	1095	0 873	1095	0 871	1095	0 804	3275	0 2170	16	0	8744	6271
-32	1089	0 745	1095	0 830	1095	0 884	1095	0 882	1095	0 815	3277	0 2203	13	0	8747	6359
-33	1090	0 756	1095	0 841	1095	0 895	1095	0 893	1095	0 826	3279	0 2235	10	0	8750	6446
-34	1093	0 767	1095	0 852	1095	0 906	1095	0 904	1095	0 837	3282	0 2268	4	0	8756	6534

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

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

BISMARCK, NORTH DAKOTA
WBAN 24011
TABLE E:

TRY Data (1970)

Latitude 46.80 N
Longitude 100.80 E

Annual COOLING Wet Bulb Degree Hour Summary

Wet Bulb Temperature (F) Base:	50	53	56	59	62	65	68	71	74	77	80
Annual Wet Bulb hours ABOVE base:	2751	2411	2022	1584	1106	672	327	123	16	0	0
Annual Wet Bulb Cooling deg-hrs:	30202.	22262.	15407.	9773.	5485.	2652.	1009.	257.	25.	0.	0.

TABLE F:

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

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **												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	30	29	27	26	24	22	19	15	11	7	5	.001		
.002	3	3	4	4	4	4	4	4	4	4	4	25	24	23	22	21	19	16	13	9	6	4	.002		
.003	6	7	7	7	7	7	7	7	7	7	7	19	19	19	18	17	16	14	11	8	6	4	.003		
.004	9	10	11	11	11	11	12	12	12	12	12	15	15	15	15	14	13	12	10	7	5	3	.004		
.005	12	14	15	16	16	17	17	17	17	17	17	12	12	12	12	12	11	10	8	6	4	3	.005		
.006	15	18	20	21	21	22	22	23	23	23	23	9	9	9	9	9	9	8	6	5	3	2	.006		
.007	18	21	24	26	27	28	28	29	29	29	29	7	7	7	7	7	6	6	5	4	3	2	.007		
.008	21	25	28	31	32	33	34	35	35	36	36	5	5	5	5	5	5	4	4	3	2	1	.008		
.009	24	29	33	36	38	39	41	41	42	43	43	3	3	3	3	3	3	3	3	2	1	1	.009		
.010	27	32	37	41	43	45	47	48	49	50	50	2	2	2	2	2	2	2	2	1	1	1	.010		
.011	29	36	42	46	48	51	53	55	56	57	58	1	1	1	1	1	1	1	1	1	1	0	.011		
.012	32	40	46	51	54	57	60	62	63	65	66	1	1	1	1	1	1	1	1	1	0	0	.012		
.013	35	43	50	55	59	63	66	69	71	72	73	0	0	0	0	0	0	0	0	0	0	0	.013		
.014	38	47	55	60	65	69	73	76	78	80	82	0	0	0	0	0	0	0	0	0	0	0	.014		
.015	41	51	59	65	70	75	79	82	86	88	90	0	0	0	0	0	0	0	0	0	0	0	.015		
.016	44	54	64	70	75	81	85	89	93	96	98	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	47	58	68	75	81	87	92	96	100	104	106	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	50	62	72	80	86	92	98	103	108	112	114	0	0	0	0	0	0	0	0	0	0	0	.018		

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

TABLE G:

Percent Diffuse Solar Radiation*
and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
% Diffuse on surface													
HORIZONTAL	62	42	41	61	67	38	38	30	37	35	60	44	44
VERTICAL													
NORTH	100	100	100	99	96	85	88	94	100	100	100	100	94
WEST	61	49	51	76	72	55	56	48	50	48	60	50	57
SOUTH	42	33	41	68	82	65	64	47	41	32	43	26	50
EAST	66	49	54	66	81	54	55	46	50	44	68	45	56
% Possible Sun	55	55	60	58	63	65	76	73	66	59	45	47	62

FOOTNOTES: * Corrected For Cloud Cover.

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

Bismarck, NORTH DAKOTA

WBAN 24011

TABLE B:

TRY Data (1970)

Latitude 46.80 N

Longitude 100.80 E

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

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

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

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

*** South exposure tilt 45 degrees.

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

TABLE I:

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

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

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

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

BOISE, IDAHO
WBAN 24131
TABLE A:

TRY Data (1966)

Latitude 43.50 N
Longitude 116.20 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence In time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-5	7-9	10-12	13-15	16-18	19-21	22-24							
Jan															
50 to 54	0	0	0	0	1	1	0	0	2	46.5	744	15049	0	0	
45 to 49	6	6	3	7	12	8	6	6	54	42.2	730	11344	14	15	
40 to 44	9	8	11	11	21	23	12	10	105	37.4	658	7870	86	261	
35 to 39	11	8	9	19	24	22	14	11	118	33.0	541	4859	203	970	
30 to 34	19	22	18	23	25	26	25	25	183	29.7	396	2482	348	2313	
25 to 29	24	17	19	24	10	11	22	22	149	25.1	209	985	535	4536	
20 to 24	22	22	18	8	0	2	11	16	99	21.1	73	261	671	7532	
15 to 19	2	8	13	1	0	0	1	1	26	16.9	19	54	725	11045	
10 to 14	0	2	2	0	0	0	2	2	8	11.8	4	5	740	14716	
Feb															
50 to 54	0	0	0	0	5	2	0	0	7	40.4	672	13114	0	0	
45 to 49	0	0	0	4	15	17	0	0	36	38.8	658	9781	14	27	
40 to 44	1	0	0	13	26	27	28	13	108	36.3	597	6614	75	220	
35 to 39	26	15	13	26	12	11	17	24	144	33.4	467	3935	205	901	
30 to 34	24	21	23	13	23	23	21	22	170	29.8	293	2002	379	2328	
25 to 29	17	27	21	22	3	4	11	10	115	25.9	153	894	519	4580	
20 to 24	6	12	15	3	0	0	3	7	46	21.5	60	384	612	7430	
15 to 19	5	3	6	3	0	0	4	7	28	16.2	34	149	638	10555	
10 to 14	4	3	3	0	0	0	0	1	11	12.2	11	41	661	13807	
5 to 9	1	3	3	0	0	0	0	0	7	7.7	2	2	670	17128	
Mar															
75 to 79	0	0	0	0	2	3	0	0	5	52.6	744	25887	0	0	
70 to 74	0	0	0	0	4	6	2	0	12	50.8	735	22189	9	22	
65 to 69	0	0	0	1	10	10	1	0	22	49.3	717	18549	27	102	
60 to 64	0	0	0	8	7	6	4	0	25	46.8	694	15019	50	292	
55 to 59	0	0	0	9	12	12	11	3	47	44.9	665	11612	79	605	
50 to 54	5	0	3	8	16	16	17	9	74	41.8	602	8428	142	1141	
45 to 49	16	11	14	21	8	9	13	18	110	40.0	521	5612	223	2045	
40 to 44	16	18	20	16	16	15	12	19	132	36.4	397	3300	347	3453	
35 to 39	26	24	20	18	15	12	17	15	147	32.2	255	1656	489	5529	
30 to 34	16	21	20	8	3	4	10	17	99	27.8	126	716	618	8309	
25 to 29	2	7	6	3	0	0	6	5	29	24.9	52	296	692	11609	
20 to 24	11	6	5	1	0	0	0	7	30	20.1	33	81	711	15114	
15 to 19	1	6	5	0	0	0	0	0	12	17.2	4	4	740	18757	

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

BOISE, IDAHO
WBAN 24131
TABLE A:

TRY Data (1966)

Latitude 43.50 N
Longitude 116.20 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Apr															
80 to 84	0	0	0	0	0	2	0	0	2	55.0	720	23999	0	0	
75 to 79	0	0	0	0	3	2	0	0	5	53.2	716	20406	4	7	
70 to 74	0	0	0	0	10	13	3	0	26	50.9	709	16841	11	42	
65 to 69	0	0	0	8	16	13	9	0	46	48.8	674	13387	46	188	
60 to 64	0	0	0	15	9	12	10	1	47	46.6	624	10152	96	553	
55 to 59	3	0	5	15	21	22	16	10	92	43.9	554	7181	166	1182	
50 to 54	4	3	12	24	20	12	18	12	105	42.0	460	4636	260	2237	
45 to 49	25	14	19	19	10	11	20	22	140	39.3	340	2624	380	3825	
40 to 44	22	26	24	7	1	3	10	25	118	36.4	198	1281	522	6082	
35 to 39	20	14	18	2	0	0	4	13	71	31.4	112	517	608	8918	
30 to 34	11	23	10	0	0	0	0	6	50	28.4	43	136	677	12137	
25 to 29	4	9	1	0	0	0	0	1	15	23.3	11	24	709	15625	
20 to 24	1	1	1	0	0	0	0	0	3	19.3	0	0	720	19201	
May															
95 to 99	0	0	0	0	0	1	0	0	1	59.0	744	26419	0	0	
90 to 94	0	0	0	1	7	7	1	0	16	58.8	737	22710	7	11	
85 to 89	0	0	0	4	8	10	4	0	26	57.9	717	19067	27	88	
80 to 84	0	0	0	3	10	13	5	0	31	57.4	690	15542	54	283	
75 to 79	3	0	2	11	19	21	13	6	75	55.6	644	12185	100	646	
70 to 74	4	1	5	21	12	5	16	6	70	54.2	565	9183	179	1364	
65 to 69	6	1	14	11	10	12	13	14	81	50.5	501	6518	243	2419	
60 to 64	11	10	16	12	21	18	16	14	118	48.1	390	4260	354	3881	
55 to 59	16	16	13	18	0	0	13	15	91	46.6	287	2579	457	5920	
50 to 54	14	19	17	7	5	6	6	18	92	42.9	194	1369	550	8430	
45 to 49	20	11	14	4	1	0	6	13	69	40.0	117	613	627	11394	
40 to 44	15	20	9	1	0	0	0	3	48	36.9	57	200	687	14701	
35 to 39	4	12	3	0	0	0	0	4	23	33.3	17	32	727	18253	
30 to 34	0	3	0	0	0	0	0	0	3	30.3	0	0	744	21941	
Jun															
90 to 94	0	0	0	0	6	7	0	0	13	62.7	716	19806	4	3	
85 to 89	0	0	0	1	9	18	7	0	35	60.7	699	16261	21	58	
80 to 84	0	0	0	9	21	14	14	0	58	58.7	649	12882	71	279	
75 to 79	0	0	1	14	13	13	13	1	55	57.4	592	9772	128	769	
70 to 74	1	0	4	22	10	11	18	12	78	54.7	533	6955	187	1552	
65 to 69	8	0	20	15	14	16	15	27	115	53.2	449	4500	271	2697	
60 to 64	31	17	26	12	12	7	13	13	131	50.8	319	2594	401	4391	
55 to 59	13	30	16	13	5	4	6	18	105	48.0	195	1330	525	6727	
50 to 54	18	12	11	4	0	0	4	12	61	44.0	105	616	615	9613	
45 to 49	7	15	9	0	0	0	0	5	36	42.2	51	230	669	12827	
40 to 44	12	11	3	0	0	0	0	2	28	38.5	24	46	696	16243	
35 to 39	0	5	0	0	0	0	0	0	5	36.8	1	1	719	19798	

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

BOISE, IDAHO
WBAN 24131
TABLE A:

TRY Data (1966)

Latitude 43.50 N
Longitude 116.20 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Jul														
95 to 99	0	0	0	0	1	6	0	0	7	62.1	744	17826	0	0
90 to 94	0	0	0	0	19	41	9	0	69	61.5	718	14148	26	42
85 to 89	0	0	0	3	38	30	24	0	95	61.3	629	10765	115	379
80 to 84	0	0	0	28	21	10	29	4	92	59.7	528	7864	216	1198
75 to 79	1	0	7	32	6	0	17	13	76	57.6	452	5420	292	2474
70 to 74	8	3	21	17	4	3	10	37	103	55.6	357	3371	387	4145
65 to 69	22	8	25	7	3	3	3	24	95	52.2	259	1811	485	6305
60 to 64	39	25	27	6	1	0	1	10	109	50.2	167	740	577	8954
55 to 59	20	38	11	0	0	0	0	4	73	48.5	60	189	684	12123
50 to 54	3	16	2	0	0	0	0	1	22	45.3	13	31	731	15685
45 to 49	0	3	0	0	0	0	0	0	3	40.0	3	5	741	19379
Aug														
100 to 104	0	0	0	0	3	2	0	0	5	64.4	744	22198	0	0
95 to 99	0	0	0	0	5	12	1	0	18	64.1	736	18499	8	21
90 to 94	0	0	0	2	17	18	7	0	44	62.5	707	14885	37	127
85 to 89	0	0	0	14	23	28	14	0	79	61.3	649	11481	95	443
80 to 84	1	0	1	19	19	12	23	9	84	59.1	563	8452	181	1134
75 to 79	10	2	8	15	12	11	17	14	89	57.2	472	5852	272	2254
70 to 74	8	6	20	23	7	2	13	24	103	54.7	386	3697	358	3819
65 to 69	24	16	18	13	7	7	7	18	110	52.9	268	2051	476	5893
60 to 64	26	23	24	5	0	1	7	14	100	50.8	172	939	572	8501
55 to 59	12	29	13	2	0	0	4	11	71	48.6	75	339	669	11621
50 to 54	9	9	6	0	0	0	0	3	27	45.5	29	101	715	15103
45 to 49	3	8	3	0	0	0	0	0	14	42.1	10	14	734	18736
Sep														
95 to 99	0	0	0	0	2	2	0	0	4	63.8	720	22532	0	0
90 to 94	0	0	0	0	4	10	0	0	14	63.1	715	18948	5	16
85 to 89	0	0	0	2	18	13	2	0	35	61.3	693	15428	27	96
80 to 84	0	0	0	11	18	22	9	1	61	59.6	644	12074	76	342
75 to 79	1	0	1	16	17	15	12	5	67	58.2	575	9021	145	889
70 to 74	9	0	8	18	10	8	20	13	86	55.8	511	6300	209	1768
65 to 69	11	11	13	16	12	14	20	16	113	53.8	408	3990	312	3058
60 to 64	15	14	16	14	8	5	15	20	107	51.0	310	2223	410	4891
55 to 59	19	22	18	11	1	1	8	21	101	49.1	191	1001	529	7269
50 to 54	28	24	25	2	0	0	4	12	95	47.4	92	292	628	10160
45 to 49	6	16	7	0	0	0	0	2	31	43.9	16	44	704	13512
40 to 44	1	3	2	0	0	0	0	0	6	42.2	2	2	718	17070

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

BOISE, IDAHO
WBAN 24131
TABLE A:

TRY Data (1966)

Latitude 43.50 N
Longitude 116.20 E

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

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
Oct														
75 to 79	0	0	0	0	3	4	0	0	7	52.3	744	21415	0	0
70 to 74	0	0	0	1	8	9	0	0	18	50.8	733	17721	11	26
65 to 69	0	1	0	4	20	20	2	1	48	49.5	706	14114	38	139
60 to 64	3	2	3	16	20	15	10	2	71	47.3	650	10721	94	466
55 to 59	4	1	3	14	17	22	13	7	81	45.9	576	7670	168	1135
50 to 54	10	2	10	21	14	12	21	17	107	43.7	474	5021	270	2206
45 to 49	13	21	10	20	8	9	20	15	116	40.6	367	2909	377	3814
40 to 44	31	19	31	12	3	2	20	27	145	36.8	237	1387	507	6012
35 to 39	16	19	15	5	0	0	7	17	79	33.4	113	534	631	8879
30 to 34	11	19	16	0	0	0	0	7	53	29.4	42	138	702	12203
25 to 29	5	7	4	0	0	0	0	0	16	25.3	9	25	735	15810
20 to 24	0	2	1	0	0	0	0	0	3	21.7	1	2	743	19507
Nov														
65 to 69	0	0	0	0	1	0	0	0	1	50.0	720	18009	0	0
60 to 64	0	0	0	2	11	5	3	0	21	47.5	712	14420	8	11
55 to 59	9	7	5	8	11	15	9	11	75	46.3	676	10932	44	123
50 to 54	3	7	7	10	18	17	4	4	70	44.0	598	7759	122	550
45 to 49	6	3	1	24	20	15	10	8	87	41.1	525	4948	195	1339
40 to 44	22	22	19	21	16	22	31	22	175	38.4	412	2578	308	2569
35 to 39	29	23	30	14	13	12	16	23	160	34.6	211	1029	509	4620
30 to 34	14	18	15	10	0	4	13	13	87	30.7	86	303	634	7494
25 to 29	6	10	12	1	0	0	4	9	42	26.1	26	38	694	10829
20 to 24	1	0	1	0	0	0	0	0	2	23.0	0	0	720	14391
Dec														
50 to 54	0	0	0	0	1	0	0	0	1	45.0	744	15971	0	0
45 to 49	6	2	0	5	12	11	6	4	46	41.0	731	12265	13	14
40 to 44	4	11	9	11	10	13	4	4	66	38.1	679	8747	65	216
35 to 39	13	6	12	11	23	21	16	14	116	34.5	583	5541	161	730
30 to 34	16	22	13	23	26	22	27	21	170	30.1	447	2929	297	1838
25 to 29	44	37	35	29	15	19	28	34	241	26.6	235	1167	509	3796
20 to 24	3	7	14	6	3	4	6	10	53	22.1	73	511	671	6860
15 to 19	2	5	4	6	3	2	1	0	23	17.3	38	243	706	10312
10 to 14	3	1	3	1	0	1	2	3	14	12.5	21	96	723	13885
5 to 9	2	1	0	1	0	0	3	3	10	7.0	11	23	733	17532
0 to 4	0	1	3	0	0	0	0	0	4	3.7	0	0	744	21229

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

BOISE, IDAHO
WBAN 24131
TABLE B:

TRY Data (1966)

Latitude 43.50 N
Longitude 116.20 E

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

Dry Bulb range(F)	Number of Hours of Occurrence In time period									Mean Coincident Wet Bulb Temperature (F)								
	Hour of day									Hour of day								
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year
100 to 104	0	0	0	0	3	2	0	0	5	0.0	0.0	0.0	0.0	64.3	64.5	0.0	0.0	64.4
95 to 99	0	0	0	0	8	21	1	0	30	0.0	0.0	0.0	0.0	63.3	63.4	64.0	0.0	63.4
90 to 94	0	0	0	3	53	83	17	0	156	0.0	0.0	0.0	62.3	62.0	61.6	61.8	0.0	61.8
85 to 89	0	0	0	24	96	99	51	0	270	0.0	0.0	0.0	61.2	61.2	60.3	61.4	0.0	60.9
80 to 84	1	0	1	70	89	73	80	14	328	60.0	0.0	59.0	59.7	59.1	58.3	58.9	60.6	59.1
75 to 79	15	2	19	88	75	69	72	39	379	57.1	56.0	56.7	58.3	56.8	55.8	57.2	56.0	57.0
70 to 74	30	10	58	102	65	57	82	92	496	54.6	57.0	55.4	55.6	53.5	52.4	55.3	54.2	54.6
65 to 69	71	37	90	75	93	95	70	100	631	51.7	51.7	53.1	53.1	50.8	50.7	52.1	53.0	52.0
60 to 64	125	91	112	90	89	69	79	74	729	50.6	50.0	50.9	49.0	48.0	47.4	48.8	49.7	49.5
55 to 59	96	143	84	90	67	76	80	100	736	48.0	48.5	47.7	46.5	45.2	45.2	45.7	47.3	47.0
50 to 54	94	92	93	76	80	66	74	88	663	45.1	45.4	45.0	43.5	41.8	41.7	42.6	44.1	43.8
45 to 49	108	110	80	104	86	80	81	93	742	41.5	41.7	41.2	40.0	39.8	39.4	40.1	40.3	40.6
40 to 44	133	138	128	92	93	105	117	125	931	37.2	38.0	37.9	36.8	36.2	36.6	37.1	37.2	37.2
35 to 39	145	126	120	95	87	78	91	121	863	33.6	33.9	33.8	33.0	32.5	32.5	33.2	33.5	33.3
30 to 34	111	149	115	77	77	79	96	111	815	30.1	30.0	29.7	29.0	28.5	28.9	29.8	29.9	29.6
25 to 29	102	114	98	79	28	34	71	81	607	25.7	25.9	26.0	25.8	26.0	26.1	25.8	25.7	25.8
20 to 24	44	50	55	18	3	6	20	40	236	20.9	21.2	21.6	21.1	20.0	21.3	21.2	21.6	21.3
15 to 19	10	22	28	10	3	2	6	8	89	16.4	16.9	16.7	17.1	18.7	18.5	16.2	16.5	16.8
10 to 14	7	6	8	1	0	1	4	6	33	12.4	12.7	11.8	12.0	0.0	14.0	11.8	12.2	12.2
5 to 9	3	4	3	1	0	0	3	3	17	7.3	8.0	7.3	6.0	0.0	0.0	7.0	7.0	7.3
0 to 4	0	1	3	0	0	0	0	0	4	0.0	4.0	3.7	0.0	0.0	0.0	0.0	0.0	3.7

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Month	Dry Bulb Temperature (F)				Wet Bulb		Percent Relative Humidity					Average Humidity Ratio (lb moisture/lb dry air)					Average wind MPH
	Ave	Max	Min	Daily Max	Ave Min	Ave	4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	32.3	51	10	39	26	29.5	84	79	65	80	77	0.0030	0.0031	0.0033	0.0032	0.0031	8.3
Feb	33.0	51	6	41	25	29.9	86	77	58	72	75	0.0030	0.0030	0.0033	0.0032	0.0031	7.5
Mar	42.7	77	15	54	32	35.7	74	57	35	48	57	0.0035	0.0035	0.0031	0.0031	0.0033	10.0
Apr	49.2	80	23	61	37	39.5	65	44	29	38	47	0.0035	0.0037	0.0033	0.0035	0.0035	8.8
May	62.0	95	33	76	47	47.8	58	37	24	34	40	0.0047	0.0048	0.0046	0.0050	0.0048	9.5
Jun	65.0	94	37	78	52	51.4	62	44	29	34	44	0.0059	0.0065	0.0058	0.0061	0.0060	8.7
Jul	73.5	97	46	89	57	55.4	50	38	19	28	35	0.0060	0.0070	0.0060	0.0069	0.0063	7.8
Aug	72.7	102	45	87	57	55.0	47	39	22	31	36	0.0058	0.0069	0.0061	0.0068	0.0063	7.9
Sep	66.2	97	41	80	53	53.1	59	47	31	46	48	0.0061	0.0069	0.0069	0.0072	0.0067	7.2
Oct	48.7	77	21	63	36	40.5	68	56	34	50	55	0.0038	0.0044	0.0041	0.0040	0.0041	7.8
Nov	42.5	65	24	51	35	37.8	76	72	56	75	71	0.0041	0.0043	0.0044	0.0045	0.0043	8.1
Dec	31.0	50	3	37	25	29.3	91	86	75	87	86	0.0033	0.0031	0.0035	0.0034	0.0033	8.1
Year	51.7	102	3	63	40	42.1	68	56	40	52	56	0.0044	0.0048	0.0045	0.0047	0.0046	8.3

BOISE, IDAHO
WBAN 24131

TRY Data (1966)

Latitude 43.50 N
Longitude 116.20 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)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Hrs	Deg	Hrs	Deg
	Base Heat Cool		Base Heat Cool		Base Heat Cool		Base Heat Cool		Base Heat Cool		Base Heat Cool		Below Base 100s*	Above Base 100s*	Below Base 100s*	Above Base 100s*
103	0	627	0	0	534	0	0	465	0	0	458	0	0	1883	0	0
102	0	616	0	0	523	0	1	454	0	0	447	0	0	1850	0	0
101	0	605	0	0	512	0	2	443	0	1	436	0	0	1817	0	0
100	0	595	0	0	501	0	2	433	0	1	425	0	0	1784	0	0
99	0	584	0	0	490	0	3	422	0	2	414	0	0	1751	0	0
98	0	573	0	0	479	0	5	411	0	2	403	0	0	1718	0	0
97	0	562	0	0	468	0	6	400	0	6	392	0	0	1685	0	0
96	0	551	0	0	457	0	6	389	0	13	381	0	0	1653	0	0
95	0	540	0	0	446	0	9	378	0	19	370	0	0	1620	0	0
94	0	529	0	0	435	0	14	367	0	31	360	1	1	1587	0	0
93	0	518	0	1	424	0	21	356	1	43	349	1	3	1554	0	0
92	0	507	0	2	413	0	30	346	1	56	339	1	5	1521	0	0
91	0	496	0	2	402	0	41	335	1	72	328	2	9	1488	0	0
90	0	485	0	2	392	0	55	325	2	93	318	3	15	1456	0	0
89	0	474	0	5	381	0	72	314	2	118	308	4	20	1423	0	0
88	0	463	0	10	370	0	90	304	3	135	299	5	28	1390	0	0
87	0	452	0	13	359	0	107	294	4	149	289	7	39	1357	0	0
86	0	441	0	18	348	0	129	284	5	172	280	8	52	1324	0	0
85	0	430	0	24	337	1	151	275	7	195	271	10	64	1291	0	0
84	0	419	0	33	327	1	169	266	8	213	262	12	76	1258	0	0
83	0	408	0	46	316	1	188	256	10	229	253	14	94	1226	0	0
82	0	397	0	60	306	2	207	247	12	242	244	17	111	1193	0	0
81	0	386	0	73	295	3	224	239	14	254	236	19	125	1160	0	0
80	0	376	0	87	285	3	240	230	17	269	228	22	140	1127	0	0
79	2	365	0	108	275	4	256	222	19	287	219	25	156	1095	0	0
78	4	354	0	126	266	5	271	213	22	303	211	28	169	1062	1	0
77	7	343	0	145	256	7	289	205	24	318	204	31	183	1030	1	0
76	13	332	0	165	247	8	305	197	27	328	196	34	199	997	1	0
75	19	321	0	179	237	10	317	189	31	339	188	37	214	965	2	0
74	24	310	1	194	228	12	330	182	34	350	181	41	231	933	3	0
73	34	300	1	214	219	14	341	174	37	358	173	44	249	901	4	0
72	46	289	1	237	211	16	354	166	41	369	166	48	266	869	5	0
71	59	279	2	258	202	19	366	159	44	385	159	52	282	838	6	0
70	72	268	2	277	194	21	380	152	48	399	152	56	296	806	8	0
69	85	258	3	292	186	24	393	145	52	413	145	60	310	776	10	0
68	101	248	4	302	178	27	407	138	56	434	138	64	321	745	12	0
67	118	238	5	317	170	30	425	131	60	456	132	68	333	715	15	0
66	135	229	7	337	162	34	447	124	64	474	125	73	348	686	19	0
65	156	219	8	354	155	37	471	118	69	491	119	78	364	657	22	0
64	179	210	10	368	147	41	494	112	74	507	113	83	380	628	26	0
63	197	201	12	384	140	44	514	106	79	521	108	88	395	600	31	0
62	220	192	14	401	133	48	530	100	84	535	102	93	409	572	36	0
61	247	183	16	421	126	52	546	95	89	551	96	99	425	545	42	0
60	269	175	19	442	120	57	563	89	95	563	91	104	443	518	48	0
59	287	167	21	463	113	61	576	84	101	577	86	110	459	493	55	0
58	299	159	24	484	107	66	587	79	106	593	81	116	475	468	63	0
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FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 565 x 100 = 56500 Deg Hrs)
** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

BOISE, IDAHO
WBAN 24131
TABLE D:

TRY Data (1966)

Latitude 43.50 N
Longitude 116.20 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																		24 HOUR SUMMARY			
	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**		HEATING		COOLING							
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg	Hrs	Deg
	Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Below 100s*		Above 100s*							
	Base	Heat Cool	Base	Heat Cool	Base	Heat Cool	Base	Heat Cool	Base	Heat Cool	Base	Heat Cool	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat
57	313	151	27	501	101	71	600	74	112	609	76	122	493	105	79	881	443	72	5362	950	3398	484
56	329	143	31	516	95	76	616	69	118	626	71	128	509	99	84	948	420	81	5214	898	3546	518
55	350	136	34	533	90	81	631	64	125	639	66	134	524	94	90	1009	396	91	5072	846	3688	555
54	376	128	38	549	84	87	643	60	131	653	62	141	538	88	95	1066	374	101	4933	796	3827	592
53	398	121	41	566	79	92	659	55	138	668	58	147	553	83	100	1118	352	112	4797	747	3963	631
52	412	114	46	583	73	98	677	51	144	678	53	154	570	77	106	1174	331	123	4665	700	4095	671
51	430	108	50	598	68	104	692	47	151	689	49	161	587	72	112	1232	310	136	4531	654	4229	713
50	449	101	54	611	63	110	710	43	158	702	45	168	601	67	118	1286	290	148	4398	610	4362	756
49	465	95	59	628	59	116	723	39	165	716	41	175	614	62	124	1343	270	161	4269	566	4491	800
48	480	89	63	647	54	123	736	36	173	729	38	182	630	57	130	1401	251	175	4135	524	4625	846
47	495	82	68	666	50	129	754	32	180	743	34	190	647	53	136	1458	232	189	3995	484	4765	893
46	513	77	73	687	46	136	774	29	188	760	31	197	665	48	143	1522	214	204	3837	444	4923	941
45	529	71	79	709	42	143	794	26	196	780	27	205	680	44	150	1591	197	220	3674	407	5086	991
44	551	65	84	731	38	150	810	23	204	799	24	213	695	40	157	1661	180	236	3511	371	5249	1043
43	577	60	90	747	34	158	827	20	212	820	21	221	717	36	164	1725	165	253	3344	337	5416	1096
42	599	55	95	764	31	165	849	17	220	842	19	229	742	33	171	1790	149	270	3172	304	5588	1151
41	621	50	102	784	28	173	868	15	229	861	16	238	763	29	178	1863	135	289	2999	273	5761	1208
40	648	45	108	803	25	181	886	13	237	882	14	246	788	26	186	1960	121	308	2790	244	5970	1266
39	676	41	115	823	22	189	909	11	246	903	12	255	813	23	194	2063	108	328	2571	217	6189	1327
38	698	37	121	844	19	197	931	9	256	918	10	264	833	20	202	2145	96	349	2389	193	6371	1390
37	720	33	128	864	17	206	949	8	265	935	9	274	852	18	211	2216	85	371	2222	170	6538	1455
36	747	30	136	884	15	215	964	6	275	953	7	283	867	16	220	2281	75	393	2062	148	6698	1521
35	773	26	143	902	13	223	978	5	284	967	6	293	885	13	228	2364	65	416	1890	128	6870	1589
34	801	23	151	917	11	233	994	4	294	983	5	302	907	11	237	2455	57	441	1702	110	7058	1658
33	826	20	159	931	9	242	1010	3	304	1003	4	312	929	10	246	2541	49	466	1518	94	7242	1730
32	850	18	168	943	8	251	1025	2	314	1019	3	322	953	8	256	2625	42	491	1344	80	7416	1803
31	870	15	176	960	6	261	1040	2	325	1032	2	333	972	7	265	2698	35	518	1186	67	7574	1878
30	888	13	185	978	5	270	1054	1	335	1046	1	343	985	6	275	2757	30	545	1051	56	7709	1955
29	907	11	194	997	4	280	1066	1	346	1059	1	354	999	5	285	2810	25	573	921	46	7839	2032
28	929	9	203	1021	3	290	1076	1	357	1073	1	364	1014	4	295	2870	20	602	775	38	7985	2111
27	956	8	213	1042	2	301	1084	0	367	1082	1	375	1031	3	305	2932	17	631	632	31	8128	2192
26	975	7	222	1053	2	311	1087	0	378	1085	0	386	1047	2	316	2993	13	660	518	25	8242	2274
25	990	6	232	1061	1	322	1088	0	389	1085	0	397	1058	2	326	3053	11	690	423	20	8337	2357
24	1008	5	242	1067	1	332	1089	0	400	1087	0	408	1066	2	337	3098	9	721	343	17	8417	2441
23	1029	4	252	1073	1	343	1089	0	411	1089	0	419	1072	1	348	3133	7	752	273	14	8487	2525
22	1039	3	263	1079	1	354	1089	0	422	1090	0	429	1076	1	358	3167	6	784	218	11	8542	2610
21	1044	3	273	1081	1	365	1090	0	433	1090	0	440	1080	1	369	3193	5	816	181	9	8579	2696
20	1050	2	284	1082	0	375	1091	0	444	1091	0	451	1081	1	380	3210	4	848	154	8	8606	2782
19	1056	2	294	1084	0	386	1093	0	454	1093	0	462	1083	1	391	3221	3	880	129	6	8631	2868
18	1062	2	305	1088	0	397	1094	0	465	1094	0	473	1084	1	402	3231	3	912	105	5	8655	2955
17	1068	1	316	1091	0	408	1095	0	476	1094	0	484	1085	1	413	3238	2	945	87	4	8673	3041
16	1074	1	326	1092	0	419	1095	0	487	1094	0	495	1086	0	423	3245	2	977	73	3	8687	3128
15	1078	1	337	1092	0	430	1095	0	498	1094	0	506	1087	0	434	3252	1	1010	60	3	8700	3215
14	1082	1	348	1093	0	441	1095	0	509	1094	0	517	1088	0	445	3258	1	1042	48	2	8712	3302
13	1084	1	359	1093	0	452	1095	0	520	1095	0	528	1089	0	456	3264	1	1075	39	2	8721	3389
12	1085	0	370	1093	0	463	1095	0	531	1095	0	539	1090	0	467	3268	1	1107	32	1	8728	3476

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

BOISE, IDAHO

WBAN 24131

TABLE D:

TRY Data (1966)

Latitude 43.50 N

Longitude 116.20 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY														24 HOUR SUMMARY			
	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**				HEATING		COOLING	
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg	Hrs	Deg
	Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*				Below		Above	
	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	100s*	Base	100s*
11 1086	0	380	1094	0	474	1095	0	542	1095	0	550	1091	0	478	3272	0	1140	
10 1088	0	391	1094	0	485	1095	0	553	1095	0	561	1091	0	489	3274	0	1173	
9 1089	0	402	1094	0	496	1095	0	564	1095	0	572	1092	0	500	3274	0	1206	
8 1090	0	413	1094	0	506	1095	0	575	1095	0	583	1093	0	511	3277	0	1238	
7 1091	0	424	1094	0	517	1095	0	586	1095	0	594	1093	0	522	3281	0	1271	
6 1091	0	435	1094	0	528	1095	0	597	1095	0	604	1094	0	533	3283	0	1304	
5 1092	0	446	1095	0	539	1095	0	608	1095	0	615	1094	0	543	3284	0	1337	
4 1093	0	457	1095	0	550	1095	0	619	1095	0	626	1095	0	554	3284	0	1370	
3 1094	0	468	1095	0	561	1095	0	630	1095	0	637	1095	0	565	3285	0	1402	
2 1095	0	479	1095	0	572	1095	0	641	1095	0	648	1095	0	576	3285	0	1435	

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

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

BOISE, IDAHO
WBAN 24131
TABLE E:

TRY Data (1966)
Annual COOLING Wet Bulb Degree Hour Summary

Latitude 43.50 N
Longitude 116.20 E

Wet Bulb Temperature (F) Base:	50	53	56	59	62	65	68	71	74	77	80
Annual Wet Bulb hours ABOVE base:	2693	1957	1332	810	297	57	6	0	0	0	0
Annual Wet Bulb Cooling deg-hrs:	18672.	11344.	6088.	2601.	707.	108.	9.	0.	0.	0.	0.

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

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **												COOLING HUMIDITY RATIO HOURS **												Maintained Indoor Humidity Ratio
	Heating Degree Base												Cooling Degree Base												
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80			
.001	0	0	0	0	0	0	0	0	0	0	0	26	24	22	20	18	16	13	10	8	5	4	.001		
.002	0	0	0	1	1	1	1	1	1	1	1	19	18	17	15	14	12	10	8	6	4	3	.002		
.003	1	2	2	2	2	3	3	3	3	3	3	12	12	12	11	10	9	7	6	5	3	2	.003		
.004	2	3	4	5	5	6	6	6	7	7	7	8	8	7	7	7	6	5	4	3	2	2	.004		
.005	3	5	7	8	9	10	11	11	12	12	12	4	4	4	4	4	4	3	3	2	1	1	.005		
.006	4	7	9	12	13	15	16	17	18	18	18	2	2	2	2	2	2	2	1	1	1	0	.006		
.007	5	9	12	15	18	19	21	23	24	25	26	1	1	1	1	1	1	1	1	1	0	0	.007		
.008	6	10	15	19	22	24	27	29	31	32	33	0	0	0	0	0	0	0	0	0	0	0	.008		
.009	7	12	17	23	26	29	33	36	38	40	41	0	0	0	0	0	0	0	0	0	0	0	.009		
.010	8	14	20	26	31	34	38	42	45	47	49	0	0	0	0	0	0	0	0	0	0	0	.010		
.011	9	16	23	30	35	39	44	48	52	55	57	0	0	0	0	0	0	0	0	0	0	0	.011		
.012	10	18	25	33	39	44	50	55	59	62	65	0	0	0	0	0	0	0	0	0	0	0	.012		
.013	11	19	28	37	44	49	56	61	66	70	73	0	0	0	0	0	0	0	0	0	0	0	.013		
.014	12	21	31	41	48	54	61	68	73	78	81	0	0	0	0	0	0	0	0	0	0	0	.014		
.015	13	23	33	44	52	59	67	74	80	85	89	0	0	0	0	0	0	0	0	0	0	0	.015		
.016	14	25	36	48	57	64	73	81	88	93	97	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	15	27	39	51	61	69	78	87	95	100	105	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	16	28	41	55	65	74	84	94	102	108	113	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	59	57	34	44	43	40	19	33	29	33	54	56	36
VERTICAL													
NORTH	100	100	100	98	92	87	80	94	100	100	100	100	93
WEST	66	63	51	60	60	57	39	52	44	41	58	65	52
SOUTH	44	47	39	57	66	70	49	53	37	32	41	39	48
EAST	61	63	46	56	59	59	40	48	46	48	67	63	52
% Possible Sun	41	51	63	67	71	75	88	85	82	68	45	40	67

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

BOISE, IDAHO
WBAN 24131
TABLE H:

TRY Data (1966)

Latitude 43.50 N
Longitude 116.20 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	1776	1649	1309	968	561	267	147	130	130	1752	795	612	583	489	390	266	174	135	129	129	585	353	485
Feb	1947	1817	1509	1212	802	449	258	181	178	2109	1152	709	670	575	483	356	253	198	174	173	722	482	840
Mar	1872	1799	1615	1435	1087	733	467	305	253	2402	1679	1092	1085	1005	913	724	533	389	296	262	1346	1024	1304
Apr	1551	1610	1591	1554	1335	1044	755	512	364	2500	2202	1193	1236	1213	1172	1024	843	676	541	461	1632	1506	1827
May	1255	1400	1514	1587	1495	1284	1005	734	528	2474	2569	1122	1193	1238	1262	1186	1049	881	723	605	1765	1856	2277
Jun	1128	1300	1467	1590	1557	1388	1118	844	644	2456	2744	1033	1102	1170	1218	1179	1069	912	760	654	1764	1955	2463
Jul	1185	1346	1490	1595	1539	1351	1076	804	601	2471	2678	1133	1260	1374	1454	1398	1231	994	762	590	2251	2430	2613
Aug	1423	1517	1550	1562	1398	1142	860	610	436	2481	2354	1244	1330	1354	1358	1230	1036	826	639	508	1939	1885	2197
Sep	1749	1719	1598	1468	1166	839	570	381	302	2423	1868	1349	1306	1202	1096	881	663	492	376	328	1780	1420	1737
Oct	1922	1804	1536	1280	878	542	325	223	211	2204	1334	1154	1060	905	768	559	389	279	221	212	1290	853	1138
Nov	1854	1725	1385	1064	635	330	177	148	148	1880	908	633	580	472	371	249	173	139	130	129	626	379	628
Dec	1717	1589	1252	911	504	233	127	120	120	1653	709	561	529	435	333	211	136	108	106	106	532	298	437
Year	1613	1605	1484	1353	1081	802	576	417	327	2234	1752	988	997	955	904	775	632	504	406	347	1357	1208	1496

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	1542	1410	1097	805	442	196	112	106	106	519	491	407	323	214	136	108	105	105
Feb	1667	1539	1268	1017	649	349	191	146	145	596	559	478	400	289	203	157	142	141
Mar	1539	1498	1349	1199	893	586	358	233	206	892	902	837	759	596	431	306	232	213
Apr	1198	1299	1315	1295	1108	851	596	393	288	946	1005	999	970	844	687	541	429	372
May	911	1075	1226	1317	1239	1055	807	571	396	861	940	1005	1040	977	859	712	577	476
Jun	796	968	1171	1315	1290	1144	907	666	479	778	852	939	1000	970	876	740	610	509
Jul	849	1019	1200	1322	1277	1115	873	634	450	823	959	1106	1203	1157	1015	807	603	447
Aug	1073	1203	1274	1299	1159	935	686	471	338	959	1062	1112	1126	1018	850	664	503	402
Sep	1409	1422	1330	1227	966	680	445	292	246	1091	1075	994	909	726	537	388	296	267
Oct	1630	1520	1288	1068	722	423	243	178	173	967	882	752	636	460	311	217	178	173
Nov	1606	1472	1167	884	513	245	136	121	121	538	486	390	303	201	138	111	106	106
Dec	1495	1366	1051	755	396	167	101	98	98	479	449	363	273	168	106	88	86	86
Year	1307	1314	1228	1126	889	647	456	327	254	788	807	784	748	637	514	405	323	275

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

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

BROWNSVILLE, TEXAS
WBAN 12919
TABLE A:

TRY Data (1955)

Latitude 25.90 N
Longitude 97.40 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	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														
80 to 84	0	0	0	2	8	1	0	0	11	69.8	744	14560	0	0
75 to 79	0	0	3	15	15	10	0	0	43	69.9	719	10883	25	43
70 to 74	12	12	10	19	31	27	26	19	156	66.0	652	7419	92	299
65 to 69	17	9	15	28	25	26	17	18	155	61.4	469	4630	275	1230
60 to 64	13	14	16	16	10	20	18	15	122	57.2	316	2666	428	2986
55 to 59	19	22	21	7	1	5	17	16	108	53.1	212	1335	532	5375
50 to 54	16	20	17	4	0	1	10	15	83	49.5	102	558	642	8318
45 to 49	10	7	6	2	2	0	2	8	37	44.5	52	192	692	11672
40 to 44	5	6	4	0	1	3	3	2	24	40.9	13	37	731	15237
35 to 39	1	3	1	0	0	0	0	0	5	36.6	3	3	741	18923
Feb														
80 to 84	0	0	0	1	10	0	0	0	11	70.4	672	12878	0	0
75 to 79	0	0	0	31	31	18	0	0	80	68.2	636	9576	36	58
70 to 74	14	6	23	11	2	25	22	16	119	67.7	545	6631	127	473
65 to 69	20	24	17	11	16	11	19	17	135	63.6	402	4229	270	1431
60 to 64	18	21	14	16	13	13	14	21	130	58.7	278	2531	394	3093
55 to 59	6	4	7	2	2	7	16	9	53	52.5	174	1442	498	5364
50 to 54	11	17	10	1	5	3	4	8	59	47.2	110	712	562	7994
45 to 49	6	3	3	8	5	7	5	7	44	43.3	58	274	614	10916
40 to 44	6	5	7	3	0	0	4	6	31	37.9	26	66	646	14068
35 to 39	3	4	3	0	0	0	0	0	10	31.8	4	4	668	17366
Mar														
90 to 94	0	0	0	2	3	2	0	0	7	60.3	740	16978	4	4
85 to 89	0	0	0	3	12	1	0	0	16	71.8	736	13291	8	37
80 to 84	0	0	1	45	48	21	0	0	115	70.8	687	9684	57	150
75 to 79	8	4	26	17	9	37	17	7	125	70.3	567	6575	177	761
70 to 74	41	34	28	5	0	11	44	48	211	69.0	405	4097	339	2003
65 to 69	12	20	12	3	5	4	10	12	78	63.6	223	2607	521	4233
60 to 64	13	11	7	2	8	5	7	13	66	57.5	175	1618	569	6964
55 to 59	6	4	4	10	2	6	6	1	39	52.7	102	940	642	10006
50 to 54	3	7	6	0	3	0	3	4	26	46.7	77	497	667	13283
45 to 49	7	9	3	3	1	3	3	5	34	40.4	52	176	692	16682
40 to 44	3	4	6	3	2	3	3	3	27	33.1	17	15	727	20241

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

BROWNSVILLE, TEXAS

WBAN 12919

TABLE A:

TRY Data (1955)

Latitude 25.90 N

Longitude 97.40 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	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	2	7	1	0	0	10	75.8	720	12249	0	0	
85 to 89	0	0	1	19	30	3	0	0	53	70.9	705	8684	15	35	
80 to 84	0	0	13	47	39	44	0	0	143	72.0	590	5369	130	320	
75 to 79	16	13	43	11	7	30	51	36	207	71.8	476	2720	244	1271	
70 to 74	47	46	17	3	2	6	27	32	180	69.9	181	1054	539	3205	
65 to 69	13	16	11	4	4	4	8	12	72	63.3	95	378	625	6129	
60 to 64	11	11	5	4	1	2	4	8	46	59.2	23	67	697	9418	
55 to 59	3	4	0	0	0	0	0	2	9	53.6	7	6	713	12957	
May															
90 to 94	0	0	0	9	23	4	0	0	36	75.8	739	8961	5	3	
85 to 89	0	0	7	58	51	32	0	0	148	75.0	664	5418	80	180	
80 to 84	13	9	54	26	19	51	31	21	224	74.9	479	2522	265	1004	
75 to 79	53	49	29	0	0	6	59	52	248	73.8	221	723	523	2925	
70 to 74	24	24	3	0	0	0	3	20	74	69.2	58	120	686	6042	
65 to 69	3	11	0	0	0	0	0	0	14	65.9	1	1	743	9643	
Jun															
90 to 94	0	0	0	36	50	7	0	0	93	76.5	716	7575	4	2	
85 to 89	0	0	28	45	35	62	0	0	170	75.1	551	4355	169	382	
80 to 84	20	10	42	9	4	18	62	26	191	75.4	402	1983	318	1610	
75 to 79	49	41	17	0	1	3	27	54	192	73.3	178	527	542	3754	
70 to 74	19	36	3	0	0	0	1	9	68	68.6	24	48	696	6875	
65 to 69	2	3	0	0	0	0	0	1	6	64.0	2	1	718	10428	

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

BROWNSVILLE, TEXAS
WBAN 12919
TABLE A:

TRY Data (1955)

Latitude 25.90 N
Longitude 97.40 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period										MCWB Temp(f)		HEATING*		COOLING*	
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Month Total				hours below	degree hours	hours above	degree hours
Jul																
90 to 94	0	0	0	38	60	11	0	0	109	76.8	76.8	740	7319	4	2	
85 to 89	0	0	34	44	23	65	0	0	166	76.9	76.9	560	4027	184	430	
80 to 84	11	0	46	4	5	13	82	48	209	76.7	76.7	407	1605	337	1728	
75 to 79	82	89	11	4	5	4	11	45	251	75.2	75.2	145	1178	599	4021	
70 to 74	0	4	2	3	0	0	0	0	9	72.9	72.9	0	0	744	7563	
Aug																
90 to 94	0	0	0	49	70	15	0	0	134	78.1	78.1	727	6969	17	12	
85 to 89	0	0	30	34	15	73	1	0	153	77.7	77.7	539	3801	205	564	
80 to 84	10	0	47	9	6	4	87	47	210	77.3	77.3	391	1470	353	1953	
75 to 79	83	87	16	1	2	0	5	48	240	75.3	75.3	105	145	639	4348	
70 to 74	0	6	0	0	0	1	0	0	7	73.0	73.0	0	0	744	7923	
Sep																
90 to 94	0	0	0	2	11	0	0	0	13	78.6	78.6	720	8424	0	0	
85 to 89	0	0	16	60	57	37	0	0	170	78.1	78.1	631	4933	89	109	
80 to 84	7	1	32	17	16	45	58	22	198	77.3	77.3	468	2164	252	940	
75 to 79	75	67	36	11	6	8	32	65	300	75.5	75.5	195	384	525	2760	
70 to 74	8	22	6	0	0	0	0	3	39	72.1	72.1	7	10	713	5986	

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

BROWNSVILLE, TEXAS
WBAN 12919
TABLE A:

TRY Data (1955)

Latitude 25.90 N
Longitude 97.40 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence In time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day 10-12 13-15		16-18	19-21	22-24	hours below			degree hours	hours above	degree hours	
Oct															
90 to 94	0	0	0	2	3	0	0	0	5	75.4	744	13536	0	0	
85 to 89	0	0	1	28	28	12	0	0	69	74.8	716	9854	28	38	
80 to 84	0	0	20	34	41	30	7	1	133	70.8	623	6472	121	376	
75 to 79	25	18	23	21	21	39	30	28	205	70.1	468	3720	276	1344	
70 to 74	15	18	17	7	0	11	26	19	113	67.0	272	1912	472	3256	
65 to 69	25	24	21	1	0	1	25	25	122	62.8	159	798	585	5862	
60 to 64	17	16	6	0	0	0	5	14	58	57.8	70	260	674	9044	
55 to 59	11	15	5	0	0	0	0	6	37	53.8	21	43	723	12547	
50 to 54	0	2	0	0	0	0	0	0	2	52.0	0	0	744	16224	
Nov															
85 to 89	0	0	0	4	1	0	0	0	5	73.6	720	14398	0	0	
80 to 84	0	0	7	33	37	12	0	0	89	73.3	678	10849	42	51	
75 to 79	19	15	21	11	9	27	21	17	140	71.9	596	7677	124	479	
70 to 74	16	16	11	2	12	14	20	20	111	68.2	444	5136	276	1538	
65 to 69	17	17	12	14	9	11	17	19	116	63.1	328	3200	392	3202	
60 to 64	14	13	12	12	7	11	12	12	93	57.5	224	1840	496	5442	
55 to 59	9	14	11	2	5	3	8	5	57	53.4	137	959	583	8161	
50 to 54	8	5	10	8	6	9	4	9	59	47.1	90	387	630	11189	
45 to 49	4	7	5	4	4	3	8	6	41	44.5	29	81	691	14483	
40 to 44	3	3	1	0	0	0	0	2	9	40.1	9	13	711	18015	
Dec															
80 to 84	0	0	0	6	15	2	0	0	23	70.3	742	14337	2	1	
75 to 79	0	0	2	23	30	17	0	0	72	68.1	692	10725	52	109	
70 to 74	6	3	6	23	15	24	11	8	96	66.4	615	7447	129	551	
65 to 69	23	19	24	10	15	19	29	24	163	63.3	502	4643	242	1467	
60 to 64	22	28	23	14	9	13	18	18	145	59.2	336	2577	408	3121	
55 to 59	15	9	17	13	4	9	15	15	97	53.5	200	1245	544	5509	
50 to 54	12	17	8	4	5	9	16	19	90	49.5	96	478	648	8462	
45 to 49	8	8	7	0	0	0	4	8	35	43.6	37	150	707	11854	
40 to 44	7	8	5	0	0	0	0	1	21	38.9	10	22	734	15446	
35 to 39	0	1	1	0	0	0	0	0	2	33.5	0	0	744	19144	

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

BROWNSVILLE, TEXAS

WBAN 12919

TABLE B:

TRY Data (1955)

Latitude 25.90 N

Longitude 97.40 E

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

Dry Bulb range(F)	Number of Hours of Occurrence in time period									Mean Coincident Wet Bulb Temperature (F)								
	Hour of day									Hour of day								
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year
90 to 94	0	0	0	140	227	40	0	0	407	0.0	0.0	0.0	77.0	76.8	75.6	0.0	0.0	76.8
85 to 89	0	0	117	295	252	285	1	0	950	0.0	0.0	77.2	76.0	75.0	76.5	75.0	0.0	76.1
80 to 84	61	20	262	233	248	241	327	165	1557	77.1	77.1	76.1	72.3	71.7	73.6	76.6	77.0	74.7
75 to 79	410	383	227	145	136	199	253	350	2103	74.7	74.6	72.9	68.8	68.0	69.5	73.3	74.5	73.0
70 to 74	202	227	126	73	62	119	180	194	1183	69.8	70.3	68.2	64.4	62.1	65.9	68.1	69.4	68.3
65 to 69	132	143	112	71	74	76	125	128	861	64.5	65.1	63.6	60.2	59.0	60.6	62.9	63.8	63.0
60 to 64	108	114	83	64	48	64	78	101	660	59.2	59.9	58.9	56.1	54.5	55.4	58.6	59.2	58.2
55 to 59	69	72	65	34	14	30	62	54	400	54.0	53.7	54.4	51.7	50.5	51.5	52.1	54.1	53.2
50 to 54	50	68	51	17	19	22	37	55	319	49.5	50.1	47.8	46.9	46.2	46.9	47.3	48.5	48.4
45 to 49	35	34	24	17	12	13	22	34	191	43.5	43.0	43.8	42.3	43.2	43.2	44.1	43.2	43.3
40 to 44	24	26	23	6	3	6	10	14	112	38.4	38.2	37.7	36.3	35.7	36.8	36.9	37.9	37.8
35 to 39	4	8	5	0	0	0	0	0	17	34.0	33.6	32.6	0.0	0.0	0.0	0.0	0.0	33.4

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Month	Dry Bulb Temperature (F)					Wet Bulb Ave	Percent Relative Humidity Average					Average Humidity Ratio (lb moisture/lb dry air)					Average wind MPH
	Ave	Max	Min	Daily Max	Ave Min		4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	62.9	82	36	72	54	58.1	86	69	62	80	76	0.0091	0.0096	0.0096	0.0102	0.0096	12.2
Feb	63.3	82	36	72	56	58.7	84	71	65	80	77	0.0097	0.0102	0.0102	0.0102	0.0100	14.2
Mar	69.7	94	40	79	63	63.7	83	61	58	81	73	0.0117	0.0113	0.0115	0.0126	0.0119	16.2
Apr	75.5	92	56	84	69	69.5	88	67	60	82	76	0.0143	0.0142	0.0138	0.0148	0.0144	15.4
May	80.5	93	67	88	74	73.9	90	62	59	83	75	0.0170	0.0159	0.0157	0.0174	0.0167	15.7
Jun	82.0	93	67	90	75	74.2	87	56	57	77	71	0.0165	0.0157	0.0161	0.0171	0.0165	13.6
Jul	82.7	93	73	90	76	76.2	91	64	61	81	76	0.0182	0.0175	0.0171	0.0185	0.0180	11.4
Aug	83.1	94	74	92	76	76.8	92	64	61	81	77	0.0184	0.0181	0.0180	0.0190	0.0185	9.8
Sep	80.8	91	70	88	75	76.5	94	74	71	87	83	0.0182	0.0188	0.0185	0.0192	0.0188	9.6
Oct	74.3	91	54	84	65	67.2	87	59	54	76	71	0.0129	0.0133	0.0127	0.0133	0.0130	9.6
Nov	67.5	85	40	76	61	62.8	85	71	69	81	78	0.0116	0.0119	0.0118	0.0118	0.0118	13.7
Dec	63.2	83	38	73	54	58.9	89	70	65	83	79	0.0096	0.0101	0.0104	0.0100	0.0100	11.0
Year	73.9	94	36	82	67	68.1	88	66	62	81	76	0.0140	0.0139	0.0138	0.0145	0.0141	12.7

BROWNSVILLE, TEXAS

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TABLE 0:

TRY Data (1955)

Latitude 25.90 N

Longitude 97.40 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																24 HOUR SUMMARY			
	7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**			
	Hrs Deg-Hrs				Hrs Deg-Hrs				Hrs Deg-Hrs				Hrs Deg-Hrs				Hrs Deg-Hrs			
	Above (100s)*				Above (100s)*				Above (100s)*				Above (100s)*				Above (100s)*			
	Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool	
95	0	245	0	0	173	0	0	156	0	0	190	0	0	247	0	0	841	0	0	0
94	0	235	0	0	162	0	0	146	0	0	179	0	0	236	0	0	808	0	0	0
93	0	224	0	5	151	0	13	135	0	1	168	0	0	225	0	0	775	0	0	0
92	0	213	0	20	141	0	48	124	0	3	157	0	0	214	0	0	742	0	0	0
91	0	202	0	52	130	0	109	114	1	9	147	0	0	203	0	0	709	0	0	1
90	0	191	0	107	120	1	186	104	2	26	136	0	0	192	0	0	676	0	0	4
89	1	180	0	177	110	3	259	95	5	64	125	1	0	181	0	0	644	0	0	8
88	11	169	0	247	101	5	313	87	8	117	115	1	0	170	0	0	611	0	0	14
87	27	158	0	305	93	7	354	80	11	170	106	3	0	159	0	0	578	0	0	22
86	54	148	1	351	86	11	394	73	15	230	97	5	0	148	0	0	545	0	0	31
85	95	137	1	403	78	15	446	66	19	295	88	8	0	137	0	0	512	0	0	42
84	144	128	2	463	72	19	509	60	24	355	81	11	12	126	0	0	479	0	0	56
83	193	118	4	519	66	24	568	54	29	412	74	15	51	115	0	0	446	0	0	72
82	240	109	6	566	60	29	622	49	35	461	67	19	123	105	1	13	414	0	0	91
81	292	101	9	607	55	35	666	45	41	499	61	24	210	96	3	65	381	0	0	112
80	349	93	12	648	50	41	705	41	48	540	55	29	290	88	5	175	349	1	0	137
79	407	86	16	681	46	48	744	37	56	589	50	35	357	80	9	341	319	4	0	167
78	453	80	20	710	42	55	777	34	63	634	45	41	408	73	12	560	290	8	0	200
77	500	73	25	743	38	62	807	31	71	678	41	47	449	66	17	807	264	15	0	238
76	547	68	30	775	35	70	833	28	79	721	37	54	497	60	21	1052	241	24	0	280
75	585	62	36	801	32	78	854	25	88	753	33	62	553	54	27	1282	220	36	0	326
74	620	58	42	825	29	86	869	23	96	779	30	69	597	49	32	1473	201	50	0	376
73	649	53	48	844	27	94	880	21	105	808	27	77	627	44	39	1625	183	66	0	429
72	677	49	55	858	24	103	892	19	114	835	24	86	659	40	45	1734	167	82	0	485
71	700	45	62	868	22	111	909	17	123	856	22	94	703	35	52	1835	152	100	0	542
70	721	41	69	879	20	120	921	15	132	874	19	103	745	32	59	1952	138	119	0	602
69	746	37	76	897	18	129	932	13	141	892	17	112	774	28	67	2059	126	139	0	664
68	772	34	84	913	16	138	944	12	151	907	15	121	801	25	75	2152	114	160	0	728
67	795	31	92	926	14	147	959	10	160	922	13	130	826	23	83	2230	103	182	0	794
66	816	28	100	939	12	157	975	9	170	938	12	139	852	20	91	2298	93	205	0	862
65	835	25	108	951	11	166	990	8	180	953	10	148	876	18	100	2374	83	228	0	931
64	852	23	117	965	9	176	1001	7	190	969	9	158	899	16	109	2449	75	252	0	1001
63	865	20	125	982	8	185	1009	6	200	984	8	168	918	14	118	2516	67	277	0	1073
62	881	18	134	997	7	195	1019	5	210	996	7	178	929	12	127	2571	59	303	0	1147
61	899	16	143	1008	6	205	1033	4	220	1008	6	188	945	11	136	2630	52	329	0	1221
60	917	14	152	1016	5	215	1044	4	231	1019	5	198	959	9	146	2702	46	355	0	1297
59	936	12	161	1026	5	226	1049	3	241	1029	4	208	969	8	155	2760	41	383	0	1374
58	951	11	171	1036	4	236	1054	3	252	1038	4	219	980	7	165	2804	36	411	0	1453
57	963	10	180	1042	4	246	1057	3	262	1044	3	229	995	6	175	2843	31	439	0	1532
56	977	8	190	1045	3	257	1058	2	273	1050	3	239	1010	5	185	2879	27	467	0	1611
55	988	7	200	1051	3	267	1059	2	283	1054	2	250	1021	4	195	2915	23	496	0	1692
54	996	6	210	1057	2	278	1061	2	294	1056	2	260	1032	3	206	2960	19	526	0	1773
53	1005	5	220	1061	2	288	1065	1	305	1062	1	271	1041	3	216	3009	16	556	0	1855
52	1015	4	230	1063	1	299	1071	1	315	1066	1	282	1049	2	226	3041	14	586	0	1938
51	1024	4	240	1066	1	310	1075	1	326	1070	1	292	1056	2	237	3065	12	616	0	2021
50	1035	3	250	1070	1	320	1078	1	337	1074	1	303	1060	1	248	3093	10	647	0	2105

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

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

BROWNSVILLE, TEXAS
WBAN 12919
TABLE D:

TRY Data (1955)

Latitude 25.90 N
Longitude 97.40 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																24 HOUR SUMMARY					
	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		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	Above 100s*	Below Base	Above 100s*						
	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool				
49	1046	2	261	1073	1	331	1081	0	348	1079	0	314	1065	1	258	3113	8	678	301	13	8459	2190
48	1054	2	271	1077	0	342	1083	0	358	1084	0	325	1070	1	269	3135	6	709	255	10	8505	2274
47	1059	2	282	1081	0	353	1086	0	369	1087	0	336	1077	0	280	3162	5	741	206	8	8554	2360
46	1062	1	292	1084	0	364	1088	0	380	1089	0	346	1082	0	290	3184	4	773	169	6	8591	2446
45	1065	1	303	1087	0	374	1091	0	391	1089	0	357	1084	0	301	3202	3	805	141	4	8619	2532
44	1069	1	314	1090	0	385	1093	0	402	1090	0	368	1088	0	312	3214	2	837	115	3	8645	2618
43	1073	0	324	1092	0	396	1094	0	413	1093	0	379	1091	0	323	3227	1	869	88	2	8672	2704
42	1080	0	335	1094	0	407	1095	0	424	1094	0	390	1093	0	334	3243	1	901	60	1	8700	2791
41	1087	0	346	1095	0	418	1095	0	435	1095	0	401	1094	0	345	3256	1	934	36	1	8724	2878
40	1090	0	357	1095	0	429	1095	0	446	1095	0	412	1095	0	356	3268	0	966	22	0	8738	2966
39	1090	0	368	1095	0	440	1095	0	457	1095	0	423	1095	0	367	3274	0	999	15	0	8745	3053
38	1092	0	379	1095	0	451	1095	0	468	1095	0	434	1095	0	378	3277	0	1032	10	0	8750	3141
37	1093	0	390	1095	0	462	1095	0	479	1095	0	445	1095	0	389	3281	0	1065	5	0	8755	3228
36	1094	0	401	1095	0	473	1095	0	490	1095	0	456	1095	0	400	3284	0	1098	1	0	8759	3316
35	1095	0	412	1095	0	484	1095	0	501	1095	0	467	1095	0	410	3285	0	1130	0	0	8760	3403

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

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

BROWNSVILLE, TEXAS

WBAW 12919

TABLE E:

TRY Data (1955)

Latitude 25.90 N

Longitude 97.40 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:	8180	7932	7618	7291	6802	6263	5655	4704	3409	1612	57
Annual Wet Bulb Cooling deg-hrs:	170457.	146175.	122688.	100129.	78754.	58843.	40589.	24488.	11520.	2779.	66.

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	111	111	111	110	109	108	105	99	89	72	39	.001		
.002	0	0	0	0	0	0	0	0	0	0	0	102	102	102	102	101	100	97	92	83	67	36	.002		
.003	0	0	0	0	0	0	0	0	0	0	0	93	93	93	93	93	92	89	85	77	62	34	.003		
.004	0	0	0	0	0	0	0	0	0	0	0	85	85	85	85	84	84	82	78	71	58	31	.004		
.005	0	0	0	0	0	1	1	1	1	1	1	76	76	76	76	76	76	74	71	65	53	29	.005		
.006	0	0	0	0	1	1	1	1	1	1	1	68	68	68	68	68	68	67	65	60	49	26	.006		
.007	0	0	0	1	1	1	2	2	2	2	2	60	60	60	60	60	60	60	58	54	44	24	.007		
.008	0	0	0	1	1	2	2	3	3	3	3	53	53	53	53	53	53	52	51	48	39	21	.008		
.009	0	0	0	1	2	3	3	4	4	4	5	45	45	45	45	45	45	45	44	42	35	19	.009		
.010	0	0	0	1	2	3	4	5	6	6	6	38	38	38	38	38	38	38	38	36	30	16	.010		
.011	0	0	0	1	2	4	5	7	8	8	8	32	32	32	32	32	32	32	32	30	26	14	.011		
.012	0	0	0	1	3	5	6	9	10	10	11	26	26	26	26	26	26	26	26	25	21	12	.012		
.013	0	0	0	1	3	5	8	10	12	13	14	20	20	20	20	20	20	20	20	20	17	9	.013		
.014	0	0	0	1	3	6	9	12	15	16	17	15	15	15	15	15	15	15	15	15	13	7	.014		
.015	0	0	0	2	4	6	10	14	17	19	21	10	10	10	10	10	10	10	10	10	9	5	.015		
.016	0	0	0	2	4	7	11	15	20	23	25	6	6	6	6	6	6	6	6	6	6	3	.016		
.017	0	0	0	2	4	8	12	17	22	26	29	3	3	3	3	3	3	3	3	3	3	2	.017		
.018	0	0	0	2	5	8	13	19	25	30	34	1	1	1	1	1	1	1	1	1	1	1	.018		

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

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

TABLE G:

Percent Diffuse Solar Radiation*
and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
% Diffuse on surface													
HORIZONTAL	39	58	44	55	45	46	54	48	64	34	52	30	48
VERTICAL													
NORTH	100	100	100	99	90	84	88	94	100	100	100	100	94
WEST	56	67	59	67	61	63	69	63	77	51	68	44	63
SOUTH	39	61	58	81	90	96	96	83	79	42	52	30	64
EAST	54	72	65	76	68	66	70	62	71	49	59	51	65
% Possible Sun	43	50	52	57	66	73	81	76	68	66	52	45	61

FOOTNOTES: * Corrected For Cloud Cover.

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

BROWNSVILLE, TEXAS
WBAN 12919
TABLE H:

TRY Data (1955)

Latitude 25.90 N
Longitude 97.40 E

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

Month	Under Clear Sky Assumption*										Corrected For Cloud Cover**										Obs ****		
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S-45 ***	horiz	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N		S-45 ***	horiz
Jan	1753	1629	1367	1145	796	484	290	220	218	2104	1366	883	840	729	627	465	322	235	201	200	1016	726	913
Feb	1624	1535	1377	1233	945	638	406	270	252	2179	1614	874	827	754	684	560	442	364	320	312	1015	860	1135
Mar	1292	1310	1304	1280	1104	859	609	400	306	2149	1930	991	961	927	888	777	647	527	435	393	1390	1308	1458
Apr	863	1019	1148	1247	1196	1050	825	596	401	1981	2176	819	848	879	903	863	790	691	596	525	1289	1433	1737
May	605	820	1037	1212	1270	1210	1028	805	591	1810	2322	694	795	901	989	1011	970	866	744	651	1377	1718	1927
Jun	526	738	982	1187	1291	1273	1120	915	725	1729	2383	668	787	926	1045	1104	1087	991	868	779	1384	1828	2115
Jul	564	777	1010	1202	1285	1246	1084	873	673	1770	2367	710	811	930	1033	1074	1049	956	842	751	1302	1671	2213
Aug	756	940	1103	1234	1228	1119	915	691	487	1912	2248	787	898	994	1074	1066	994	863	719	590	1402	1644	2027
Sep	1132	1193	1236	1256	1125	918	686	476	351	2082	2031	872	908	918	916	845	741	632	533	472	1165	1200	1694
Oct	1519	1461	1354	1253	1004	719	480	318	283	2177	1739	1206	1178	1100	1022	840	637	469	354	331	1589	1309	1439
Nov	1729	1632	1405	1201	873	557	336	238	234	2143	1455	815	803	726	647	512	381	287	240	237	925	715	1055
Dec	1773	1662	1380	1137	773	462	269	212	211	2075	1303	1060	969	798	657	458	301	212	187	187	1208	796	862
Year	1176	1225	1224	1215	1075	879	672	502	395	2008	1913	866	886	883	875	800	698	592	504	453	1258	1270	1548

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	1479	1350	1134	946	643	372	213	178	177	737	694	602	515	376	252	182	163	162		
Feb	1321	1256	1134	1020	770	503	303	212	204	708	673	616	559	454	355	289	258	253		
Mar	954	1039	1064	1059	907	688	466	299	247	765	766	750	725	631	519	417	344	318		
Apr	575	760	918	1020	987	852	653	451	312	619	666	706	733	703	639	554	473	421		
May	415	576	805	984	1045	989	822	621	427	526	604	713	801	826	789	696	588	501		
Jun	392	512	751	960	1063	1046	902	712	514	525	594	728	847	903	889	800	688	590		
Jul	407	544	779	974	1058	1025	873	679	483	557	622	738	839	879	859	774	672	579		
Aug	506	688	877	1009	1015	915	731	531	369	590	694	803	881	880	815	698	568	463		
Sep	806	932	1003	1035	929	743	535	359	285	676	730	750	754	695	605	507	422	383		
Oct	1206	1189	1116	1040	824	573	363	246	230	964	961	907	847	690	512	362	279	269		
Nov	1445	1347	1161	997	708	429	249	191	189	671	660	598	535	418	303	223	194	192		
Dec	1507	1384	1146	941	627	351	201	172	171	895	800	657	538	369	232	166	152	152		
Year	916	963	990	999	882	708	527	388	301	687	706	715	716	653	565	473	401	357		

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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CHEYENNE, WYOMING
WBAH 24018
TABLE A:

TRY Data (1974)

Latitude 41.20 N
Longitude 104.80 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															
60 to 64	0	0	0	0	3	0	0	0	3	42.0	744	28250	0	0	
55 to 59	0	0	0	2	2	1	0	0	5	40.6	739	24541	5	11	
50 to 54	0	0	2	5	2	5	3	0	17	38.0	732	20860	12	50	
45 to 49	1	2	5	5	8	7	8	2	38	34.9	706	17254	38	164	
40 to 44	11	10	6	12	15	13	7	11	85	32.4	652	13831	92	461	
35 to 39	12	12	11	19	18	13	14	14	113	29.4	554	10794	190	1144	
30 to 34	9	8	14	9	6	11	9	12	78	27.1	446	8311	298	2381	
25 to 29	11	15	14	7	12	9	10	8	86	21.8	380	6246	364	4036	
20 to 24	12	10	9	11	7	11	14	15	89	18.1	286	4601	458	6111	
15 to 19	7	5	6	6	5	1	4	6	40	13.9	215	3382	529	8612	
10 to 14	4	4	1	2	0	2	2	0	15	9.7	184	2402	560	11352	
5 to 9	5	6	3	2	6	6	4	3	35	5.1	161	1525	583	14195	
0 to 4	5	5	9	11	9	4	6	6	55	0.4	121	811	623	17201	
-5 to -1	8	8	7	2	0	9	5	5	44	-3.6	62	345	682	20455	
-10 to -6	4	4	2	0	0	1	6	6	23	-8.2	27	121	717	23951	
-15 to -11	3	4	2	0	0	0	1	5	15	-13.1	14	26	730	27576	
-20 to -16	1	0	2	0	0	0	0	0	3	-16.7	0	0	744	31270	
Feb															
55 to 59	0	0	0	0	2	1	0	0	3	38.0	672	17053	0	0	
50 to 54	0	0	0	6	17	5	0	0	28	34.7	661	13712	11	19	
45 to 49	0	0	0	14	24	18	0	0	56	32.6	632	10478	40	145	
40 to 44	6	8	6	25	8	20	10	5	88	30.1	565	7505	107	532	
35 to 39	17	15	22	11	9	11	18	14	117	27.4	441	4955	231	1342	
30 to 34	11	6	14	6	8	9	26	26	106	24.9	329	3008	343	2755	
25 to 29	24	27	21	11	10	9	9	17	128	22.1	230	1601	442	4708	
20 to 24	10	9	8	8	6	6	6	6	59	17.7	123	765	549	7232	
15 to 19	10	6	4	3	0	4	10	9	46	14.3	64	298	608	10125	
10 to 14	3	9	6	0	0	1	5	6	30	9.8	30	68	642	13255	
5 to 9	3	4	3	0	0	0	0	1	11	6.8	2	1	670	16548	
Mar															
63 to 69	0	0	0	0	1	0	0	0	1	45.0	744	22550	0	0	
60 to 64	0	0	0	3	10	3	0	0	18	42.2	739	18838	5	8	
55 to 59	0	0	1	12	22	18	0	0	53	40.2	708	15202	36	92	
50 to 54	0	3	3	12	13	16	8	2	59	37.9	655	11805	89	415	
45 to 49	9	3	14	13	11	15	14	8	87	36.2	368	8711	176	1041	
40 to 44	13	17	14	13	8	12	23	14	114	32.9	490	6049	254	2099	
35 to 39	21	19	19	13	9	7	15	23	126	30.3	364	3900	380	3670	
30 to 34	16	14	10	8	7	10	15	22	102	26.8	233	2402	511	5892	
25 to 29	21	20	14	8	3	3	7	12	88	24.1	135	1466	609	8676	
20 to 24	1	2	4	0	0	0	1	0	8	18.5	92	941	652	11871	
15 to 19	0	3	6	3	6	5	1	1	25	14.0	77	509	667	15159	
10 to 14	7	6	1	6	3	2	5	5	33	9.8	52	178	692	18548	
5 to 9	4	6	5	0	0	2	6	5	28	7.2	7	12	737	22102	
0 to 4	1	0	0	0	0	0	0	1	2	2.0	0	0	744	25810	

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

CHEYENNE, WYOMING
WBAN 24018
TABLE A:

TRY Data (1974)

Latitude 41.20 N
Longitude 104.80 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence In time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Apr															
75 to 79	0	0	0	0	1	0	0	0	1	47.0	720	24444	0	0	
70 to 74	0	0	0	4	8	4	0	0	16	47.6	714	20851	6	7	
65 to 69	0	0	1	7	8	10	1	0	27	46.1	692	17328	28	84	
60 to 64	0	0	5	3	8	10	4	0	30	43.4	672	13927	48	283	
55 to 59	3	1	3	15	17	11	9	2	61	41.5	625	10679	95	635	
50 to 54	2	2	9	16	10	13	11	10	73	39.1	553	7717	167	1273	
45 to 49	5	4	15	14	15	14	17	10	94	36.2	483	5125	237	2281	
40 to 44	17	14	20	15	10	12	15	23	126	33.5	381	2977	339	3733	
35 to 39	30	27	18	5	6	8	14	16	124	31.0	253	1417	467	5773	
30 to 34	10	19	13	8	7	8	14	14	93	27.8	127	490	593	8446	
25 to 29	20	20	6	3	0	0	5	12	66	24.2	33	73	687	11629	
20 to 24	3	3	0	0	0	0	0	3	9	20.3	6	3	714	15159	
May															
80 to 84	0	0	0	5	2	2	0	0	9	52.0	741	20212	3	2	
75 to 79	0	0	1	2	16	9	1	0	29	52.1	727	16535	17	45	
70 to 74	0	0	3	13	13	18	5	0	52	49.8	689	12992	55	222	
65 to 69	0	0	6	14	21	20	9	1	71	48.4	622	9701	122	651	
60 to 64	0	0	12	18	22	20	21	5	98	46.4	542	6756	202	1426	
55 to 59	10	0	19	22	13	12	22	19	117	43.2	448	4279	296	2669	
50 to 54	19	21	26	14	6	9	15	29	139	42.9	321	2350	423	4460	
45 to 49	25	23	16	4	0	1	11	8	88	39.0	188	1125	556	6955	
40 to 44	22	24	9	1	0	2	6	23	87	34.7	105	382	639	9932	
35 to 39	14	20	1	0	0	0	3	8	46	30.5	31	68	713	13338	
30 to 34	3	5	0	0	0	0	0	0	8	28.3	2	1	742	16991	
Jun															
85 to 89	0	0	0	9	11	3	0	0	23	57.4	712	16660	8	8	
80 to 84	0	0	3	14	24	23	4	0	68	56.8	666	13178	54	126	
75 to 79	0	0	11	23	20	21	11	0	86	54.7	593	10017	127	565	
70 to 74	0	0	17	10	12	19	19	4	81	53.7	522	7249	198	1397	
65 to 69	3	0	16	10	5	5	24	15	78	52.8	433	4877	287	2625	
60 to 64	27	22	19	6	7	10	13	29	133	49.1	335	2929	385	4277	
55 to 59	27	29	7	10	6	2	7	20	108	47.5	202	1593	518	6541	
50 to 54	10	16	7	2	2	1	5	6	49	44.7	119	817	601	9365	
45 to 49	9	6	5	0	0	3	4	10	37	40.8	85	324	635	12472	
40 to 44	14	17	5	6	3	3	3	6	57	39.0	28	16	692	15764	

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

CHEYENNE, WYOMING
WBAN 24018
TABLE A:

TRY Data (1974)

Latitude 41.20 N
Longitude 104.80 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															
85 to 89	0	0	0	8	20	14	0	0	42	56.1	741	13150	3	3	
80 to 84	0	0	8	40	43	28	6	0	125	57.3	656	9616	88	189	
75 to 79	0	0	24	25	19	20	11	1	100	57.2	543	6649	201	942	
70 to 74	0	0	23	17	9	16	30	6	101	55.5	441	4201	303	2214	
65 to 69	9	3	25	3	1	6	27	31	105	54.4	335	2249	409	3982	
60 to 64	43	37	10	0	1	6	16	38	151	52.4	203	873	541	6326	
55 to 59	32	39	3	0	0	3	3	13	93	49.7	71	203	673	9376	
50 to 54	9	14	0	0	0	0	0	4	27	46.5	11	19	733	12912	
Aug															
85 to 89	0	0	0	3	10	4	0	0	17	52.6	742	16655	2	1	
80 to 84	0	0	3	18	25	16	1	0	63	54.3	704	13011	40	77	
75 to 79	0	0	7	17	25	32	6	0	87	54.5	631	9648	113	434	
70 to 74	0	0	9	28	15	16	26	3	97	53.2	540	6707	204	1213	
65 to 69	2	0	21	12	9	13	23	8	88	52.4	434	4251	310	2477	
60 to 64	20	8	22	9	7	10	19	37	132	50.9	338	2277	406	4223	
55 to 59	42	32	21	4	1	2	15	30	147	48.8	212	909	532	6575	
50 to 54	21	35	9	2	1	0	3	14	85	45.8	74	219	670	9605	
45 to 49	8	15	1	0	0	0	0	1	25	41.4	16	25	728	13131	
40 to 44	0	3	0	0	0	0	0	0	3	39.0	0	0	744	16826	
Sep															
85 to 89	0	0	0	1	4	1	0	0	6	55.7	720	23367	0	0	
80 to 84	0	0	0	6	6	6	0	0	18	53.4	708	19795	12	28	
75 to 79	0	0	3	10	18	14	1	0	46	49.8	675	16314	45	147	
70 to 74	0	0	6	11	14	14	5	0	50	49.6	634	13039	86	472	
65 to 69	2	1	6	15	15	12	6	2	59	47.3	578	10006	142	1039	
60 to 64	3	5	12	16	5	14	13	3	71	45.5	508	7278	212	1911	
55 to 59	5	11	12	6	9	12	23	13	91	43.1	437	4894	283	3127	
50 to 54	20	8	15	11	7	2	10	28	101	40.9	348	2926	372	4759	
45 to 49	25	22	15	7	5	8	13	15	110	39.7	229	1478	491	6911	
40 to 44	19	17	11	1	1	4	13	18	84	36.5	141	579	579	9612	
35 to 39	10	21	8	6	6	3	6	7	67	33.5	39	104	681	12737	
30 to 34	4	5	2	0	0	0	0	4	15	30.7	3	8	717	16241	
25 to 29	2	0	0	0	0	0	0	0	2	27.5	0	0	720	19833	

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

CHEYENNE, WYOMING
WBAN 24018
TABLE A:

TRY Data (1974)

Latitude 41.20 N
Longitude 104.80 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	Hour of Day			16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Oct															
75 to 79	0	0	0	1	6	0	0	0	7	47.9	742	22207	2	1	
70 to 74	0	0	0	7	13	8	0	0	28	47.8	727	18519	17	33	
65 to 69	0	0	1	17	17	10	0	0	45	46.5	688	14965	56	199	
60 to 64	0	0	5	14	13	10	1	0	43	44.5	641	11633	103	587	
55 to 59	0	0	10	15	11	18	10	2	66	43.0	587	8531	157	1205	
50 to 54	1	0	13	10	12	13	18	9	76	41.2	536	5735	208	2129	
45 to 49	22	16	15	8	6	15	24	18	124	38.6	438	3290	306	3404	
40 to 44	27	31	26	16	13	14	23	35	185	36.5	305	1439	439	5273	
35 to 39	31	29	14	4	0	4	12	21	115	33.3	112	425	632	7979	
30 to 34	11	13	7	1	2	1	5	7	47	28.7	38	84	706	11358	
25 to 29	1	4	2	0	0	0	0	1	8	25.1	4	3	740	14997	
Nov															
60 to 64	0	0	0	3	4	0	0	0	7	40.3	717	20016	3	2	
55 to 59	0	0	0	5	16	1	0	0	22	38.6	709	16447	11	33	
50 to 54	0	0	1	16	12	10	1	2	42	36.5	679	12974	41	160	
45 to 49	4	1	7	11	11	12	4	6	56	34.7	630	9704	90	490	
40 to 44	6	10	11	10	18	17	10	2	84	31.8	564	6705	156	1091	
35 to 39	11	12	15	22	11	19	18	15	123	30.2	458	4121	262	2107	
30 to 34	38	28	26	6	12	14	27	35	186	27.4	303	2163	417	3749	
25 to 29	12	19	12	10	6	7	16	15	97	23.9	150	1062	570	6248	
20 to 24	10	9	10	7	0	8	7	6	57	19.6	81	514	639	9300	
15 to 19	1	4	5	0	0	2	2	3	17	15.8	35	250	685	12636	
10 to 14	5	4	1	0	0	0	4	3	17	10.2	22	102	698	16088	
5 to 9	2	0	1	0	0	0	1	3	7	5.7	10	29	710	19615	
0 to 4	1	3	1	0	0	0	0	0	5	2.6	0	0	720	23186	
Dec															
55 to 59	0	0	0	0	1	0	0	0	1	36.0	744	22790	0	0	
50 to 54	0	0	0	6	9	2	0	0	17	35.6	741	19075	3	5	
45 to 49	0	0	1	7	13	4	1	0	26	32.9	720	15435	24	85	
40 to 44	0	0	3	13	11	8	2	2	39	30.2	689	11918	55	288	
35 to 39	3	6	10	18	26	22	13	2	100	27.9	624	8598	120	688	
30 to 34	14	9	10	19	8	12	17	22	111	24.9	519	5736	225	1546	
25 to 29	20	18	17	14	17	20	9	19	134	21.9	402	3430	342	2960	
20 to 24	20	25	27	9	2	15	26	14	138	18.1	277	1745	467	4995	
15 to 19	20	26	18	2	3	3	9	14	95	14.1	134	747	610	7717	
10 to 14	13	3	4	5	3	4	8	14	54	10.1	61	276	683	10966	
5 to 9	0	3	0	0	0	3	7	3	16	6.6	18	93	726	14503	
0 to 4	2	0	1	0	0	0	1	3	7	1.6	9	27	735	18157	
-5 to -1	1	3	2	0	0	0	0	0	6	-2.2	0	0	744	21850	

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

CHEYENNE, WYOMING
WBAN 24018
TABLE B:

TRY Data (1974)

Latitude 41.20 N
Longitude 104.80 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
85 to 89	0	0	0	21	45	22	0	0	88	0.0	0.0	0.0	56.2	55.8	55.1	0.0	0.0	55.7
80 to 84	0	0	14	83	100	75	11	0	283	0.0	0.0	54.4	56.0	56.4	56.3	55.2	0.0	56.1
75 to 79	0	0	46	78	105	96	30	1	356	0.0	0.0	55.7	54.7	53.6	54.3	54.6	52.0	54.4
70 to 74	0	0	58	90	84	95	85	13	425	0.0	0.0	53.6	52.0	51.5	51.9	53.4	55.0	52.4
65 to 69	16	4	76	78	77	76	90	57	474	53.4	52.3	52.4	49.2	48.2	49.6	52.0	52.6	50.7
60 to 64	93	72	85	74	80	83	87	112	686	50.4	49.5	49.0	46.0	45.2	46.6	49.7	50.9	48.6
55 to 59	119	112	76	91	100	81	89	99	767	48.2	47.8	45.9	42.1	41.0	42.4	44.8	47.3	45.1
50 to 54	82	99	87	100	91	76	74	104	713	44.2	44.5	41.1	39.3	38.6	38.5	40.9	42.5	41.3
45 to 49	108	92	94	83	93	97	96	78	741	39.1	39.6	37.6	35.8	35.1	36.0	36.9	38.1	37.3
40 to 44	135	151	111	112	87	105	112	139	952	34.9	34.6	33.9	32.9	33.2	33.1	34.3	34.6	34.0
35 to 39	149	161	118	98	85	87	113	120	931	30.6	30.9	30.4	29.5	29.2	29.4	30.4	30.6	30.3
30 to 34	116	107	96	57	50	65	113	142	746	27.2	27.3	26.7	25.7	25.8	26.3	26.9	27.0	26.8
25 to 29	111	123	86	53	48	48	56	84	609	23.2	23.3	22.8	22.8	22.1	22.4	22.7	22.8	22.9
20 to 24	56	58	58	35	15	40	54	44	360	18.1	18.2	18.3	18.6	18.8	18.3	18.5	18.3	18.3
15 to 19	38	44	39	14	14	15	26	33	223	13.9	14.1	14.5	13.4	13.3	14.3	15.0	14.5	14.2
10 to 14	32	26	13	13	6	9	22	28	149	10.1	10.3	10.0	9.8	9.2	9.2	9.8	9.9	9.9
5 to 9	14	19	12	2	6	11	18	15	97	6.4	6.2	6.5	3.0	4.3	6.5	6.2	6.5	6.2
0 to 4	9	8	11	11	9	4	7	10	69	0.7	1.2	1.1	0.3	0.3	0.7	0.6	1.1	0.8
-5 to -1	9	11	9	2	0	9	5	5	50	-2.8	-3.5	-3.4	-2.5	0.0	-3.9	-3.8	-3.8	-3.5
-10 to -6	4	4	2	0	0	1	6	6	23	-8.7	-7.5	-8.0	0.0	0.0	-7.0	-8.8	-7.8	-8.2
-15 to -11	3	4	2	0	0	0	1	5	15	-13.0	-13.8	-13.5	0.0	0.0	0.0	-12.0	-12.8	-13.1
-20 to -16	1	0	2	0	0	0	0	0	3	-17.0	0.0	-16.5	0.0	0.0	0.0	0.0	0.0	-16.7

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

Month	Dry Bulb Temperature (F)				Wet Bulb		Percent Relative Humidity					Average Humidity Ratio (lb moisture/lb dry air)					Average wind
	Ave	Max	Min	Daily Ave	Max	Ave	4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	MPH
Jan	24.5	61	-17	33	16	19.2	60	50	47	57	55	0.0016	0.0017	0.0019	0.0018	0.0018	13.1
Feb	32.1	57	7	42	22	24.3	47	39	32	48	43	0.0015	0.0017	0.0017	0.0017	0.0016	16.1
Mar	37.2	66	3	48	27	29.3	58	44	36	51	49	0.0025	0.0025	0.0024	0.0026	0.0025	14.4
Apr	43.5	75	22	54	33	34.1	61	39	32	47	47	0.0030	0.0029	0.0028	0.0030	0.0030	15.4
May	55.3	83	32	68	42	42.5	56	33	29	39	41	0.0042	0.0043	0.0045	0.0045	0.0044	13.0
Jun	64.4	89	41	76	52	49.9	56	37	32	44	44	0.0059	0.0064	0.0064	0.0067	0.0064	11.2
Jul	69.8	89	50	83	57	54.2	58	32	32	43	43	0.0075	0.0073	0.0076	0.0077	0.0076	9.7
Aug	65.1	88	44	78	52	50.8	62	36	29	43	44	0.0068	0.0065	0.0061	0.0068	0.0066	10.6
Sep	55.0	87	29	68	43	42.1	55	34	29	42	43	0.0041	0.0041	0.0039	0.0043	0.0042	10.0
Oct	47.7	78	26	60	36	38.4	64	44	38	56	52	0.0038	0.0040	0.0040	0.0042	0.0040	10.2
Nov	34.7	63	3	46	25	27.8	64	48	40	60	53	0.0023	0.0024	0.0024	0.0025	0.0024	12.2
Dec	26.9	55	-2	38	16	21.0	59	44	39	55	51	0.0016	0.0016	0.0016	0.0016	0.0016	13.7
Year	46.4	89	-17	58	35	36.2	58	40	35	49	47	0.0038	0.0038	0.0038	0.0040	0.0039	12.4

CHEYENNE, WYOMING
WBAN 24018
TABLE D:

TRY Data (1974)

Latitude 41.20 N
Longitude 104.80 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	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	Deg	Hrs	Deg		
	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Base 100s*	Base 100s*	Base 100s*	Base 100s*				
90	0	496	0	0	406	0	0	370	0	0	406	0	0	484	0	0	1653	0	8760	3816	0	0						
89	0	485	0	0	395	0	1	359	0	1	395	0	0	473	0	0	1620	0	8757	3728	3	0						
88	0	474	0	0	384	0	5	348	0	3	384	0	0	462	0	0	1587	0	8751	3640	9	0						
87	0	463	0	2	373	0	11	337	0	5	374	0	0	451	0	0	1554	0	8742	3553	18	0						
86	0	452	0	6	362	0	21	326	0	9	363	0	0	440	0	0	1522	0	8723	3466	37	0						
85	0	441	0	15	351	0	36	316	1	17	352	0	0	429	0	0	1489	0	8691	3378	69	1						
84	0	431	0	28	341	0	56	305	1	32	341	0	0	418	0	0	1456	0	8644	3292	116	2						
83	0	420	0	38	330	1	81	295	2	49	331	1	1	407	0	0	1423	0	8589	3206	171	3						
82	1	409	0	56	320	1	103	285	3	61	320	1	2	396	0	0	1390	0	8535	3120	225	5						
81	5	398	0	79	309	2	117	275	4	70	310	2	3	386	0	0	1357	0	8484	3035	276	8						
80	11	387	0	96	299	3	134	265	5	85	300	3	7	375	0	0	1324	0	8425	2950	335	11						
79	15	376	0	113	289	4	155	256	6	107	290	4	13	364	0	0	1292	0	8356	2866	404	14						
78	20	365	0	127	280	5	179	247	8	125	280	5	18	353	0	0	1259	0	8289	2783	471	19						
77	30	355	1	141	270	6	205	238	10	142	270	6	22	342	1	0	1226	0	8218	2701	542	24						
76	41	344	1	157	261	8	224	229	12	158	261	8	28	332	1	0	1193	0	8151	2619	609	30						
75	53	333	1	173	251	9	240	220	14	179	252	10	36	321	1	0	1160	0	8077	2538	683	36						
74	62	323	2	189	242	11	256	212	17	203	243	11	48	310	2	1	1127	0	8000	2457	760	43						
73	70	313	3	205	233	13	272	203	20	221	234	14	60	300	2	1	1094	0	7929	2378	831	51						
72	80	303	3	225	224	15	290	195	22	237	225	16	75	290	3	2	1062	0	7850	2299	910	60						
71	89	293	4	245	216	18	308	187	25	255	217	18	92	280	4	3	1029	0	7766	2221	994	69						
70	106	283	5	263	207	20	326	180	29	276	208	21	113	270	5	9	996	0	7665	2143	1095	80						
69	127	273	6	279	199	23	344	172	32	295	200	24	135	260	6	18	963	0	7560	2067	1200	91						
68	142	263	8	298	191	26	363	165	35	311	192	27	157	250	7	28	931	0	7459	1992	1301	104						
67	160	254	9	316	183	29	378	157	39	324	185	30	177	241	9	41	898	1	7363	1918	1397	117						
66	177	244	11	326	175	32	393	150	43	338	177	33	194	232	11	55	866	1	7275	1845	1485	132						
65	189	235	13	340	168	35	406	143	47	355	169	37	210	223	13	76	834	2	7182	1773	1578	147						
64	203	226	15	359	160	39	417	136	51	371	162	40	226	214	15	115	802	3	7067	1701	1693	163						
63	221	218	17	378	153	43	432	130	55	390	155	44	245	206	17	166	770	4	6927	1631	1833	181						
62	236	209	19	394	146	47	447	123	60	407	148	48	262	197	20	223	739	6	6790	1563	1970	200						
61	251	200	22	404	139	51	462	117	64	422	141	52	277	189	23	279	709	9	6664	1495	2096	220						
60	269	192	24	416	132	55	480	111	69	438	135	57	294	181	25	336	679	12	6525	1429	2235	242						
59	287	184	27	432	126	59	496	104	74	455	128	61	314	173	29	400	650	15	6373	1365	2387	265						
58	303	176	30	448	119	63	515	99	79	472	122	66	333	165	32	462	621	20	6226	1302	2584	290						
57	317	168	33	462	113	68	538	93	84	488	116	71	349	158	35	521	594	25	6084	1240	2676	316						
56	329	160	36	480	106	73	563	87	90	505	110	76	364	150	39	581	566	30	5936	1180	2824	343						
55	345	153	40	503	100	77	584	82	96	521	104	81	381	143	42	655	539	36	5770	1122	2990	372						
54	360	145	43	520	94	83	597	77	101	536	98	86	401	136	46	720	514	43	5624	1065	3136	403						
53	370	138	47	537	89	88	615	72	107	550	93	91	417	129	50	771	488	51	5498	1009	3262	435						
52	384	131	51	563	83	93	636	68	114	564	87	97	430	123	55	838	463	59	5343	955	3417	468						
51	403	124	55	589	78	99	656	63	120	579	82	103	443	116	59	897	439	67	5191	902	3569	503						
50	427	117	59	608	73	105	673	59	127	595	77	109	458	110	64	951	416	77	5046	851	3714	540						
49	452	110	63	620	68	111	687	55	134	612	72	115	474	103	68	1007	393	86	4906	801	3854	577						
48	473	104	68	635	64	118	703	51	141	625	67	121	489	97	73	1063	370	97	4770	753	3990	617						
47	495	98	73	655	59	124	724	47	148	642	63	127	506	91	78	1122	348	108	4614	706	4146	657						
46	511	92	78	676	55	131	744	43	155	664	58	134	529	85	83	1171	327	119	4464	661	4296	699						
45	526	86	83	692	51	138	764	40	163	688	54	140	552	80	89	1226	306	131	4310	617	4450	743						

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

CHEYENNE, WYOMING

TRY Data (1974)

Latitude 41.20 N

WBAN 24018

Longitude 104.80 E

TABLE 0:

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BY TIME OF DAY																			
BASE		7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**		24-HOUR SUMMARY		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)*	Below	Hrs	Above	Hrs	Above	Hrs
	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	100s*	Base	100s*
44	542	81	88	706	47	144	782	37	170	707	50	147	569	75	94	1295	286	144	4157
43	554	75	94	725	43	152	798	34	178	724	46	155	588	69	100	1366	266	157	4003
42	576	70	99	748	39	159	819	31	186	750	43	162	611	64	106	1440	247	171	3814
41	603	65	105	772	36	167	839	28	195	772	39	170	630	60	112	1518	229	186	3624
40	630	60	111	796	33	174	854	26	203	793	36	177	656	55	119	1622	212	201	3407
39	660	56	118	818	30	183	873	23	212	812	33	185	683	51	125	1727	196	218	3185
38	693	51	125	840	27	191	892	21	221	827	31	194	702	47	132	1818	181	236	2986
37	721	48	132	863	25	199	910	19	230	845	28	202	720	43	139	1912	167	255	2787
36	738	44	139	881	23	208	931	17	239	863	26	211	743	39	147	1987	153	274	2615
35	755	40	146	898	21	217	945	16	248	883	23	219	773	36	154	2067	141	294	2438
34	775	37	154	914	19	226	953	14	258	902	21	228	803	33	162	2155	129	316	2255
33	794	34	162	926	17	235	964	13	267	921	19	237	835	30	170	2236	118	338	2083
32	812	31	170	937	16	245	973	12	277	935	18	247	858	28	179	2315	108	360	1928
31	834	28	178	951	14	254	981	11	287	945	16	256	876	26	188	2386	99	384	1786
30	853	26	187	962	13	264	991	10	297	953	15	265	892	23	196	2450	90	408	1657
29	866	24	195	972	11	273	1001	9	307	963	13	275	907	21	205	2510	82	433	1540
28	881	21	204	982	10	283	1011	8	317	974	12	285	921	20	215	2581	74	458	1408
27	902	19	213	990	9	293	1021	7	327	985	11	295	933	18	224	2660	68	484	1267
26	924	17	222	1002	8	303	1028	6	337	993	10	304	943	16	233	2722	62	511	1147
25	940	16	231	1013	7	313	1038	6	347	1001	9	314	952	15	243	2773	57	539	1041
24	951	14	241	1024	6	323	1047	5	358	1007	8	324	960	14	252	2809	52	567	959
23	960	13	250	1034	6	333	1052	5	368	1016	7	335	970	12	262	2829	47	595	897
22	972	12	260	1041	5	344	1055	4	379	1029	7	345	982	11	272	2860	43	624	820
21	985	10	270	1047	5	354	1057	4	389	1037	6	355	993	10	282	2897	39	652	742
20	998	9	280	1051	4	365	1059	3	400	1043	5	366	1004	9	292	2935	35	681	669
19	1010	9	290	1053	4	375	1061	3	411	1048	5	376	1014	8	302	2972	32	711	601
18	1021	8	300	1055	3	386	1063	3	421	1052	4	387	1022	7	312	2995	29	741	549
17	1030	7	310	1058	3	396	1066	2	432	1056	4	397	1027	7	322	3014	26	771	508
16	1035	6	321	1061	3	407	1069	2	443	1058	4	408	1030	6	332	3034	23	801	471
15	1041	6	331	1065	2	418	1072	2	453	1060	3	418	1034	5	343	3058	21	832	428
14	1045	5	341	1069	2	428	1074	2	464	1062	3	429	1038	5	353	3081	19	862	390
13	1047	5	352	1071	2	439	1074	2	475	1064	3	439	1042	4	363	3098	17	893	361
12	1050	4	362	1073	2	450	1074	1	485	1066	2	450	1046	4	374	3114	15	924	336
11	1053	4	373	1075	1	460	1075	1	496	1067	2	461	1051	3	384	3132	13	956	306
10	1055	4	383	1078	1	471	1078	1	507	1068	2	471	1056	3	395	3150	12	987	273
9	1059	3	394	1080	1	482	1080	1	518	1073	2	482	1062	3	405	3164	11	1019	240
8	1063	3	405	1080	1	493	1081	1	529	1077	1	493	1068	2	416	3179	9	1050	211
7	1066	3	415	1080	1	504	1084	1	539	1079	1	504	1070	2	427	3192	8	1082	187
6	1068	2	426	1080	1	514	1086	0	550	1081	1	515	1071	2	438	3199	8	1114	174
5	1068	2	437	1081	1	525	1086	0	561	1081	1	525	1074	2	448	3203	7	1146	166
4	1070	2	447	1082	0	536	1087	0	572	1081	1	536	1076	1	459	3208	6	1178	155
3	1073	2	458	1083	0	547	1088	0	583	1083	1	547	1078	1	470	3213	5	1210	140
2	1076	1	469	1086	0	558	1089	0	594	1084	1	558	1079	1	481	3219	5	1242	127
1	1076	1	479	1088	0	569	1090	0	605	1084	0	569	1080	1	491	3225	4	1275	115
0	1078	1	490	1091	0	579	1093	0	616	1084	0	579	1082	1	502	3231	3	1307	98
-1	1082	1	501	1093	0	590	1095	0	626	1086	0	590	1084	1	513	3236	3	1339	83

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

CHEYENNE, WYOMING
WBAW 24018
TABLE D:

TRY Date (1974)

Latitude 41.20 N
Longitude 104.80 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	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	Above	Below	Above				
	Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	100s*	Base	100s*				
-2	1084	1	512	1094	0	601	1095	0	637	1088	0	601	1085	1	524	3245	2	1372			68	4	8692	4247				
-3	1084	1	523	1095	0	612	1095	0	648	1090	0	612	1085	0	535	3250	2	1404			59	3	8701	4334				
-4	1086	1	534	1095	0	623	1095	0	659	1091	0	623	1086	0	546	3253	2	1437			52	3	8708	4421				
-5	1088	0	544	1095	0	634	1095	0	670	1093	0	634	1087	0	556	3256	1	1469			44	2	8716	4509				
-6	1089	0	555	1095	0	645	1095	0	681	1094	0	645	1088	0	567	3260	1	1502			37	2	8723	4596				
-7	1090	0	566	1095	0	656	1095	0	692	1095	0	656	1089	0	578	3265	1	1534			30	1	8730	4683				
-8	1090	0	577	1095	0	667	1095	0	703	1095	0	667	1091	0	589	3268	1	1567			24	1	8736	4770				
-9	1091	0	588	1095	0	678	1095	0	714	1095	0	678	1092	0	600	3271	1	1600			21	1	8739	4858				
-10	1091	0	599	1095	0	689	1095	0	725	1095	0	689	1093	0	611	3272	0	1633			19	1	8741	4945				
-11	1091	0	610	1095	0	700	1095	0	736	1095	0	700	1094	0	622	3273	0	1665			16	0	8744	5033				
-12	1091	0	621	1095	0	711	1095	0	747	1095	0	711	1095	0	633	3275	0	1698			14	0	8746	5120				
-13	1091	0	632	1095	0	722	1095	0	758	1095	0	722	1095	0	644	3276	0	1731			12	0	8748	5207				
-14	1092	0	643	1095	0	733	1095	0	769	1095	0	732	1095	0	655	3280	0	1764			7	0	8753	5295				
-15	1093	0	654	1095	0	744	1095	0	780	1095	0	743	1095	0	666	3283	0	1796			3	0	8757	5382				
-16	1093	0	664	1095	0	755	1095	0	791	1095	0	754	1095	0	677	3284	0	1829			2	0	8758	5470				
-17	1094	0	675	1095	0	766	1095	0	802	1095	0	765	1095	0	688	3284	0	1862			1	0	8759	5558				
-18	1095	0	686	1095	0	777	1095	0	813	1095	0	776	1095	0	699	3285	0	1895			0	0	8760	5645				

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

CHEYENNE, WYOMING

TRY Data (1974)

Latitude 41.20 N

WBAN 24018

Longitude 104.80 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:	1723	1183	574	140	15	0	0	0	0	0	0
Annual Wet Bulb Cooling deg-hrs:	9028.	4422.	1506.	262.	17.	0.	0.	0.	0.	0.	0.

TABLE F:

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

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS ** Heating Degree Base											COOLING HUMIDITY RATIO HOURS ** Cooling Degree Base											Maintained Indoor Humidity Ratio*
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80	
.001	0	0	0	0	0	0	0	0	0	0	0	21	20	18	17	15	13	10	7	5	3	1	.001
.002	2	2	2	2	2	3	3	3	3	3	3	14	14	13	13	11	10	8	5	4	2	1	.002
.003	3	4	5	5	6	6	6	7	7	7	7	10	10	10	9	8	7	6	4	3	2	1	.003
.004	5	6	8	9	10	11	11	12	12	12	12	7	7	6	6	6	5	4	3	2	1	0	.004
.005	6	9	11	13	15	16	17	17	18	18	18	4	4	4	4	4	4	3	2	1	1	0	.005
.006	8	11	14	17	20	21	23	24	24	25	25	2	2	2	2	2	2	2	1	1	0	0	.006
.007	10	13	18	22	25	27	29	30	31	32	32	1	1	1	1	1	1	1	1	0	0	0	.007
.008	11	16	21	26	30	32	35	37	38	39	40	0	0	0	0	0	0	0	0	0	0	0	.008
.009	13	18	24	30	35	38	41	44	45	47	48	0	0	0	0	0	0	0	0	0	0	0	.009
.010	14	20	28	34	39	44	48	51	53	55	57	0	0	0	0	0	0	0	0	0	0	0	.010
.011	16	23	31	39	44	49	54	58	61	63	65	0	0	0	0	0	0	0	0	0	0	0	.011
.012	18	25	34	43	49	55	61	65	68	71	73	0	0	0	0	0	0	0	0	0	0	0	.012
.013	19	27	37	47	54	61	67	72	76	79	82	0	0	0	0	0	0	0	0	0	0	0	.013
.014	21	30	41	51	59	67	74	79	83	87	90	0	0	0	0	0	0	0	0	0	0	0	.014
.015	22	32	44	56	64	72	80	87	91	95	98	0	0	0	0	0	0	0	0	0	0	0	.015
.016	24	34	47	60	69	78	87	94	99	103	107	0	0	0	0	0	0	0	0	0	0	0	.016
.017	26	37	50	64	74	84	93	101	106	111	115	0	0	0	0	0	0	0	0	0	0	0	.017
.018	27	39	54	68	79	89	99	108	114	119	124	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	36	30	46	47	44	33	41	37	28	32	33	30	38
VERTICAL													
NORTH	100	100	100	98	93	86	90	96	100	100	100	100	95
WEST	49	41	60	65	69	61	70	61	46	46	43	39	57
SOUTH	26	26	49	64	70	66	70	58	37	31	26	21	45
EAST	43	41	59	58	56	49	53	51	42	46	47	42	50
% Possible Sun	61	65	65	60	59	64	68	67	69	69	69	59	64

FOOTNOTES: * Corrected For Cloud Cover.

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

CHEYENNE, WYOMING
WBAN 24018
TABLE H:

TRY Data (1974)

Latitude 41.20 N
Longitude 104.80 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	1938	1798	1434	1082	638	307	168	144	144	1963	934	966	920	761	598	381	215	146	134	134	959	512	766
Feb	2043	1908	1597	1298	871	504	282	198	191	2278	1297	1188	1114	943	781	547	347	228	183	179	1284	766	1068
Mar	1882	1815	1643	1473	1135	781	502	319	265	2495	1802	1067	1038	947	856	688	524	406	333	312	1271	1011	1433
Apr	1492	1566	1571	1554	1354	1070	778	530	368	2509	2272	1087	1149	1151	1136	1019	860	699	562	472	1516	1464	1771
May	1166	1324	1456	1553	1484	1287	1012	744	535	2421	2578	1061	1178	1251	1299	1240	1101	920	746	606	1702	1825	1995
Jun	1034	1211	1395	1538	1532	1378	1129	860	653	2359	2705	969	1104	1221	1307	1287	1163	980	786	623	1826	2055	2258
Jul	1083	1249	1407	1533	1497	1325	1074	809	604	2361	2627	1012	1148	1250	1330	1294	1164	986	799	631	1721	1905	2230
Aug	1326	1432	1484	1512	1369	1128	855	611	438	2407	2349	1115	1212	1243	1253	1142	968	778	612	492	1735	1721	1966
Sep	1688	1672	1577	1470	1192	874	600	400	311	2421	1928	1354	1362	1289	1202	987	745	542	398	335	1821	1473	1667
Oct	1940	1820	1557	1314	924	570	347	235	223	2288	1438	1114	1057	919	787	577	391	275	216	208	1285	859	1242
Nov	1945	1819	1472	1144	708	373	205	161	161	2027	1029	1059	982	798	625	409	252	175	153	153	1087	612	823
Dec	1865	1731	1370	1008	576	268	146	133	133	1845	837	1056	973	771	571	342	185	126	119	119	1038	506	671
Year	1614	1610	1496	1373	1108	824	593	430	336	2281	1819	1086	1103	1046	980	827	661	523	422	356	1437	1228	1491

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	1674	1529	1199	892	504	227	126	117	117	826	779	636	495	303	164	114	109	109
Feb	1733	1600	1329	1079	703	385	209	157	155	1002	930	783	647	442	270	175	147	145
Mar	1529	1499	1365	1229	931	619	379	244	215	869	852	780	706	560	419	320	266	253
Apr	1127	1246	1285	1284	1115	868	611	401	289	846	922	941	935	837	700	558	442	378
May	828	1001	1171	1280	1225	1056	814	579	400	806	921	1012	1067	1019	899	740	590	478
Jun	714	888	1105	1264	1264	1137	911	673	481	710	835	973	1071	1057	954	789	621	481
Jul	762	933	1126	1261	1237	1094	865	633	450	762	885	1006	1092	1066	959	798	635	494
Aug	980	1120	1208	1248	1129	922	682	471	338	855	962	1014	1031	939	789	624	481	390
Sep	1344	1372	1305	1222	981	703	465	306	252	1086	1120	1067	999	812	601	425	309	273
Oct	1631	1523	1301	1093	751	448	258	187	182	931	880	763	650	469	311	213	173	169
Nov	1674	1541	1232	950	566	279	152	131	131	904	824	661	514	328	195	136	125	124
Dec	1614	1477	1143	832	450	194	112	108	108	908	824	639	469	268	139	99	96	96
Year	1298	1309	1230	1136	906	662	467	335	260	874	894	856	807	676	535	417	334	283

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

EL PASO, TEXAS
WBAN 23044
TABLE A:

TRY Data (1967)

Latitude 31.80 N
Longitude 106.40 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															
70 to 74	0	0	0	0	8	9	0	0	17	47.3	740	22582	4	2	
65 to 69	0	0	0	2	15	11	2	0	30	45.0	715	18942	29	82	
60 to 64	0	0	0	7	12	14	6	1	40	43.2	682	15446	62	306	
55 to 59	2	1	1	10	13	14	14	6	61	40.5	635	12146	109	726	
50 to 54	3	2	3	17	21	14	13	12	85	37.8	563	9132	181	1432	
45 to 49	5	2	6	25	12	14	9	11	84	34.8	477	6527	267	2547	
40 to 44	10	11	13	12	6	8	16	9	85	31.6	398	4352	346	4092	
35 to 39	18	14	16	11	6	7	18	18	108	27.9	301	2589	443	6049	
30 to 34	18	13	19	9	0	2	10	18	89	24.2	200	1361	544	8541	
25 to 29	24	23	14	0	0	0	4	13	78	20.5	118	576	626	11476	
20 to 24	10	17	14	0	0	0	1	2	44	17.2	49	187	695	14807	
15 to 19	0	6	7	0	0	0	0	3	16	13.1	14	41	730	18381	
10 to 14	3	4	0	0	0	0	0	0	7	8.4	3	5	741	22065	
Feb															
75 to 79	0	0	0	0	3	1	0	0	4	48.0	671	19193	1	1	
70 to 74	0	0	0	1	1	3	1	0	6	47.3	667	15850	5	18	
65 to 69	0	0	0	1	17	17	4	3	42	46.0	650	12540	22	68	
60 to 64	3	1	0	16	27	29	9	4	89	43.4	596	9421	76	309	
55 to 59	13	9	8	18	20	16	19	10	113	42.3	494	6713	178	961	
50 to 54	8	4	7	24	9	9	14	19	94	38.6	383	4535	289	2143	
45 to 49	7	8	11	14	5	7	16	6	74	35.4	297	2842	375	3810	
40 to 44	17	11	21	6	2	2	15	17	91	31.8	210	1568	462	5896	
35 to 39	13	17	18	4	0	0	5	19	76	28.2	131	719	541	8407	
30 to 34	17	21	12	0	0	0	1	5	56	25.3	55	249	617	11297	
25 to 29	4	6	4	0	0	0	0	1	15	21.2	20	76	652	14484	
20 to 24	2	6	2	0	0	0	0	0	10	18.3	5	13	667	17781	
15 to 19	0	1	1	0	0	0	0	0	2	14.5	0	0	672	21128	
Mar															
85 to 89	0	0	0	0	2	2	0	0	4	53.8	744	19852	0	0	
80 to 84	0	0	0	3	12	13	0	0	28	54.1	736	16148	8	16	
75 to 79	0	0	0	6	31	28	4	0	69	51.4	694	12568	50	156	
70 to 74	1	0	0	25	26	29	18	3	102	49.4	608	9303	136	611	
65 to 69	9	1	3	26	9	9	34	18	109	46.7	505	6538	239	1566	
60 to 64	15	9	21	19	4	5	18	29	120	45.1	382	4316	362	3064	
55 to 59	17	12	21	7	4	3	9	18	91	43.5	273	2692	471	5160	
50 to 54	19	17	18	1	5	4	4	11	79	39.3	183	1537	561	7725	
45 to 49	16	22	11	2	0	0	5	6	62	36.5	114	795	630	10703	
40 to 44	6	13	8	4	0	0	1	8	40	32.1	62	362	682	13990	
35 to 39	6	10	5	0	0	0	0	0	21	28.6	30	140	714	17488	
30 to 34	4	6	5	0	0	0	0	0	15	24.5	15	36	729	21104	
25 to 29	0	3	1	0	0	0	0	0	4	21.8	2	2	742	24790	

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

EL PASO, TEXAS
WBAN 23044
TABLE A:

TRY Data (1967)

Latitude 31.80 N
Longitude 106.40 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	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	11	10	0	0	21	54.9	718	14890	2	2	
80 to 84	0	0	0	4	29	29	3	0	65	52.8	677	11385	43	97	
75 to 79	0	0	0	28	25	31	28	4	116	50.7	586	8190	134	502	
70 to 74	7	0	12	34	13	11	28	20	125	49.0	469	5545	251	1457	
65 to 69	24	14	19	13	7	3	15	25	120	46.7	335	3529	385	3041	
60 to 64	20	10	24	6	0	0	8	20	88	44.8	236	2110	484	5222	
55 to 59	14	20	16	2	2	3	3	11	71	41.8	154	1132	566	7844	
50 to 54	12	17	11	1	2	0	2	6	51	38.5	89	536	631	10848	
45 to 49	9	16	5	1	1	3	2	1	38	35.2	43	207	677	14119	
40 to 44	1	6	1	1	0	0	1	3	13	33.0	19	62	701	17574	
35 to 39	3	7	2	0	0	0	0	0	12	31.8	5	6	715	21118	
May															
95 to 99	0	0	0	0	1	0	0	0	1	56.0	744	18768	0	0	
90 to 94	0	0	0	1	11	11	1	0	24	56.5	740	15054	4	6	
85 to 89	0	0	0	13	30	28	6	0	77	55.2	691	11442	53	114	
80 to 84	1	0	1	27	26	32	26	4	117	53.7	589	8211	155	603	
75 to 79	6	0	14	25	17	13	27	22	124	51.4	478	5525	266	1637	
70 to 74	18	8	29	15	5	3	19	28	125	50.1	353	3452	391	3284	
65 to 69	23	19	22	7	3	4	4	15	97	47.8	235	2003	509	5555	
60 to 64	18	22	11	3	0	2	9	10	75	45.7	139	1054	605	8326	
55 to 59	12	15	8	2	0	0	1	9	47	42.4	80	498	664	11490	
50 to 54	7	15	7	0	0	0	0	5	34	39.6	40	195	704	14907	
45 to 49	7	9	0	0	0	0	0	0	16	34.8	14	71	730	18503	
40 to 44	1	2	1	0	0	0	0	0	4	28.8	6	29	738	22181	
35 to 39	0	2	0	0	0	0	0	0	2	25.5	3	10	741	25882	
30 to 34	0	1	0	0	0	0	0	0	1	23.0	1	1	743	29593	
Jun															
95 to 99	0	0	0	1	14	16	1	0	32	62.3	709	12828	11	8	
90 to 94	0	0	0	8	37	36	8	1	90	61.9	660	9377	60	157	
85 to 89	1	0	2	30	22	22	27	5	109	60.8	559	6333	161	713	
80 to 84	8	3	21	34	12	12	26	25	141	59.9	426	3843	294	1823	
75 to 79	21	8	29	12	1	1	18	30	120	58.8	305	2031	415	3611	
70 to 74	30	28	28	4	4	3	5	18	120	57.9	187	822	533	6002	
65 to 69	25	30	10	1	0	0	3	9	78	57.7	79	199	641	8979	
60 to 64	5	21	0	0	0	0	2	2	30	51.1	7	9	713	12389	

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

EL PASO, TEXAS

WBAN 23044

TABLE A:

TRY Data (1967)

Latitude 31.80 N

Longitude 106.40 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	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	19	20	0	0	39	67.3	744	10866	0	0	
90 to 94	0	0	0	22	47	54	20	0	143	67.2	650	7318	94	172	
85 to 89	0	0	5	42	21	13	47	16	144	66.8	508	4429	236	1003	
80 to 84	22	1	31	23	5	5	16	47	150	65.2	363	2260	381	2554	
75 to 79	44	33	39	6	0	1	9	17	149	63.9	210	827	534	4841	
70 to 74	23	47	18	0	1	0	1	13	103	62.8	70	139	674	7873	
65 to 69	4	12	0	0	0	0	0	0	16	61.5	2	1	742	11455	
Aug															
95 to 99	0	0	0	0	5	3	0	0	8	68.4	743	14658	1	1	
90 to 94	0	0	0	6	28	24	2	0	60	66.6	722	10977	22	40	
85 to 89	0	0	1	23	35	35	14	2	110	64.9	639	7562	105	345	
80 to 84	3	2	13	42	15	13	38	13	139	64.6	515	4666	229	1169	
75 to 79	21	7	26	14	7	11	21	33	140	63.3	377	2446	367	2669	
70 to 74	36	26	30	6	3	6	9	33	149	61.0	232	931	512	4874	
65 to 69	31	44	23	2	0	1	9	11	121	58.5	76	161	668	7824	
60 to 64	2	14	0	0	0	0	0	1	17	55.9	2	1	742	11384	
Sep															
90 to 94	0	0	0	2	11	8	0	0	21	63.8	720	14003	0	0	
85 to 89	0	0	0	6	23	24	4	0	57	63.8	683	10488	37	85	
80 to 84	0	0	1	24	33	34	19	5	116	62.9	603	7249	117	446	
75 to 79	5	0	10	26	13	13	27	13	107	61.8	478	4538	242	1335	
70 to 74	26	7	21	21	7	7	26	33	148	59.6	367	2396	353	2793	
65 to 69	32	31	34	9	3	4	10	29	152	58.2	209	953	511	4950	
60 to 64	17	37	18	2	0	0	4	6	84	55.5	71	277	649	7874	
55 to 59	8	8	5	0	0	0	0	4	25	50.0	22	66	698	11263	
50 to 54	2	7	1	0	0	0	0	0	10	46.4	4	4	716	14801	

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

EL PASO, TEXAS
WBAN 23044
TABLE A:

TRY Data (1967)

Latitude 31.80 N
Longitude 106.40 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Oct															
85 to 89	0	0	0	1	13	9	0	0	23	61.8	737	17258	7	6	
80 to 84	0	0	0	12	24	14	2	0	52	58.7	705	13650	39	118	
75 to 79	0	0	1	19	30	33	8	0	91	54.7	631	10280	113	468	
70 to 74	4	1	12	28	12	18	19	12	106	53.5	529	7370	215	1278	
65 to 69	17	9	13	16	6	9	22	19	111	51.4	428	4963	316	2591	
60 to 64	15	15	23	10	2	4	25	18	112	48.5	318	3098	426	4446	
55 to 59	14	16	16	3	2	2	8	22	83	45.5	212	1793	532	6861	
50 to 54	18	16	14	3	4	3	3	7	68	41.7	129	929	615	9717	
45 to 49	15	16	5	1	0	1	2	9	49	37.2	79	417	665	12925	
40 to 44	4	14	7	0	0	0	3	6	34	33.7	35	150	709	16378	
35 to 39	4	3	1	0	0	0	1	0	9	29.3	10	53	734	20001	
30 to 34	2	0	1	0	0	0	0	0	3	24.0	6	16	738	23684	
25 to 29	0	3	0	0	0	0	0	0	3	22.7	0	0	744	27388	
Nov															
75 to 79	0	0	0	0	2	0	0	0	2	51.0	720	17570	0	0	
70 to 74	0	0	0	3	27	20	4	0	54	49.8	700	13994	20	24	
65 to 69	1	0	1	16	22	17	4	6	67	49.1	646	10630	74	260	
60 to 64	4	5	5	25	16	23	9	1	88	46.6	577	7590	143	820	
55 to 59	8	4	12	19	8	12	28	18	109	44.9	473	4953	247	1783	
50 to 54	25	19	22	15	10	8	16	14	129	42.3	349	2889	371	3319	
45 to 49	11	15	20	7	5	10	21	18	107	38.4	236	1449	484	5479	
40 to 44	18	17	15	5	0	0	8	28	91	34.5	121	555	599	8185	
35 to 39	17	17	10	0	0	0	0	5	49	30.1	47	149	673	11379	
30 to 34	6	13	5	0	0	0	0	0	24	27.1	9	12	711	14842	
Dec															
65 to 69	0	0	0	0	5	2	0	0	7	45.6	742	19670	2	2	
60 to 64	0	0	0	3	9	6	0	0	18	45.3	735	15984	9	36	
55 to 59	0	0	0	10	15	16	7	2	50	43.2	702	12378	42	150	
50 to 54	5	2	4	8	23	18	10	7	77	40.8	641	9010	103	502	
45 to 49	14	6	9	26	12	11	15	12	105	38.9	555	6014	189	1226	
40 to 44	14	13	16	21	15	20	21	18	138	35.6	440	3531	304	2463	
35 to 39	20	32	26	11	3	8	20	28	148	33.0	297	1690	447	4342	
30 to 34	20	19	22	11	10	10	16	16	124	29.3	142	590	602	6962	
25 to 29	17	13	12	3	1	2	4	10	62	25.4	48	122	696	10214	
20 to 24	3	8	3	0	0	0	0	0	14	22.0	5	12	739	13824	
15 to 19	0	0	1	0	0	0	0	0	1	18.0	0	0	744	17532	

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

EL PASO, TEXAS
WBAN 23044
TABLE B:

TRY Data (1967)

Latitude 31.80 N
Longitude 106.40 E

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

Dry Bulb range(F)	Number of Hours of Occurrence in time period									Mean Coincident Wet Bulb Temperature (F)								
	Hour of day									Hour of day								
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year
95 to 99	0	0	0	1	39	39	1	0	80	0.0	0.0	0.0	65.0	65.7	64.9	64.0	0.0	65.3
90 to 94	0	0	0	39	134	135	31	1	338	0.0	0.0	0.0	66.9	64.9	63.9	64.5	63.0	64.7
85 to 89	1	0	8	115	157	143	98	23	545	63.0	0.0	66.8	64.4	61.8	60.8	62.7	65.2	62.5
80 to 84	34	6	67	169	156	152	130	94	808	63.0	63.5	64.2	61.9	58.3	58.1	59.8	61.9	60.4
75 to 79	97	48	119	136	129	132	142	119	922	61.1	62.7	60.9	57.3	53.5	53.8	57.2	58.9	57.6
70 to 74	145	117	150	137	107	109	130	160	1055	57.5	59.6	57.6	52.9	51.5	51.0	53.3	56.3	55.2
65 to 69	166	160	125	93	87	77	107	135	950	53.8	55.6	54.1	49.4	47.4	47.2	49.8	52.1	51.9
60 to 64	99	134	102	91	70	83	90	92	761	48.6	50.4	47.7	45.6	44.7	44.7	46.0	46.8	47.1
55 to 59	88	85	87	71	64	66	89	100	650	44.4	44.4	44.4	42.4	42.8	42.3	43.0	43.3	43.4
50 to 54	99	99	87	69	74	56	62	81	627	40.6	41.9	40.3	39.6	39.5	39.3	39.2	39.5	40.1
45 to 49	84	94	67	76	35	46	70	63	535	36.7	37.2	37.1	36.7	36.0	36.7	36.7	37.1	36.8
40 to 44	71	87	82	49	23	30	65	89	496	33.4	33.6	33.3	33.7	33.0	33.6	33.5	33.6	33.5
35 to 39	81	102	78	26	9	15	44	70	425	30.0	30.2	30.6	29.9	28.2	29.9	30.4	29.9	30.1
30 to 34	67	73	64	20	10	12	27	39	312	26.5	26.7	27.0	26.6	30.0	27.7	26.1	25.9	26.7
25 to 29	45	48	31	3	1	2	8	24	162	22.7	22.1	22.2	27.0	29.0	27.5	22.8	22.2	22.5
20 to 24	15	31	19	0	0	0	1	2	68	17.7	18.7	18.5	0.0	0.0	0.0	17.0	17.0	18.4
15 to 19	0	7	9	0	0	0	0	3	19	0.0	14.0	13.7	0.0	0.0	0.0	0.0	11.7	13.5
10 to 14	3	4	0	0	0	0	0	0	7	9.0	8.0	0.0	0.0	0.0	0.0	0.0	0.0	8.4

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 wind MPH
Month	Ave	Max	Min	Daily Max	Ave Min		4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	42.2	73	10	58	25	30.9	40	29	19	28	30	0.0015	0.0019	0.0020	0.0018	0.0017	7.4
Feb	48.9	78	18	62	34	36.1	38	29	20	27	31	0.0022	0.0025	0.0025	0.0024	0.0024	8.7
Mar	60.8	87	26	75	45	43.7	34	27	17	23	26	0.0029	0.0036	0.0033	0.0030	0.0031	9.2
Apr	66.8	89	36	79	51	46.1	26	21	13	17	21	0.0029	0.0034	0.0029	0.0028	0.0030	11.5
May	72.3	95	32	85	57	49.4	29	18	13	16	20	0.0034	0.0037	0.0033	0.0032	0.0034	9.9
Jun	79.7	99	60	91	67	59.3	46	33	21	33	35	0.0080	0.0085	0.0070	0.0078	0.0079	9.7
Jul	82.9	97	67	93	72	65.3	56	44	29	36	43	0.0113	0.0123	0.0106	0.0108	0.0113	8.9
Aug	77.8	98	62	89	68	62.7	58	46	34	45	47	0.0102	0.0113	0.0101	0.0105	0.0106	8.2
Sep	73.1	92	51	84	62	59.6	62	50	35	45	50	0.0091	0.0103	0.0093	0.0094	0.0095	6.9
Oct	64.3	89	28	78	50	48.7	45	33	21	34	35	0.0046	0.0056	0.0049	0.0051	0.0050	6.5
Nov	53.1	76	30	65	41	41.5	48	40	31	40	41	0.0034	0.0041	0.0042	0.0039	0.0038	7.3
Dec	41.1	69	18	52	32	34.8	72	59	45	61	61	0.0033	0.0035	0.0034	0.0036	0.0034	8.4
Year	63.6	99	10	76	50	48.2	46	36	25	34	37	0.0052	0.0059	0.0053	0.0054	0.0055	8.6

EL PASO, TEXAS
WBAN 23044
TABLE 0:

TRY Data (1967)

Latitude 31.80 N
Longitude 106.40 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY												24 HOUR SUMMARY																
	7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**				10PM-6AM**				HEATING		COOLING		
	Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg		Hrs		Deg		
	Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Below		Hrs		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*
100	0	463	0		0	348	0		0	284	0		0	292	0		0	374	0		0	1423	0		8760	3185	0	0	
99	0	452	0		0	337	0		1	273	0		0	281	0		0	363	0		0	1391	0		8759	3097	1	0	
98	0	441	0		0	326	0		5	262	0		1	270	0		0	352	0		0	1358	0		8753	3009	7	0	
97	0	430	0		1	315	0		10	252	0		7	259	0		0	341	0		0	1325	0		8741	2922	19	0	
96	0	419	0		1	304	0		16	241	0		18	249	0		0	330	0		0	1292	0		8724	2835	36	0	
95	0	408	0		1	293	0		30	230	0		31	238	0		0	319	0		0	1259	0		8697	2747	63	1	
94	0	397	0		1	282	0		46	219	1		49	227	1		2	308	0		0	1226	0		8660	2661	100	2	
93	0	386	0		5	271	0		67	209	1		72	217	1		5	297	0		0	1193	0		8610	2574	150	3	
92	0	375	0		11	261	0		93	199	2		104	207	2		8	286	0		0	1161	0		8542	2488	218	5	
91	0	364	0		18	250	0		124	189	3		138	197	3		12	276	0		0	1128	0		8466	2403	294	7	
90	0	353	0		31	239	1		158	179	5		161	188	5		23	265	0		0	1095	0		8385	2319	375	11	
89	0	342	0		47	229	1		186	170	6		183	178	7		38	254	1		1	1062	0		8303	2236	457	15	
88	0	331	0		63	218	1		219	161	8		210	169	9		52	244	1		3	1029	0		8212	2153	548	20	
87	1	320	0		86	208	2		253	153	11		241	161	11		72	233	2		5	996	0		8100	2071	660	26	
86	1	309	0		112	198	3		283	144	13		273	152	13		95	223	3		10	964	0		7983	1991	777	33	
85	5	298	0		139	188	4		314	136	16		303	144	16		118	213	4		19	931	0		7861	1912	899	41	
84	13	288	0		171	179	6		346	129	20		331	137	20		141	204	5		33	898	1		7724	1834	1036	51	
83	21	277	0		205	170	8		378	121	23		364	129	23		164	194	6		53	866	1		7573	1757	1187	62	
82	31	266	1		241	161	10		408	114	27		392	122	27		185	185	8		79	834	2		7422	1682	1338	75	
81	46	256	1		275	153	13		436	108	32		415	115	31		209	176	10		109	802	3		7267	1609	1493	89	
80	64	245	1		308	145	16		468	101	36		447	108	35		242	167	12		142	770	4		7086	1537	1674	104	
79	85	235	2		340	137	19		497	95	41		479	102	40		274	159	15		181	739	5		6902	1467	1858	122	
78	104	225	3		372	130	22		521	89	46		504	96	45		302	151	18		229	708	7		6726	1399	2034	142	
77	130	215	4		400	122	26		549	84	51		531	90	50		329	143	21		275	678	10		6544	1333	2216	163	
76	159	206	6		422	116	30		579	78	57		558	85	55		357	136	24		325	648	13		6359	1268	2401	186	
75	182	196	7		445	109	35		604	73	63		585	80	61		386	128	28		388	619	16		6168	1205	2592	211	
74	207	187	9		475	103	39		628	69	69		609	75	67		414	121	32		458	590	21		5967	1145	2793	238	
73	236	179	12		503	97	44		650	64	75		633	70	73		438	115	36		531	562	26		5766	1086	2994	267	
72	270	170	14		529	91	49		674	60	82		658	65	80		462	108	41		614	535	31		5550	1029	3210	298	
71	305	162	17		557	85	55		699	56	89		679	61	86		486	102	46		705	509	38		5328	975	3432	331	
70	333	154	20		584	80	61		715	52	96		698	57	93		515	96	51		798	483	45		5116	923	3644	366	
69	359	147	24		608	75	66		731	48	103		713	53	100		540	91	56		885	459	54		4921	873	3839	404	
68	392	140	27		631	70	73		748	45	111		727	49	108		558	85	62		976	435	63		4726	824	4034	443	
67	418	133	32		649	66	79		763	41	118		747	46	115		582	80	67		1077	413	73		4522	778	4238	484	
66	435	126	36		665	61	86		778	38	126		766	42	123		603	75	73		1172	391	85		4339	734	4421	528	
65	456	120	40		682	57	92		797	35	134		778	39	130		624	70	79		1262	371	97		4159	691	4601	573	
64	480	113	45		700	53	99		813	32	142		791	36	138		651	65	86		1344	351	110		3980	651	4780	620	
63	499	107	50		715	49	106		823	29	150		803	33	146		673	61	92		1424	332	124		3821	612	4939	668	
62	516	101	55		730	46	114		838	26	158		822	30	154		690	57	99		1489	313	138		3674	574	5086	719	
61	536	96	60		750	42	121		854	24	167		841	28	163		704	53	106		1546	296	154		3528	538	5232	770	
60	559	90	66		771	39	129		870	22	175		858	25	171		720	49	113		1604	279	169		3377	504	5383	823	
59	580	85	71		789	36	136		882	20	184		874	23	180		735	45	120		1657	262	186		3241	471	5519	878	
58	598	80	77		804	33	144		896	17	193		887	21	188		750	42	128		1709	246	202		3113	439	5647	934	
57	614	75	83		820	30	153		911	16	202		898	19	197		768	39	136		1762	231	220		2985	408	5775	991	
56	629	70	90		832	27	161		923	14	211		908	17	206		789	35	143		1817	216	238		2861	379	5899	1049	
55	648	66	96		844	25	169		936	12	221		923	15	216		809	32	151		1874	201	256		2724	351	6036	1109	

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

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

EL PASO, TEXAS
WBAN 23044
TABLE D:

TRY Data (1967)

Latitude 31.80 N
Longitude 106.40 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																24 HOUR SUMMARY					
	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		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	Deg 100s*	Above Base	Deg 100s*						
54	668	61	102	859	22	178	950	11	230	938	13	225	824	30	159	1934	187	275	2585	325	6175	1170
53	689	57	109	872	20	186	966	9	240	949	12	234	839	27	168	1994	174	295	2450	300	6310	1232
52	705	53	116	883	18	195	979	8	249	960	11	244	854	25	176	2055	162	315	2323	276	6437	1296
51	718	49	123	896	16	204	994	7	259	970	9	254	864	22	185	2110	150	336	2207	253	6553	136
50	735	46	131	913	14	213	1010	6	269	983	8	263	874	20	194	2158	138	357	2086	232	6674	1427
49	750	42	138	926	12	222	1021	5	279	995	7	273	886	18	202	2215	127	379	1965	211	6795	1494
48	761	39	146	939	10	232	1027	5	290	1006	6	283	898	16	211	2267	117	402	1861	192	6899	1563
47	774	36	153	960	9	241	1034	4	300	1017	5	293	910	14	220	2312	107	424	1752	174	7008	1632
46	790	32	161	978	8	251	1040	3	310	1028	4	304	924	12	229	2354	97	448	1643	157	7117	1703
45	805	30	169	990	6	261	1047	3	321	1034	4	314	941	10	239	2397	88	472	1543	141	7217	1775
44	817	27	177	1002	5	271	1056	2	331	1041	3	324	959	9	248	2447	80	496	1436	126	7324	1847
43	831	24	185	1014	5	281	1063	2	342	1049	3	335	973	8	258	2491	71	520	1337	113	7423	1921
42	848	21	194	1023	4	291	1067	2	353	1054	2	345	983	7	268	2541	64	546	1242	100	7518	1996
41	863	19	202	1030	3	301	1070	1	363	1059	2	356	994	6	278	2594	57	571	1149	88	7611	2072
40	882	17	211	1039	3	312	1073	1	374	1064	2	366	1008	5	288	2644	50	597	1048	77	7712	2148
39	904	15	220	1051	2	322	1076	1	385	1068	1	377	1019	4	298	2691	44	624	949	67	7811	2226
38	920	13	229	1058	2	333	1078	1	395	1071	1	388	1030	3	308	2737	38	651	865	58	7895	2304
37	932	11	238	1061	1	343	1080	1	406	1073	1	398	1040	2	318	2790	33	679	785	49	7977	2384
36	946	10	248	1067	1	354	1082	1	417	1077	1	409	1047	2	329	2840	28	707	699	42	8061	2464
35	963	8	257	1071	1	364	1083	0	428	1080	1	420	1055	2	339	2894	24	736	612	35	8148	2545
34	981	7	267	1074	1	375	1085	0	439	1081	0	431	1061	1	350	2944	20	765	532	30	8228	2627
33	998	6	277	1078	0	386	1087	0	450	1083	0	442	1067	1	361	2983	17	795	462	25	8298	2709
32	1009	5	287	1082	0	397	1088	0	460	1086	0	453	1073	1	371	3019	14	825	402	20	8358	2793
31	1018	4	297	1087	0	408	1088	0	471	1089	0	463	1075	0	382	3048	12	855	353	17	8407	2877
30	1030	4	307	1090	0	418	1091	0	482	1092	0	474	1081	0	393	3082	10	886	293	13	8467	2961
29	1039	3	318	1092	0	429	1094	0	493	1094	0	485	1087	0	404	3117	8	917	236	11	8524	3046
28	1043	2	328	1094	0	440	1095	0	504	1095	0	496	1090	0	415	3141	6	948	202	9	8558	3131
27	1048	2	339	1095	0	451	1095	0	515	1095	0	507	1092	0	425	3163	5	979	171	7	8589	3217
26	1056	2	349	1095	0	462	1095	0	526	1095	0	518	1093	0	436	3185	4	1011	139	5	8621	3303
25	1064	1	360	1095	0	473	1095	0	537	1095	0	529	1094	0	447	3208	3	1043	109	4	8651	3389
24	1069	1	370	1095	0	484	1095	0	548	1095	0	540	1094	0	458	3229	2	1075	81	3	8679	3476
23	1073	1	381	1095	0	495	1095	0	559	1095	0	551	1095	0	469	3242	2	1108	64	2	8696	3563
22	1078	0	392	1095	0	506	1095	0	570	1095	0	562	1095	0	480	3249	1	1140	52	2	8708	3650
21	1082	0	403	1095	0	517	1095	0	581	1095	0	573	1095	0	491	3256	1	1173	42	1	8718	3737
20	1084	0	414	1095	0	528	1095	0	592	1095	0	584	1095	0	502	3263	1	1205	32	1	8728	3824
19	1086	0	424	1095	0	539	1095	0	603	1095	0	595	1095	0	513	3269	1	1238	24	1	8736	3912
18	1089	0	435	1095	0	550	1095	0	614	1095	0	606	1095	0	524	3272	0	1271	18	0	8742	3999
17	1092	0	446	1095	0	561	1095	0	625	1095	0	617	1095	0	535	3276	0	1303	11	0	8749	4087
16	1094	0	457	1095	0	572	1095	0	636	1095	0	628	1095	0	546	3277	0	1336	8	0	8752	4174
15	1094	0	468	1095	0	583	1095	0	647	1095	0	639	1095	0	557	3278	0	1369	7	0	8753	4262
14	1095	0	479	1095	0	594	1095	0	657	1095	0	649	1095	0	568	3279	0	1402	5	0	8755	4349
13	1095	0	490	1095	0	605	1095	0	668	1095	0	660	1095	0	579	3281	0	1435	3	0	8757	4437
12	1095	0	501	1095	0	616	1095	0	679	1095	0	671	1095	0	590	3282	0	1467	2	0	8758	4524
11	1095	0	512	1095	0	626	1095	0	690	1095	0	682	1095	0	601	3283	0	1500	1	0	8759	4612
10	1095	0	523	1095	0	637	1095	0	701	1095	0	693	1095	0	612	3284	0	1533	0	0	8760	4699
9	1095	0	534	1095	0	648	1095	0	712	1095	0	704	1095	0	623	3285	0	1566	0	0	8760	4787

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

EL PASO, TEXAS
WBAN 23044
TABLE E:

TRY Data (1967)
Annual COOLING Wet Bulb Degree Hour Summary

Latitude 31.80 N
Longitude 106.40 E

Wet Bulb Temperature (F) Base:	50	53	56	59	62	65	68	71	74	77	80
Annual Wet Bulb hours ABOVE base:	4159	3456	2939	2412	1803	917	232	3	0	0	0
Annual Wet Bulb Cooling deg-hrs:	43424.	31726.	21880.	13578.	6972.	2362.	375.	3.	0.	0.	0.

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

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **												COOLING HUMIDITY RATIO HOURS **												Maintained Indoor Humidity Ratio*
	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	35	35	34	33	33	31	30	27	22	17	11	.001		
.002	0	0	1	1	1	1	1	2	2	2	2	28	28	28	27	27	26	25	23	19	14	10	.002		
.003	1	1	1	2	2	3	3	4	4	5	5	22	22	22	22	22	22	21	19	16	12	8	.003		
.004	1	1	2	3	4	5	6	7	8	8	9	18	18	18	18	18	18	17	16	14	10	7	.004		
.005	1	2	3	5	6	8	9	10	12	13	14	14	14	14	14	14	14	14	13	11	8	6	.005		
.006	1	3	4	6	8	10	12	14	16	17	19	11	11	11	11	11	11	11	10	9	7	4	.006		
.007	2	3	5	8	10	13	15	18	20	22	24	8	8	8	8	8	8	8	8	7	5	3	.007		
.008	2	4	6	9	12	16	19	22	25	27	30	6	6	6	6	6	6	6	6	5	4	2	.008		
.009	2	4	7	11	14	18	22	26	29	33	35	4	4	4	4	4	4	4	3	3	2	1	.009		
.010	2	5	8	12	16	21	25	30	34	38	41	2	2	2	2	2	2	2	2	2	1	1	.010		
.011	3	5	9	14	18	23	29	34	39	44	48	1	1	1	1	1	1	1	1	1	1	0	.011		
.012	3	6	10	15	20	26	32	38	44	50	55	0	0	0	0	0	0	0	0	0	0	0	.012		
.013	3	7	11	17	22	29	35	42	49	56	61	0	0	0	0	0	0	0	0	0	0	0	.013		
.014	3	7	12	18	24	31	38	46	54	62	68	0	0	0	0	0	0	0	0	0	0	0	.014		
.015	4	8	13	20	26	34	42	50	59	68	75	0	0	0	0	0	0	0	0	0	0	0	.015		
.016	4	8	14	21	28	37	45	54	64	74	82	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	4	9	15	23	30	39	48	58	69	80	89	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	4	9	16	24	32	42	52	62	74	86	96	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	21	29	38	39	36	32	46	37	25	23	35	27	33
VERTICAL													
NORTH	100	100	100	97	90	83	91	97	100	100	100	100	94
WEST	37	46	61	60	59	54	65	62	45	41	49	41	53
SOUTH	20	31	48	65	76	82	85	67	41	30	34	24	46
EAST	36	44	50	54	55	54	68	56	43	41	50	43	51
% Possible Sun	78	82	85	87	89	89	79	80	82	84	83	78	83

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

EL PASO, TEXAS
WBAN 23044
TABLE H:

TRY Data (1967)

Latitude 31.80 N
Longitude 106.40 E

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

Month	S	Under Clear Sky Assumption*								N	S-45 ***	horiz	Corrected For Cloud Cover**								N	S-45 ***	horiz	Obs ***
		SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	S				SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW					
Jan	2001	1865	1534	1234	813	459	255	196	195	2250	1304	1632	1527	1265	1022	689	413	257	209	208	1807	1079	1125	
Feb	1923	1616	1582	1362	993	637	381	249	234	2405	1616	1329	1263	1109	961	719	495	342	267	259	1586	1116	1480	
Mar	1602	1578	1505	1423	1170	861	582	374	297	2439	2016	1287	1314	1260	1191	1004	786	597	461	411	1741	1508	1909	
Apr	1134	1269	1364	1429	1328	1107	844	588	393	2299	2346	1044	1148	1208	1246	1170	1014	834	658	522	1727	1812	2364	
May	809	1014	1210	1357	1375	1248	1028	773	550	2117	2528	877	1017	1144	1239	1242	1142	981	799	641	1742	2054	2601	
Jun	691	906	1142	1330	1401	1326	1123	884	674	2023	2598	726	875	1036	1165	1210	1150	1001	829	678	1647	2070	2683	
Jul	741	950	1166	1333	1380	1288	1077	836	625	2045	2549	796	888	984	1059	1072	1011	893	765	665	1495	1809	2450	
Aug	980	1143	1277	1378	1328	1156	919	671	463	2171	2377	922	1026	1095	1144	1092	962	801	639	509	1640	1781	2285	
Sep	1391	1428	1421	1400	1212	947	680	459	341	2316	2091	1206	1227	1207	1175	1017	809	608	447	365	1873	1700	1987	
Oct	1770	1677	1500	1335	1015	684	435	289	264	2353	1720	1465	1396	1253	1117	863	606	418	308	288	1894	1423	1639	
Nov	1958	1825	1524	1256	856	498	291	212	211	2269	1384	1166	1089	928	782	565	379	273	228	227	1307	879	1244	
Dec	1993	1856	1512	1193	771	415	235	187	186	2182	1214	1243	1157	951	758	508	305	204	177	176	1339	790	1031	
Year	1413	1442	1393	1335	1137	887	656	478	370	2238	1980	1141	1161	1120	1072	930	757	602	483	413	1650	1504	1900	

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	S	Under Clear Sky*								S	Corrected For Cloud Cover**								N
		SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	SSE/ SSW		SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW			
Jan	1717	1570	1282	1028	658	347	190	160	159	1395	1283	1054	848	558	318	196	170	170	
Feb	1607	1512	1318	1140	815	498	282	196	191	1108	1049	921	799	589	390	263	215	211	
Mar	1246	1283	1244	1186	967	694	447	283	241	1022	1075	1040	988	827	635	470	362	334	
Apr	793	974	1106	1180	1097	908	669	446	307	778	900	982	1025	963	830	667	515	416	
May	538	730	955	1116	1135	1028	825	599	404	641	768	913	1017	1021	937	791	630	496	
Jun	469	635	886	1088	1154	1091	909	690	489	531	647	816	952	994	944	811	654	514	
Jul	500	675	912	1092	1139	1058	870	652	458	600	679	783	863	877	825	723	610	521	
Aug	673	859	1028	1135	1099	950	734	516	355	680	797	885	938	897	786	641	503	407	
Sep	1047	1144	1170	1163	1002	769	533	350	277	925	989	993	973	839	656	479	347	297	
Oct	1454	1388	1247	1112	832	542	328	226	215	1202	1154	1038	927	706	483	322	244	235	
Nov	1669	1532	1274	1047	693	386	214	173	172	983	907	772	647	458	301	212	186	186	
Dec	1713	1566	1263	995	618	315	174	152	152	1062	971	791	628	408	236	158	144	144	
Year	1116	1154	1139	1106	934	716	516	371	286	910	935	916	884	762	613	479	383	328	

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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FRESNO, CALIFORNIA
WBAN 93193
TABLE A:

TRY Data (1951)

Latitude 36.80 N
Longitude 119.70 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 Hour of Day								Month Total	MCWB Temp(F)	HEATING* hours degree below hours		COOLING* hours degree above hours	
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Jan														
60 to 64	0	0	0	2	6	0	0	0	8	51.3	744	13141	0	0
55 to 59	0	0	0	10	27	9	3	0	49	51.2	723	9460	21	39
50 to 54	7	5	9	31	35	34	11	8	140	48.6	651	5999	93	298
45 to 49	19	23	27	29	13	28	29	21	189	45.5	459	3175	285	1194
40 to 44	28	19	21	12	11	19	34	36	180	41.0	292	1296	452	3035
35 to 39	30	30	27	9	1	3	15	24	139	37.1	100	299	644	5758
30 to 34	8	16	9	0	0	0	1	4	38	31.9	23	32	721	9211
25 to 29	1	0	0	0	0	0	0	0	1	29.0	0	0	744	12899
Feb														
70 to 74	0	0	0	0	4	0	0	0	4	60.3	672	15905	0	0
65 to 69	0	0	0	3	15	3	0	0	21	56.1	662	12561	10	16
60 to 64	0	0	0	17	23	21	0	0	61	53.7	621	9328	51	143
55 to 59	3	2	5	21	22	23	10	5	91	51.7	556	6370	116	545
50 to 54	10	4	19	30	17	24	25	15	144	48.2	444	3843	228	1378
45 to 49	21	24	22	12	3	11	27	22	142	45.1	284	2001	388	2896
40 to 44	21	11	19	1	0	2	18	27	99	40.5	172	886	500	5141
35 to 39	18	18	12	0	0	0	4	13	65	36.4	85	269	587	7884
30 to 34	11	24	7	0	0	0	0	2	44	32.6	14	20	658	10995
25 to 29	0	1	0	0	0	0	0	0	1	29.0	0	0	672	14335
Mar														
80 to 84	0	0	0	0	3	0	0	0	3	59.3	744	21839	0	0
75 to 79	0	0	0	3	20	9	0	0	32	58.3	730	18137	14	18
70 to 74	0	0	0	16	16	16	1	0	49	56.3	686	14582	58	183
65 to 69	0	0	1	18	17	20	2	0	58	54.7	641	11261	103	582
60 to 64	0	0	11	16	14	17	14	1	73	52.7	575	8224	169	1265
55 to 59	3	3	16	20	10	12	25	8	97	50.4	497	5547	247	2308
50 to 54	6	4	18	7	4	9	25	25	98	47.6	392	3321	352	3802
45 to 49	36	27	22	10	8	5	18	34	160	44.0	292	1595	452	5796
40 to 44	29	30	15	3	1	4	5	17	104	40.2	140	592	604	8513
35 to 39	14	15	7	0	0	1	3	6	46	36.3	44	163	700	11804
30 to 34	4	11	3	0	0	0	0	2	20	31.5	13	26	731	15387
25 to 29	1	3	0	0	0	0	0	0	4	27.8	0	0	744	19081

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

FRESNO, CALIFORNIA
WBAN 93193
TABLE A:

TRY Data (1951)

Latitude 36.80 N
Longitude 119.70 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	1	0	0	3	65.3	720	22919	0	0	
85 to 89	0	0	0	1	11	9	0	0	21	65.2	713	19329	7	10	
80 to 84	0	0	0	8	8	9	0	0	25	63.7	684	15833	36	114	
75 to 79	0	0	1	8	10	12	5	0	36	61.4	662	12462	58	343	
70 to 74	0	0	6	14	30	23	9	0	82	58.3	609	9267	111	748	
65 to 69	0	0	6	23	11	15	16	5	76	56.6	523	6452	197	1533	
60 to 64	4	0	14	22	11	14	30	17	112	54.0	435	4040	285	2721	
55 to 59	22	11	27	9	4	2	18	27	120	52.0	329	2145	391	4426	
50 to 54	30	33	26	4	2	2	6	31	134	49.3	195	852	525	6733	
45 to 49	26	35	10	1	1	3	4	6	86	46.1	71	203	649	9684	
40 to 44	7	8	0	0	0	0	2	4	21	41.1	14	31	706	13112	
35 to 39	1	3	0	0	0	0	0	0	4	38.0	0	0	720	16681	
May															
100 to 104	0	0	0	0	3	2	0	0	5	71.4	744	25412	0	0	
95 to 99	0	0	0	2	5	4	0	0	11	68.9	739	21713	5	21	
90 to 94	0	0	0	4	13	10	2	0	29	66.2	721	18068	23	96	
85 to 89	0	0	1	9	19	25	2	0	56	64.7	680	14556	64	304	
80 to 84	0	0	4	17	16	12	11	1	61	62.8	622	11310	122	778	
75 to 79	0	1	10	18	7	10	17	4	67	60.7	558	8366	186	1554	
70 to 74	6	4	14	13	18	14	19	9	97	58.2	485	5751	259	2659	
65 to 69	3	2	16	15	9	9	15	24	93	56.0	383	3590	361	4218	
60 to 64	22	15	22	12	3	6	14	23	117	54.3	283	1914	461	6262	
55 to 59	30	23	17	3	0	1	12	17	103	52.1	164	802	580	8870	
50 to 54	17	31	8	0	0	0	1	14	71	49.6	60	228	684	12016	
45 to 49	14	13	1	0	0	0	0	1	29	45.7	19	40	725	15548	
40 to 44	1	4	0	0	0	0	0	0	5	43.2	0	0	744	19228	
Jun															
95 to 99	0	0	0	0	16	14	0	0	30	67.9	714	16594	6	4	
90 to 94	0	0	0	7	29	27	1	0	64	67.1	668	13128	52	138	
85 to 89	0	0	0	23	22	23	13	0	81	65.1	597	9964	123	574	
80 to 84	0	0	6	26	14	12	28	0	86	63.5	511	7195	209	1405	
75 to 79	0	0	20	20	8	13	22	15	98	61.9	417	4867	303	2677	
70 to 74	8	3	23	11	1	1	17	29	93	60.2	325	3008	395	4418	
65 to 69	18	12	24	3	0	0	6	25	88	58.0	234	1608	486	6618	
60 to 64	39	32	14	0	0	0	3	12	100	55.8	139	663	581	9273	
55 to 59	13	28	3	0	0	0	0	8	52	52.0	53	206	667	12416	
50 to 54	12	13	0	0	0	0	0	1	26	48.5	17	34	703	15844	
45 to 49	0	2	0	0	0	0	0	0	2	45.5	0	0	720	19410	

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

FRESNO, CALIFORNIA

WBAN 93193

TABLE A:

TRY Data (1951)

Latitude 36.80 N

Longitude 119.70 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															
105 to 109	0	0	0	0	2	2	0	0	4	74.8	744	20957	0	0	
100 to 104	0	0	0	1	15	11	0	0	27	70.9	736	17253	8	16	
95 to 99	0	0	0	6	34	30	3	0	73	69.2	684	13683	60	166	
90 to 94	0	0	0	18	27	32	8	0	85	68.1	606	10443	138	646	
85 to 89	0	0	5	30	13	15	27	4	94	66.1	520	7632	224	1555	
80 to 84	2	0	16	25	2	3	28	12	88	64.6	428	5272	316	2915	
75 to 79	5	4	21	12	0	0	19	23	84	62.8	344	3355	400	4718	
70 to 74	14	8	27	1	0	0	8	28	86	60.7	257	1869	487	6952	
65 to 69	34	19	17	0	0	0	0	21	91	59.0	167	820	577	9623	
60 to 64	29	42	6	0	0	0	0	5	82	56.4	70	223	674	12746	
55 to 59	8	17	1	0	0	0	0	0	26	53.6	15	29	729	16272	
50 to 54	1	3	0	0	0	0	0	0	4	51.3	1	1	743	19964	
Aug															
100 to 104	0	0	0	0	18	13	0	0	31	71.6	739	18481	5	3	
95 to 99	0	0	0	8	24	19	0	0	51	69.0	700	14883	44	125	
90 to 94	0	0	0	16	30	30	3	0	79	67.5	626	11544	118	506	
85 to 89	0	0	3	29	12	20	14	0	78	66.5	547	8603	197	1285	
80 to 84	0	0	12	22	7	8	32	7	88	65.2	473	6045	271	2447	
75 to 79	2	0	20	13	2	3	26	20	86	63.2	377	3905	367	4027	
70 to 74	13	5	27	5	0	0	17	30	97	61.6	290	2216	454	6058	
65 to 69	26	19	19	0	0	0	1	29	94	59.8	190	1001	554	8563	
60 to 64	43	40	11	0	0	0	0	7	101	57.0	99	277	645	11559	
55 to 59	9	28	1	0	0	0	0	0	38	54.4	17	18	727	15020	
50 to 54	0	1	0	0	0	0	0	0	1	50.0	0	0	744	18722	
Sep															
100 to 104	0	0	0	0	7	1	0	0	8	71.1	717	20465	3	2	
95 to 99	0	0	0	2	17	16	0	0	35	70.2	701	16904	19	41	
90 to 94	0	0	0	9	30	17	0	0	56	68.5	661	13495	59	232	
85 to 89	0	0	1	23	25	28	2	0	79	66.9	596	10360	124	697	
80 to 84	0	0	4	26	8	18	18	0	74	65.3	517	7593	203	1530	
75 to 79	0	0	16	20	3	7	33	4	83	63.8	434	5213	286	2750	
70 to 74	2	0	21	9	0	2	24	28	86	61.7	354	3248	366	4385	
65 to 69	25	14	20	1	0	1	10	35	106	60.0	261	1703	459	6440	
60 to 64	33	26	19	0	0	0	3	18	99	57.3	147	676	573	9013	
55 to 59	27	36	8	0	0	0	0	5	76	54.1	62	149	658	12086	
50 to 54	3	14	1	0	0	0	0	0	18	51.3	5	5	715	15542	

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

FRESNO, CALIFORNIA
WBAN 93193
TABLE A:

TRY Data (1951)

Latitude 36.80 N
Longitude 119.70 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): Fourth Quarter
(5 Degrees(F)/3Hr 8Ins)

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															
95 to 99	0	0	0	0	5	2	0	0	7	63.1	743	26420	1	1	
90 to 94	0	0	0	2	3	0	0	0	5	61.8	736	22722	8	23	
85 to 89	0	0	0	3	6	6	0	0	15	61.1	728	19057	16	78	
80 to 84	0	0	0	5	19	5	0	0	29	60.8	709	15459	35	200	
75 to 79	0	0	2	19	34	21	1	0	77	59.1	656	12014	88	475	
70 to 74	0	0	1	29	17	26	4	0	77	57.2	580	8925	164	1106	
65 to 69	0	0	15	21	4	17	26	5	88	55.6	500	6212	244	2113	
60 to 64	5	3	19	9	5	11	24	15	91	54.1	405	3949	339	3570	
55 to 59	18	5	23	5	0	5	25	28	109	51.4	309	2151	435	5492	
50 to 54	33	27	20	0	0	0	13	30	123	48.3	194	873	550	7934	
45 to 49	31	40	11	0	0	0	0	14	96	44.7	79	194	665	10975	
40 to 44	6	16	2	0	0	0	0	1	25	41.1	8	17	736	14518	
35 to 39	0	2	0	0	0	0	0	0	2	35.0	1	1	743	18222	
Nov															
80 to 84	0	0	0	1	11	0	0	0	12	61.2	717	20729	3	2	
75 to 79	0	0	0	6	8	4	0	0	18	60.1	701	17177	19	50	
70 to 74	0	0	0	9	14	7	0	0	30	57.8	679	13725	41	198	
65 to 69	0	0	2	15	23	16	0	0	56	55.2	640	10414	80	487	
60 to 64	0	0	5	19	11	18	10	0	63	53.6	578	7356	142	1029	
55 to 59	6	3	14	21	17	21	28	8	118	50.5	504	4626	216	1899	
50 to 54	16	13	19	18	6	18	24	35	149	49.3	366	2427	354	3300	
45 to 49	33	32	25	1	0	6	21	23	141	45.6	207	1000	513	5473	
40 to 44	26	22	16	0	0	0	7	23	94	41.4	90	265	630	8338	
35 to 39	9	17	8	0	0	0	0	1	35	37.0	13	30	707	11703	
30 to 34	0	3	1	0	0	0	0	0	4	33.0	1	1	719	15274	
Dec															
65 to 69	0	0	0	1	6	0	0	0	7	52.6	744	17510	0	0	
60 to 64	0	0	0	3	2	3	0	0	8	53.1	734	13817	10	27	
55 to 59	1	3	0	6	15	9	2	0	36	51.3	723	10169	21	99	
50 to 54	7	8	13	30	43	23	15	10	149	48.0	652	6682	92	332	
45 to 49	22	14	21	40	25	30	17	22	191	44.4	465	3845	279	1215	
40 to 44	18	27	26	10	2	22	25	11	141	40.9	286	1976	458	3066	
35 to 39	10	5	13	3	0	6	25	24	86	36.4	171	869	573	5679	
30 to 34	26	21	15	0	0	0	9	23	94	31.8	82	213	662	8743	
25 to 29	9	15	5	0	0	0	0	3	32	27.9	9	9	735	12259	

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

FRESNO, CALIFORNIA
WBAN 93193
TABLE B:

TRY Data (1951)

Latitude 36.80 N
Longitude 119.70 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
105 to 109	0	0	0	0	2	2	0	0	4	0.0	0.0	0.0	0.0	75.0	74.5	0.0	0.0	74.8
100 to 104	0	0	0	1	43	27	0	0	71	0.0	0.0	0.0	73.0	71.2	71.3	0.0	0.0	71.3
95 to 99	0	0	0	18	101	85	3	0	207	0.0	0.0	0.0	71.2	68.7	68.6	70.3	0.0	68.9
90 to 94	0	0	0	56	134	117	14	0	321	0.0	0.0	0.0	69.0	67.4	66.9	68.8	0.0	67.5
85 to 89	0	0	10	118	108	126	58	4	424	0.0	0.0	68.9	67.0	64.8	64.9	66.2	66.5	65.7
80 to 84	2	0	42	130	88	67	117	20	466	65.5	0.0	66.4	64.5	62.2	62.4	64.5	65.0	64.0
75 to 79	7	5	90	119	92	79	123	66	581	62.6	64.8	63.5	61.7	59.2	59.8	62.5	63.0	61.7
70 to 74	43	20	119	107	100	89	99	124	701	61.5	61.5	61.1	58.2	56.9	57.0	59.6	61.5	59.4
65 to 69	106	66	120	100	85	81	76	144	778	59.8	59.8	58.4	55.4	54.6	55.1	56.5	58.6	57.4
60 to 64	175	158	121	100	75	90	98	98	915	56.7	56.9	55.1	52.8	52.8	53.1	53.9	55.5	55.0
55 to 59	140	159	115	95	95	82	123	106	915	53.0	53.3	51.4	50.7	49.8	51.4	51.4	51.9	51.8
50 to 54	142	156	133	120	107	110	120	169	1057	49.0	49.6	49.1	47.8	46.8	47.8	49.2	48.9	48.6
45 to 49	202	210	139	93	50	83	116	143	1036	45.6	45.5	45.3	43.3	43.1	44.2	44.8	45.6	45.0
40 to 44	136	137	99	26	14	47	91	119	669	41.0	41.1	40.6	39.9	40.1	40.6	41.1	40.8	40.9
35 to 39	82	90	67	12	1	10	47	68	377	36.6	37.1	36.4	36.7	36.0	37.1	36.4	36.9	36.7
30 to 34	49	75	35	0	0	0	10	31	200	32.1	31.9	31.9	0.0	0.0	0.0	32.5	32.0	32.0
25 to 29	11	19	5	0	0	0	0	3	38	28.3	27.7	28.0	0.0	0.0	0.0	0.0	28.7	28.0

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	4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM		Day
				Max	Min													
Jan	44.8	62	29	53	38	43.1	96	84	77	93	89	0.0053	0.0056	0.0060	0.0058	0.0056	5.9	
Feb	48.8	71	29	61	39	45.5	96	73	57	87	81	0.0055	0.0062	0.0061	0.0064	0.0059	6.4	
Mar	53.1	82	28	67	40	47.1	90	57	44	72	69	0.0052	0.0058	0.0057	0.0062	0.0057	6.8	
Apr	60.7	90	38	74	48	53.2	89	58	42	64	67	0.0068	0.0074	0.0070	0.0075	0.0072	6.5	
May	68.3	102	43	83	54	56.7	81	48	29	47	54	0.0074	0.0079	0.0067	0.0075	0.0075	8.8	
Jun	74.5	99	48	90	58	60.3	74	43	26	41	48	0.0080	0.0088	0.0079	0.0084	0.0083	8.2	
Jul	79.3	107	52	97	62	63.2	70	43	23	38	45	0.0086	0.0101	0.0087	0.0091	0.0090	7.5	
Aug	77.7	103	54	95	61	63.0	75	44	25	42	49	0.0090	0.0100	0.0087	0.0091	0.0093	6.4	
Sep	74.1	103	51	92	58	62.0	81	48	29	50	56	0.0088	0.0100	0.0092	0.0094	0.0094	5.8	
Oct	62.0	98	37	79	47	52.6	81	48	33	59	59	0.0061	0.0067	0.0062	0.0067	0.0065	5.7	
Nov	53.7	83	32	68	43	48.7	90	66	54	78	75	0.0057	0.0066	0.0067	0.0065	0.0063	5.3	
Dec	44.0	66	26	53	36	41.7	94	80	70	91	85	0.0048	0.0055	0.0056	0.0053	0.0052	6.2	
Year	61.8	107	26	76	49	53.1	85	58	42	63	65	0.0068	0.0075	0.0070	0.0073	0.0072	6.6	

FRESNO, CALIFORNIA
WBAN 93193
TABLE D:

TRY Data (1951)

Latitude 36.80 N
Longitude 119.70 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	7-9AM**				10-12AM**				1-3PM**				BY TIME OF DAY 4-6PM**				7-9PM**				10PM-6AM**				24 HOUR SUMMARY			
	Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		HEATING		COOLING	
	Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Below Hrs		Above Hrs		Below Hrs		Above Hrs	
	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	100s*	Base	100s*	Base	100s*	Base	100s*
108	0	550	0	0	431	0	0	364	0	0	397	0	0	497	0	0	1807	0	8760	4046	0	0	8759	3958	1	0		
107	0	539	0	0	420	0	0	353	0	0	386	0	0	486	0	0	1775	0	8758	3871	2	0	8756	3783	4	0		
106	0	528	0	0	409	0	0	342	0	1	375	0	0	475	0	0	1742	0	8756	3695	4	0	8750	3608	10	0		
105	0	517	0	0	398	0	1	331	0	2	364	0	0	464	0	0	1709	0	8734	3520	26	0	8717	3433	43	1		
104	0	506	0	0	387	0	2	320	0	2	353	0	0	453	0	0	1676	0	8697	3346	63	1	8672	3259	88	2		
103	0	495	0	0	376	0	5	309	0	4	342	0	0	442	0	0	1643	0	8642	3173	118	5	8607	3086	153	4		
102	0	484	0	0	365	0	14	298	0	11	331	0	0	431	0	0	1610	0	8563	3001	197	6	8507	2915	253	8		
101	0	474	0	0	355	0	24	287	0	18	320	0	0	420	0	0	1577	0	8448	2830	312	11						
100	0	463	0	0	344	0	37	277	1	25	310	1	0	409	0	0	1545	0	8390	2746	370	14						
99	0	452	0	1	333	0	52	266	1	34	299	1	0	398	0	0	1512	0	8329	2663	431	18						
98	0	441	0	2	322	0	69	256	2	47	288	1	0	387	0	0	1479	0	8261	2580	499	23						
97	0	430	0	3	311	0	87	246	2	62	278	2	0	376	0	0	1446	0	8191	2497	569	28						
96	0	419	0	7	300	0	107	236	3	81	268	2	0	365	0	0	1413	0	8116	2416	644	34						
95	0	408	0	15	289	0	132	226	5	103	258	3	2	354	0	0	1380	0	8040	2335	720	41						
94	0	397	0	20	278	0	162	216	6	126	248	4	3	344	0	0	1347	0	7959	2255	801	49						
93	0	386	0	25	268	1	191	207	8	149	238	6	4	333	0	0	1315	0	7870	2176	890	57						
92	0	375	0	36	257	1	215	198	10	173	229	7	6	322	0	0	1282	0	7780	2098	980	67						
91	0	364	0	51	246	1	239	190	12	198	220	9	9	311	0	0	1249	0	7694	2020	1066	77						
90	0	353	0	67	236	2	266	181	15	220	211	11	14	300	0	0	1216	0	7610	1944	1150	88						
89	1	342	0	86	226	3	292	173	17	243	202	14	20	289	0	0	1183	0	7518	1868	1242	100						
88	2	331	0	105	216	4	311	165	21	271	194	16	28	279	1	0	1150	0	7427	1793	1333	113						
87	3	320	0	124	206	5	334	157	24	300	186	19	36	268	1	1	1118	0	7325	1720	1435	127						
86	6	309	0	150	196	6	359	150	27	323	178	22	49	257	1	2	1085	0	7211	1647	1549	141						
85	9	298	0	178	187	8	378	143	31	344	170	26	67	247	2	3	1052	0	7097	1575	1663	158						
84	12	288	0	202	178	10	397	136	35	365	163	29	84	237	3	5	1019	0	6981	1505	1779	175						
83	18	277	0	224	169	12	416	129	39	379	156	33	103	227	4	9	986	0	6861	1436	1899	193						
82	25	266	1	251	161	14	435	122	43	391	149	37	126	217	5	12	954	0	6742	1368	2018	213						
81	33	255	1	280	152	17	449	116	48	404	142	41	151	207	6	15	921	0	6625	1301	2135	233						
80	45	245	1	308	144	20	465	109	52	418	135	45	177	198	8	21	888	1	6495	1235	2265	255						
79	59	234	2	336	137	23	484	103	57	433	128	49	205	189	10	31	856	1	6359	1171	2401	279						
78	73	224	2	361	129	27	503	97	62	451	122	54	234	180	12	40	823	1	6222	1108	2538	303						
77	91	214	3	383	122	30	522	91	67	467	115	58	260	172	14	54	791	2	6067	1046	2693	329						
76	110	204	4	408	115	34	541	85	72	480	109	63	285	164	17	72	758	2	5906	987	2854	357						
75	130	194	6	432	108	38	560	80	78	495	103	68	307	156	20	92	726	3	5758	928	3002	387						
74	152	185	7	453	102	43	577	75	83	511	97	73	323	148	23	116	695	4	5607	871	3153	417						
73	175	175	9	472	95	47	596	70	89	529	91	78	346	140	27	147	663	5	5445	816	3315	450						
72	199	166	10	489	89	52	616	65	95	545	86	83	370	133	30	179	632	7	5285	763	3475	484						
71	224	158	13	511	83	57	637	60	102	558	80	89	391	126	34	215	601	9	5118	710	3642	519						
70	249	149	15	536	78	63	657	56	108	578	75	95	407	119	38	264	570	11	4930	660	3830	556						
69	275	141	18	559	72	68	676	51	115	601	70	100	420	112	42	322	541	14										
68	303	133	20	578	67	74	690	47	122	616	65	107	437	105	46	377	511	18										
67	329	125	24	599	62	80	704	43	129	630	60	113	455	99	51	434	482	22										
66	352	117	27	621	57	86	722	39	136	649	56	119	469	92	56	501	454	27										
65	372	110	31	640	52	92	742	36	143	666	52	126	482	86	60	570	427	32										
64	393	103	34	659	48	98	762	32	151	682	47	132	502	80	65	641	400	38										
63	419	96	39	678	44	105	781	29	158	701	43	139	522	74	70	727	374	45										

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

FRESNO, CALIFORNIA
WBAN 93193
TABLE D:

TRY Data (1951)

Latitude 36.80 N
Longitude 119.70 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	7-9AM**				10-12AM**				1-3PM**				BY TIME OF DAY 4-6PM**				7-9PM**				10PM-6AM**				24 HOUR SUMMARY			
	Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		HEATING		COOLING	
	Above (100s)*		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*	
62	444	89	43	695	40	112	798	26	166	721	39	147	543	69	76	819	349	52							4738	612	4022	596
61	467	83	47	715	36	119	813	23	174	738	36	154	564	63	81	900	325	61							4561	565	4199	637
60	491	77	52	737	32	126	823	20	182	754	32	161	581	58	87	989	301	70							4384	521	4376	680
59	508	71	57	759	28	134	834	18	191	770	29	169	597	53	93	1079	279	81							4211	478	4549	724
58	526	65	62	774	25	142	851	15	199	787	26	177	620	48	99	1159	257	92							4041	436	4719	771
57	552	59	68	789	22	149	868	13	208	804	23	185	641	44	105	1237	236	104							3868	397	4892	819
56	576	54	73	807	19	157	886	11	216	819	20	193	664	39	112	1315	216	117							3691	359	5069	868
55	602	49	79	830	16	165	910	9	225	836	17	201	695	35	119	1397	197	130							3487	323	5273	920
54	627	44	85	858	14	174	935	7	235	855	15	209	723	31	126	1481	178	145							3279	289	5481	974
53	653	40	92	883	12	183	960	6	244	876	13	218	744	28	133	1563	161	160							3079	258	5681	1030
52	679	35	99	905	10	192	980	4	254	897	10	227	768	24	141	1648	144	176							2882	228	5878	1088
51	703	31	105	927	8	201	997	3	264	917	9	236	793	21	148	1738	128	193							2684	200	6076	1147
50	733	28	113	950	6	210	1018	2	274	940	7	245	817	18	156	1849	113	211							2450	174	6310	1209
49	768	24	120	973	5	220	1036	2	284	965	5	255	840	15	165	1967	99	230							2209	151	6551	1273
48	798	21	128	993	4	230	1052	1	295	985	4	265	867	13	173	2076	87	250							1987	130	6773	1340
47	826	18	136	1015	3	240	1065	1	305	1005	3	275	895	11	182	2186	75	271							1765	111	6995	1409
46	854	16	144	1034	2	250	1074	1	316	1021	3	285	913	9	191	2298	65	294							1565	95	7195	1480
45	877	13	153	1049	2	260	1079	0	327	1032	2	295	934	7	200	2408	55	317							1380	80	7380	1553
44	900	11	162	1060	1	271	1082	0	337	1047	1	305	958	6	210	2504	47	342							1208	67	7552	1628
43	919	10	171	1065	1	282	1084	0	348	1061	1	316	978	5	219	2584	40	367							1067	56	7693	1704
42	938	8	180	1071	1	292	1086	0	359	1069	1	327	998	3	229	2660	33	394							935	46	7825	1781
41	958	6	190	1077	0	303	1090	0	370	1075	0	337	1018	3	239	2731	27	421							810	37	7950	1860
40	978	5	200	1082	0	314	1093	0	381	1081	0	348	1031	2	250	2811	22	448							683	29	8077	1940
39	998	4	209	1085	0	325	1094	0	392	1088	0	359	1043	1	260	2898	18	477							553	23	8207	2022
38	1015	3	220	1088	0	335	1095	0	403	1091	0	370	1056	1	271	2961	14	506							452	18	8308	2105
37	1025	2	230	1091	0	346	1095	0	414	1093	0	381	1068	1	281	3005	11	536							381	14	8379	2188
36	1034	2	240	1092	0	357	1095	0	425	1095	0	392	1077	0	292	3045	9	566							321	11	8439	2272
35	1048	1	250	1094	0	368	1095	0	436	1095	0	403	1083	0	303	3079	6	597							265	8	8495	2357
34	1060	1	261	1095	0	379	1095	0	447	1095	0	414	1087	0	314	3116	4	628							211	5	8549	2442
33	1070	1	272	1095	0	390	1095	0	458	1095	0	425	1090	0	324	3155	3	659							159	4	8601	2528
32	1078	0	282	1095	0	401	1095	0	469	1095	0	436	1093	0	335	3193	2	691							111	2	8649	2614
31	1082	0	293	1095	0	412	1095	0	479	1095	0	447	1094	0	346	3222	1	723							76	1	8684	2701
30	1086	0	304	1095	0	423	1095	0	490	1095	0	457	1095	0	357	3243	1	756							50	1	8710	2788
29	1091	0	315	1095	0	434	1095	0	501	1095	0	468	1095	0	368	3259	0	788							29	0	8731	2875
28	1093	0	326	1095	0	445	1095	0	512	1095	0	479	1095	0	379	3272	0	821							15	0	8745	2962
27	1094	0	337	1095	0	456	1095	0	523	1095	0	490	1095	0	390	3279	0	854							6	0	8754	3050
26	1095	0	348	1095	0	467	1095	0	534	1095	0	501	1095	0	401	3283	0	886							2	0	8758	3137
25	1095	0	359	1095	0	478	1095	0	545	1095	0	512	1095	0	412	3285	0	919							0	0	8760	3225

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

FRESNO, CALIFORNIA

TRY Data (1951)

Latitude 36.80 N

WBAN 93193

Longitude 119.70 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:	5588	4669	3731	2802	1948	1206	530	150	16	1	0
Annual Wet Bulb Cooling deg-hrs:	56126	40382	27242	16938	9403	4345	1488	295	24	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	50	49	48	45	40	35	29	24	19	14	10	.001		
.002	0	0	0	0	0	0	0	0	0	0	0	41	41	40	38	34	29	25	21	16	12	9	.002		
.003	0	0	0	0	0	0	0	0	0	0	0	32	32	32	30	27	24	21	17	14	10	8	.003		
.004	0	0	0	0	0	0	0	0	0	0	0	24	24	24	23	21	19	17	14	11	9	6	.004		
.005	0	0	1	1	1	2	2	2	2	2	2	17	17	17	16	16	14	13	10	8	7	5	.005		
.006	0	1	1	2	3	4	4	4	4	4	5	11	11	11	11	10	10	9	7	6	5	4	.006		
.007	0	1	2	4	5	6	7	8	8	8	9	6	6	6	6	6	6	6	5	4	3	2	.007		
.008	0	1	3	5	8	10	11	12	13	13	14	3	3	3	3	3	3	3	3	2	2	1	.008		
.009	0	1	3	6	10	13	15	17	18	19	20	1	1	1	1	1	1	1	1	1	1	1	.009		
.010	0	2	4	8	12	16	20	22	24	26	27	0	0	0	0	0	0	0	0	0	0	0	.010		
.011	0	2	5	9	15	20	24	27	30	32	34	0	0	0	0	0	0	0	0	0	0	0	.011		
.012	0	2	5	10	17	23	28	33	36	39	41	0	0	0	0	0	0	0	0	0	0	0	.012		
.013	0	2	6	11	19	27	32	38	42	46	49	0	0	0	0	0	0	0	0	0	0	0	.013		
.014	0	3	6	13	22	30	37	43	48	52	56	0	0	0	0	0	0	0	0	0	0	0	.014		
.015	0	3	7	14	24	33	41	48	54	59	63	0	0	0	0	0	0	0	0	0	0	0	.015		
.016	1	3	8	15	26	37	45	53	60	66	71	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	1	3	8	17	29	40	50	59	66	73	78	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	1	4	9	18	31	43	54	64	72	79	85	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	35	34	44	30	24	20	20	18	18	26	51	28
VERTICAL													
NORTH	100	100	100	99	87	79	79	92	100	100	100	100	91
WEST	74	47	51	67	51	45	42	39	37	34	39	56	46
SOUTH	62	33	43	62	65	67	59	46	31	23	23	40	44
EAST	78	46	48	58	50	47	42	41	36	37	42	62	46
% Possible Sun	50	66	79	85	89	94	96	96	94	88	67	47	82

FOOTNOTES: * Corrected For Cloud Cover.

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

FRESNO, CALIFORNIA

WBAN 93193

TABLE H:

TRY Data (1951)

Latitude 36.80 N

Longitude 119.70 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	2042	1893	1530	1187	740	383	211	170	170	2171	1136	556	521	444	373	280	212	178	168	168	546	396	657
Feb	2035	1910	1627	1358	950	577	331	223	213	2393	1476	1064	1010	881	759	564	383	264	212	206	1203	803	1012
Mar	1756	1708	1582	1455	1155	821	542	345	281	2478	1910	1261	1259	1191	1110	915	699	521	393	349	1656	1367	1566
Apr	1308	1405	1450	1472	1321	1073	794	549	379	2379	2280	1118	1189	1201	1196	1084	917	744	598	500	1648	1626	2093
May	976	1150	1309	1424	1401	1242	1001	746	535	2217	2489	935	1070	1189	1276	1254	1127	941	744	581	1816	2048	2484
Jun	850	1036	1238	1395	1428	1314	1102	855	653	2116	2554	874	1036	1210	1344	1369	1264	1074	855	674	1977	2372	2733
Jul	896	1071	1247	1382	1389	1258	1044	801	605	2113	2476	880	1042	1204	1328	1332	1208	1009	783	600	2012	2354	2685
Aug	1132	1256	1341	1402	1308	1106	859	624	444	2220	2288	1131	1238	1313	1367	1276	1086	856	637	470	2142	2212	2423
Sep	1522	1530	1477	1412	1182	896	631	425	325	2326	1970	1452	1463	1414	1351	1135	869	623	433	340	2183	1861	1985
Oct	1858	1750	1528	1322	965	621	388	261	243	2313	1567	1571	1475	1290	1118	825	547	361	261	245	1938	1338	1429
Nov	1982	1854	1521	1215	787	436	245	185	185	2171	1208	1293	1197	982	790	529	324	215	180	179	1404	834	889
Dec	1973	1842	1478	1125	684	343	188	159	158	2049	1029	798	739	605	481	333	222	173	162	161	796	491	574
Year	1524	1532	1443	1345	1110	840	613	446	350	2244	1867	1077	1103	1077	1042	910	740	582	453	374	1611	1479	1711

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**									Obs
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	Obs
Jan	1765	1608	1283	988	593	288	158	139	139	466	432	367	306	228	170	143	137	137	
Feb	1726	1606	1363	1140	777	448	247	177	174	893	842	735	634	461	303	205	170	168	
Mar	1409	1408	1317	1216	954	658	413	263	229	1010	1036	987	923	754	565	409	309	284	
Apr	965	1110	1191	1223	1096	878	632	420	299	869	957	986	989	894	749	598	474	405	
May	674	853	1046	1177	1158	1024	805	581	400	680	814	956	1052	1034	927	759	588	447	
Jun	579	748	975	1149	1181	1088	891	672	482	617	764	958	1106	1130	1045	870	676	508	
Jul	618	786	992	1140	1150	1041	843	629	451	613	769	958	1094	1102	1000	815	616	450	
Aug	816	973	1093	1161	1083	910	689	483	346	824	963	1071	1132	1057	893	688	497	368	
Sep	1190	1247	1223	1177	978	726	493	325	265	1137	1194	1171	1126	939	705	489	333	277	
Oct	1553	1463	1277	1104	790	493	292	207	199	1310	1230	1075	930	675	436	277	208	200	
Nov	1708	1572	1279	1015	636	333	181	152	151	1108	1009	821	656	427	252	166	147	147	
Dec	1709	1570	1239	938	544	256	141	129	129	679	619	501	398	269	176	138	132	132	
Year	1223	1243	1189	1119	912	680	463	349	273	849	885	882	863	749	603	464	358	294	

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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FORT WORTH, TEXAS

WBAN 3927

TABLE A:

TRY Data (1975)

Latitude 32.90 N

Longitude 97.00 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 10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Jan														
80 to 84	0	0	0	0	1	0	0	0	1	66.0	744	25439	0	0
75 to 79	0	0	0	0	2	3	0	0	5	63.8	741	21724	3	5
70 to 74	0	0	0	1	8	10	1	0	20	62.8	733	18035	11	36
65 to 69	2	0	0	2	6	8	10	6	34	60.8	708	14427	36	148
60 to 64	1	3	3	7	17	12	5	1	49	53.0	672	10978	72	419
55 to 59	8	0	3	15	19	17	9	8	79	48.1	607	7779	137	940
50 to 54	15	22	15	18	14	12	15	14	125	46.6	518	4948	226	1829
45 to 49	23	17	22	24	17	24	28	22	177	42.4	374	2722	370	3323
40 to 44	17	18	16	15	6	4	19	24	119	37.4	202	1311	542	5632
35 to 39	15	13	15	7	1	1	3	14	69	33.7	99	563	645	8604
30 to 34	9	16	11	2	2	2	0	1	43	29.0	46	210	698	11971
25 to 29	1	1	6	2	0	0	3	2	15	22.5	16	67	728	15548
20 to 24	2	3	0	0	0	0	0	1	6	18.5	6	15	738	19216
15 to 19	0	0	2	0	0	0	0	0	2	17.0	0	0	744	22921
Feb														
75 to 79	0	0	0	0	1	1	0	0	2	58.0	672	21165	0	0
70 to 74	0	0	0	0	7	7	0	0	14	57.8	669	17811	3	6
65 to 69	3	2	0	1	9	9	4	3	31	57.5	649	14511	23	66
60 to 64	3	2	0	11	5	11	7	3	42	53.1	608	11361	64	276
55 to 59	0	2	6	7	13	11	11	8	58	49.4	564	8424	108	699
50 to 54	12	10	6	11	13	12	11	8	83	46.6	495	5771	177	1406
45 to 49	9	7	16	21	12	16	25	18	124	43.1	408	3518	264	2513
40 to 44	27	19	15	16	15	8	7	17	124	39.0	249	1864	423	4219
35 to 39	9	19	21	9	5	5	13	18	99	33.2	159	828	513	6543
30 to 34	14	13	11	2	4	3	3	6	56	28.9	75	284	597	9359
25 to 29	4	7	7	6	0	1	3	3	31	24.9	23	49	649	12484
20 to 24	3	3	2	0	0	0	0	0	8	21.3	1	1	671	15796
Mar														
80 to 84	0	0	0	1	3	1	0	0	5	56.4	744	21475	0	0
75 to 79	0	0	0	3	15	17	1	0	36	63.0	726	17782	18	27
70 to 74	5	6	6	9	5	10	12	6	59	62.7	688	14245	56	210
65 to 69	5	0	1	6	10	6	8	9	45	57.1	626	10971	118	656
60 to 64	10	7	5	15	9	10	10	8	74	53.7	563	7965	181	1370
55 to 59	6	8	13	10	14	15	16	14	96	49.6	494	5305	250	2430
50 to 54	19	20	18	14	11	17	16	17	132	46.7	377	3112	367	3957
45 to 49	13	18	19	19	15	7	8	12	111	42.3	259	1539	485	6104
40 to 44	21	19	17	9	7	7	15	16	111	38.4	141	562	603	8847
35 to 39	8	9	10	7	4	3	7	9	57	34.7	40	117	704	12122
30 to 34	6	4	3	0	0	0	0	2	15	29.8	7	19	737	15744
25 to 29	0	2	1	0	0	0	0	0	3	26.3	0	0	744	19445

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

FORT WORTH, TEXAS

WBAN 3927

TABLE A:

TRY Data (1975)

Latitude 32.90 N

Longitude 97.00 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														
85 to 89	0	0	0	0	12	1	0	0	13	73.2	720	16635	0	0
80 to 84	0	0	0	9	4	14	6	0	33	69.7	696	13082	24	47
75 to 79	4	1	7	9	24	29	16	15	105	66.9	647	9695	73	260
70 to 74	14	18	15	24	16	14	15	8	124	65.1	509	6780	211	945
65 to 69	9	7	11	10	4	5	13	11	70	60.8	417	4489	303	2254
60 to 64	18	13	15	10	18	15	17	17	123	56.1	320	2608	400	3973
55 to 59	17	16	19	18	3	6	12	23	114	52.1	212	1279	508	6244
50 to 54	17	18	15	4	8	6	6	10	84	48.2	85	529	635	9094
45 to 49	5	8	1	4	1	0	5	2	26	40.7	44	226	676	12391
40 to 44	3	6	5	2	0	0	0	3	19	37.3	20	71	700	15836
35 to 39	3	1	2	0	0	0	0	1	7	31.0	6	18	714	19383
30 to 34	0	2	0	0	0	0	0	0	2	28.5	1	1	719	22966
May														
85 to 89	0	0	0	7	27	21	0	0	55	73.8	729	11123	15	16
80 to 84	0	0	3	24	21	27	14	3	92	70.6	655	7647	89	260
75 to 79	10	7	17	21	18	27	25	10	135	68.8	552	4604	192	937
70 to 74	31	22	32	24	20	13	29	31	202	67.3	378	2228	366	2281
65 to 69	19	21	30	16	7	5	19	27	144	63.4	190	818	554	4591
60 to 64	27	32	10	1	0	0	6	21	97	59.8	59	174	685	7667
55 to 59	5	8	1	0	0	0	0	1	15	53.9	12	26	732	11239
50 to 54	1	3	0	0	0	0	0	0	4	50.0	2	1	742	14934
Jun														
95 to 99	0	0	0	0	1	3	0	0	4	76.8	720	12423	0	0
90 to 94	0	0	0	8	45	49	4	0	106	75.3	688	8860	32	37
85 to 89	0	0	0	40	27	19	31	0	117	73.9	560	5741	160	518
80 to 84	11	1	26	26	12	15	25	38	154	72.8	436	3236	284	1613
75 to 79	38	38	39	9	4	4	18	29	179	71.4	265	1460	455	3437
70 to 74	24	29	17	5	1	0	8	13	97	68.2	118	539	602	6116
65 to 69	9	12	7	2	0	0	4	7	41	63.9	43	167	677	9344
60 to 64	6	7	1	0	0	0	0	3	17	59.8	14	36	706	12813
55 to 59	2	3	0	0	0	0	0	0	5	56.2	1	1	719	16378

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

FORT WORTH, TEXAS
WBAN 3927
TABLE A:

TRY Data (1975)

Latitude 32.90 N
Longitude 97.00 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Jul															
95 to 99	0	0	0	1	18	26	2	0	47	74.6	735	10830	9	7	
90 to 94	0	0	0	26	50	47	15	0	138	74.2	662	7305	82	202	
85 to 89	0	0	12	50	13	2	32	11	120	74.2	512	4406	232	1023	
80 to 84	29	6	40	13	4	6	21	37	156	73.3	385	2155	359	2492	
75 to 79	35	46	33	0	7	12	20	34	187	72.4	198	665	546	4722	
70 to 74	29	37	8	3	1	0	3	11	92	69.6	48	79	696	7856	
65 to 69	0	4	0	0	0	0	0	0	4	63.3	3	4	741	11501	
Aug															
95 to 99	0	0	0	0	25	36	0	0	61	74.5	743	10056	1	1	
90 to 94	0	0	0	33	54	37	20	0	144	74.5	627	6594	117	259	
85 to 89	0	0	11	47	13	11	40	16	138	74.5	487	3810	257	1195	
80 to 84	29	4	39	10	1	2	25	49	157	73.1	352	1714	392	2819	
75 to 79	52	57	40	2	0	7	10	24	192	72.2	166	397	578	5222	
70 to 74	12	32	3	1	0	0	0	4	52	70.3	14	13	730	8558	
Sep															
95 to 99	0	0	0	0	14	12	0	0	26	74.5	713	16124	7	5	
90 to 94	0	0	0	11	11	17	4	0	43	73.9	681	12636	39	117	
85 to 89	0	0	2	14	25	17	19	1	78	71.9	624	9352	96	433	
80 to 84	8	0	10	22	14	15	12	27	108	70.0	528	6453	192	1134	
75 to 79	26	18	20	14	11	14	17	9	129	67.2	420	4074	300	2355	
70 to 74	10	17	12	12	5	6	13	19	94	63.9	299	2310	421	4191	
65 to 69	22	22	23	15	9	6	11	12	120	59.6	190	1066	530	6547	
60 to 64	8	14	14	2	1	3	13	15	70	56.4	78	397	642	9478	
55 to 59	13	6	6	0	0	0	1	7	33	51.2	38	119	682	12800	
50 to 54	3	13	3	0	0	0	0	0	19	48.9	6	6	714	16287	

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

FORT WORTH, TEXAS
WBAN 3927
TABLE A:

TRY Data (1975)

Latitude 32.90 N
Longitude 97.00 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														
95 to 99	0	0	0	0	0	1	0	0	1	70.0	744	20825	0	0
90 to 94	0	0	0	2	10	8	0	0	20	71.7	737	17115	7	10
85 to 89	0	0	0	5	18	13	0	0	36	70.0	710	13487	34	102
80 to 84	0	0	0	19	19	22	14	2	76	65.9	656	10052	88	387
75 to 79	10	2	10	21	20	17	18	18	116	65.3	574	6956	170	1011
70 to 74	16	21	20	15	19	23	17	13	144	62.0	429	4436	315	2211
65 to 69	16	14	14	18	4	5	17	16	104	58.4	312	2616	432	4111
60 to 64	12	14	21	9	0	1	20	18	95	54.6	206	1326	538	6541
55 to 59	19	17	16	4	3	2	4	19	84	49.3	113	524	631	9459
50 to 54	18	15	8	0	0	1	3	6	51	44.7	49	127	695	12782
45 to 49	2	9	4	0	0	0	0	1	16	41.5	7	9	737	16384
40 to 44	0	1	0	0	0	0	0	0	1	42.0	0	0	744	20095
Nov														
85 to 89	0	0	0	0	6	4	0	0	10	68.0	720	21593	0	0
80 to 84	0	0	0	3	8	7	0	0	18	65.9	706	18029	14	36
75 to 79	0	0	0	8	15	16	5	0	44	64.4	679	14562	41	169
70 to 74	9	8	8	18	19	15	15	11	103	62.6	619	11298	101	505
65 to 69	9	7	9	16	6	8	15	10	80	60.0	520	8471	200	1278
60 to 64	9	6	10	7	7	7	13	17	76	54.6	437	6091	283	2498
55 to 59	19	18	19	8	12	14	6	11	107	49.8	345	4118	375	4125
50 to 54	9	12	6	8	11	8	11	10	75	42.3	257	2619	463	6226
45 to 49	7	10	9	14	4	8	9	10	71	37.7	175	1540	545	8747
40 to 44	7	3	8	5	2	3	7	6	41	33.6	117	814	603	11621
35 to 39	12	11	11	2	0	0	6	9	51	30.6	67	329	653	14736
30 to 34	7	10	5	1	0	0	3	5	31	26.9	34	88	686	18095
25 to 29	2	4	5	0	0	0	0	1	12	24.2	3	5	717	21612
20 to 24	0	1	0	0	0	0	0	0	1	21.0	0	0	720	25207
Dec														
75 to 79	0	0	0	0	9	8	0	0	17	63.6	744	21588	0	0
70 to 74	0	0	0	6	9	7	8	2	32	63.1	714	17939	30	71
65 to 69	9	7	6	6	7	10	8	8	61	60.1	681	14445	63	297
60 to 64	3	2	5	7	12	10	3	9	51	52.6	614	11224	130	796
55 to 59	4	4	4	5	12	14	9	1	53	48.5	570	8269	174	1561
50 to 54	4	7	5	18	25	17	15	11	102	44.5	488	5586	256	2598
45 to 49	15	8	8	26	5	12	15	14	103	40.7	383	3394	361	4126
40 to 44	19	17	24	19	11	11	20	23	144	36.9	281	1728	463	6180
35 to 39	25	20	22	3	3	4	11	18	106	32.8	142	692	602	8864
30 to 34	6	19	11	2	0	0	4	4	46	28.6	49	227	695	12119
25 to 29	7	4	3	1	0	0	0	3	18	23.6	18	65	726	15677
20 to 24	1	5	5	0	0	0	0	0	11	18.6	6	7	738	19339

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

FORT WORTH, TEXAS
WBAN 3927
TABLE B:

TRY Data (1975)

Latitude 32.90 N
Longitude 97.00 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
95 to 99	0	0	0	1	58	78	2	0	139	0.0	0.0	0.0	75.0	75.1	74.3	71.5	0.0	74.6
90 to 94	0	0	0	80	170	158	43	0	451	0.0	0.0	0.0	75.2	74.7	74.0	73.5	0.0	74.4
85 to 89	0	0	25	163	141	88	122	28	567	0.0	0.0	75.2	74.7	72.7	72.2	73.2	73.8	73.5
80 to 84	77	11	118	127	87	109	115	156	800	72.8	73.3	74.1	71.7	66.9	67.9	71.4	72.6	71.3
75 to 79	175	169	166	87	126	155	130	139	1147	71.5	72.0	72.1	67.0	64.0	65.1	68.8	70.4	69.2
70 to 74	150	190	121	118	110	105	121	118	1033	68.1	68.8	67.8	63.5	61.3	59.4	63.8	66.3	65.4
65 to 69	103	96	101	92	62	62	109	109	734	61.8	63.1	62.2	59.4	56.8	56.7	59.0	61.8	60.4
60 to 64	97	100	84	69	69	69	94	112	694	57.8	58.9	57.3	54.0	51.0	52.1	54.0	55.9	55.5
55 to 59	93	82	87	67	76	79	68	92	644	51.7	52.7	52.2	49.1	47.0	46.4	49.1	50.6	50.0
50 to 54	98	120	76	73	82	73	77	76	675	47.0	47.7	47.4	45.1	43.7	43.7	45.4	46.5	46.0
45 to 49	74	77	79	108	54	67	90	79	628	42.5	42.7	42.9	41.0	41.3	40.5	40.7	41.5	41.6
40 to 44	94	83	85	66	41	33	68	89	559	37.7	38.4	38.0	37.5	37.6	36.5	36.8	37.0	37.5
35 to 39	72	73	81	28	13	13	40	69	389	32.6	33.6	33.7	33.1	31.5	30.8	32.8	32.9	33.0
30 to 34	42	64	41	7	6	5	10	18	193	29.3	29.0	29.4	25.7	26.8	26.0	25.5	27.7	28.6
25 to 29	14	18	22	9	0	1	6	9	79	23.9	25.3	24.3	23.9	0.0	25.0	23.2	21.9	24.1
20 to 24	6	12	7	0	0	0	0	1	26	20.7	19.3	18.9	0.0	0.0	0.0	0.0	19.0	19.5
15 to 19	0	0	2	0	0	0	0	0	2	0.0	0.0	17.0	0.0	0.0	0.0	0.0	0.0	17.0

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
Month	Ave	Max	Min	Daily		Ave	Average					4AM	10AM	4PM	10PM	Day	MPH
				Max	Min		4AM	10AM	4PM	10PM	Day						
Jan	48.3	80	19	59	39	42.9	76	71	50	63	66	0.0048	0.0050	0.0054	0.0052	0.0050	10.4
Feb	46.0	75	22	57	37	41.2	80	69	57	66	69	0.0047	0.0045	0.0052	0.0049	0.0047	11.9
Mar	53.6	82	28	64	44	47.3	73	65	55	65	65	0.0057	0.0059	0.0061	0.0062	0.0060	11.8
Apr	64.4	87	32	73	56	57.7	81	69	56	63	68	0.0093	0.0098	0.0097	0.0092	0.0094	10.6
May	72.6	89	52	81	63	66.4	85	70	60	76	74	0.0122	0.0130	0.0134	0.0135	0.0130	7.5
Jun	80.2	96	57	90	71	71.5	85	65	48	65	68	0.0148	0.0154	0.0147	0.0150	0.0151	9.5
Jul	83.0	99	66	93	74	73.0	82	61	49	62	65	0.0159	0.0161	0.0146	0.0154	0.0156	7.1
Aug	84.0	98	70	95	74	73.3	80	62	43	58	63	0.0158	0.0166	0.0145	0.0149	0.0156	8.0
Sep	75.1	99	51	86	65	64.8	74	61	42	55	60	0.0112	0.0125	0.0111	0.0109	0.0114	7.8
Oct	69.5	95	44	81	58	59.0	68	58	38	50	56	0.0087	0.0099	0.0088	0.0081	0.0089	9.5
Nov	57.5	87	24	69	46	49.1	66	57	38	50	55	0.0062	0.0070	0.0064	0.0061	0.0064	11.2
Dec	48.5	77	20	60	39	42.3	71	66	47	57	62	0.0045	0.0051	0.0052	0.0049	0.0048	9.9
Year	65.3	99	19	76	56	57.5	77	64	49	61	64	0.0095	0.0101	0.0096	0.0095	0.0097	9.6

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TABLE D:

TRY Data (1975)

Latitude 32.90 N

Longitude 97.00 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY												24 HOUR SUMMARY									
	7-9AM**			10-12AM**			1-3PM**			4-6PM**			7-9PM**			10PM-6AM**			HEATING		COOLING	
	Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg	Hrs	Deg
	Above (100s)*	(100s)*	Base Heat Cool	Above (100s)*	(100s)*	Base Heat Cool	Above (100s)*	(100s)*	Base Heat Cool	Above (100s)*	(100s)*	Base Heat Cool	Above (100s)*	(100s)*	Base Heat Cool	Above (100s)*	(100s)*	Base Heat Cool	Below Base 100s*	Hrs	Above Base 100s*	Hrs
100	0	429	0	0	348	0	0	293	0	0	295	0	0	366	0	0	1304	0	8760	3036	0	0
99	0	419	0	0	337	0	0	282	0	1	284	0	0	355	0	0	1271	0	8758	2949	2	0
98	0	408	0	0	327	0	4	271	0	5	273	0	0	344	0	0	1239	0	8750	2861	10	0
97	0	397	0	0	316	0	12	260	0	17	263	0	0	333	0	0	1206	0	8731	2774	29	0
96	0	386	0	0	305	0	26	249	0	35	252	0	0	322	0	0	1173	0	8698	2686	62	1
95	0	375	0	1	294	0	47	239	1	61	241	1	1	311	0	0	1140	0	8649	2600	111	1
94	0	364	0	2	283	0	74	228	1	92	231	2	2	300	0	0	1107	0	8589	2514	171	3
93	0	353	0	6	272	0	109	218	2	119	221	3	5	289	0	0	1074	0	8520	2428	240	5
92	0	342	0	17	261	0	146	209	3	151	212	4	13	279	0	0	1042	0	8432	2343	328	8
91	0	331	0	37	250	0	180	199	5	189	202	6	21	268	0	0	1009	0	8332	2259	428	11
90	0	320	0	65	240	1	212	190	7	221	194	8	35	257	1	0	976	0	8226	2176	534	16
89	0	309	0	94	230	2	239	182	9	248	185	10	53	247	1	0	943	0	8124	2095	636	22
88	1	298	0	125	220	3	266	173	12	268	177	13	75	236	2	1	910	0	8022	2014	738	29
87	4	287	0	161	210	4	297	165	15	287	168	15	103	226	3	3	877	0	7903	1934	857	37
86	7	276	0	195	201	6	324	157	18	305	160	18	128	216	4	8	845	0	7791	1856	969	46
85	17	265	0	228	192	8	353	150	21	317	153	22	152	207	5	20	812	0	7672	1778	1088	56
84	34	255	0	258	184	11	379	142	25	334	145	25	178	198	7	39	779	0	7537	1702	1223	68
83	52	244	1	288	176	13	397	135	29	357	137	28	200	189	9	69	747	1	7395	1628	1365	81
82	78	234	1	313	168	16	414	128	33	380	130	32	221	180	11	116	715	2	7237	1555	1523	95
81	103	224	2	336	160	20	428	122	37	398	123	36	241	171	13	165	683	3	7087	1483	1673	111
80	127	214	4	360	152	23	445	115	41	420	116	40	266	163	16	229	653	5	6910	1413	1850	129
79	162	204	5	379	145	27	465	109	46	441	110	44	291	154	18	311	622	8	6709	1345	2051	148
78	199	195	7	399	138	31	488	102	51	461	103	49	315	147	21	397	593	11	6499	1279	2261	170
77	231	187	9	420	131	35	511	97	56	489	97	53	341	139	25	490	565	16	6276	1215	2484	193
76	263	178	11	438	125	39	539	91	61	527	91	59	364	131	28	583	537	21	6045	1153	2715	219
75	294	170	14	453	118	44	569	85	66	568	86	64	393	124	32	693	511	28	5788	1094	2972	248
74	324	162	17	473	112	48	597	80	72	602	81	70	422	117	36	805	485	35	5534	1037	3226	279
73	350	155	21	500	106	53	626	75	78	626	76	76	442	111	40	899	461	44	5315	983	3445	312
72	372	147	24	523	100	58	649	71	85	646	71	82	465	104	45	992	438	53	5112	931	3648	348
71	393	140	28	544	94	63	665	67	91	662	67	89	490	98	50	1081	415	63	4923	881	3837	385
70	416	133	32	564	89	69	681	62	98	681	63	96	518	92	55	1166	393	75	4732	833	4028	424
69	437	126	36	585	84	75	701	58	105	699	58	103	541	87	60	1244	373	87	4551	786	4209	466
68	456	120	41	604	79	81	714	54	112	710	55	110	562	81	66	1303	353	100	4409	742	4351	508
67	475	114	46	625	74	87	725	51	119	722	51	117	581	76	71	1358	333	113	4273	698	4487	553
66	496	108	50	644	69	93	735	47	127	735	47	124	604	71	77	1414	314	127	4129	656	4631	598
65	521	102	56	660	65	100	746	43	134	748	44	132	631	66	83	1482	296	141	3970	616	4790	645
64	542	96	61	677	61	106	761	40	142	760	40	139	654	62	90	1559	278	156	3805	577	4955	694
63	562	91	66	691	56	113	774	37	149	774	37	147	679	57	96	1632	261	172	3646	539	5114	744
62	577	85	72	705	53	120	786	34	157	788	34	155	698	53	103	1691	245	189	3514	504	5246	796
61	590	80	78	717	49	127	801	31	165	803	31	163	712	49	110	1747	229	206	3388	469	5372	849
60	606	75	84	729	45	135	817	28	173	818	28	171	728	46	118	1804	214	224	3257	436	5503	904
59	622	71	90	745	41	142	829	25	181	830	25	179	744	42	125	1851	200	242	3138	404	5622	959
58	635	66	96	759	38	149	844	22	190	841	23	187	759	39	133	1903	186	261	3018	373	5742	1016
57	646	61	103	773	35	157	858	20	198	855	20	196	769	35	140	1963	172	280	2896	344	5864	1074
56	662	57	109	786	32	165	870	18	207	869	18	204	776	32	148	2016	159	300	2778	315	5982	1133
55	687	53	116	798	28	173	888	16	216	889	16	213	792	29	156	2068	147	321	2636	288	6124	1194

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

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

FORT WORTH, TEXAS
WBAN 3927
TABLE D:

TRY Data (1975)

Latitude 32.90 N
Longitude 97.00 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE (F)	BY TIME OF DAY												24 HOUR SUMMARY									
	7-9AM**			10-12AM**			1-3PM**			4-6PM**			7-9PM**			10PM-6AM**			HEATING		COOLING	
	Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		
	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*
54	706	49	123	811	26	181	907	14	225	911	14	222	811	26	164	2127	135	342	2486	263	6274	1256
53	719	45	130	823	23	189	924	12	234	928	12	231	829	23	172	2187	124	363	2349	238	6411	1319
52	734	41	137	834	20	197	944	10	243	943	10	241	846	21	180	2251	113	385	2207	216	6553	1384
51	752	38	145	847	18	206	961	9	253	957	9	250	859	18	189	2311	103	408	2071	194	6689	1450
50	770	34	152	866	15	214	974	7	262	971	8	260	873	16	198	2364	93	432	1940	174	6820	1518
49	783	31	160	888	13	223	986	6	272	981	6	270	890	14	206	2408	84	455	1822	155	6938	1587
48	797	28	168	908	11	232	999	5	282	994	5	279	905	12	215	2447	76	480	1709	138	7051	1657
47	816	25	176	928	9	241	1010	4	292	1007	4	290	921	10	224	2494	68	504	1583	121	7177	1728
46	834	23	184	951	8	251	1019	4	302	1017	4	300	939	8	234	2542	60	530	1456	106	7304	1800
45	849	20	193	974	6	260	1029	3	312	1033	3	310	958	7	243	2593	53	555	1322	92	7438	1874
44	865	18	201	997	5	270	1041	2	323	1046	2	320	982	6	253	2650	46	581	1178	80	7582	1949
43	883	15	210	1012	4	280	1051	2	333	1052	2	331	1004	5	263	2697	40	608	1059	69	7701	2025
42	900	13	219	1022	4	290	1059	1	344	1057	2	341	1020	4	273	2736	34	635	964	58	7796	2103
41	912	12	228	1033	3	301	1066	1	354	1063	1	352	1027	3	283	2785	29	663	872	49	7888	2181
40	929	10	237	1045	2	311	1073	1	365	1071	1	363	1034	3	294	2850	24	691	757	41	8003	2261
39	952	8	247	1054	2	322	1077	1	376	1076	1	373	1043	2	304	2909	20	720	648	34	8112	2341
38	969	7	256	1062	2	332	1081	0	387	1079	1	384	1054	2	314	2953	17	749	560	28	8200	2423
37	987	6	266	1070	1	343	1084	0	398	1083	0	395	1066	1	325	2996	14	779	472	23	8288	2505
36	1005	5	276	1075	1	354	1085	0	408	1085	0	406	1073	1	336	3037	11	809	398	19	8362	2589
35	1018	4	286	1077	1	364	1087	0	419	1088	0	417	1077	1	347	3079	9	840	332	15	8428	2673
34	1029	3	296	1079	1	375	1089	0	430	1090	0	428	1080	1	357	3113	7	871	279	12	8481	2757
33	1040	3	307	1079	1	386	1090	0	441	1091	0	438	1081	0	368	3142	5	902	235	9	8525	2842
32	1050	2	317	1080	0	397	1092	0	452	1091	0	449	1082	0	379	3171	4	934	192	7	8568	2928
31	1056	2	328	1082	0	407	1093	0	463	1092	0	460	1084	0	390	3192	3	966	158	5	8602	3014
30	1061	1	338	1085	0	418	1094	0	474	1093	0	471	1087	0	401	3213	2	998	125	4	8635	3100
29	1067	1	349	1087	0	429	1095	0	485	1094	0	482	1089	0	411	3232	2	1030	94	3	8666	3186
28	1072	1	360	1089	0	440	1095	0	496	1095	0	493	1091	0	422	3245	1	1062	71	2	8689	3273
27	1077	1	370	1093	0	451	1095	0	507	1095	0	504	1094	0	433	3254	1	1095	51	2	8709	3360
26	1082	0	381	1095	0	462	1095	0	518	1095	0	515	1095	0	444	3259	1	1127	38	1	8722	3447
25	1085	0	392	1095	0	473	1095	0	529	1095	0	526	1095	0	455	3263	0	1160	31	1	8729	3535
24	1086	0	403	1095	0	484	1095	0	539	1095	0	537	1095	0	466	3269	0	1193	24	1	8736	3622
23	1087	0	414	1095	0	495	1095	0	550	1095	0	548	1095	0	477	3276	0	1225	17	0	8743	3709
22	1089	0	425	1095	0	506	1095	0	561	1095	0	559	1095	0	488	3280	0	1258	10	0	8750	3797
21	1091	0	436	1095	0	517	1095	0	572	1095	0	570	1095	0	499	3281	0	1291	7	0	8753	3884
20	1092	0	447	1095	0	528	1095	0	583	1095	0	581	1095	0	510	3283	0	1324	4	0	8756	3972
19	1094	0	457	1095	0	539	1095	0	594	1095	0	592	1095	0	521	3285	0	1357	1	0	8759	4059
18	1095	0	468	1095	0	549	1095	0	605	1095	0	603	1095	0	532	3285	0	1389	0	0	8760	4147

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

FORT WORTH, TEXAS
WBAN 3927
TABLE E:

TRY Data (1975)

Latitude 32.90 N
Longitude 97.00 E

Annual COOLING Wet Bulb Degree Hour Summary

Wet Bulb Temperature (F) Base:	50	53	56	59	62	65	68	71	74	77	80
Annual Wet Bulb hours ABOVE base:	5969	5554	5153	4677	4203	3655	3051	2314	1191	174	0
Annual Wet Bulb Cooling deg-hrs:	101696.	84184.	67926.	52934.	39381.	27346.	16952.	8504.	2603.	238.	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	72	72	71	69	67	65	62	56	49	37	23	.001		
.002	0	0	0	0	0	0	0	0	0	0	0	63	63	63	62	61	59	56	52	45	34	21	.002		
.003	0	0	1	1	1	1	1	1	1	1	1	55	55	55	55	54	53	51	47	41	31	20	.003		
.004	0	1	1	2	2	2	3	3	3	3	3	48	48	48	48	48	47	45	42	37	28	18	.004		
.005	0	1	2	3	4	4	5	5	5	5	5	42	42	42	42	42	41	40	38	34	26	16	.005		
.006	1	1	3	4	6	7	7	8	8	8	8	36	36	36	36	36	36	35	33	30	23	14	.006		
.007	1	2	3	5	7	9	10	10	11	11	11	30	30	30	30	30	30	30	29	26	20	13	.007		
.008	1	2	4	7	9	11	13	14	14	15	15	25	25	25	25	25	25	25	24	22	17	11	.008		
.009	1	2	5	8	11	14	16	17	18	18	19	21	21	21	21	21	21	21	20	19	15	9	.009		
.010	1	3	5	9	13	16	19	21	22	23	23	16	16	16	16	16	16	16	16	15	12	8	.010		
.011	1	3	6	10	15	19	22	25	26	27	28	13	13	13	13	13	13	13	13	12	10	6	.011		
.012	1	3	7	12	17	22	26	29	31	32	33	9	9	9	9	9	9	9	9	9	7	5	.012		
.013	1	3	7	13	19	24	29	33	35	37	38	6	6	6	6	6	6	6	6	6	5	3	.013		
.014	1	4	8	14	21	27	32	36	40	42	44	4	4	4	4	4	4	4	4	4	3	2	.014		
.015	1	4	9	15	22	29	35	40	44	48	50	2	2	2	2	2	2	2	2	2	2	1	.015		
.016	2	4	10	17	24	32	38	44	49	53	56	1	1	1	1	1	1	1	1	1	1	0	.016		
.017	2	5	10	18	26	34	42	48	54	59	63	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	2	5	11	19	28	37	45	52	58	65	70	0	0	0	0	0	0	0	0	0	0	0	.018		

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

TABLE G:

Percent Diffuse Solar Radiation*
and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
% Diffuse on surface													
HORIZONTAL	34	36	51	56	55	47	48	40	35	25	22	36	42
VERTICAL													
NORTH	100	100	100	99	93	88	89	95	100	100	100	100	95
WEST	44	48	63	67	69	61	68	59	53	38	37	47	57
SOUTH	30	37	60	75	85	87	85	70	49	31	22	31	52
EAST	50	52	69	77	70	72	62	58	50	45	39	51	60
% Possible Sun	43	53	61	63	63	76	84	73	70	72	63	61	66

FOOTNOTES: * Corrected For Cloud Cover.

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

FORT WORTH, TEXAS

WBAN 3927

TABLE H:

TRY Data (1975)

Latitude 32.90 N

Longitude 97.00 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	1902	1777	1453	1167	757	425	238	188	187	2112	1208	1102	1006	818	662	456	297	209	184	184	1186	730	805
Feb	1852	1732	1494	1280	917	575	350	236	227	2280	1511	1082	1006	879	767	585	414	304	246	240	1277	924	1069
Mar	1569	1546	1467	1360	1128	828	561	364	290	2337	1907	1031	992	930	866	734	599	494	419	389	1310	1174	1409
Apr	1134	1251	1332	1362	1266	1062	808	565	388	2223	2238	925	922	916	905	833	741	644	559	503	1330	1386	1617
May	832	1024	1205	1354	1353	1236	1009	764	552	2073	2442	827	906	979	1041	1026	957	840	719	628	1356	1584	1890
Jun	722	923	1142	1324	1373	1302	1102	867	665	1992	2517	805	876	963	1039	1046	999	894	779	714	1491	1827	2153
Jul	769	964	1164	1333	1360	1272	1065	829	622	2011	2468	837	964	1086	1191	1201	1136	996	837	700	1509	1821	2155
Aug	993	1140	1261	1350	1284	1124	888	653	463	2115	2285	926	1018	1088	1137	1082	968	809	654	530	1593	1739	1983
Sep	1374	1392	1372	1334	1139	884	636	435	335	2230	1989	1147	1169	1150	1116	969	781	604	463	392	1664	1520	1621
Oct	1720	1637	1459	1292	982	665	425	282	258	2245	1621	1226	1130	998	885	690	498	356	267	249	1575	1179	1293
Nov	1871	1748	1458	1190	808	475	274	205	203	2138	1287	1344	1247	1038	847	582	360	230	188	186	1517	938	938
Dec	1885	1750	1412	1111	697	379	211	179	178	2041	1122	1030	950	775	621	419	268	189	173	173	1086	663	766
Year	1383	1405	1351	1291	1090	854	632	465	365	2149	1884	1023	1015	968	924	803	670	549	459	408	1408	1292	1475

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.

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

TABLE I:

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

Month	S	Under Clear Sky*								N	S	Corrected For Cloud Cover**								N
		SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N			SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	
Jan	1628	1493	1214	967	610	321	177	153	152		934	835	675	544	368	231	163	150	149	
Feb	1547	1438	1241	1061	746	451	258	188	184		895	827	724	632	476	330	235	198	195	
Mar	1225	1256	1210	1148	930	665	431	275	235		821	804	758	709	599	484	394	334	316	
Apr	805	967	1080	1142	1051	865	638	430	305		716	732	739	737	681	602	519	449	406	
May	562	745	959	1111	1124	1016	815	596	410		633	709	791	852	845	783	682	576	496	
Jun	489	650	890	1079	1137	1071	890	678	485		609	672	766	843	856	814	724	624	555	
Jul	523	692	918	1091	1128	1048	861	649	459		635	738	872	977	992	934	808	667	545	
Aug	692	863	1015	1112	1066	920	711	504	357		690	793	881	934	894	791	652	518	420	
Sep	1041	1118	1127	1108	943	717	497	331	272		889	946	946	925	801	635	479	362	319	
Oct	1412	1353	1212	1078	805	525	319	221	210		999	925	823	733	564	398	275	211	202	
Nov	1590	1461	1211	988	652	362	205	166	165		1138	1039	860	700	469	277	177	152	151	
Dec	1621	1477	1181	919	561	281	160	146	145		878	794	643	511	339	207	149	141	141	
Year	1092	1124	1104	1067	897	688	498	362	282		819	818	790	759	658	542	439	366	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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GREAT FALLS, MONTANA
WBAN 24143
TABLE A:

TRY Data (1956)

Latitude 47.50 N
Longitude 111.40 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*	
	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														
50 to 54	0	0	0	5	9	2	0	0	16	39.4	736	23287	8	7
45 to 49	0	1	2	5	3	7	6	5	29	36.7	726	19631	18	71
40 to 44	6	5	5	5	5	3	8	5	42	35.0	679	16117	65	277
35 to 39	8	9	7	15	16	13	9	7	84	31.6	637	12820	107	700
30 to 34	16	13	16	17	12	15	8	18	115	28.3	524	9900	220	1500
25 to 29	18	26	16	4	9	10	14	12	109	24.3	417	7546	327	2866
20 to 24	8	3	12	10	8	7	9	7	64	20.7	310	5726	434	4766
15 to 19	4	5	5	7	4	3	4	1	33	15.5	277	4272	467	7032
10 to 14	4	4	4	1	4	8	5	4	34	11.7	236	2988	508	9468
5 to 9	5	3	2	3	5	5	6	9	38	6.4	204	1886	540	12086
0 to 4	7	8	5	8	9	9	12	7	65	1.6	153	977	591	14897
-5 to -1	10	7	11	11	9	7	5	11	71	-3.6	94	367	650	18007
-10 to -6	4	6	5	2	0	4	7	6	34	-7.7	25	79	719	21439
-15 to -11	3	3	3	0	0	0	0	1	10	-12.8	6	6	738	25086
Feb														
50 to 54	0	0	0	1	3	2	0	0	6	39.3	671	19607	1	1
45 to 49	3	1	0	2	1	1	3	3	14	36.0	663	16272	9	26
40 to 44	2	3	4	9	17	9	2	2	48	33.3	640	13007	32	121
35 to 39	8	5	11	23	19	14	7	7	94	31.1	569	9969	103	443
30 to 34	16	14	10	10	7	15	21	19	112	26.8	476	7364	196	1198
25 to 29	13	19	19	10	13	14	14	14	116	23.8	348	5303	324	2497
20 to 24	8	8	10	8	2	7	10	7	60	19.6	262	3829	410	4383
15 to 19	14	10	7	1	10	8	9	16	75	15.3	191	2685	481	6599
10 to 14	4	6	4	6	6	7	6	3	42	11.1	125	1890	547	9164
5 to 9	2	3	5	7	0	1	4	1	23	6.3	97	1354	575	11988
0 to 4	5	6	6	1	0	0	2	5	25	1.5	74	933	598	14927
-5 to -1	0	0	2	1	3	2	0	1	9	-4.6	57	630	615	17984
-10 to -6	3	6	2	2	0	1	1	0	15	-8.3	43	378	629	21092
-15 to -11	1	0	1	0	0	0	2	2	6	-12.3	29	202	643	24276
-20 to -16	5	3	0	3	3	3	2	1	20	-19.1	25	65	647	27499
-25 to -21	0	0	3	0	0	0	1	3	7	-21.7	1	1	671	30795
Mar														
65 to 69	0	0	0	1	5	4	0	0	10	46.5	740	25255	4	2
60 to 64	0	0	0	4	9	5	1	0	19	44.7	730	21577	14	44
55 to 59	0	0	1	7	7	6	2	0	23	42.2	708	17981	36	168
50 to 54	1	1	2	8	8	10	5	5	40	40.1	677	14522	67	429
45 to 49	7	3	10	14	3	5	10	7	59	38.2	628	11245	116	872
40 to 44	16	14	13	9	18	15	12	10	107	34.3	556	8266	188	1613
35 to 39	11	15	15	9	15	16	17	17	115	30.7	447	5759	297	2826
30 to 34	17	13	14	17	12	11	14	17	115	27.5	326	3843	418	4630
25 to 29	8	17	13	9	6	11	9	7	80	24.3	223	2482	521	6989
20 to 24	16	10	10	7	2	2	10	15	72	20.3	135	1570	609	9797
15 to 19	8	10	6	1	4	2	4	6	41	15.7	76	1035	668	12982
10 to 14	0	1	1	3	1	1	3	0	10	10.1	59	706	685	16373
5 to 9	3	3	2	1	0	2	1	3	15	6.5	44	435	700	19822
0 to 4	0	0	1	1	3	2	2	3	12	0.7	36	240	708	23347
-5 to -1	3	3	4	2	0	1	2	0	15	-3.9	23	97	721	26924
-10 to -6	1	2	0	0	0	0	1	3	7	-8.6	9	25	735	30572
-15 to -11	2	1	1	0	0	0	1	0	4	-11.5	1	1	743	7

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

GREAT FALLS, MONTANA
WBAN 24143
TABLE A:

TRY Data (1956)

Latitude 47.50 N
Longitude 111.40 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	hours below			degree hours	hours above	degree hours	
Apr															
70 to 74	0	0	0	1	7	7	0	0	15	48.3	716	22194	4	2	
65 to 69	0	0	0	6	7	10	2	0	25	46.4	701	18660	19	68	
60 to 64	0	0	3	7	10	7	5	0	32	44.1	668	15233	52	241	
55 to 59	0	0	2	7	4	6	9	2	30	42.0	638	11967	82	575	
50 to 54	2	0	10	13	16	12	11	12	76	39.6	590	8872	130	1080	
45 to 49	8	1	8	14	13	12	9	12	77	37.0	519	6108	201	1916	
40 to 44	19	15	15	13	13	9	16	14	114	34.6	423	3749	297	3157	
35 to 39	21	23	19	14	10	9	8	14	118	31.9	299	1947	421	4955	
30 to 34	21	27	17	7	6	18	17	17	130	29.2	176	725	544	7333	
25 to 29	16	14	11	8	4	0	12	17	82	25.6	58	153	662	10361	
20 to 24	3	10	5	0	0	0	1	2	21	21.8	7	6	713	13814	
May															
85 to 89	0	0	0	0	0	1	0	0	1	58.0	744	25806	0	0	
80 to 84	0	0	0	0	10	8	0	0	18	56.1	738	22091	6	5	
75 to 79	0	0	0	11	13	12	3	0	39	54.3	707	18461	37	95	
70 to 74	0	0	4	15	6	7	7	0	39	53.2	671	15010	73	364	
65 to 69	0	0	11	7	14	12	16	3	63	52.6	622	11762	122	836	
60 to 64	6	1	16	12	6	9	15	15	80	50.3	558	8795	186	1589	
55 to 59	26	14	10	11	15	15	9	27	127	47.9	456	6234	288	2748	
50 to 54	13	27	12	14	8	6	8	5	93	44.8	338	4262	406	4496	
45 to 49	7	7	13	7	6	6	14	10	70	41.6	258	2783	486	6737	
40 to 44	14	16	8	1	5	2	4	12	62	38.5	185	1667	559	9341	
35 to 39	5	6	3	6	2	7	3	4	36	33.3	142	873	602	12267	
30 to 34	10	10	6	5	8	8	12	10	69	31.4	81	279	663	15393	
25 to 29	12	12	10	4	0	0	2	7	47	27.1	19	24	725	18858	
Jun															
90 to 94	0	0	0	1	7	2	0	0	10	59.4	719	20470	1	1	
85 to 89	0	0	0	4	10	14	1	0	29	59.4	700	16920	20	51	
80 to 84	0	0	1	8	10	10	4	0	33	58.5	668	13493	52	224	
75 to 79	0	0	3	13	15	17	10	0	58	56.0	626	10236	94	567	
70 to 74	1	0	9	23	21	22	19	5	100	53.5	559	7260	161	1191	
65 to 69	5	3	17	19	10	6	17	17	94	52.4	456	4717	264	2248	
60 to 64	12	6	26	8	7	5	18	19	101	50.4	363	2677	357	3808	
55 to 59	24	29	18	10	6	6	6	23	122	48.3	244	1131	476	5862	
50 to 54	46	43	11	2	2	8	15	24	151	46.0	112	215	608	8546	
45 to 49	2	9	5	2	2	0	0	2	22	43.7	0	0	720	11931	

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

GREAT FALLS, MONTANA
WBAN 24143
TABLE A:

TRY Data (1956)

Latitude 47.50 N
Longitude 111.40 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														
90 to 94	0	0	0	1	13	17	0	0	31	59.8	742	17536	2	1
85 to 89	0	0	0	15	19	15	9	0	58	60.0	694	13945	50	130
80 to 84	0	0	7	14	12	10	11	0	54	59.9	644	10620	100	525
75 to 79	0	0	10	13	25	24	17	15	104	58.2	558	7579	186	1204
70 to 74	6	6	18	24	7	4	24	9	98	56.6	458	5038	286	2383
65 to 69	19	14	23	10	6	12	9	25	118	54.6	359	2979	385	4044
60 to 64	28	20	15	7	8	2	9	19	108	52.9	240	1503	504	6288
55 to 59	19	29	12	7	3	8	8	12	98	51.1	137	579	607	9084
50 to 54	15	15	7	2	0	1	6	10	56	47.6	58	140	686	12365
45 to 49	6	8	1	0	0	0	0	3	18	43.2	4	7	740	15952
40 to 44	0	1	0	0	0	0	0	0	1	38.0	0	0	744	19665
Aug														
90 to 94	0	0	0	0	3	5	0	0	8	58.4	744	20183	0	0
85 to 89	0	0	0	6	17	14	1	0	38	58.5	724	16496	20	33
80 to 84	0	0	0	15	12	11	6	0	44	56.8	683	12977	61	234
75 to 79	0	0	7	12	23	22	17	3	84	55.8	622	9690	122	667
70 to 74	1	0	13	21	11	12	14	12	84	54.5	541	6792	203	1489
65 to 69	10	4	15	14	11	12	18	18	102	53.3	451	4298	293	2715
60 to 64	24	19	24	11	9	4	15	22	128	51.8	329	2333	415	4470
55 to 59	33	30	14	10	6	7	9	23	132	50.0	208	970	536	6827
50 to 54	19	28	14	2	1	6	12	10	92	48.2	76	268	668	9845
45 to 49	6	9	4	2	0	0	1	5	27	43.8	19	52	725	13349
40 to 44	0	2	2	0	0	0	0	0	4	39.8	4	8	740	17025
35 to 39	0	1	0	0	0	0	0	0	1	39.0	0	0	744	20737
Sep														
85 to 89	0	0	0	0	4	2	0	0	6	57.7	719	20760	1	1
80 to 84	0	0	0	5	17	9	0	0	31	54.5	707	17186	13	27
75 to 79	0	0	0	11	13	20	0	0	44	53.8	665	13752	55	193
70 to 74	0	0	2	14	18	22	8	1	65	52.7	620	10532	100	573
65 to 69	1	0	7	15	10	9	20	12	74	50.3	543	7617	177	1258
60 to 64	16	5	16	17	10	8	22	21	115	48.0	454	5101	266	2342
55 to 59	14	20	19	12	6	4	14	15	104	45.9	344	3089	376	3930
50 to 54	21	16	21	7	6	7	7	15	100	44.3	231	1640	489	6081
45 to 49	19	20	11	6	6	7	11	12	92	40.6	140	696	580	8737
40 to 44	13	17	10	3	0	2	8	8	61	38.4	55	210	665	11851
35 to 39	6	9	4	0	0	0	0	6	25	34.3	17	46	703	15287
30 to 34	0	3	0	0	0	0	0	0	3	30.3	3	4	717	18845

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

GREAT FALLS, MONTANA
WBAW 24143
TABLE A:

TRY Data (1956)

Latitude 47.50 N
Longitude 111.40 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															
75 to 79	0	0	0	1	1	0	0	0	2	51.5	744	21587	0	0	
70 to 74	0	0	0	6	11	7	0	0	24	50.7	734	17877	10	10	
65 to 69	0	0	4	8	14	7	1	0	34	48.9	709	14272	35	125	
60 to 64	1	1	6	18	19	18	10	6	79	47.0	662	10830	82	403	
55 to 59	18	14	14	13	8	15	18	14	114	44.3	570	7752	174	1045	
50 to 54	7	13	19	11	13	12	14	14	103	41.7	459	5198	285	2211	
45 to 49	24	21	9	19	13	12	16	18	132	38.3	329	3197	415	3930	
40 to 44	12	5	14	4	2	6	9	9	61	35.3	228	1840	516	6293	
35 to 39	18	24	11	4	7	10	15	20	109	31.8	160	838	584	9011	
30 to 34	10	11	10	5	2	3	7	9	57	29.2	53	333	691	12226	
25 to 29	0	1	4	3	0	0	0	0	8	24.8	26	160	718	15773	
20 to 24	2	1	2	1	3	3	2	3	17	20.4	19	48	725	19381	
15 to 19	1	2	0	0	0	0	1	0	4	18.5	0	0	744	23053	
Nov															
65 to 69	0	0	0	0	1	0	0	0	1	46.0	720	21417	0	0	
60 to 64	0	0	0	3	5	3	0	0	11	44.0	714	17825	6	8	
55 to 59	3	3	4	9	20	6	7	3	55	41.9	696	14283	24	66	
50 to 54	0	1	4	13	9	8	4	5	44	40.4	639	10962	81	345	
45 to 49	7	9	7	11	9	13	6	8	70	37.5	586	7892	134	875	
40 to 44	21	18	16	13	12	15	15	14	124	34.5	492	5172	228	1755	
35 to 39	12	9	9	18	20	15	19	13	115	31.7	365	3017	355	3200	
30 to 34	18	16	22	12	6	21	20	20	135	29.0	236	1479	484	5262	
25 to 29	15	21	14	8	7	3	10	17	95	24.1	129	575	591	7958	
20 to 24	8	8	11	3	1	6	8	6	51	19.8	53	150	667	11133	
15 to 19	6	3	3	0	0	0	1	4	17	16.4	8	21	712	14604	
10 to 14	0	2	0	0	0	0	0	0	2	12.5	1	1	719	18184	
Dec															
55 to 59	0	0	0	4	10	1	0	0	15	40.9	739	20610	5	3	
50 to 54	5	6	3	13	15	8	4	6	60	38.0	717	16960	27	73	
45 to 49	15	15	16	18	16	14	14	15	123	35.9	626	13571	118	404	
40 to 44	15	10	17	13	18	23	18	10	124	34.3	486	10779	258	1332	
35 to 39	15	22	22	15	2	9	17	22	124	31.5	368	8639	376	2912	
30 to 34	5	2	2	2	4	9	8	6	38	27.1	281	7052	463	5045	
25 to 29	6	6	4	1	2	2	5	5	31	23.7	245	5732	499	7445	
20 to 24	0	3	2	3	2	0	2	1	13	20.2	220	4573	524	10006	
15 to 19	4	2	2	1	3	3	3	3	21	15.8	208	3492	536	12645	
10 to 14	8	6	1	3	6	2	6	4	36	10.4	186	2508	558	15381	
5 to 9	7	5	10	10	6	13	4	7	62	6.8	130	1693	614	18286	
0 to 4	4	5	5	1	0	0	3	5	23	2.0	89	1166	655	21479	
-5 to -1	0	3	3	0	0	0	0	0	6	-3.5	72	781	672	24814	
-10 to -6	2	2	0	3	3	3	0	0	13	-8.1	62	439	682	28192	
-15 to -11	3	2	2	6	6	2	4	5	30	-13.5	48	158	696	31631	
-20 to -16	4	4	4	0	0	4	5	4	25	-17.4	9	10	735	35203	

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

GREAT FALLS, MONTANA
WBAN 24143
TABLE B:

TRY Date (1956)

Latitude 47.50 N
Longitude 111.40 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	2	23	24	0	0	49	0.0	0.0	0.0	58.5	59.5	59.5	0.0	0.0	59.5
85 to 89	0	0	0	25	50	46	11	0	132	0.0	0.0	0.0	59.4	59.2	59.3	59.5	0.0	59.3
80 to 84	0	0	8	42	61	48	21	0	180	0.0	0.0	59.4	58.3	57.2	57.3	57.2	0.0	57.6
75 to 79	0	0	20	61	90	95	47	18	331	0.0	0.0	57.7	56.4	55.9	55.6	56.2	56.8	56.1
70 to 74	8	6	46	104	81	81	72	27	425	54.9	55.5	55.7	54.3	52.6	52.5	54.9	54.3	53.9
65 to 69	35	21	77	80	78	72	83	75	521	53.1	52.9	53.2	51.5	51.1	51.1	52.1	53.2	52.2
60 to 64	87	52	106	87	83	61	95	102	673	51.3	51.1	50.1	49.2	47.0	46.8	50.1	51.1	49.7
55 to 59	137	139	94	90	85	74	82	119	820	48.4	48.5	47.9	45.2	43.9	45.4	46.1	48.2	47.0
50 to 54	129	150	103	91	90	82	86	106	837	45.2	45.5	44.2	41.2	40.2	42.0	43.7	44.2	43.6
45 to 49	104	104	86	100	72	77	90	100	733	39.4	40.5	39.5	37.4	37.9	37.1	38.2	38.8	38.7
40 to 44	118	106	104	70	90	84	92	84	748	35.9	36.3	35.3	34.1	34.0	34.3	34.9	35.8	35.1
35 to 39	104	123	101	104	91	93	95	110	821	31.7	31.9	31.8	31.5	31.5	31.6	31.3	31.7	31.7
30 to 34	113	109	97	75	57	100	107	116	774	28.6	29.0	28.8	28.2	27.8	28.4	28.5	28.6	28.5
25 to 29	88	116	91	47	41	40	66	79	568	24.7	24.6	24.6	24.2	24.2	23.7	25.0	24.6	24.5
20 to 24	45	43	52	32	18	25	42	41	298	20.1	20.6	20.5	19.8	20.8	19.8	20.2	20.2	20.3
15 to 19	37	32	23	10	21	16	22	30	191	15.9	15.8	15.2	14.8	15.0	15.8	15.9	16.0	15.6
10 to 14	16	19	10	13	17	18	20	11	124	10.9	11.6	11.8	10.4	10.8	10.8	10.6	11.4	11.0
5 to 9	17	14	19	21	11	21	15	20	138	6.0	6.6	6.3	6.4	6.6	7.3	6.2	6.9	6.6
0 to 4	16	19	17	11	12	11	19	20	125	1.0	0.6	1.4	2.0	1.7	1.5	2.6	1.8	1.5
-5 to -1	13	13	20	14	12	10	7	12	101	-3.5	-3.6	-4.0	-3.6	-3.6	-4.0	-4.6	-3.3	-3.7
-10 to -6	10	16	7	7	3	8	9	9	69	-7.3	-8.0	-8.6	-7.0	-8.7	-8.3	-8.7	-8.0	-8.0
-15 to -11	9	6	7	6	6	2	6	8	50	-12.9	-13.7	-12.7	-14.2	-13.2	-14.5	-11.8	-12.9	-13.1
-20 to -16	9	7	4	3	3	7	7	5	45	-18.1	-18.4	-17.5	-19.3	-19.0	-17.7	-18.1	-17.8	-18.2
-25 to -21	0	0	3	0	0	0	1	3	7	0.0	0.0	-21.0	0.0	0.0	0.0	-22.0	-22.3	-21.7

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Month	Dry Bulb Temperature (F)					Wet Bulb Ave	Percent Relative Humidity					Average Humidity Ratio (lb moisture/lb dry air)					Average wind MPH
	Ave	Max	Min	Daily Max	Ave Min		4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	21.2	54	-14	29	13	18.4	80	73	72	76	76	0.0019	0.0020	0.0020	0.0018	0.0019	14.2
Feb	23.3	53	-23	31	15	19.7	70	64	64	70	68	0.0016	0.0018	0.0020	0.0018	0.0018	20.9
Mar	33.6	68	-13	44	24	27.7	70	51	45	60	58	0.0023	0.0022	0.0022	0.0023	0.0023	20.0
Apr	41.7	73	21	52	31	34.0	66	51	42	53	54	0.0027	0.0029	0.0028	0.0028	0.0028	12.9
May	52.8	85	25	63	43	44.1	76	53	43	57	59	0.0052	0.0053	0.0047	0.0053	0.0052	11.5
Jun	64.1	93	48	76	52	50.9	61	41	31	43	46	0.0060	0.0062	0.0056	0.0062	0.0061	15.2
Jul	68.9	93	44	81	57	54.8	64	41	31	43	47	0.0073	0.0074	0.0068	0.0074	0.0073	11.5
Aug	65.4	91	39	77	54	52.3	65	44	31	45	48	0.0067	0.0068	0.0059	0.0063	0.0066	11.9
Sep	58.7	88	31	72	46	46.2	60	40	27	45	45	0.0047	0.0048	0.0042	0.0050	0.0047	13.7
Oct	48.5	75	18	58	39	39.0	56	45	41	51	49	0.0034	0.0036	0.0035	0.0035	0.0035	16.9
Nov	37.8	65	12	47	29	31.5	67	54	48	58	58	0.0028	0.0028	0.0025	0.0025	0.0027	19.6
Dec	29.8	58	-20	39	20	23.8	64	58	56	62	60	0.0019	0.0021	0.0020	0.0020	0.0020	22.3
Year	45.6	93	-23	56	35	37.0	67	51	44	55	56	0.0039	0.0040	0.0037	0.0039	0.0039	15.9

GREAT FALLS, MONTANA
WBAN 24143
TABLE D:

TRY Data (1956)

Latitude 47.50 N
Longitude 111.40 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		
	Above (100s)*	Base Heat	Cool		Above (100s)*	Base Heat	Cool		Above (100s)*	Base Heat	Cool		Above (100s)*	Base Heat	Cool		Above (100s)*	Base Heat	Cool		Below Base	100s*	Above Base	100s*				
94	0	559	0	0	483	0	0	445	0	0	468	0	0	528	0	0	1757	0	8760	4240	0	0						
93	0	548	0	0	472	0	1	434	0	0	458	0	0	517	0	0	1724	0	8758	4152	2	0						
92	0	537	0	0	461	0	6	423	0	5	447	0	0	506	0	0	1691	0	8749	4065	11	0						
91	0	526	0	0	450	0	13	412	0	11	436	0	0	495	0	0	1658	0	8735	3977	25	0						
90	0	515	0	1	439	0	20	402	0	19	425	0	0	484	0	0	1626	0	8720	3890	40	1						
89	0	504	0	3	429	0	27	391	1	27	414	0	0	473	0	0	1593	0	8702	3803	58	1						
88	0	493	0	7	418	0	36	380	1	33	404	1	1	462	0	0	1560	0	8681	3716	79	2						
87	0	482	0	11	407	0	46	370	1	42	393	1	2	451	0	0	1527	0	8657	3629	103	3						
86	0	471	0	17	396	0	55	359	2	52	383	2	4	440	0	0	1494	0	8631	3543	129	4						
85	0	460	0	24	385	1	66	349	2	63	372	2	8	429	0	0	1461	0	8598	3457	162	5						
84	0	449	0	29	375	1	76	339	3	73	362	3	12	418	0	0	1428	0	8569	3371	191	7						
83	0	438	0	36	364	1	85	329	4	79	352	4	14	408	0	0	1396	0	8544	3285	216	9						
82	2	427	0	44	353	2	101	318	5	86	342	4	17	397	1	0	1363	0	8509	3200	251	11						
81	4	416	0	52	343	2	114	309	6	92	332	5	22	386	1	0	1330	0	8475	3115	285	14						
80	6	405	0	62	333	3	126	299	7	106	322	6	28	375	1	0	1297	0	8430	3031	330	17						
79	8	394	0	73	322	3	145	289	8	126	312	8	36	365	1	0	1264	0	8370	2947	390	21						
78	11	384	0	85	312	4	166	280	10	148	302	9	43	354	2	2	1231	0	8304	2863	456	25						
77	15	373	0	96	302	5	184	271	12	167	293	10	52	344	2	5	1199	0	8239	2780	521	30						
76	19	362	1	106	292	6	200	262	14	184	284	12	62	333	3	9	1166	0	8178	2698	582	35						
75	25	351	1	121	282	7	216	253	16	204	275	14	73	323	3	14	1133	0	8106	2617	654	41						
74	31	341	1	138	273	8	230	244	18	220	266	16	88	313	4	19	1100	0	8032	2536	728	48						
73	37	330	1	157	263	10	246	235	20	234	257	19	100	303	5	24	1068	1	7959	2456	801	56						
72	44	319	2	177	254	12	265	227	23	247	249	21	111	293	6	31	1035	1	7884	2377	876	64						
71	54	309	2	192	245	13	280	219	26	260	240	23	126	283	7	38	1003	1	7809	2299	951	73						
70	66	299	3	216	236	15	296	211	29	281	232	26	142	274	9	50	970	2	7708	2221	1052	83						
69	76	288	4	239	227	18	315	203	32	301	224	29	157	264	10	67	938	2	7603	2144	1157	94						
68	86	278	4	253	219	20	333	195	35	315	216	32	175	255	12	84	906	3	7512	2069	1248	106						
67	104	268	5	267	210	23	347	188	38	325	208	35	195	246	14	110	874	4	7411	1994	1349	119						
66	120	258	7	284	202	25	360	180	42	338	201	39	210	237	16	140	842	5	7306	1921	1454	133						
65	139	249	8	304	194	28	375	173	45	357	193	42	225	228	18	172	811	7	7186	1848	1574	149						
64	160	239	9	325	186	32	391	166	49	371	186	46	240	219	20	212	780	9	7060	1777	1700	165						
63	176	230	11	343	179	35	409	159	53	385	179	50	255	211	23	252	750	11	6938	1707	1822	183						
62	195	221	13	360	171	38	425	152	57	397	172	54	273	203	25	290	719	14	6818	1638	1942	201						
61	215	212	15	377	164	42	437	146	62	404	165	58	294	195	28	331	690	17	6701	1570	2059	221						
60	240	203	17	392	157	46	454	139	66	417	158	62	317	187	31	391	660	20	6547	1504	2213	243						
59	265	195	20	409	150	50	468	133	71	436	151	66	336	179	35	462	632	25	6382	1440	2378	266						
58	283	187	22	426	143	54	477	126	76	455	145	70	352	171	38	530	604	30	6236	1376	2524	290						
57	302	179	25	442	137	59	494	120	80	473	138	75	369	164	42	613	577	35	6066	1315	2694	316						
56	320	171	28	460	130	63	511	114	85	485	132	80	385	157	45	695	550	42	5902	1255	2858	344						
55	340	163	32	481	124	68	535	109	91	495	126	85	402	150	49	778	525	49	5728	1197	3032	373						
54	365	156	35	501	118	73	558	103	96	508	120	90	417	143	53	861	500	57	5548	1141	3212	405						
53	390	149	39	520	112	78	576	98	102	522	114	95	432	136	58	932	476	66	5386	1086	3374	437						
52	408	142	43	538	106	83	597	93	108	534	109	100	450	130	62	1008	453	76	5223	1033	3537	472						
51	422	135	47	555	101	88	615	88	114	548	103	106	466	123	67	1084	431	87	5068	981	3692	508						
50	441	128	52	572	96	94	632	83	120	570	98	111	485	117	71	1166	409	98	4892	931	3868	546						
49	464	122	56	591	90	100	648	79	126	589	93	117	504	111	76	1242	389	110	4720	884	4040	586						

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

GREAT FALLS, MONTANA
WBAN 24143
TABLE D:

TRY Data (1956)

Latitude 47.50 N
Longitude 111.40 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																		24 HOUR SUMMARY			
	7-9AM**			10-12AM**			1-3PM**			4-6PM**			7-9PM**			10PM-6AM**			HEATING		COOLING	
	Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg	Hrs	Deg
	Above (100s)*	Base	Heat	Above (100s)*	Base	Heat	Above (100s)*	Base	Heat	Above (100s)*	Base	Heat	Above (100s)*	Base	Heat	Above (100s)*	Base	Heat	Below Base 100s*	Above Base 100s*	Below Base 100s*	Above Base 100s*
48	482	116	61	609	86	106	662	74	133	604	88	123	519	105	81	1309	368	123	4573	837	4187	627
47	498	110	66	626	81	112	680	70	140	622	83	129	537	100	87	1379	349	136	4417	792	4343	669
46	513	104	71	646	76	118	698	66	147	637	78	135	557	94	92	1434	330	150	4274	749	4486	714
45	530	98	76	669	72	125	709	62	154	651	74	142	576	89	98	1488	312	165	4135	707	4625	759
44	550	92	81	686	68	132	724	58	161	667	69	148	596	84	104	1551	294	180	3984	666	4776	806
43	574	87	87	697	64	139	741	55	168	685	65	155	619	79	110	1614	277	196	3828	627	4932	855
42	599	82	93	711	60	146	752	51	176	706	61	162	642	74	116	1682	261	212	3665	589	5095	905
41	616	77	99	726	56	153	768	48	183	720	57	169	658	70	123	1744	245	229	3527	554	5233	956
40	633	72	105	742	52	160	791	45	191	733	54	177	671	66	129	1797	230	247	3391	519	5369	1009
39	654	68	112	762	49	168	813	42	199	750	50	184	687	61	136	1854	216	265	3238	486	5522	1064
38	679	64	118	783	46	176	834	39	207	763	47	192	700	58	143	1914	201	284	3085	454	5675	1120
37	701	60	125	801	43	184	856	37	216	783	44	199	715	54	150	1984	188	304	2918	424	5842	1177
36	715	56	132	821	40	192	871	34	224	807	41	207	737	50	157	2046	175	324	2761	396	5999	1237
35	733	52	139	844	37	200	885	32	233	827	38	215	761	46	165	2117	163	345	2590	369	6170	1297
34	757	49	147	863	35	208	901	30	242	850	35	224	783	43	173	2193	152	366	2412	344	6348	1360
33	780	45	155	881	33	217	914	28	251	872	33	232	801	40	181	2265	141	388	2245	321	6515	1424
32	797	42	163	898	30	226	925	26	260	890	31	241	823	37	189	2347	132	412	2079	299	6681	1490
31	811	39	171	909	29	235	935	25	270	908	29	250	843	35	197	2411	123	435	1941	279	6819	1558
30	830	37	179	923	27	244	945	23	279	927	27	259	866	32	205	2470	114	460	1798	260	6962	1627
29	852	34	187	936	25	254	956	22	289	940	25	269	892	30	214	2526	106	485	1656	243	7104	1697
28	870	32	196	947	24	263	965	21	298	947	24	278	909	28	223	2589	99	510	1530	227	7230	1769
27	888	30	205	955	22	273	975	19	308	957	22	288	920	26	232	2657	93	537	1406	212	7354	1842
26	903	28	214	962	21	282	984	18	318	964	21	297	931	25	242	2707	87	563	1308	199	7452	1916
25	920	26	223	971	20	292	989	17	327	971	20	307	941	23	251	2757	81	591	1209	186	7551	1991
24	941	24	232	982	18	302	995	16	337	980	19	317	952	22	261	2798	76	619	1110	175	7650	2067
23	956	23	241	989	17	311	1001	15	347	984	18	327	964	20	270	2825	71	647	1039	164	7721	2144
22	966	21	251	995	16	321	1005	14	357	988	16	336	971	19	280	2852	67	675	981	154	7779	2221
21	974	20	261	1002	15	331	1007	13	368	993	15	346	976	18	290	2877	63	704	929	144	7831	2299
20	982	19	271	1008	14	341	1009	12	378	999	14	356	984	17	299	2901	59	733	876	135	7884	2378
19	987	18	280	1010	14	352	1011	12	388	1002	14	366	992	16	309	2929	55	762	827	127	7933	2457
18	992	17	290	1012	13	362	1014	11	398	1006	13	376	998	15	319	2955	52	791	782	119	7978	2537
17	997	16	300	1014	12	372	1017	10	408	1011	12	386	1002	14	329	2971	48	821	746	111	8014	2617
16	999	15	310	1015	11	382	1024	9	418	1014	11	397	1005	13	339	2984	45	851	718	104	8042	2697
15	1003	14	320	1018	10	392	1029	8	428	1016	10	407	1008	12	349	3002	42	881	681	97	8079	2777
14	1010	13	330	1021	10	402	1033	8	439	1019	9	417	1013	11	359	3017	40	911	646	90	8114	2858
13	1013	12	340	1024	9	412	1036	7	449	1021	9	427	1017	10	370	3028	37	941	620	84	8140	2940
12	1015	11	351	1026	8	423	1038	7	459	1025	8	437	1022	10	380	3042	34	971	592	78	8168	3021
11	1016	11	361	1027	7	433	1041	6	470	1030	7	448	1024	9	390	3050	32	1002	571	72	8189	3103
10	1017	10	371	1030	7	443	1045	6	480	1034	7	458	1027	8	400	3055	30	1032	550	66	8210	3185
9	1018	9	381	1036	6	454	1049	5	491	1041	6	468	1031	7	411	3063	27	1063	520	61	8240	3267
8	1020	8	391	1041	6	464	1052	5	501	1049	5	479	1033	7	421	3073	25	1093	490	56	8270	3350
7	1025	7	402	1045	5	474	1055	4	512	1053	5	489	1037	6	431	3084	23	1124	460	51	8300	3433
6	1031	7	412	1049	5	485	1057	4	522	1055	5	500	1040	6	442	3093	21	1155	433	47	8327	3516
5	1035	6	422	1052	4	495	1058	4	533	1056	4	510	1044	5	452	3104	19	1186	409	43	8351	3599
4	1038	6	433	1056	4	506	1061	3	544	1057	4	521	1049	5	463	3112	18	1217	386	39	8374	3683
3	1041	5	443	1059	3	517	1064	3	554	1058	4	531	1055	4	473	3117	16	1248	363	35	8397	3767

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (i.e., 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

GREAT FALLS, MONTANA

MBAN 24143

TABLE D:

TRY Data (1956)

Latitude 47.50 N

Longitude 111.40 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
2	1044	5	453	1061	3	527	1067	3	565	1063	3	542	1062	4	484	3129	14 1280
1	1048	4	464	1063	3	538	1069	2	576	1066	3	553	1065	4	494	3143	13 1311
0	1052	4	474	1064	2	548	1070	2	586	1067	3	563	1065	3	505	3157	11 1342
-1	1055	3	485	1066	2	559	1071	2	597	1068	2	574	1065	3	516	3168	10 1374
-2	1058	3	495	1067	2	570	1073	2	608	1069	2	585	1065	3	526	3174	9 1406
-3	1059	2	506	1070	2	580	1076	1	618	1071	2	595	1065	2	537	3180	8 1438
-4	1062	2	517	1074	1	591	1079	1	629	1072	2	606	1067	2	548	3186	7 1469
-5	1069	2	527	1077	1	602	1082	1	640	1075	1	617	1070	2	558	3196	6 1501
-6	1074	2	538	1080	1	613	1083	1	651	1078	1	628	1073	2	569	3208	5 1533
-7	1075	1	549	1083	1	624	1083	1	662	1080	1	638	1074	1	580	3217	5 1565
-8	1076	1	560	1084	1	634	1083	1	672	1082	1	649	1074	1	590	3224	4 1598
-9	1078	1	570	1085	1	645	1085	1	683	1083	1	660	1076	1	601	3228	3 1630
-10	1080	1	581	1086	1	656	1086	0	694	1085	1	671	1079	1	612	3234	3 1662
-11	1082	1	592	1086	0	667	1086	0	705	1086	1	682	1083	1	623	3240	2 1695
-12	1083	1	603	1086	0	678	1086	0	716	1086	0	693	1085	1	634	3244	2 1727
-13	1085	0	614	1087	0	689	1088	0	727	1086	0	704	1086	0	644	3248	2 1760
-14	1086	0	624	1088	0	700	1091	0	738	1086	0	714	1086	0	655	3254	1 1792
-15	1087	0	635	1091	0	710	1092	0	749	1087	0	725	1086	0	666	3259	1 1825
-16	1088	0	646	1092	0	721	1092	0	760	1089	0	736	1087	0	677	3262	1 1857
-17	1090	0	657	1092	0	732	1092	0	770	1091	0	747	1089	0	688	3266	0 1890
-18	1091	0	668	1092	0	743	1092	0	781	1092	0	758	1090	0	699	3271	0 1923
-19	1091	0	679	1093	0	754	1093	0	792	1093	0	769	1091	0	710	3275	0 1955
-20	1091	0	690	1094	0	765	1095	0	803	1094	0	780	1093	0	721	3279	0 1988
-21	1093	0	701	1095	0	776	1095	0	814	1095	0	791	1094	0	732	3282	0 2021
-22	1095	0	712	1095	0	787	1095	0	825	1095	0	802	1094	0	743	3283	0 2054
-23	1095	0	723	1095	0	798	1095	0	836	1095	0	813	1095	0	754	3284	0 2087
-24	1095	0	734	1095	0	809	1095	0	847	1095	0	824	1095	0	764	3285	0 2119

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

GREAT FALLS, MONTANA
WBAN 24143

TRY Data (1956)

Latitude 47.50 N
Longitude 111.40 E

TABLE E:

Annual COOLING Wet Bulb Degree Hour Summary

Wet Bulb Temperature (F) Base:	50	53	56	59	62	65	68	71	74	77	80
Annual Wet Bulb hours ABOVE base:	2145	1472	782	291	41	3	0	0	0	0	0
Annual Wet Bulb Cooling deg-hrs:	11944.	6178.	2468.	613.	66.	4.	0.	0.	0.	0.	0.

TABLE F:

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

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **												COOLING HUMIDITY RATIO HOURS **												Maintained Indoor Humidity Ratio*
	Heating Degree Base												Cooling Degree Base												
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80			
.001	1	1	1	1	1	1	1	1	1	1	1	21	20	19	18	16	13	9	7	4	3	1	.001		
.002	2	2	2	2	2	2	2	2	2	2	2	15	14	14	13	12	10	7	5	3	2	1	.002		
.003	3	4	5	5	6	6	6	6	6	6	6	10	10	10	9	9	7	5	4	2	2	1	.003		
.004	5	6	8	9	10	10	11	11	11	11	11	6	6	6	6	6	5	4	3	2	1	0	.004		
.005	7	9	11	13	14	15	16	17	17	17	18	4	4	4	4	4	3	2	2	1	1	0	.005		
.006	9	11	14	17	19	21	22	23	23	24	24	2	2	2	2	2	2	1	1	0	0	0	.006		
.007	10	14	18	21	24	26	28	29	30	31	32	1	1	1	1	1	1	1	0	0	0	0	.007		
.008	12	16	21	25	29	32	34	36	38	39	40	0	0	0	0	0	0	0	0	0	0	0	.008		
.009	14	19	24	29	33	37	41	43	45	47	48	0	0	0	0	0	0	0	0	0	0	0	.009		
.010	15	21	28	33	38	43	47	50	53	55	56	0	0	0	0	0	0	0	0	0	0	0	.010		
.011	17	24	31	37	43	49	54	57	60	63	64	0	0	0	0	0	0	0	0	0	0	0	.011		
.012	19	26	34	41	48	54	60	65	68	71	73	0	0	0	0	0	0	0	0	0	0	0	.012		
.013	21	29	38	45	53	60	66	72	76	79	81	0	0	0	0	0	0	0	0	0	0	0	.013		
.014	22	31	41	49	57	65	73	79	83	87	90	0	0	0	0	0	0	0	0	0	0	0	.014		
.015	24	34	44	53	62	71	79	86	91	95	98	0	0	0	0	0	0	0	0	0	0	0	.015		
.016	26	36	48	58	67	77	86	93	98	103	106	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	27	39	51	62	72	82	92	100	106	111	115	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	29	41	54	66	77	88	99	107	114	119	123	0	0	0	0	0	0	0	0	0	0	0	.018		

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

TABLE G:

Percent Diffuse Solar Radiation*
and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
% Diffuse on surface													
HORIZONTAL	38	46	43	43	63	41	34	40	33	38	37	49	42
VERTICAL													
NORTH	100	100	100	98	95	88	87	96	100	100	100	100	94
WEST	43	57	54	59	72	64	52	57	48	48	45	54	57
SOUTH	23	34	41	52	80	66	58	56	37	33	24	29	46
EAST	48	53	55	58	76	56	51	54	48	49	43	53	55
% Possible Sun	48	57	66	61	63	65	80	77	68	61	46	45	63

FOOTNOTES: * Corrected For Cloud Cover.

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

GREAT FALLS, MONTANA
WBAN 24143
TABLE H:

TRY Data (1956)

Latitude 47.50 N
Longitude 111.40 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/ 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	1669	1548	1219	884	476	215	115	108	107	1574	637	843	773	609	445	257	145	104	100	100	790	367	421
Feb	1914	1786	1457	1149	720	391	215	157	156	1981	993	800	763	643	518	345	221	161	143	143	807	468	720
Mar	1919	1830	1619	1408	1030	680	430	276	236	2334	1530	900	858	763	668	509	369	279	229	216	1022	730	1170
Apr	1639	1676	1624	1554	1305	1002	716	491	354	2466	2068	1127	1136	1082	1018	861	692	551	450	393	1483	1302	1489
May	1360	1479	1557	1601	1470	1236	961	702	518	2459	2445	982	1011	1017	1011	936	830	723	629	569	1313	1371	1848
Jun	1241	1380	1515	1614	1543	1358	1097	832	646	2433	2610	1096	1193	1261	1304	1236	1100	927	759	635	1756	1875	2101
Jul	1285	1412	1519	1590	1493	1295	1032	774	593	2419	2518	1132	1213	1272	1308	1227	1079	893	712	584	1862	1935	2329
Aug	1489	1560	1560	1536	1343	1079	808	577	422	2400	2184	1090	1138	1129	1102	976	814	656	525	434	1556	1470	1933
Sep	1766	1719	1566	1406	1094	775	522	351	286	2308	1687	1112	1080	980	876	696	521	388	299	265	1392	1064	1379
Oct	1874	1754	1476	1200	809	478	281	201	191	2046	1151	907	854	730	607	436	291	205	170	165	977	613	925
Nov	1717	1599	1273	949	545	256	144	124	124	1666	731	904	850	689	523	317	173	120	111	111	866	419	498
Dec	1551	1442	1129	803	414	173	101	96	96	1430	545	595	558	449	333	194	109	85	83	83	546	260	336
Year	1617	1597	1459	1308	1021	746	537	392	312	2126	1594	957	953	886	811	667	530	426	352	309	1199	992	1262

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	1449	1328	1021	727	374	153	91	87	87	725	656	505	363	204	110	83	81	81
Feb	1636	1507	1219	951	577	294	157	127	126	675	639	533	424	275	171	126	116	116
Mar	1583	1524	1346	1169	845	539	323	211	191	741	709	628	549	413	294	218	182	175
Apr	1289	1362	1344	1296	1083	817	566	374	278	903	926	890	839	707	561	440	356	316
May	1020	1157	1266	1327	1221	1019	773	550	391	776	810	827	827	766	678	586	506	454
Jun	902	1050	1212	1329	1279	1118	883	653	481	836	933	1015	1069	1017	900	747	604	495
Jul	950	1090	1227	1316	1241	1065	831	607	445	861	951	1031	1080	1016	886	720	565	452
Aug	1152	1250	1284	1279	1115	884	644	447	329	857	916	925	911	805	665	528	415	346
Sep	1437	1423	1302	1175	903	621	402	269	231	907	890	808	726	571	419	305	236	215
Oct	1587	1475	1230	998	654	368	211	158	154	760	711	603	502	353	228	160	136	134
Nov	1480	1361	1063	779	428	189	108	100	100	773	720	572	427	250	132	94	90	90
Dec	1344	1238	943	654	320	123	79	77	77	508	473	372	271	152	83	68	67	67
Year	1317	1312	1204	1084	838	601	424	306	241	777	778	726	667	545	428	341	280	246

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

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

HOUSTON, TEXAS
WBAN 12918
TABLE A:

TRY Data (1966)

Latitude 29.70 N
Longitude 90.30 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Jan														
75 to 79	0	0	0	1	3	0	0	0	4	69.3	744	21983	0	0
70 to 74	3	3	2	5	10	6	3	3	35	65.3	734	18280	10	17
65 to 69	3	3	2	7	11	10	0	1	37	60.1	694	14720	50	177
60 to 64	2	1	2	14	9	14	8	2	52	55.6	641	11371	103	548
55 to 59	3	3	10	5	9	9	11	10	60	52.4	595	8274	149	1171
50 to 54	14	15	11	15	12	13	21	11	112	48.2	505	5468	239	2085
45 to 49	19	20	20	13	8	11	12	24	127	43.7	398	3198	346	3535
40 to 44	22	21	18	16	21	17	19	16	150	40.0	266	1525	478	5582
35 to 39	13	11	14	10	8	12	12	19	99	35.1	118	612	626	8389
30 to 34	8	6	4	4	2	1	6	3	34	30.1	46	239	698	11736
25 to 29	3	7	7	3	0	0	1	4	25	25.2	20	69	724	15286
20 to 24	3	3	3	0	0	0	0	0	9	19.0	6	10	738	18947
Feb														
70 to 74	0	0	0	2	4	1	0	0	7	63.6	672	13646	0	0
65 to 69	0	0	1	14	27	21	6	5	74	60.0	635	10332	37	46
60 to 64	8	6	8	13	10	16	8	6	75	55.8	559	7347	113	421
55 to 59	12	12	9	19	20	12	11	8	103	51.6	491	4725	181	1159
50 to 54	16	15	18	19	15	24	27	23	157	48.5	357	2602	315	2396
45 to 49	19	16	18	8	6	7	20	22	116	44.2	200	1241	472	4395
40 to 44	13	15	14	7	2	3	9	11	74	39.0	109	489	563	7003
35 to 39	11	11	8	2	0	0	3	9	44	35.3	35	134	637	10008
30 to 34	5	9	8	0	0	0	0	0	22	29.6	11	15	661	13249
Mar														
80 to 84	0	0	0	1	9	6	0	0	16	64.5	739	16289	5	5
75 to 79	0	0	0	9	18	13	0	0	40	65.1	723	12636	21	72
70 to 74	0	0	3	18	15	19	6	1	62	64.2	669	9159	75	315
65 to 69	15	11	13	22	22	16	20	12	131	61.5	593	5990	151	866
60 to 64	8	7	19	16	19	25	27	24	145	56.2	449	3414	295	2010
55 to 59	32	29	28	22	10	12	21	29	183	52.1	266	1595	478	3911
50 to 54	17	25	17	5	0	2	19	15	100	46.2	127	649	617	6685
45 to 49	13	5	6	0	0	0	0	12	36	41.6	54	244	690	10000
40 to 44	7	11	4	0	0	0	0	0	22	36.8	18	67	726	13543
35 to 39	1	3	2	0	0	0	0	0	6	32.3	5	14	739	17210
30 to 34	0	2	1	0	0	0	0	0	3	30.0	0	0	744	20916

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

HOUSTON, TEXAS
WBAN 12918
TABLE A:

TRY Data (1966)

Latitude 29.70 N
Longitude 90.30 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence In time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Apr															
85 to 89	0	0	0	0	1	2	0	0	3	68.3	720	12781	0	0	
80 to 84	0	0	0	16	32	12	0	0	60	72.2	703	9201	17	20	
75 to 79	0	0	13	28	30	38	15	4	128	70.1	616	5877	104	296	
70 to 74	36	35	27	27	20	23	36	42	246	67.5	415	3198	305	1217	
65 to 69	14	13	21	14	1	9	20	11	103	62.1	234	1631	486	3250	
60 to 64	11	13	15	2	5	6	18	22	92	57.0	160	676	560	5895	
55 to 59	23	20	12	3	1	0	1	9	69	53.9	46	166	674	8985	
50 to 54	5	4	1	0	0	0	0	2	12	46.2	14	42	706	12461	
45 to 49	1	5	1	0	0	0	0	0	7	43.7	0	0	720	16019	
May															
90 to 94	0	0	0	0	6	2	0	0	8	77.4	744	13007	0	0	
85 to 89	0	0	0	16	32	14	0	0	62	75.0	729	9315	15	28	
80 to 84	0	0	11	37	28	43	10	0	129	73.2	619	5897	125	330	
75 to 79	15	9	34	14	9	10	47	30	168	72.0	497	3107	247	1260	
70 to 74	48	46	23	11	9	15	20	42	214	68.9	288	1097	456	2970	
65 to 69	27	34	22	14	9	9	13	18	146	64.3	88	174	656	5767	
60 to 64	3	4	3	1	0	0	3	3	17	59.1	13	17	731	9330	
Jun															
90 to 94	0	0	0	4	15	7	0	0	26	76.0	718	9813	2	1	
85 to 89	0	0	1	55	48	41	3	0	148	75.0	642	6354	78	142	
80 to 84	0	0	43	19	18	28	24	1	133	73.5	494	3523	226	911	
75 to 79	27	19	38	7	8	11	53	56	219	72.1	362	1399	358	2387	
70 to 74	54	62	8	5	1	3	7	24	164	69.6	82	245	638	4833	
65 to 69	8	6	0	0	0	0	3	9	26	62.7	19	40	701	8228	
60 to 64	1	3	0	0	0	0	0	0	4	58.5	3	3	717	11791	

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

HOUSTON, TEXAS
WBAN 12918
TABLE A:

TRY Data (1966)

Latitude 29.70 N
Longitude 90.30 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Jul														
95 to 99	0	0	0	0	4	1	0	0	5	78.6	744	10980	0	0
90 to 94	0	0	0	39	57	32	0	0	128	78.3	712	7297	32	37
85 to 89	0	0	28	42	21	42	14	0	147	77.7	546	4153	198	613
80 to 84	0	1	53	11	6	13	60	26	170	76.1	408	1769	336	1949
75 to 79	84	81	12	1	5	4	19	64	270	74.4	148	241	596	4141
70 to 74	9	11	0	0	0	1	0	3	24	70.6	2	1	742	7621
Aug														
90 to 94	0	0	0	21	41	26	0	0	88	78.2	730	8538	14	11
85 to 89	0	0	19	47	24	37	6	0	133	77.7	604	5177	140	370
80 to 84	12	4	34	15	18	19	49	18	169	76.1	476	2472	268	1385
75 to 79	66	67	34	5	7	8	33	69	289	74.1	232	618	512	3251
70 to 74	12	17	2	2	1	3	5	5	47	69.4	32	104	712	6457
65 to 69	3	5	4	3	2	0	0	1	18	64.8	7	5	737	10078
Sep														
90 to 94	0	0	0	8	17	4	0	0	29	76.6	720	10295	0	0
85 to 89	0	0	4	38	49	40	0	0	131	73.8	647	6821	73	126
80 to 84	0	0	17	36	24	39	23	0	139	72.8	505	3940	215	845
75 to 79	29	18	35	8	0	7	48	48	193	72.0	365	1764	355	2269
70 to 74	44	43	23	0	0	0	18	34	162	68.8	138	497	582	4602
65 to 69	13	21	9	0	0	0	1	8	52	63.8	37	93	683	7798
60 to 64	4	8	2	0	0	0	0	0	14	59.8	2	1	718	11306

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

HOUSTON, TEXAS
WBAN 12918
TABLE A:

TRY Data (1966)

Latitude 29.70 N
Longitude 90.30 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence In time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Oct															
90 to 94	0	0	0	1	4	0	0	0	5	78.6	744	17963	0	0	
85 to 89	0	0	0	10	12	7	0	0	29	77.0	732	14264	12	21	
80 to 84	0	0	5	10	18	17	2	0	52	74.0	693	10687	51	164	
75 to 79	13	12	13	26	36	25	21	21	167	69.0	603	7397	141	594	
70 to 74	11	7	8	24	10	22	11	6	99	64.5	434	4810	310	1727	
65 to 69	11	11	18	12	10	16	19	14	111	60.0	355	2826	389	3463	
60 to 64	19	18	20	6	3	5	26	25	122	57.0	230	1354	514	5711	
55 to 59	21	19	18	4	0	1	10	20	93	53.3	121	486	623	8563	
50 to 54	14	22	10	0	0	0	4	5	55	48.9	45	109	699	11906	
45 to 49	4	2	0	0	0	0	0	2	8	43.7	7	15	737	15532	
40 to 44	0	2	1	0	0	0	0	0	3	41.7	0	0	744	19237	
Nov															
80 to 84	0	0	0	8	21	1	0	0	30	69.7	719	13609	1	1	
75 to 79	3	1	1	24	23	18	3	3	76	69.2	664	10127	56	119	
70 to 74	0	0	9	16	17	31	4	0	77	65.3	587	7005	133	597	
65 to 69	22	19	22	22	16	17	43	32	193	63.2	471	4301	249	1493	
60 to 64	30	33	28	7	7	12	12	20	149	59.2	271	2456	449	3248	
55 to 59	9	12	10	5	0	3	12	14	65	53.2	155	1406	565	5798	
50 to 54	13	12	8	4	3	6	6	5	57	46.8	110	739	610	8731	
45 to 49	3	1	3	3	3	2	7	12	34	42.1	55	336	665	11928	
40 to 44	6	5	5	1	0	0	3	1	21	35.5	32	130	688	15322	
35 to 39	4	4	4	0	0	0	0	3	15	32.5	12	26	708	18818	
30 to 34	0	3	0	0	0	0	0	0	3	31.0	0	0	720	22392	
Dec															
80 to 84	0	0	0	2	1	0	0	0	3	67.7	744	21743	0	0	
75 to 79	0	0	0	7	16	6	0	0	29	67.6	730	18040	14	17	
70 to 74	5	3	3	10	15	15	6	4	61	66.0	698	14471	46	168	
65 to 69	4	3	11	9	12	14	9	9	71	63.0	614	11181	130	598	
60 to 64	11	16	6	8	4	9	19	11	84	58.7	551	8257	193	1394	
55 to 59	11	5	9	12	6	13	12	15	83	53.8	460	5710	284	2567	
50 to 54	14	18	19	15	12	7	15	18	118	48.9	380	3601	364	4178	
45 to 49	18	13	15	12	21	19	7	8	113	42.7	252	2018	492	6315	
40 to 44	9	16	10	10	6	8	9	6	74	37.5	146	1044	598	9061	
35 to 39	5	1	4	7	0	2	11	10	40	32.0	87	471	657	12208	
30 to 34	15	9	7	1	0	0	5	12	49	28.7	45	128	699	15585	
25 to 29	1	9	9	0	0	0	0	0	19	26.1	5	5	739	19182	

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

HOUSTON, TEXAS
WBAN 12918
TABLE B:

TRY Data (1966)

Latitude 29.70 N
Longitude 90.30 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	4	1	0	0	5	0.0	0.0	0.0	0.0	78.5	79.0	0.0	0.0	78.6
90 to 94	0	0	0	73	140	71	0	0	284	0.0	0.0	0.0	78.3	77.6	77.8	0.0	0.0	77.8
85 to 89	0	0	52	208	187	183	23	0	653	0.0	0.0	78.2	76.4	75.0	75.7	77.0	0.0	76.0
80 to 84	12	5	163	155	175	178	168	45	901	77.0	76.4	76.0	72.6	72.2	72.9	75.3	76.3	74.0
75 to 79	237	207	180	130	155	140	239	295	1583	74.0	74.0	72.8	69.2	67.0	68.8	72.3	73.3	71.9
70 to 74	222	227	108	120	102	139	116	164	1198	69.6	69.8	68.5	64.8	62.8	64.4	67.8	69.0	67.6
65 to 69	120	126	123	117	110	112	134	120	962	63.8	64.2	63.8	60.7	58.3	60.2	62.9	64.0	62.3
60 to 64	97	109	103	67	57	87	121	113	754	59.7	59.5	58.6	54.7	51.7	53.4	58.0	59.0	57.4
55 to 59	111	100	96	70	46	50	78	105	656	54.7	54.6	53.4	49.5	48.3	48.9	52.7	54.4	52.8
50 to 54	93	111	84	58	42	52	92	79	611	49.1	49.1	48.7	47.0	47.0	46.7	46.7	47.9	48.0
45 to 49	77	62	63	36	38	39	46	80	441	44.1	44.5	44.3	41.9	40.7	40.8	43.7	43.7	43.3
40 to 44	57	70	52	34	29	28	40	34	344	39.3	39.5	39.1	38.0	38.6	38.3	37.7	38.7	38.8
35 to 39	34	30	32	19	8	14	26	41	204	34.2	34.7	34.7	33.8	33.3	33.2	34.4	34.5	34.3
30 to 34	28	29	20	5	2	1	11	15	111	29.4	29.2	29.5	28.4	29.0	28.0	29.5	29.8	29.4
25 to 29	4	16	16	3	0	0	1	4	44	27.3	26.1	25.6	24.0	0.0	0.0	24.0	23.3	25.6
20 to 24	3	3	3	0	0	0	0	0	9	20.0	18.0	19.0	0.0	0.0	0.0	0.0	0.0	19.0

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Month	Dry Bulb Temperature (F)			Daily Ave		Wet Bulb Ave	Percent Relative Humidity Average					Average Humidity Ratio (lb moisture/lb dry air)					Average wind MPH
	Ave	Max	Min	Max	Min		4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	48.0	77	20	56	41	44.5	84	79	66	80	78	0.0056	0.0062	0.0059	0.0059	0.0058	11.5
Feb	52.2	72	30	62	44	48.0	87	71	59	77	75	0.0062	0.0065	0.0063	0.0066	0.0064	11.4
Mar	60.6	84	34	71	52	54.5	82	65	51	71	69	0.0075	0.0084	0.0079	0.0081	0.0080	11.8
Apr	69.7	86	48	78	62	64.4	84	71	65	79	76	0.0115	0.0121	0.0125	0.0124	0.0121	12.9
May	75.0	91	60	82	69	69.8	89	73	68	80	79	0.0141	0.0147	0.0152	0.0148	0.0146	10.5
Jun	78.9	93	61	88	71	72.1	87	64	60	78	74	0.0148	0.0157	0.0155	0.0157	0.0155	8.5
Jul	82.7	96	72	91	76	76.0	88	66	61	78	75	0.0174	0.0181	0.0179	0.0179	0.0179	7.4
Aug	81.0	94	66	89	75	75.2	88	70	64	81	78	0.0171	0.0182	0.0174	0.0176	0.0176	7.6
Sep	78.2	92	62	88	70	71.1	86	64	56	75	73	0.0144	0.0155	0.0150	0.0150	0.0149	7.5
Oct	68.4	90	44	79	60	62.0	83	64	53	76	72	0.0102	0.0113	0.0111	0.0113	0.0110	9.3
Nov	63.6	83	34	74	55	58.7	87	72	59	81	76	0.0097	0.0108	0.0101	0.0101	0.0099	9.2
Dec	53.3	81	26	64	45	49.2	83	76	60	78	75	0.0067	0.0075	0.0075	0.0074	0.0072	10.6
Year	67.7	96	20	77	60	62.2	86	70	60	78	75	0.0113	0.0121	0.0119	0.0119	0.0118	9.9

HOUSTON, TEXAS
WBAN 12918
TABLE D:

TRY Data (1966)

Latitude 29.70 N
Longitude 90.30 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	7-9AM**				10-12AM**				1-3PM**				BY TIME OF DAY 4-6PM**				7-9PM**				10PM-6AM**				24 HOUR SUMMARY			
	Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		HEATING		COOLING	
	Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Below Base 100s*		Above Base 100s*			
	Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	100s*	Base	100s*
97	0	349	0		0	271	0		0	240	0		0	262	0		0	329	0		0	1116	0		8760	2566	0	0
96	0	338	0		0	260	0		1	229	0		0	252	0		0	318	0		0	1083	0		8759	2478	1	0
95	0	327	0		0	249	0		3	218	0		0	241	0		0	307	0		0	1050	0		8756	2391	4	0
94	0	316	0		0	238	0		10	207	0		1	230	0		0	296	0		0	1017	0		8748	2303	12	0
93	0	305	0		2	227	0		23	196	0		7	219	0		0	285	0		0	984	0		8727	2216	33	0
92	0	294	0		9	216	0		46	186	1		16	208	0		0	274	0		0	951	0		8688	2129	72	1
91	0	283	0		25	205	0		82	175	1		34	197	0		0	263	0		0	918	0		8618	2042	142	2
90	0	272	0		55	195	1		123	165	2		59	187	1		0	252	0		0	886	0		8522	1956	238	4
89	0	261	0		86	184	1		166	156	4		90	176	2		0	241	0		0	853	0		8417	1872	343	6
88	2	250	0		123	174	2		207	147	5		124	167	3		0	230	0		0	820	0		8304	1788	456	10
87	9	239	0		166	165	4		240	138	8		155	157	4		2	219	0		0	787	0		8188	1706	572	16
86	21	228	0		210	156	6		272	130	10		191	148	6		6	208	0		0	754	0		8059	1624	701	22
85	40	218	0		257	147	8		310	122	13		233	139	8		16	198	0		0	721	0		7902	1544	858	30
84	64	207	1		297	139	11		345	114	17		276	131	10		30	187	0		0	688	0		7747	1466	1013	39
83	95	197	2		325	131	14		379	107	20		318	123	13		46	176	1		0	656	0		7596	1390	1164	50
82	126	187	3		352	124	17		413	100	24		356	115	17		71	166	1		1	623	0		7438	1314	1322	62
81	157	178	4		381	116	21		447	93	28		388	108	21		111	156	2		10	590	0		7264	1241	1496	76
80	194	169	6		415	109	25		486	87	33		418	101	25		163	146	4		40	557	0		7042	1169	1718	92
79	234	160	8		453	103	29		522	81	38		447	94	29		220	137	5		113	525	1		6769	1100	1991	111
78	267	151	11		479	96	34		553	75	43		475	88	33		272	129	8		223	494	2		6489	1034	2271	132
77	299	143	14		502	90	39		587	70	49		500	82	38		318	121	11		357	464	5		6196	970	2564	156
76	334	135	17		530	85	44		616	65	55		527	76	43		363	113	14		515	435	10		5873	910	2887	183
75	373	128	20		555	79	49		643	61	61		559	71	49		408	106	18		699	408	16		5522	853	3238	214
74	406	121	24		582	74	55		670	56	68		585	65	55		444	99	22		881	384	24		5190	799	3570	248
73	429	114	28		608	69	61		689	52	75		611	60	61		470	93	27		1053	360	33		4899	749	3861	285
72	448	108	33		630	64	67		710	48	82		637	56	67		489	87	32		1195	339	45		4649	701	4111	325
71	468	101	37		653	60	74		732	44	89		667	51	73		504	81	37		1293	319	57		4441	656	4319	367
70	492	95	42		675	55	80		753	41	97		698	47	80		529	75	42		1377	299	71		4235	613	4525	412
69	513	89	47		698	51	87		774	38	104		728	43	87		556	70	47		1444	280	85		4045	571	4715	458
68	533	84	52		727	47	94		801	34	112		756	40	95		583	64	53		1507	262	99		3851	532	4909	506
67	561	78	58		754	44	102		825	32	120		776	36	102		611	59	59		1591	245	115		3641	494	5119	556
66	587	73	64		775	41	109		843	29	129		795	33	110		637	55	65		1680	228	131		3442	459	5318	608
65	611	68	70		794	37	117		863	27	137		815	30	118		665	50	72		1749	213	148		3261	425	5499	662
64	634	63	76		810	35	125		878	24	146		835	28	127		691	46	79		1810	198	166		3100	394	5660	718
63	653	59	82		823	32	133		893	22	155		855	25	135		718	42	86		1864	183	185		2952	363	5808	776
62	673	54	89		837	29	142		907	20	164		872	23	144		746	39	93		1915	169	204		2809	335	5951	834
61	694	50	96		851	27	150		917	19	173		885	21	153		770	35	101		1973	156	223		2668	307	6092	895
60	717	46	103		863	24	159		926	17	182		901	19	161		791	32	108		2051	143	243		2509	281	6251	956
59	739	43	110		877	22	167		937	15	191		917	17	171		811	29	116		2133	131	264		2344	257	6416	1020
58	760	39	118		890	20	176		948	14	201		929	15	180		828	26	125		2202	120	286		2201	234	6559	1085
57	779	36	125		905	18	185		955	12	210		938	14	189		843	24	133		2271	110	308		2068	213	6692	1151
56	793	33	133		918	16	194		960	11	220		948	12	199		857	21	141		2334	100	331		1948	193	6812	1218
55	812	30	141		931	14	204		969	10	229		957	11	208		870	19	150		2390	91	355		1829	174	6931	1287
54	832	27	149		943	13	213		981	8	239		968	9	218		887	17	159		2437	82	379		1710	156	7050	1357
53	848	25	158		954	11	223		993	7	249		983	8	227		903	15	168		2481	74	403		1597	140	7163	1428
52	866	22	166		967	10	232		1003	6	259		996	7	237		917	13	177		2537	66	428		1472	124	7288	1500

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

HOUSTON, TEXAS
WBAN 12918
TABLE D:

TRY Data (1966)

Latitude 29.70 N
Longitude 90.30 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**				10PM-6AM**				24 HOUR SUMMARY			
	Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		HEATING		COOLING	
	Above (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*	
51	883	20	175	978	9	242	1011	5	269	1003	6	247	935	11	186	2601	59	454							1348	110	7412	1574
50	900	18	184	991	8	252	1016	5	279	1008	5	257	959	10	196	2664	52	480							1221	97	7539	1649
49	917	16	193	1000	7	262	1022	4	290	1018	4	268	977	9	205	2720	46	507							1104	86	7656	1725
48	930	15	202	1006	6	272	1029	3	300	1028	4	278	988	7	215	2767	41	535							1011	75	7749	1802
47	939	13	212	1012	5	282	1037	3	310	1035	3	288	996	6	225	2810	36	563							929	66	7831	1880
46	951	11	221	1023	4	292	1048	2	321	1043	3	298	1004	5	235	2852	31	591							858	57	7922	1958
45	965	10	231	1032	3	302	1055	2	331	1050	2	309	1013	5	245	2896	27	620							748	49	8012	2038
44	976	9	240	1037	3	313	1059	1	342	1054	2	320	1020	4	255	2937	23	649							676	42	8084	2119
43	987	8	250	1045	2	323	1067	1	352	1059	1	330	1025	3	266	2971	20	679							605	35	8155	2200
42	999	7	260	1055	2	333	1074	1	363	1064	1	341	1033	2	276	3001	17	708							532	30	8228	2282
41	1011	6	270	1062	1	344	1078	0	374	1070	1	351	1045	2	286	3035	15	739							458	25	8302	2364
40	1020	5	280	1066	1	355	1082	0	385	1076	0	362	1054	1	297	3064	12	769							395	21	8365	2448
39	1027	4	291	1072	1	365	1087	0	395	1082	0	373	1063	1	307	3094	10	800							334	17	8426	2532
38	1035	4	301	1078	1	376	1089	0	406	1085	0	384	1071	1	318	3121	8	831							279	14	8481	2616
37	1043	3	311	1080	1	387	1089	0	417	1088	0	395	1076	1	329	3144	7	862							238	11	8522	2701
36	1049	3	322	1083	0	398	1091	0	428	1091	0	405	1080	0	340	3163	6	894							201	9	8559	2787
35	1054	2	332	1086	0	409	1092	0	439	1094	0	416	1082	0	350	3177	4	926							173	7	8587	2872
34	1059	2	343	1087	0	420	1093	0	450	1094	0	427	1086	0	361	3193	3	957							146	6	8614	2958
33	1064	1	354	1088	0	430	1094	0	461	1095	0	438	1090	0	372	3212	3	989							115	4	8645	3045
32	1067	1	364	1090	0	441	1094	0	472	1095	0	449	1092	0	383	3227	2	1022							93	3	8667	3131
31	1069	1	375	1092	0	452	1095	0	483	1095	0	460	1092	0	394	3239	1	1054							77	2	8683	3218
30	1073	1	386	1092	0	463	1095	0	494	1095	0	471	1093	0	405	3249	1	1086							62	2	8698	3305
29	1079	0	396	1093	0	474	1095	0	505	1095	0	482	1094	0	416	3259	1	1119							44	1	8716	3392
28	1083	0	407	1094	0	485	1095	0	516	1095	0	493	1094	0	427	3267	1	1152							30	1	8730	3479
27	1086	0	418	1094	0	496	1095	0	527	1095	0	504	1095	0	438	3272	0	1184							22	1	8738	3567
26	1089	0	429	1094	0	507	1095	0	537	1095	0	515	1095	0	449	3275	0	1217							16	0	8744	3654
25	1091	0	440	1095	0	518	1095	0	548	1095	0	526	1095	0	460	3277	0	1250							11	0	8749	3741
24	1092	0	451	1095	0	529	1095	0	559	1095	0	537	1095	0	471	3279	0	1283							8	0	8752	3829
23	1093	0	462	1095	0	540	1095	0	570	1095	0	548	1095	0	481	3280	0	1315							6	0	8754	3916
22	1093	0	473	1095	0	551	1095	0	581	1095	0	559	1095	0	492	3281	0	1348							5	0	8755	4004
21	1093	0	484	1095	0	562	1095	0	592	1095	0	570	1095	0	503	3283	0	1381							3	0	8757	4092
20	1094	0	494	1095	0	573	1095	0	603	1095	0	581	1095	0	514	3284	0	1414							1	0	8759	4179
19	1095	0	505	1095	0	584	1095	0	614	1095	0	592	1095	0	525	3285	0	1447							0	0	8760	4267

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

HOUSTON, TEXAS

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TABLE E:

TRY Data (1966)

Latitude 29.70 N

Longitude 90.30 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:	7049	6657	6236	5759	5227	4649	3956	3181	2054	801	46
Annual Wet Bulb Cooling deg-hrs:	129788.	109020.	89454.	71223.	54446.	39278.	26032.	14873.	6375.	1551.	50.

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	90	90	89	88	86	83	79	73	63	46	24	.001		
.002	0	0	0	0	0	0	0	0	0	0	0	81	81	81	80	79	77	73	68	59	43	23	.002		
.003	0	0	0	0	0	1	1	1	1	1	1	73	73	73	73	72	70	67	62	54	40	21	.003		
.004	0	0	1	1	1	1	1	1	1	1	1	65	65	65	65	64	63	60	57	50	37	20	.004		
.005	0	1	1	1	2	2	2	2	2	2	2	57	57	57	57	57	56	54	51	45	33	18	.005		
.006	0	1	1	2	3	3	4	4	4	4	4	50	50	50	50	50	50	48	46	41	30	17	.006		
.007	0	1	2	3	4	5	5	6	6	6	6	43	43	43	43	43	43	43	41	37	27	15	.007		
.008	0	1	2	4	5	7	7	8	8	8	8	37	37	37	37	37	37	37	36	32	24	13	.008		
.009	0	1	2	4	6	8	10	10	11	11	11	31	31	31	31	31	31	31	30	28	21	12	.009		
.010	0	1	3	5	7	10	12	13	14	14	15	26	26	26	26	26	26	26	26	24	18	10	.010		
.011	1	1	3	6	9	12	14	16	17	18	18	21	21	21	21	21	21	21	21	20	16	9	.011		
.012	1	2	4	6	10	14	17	19	21	22	22	16	16	16	16	16	16	16	16	16	13	7	.012		
.013	1	2	4	7	11	15	19	23	25	26	27	12	12	12	12	12	12	12	12	12	10	6	.013		
.014	1	2	4	8	12	17	22	26	29	31	32	9	9	9	9	9	9	9	9	9	7	4	.014		
.015	1	2	5	9	13	19	24	29	33	36	37	6	6	6	6	6	6	6	6	6	5	3	.015		
.016	1	2	5	9	14	21	27	32	37	41	43	3	3	3	3	3	3	3	3	3	3	2	.016		
.017	1	2	5	10	15	22	29	35	42	46	49	1	1	1	1	1	1	1	1	1	1	1	.017		
.018	1	3	6	11	17	24	31	38	46	52	56	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	56	46	56	71	69	47	55	65	42	38	36	46	53
VERTICAL													
NORTH	100	100	100	100	95	85	91	97	100	100	100	100	96
WEST	68	60	63	80	80	65	76	79	62	53	49	56	68
SOUTH	51	47	66	85	94	91	92	88	57	44	35	42	64
EAST	61	58	75	84	83	62	66	73	55	54	52	60	66
% Possible Sun	42	55	47	52	59	66	67	63	58	62	53	62	57

FOOTNOTES: * Corrected For Cloud Cover.

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

HOUSTON, TEXAS
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TABLE M:

TRY Data (1966)

Latitude 29.70 N
Longitude 90.30 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	1850	1730	1441	1178	803	470	271	204	203	2123	1287	753	731	645	557	425	305	231	204	203	803	576	772
Feb	1745	1652	1454	1270	948	623	384	253	238	2233	1560	982	942	845	749	588	434	329	276	270	1147	883	1034
Mar	1430	1420	1374	1318	1104	829	573	377	298	2236	1910	983	932	876	825	717	601	506	438	412	1248	1159	1297
Apr	1001	1138	1243	1315	1243	1055	819	581	395	2093	2198	862	874	878	880	832	751	668	591	539	1160	1251	1522
May	715	913	1104	1256	1287	1185	990	760	551	1920	2354	732	779	828	869	869	824	752	673	621	1100	1318	1775
Jun	621	824	1045	1235	1313	1260	1082	869	676	1835	2414	700	816	954	1071	1120	1084	970	854	711	1357	1733	1898
Jul	664	863	1071	1237	1297	1227	1041	825	628	1859	2375	739	852	966	1059	1089	1042	930	801	677	1290	1593	1828
Aug	873	1035	1175	1276	1252	1106	895	666	469	1983	2231	806	885	943	985	966	888	783	671	570	1186	1352	1686
Sep	1247	1293	1306	1304	1150	917	672	464	346	2129	1983	1042	1089	1089	1077	962	799	634	496	420	1515	1447	1471
Oct	1607	1532	1391	1257	978	678	444	299	270	2185	1656	1139	1090	998	906	727	544	409	326	309	1423	1141	1276
Nov	1795	1671	1406	1175	818	492	297	219	218	2126	1356	955	893	764	651	477	324	232	196	195	1082	740	924
Dec	1849	1725	1420	1140	758	426	249	196	195	2067	1207	794	736	616	512	379	263	201	180	179	841	569	730
Year	1280	1315	1285	1246	1080	857	644	477	375	2065	1879	873	884	866	845	763	656	555	475	426	1178	1148	1351

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**										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	1573	1445	1197	979	648	358	201	166	165	165	628	606	534	462	346	241	181	166	165	165	165
Feb	1443	1366	1206	1060	775	487	284	199	194	194	809	776	698	620	479	344	258	222	219	219	219
Mar	1093	1143	1128	1091	907	667	441	284	241	241	778	749	711	673	584	486	404	351	334	334	334
Apr	689	865	1002	1083	1024	863	647	441	308	308	675	698	711	716	677	609	538	474	435	435	435
May	481	654	868	1027	1058	974	795	589	406	406	576	615	666	707	708	671	609	542	494	494	494
Jun	434	577	812	1006	1081	1036	877	679	490	490	537	617	758	876	922	893	792	666	545	545	545
Jul	459	614	837	1013	1069	1008	843	645	461	461	573	655	774	869	897	858	759	640	530	530	530
Aug	596	773	941	1052	1034	909	715	514	360	360	627	701	767	810	796	730	636	537	456	456	456
Sep	924	1028	1072	1081	949	745	528	353	280	280	805	877	895	891	793	650	505	390	341	341	341
Oct	1302	1258	1149	1043	799	538	336	233	219	219	925	894	822	748	594	436	319	260	251	251	251
Nov	1518	1392	1170	975	661	382	219	178	177	177	801	739	632	537	386	255	179	159	158	158	158
Dec	1580	1447	1181	948	609	326	184	159	159	159	667	608	507	423	307	208	157	146	146	146	146
Year	1005	1045	1046	1030	885	692	507	371	289	289	699	711	706	694	624	533	446	380	340	340	340

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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LAKE CHARLES, LOUISIANA
WBAN 3937
TABLE A:

TRY Data (1966)

Latitude 30.10 N
Longitude 93.20 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence In time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Jan														
75 to 79	0	0	0	1	3	0	0	0	4	70.3	744	22539	0	0
70 to 74	3	3	1	3	8	4	0	1	23	65.3	737	18836	7	17
65 to 69	3	3	5	5	6	4	3	3	32	62.7	705	15233	39	134
60 to 64	0	2	3	8	10	10	3	2	38	55.4	672	11790	72	411
55 to 59	4	1	2	13	11	15	10	6	62	53.9	626	8538	118	879
50 to 54	15	9	11	14	16	20	24	22	131	49.2	537	5597	207	1658
45 to 49	17	16	17	13	7	4	13	14	101	44.5	411	3245	333	3026
40 to 44	20	26	26	20	24	27	16	21	180	40.2	293	1431	451	4952
35 to 39	25	25	18	10	3	6	18	18	123	35.5	117	443	627	7664
30 to 34	2	3	6	4	5	3	6	4	33	29.6	30	131	714	11072
25 to 29	3	2	2	2	0	0	0	2	11	25.1	10	34	734	14695
20 to 24	1	3	2	0	0	0	0	0	6	21.2	2	1	742	18382
Feb														
70 to 74	0	0	0	3	8	2	0	0	13	64.3	670	13776	2	1
65 to 69	6	2	3	10	19	18	6	6	70	60.0	634	10481	38	66
60 to 64	8	3	3	13	14	13	6	6	66	56.2	569	7491	103	436
55 to 59	6	11	15	21	22	29	12	10	126	52.4	488	4855	184	1160
50 to 54	11	14	18	17	12	11	27	13	123	48.2	345	2775	327	2440
45 to 49	29	20	15	10	8	9	15	28	134	44.1	221	1352	451	4377
40 to 44	6	15	14	7	1	2	15	7	67	39.3	100	586	572	6971
35 to 39	10	6	8	3	0	0	3	12	42	35.1	50	193	622	9938
30 to 34	8	13	8	0	0	0	0	2	31	31.0	17	17	655	13122
Mar														
80 to 84	0	0	0	1	3	0	0	0	4	66.0	743	17138	1	1
75 to 79	0	0	0	7	21	9	0	0	37	65.5	734	13436	10	19
70 to 74	0	0	2	21	13	18	3	1	58	64.6	681	9895	63	198
65 to 69	12	9	12	20	27	30	13	11	134	61.9	602	6653	142	676
60 to 64	16	13	20	15	16	17	38	22	157	57.0	439	4045	305	1788
55 to 59	22	24	21	16	11	17	11	23	145	52.0	290	2233	454	3696
50 to 54	14	15	14	12	2	2	16	15	90	47.8	170	1107	574	6290
45 to 49	13	9	13	1	0	0	10	11	57	41.3	95	472	649	9375
40 to 44	11	14	7	0	0	0	2	10	44	37.9	41	141	703	12764
35 to 39	5	5	2	0	0	0	0	0	12	34.3	11	29	733	16372
30 to 34	0	4	2	0	0	0	0	0	6	30.3	0	0	744	20063

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

LAKE CHARLES, LOUISIANA
WBAN 3937
TABLE A:

TRY Data (1966)

Latitude 30.10 N
Longitude 93.20 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period Hour of Day								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Apr														
80 to 84	0	0	0	17	29	9	0	0	55	73.3	711	9832	9	9
75 to 79	0	0	15	27	36	37	10	2	127	69.6	638	6451	82	228
70 to 74	30	30	22	27	13	27	33	34	216	67.5	430	3696	290	1073
65 to 69	19	15	22	10	9	14	19	17	125	62.5	261	2015	459	2992
60 to 64	13	11	14	7	0	3	17	13	78	57.9	170	967	550	5544
55 to 59	20	15	13	2	3	0	9	21	83	54.0	77	327	643	8504
50 to 54	2	13	4	0	0	0	2	2	23	48.6	27	94	693	11871
45 to 49	6	6	0	0	0	0	0	1	13	43.2	8	13	712	15390
May														
90 to 94	0	0	0	0	1	0	0	0	1	76.0	744	13183	0	0
85 to 89	0	0	0	13	30	14	0	0	57	74.6	732	9475	12	12
80 to 84	0	0	13	36	32	39	4	0	124	73.4	638	6009	106	266
75 to 79	19	16	30	24	16	27	47	27	206	72.3	496	3152	248	1129
70 to 74	37	34	26	8	11	5	32	37	190	68.8	289	1203	455	2900
65 to 69	31	34	19	12	3	7	7	26	139	64.6	103	246	641	5663
60 to 64	6	6	4	0	0	1	3	3	23	58.7	19	39	725	9176
55 to 59	0	3	1	0	0	0	0	0	4	53.5	0	0	744	12857
Jun														
90 to 94	0	0	0	4	29	16	0	0	49	75.1	714	9905	6	4
85 to 89	0	0	2	57	44	32	4	0	139	75.1	623	6512	97	211
80 to 84	0	0	31	21	11	27	21	2	113	73.0	484	5766	236	1065
75 to 79	31	14	40	6	6	15	47	55	214	72.4	360	1624	360	2523
70 to 74	47	53	12	2	0	0	15	26	155	70.1	105	439	615	4938
65 to 69	4	14	3	0	0	0	3	4	28	64.9	30	140	690	8239
60 to 64	8	6	2	0	0	0	0	3	19	58.6	13	28	707	11727
55 to 59	0	3	0	0	0	0	0	0	3	56.7	0	0	720	15299

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

LAKE CHARLES, LOUISIANA
WBAN 3937
TABLE A:

TRY Data (1966)

Latitude 30.10 N
Longitude 93.20 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day 10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Jul														
95 to 99	0	0	0	0	6	0	0	0	6	79.0	744	11139	0	0
90 to 94	0	0	0	34	46	34	1	0	115	79.2	698	7477	46	58
85 to 89	0	0	34	46	18	32	11	0	141	78.7	553	4316	191	617
80 to 84	9	5	43	5	14	24	53	30	183	76.6	426	1847	318	1868
75 to 79	80	83	15	6	9	3	28	59	283	74.6	164	257	580	3998
70 to 74	4	5	1	2	0	0	0	4	16	71.1	6	3	738	7464
Aug														
90 to 94	0	0	0	20	40	11	0	0	71	78.6	743	8943	1	1
85 to 89	0	0	13	43	23	46	1	0	126	77.6	619	5520	125	298
80 to 84	4	2	28	17	16	26	38	15	146	76.0	504	2721	240	1219
75 to 79	73	61	40	11	14	10	50	68	327	74.3	266	663	478	2881
70 to 74	11	22	7	1	0	0	4	9	54	69.3	40	112	704	6050
65 to 69	5	8	5	1	0	0	0	1	20	64.8	2	1	742	9659
Sep														
90 to 94	0	0	0	4	16	0	0	0	20	78.4	719	11071	1	1
85 to 89	0	0	5	34	50	29	0	0	118	76.0	664	7570	56	100
80 to 84	0	0	13	34	20	36	12	0	115	74.5	532	4588	188	718
75 to 79	28	22	35	14	1	21	42	38	201	73.2	413	2211	307	1941
70 to 74	32	40	24	4	3	4	29	33	169	70.0	179	728	541	4058
65 to 69	22	17	10	0	0	0	7	13	69	65.3	58	176	662	7106
60 to 64	8	11	3	0	0	0	0	6	28	60.7	11	13	709	10543

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

LAKE CHARLES, LOUISIANA
WBAN 3937
TABLE A:

TRY Data (1966)

Latitude 30.10 N
Longitude 93.20 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Oct														
85 to 89	0	0	0	10	18	6	0	0	34	77.9	742	15302	2	1
80 to 84	0	0	3	16	18	15	0	0	52	72.8	693	11720	51	139
75 to 79	9	6	11	18	27	23	17	11	122	68.5	623	8410	121	549
70 to 74	13	14	12	19	18	23	16	17	132	65.7	481	5644	263	1503
65 to 69	12	6	9	20	9	12	10	13	91	61.2	357	3556	387	3135
60 to 64	14	20	26	6	0	9	23	10	108	57.6	273	1968	471	5267
55 to 59	17	11	17	4	3	5	20	18	95	54.3	162	881	582	7900
50 to 54	15	19	8	0	0	0	7	19	68	50.0	83	277	661	11016
45 to 49	13	15	7	0	0	0	0	5	40	46.5	21	24	723	14483
40 to 44	0	2	0	0	0	0	0	0	2	43.0	0	0	744	18179
Nov														
80 to 84	0	0	1	4	16	0	0	0	21	70.4	720	14420	0	0
75 to 79	2	0	1	24	28	19	3	3	80	69.0	673	10911	47	91
70 to 74	4	7	4	17	19	27	2	2	82	65.3	590	7760	130	540
65 to 69	10	7	22	25	13	20	33	19	149	63.3	474	5047	246	1427
60 to 64	31	34	29	8	5	9	21	28	165	59.4	314	3041	406	3021
55 to 59	18	14	11	4	3	4	12	16	82	53.6	185	1839	535	5419
50 to 54	7	9	8	3	3	3	2	4	39	47.2	126	1083	594	8263
45 to 49	5	1	3	4	3	7	6	6	35	43.3	91	546	629	11326
40 to 44	8	10	6	1	0	1	8	9	43	39.5	40	198	680	14578
35 to 39	2	5	4	0	0	0	3	0	14	34.1	16	63	704	18043
30 to 34	3	3	1	0	0	0	0	3	10	30.7	6	8	714	21588
Dec														
80 to 84	0	0	0	1	3	0	0	0	4	73.0	744	21628	0	0
75 to 79	0	0	0	9	9	5	0	0	23	71.0	728	17933	16	25
70 to 74	1	0	2	9	20	11	9	4	56	66.5	699	14348	45	160
65 to 69	7	6	7	8	11	17	3	6	65	63.9	621	11009	123	541
60 to 64	11	9	11	12	6	12	17	13	91	59.9	565	8021	179	1273
55 to 59	19	16	10	9	10	10	18	21	113	54.9	465	5457	279	2429
50 to 54	10	16	14	12	6	8	10	8	84	50.4	352	3431	392	4123
45 to 49	16	14	21	11	15	17	10	11	115	44.2	266	1870	478	6282
40 to 44	8	10	7	15	13	10	13	10	86	38.8	155	851	589	8983
35 to 39	8	13	14	7	0	3	11	12	68	34.0	86	265	658	12117
30 to 34	13	8	6	0	0	0	2	8	37	30.8	20	25	724	15597
25 to 29	0	1	1	0	0	0	0	0	2	28.0	0	0	744	19292

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

LAKE CHARLES, LOUISIANA

WBAN 3937

TABLE B:

TRY Data (1966)

Latitude 30.10 N

Longitude 93.20 E

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

Dry Bulb range(F)	Number of Hours of Occurrence in time period									Mean Coincident Wet Bulb Temperature (F)								
	Hour of day									Hour of day								
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year
95 to 99	0	0	0	0	6	0	0	0	6	0.0	0.0	0.0	0.0	79.0	0.0	0.0	0.0	79.0
90 to 94	0	0	0	62	132	61	1	0	256	0.0	0.0	0.0	79.2	78.0	77.5	79.0	0.0	78.2
85 to 89	0	0	54	203	183	159	16	0	615	0.0	0.0	78.9	77.0	75.8	76.5	77.8	0.0	76.7
80 to 84	13	7	132	152	162	176	128	47	817	76.9	76.7	76.3	73.4	72.6	74.1	76.0	76.7	74.5
75 to 79	242	202	187	147	170	169	244	263	1624	74.4	74.3	73.1	69.8	67.3	69.8	73.3	74.1	72.4
70 to 74	182	208	113	116	113	121	143	168	1164	70.2	70.3	69.2	63.8	63.0	64.5	68.6	69.7	67.9
65 to 69	131	121	117	111	97	122	104	119	922	65.1	65.2	64.2	60.2	58.2	60.7	64.3	64.8	63.0
60 to 64	115	115	115	69	51	74	128	106	773	60.1	60.3	59.0	54.5	51.4	53.8	59.0	60.1	58.1
55 to 59	106	98	90	69	63	80	92	115	713	54.9	55.5	53.9	51.2	50.1	50.5	53.9	54.9	53.4
50 to 54	74	95	77	58	39	44	88	83	558	50.5	50.2	49.2	46.6	46.6	46.9	48.7	49.3	48.9
45 to 49	99	81	76	39	33	37	54	76	495	44.6	45.2	44.6	42.7	41.6	41.7	43.6	44.3	44.0
40 to 44	53	77	60	43	38	40	54	57	422	39.6	39.9	39.3	38.8	39.3	38.9	39.7	39.6	39.5
35 to 39	50	54	46	20	3	9	35	42	259	35.2	35.2	35.0	34.5	34.7	33.3	34.7	34.6	34.9
30 to 34	26	31	23	4	5	3	8	17	117	31.2	30.3	30.0	29.3	29.0	29.7	30.0	31.4	30.5
25 to 29	3	3	3	2	0	0	0	2	13	24.7	28.0	25.7	23.0	0.0	0.0	0.0	25.5	25.5
20 to 24	1	3	2	0	0	0	0	0	6	22.0	21.3	20.5	0.0	0.0	0.0	0.0	0.0	21.2

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

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

LAKE CHARLES, LOUISIANA

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TABLE D:

TRY Data (1966)

Latitude 30.10 N

Longitude 93.20 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

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

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

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

LAKE CHARLES, LOUISIANA

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TABLE 0:

THY Data (1966)

Latitude 30.10 N

Longitude 93.20 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																24 HOUR SUMMARY											
	7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**				10PM-6AM**				HEATING		COOLING	
	Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs		
	Above (100s)*	Base	Heat	Cool	Above (100s)*	Base	Heat	Cool	Above (100s)*	Base	Heat	Cool	Above (100s)*	Base	Heat	Cool	Above (100s)*	Base	Heat	Cool	Above (100s)*	Base	Heat	Cool	Below Base 100s*	Above Base 100s*		
51	858	20	170	967	9	237	1004	6	266	994	7	239	924	13	176	2535	64	440	1475	120	7285	1528						
50	874	18	179	980	8	247	1013	5	276	1001	6	249	937	12	185	2584	57	465	1369	106	7391	1602						
49	897	16	187	991	7	257	1017	5	286	1008	5	259	951	10	195	2637	50	491	1257	93	7503	1676						
48	915	14	197	1000	6	267	1021	4	296	1013	4	269	964	9	204	2688	44	518	1158	81	7602	1752						
47	928	12	206	1008	5	277	1028	3	307	1020	4	279	976	7	214	2743	38	545	1055	70	7705	1828						
46	941	11	215	1016	4	287	1035	2	317	1030	3	290	987	6	224	2800	33	573	950	60	7810	1906						
45	954	9	225	1023	4	297	1043	2	327	1039	2	300	995	5	234	2845	28	601	860	51	7900	1984						
44	969	8	234	1031	3	308	1054	1	338	1045	2	310	1003	4	244	2886	24	630	771	42	7989	2064						
43	982	7	244	1040	2	318	1064	1	349	1053	1	321	1016	3	254	2926	20	659	677	35	8083	2144						
42	990	6	254	1048	2	328	1071	1	359	1063	1	332	1029	3	264	2965	17	688	592	29	8168	2225						
41	1001	5	264	1055	1	339	1077	1	370	1070	1	342	1038	2	274	3006	14	718	511	23	8249	2307						
40	1014	4	274	1064	1	350	1084	0	381	1078	0	353	1047	2	285	3040	11	748	431	19	8329	2390						
39	1024	3	284	1072	1	360	1088	0	392	1084	0	364	1055	1	295	3067	9	779	368	15	8392	2474						
38	1034	2	294	1079	0	371	1089	0	403	1086	0	375	1065	1	306	3095	7	810	311	11	8449	2558						
37	1048	2	305	1086	0	382	1089	0	413	1088	0	385	1071	1	317	3127	5	841	250	9	8510	2643						
36	1059	1	315	1088	0	393	1089	0	424	1089	0	396	1075	0	327	3161	4	872	198	6	8562	2728						
35	1064	1	326	1088	0	404	1090	0	435	1090	0	407	1083	0	338	3187	3	904	156	5	8604	2814						
34	1068	1	337	1090	0	415	1090	0	446	1093	0	418	1089	0	349	3209	2	936	119	3	8641	2900						
33	1072	1	347	1091	0	425	1092	0	457	1094	0	429	1091	0	360	3229	1	968	88	2	8672	2987						
32	1079	0	358	1092	0	436	1094	0	468	1095	0	440	1092	0	371	3247	1	1001	60	1	8700	3074						
31	1085	0	369	1092	0	447	1095	0	479	1095	0	451	1094	0	382	3261	1	1033	37	1	8723	3161						
30	1089	0	380	1092	0	458	1095	0	490	1095	0	462	1095	0	393	3270	0	1066	23	1	8737	3248						
29	1090	0	391	1093	0	469	1095	0	501	1095	0	473	1095	0	404	3275	0	1099	15	1	8745	3336						
28	1091	0	402	1094	0	480	1095	0	512	1095	0	484	1095	0	415	3278	0	1131	11	0	8749	3423						
27	1092	0	413	1094	0	491	1095	0	523	1095	0	495	1095	0	426	3279	0	1164	9	0	8751	3511						
26	1092	0	423	1095	0	502	1095	0	534	1095	0	506	1095	0	436	3279	0	1197	8	0	8752	3598						
25	1092	0	434	1095	0	513	1095	0	545	1095	0	517	1095	0	447	3280	0	1230	7	0	8753	3686						
24	1093	0	445	1095	0	524	1095	0	556	1095	0	528	1095	0	458	3282	0	1263	5	0	8755	3773						
23	1093	0	456	1095	0	535	1095	0	567	1095	0	539	1095	0	469	3283	0	1295	3	0	8757	3861						
22	1094	0	467	1095	0	546	1095	0	577	1095	0	550	1095	0	480	3284	0	1328	1	0	8759	3948						
21	1095	0	478	1095	0	557	1095	0	588	1095	0	561	1095	0	491	3285	0	1361	0	0	8760	4036						

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

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

LAKE CHARLES, LOUISIANA
WBAN 3937
TABLE E:

TRY Data (1966)

Latitude 30.10 N
Longitude 93.20 E

Annual COOLING Wet Bulb Degree Hour Summary

Wet Bulb Temperature (F) Base:	50	53	56	59	62	65	68	71	74	77	80
Annual Wet Bulb hours ABOVE base:	7024	6636	6156	5687	5154	4553	3946	3243	2146	862	192
Annual Wet Bulb Cooling deg-hrs:	129741.	109067.	89594.	71584.	54987.	40107.	27014.	15826.	7041.	2005.	242.

TABLE F:

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

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS ** 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	91	91	90	89	87	84	79	73	62	46	23	.001		
.002	0	0	0	0	0	0	0	0	0	0	0	83	83	82	81	80	77	73	67	58	43	22	.002		
.003	0	0	0	0	0	0	0	0	0	0	0	74	74	74	74	72	70	67	62	54	40	20	.003		
.004	0	0	0	1	1	1	1	1	1	1	1	66	66	66	66	65	64	61	57	50	37	19	.004		
.005	0	0	1	1	2	2	2	2	2	2	2	58	58	58	58	58	57	55	52	45	34	17	.005		
.006	0	1	1	2	3	3	3	4	4	4	4	51	51	51	51	51	51	49	47	41	31	16	.006		
.007	0	1	2	3	4	5	5	5	5	6	6	44	44	44	44	44	44	43	41	37	28	14	.007		
.008	0	1	2	4	5	6	7	8	8	8	8	38	38	38	38	38	38	38	36	33	25	13	.008		
.009	0	1	2	5	7	8	9	10	11	11	11	32	32	32	32	32	32	32	31	29	22	11	.009		
.010	0	1	3	5	8	10	12	13	14	14	14	27	27	27	27	27	27	27	26	25	19	10	.010		
.011	0	1	3	6	9	12	15	16	17	18	18	22	22	22	22	22	22	22	22	21	16	9	.011		
.012	0	1	4	7	11	14	17	20	21	22	22	17	17	17	17	17	17	17	17	17	13	7	.012		
.013	0	1	4	8	12	16	20	23	25	26	27	13	13	13	13	13	13	13	13	13	11	6	.013		
.014	0	2	4	9	13	18	22	26	29	31	32	10	10	10	10	10	10	10	10	10	8	4	.014		
.015	0	2	5	9	14	19	25	30	33	36	37	6	6	6	6	6	6	6	6	6	6	3	.015		
.016	0	2	5	10	16	21	27	33	38	41	43	4	4	4	4	4	4	4	4	4	4	2	.016		
.017	0	2	6	11	17	23	30	36	42	46	49	2	2	2	2	2	2	2	2	2	2	1	.017		
.018	0	2	6	12	18	25	33	40	46	52	56	1	1	1	1	1	1	1	1	1	1	1	.018		

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

TABLE G:

Percent Diffuse Solar Radiation*
and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
% Diffuse on surface													
HORIZONTAL	59	44	53	63	63	46	56	60	46	38	31	52	52
VERTICAL													
NORTH	100	100	100	99	94	86	91	97	100	100	100	100	96
WEST	73	57	63	73	75	64	75	78	62	52	45	56	66
SOUTH	55	45	63	81	92	90	91	85	61	44	30	46	64
EAST	68	60	68	79	78	64	68	70	59	55	48	69	66

% Possible Sun DATA IS NOT AVAILABLE AT THIS TIME

FOOTNOTES: * Corrected For Cloud Cover.

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

LAKE CHARLES, LOUISIANA
 MBAN 3937
 TABLE H:

TRY Data (1966)

Latitude 30.10 N
 Longitude 93.20 E

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

Month	Under Clear Sky Assumption*										Corrected For Cloud Cover**										Obs ***		
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S-45 ***	horiz	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N		S-45 ***	horiz
Jan	1751	1637	1357	1108	745	440	256	200	199	2002	1215	669	643	561	481	363	267	212	194	193	706	526	728
Feb	1692	1599	1407	1229	910	601	375	250	236	2147	1495	1001	942	830	726	562	418	322	272	265	1172	891	1010
Mar	1408	1395	1346	1287	1074	804	558	370	295	2180	1854	962	937	896	849	734	605	497	418	387	1236	1137	1313
Apr	1001	1132	1232	1305	1227	1041	810	576	392	2063	2156	895	915	926	933	877	784	689	534	1262	1353	1570	
May	726	921	1112	1257	1288	1189	988	760	553	1917	2338	736	796	857	906	910	862	775	683	616	1162	1395	1849
Jun	632	834	1057	1236	1313	1260	1080	865	675	1850	2419	737	853	982	1087	1130	1089	973	836	729	1450	1835	1970
Jul	677	875	1085	1252	1307	1238	1050	831	634	1876	2380	779	885	995	1085	1110	1063	951	822	712	1346	1656	1788
Aug	882	1040	1175	1281	1248	1107	891	665	470	1977	2212	842	932	994	1043	1013	926	804	680	573	1276	1440	1657
Sep	1241	1280	1289	1281	1125	892	656	456	345	2096	1945	985	1009	1006	991	888	744	601	482	416	1393	1337	1485
Oct	1570	1494	1350	1216	943	654	428	291	267	2119	1603	1146	1091	990	896	717	536	402	324	310	1433	1150	1381
Nov	1739	1626	1373	1146	804	488	295	218	216	2045	1301	1032	958	811	682	493	326	228	189	188	1180	787	917
Dec	1760	1641	1348	1081	716	407	240	193	193	1957	1143	678	614	507	419	309	221	178	164	164	711	489	706
Year	1254	1288	1260	1223	1059	845	637	474	374	2018	1840	870	880	863	842	759	654	554	473	425	1193	1167	1365

FOOTNOTES: * Derived according to DOE-2.1 LOADS Algorithms.
 ** Derived according to DOE-2.1 LOADS Algorithms and TRY cloud cover data.
 *** South exposure tilt 45 degrees.
 **** Cinquemani, V., J. R. Owenby, Jr. and R. G. Baldwin, 1978. Input Data for Solar Systems. NCC, 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	1493	1369	1129	918	603	333	192	163	162	559	533	464	396	295	212	169	158	157
Feb	1402	1324	1168	1024	748	473	279	198	192	828	775	683	598	460	334	253	219	216
Mar	1082	1127	1108	1070	887	651	431	280	240	760	760	733	698	601	491	397	333	315
Apr	694	863	996	1074	1013	851	640	438	307	694	729	749	760	715	637	555	479	431
May	489	662	875	1031	1062	975	795	590	409	572	623	688	738	743	703	629	548	487
Jun	442	588	821	1011	1084	1036	874	677	492	564	647	780	889	928	893	790	667	563
Jul	468	625	850	1026	1082	1020	851	651	467	605	684	799	890	915	874	774	658	559
Aug	607	780	946	1053	1035	909	715	515	362	652	738	810	859	836	760	652	544	460
Sep	925	1020	1057	1062	929	727	516	348	280	764	815	827	821	734	608	481	380	339
Oct	1277	1229	1117	1009	770	516	323	228	217	933	894	816	740	585	428	315	260	252
Nov	1473	1357	1143	955	651	378	220	177	176	869	795	672	564	399	256	177	154	153
Dec	1506	1377	1122	898	576	309	180	157	157	570	505	416	344	249	176	142	134	133
Year	986	1025	1027	1011	870	683	503	369	289	696	707	703	691	622	532	445	379	339

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

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LOS ANGELES, CALIFORNIA
WBAN 23174
TABLE A:

TRY Data (1973)

Latitude 33.90 N
Longitude 118.40 E

Monthly Dry Bulb Temperature Frequencies With Mean
Coincident Wet Bulb Temperature (MCWB): First Quarter
(5 Degrees(F)/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	2	1	0	0	0	3	60.0	744	17270	0	0	
70 to 74	0	0	0	3	6	2	0	0	11	56.1	738	13562	6	12	
65 to 69	0	0	1	5	11	6	0	0	23	52.9	726	9903	18	73	
60 to 64	3	2	2	22	27	12	5	3	76	51.3	687	6355	57	245	
55 to 59	20	9	16	46	46	56	52	31	276	50.9	555	3190	189	800	
50 to 54	27	32	39	15	2	15	31	37	198	46.4	267	1245	477	2575	
45 to 49	33	30	24	0	0	2	5	20	114	41.4	101	331	643	5381	
40 to 44	10	17	10	0	0	0	0	2	39	37.0	28	55	716	8825	
35 to 39	0	3	1	0	0	0	0	0	4	32.5	2	1	742	12491	
Feb															
70 to 74	0	0	0	3	3	0	0	0	6	51.5	672	11485	0	0	
65 to 69	0	0	0	10	12	3	0	0	25	51.0	658	8151	14	26	
60 to 64	0	0	3	29	40	20	4	0	96	54.4	619	4938	53	173	
55 to 59	22	13	29	39	29	54	56	35	277	52.2	452	2187	220	782	
50 to 54	38	34	37	3	0	7	23	43	185	48.6	184	643	488	2598	
45 to 49	22	28	13	0	0	0	1	6	70	43.4	47	115	625	5430	
40 to 44	2	9	2	0	0	0	0	0	13	37.5	7	7	665	8682	
Mar															
70 to 74	0	0	0	4	2	0	3	1	10	53.2	742	12080	2	1	
65 to 69	2	0	1	13	17	5	0	1	39	54.3	724	8404	20	45	
60 to 64	1	0	8	50	58	35	6	0	158	54.2	649	4926	95	287	
55 to 59	15	2	37	20	13	43	68	56	254	51.7	457	2146	287	1227	
50 to 54	59	57	35	6	3	10	15	30	215	48.7	195	539	549	3340	
45 to 49	15	30	11	0	0	0	1	5	62	43.6	35	72	709	6593	
40 to 44	1	4	1	0	0	0	0	0	6	40.7	2	1	742	10242	

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

LOS ANGELES, CALIFORNIA

TRY Data (1973)

Latitude 33.90 N

WBAW 23174

Longitude 118.40 E

TABLE A:

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day 10-12 13-15 16-18			19-21	22-24	hours below			degree hours	hours above	degree hours	
Apr															
90 to 94	0	0	0	1	0	0	0	0	1	59.0	720	24852	0	0	
85 to 89	0	0	0	2	0	0	0	0	2	60.5	718	21257	2	5	
80 to 84	0	0	2	3	2	0	0	0	7	59.3	713	17675	7	23	
75 to 79	0	0	2	1	4	3	0	0	10	57.4	706	14124	14	72	
70 to 74	0	0	1	9	11	4	1	0	26	59.6	695	10619	25	167	
65 to 69	1	0	6	10	4	8	5	3	37	56.6	666	7221	54	369	
60 to 64	7	7	10	33	56	26	9	7	155	54.9	597	4026	123	774	
55 to 59	35	25	44	29	12	46	48	42	281	51.8	390	1517	330	1865	
50 to 54	34	37	24	2	1	3	26	36	163	48.0	115	290	605	4238	
45 to 49	13	21	1	0	0	0	1	2	38	43.9	11	13	709	7561	
May															
75 to 79	0	0	0	7	8	1	0	0	16	64.8	742	12262	2	1	
70 to 74	0	0	4	9	6	8	0	0	27	62.9	718	8610	26	69	
65 to 69	0	0	13	31	35	11	9	1	100	59.1	685	5089	59	268	
60 to 64	18	24	48	46	44	58	23	25	286	56.3	494	2041	250	940	
55 to 59	60	51	28	0	0	15	61	65	280	53.7	172	321	572	2940	
50 to 54	15	18	0	0	0	0	0	2	35	49.1	9	7	735	6346	
Jun															
75 to 79	0	0	1	4	2	0	0	0	7	66.1	720	10291	0	0	
70 to 74	0	0	1	19	25	6	1	0	52	63.9	712	6713	8	22	
65 to 69	0	0	23	52	58	44	4	1	182	61.1	592	3371	128	280	
60 to 64	56	58	62	15	5	40	73	63	372	58.6	382	900	338	1409	
55 to 59	34	31	3	0	0	0	12	26	106	56.2	20	22	700	4131	
50 to 54	0	1	0	0	0	0	0	0	1	52.0	0	0	720	7709	

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

LOS ANGELES, CALIFORNIA

WBAN 23174

TABLE A:

TRY Data (1973)

Latitude 33.90 N

Longitude 118.40 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	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														
75 to 79	0	0	3	19	17	3	0	0	42	67.2	743	7481	1	1
70 to 74	0	0	30	69	73	52	0	0	224	64.7	598	3993	146	233
65 to 69	29	29	51	5	3	33	60	37	247	62.2	424	1493	320	1453
60 to 64	62	57	9	0	0	5	33	55	221	59.9	89	146	655	3826
55 to 59	2	7	0	0	0	0	0	1	10	56.2	1	1	743	7401
Aug														
80 to 84	0	0	0	0	2	0	0	0	2	69.5	744	10463	0	0
75 to 79	0	0	3	29	16	2	0	0	50	67.9	736	6756	8	13
70 to 74	0	0	28	54	73	53	7	3	218	64.9	623	3270	121	247
65 to 69	68	63	59	10	2	38	77	66	383	62.4	363	789	381	1486
60 to 64	25	30	3	0	0	0	9	24	91	60.4	18	15	726	4432
Sep														
95 to 99	0	0	0	2	3	0	0	0	5	62.6	718	21758	2	2
90 to 94	0	0	0	1	0	1	0	0	2	61.0	714	18177	6	21
85 to 89	0	0	1	3	0	2	0	0	6	62.3	710	14614	10	58
80 to 84	0	0	4	5	4	2	3	0	18	64.8	704	11075	16	119
75 to 79	0	0	5	12	14	5	2	1	39	65.8	678	7610	42	254
70 to 74	5	2	7	39	52	20	10	12	147	63.5	622	4342	98	586
65 to 69	27	28	43	28	17	50	32	16	241	61.9	438	1691	282	1535
60 to 64	57	43	27	0	0	10	42	61	240	59.5	132	210	588	3654
55 to 59	1	17	3	0	0	0	1	0	22	56.3	2	1	718	7045

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

LOS ANGELES, CALIFORNIA
WBAN 23174
TABLE A:

TRY Data (1973)

Latitude 33.90 N
Longitude 118.40 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Oct															
100 to 104	0	0	0	4	4	0	0	0	8	68.4	741	28317	3	2	
95 to 99	0	0	0	2	1	0	0	0	3	67.3	735	24628	9	33	
90 to 94	0	0	3	0	1	2	0	0	6	65.7	731	20962	13	87	
85 to 89	0	0	1	4	1	3	0	0	9	64.3	727	17320	17	165	
80 to 84	3	3	3	1	2	1	6	4	23	63.2	710	13727	34	292	
75 to 79	3	0	2	3	2	2	0	2	14	63.3	689	10234	55	519	
70 to 74	1	4	2	22	22	4	3	3	61	60.2	667	6828	77	833	
65 to 69	8	8	14	46	45	34	4	5	164	59.9	563	3698	181	1423	
60 to 64	33	27	41	8	15	43	73	55	295	58.3	342	1362	402	2807	
55 to 59	35	27	21	3	0	4	5	20	115	52.9	109	340	635	5505	
50 to 54	6	23	6	0	0	0	2	4	41	47.8	21	43	723	8928	
45 to 49	4	1	0	0	0	0	0	0	5	45.0	0	0	744	12605	
Nov															
80 to 84	0	0	0	0	3	0	0	0	3	60.7	719	16607	1	1	
75 to 79	0	0	0	5	5	1	0	0	11	58.0	713	13021	7	15	
70 to 74	0	0	0	10	8	3	0	0	21	59.8	697	9491	23	85	
65 to 69	0	0	3	33	47	15	5	1	104	57.0	660	6065	60	259	
60 to 64	10	9	15	36	26	55	38	18	207	55.5	492	3110	228	904	
55 to 59	40	19	35	5	1	16	42	53	211	52.0	300	1144	420	2538	
50 to 54	37	45	30	1	0	0	5	18	136	48.2	91	207	629	5201	
45 to 49	3	16	7	0	0	0	0	0	26	43.1	8	12	712	8606	
40 to 44	0	1	0	0	0	0	0	0	1	42.0	0	0	720	12194	
Dec															
75 to 79	0	0	0	1	1	0	0	0	2	54.0	744	15697	0	0	
70 to 74	0	0	0	17	11	1	0	0	29	53.9	731	11993	13	16	
65 to 69	0	0	0	16	17	4	1	0	38	53.2	702	8408	42	151	
60 to 64	3	3	15	29	44	25	17	15	151	54.3	626	5036	118	499	
55 to 59	30	14	21	22	18	43	45	30	223	50.2	447	2356	297	1539	
50 to 54	42	35	31	7	2	19	30	41	207	47.2	211	712	533	3615	
45 to 49	15	33	22	1	0	1	0	7	79	42.7	48	109	696	6732	
40 to 44	3	8	4	0	0	0	0	0	15	35.2	4	3	740	10346	

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

LOS ANGELES, CALIFORNIA
WBAN 23174
TABLE B:

TRY Data (1973)

Latitude 33.90 N
Longitude 118.40 E

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

Dry Bulb range(F)	Number of Hours of Occurrence In time period									Mean Coincident Wet Bulb Temperature (F)								
	Hour of day									Hour of day								
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year
100 to 104	0	0	0	4	4	0	0	0	8	0.0	0.0	0.0	67.3	69.5	0.0	0.0	0.0	68.4
95 to 99	0	0	0	4	4	0	0	0	8	0.0	0.0	0.0	64.8	64.0	0.0	0.0	0.0	64.4
90 to 94	0	0	3	2	1	3	0	0	9	0.0	0.0	65.3	60.0	67.0	64.0	0.0	0.0	63.9
85 to 89	0	0	2	9	1	5	0	0	17	0.0	0.0	62.0	64.1	61.0	62.4	0.0	0.0	63.2
80 to 84	3	3	9	9	13	3	9	4	53	62.0	62.0	61.2	65.6	64.1	65.0	62.7	63.0	63.3
75 to 79	3	0	16	83	70	17	2	3	194	62.3	0.0	63.3	66.1	65.5	64.1	61.5	62.7	65.3
70 to 74	6	6	73	258	292	153	25	19	832	55.2	57.2	64.4	62.5	63.2	64.2	62.0	61.5	63.1
65 to 69	135	128	214	259	268	251	197	131	1583	61.9	62.0	61.3	58.2	58.4	60.7	61.8	62.0	60.4
60 to 64	275	260	243	268	315	329	332	326	2348	59.1	59.0	56.9	54.0	55.0	56.0	57.7	58.8	57.1
55 to 59	294	215	237	164	119	277	390	359	2055	52.7	53.5	51.3	50.5	50.6	52.5	52.3	52.5	52.2
50 to 54	258	282	202	34	8	54	132	211	1181	48.3	47.9	47.1	46.4	48.6	47.7	47.6	48.3	47.8
45 to 49	105	159	78	1	0	3	8	40	394	42.5	43.2	42.3	47.0	0.0	42.3	43.5	42.3	42.8
40 to 44	16	39	17	0	0	0	0	2	74	36.9	37.3	36.5	0.0	0.0	0.0	0.0	39.0	37.1
35 to 39	0	3	1	0	0	0	0	0	4	0.0	32.7	32.0	0.0	0.0	0.0	0.0	0.0	32.5

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Month	Dry Bulb Temperature (F)			Daily Ave		Wet Bulb Ave	Percent Relative Humidity Average					Average Humidity Ratio (lb moisture/lb dry air)					Average wind MPH
	Ave	Max	Min	Max	Min		4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	54.3	76	37	62	47	47.6	67	54	60	68	63	0.0050	0.0052	0.0063	0.0062	0.0056	7.3
Feb	58.1	77	47	65	52	53.3	81	69	68	78	75	0.0072	0.0074	0.0080	0.0079	0.0076	7.8
Mar	55.7	68	44	62	49	50.7	80	64	69	71	72	0.0064	0.0066	0.0074	0.0066	0.0067	9.4
Apr	59.3	79	48	67	53	52.7	74	57	61	72	68	0.0067	0.0069	0.0072	0.0070	0.0070	8.9
May	61.2	83	52	68	57	57.0	87	71	71	84	79	0.0087	0.0092	0.0090	0.0090	0.0090	7.6
Jun	65.5	90	56	73	60	60.7	87	70	70	83	78	0.0101	0.0108	0.0106	0.0101	0.0103	7.6
Jul	66.7	85	58	73	62	62.5	90	71	70	86	80	0.0110	0.0112	0.0114	0.0111	0.0112	7.6
Aug	67.8	84	60	74	63	63.4	88	72	71	82	79	0.0113	0.0118	0.0117	0.0113	0.0115	7.3
Sep	66.3	96	58	73	61	61.1	85	68	69	82	77	0.0101	0.0100	0.0105	0.0105	0.0103	7.1
Oct	63.7	88	53	73	57	57.9	84	58	65	80	73	0.0087	0.0084	0.0092	0.0094	0.0089	6.4
Nov	58.6	76	44	66	52	53.1	79	61	64	74	71	0.0071	0.0073	0.0078	0.0076	0.0074	6.9
Dec	57.2	84	44	67	50	50.2	72	53	58	70	64	0.0058	0.0056	0.0066	0.0068	0.0061	5.9
Year	61.2	96	37	69	55	55.8	81	64	66	78	73	0.0082	0.0084	0.0088	0.0086	0.0085	7.5

LOS ANGELES, CALIFORNIA
WBAN 23174
TABLE 0:

TRY Data (1973)

Latitude 33.90 N
Longitude 118.40 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																24 HOUR SUMMARY											
	7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**				10PM-6AM**				HEATING		COOLING	
	Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs	
	Above	Base	(100s)*	Heat	Above	Base	(100s)*	Heat	Above	Base	(100s)*	Heat	Above	Base	(100s)*	Heat	Above	Base	(100s)*	Heat	Above	Base	(100s)*	Heat	Below	Hrs	Above	Hrs
104	0	484	0	0	0	413	0	0	0	407	0	0	0	447	0	0	0	482	0	0	0	1534	0	8760	3767	0	0	
103	0	473	0	0	0	402	0	1	396	0	0	0	436	0	0	0	471	0	0	0	1501	0	8758	3679	2	0		
102	0	462	0	1	391	0	2	385	0	0	0	425	0	0	0	460	0	0	0	1468	0	8756	3591	4	0			
101	0	451	0	2	380	0	2	375	0	0	0	414	0	0	0	449	0	0	0	1435	0	8755	3504	5	0			
100	0	440	0	3	369	0	3	364	0	0	0	403	0	0	0	438	0	0	0	1402	0	8753	3416	7	0			
99	0	429	0	4	358	0	4	353	0	0	0	392	0	0	0	427	0	0	0	1369	0	8751	3329	9	0			
98	0	418	0	5	348	0	4	342	0	0	0	381	0	0	0	416	0	0	0	1337	0	8750	3241	10	0			
97	0	407	0	6	337	0	5	331	0	0	0	370	0	0	0	405	0	0	0	1304	0	8749	3154	11	0			
96	0	396	0	7	326	0	5	320	0	0	0	359	0	0	0	394	0	0	0	1271	0	8747	3066	13	1			
95	0	386	0	8	315	0	7	309	0	0	0	348	0	0	0	383	0	0	0	1238	0	8745	2979	15	1			
94	0	375	0	8	304	0	8	298	0	0	0	337	0	0	0	372	0	0	0	1205	0	8743	2891	17	1			
93	1	364	0	8	293	1	8	287	0	0	0	326	0	0	0	361	0	0	0	1172	0	8742	2804	18	1			
92	2	353	0	9	282	1	8	276	1	0	0	315	0	0	0	350	0	0	0	1139	0	8740	2717	20	1			
91	2	342	0	9	271	1	9	266	1	1	0	304	0	0	0	339	0	0	0	1107	0	8738	2629	22	1			
90	2	331	0	10	261	1	9	255	1	2	0	293	0	0	0	328	0	0	0	1074	0	8736	2542	24	2			
89	3	320	0	10	250	1	9	244	1	3	0	283	0	0	0	317	0	0	0	1041	0	8733	2454	27	2			
88	4	309	0	11	239	1	9	233	1	4	0	272	0	0	0	306	0	0	0	1008	0	8731	2367	29	2			
87	4	298	0	14	228	1	9	222	1	4	0	261	0	0	0	296	0	0	0	975	0	8728	2280	32	2			
86	5	287	0	16	217	1	10	211	1	5	0	250	0	0	0	285	0	0	0	942	0	8723	2193	37	3			
85	5	276	0	18	206	1	10	200	1	7	0	239	0	0	0	274	0	0	0	910	0	8719	2105	41	3			
84	6	265	0	19	196	2	10	190	1	8	0	228	0	0	0	263	0	0	1	877	0	8715	2018	45	4			
83	9	255	0	19	185	2	12	179	1	8	0	217	0	0	0	252	0	0	3	844	0	8707	1931	53	4			
82	10	244	1	21	174	2	16	168	2	8	0	206	0	1	0	241	0	5	5	811	0	8697	1844	63	5			
81	11	233	1	23	163	2	18	157	2	9	0	195	1	3	0	230	0	7	7	778	0	8687	1757	73	5			
80	12	222	1	26	153	2	21	146	2	10	0	185	1	7	0	219	0	9	7	745	0	8673	1670	87	6			
79	14	211	1	31	142	3	24	136	2	12	0	174	1	9	0	208	0	10	10	713	0	8659	1584	101	7			
78	15	200	1	37	132	3	30	125	2	14	0	163	1	9	0	197	0	11	11	680	0	8642	1497	118	8			
77	17	190	1	47	121	4	42	114	3	18	0	152	1	9	0	186	0	12	12	647	1	8615	1411	145	9			
76	21	179	1	64	111	4	56	104	3	23	0	141	1	9	0	175	0	13	13	615	1	8573	1325	187	11			
75	27	168	2	93	100	5	78	94	4	27	0	131	2	10	0	165	1	15	15	582	1	8509	1239	251	13			
74	34	157	2	129	91	6	116	84	5	33	0	120	2	13	0	154	1	16	16	549	1	8418	1155	342	16			
73	43	147	2	176	81	7	168	74	6	48	0	109	2	15	0	143	1	19	19	516	1	8290	1071	470	20			
72	54	136	3	231	72	9	230	65	8	75	0	99	3	17	0	132	1	23	23	484	1	8128	989	632	25			
71	69	126	3	285	64	12	293	57	11	111	0	89	4	22	0	121	1	28	28	451	2	7950	908	810	33			
70	91	116	4	340	56	15	354	49	14	156	0	79	5	30	0	111	1	39	39	419	2	7748	830	1012	42			
69	119	106	5	389	49	19	407	42	18	200	0	70	7	40	0	100	2	56	56	386	2	7547	753	1213	53			
68	151	96	7	435	42	23	460	35	22	247	0	62	9	53	0	90	2	85	85	354	3	7328	679	1432	66			
67	190	87	8	488	35	28	516	29	27	298	0	53	12	79	0	79	3	134	134	322	4	7054	607	1706	81			
66	232	78	10	545	30	33	568	24	33	353	0	46	15	128	0	69	4	225	225	291	6	6709	538	2051	100			
65	284	70	13	600	24	38	624	19	38	407	0	38	19	196	0	60	5	364	364	261	9	6283	473	2477	122			
64	344	62	16	657	20	45	685	14	45	460	0	32	23	270	0	51	8	525	525	233	13	5818	412	2942	150			
63	395	55	20	714	16	52	751	11	52	519	0	26	28	331	0	43	11	693	693	206	19	5354	356	3406	181			
62	445	48	24	772	12	59	824	7	60	587	0	20	34	392	0	36	14	863	863	181	27	4875	305	3885	218			
61	493	42	29	826	9	67	888	5	69	657	0	16	40	456	0	29	19	1032	1032	157	36	4407	259	4353	259			
60	537	36	34	873	7	76	940	3	78	726	0	12	47	524	0	23	23	1208	1208	136	48	3950	217	4810	305			
59	584	31	39	917	5	84	985	2	87	797	0	8	54	594	0	18	29	1376	1376	116	61	3504	180	5256	355			

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

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

LOS ANGELES, CALIFORNIA

TRY Data (1973)

Latitude 33.90 N

WBAN 23174

Longitude 118.40 E

TABLE D:

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																				24 HOUR SUMMARY							
	7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**				10PM-6AM**				HEATING		COOLING	
	Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg		Hrs		Deg	
	Above (100s)*				Above (100s)*				Above (100s)*				Above (100s)*				Above (100s)*				Above (100s)*				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*
58	630	26	45	959	3	94	1021	1	97	864	6	63	659	13	35	1523	98	75							3103	147	5657	410
57	677	21	52	1000	2	104	1052	1	108	927	4	72	731	9	42	1682	81	91							2690	118	6070	468
56	724	17	59	1031	1	114	1072	0	119	980	2	81	819	6	50	1859	66	109							2274	93	6486	531
55	771	14	66	1051	1	124	1083	0	129	1019	1	91	913	4	59	2059	52	128							1863	72	6897	598
54	821	11	74	1067	0	135	1089	0	140	1050	1	102	975	2	68	2260	41	150							1496	56	7264	669
53	863	9	83	1078	0	146	1093	0	151	1068	0	112	1012	1	78	2427	32	173							1216	42	7544	743
52	903	6	92	1084	0	156	1095	0	162	1079	0	123	1043	1	88	2580	24	198							975	31	7785	820
51	943	5	101	1089	0	167	1095	0	173	1087	0	134	1065	0	99	2718	18	225							762	23	7998	899
50	980	3	111	1093	0	178	1095	0	184	1091	0	145	1080	0	110	2851	13	253							569	16	8191	980
49	1008	2	121	1094	0	189	1095	0	195	1092	0	156	1089	0	121	2962	9	282							418	11	8342	1063
48	1031	2	131	1094	0	200	1095	0	206	1093	0	166	1092	0	132	3046	6	312							307	8	8453	1147
47	1051	1	141	1094	0	211	1095	0	217	1094	0	177	1094	0	142	3118	4	343							212	5	8548	1232
46	1063	1	152	1095	0	222	1095	0	228	1095	0	188	1095	0	153	3165	3	374							152	4	8608	1318
45	1072	0	162	1095	0	233	1095	0	239	1095	0	199	1095	0	164	3204	2	406							103	2	8657	1404
44	1079	0	173	1095	0	244	1095	0	250	1095	0	210	1095	0	175	3233	1	438							67	1	8693	1491
43	1084	0	184	1095	0	255	1095	0	261	1095	0	221	1095	0	186	3246	1	471							49	1	8711	1578
42	1089	0	195	1095	0	266	1095	0	272	1095	0	232	1095	0	197	3259	0	503							32	0	8728	1665
41	1092	0	206	1095	0	277	1095	0	283	1095	0	243	1095	0	208	3270	0	536							18	0	8742	1752
40	1093	0	217	1095	0	288	1095	0	293	1095	0	254	1095	0	219	3278	0	569							8	0	8752	1840
39	1094	0	228	1095	0	299	1095	0	304	1095	0	265	1095	0	230	3282	0	602							3	0	8757	1928
38	1095	0	239	1095	0	310	1095	0	315	1095	0	276	1095	0	241	3282	0	634							2	0	8758	2015
37	1095	0	250	1095	0	321	1095	0	326	1095	0	287	1095	0	252	3284	0	667							1	0	8759	2103
36	1095	0	261	1095	0	332	1095	0	337	1095	0	298	1095	0	263	3285	0	700							0	0	8760	2190

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

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

LOS ANGELES, CALIFORNIA
WBAN 23174
TABLE E:

TRY Data (1973)

Latitude 33.90 N
Longitude 118.40 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:	6987	5809	4508	3303	1776	567	79	3	0	0	0
Annual Wet Bulb Cooling deg-hrs:	61991.	42115.	25970.	13682.	5227.	1253.	134.	3.	0.	0.	0.

TABLE F:

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

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

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

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

TABLE G:

Percent Diffuse Solar Radiation*
and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
<hr/>													
% Diffuse on surface													
HORIZONTAL	30	28	37	33	42	41	31	33	32	31	27	29	34
VERTICAL													
NORTH	100	100	100	97	93	91	87	96	100	100	100	100	95
WEST	43	43	51	47	55	53	46	48	45	46	41	40	47
SOUTH	26	30	46	57	75	81	72	62	47	36	24	24	45
EAST	41	42	54	56	70	84	69	68	58	51	39	43	58
% Possible Sun	69	72	73	70	66	65	82	83	79	73	74	71	73

FOOTNOTES: * Corrected For Cloud Cover.

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

LOS ANGELES, CALIFORNIA
WBAN 23174
TABLE H:

TRY Data (1973)

Latitude 33.90 N
Longitude 118.40 E

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

Month	Under Clear Sky Assumption*										Corrected For Cloud Cover**										Obs ****		
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N	S-45 ***	horiz	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NN	NNE/ NNW	N		S-45 ***	horiz
Jan	2076	1934	1583	1253	815	441	246	187	186	2278	1262	1267	1197	1004	819	565	344	226	190	189	1358	805	926
Feb	2006	1887	1624	1380	990	616	359	238	227	2445	1585	1300	1229	1078	934	699	474	318	246	239	1535	1057	1214
Mar	1676	1644	1550	1450	1176	854	572	365	290	2472	1984	1257	1221	1145	1065	888	695	534	419	375	1667	1401	1619
Apr	1205	1321	1392	1434	1314	1086	814	565	387	2327	2314	1035	1060	1078	1084	995	849	689	549	455	1723	1747	1951
May	874	1063	1244	1381	1380	1243	1015	763	543	2137	2487	836	871	924	963	942	862	755	644	568	1516	1734	2060
Jun	750	949	1169	1347	1400	1307	1109	866	658	2027	2533	728	735	768	797	787	734	668	597	593	1427	1716	2119
Jul	798	987	1182	1333	1364	1254	1053	814	610	2030	2462	792	823	883	927	919	845	745	637	589	1682	1996	2308
Aug	1034	1175	1286	1360	1296	1114	876	640	452	2160	2306	940	923	930	929	867	756	641	538	479	1677	1788	2080
Sep	1439	1463	1434	1395	1191	920	656	443	334	2305	2028	1146	1082	1020	969	834	678	538	432	377	1685	1524	1681
Oct	1817	1720	1528	1345	1005	668	423	281	256	2347	1662	1258	1170	1031	903	688	492	363	292	280	1553	1162	1317
Nov	1985	1853	1530	1243	821	471	268	201	200	2249	1323	1262	1186	993	818	561	347	222	182	181	1396	822	1004
Dec	2020	1891	1533	1195	752	396	217	175	175	2165	1155	1315	1220	992	782	519	308	206	180	180	1382	781	849
Year	1470	1488	1420	1343	1126	865	635	463	361	2244	1926	1094	1059	987	916	772	616	493	410	376	1550	1380	1594

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

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

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LUBBOCK, TEXAS
WBAN 23042
TABLE A:

TRY Data (1955)

Latitude 33.70 N
Longitude 101.80 E

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

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														
65 to 69	0	0	0	1	5	3	0	0	9	46.6	743	21235	1	1
60 to 64	0	0	0	5	14	12	1	1	33	53.6	720	17557	24	43
55 to 59	3	3	5	5	9	10	7	5	47	50.1	682	14034	62	240
50 to 54	3	3	1	7	16	13	7	4	54	44.3	638	10743	106	669
45 to 49	5	1	0	15	11	16	10	3	61	39.2	578	7702	166	1348
40 to 44	8	6	8	18	20	20	18	9	107	36.3	495	4985	249	2351
35 to 39	15	17	17	20	9	11	23	28	140	33.1	375	2782	369	3868
30 to 34	29	16	22	17	9	5	17	20	135	29.6	232	1255	512	6061
25 to 29	16	27	24	4	0	3	10	17	101	25.8	96	429	648	8955
20 to 24	9	13	13	1	0	0	0	6	42	20.7	35	110	709	12356
15 to 19	5	7	2	0	0	0	0	0	14	16.3	8	11	736	15977
10 to 14	0	0	1	0	0	0	0	0	1	13.0	0	0	744	19686
Feb														
70 to 74	0	0	0	1	9	7	0	0	17	48.2	663	21784	9	8
65 to 69	0	0	0	5	10	9	0	0	24	47.3	645	18507	27	91
60 to 64	0	0	0	9	10	17	3	0	39	45.5	616	15344	56	288
55 to 59	0	0	2	8	12	11	16	3	52	43.7	570	12361	102	665
50 to 54	1	1	4	9	9	7	8	6	45	41.0	522	9632	150	1296
45 to 49	10	3	3	11	11	12	10	12	72	37.3	466	7145	206	2169
40 to 44	9	8	6	9	9	4	11	13	69	34.5	402	4988	270	3372
35 to 39	11	9	14	16	6	12	17	13	98	32.0	324	3177	348	4921
30 to 34	14	18	11	5	8	5	9	17	87	28.2	216	1817	456	6921
25 to 29	21	13	18	7	0	0	6	9	74	23.7	136	942	536	9406
20 to 24	9	11	14	3	0	0	4	3	44	19.1	77	414	595	12238
15 to 19	3	15	8	1	0	0	0	7	34	14.9	34	139	638	15323
10 to 14	6	2	2	0	0	0	0	1	11	9.3	16	39	656	18583
5 to 9	0	4	2	0	0	0	0	0	6	6.3	1	1	671	21905
Mar														
80 to 84	0	0	0	0	12	9	0	0	21	54.5	743	23935	1	1
75 to 79	0	0	0	7	17	19	0	0	43	52.9	701	20311	43	97
70 to 74	0	0	0	11	17	15	4	0	47	51.2	662	16891	82	397
65 to 69	2	0	1	17	9	12	15	2	58	49.2	609	13708	135	934
60 to 64	2	1	2	9	5	8	18	10	55	46.5	555	10800	189	1746
55 to 59	10	3	9	9	6	3	17	13	70	44.2	496	8174	248	2840
50 to 54	13	8	11	9	3	3	8	20	75	41.8	424	5887	320	4273
45 to 49	10	14	17	7	4	6	7	11	76	38.6	340	3975	404	6081
40 to 44	21	14	16	8	10	9	8	14	100	35.1	262	2448	482	8274
35 to 39	15	23	9	4	4	4	6	9	74	30.8	176	1377	568	10923
30 to 34	7	12	13	7	4	3	4	3	53	27.5	96	712	648	13978
25 to 29	4	3	6	2	1	2	3	5	26	23.3	57	332	687	17318
20 to 24	5	9	4	1	1	0	3	6	29	19.5	31	96	713	20802
15 to 19	4	6	5	2	0	0	0	0	17	15.5	6	6	738	24432

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

LUBBOCK, TEXAS
WBAN 23042
TABLE A:

TRY Data (1955)

Latitude 33.70 N
Longitude 101.80 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	10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Apr														
90 to 94	0	0	0	0	6	2	0	0	8	59.0	720	21858	0	0
85 to 89	0	0	0	4	18	18	0	0	40	57.2	699	18294	21	36
80 to 84	0	0	0	15	13	18	3	0	49	56.3	650	14908	70	250
75 to 79	0	0	3	14	15	16	17	0	65	55.0	599	11777	121	719
70 to 74	5	0	4	10	10	9	18	14	70	53.9	540	8939	180	1481
65 to 69	3	4	10	13	11	10	14	13	78	50.7	457	6453	263	2595
60 to 64	13	2	15	14	8	10	12	16	90	48.1	371	4370	349	4112
55 to 59	18	17	15	12	6	4	9	9	90	44.6	291	2720	429	6062
50 to 54	18	13	14	7	3	1	9	15	80	42.5	196	1503	524	8445
45 to 49	11	20	16	1	0	2	4	12	66	37.9	129	703	591	11245
40 to 44	14	15	10	0	0	0	3	10	52	36.3	63	233	657	14375
35 to 39	7	13	3	0	0	0	1	1	25	32.9	17	46	703	17788
30 to 34	1	6	0	0	0	0	0	0	7	30.4	3	2	717	21344
May														
95 to 99	0	0	0	0	1	1	0	0	2	65.0	744	21456	0	0
90 to 94	0	0	0	2	7	7	0	0	16	62.9	740	17743	4	7
85 to 89	0	0	0	7	26	28	4	0	65	62.0	708	14101	36	85
80 to 84	0	0	0	16	18	15	10	1	60	61.9	644	10727	100	431
75 to 79	1	0	6	22	17	17	18	2	83	60.8	565	7683	179	1107
70 to 74	1	1	16	22	9	7	22	13	91	59.3	481	5058	263	2202
65 to 69	17	13	29	9	2	6	15	29	120	58.5	383	2889	361	3753
60 to 64	31	19	19	6	11	10	16	25	137	56.3	252	1297	492	5881
55 to 59	29	38	20	9	2	2	8	18	126	54.0	115	376	629	8680
50 to 54	12	17	2	0	0	0	0	5	36	49.4	29	66	715	12090
45 to 49	2	5	1	0	0	0	0	0	8	44.6	2	3	742	15747
Jun														
100 to 104	0	0	0	0	1	1	0	0	2	67.0	720	19956	0	0
95 to 99	0	0	0	1	11	10	1	0	23	65.4	713	16366	7	10
90 to 94	0	0	0	11	27	23	2	0	63	65.7	673	12881	47	125
85 to 89	0	0	0	21	20	21	12	0	74	65.8	602	9681	118	525
80 to 84	0	0	6	22	16	12	21	9	86	65.5	527	6846	193	1290
75 to 79	7	3	24	19	5	10	23	18	109	63.8	435	4453	285	2497
70 to 74	27	13	30	6	4	4	13	24	121	62.2	321	2567	399	4211
65 to 69	23	27	13	4	2	3	10	21	103	61.5	191	1277	529	6521
60 to 64	22	27	8	2	2	3	3	8	75	58.1	100	527	620	9371
55 to 59	5	11	7	4	2	3	3	5	40	52.8	42	172	678	12616
50 to 54	5	6	2	0	0	0	2	5	20	49.0	16	36	704	16080
45 to 49	1	3	0	0	0	0	0	0	4	45.0	0	0	720	19644

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

LUBBOCK, TEXAS
WBAN 23042
TABLE A:

TRY Data (1955)

Latitude 33.70 N
Longitude 101.80 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Jul														
95 to 99	0	0	0	0	5	8	0	0	13	69.4	741	14103	3	3
90 to 94	0	0	0	6	33	32	4	0	75	69.6	712	10443	32	63
85 to 89	0	0	1	37	28	26	24	0	116	68.8	608	7110	136	450
80 to 84	0	0	11	30	18	13	31	20	123	68.1	499	4336	245	1396
75 to 79	24	2	35	16	5	7	14	40	143	67.3	354	2190	390	2970
70 to 74	41	42	34	1	1	4	16	21	160	65.8	216	747	528	5247
65 to 69	26	47	12	2	3	3	4	12	109	64.8	52	78	692	8298
60 to 64	2	2	0	1	0	0	0	0	5	63.2	0	0	744	11940
Aug														
95 to 99	0	0	0	0	4	3	0	0	7	70.9	741	14640	3	3
90 to 94	0	0	0	5	37	38	1	0	81	69.6	709	10975	35	58
85 to 89	0	0	0	37	32	34	13	0	116	68.5	618	7647	126	450
80 to 84	0	0	10	33	16	10	35	5	109	67.6	496	4868	248	1391
75 to 79	15	2	32	16	3	6	29	33	136	66.3	375	2679	369	2922
70 to 74	29	17	33	2	1	1	12	39	134	64.6	249	1124	495	5087
65 to 69	42	57	17	0	0	1	3	16	136	62.3	92	247	652	7930
60 to 64	6	13	0	0	0	0	0	0	19	57.5	16	36	728	11439
55 to 59	1	4	1	0	0	0	0	0	6	55.5	1	2	743	15125
Sep														
90 to 94	0	0	0	0	5	4	0	0	9	67.4	719	14740	1	1
85 to 89	0	0	0	6	40	38	1	0	85	66.9	681	11193	39	54
80 to 84	0	0	0	31	21	23	7	0	82	66.9	596	7999	124	460
75 to 79	0	0	6	30	9	11	31	6	93	66.3	517	5221	203	1282
70 to 74	20	2	27	10	9	3	30	36	137	64.3	399	2920	321	2581
65 to 69	30	25	31	7	5	11	15	35	159	63.3	267	1274	453	4535
60 to 64	29	38	17	4	1	0	6	10	105	60.0	82	400	638	7261
55 to 59	10	14	8	2	0	0	0	3	37	53.8	37	116	683	10577
50 to 54	1	9	1	0	0	0	0	0	11	50.0	6	15	714	14076
45 to 49	0	2	0	0	0	0	0	0	2	47.0	0	0	720	17661

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

LUBBOCK, TEXAS
WBAN 23042
TABLE A:

TRY Data (1955)

Latitude 33.70 N
Longitude 101.80 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Oct														
85 to 89	0	0	0	0	5	1	0	0	6	62.3	744	20437	0	0
80 to 84	0	0	0	2	17	13	0	0	32	61.1	732	16741	12	24
75 to 79	0	0	0	14	21	15	1	0	51	57.9	689	13186	55	189
70 to 74	0	0	0	24	20	22	4	0	70	57.7	626	9875	118	598
65 to 69	6	4	12	28	16	20	19	16	121	58.7	554	6912	190	1355
60 to 64	17	11	15	13	11	13	27	18	125	55.3	402	4498	342	2661
55 to 59	15	12	21	8	3	6	18	15	98	49.1	296	2764	448	4647
50 to 54	16	17	15	3	0	3	12	21	87	46.6	201	1519	543	7122
45 to 49	23	17	14	1	0	0	9	12	76	42.2	118	722	626	10045
40 to 44	7	19	10	0	0	0	3	8	47	38.6	58	293	686	13336
35 to 39	5	4	3	0	0	0	0	3	15	33.6	23	113	721	16876
30 to 34	4	7	2	0	0	0	0	0	13	29.5	13	26	731	20509
25 to 29	0	2	1	0	0	0	0	0	3	26.3	0	0	744	24203
Nov														
80 to 84	0	0	0	0	1	0	0	0	1	54.0	720	25832	0	0
75 to 79	0	0	0	1	15	5	0	0	21	53.2	713	22241	7	9
70 to 74	0	0	0	7	10	9	0	0	26	51.6	688	18731	32	99
65 to 69	0	0	1	11	15	16	1	0	44	49.1	652	15369	68	337
60 to 64	0	0	1	14	6	12	10	0	43	47.2	608	12212	112	780
55 to 59	2	2	5	11	11	12	16	13	72	44.5	563	9269	157	1437
50 to 54	14	9	13	13	8	8	10	15	90	41.9	485	6664	235	2432
45 to 49	20	13	12	10	6	5	17	13	96	39.3	383	4484	337	3852
40 to 44	6	15	16	7	13	10	10	16	93	34.8	292	2796	428	5764
35 to 39	20	9	11	8	2	7	7	7	71	31.1	203	1575	517	8143
30 to 34	4	17	10	7	3	5	14	13	73	27.7	137	722	583	10890
25 to 29	17	9	11	1	0	1	5	11	55	24.4	57	227	663	13995
20 to 24	6	13	8	0	0	0	0	2	29	19.9	18	43	702	17411
15 to 19	1	3	2	0	0	0	0	0	6	16.2	0	0	720	20968
Dec														
80 to 84	0	0	0	0	4	0	0	0	4	56.8	744	29060	0	0
75 to 79	0	0	0	2	9	4	0	0	15	53.3	735	25354	9	14
70 to 74	0	0	0	4	3	7	0	0	14	52.3	719	21716	25	96
65 to 69	0	0	0	4	15	11	3	0	33	49.1	698	18163	46	263
60 to 64	0	0	2	9	14	12	1	2	40	46.4	667	14758	77	578
55 to 59	3	6	4	13	8	15	8	3	60	44.3	617	11557	127	1097
50 to 54	4	0	2	6	11	10	20	8	61	41.2	558	8618	186	1878
45 to 49	11	3	8	18	13	9	18	13	93	37.9	484	6002	260	2982
40 to 44	8	8	7	12	7	14	16	18	90	35.0	391	3808	353	4508
35 to 39	18	10	16	16	8	9	10	22	109	31.4	294	2089	450	6509
30 to 34	22	27	27	8	1	2	10	12	109	28.0	178	898	566	9038
25 to 29	21	24	15	1	0	0	6	10	77	23.8	78	273	666	12133
20 to 24	6	12	9	0	0	0	1	5	33	19.4	22	44	722	15624
15 to 19	0	3	3	0	0	0	0	0	6	15.7	0	0	744	19300

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

LUBBOCK, TEXAS
WBAN 23042
TABLE B:

TRY Data (1955)

Latitude 33.70 N
Longitude 101.80 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 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
100 to 104	0	0	0	0	1	1	0	0	2	0.0	0.0	0.0	0.0	67.0	67.0	0.0	0.0	67.0
95 to 99	0	0	0	1	21	22	1	0	45	0.0	0.0	0.0	70.0	67.5	67.3	65.0	0.0	67.4
90 to 94	0	0	0	24	115	106	7	0	252	0.0	0.0	0.0	67.7	67.6	68.0	67.0	0.0	67.8
85 to 89	0	0	1	112	169	166	54	0	502	0.0	0.0	70.0	67.6	65.7	65.3	66.8	0.0	66.1
80 to 84	0	0	27	149	136	113	107	35	567	0.0	0.0	68.0	66.0	63.4	62.7	65.7	66.1	64.8
75 to 79	47	7	106	141	116	110	133	99	759	65.1	65.4	66.2	63.4	57.6	58.8	63.3	65.5	62.6
70 to 74	123	75	144	98	93	88	119	147	887	64.1	63.8	64.2	57.1	55.8	55.5	60.4	62.9	60.9
65 to 69	149	177	126	101	93	105	99	144	994	62.6	63.2	60.7	54.6	51.3	53.9	56.7	58.9	58.6
60 to 64	122	113	79	86	82	97	97	90	766	56.4	59.1	56.0	49.9	49.7	49.3	51.8	54.2	53.5
55 to 59	96	110	97	81	59	66	102	87	698	49.8	51.3	50.1	46.0	44.4	44.4	47.4	48.9	48.2
50 to 54	87	83	65	54	50	45	76	99	559	44.9	46.9	44.4	41.1	40.9	41.2	42.7	44.3	43.7
45 to 49	93	81	71	63	45	50	75	76	554	40.5	40.7	39.6	38.0	37.3	37.3	37.9	39.5	39.1
40 to 44	73	85	73	54	59	57	69	88	558	36.0	37.2	36.2	35.1	34.7	34.3	35.4	35.1	35.6
35 to 39	91	85	73	64	29	43	64	83	532	32.1	32.5	32.2	31.6	31.8	31.2	31.6	32.1	32.0
30 to 34	81	103	85	44	25	20	54	65	477	28.6	28.9	28.7	28.2	28.4	28.5	27.7	28.3	28.5
25 to 29	79	78	75	15	1	6	30	52	336	24.5	24.7	24.3	23.5	23.0	26.0	24.3	24.4	24.5
20 to 24	35	58	48	5	1	0	8	22	177	19.2	20.2	19.8	20.0	22.0	0.0	18.1	19.7	19.7
15 to 19	13	34	20	3	0	0	0	7	77	15.6	15.5	15.6	17.3	0.0	0.0	0.0	13.9	15.5
10 to 14	6	2	3	0	0	0	0	1	12	9.3	9.0	10.3	0.0	0.0	0.0	0.0	10.0	9.6
5 to 9	0	4	2	0	0	0	0	0	6	0.0	6.8	5.5	0.0	0.0	0.0	0.0	0.0	6.3

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 MPH
Month	Ave	Max	Min	Daily Max	Ave Min		Ave	4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	
Jan	39.0	68	14	51	29	34.3	80	69	50	68	69	0.0034	0.0038	0.0040	0.0039	0.0038	13.8
Feb	40.1	74	7	56	25	32.4	70	51	32	45	52	0.0024	0.0027	0.0026	0.0026	0.0026	16.6
Mar	50.3	83	15	66	34	39.1	56	44	29	38	43	0.0029	0.0036	0.0035	0.0033	0.0032	17.4
Apr	62.1	90	32	77	45	47.2	52	34	23	36	38	0.0043	0.0048	0.0044	0.0047	0.0045	17.3
May	68.7	95	46	81	56	57.8	77	55	40	53	59	0.0090	0.0097	0.0087	0.0089	0.0091	13.8
Jun	74.8	100	48	89	62	62.1	78	50	36	51	56	0.0112	0.0113	0.0097	0.0104	0.0107	14.5
Jul	78.5	99	64	89	68	67.2	77	57	42	57	60	0.0134	0.0141	0.0128	0.0132	0.0135	13.0
Aug	77.8	99	56	90	66	65.9	77	54	39	53	58	0.0125	0.0137	0.0123	0.0125	0.0127	10.6
Sep	72.0	93	49	84	60	63.6	85	66	49	65	68	0.0116	0.0132	0.0125	0.0124	0.0123	11.8
Oct	60.0	86	29	75	47	51.3	79	51	40	62	61	0.0071	0.0076	0.0075	0.0075	0.0074	12.9
Nov	46.6	80	18	62	33	37.4	63	41	31	40	49	0.0032	0.0033	0.0033	0.0033	0.0033	14.8
Dec	43.4	80	18	59	30	35.1	65	48	32	48	50	0.0027	0.0031	0.0033	0.0031	0.0030	15.7
Year	59.6	100	7	73	46	49.6	72	52	37	52	55	0.0070	0.0076	0.0071	0.0072	0.0072	14.3

LUBBOCK, TEXAS
WBAN 23042
TABLE D:

TRY Data (1955)

Latitude 33.70 N
Longitude 101.80 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**		24 HOUR SUMMARY			
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	HEATING		COOLING	
	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Hrs	Deg	Hrs	Deg
	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Below	Base	Above	Base
		Cool		Cool		Cool		Cool		Cool		Cool	Base	100s*	Base	100s*
101	0	522	0	0	394	0	0	326	0	0	437	0	0	1612	0	0
100	0	511	0	0	383	0	0	315	0	0	426	0	0	1579	0	0
99	0	501	0	0	372	0	0	304	0	1	415	0	0	1547	0	0
98	0	490	0	0	361	0	6	293	0	3	405	0	0	1514	0	0
97	0	479	0	0	350	0	9	283	0	7	394	0	0	1481	0	0
96	0	468	0	0	339	0	13	272	0	11	384	0	0	1448	0	0
95	0	457	0	0	328	0	18	261	0	18	373	0	0	1415	0	0
94	0	446	0	3	317	0	28	250	1	29	360	0	0	1382	0	0
93	0	435	0	5	306	0	46	240	1	44	349	0	0	1349	0	0
92	0	424	0	8	296	0	65	229	2	66	338	0	0	1317	0	0
91	0	413	0	12	285	0	85	219	2	86	327	0	0	1284	0	0
90	0	402	0	19	274	0	117	209	3	112	316	0	0	1251	0	0
89	0	391	0	32	263	1	151	199	5	143	305	0	0	1218	0	0
88	0	380	0	47	253	1	182	190	6	177	294	0	0	1185	0	0
87	0	369	0	62	242	2	216	181	8	214	284	1	0	1152	0	0
86	0	358	0	83	232	2	246	173	11	245	273	1	0	1119	0	0
85	0	347	0	117	222	3	282	164	13	276	263	1	0	1087	0	0
84	1	336	0	146	212	5	319	156	16	304	252	2	0	1054	0	0
83	3	325	0	172	203	6	344	149	20	326	242	3	3	1021	0	0
82	8	314	0	206	194	8	370	141	23	351	232	4	8	988	0	0
81	15	304	0	239	185	10	397	134	27	373	222	5	16	955	0	0
80	24	293	0	270	177	13	425	127	31	396	213	6	28	923	0	0
79	38	282	1	302	169	16	453	121	35	418	204	8	43	890	1	0
78	54	272	1	332	161	19	479	115	40	443	195	10	67	858	1	0
77	72	261	2	358	154	22	501	109	45	465	186	12	93	826	2	0
76	95	251	3	387	146	26	521	103	50	485	178	15	120	794	3	0
75	120	241	4	414	139	30	545	97	55	508	169	18	163	763	4	0
74	146	232	5	436	133	34	568	92	61	527	100	21	205	732	6	0
73	176	222	7	455	126	39	591	87	67	547	95	24	248	701	9	0
72	208	213	9	476	120	43	612	82	73	570	89	27	319	671	11	0
71	234	205	11	493	114	48	625	77	79	586	84	31	399	642	15	0
70	262	196	13	513	108	53	641	72	85	598	79	35	483	613	19	0
69	290	188	16	531	102	59	661	68	92	616	74	40	575	586	25	0
68	316	180	19	547	97	64	681	64	99	638	70	44	672	559	31	0
67	338	172	22	568	91	70	697	60	106	662	65	49	769	533	38	0
66	361	165	26	590	86	75	714	56	113	682	61	53	858	509	46	0
65	390	158	30	613	81	81	734	52	120	701	57	58	954	485	55	0
64	416	151	34	638	76	88	755	48	127	722	53	64	1039	462	65	0
63	439	144	38	659	72	94	774	45	135	741	49	69	1119	440	76	0
62	455	138	42	675	68	101	790	42	143	757	46	74	1196	419	88	0
61	464	131	47	687	64	108	804	39	151	779	43	80	1256	398	100	0
60	475	125	52	701	60	115	818	36	159	799	40	86	1305	378	113	0
59	492	119	57	722	56	122	834	33	167	816	37	92	1352	359	126	0
58	514	113	62	739	52	129	849	31	176	832	34	99	1399	340	140	0
57	536	107	67	753	49	136	861	29	184	846	31	105	1453	321	154	0
56	553	102	72	767	45	144	872	26	193	859	29	112	1515	303	169	0
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FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds (eg. 565 x 100 = 56500 Deg Hrs)
** The Hours Below the Base Temp for any X-Hr period are calculated by subtracting the Hrs Above from X times 365

LUBBOCK, TEXAS

WBAN 23042

TABLE D:

TRY Data (1955)

Latitude 33.70 N

Longitude 101.80 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	Hrs	Deg-Hrs		Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Below	Deg	Hrs	Deg					
(F)	Above	(100s)*		Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Above	(100s)*	Hrs	Hrs	Above	Hrs					
	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat					
55	570	97	78	783	42	152	881	24	202	870	27	192	710	52	119	1583	286	184	3360	527	5400	927
54	585	91	84	799	39	160	889	22	210	876	25	201	729	48	126	1650	269	201	3230	494	5530	982
53	596	86	90	809	36	168	898	20	219	882	22	210	746	45	134	1703	253	217	3124	462	5636	1037
52	609	81	96	818	33	176	907	18	228	890	20	219	763	41	141	1756	237	235	3014	431	5746	1094
51	623	77	102	829	31	184	917	16	237	900	18	228	779	38	149	1804	222	253	2907	402	5853	1152
50	636	72	108	841	28	192	929	15	247	912	16	237	789	35	157	1856	208	271	2795	373	5965	1211
49	653	67	114	852	26	201	938	13	256	924	15	246	803	32	165	1917	194	290	2672	346	6088	1272
48	667	63	121	866	23	210	947	11	265	934	13	255	817	29	173	1970	180	309	2557	320	6203	1333
47	678	59	128	879	21	218	958	10	275	942	11	265	829	26	181	2016	167	329	2455	295	6305	1396
46	691	55	135	892	19	227	967	9	285	952	10	274	842	24	189	2060	155	349	2354	271	6406	1459
45	707	51	142	905	17	236	975	7	294	964	9	284	859	21	198	2112	143	370	2236	248	6524	1524
44	721	47	149	915	15	245	987	6	304	976	7	293	877	19	207	2160	131	392	2123	226	6637	1590
43	734	43	156	925	13	254	1000	5	314	988	6	303	891	17	215	2203	120	413	2017	205	6743	1657
42	748	40	163	935	12	264	1014	4	324	1001	5	313	904	15	224	2252	110	436	1905	186	6855	1724
41	763	36	171	946	10	273	1026	4	334	1012	4	323	920	13	234	2302	100	459	1789	167	6971	1794
40	780	33	179	958	9	283	1035	3	345	1021	4	333	935	11	243	2356	90	482	1673	150	7087	1864
39	796	30	187	971	7	292	1043	2	355	1030	3	344	944	10	252	2411	81	506	1563	134	7197	1935
38	811	27	195	984	6	302	1050	2	366	1038	2	354	955	8	262	2460	73	530	1461	119	7299	2008
37	825	24	203	995	5	312	1056	2	376	1046	2	364	967	7	271	2510	65	555	1359	105	7401	2081
36	837	22	211	1008	4	322	1062	1	387	1055	1	375	981	6	281	2564	57	580	1252	91	7508	2156
35	852	19	220	1021	3	332	1067	1	397	1065	1	385	995	5	291	2618	50	606	1141	79	7619	2231
34	869	17	228	1033	3	342	1071	1	408	1071	1	396	1008	4	301	2666	44	633	1039	69	7721	2308
33	887	15	237	1045	2	353	1076	0	419	1077	0	407	1019	3	311	2719	38	659	934	59	7826	2386
32	906	13	246	1057	2	363	1082	0	430	1083	0	418	1030	2	321	2778	33	687	823	50	7937	2465
31	924	11	255	1064	1	374	1088	0	440	1086	0	428	1040	2	332	2827	28	715	728	42	8032	2545
30	940	9	264	1069	1	385	1092	0	451	1088	0	439	1052	1	342	2872	23	744	646	35	8114	2625
29	955	8	274	1074	1	395	1093	0	462	1090	0	450	1064	1	353	2922	19	772	561	29	8199	2707
28	972	7	284	1079	1	406	1093	0	473	1093	0	461	1074	1	363	2978	16	802	469	24	8291	2789
27	988	5	293	1082	1	417	1093	0	484	1094	0	472	1080	0	374	3023	13	832	399	20	8361	2873
26	1000	4	303	1084	0	428	1093	0	495	1094	0	483	1084	0	385	3056	11	862	347	16	8413	2957
25	1014	4	313	1086	0	439	1094	0	506	1095	0	494	1086	0	396	3088	9	893	296	13	8464	3041
24	1029	3	324	1087	0	449	1094	0	517	1095	0	505	1087	0	407	3117	7	924	249	10	8511	3126
23	1041	2	334	1088	0	460	1094	0	528	1095	0	516	1089	0	418	3147	5	956	205	8	8555	3211
22	1047	2	344	1089	0	471	1095	0	539	1095	0	527	1091	0	429	3174	4	987	167	6	8593	3297
21	1053	1	355	1090	0	482	1095	0	550	1095	0	538	1094	0	439	3194	3	1019	138	5	8622	3383
20	1064	1	365	1091	0	493	1095	0	561	1095	0	549	1095	0	450	3210	2	1051	109	3	8651	3469
19	1073	1	376	1093	0	504	1095	0	572	1095	0	560	1095	0	461	3230	2	1083	79	2	8681	3556
18	1078	1	387	1094	0	515	1095	0	583	1095	0	571	1095	0	472	3247	1	1116	55	2	8705	3643
17	1085	0	398	1094	0	526	1095	0	594	1095	0	582	1095	0	483	3257	1	1148	38	1	8722	3730
16	1089	0	409	1095	0	537	1095	0	604	1095	0	593	1095	0	494	3265	1	1181	25	1	8735	3817
15	1089	0	420	1095	0	548	1095	0	615	1095	0	603	1095	0	505	3270	1	1213	20	1	8740	3905
14	1090	0	430	1095	0	559	1095	0	626	1095	0	614	1095	0	516	3272	0	1246	17	1	8743	3992
13	1091	0	441	1095	0	570	1095	0	637	1095	0	625	1095	0	527	3273	0	1279	16	0	8744	4080
12	1091	0	452	1095	0	581	1095	0	648	1095	0	636	1095	0	538	3275	0	1312	13	0	8747	4167
11	1092	0	463	1095	0	592	1095	0	659	1095	0	647	1095	0	549	3277	0	1344	10	0	8750	4255
10	1092	0	474	1095	0	602	1095	0	670	1095	0	658	1095	0	560	3279	0	1377	8	0	8752	4342

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 calculated by subtracting the Hrs Above from X times 365

LUBBOCK, TEXAS
WBAN 23042
TABLE D:

TRY Data (1955)

Latitude 33.70 N
Longitude 101.80 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**		24 HOUR SUMMARY									
	Hrs Deg-Hrs		Hrs Deg-Hrs		Hrs Deg-Hrs		Hrs Deg-Hrs		Hrs Deg-Hrs		Hrs Deg-Hrs		HEATING		COOLING							
	Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		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	1093	0	485	1095	0	613	1095	0	681	1095	0	669	1095	0	571	3282	0	1410	4	0	8756	4430
8	1093	0	496	1095	0	624	1095	0	692	1095	0	680	1095	0	582	3284	0	1443	2	0	8758	4517
7	1094	0	507	1095	0	635	1095	0	703	1095	0	691	1095	0	593	3285	0	1476	0	0	8760	4605
6	1095	0	518	1095	0	646	1095	0	714	1095	0	702	1095	0	604	3285	0	1509	0	0	8760	4692

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

LUBBOCK, TEXAS
WBAN 23042
TABLE E:

TRY Data (1955)

Latitude 33.70 N
Longitude 101.80 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:	4641	4187	3717	3232	2694	1912	913	161	3	0	0
Annual Wet Bulb Cooling deg-hrs:	59671.	46250.	34126.	23430.	14251.	6878.	2217.	238.	5.	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		50	49	48	47	46	44	40	34	26	18	12		.001
.002	0	1	1	1	1	1	1	1	1	1	1		42	42	42	41	40	39	36	31	23	16	10		.002
.003	1	1	2	2	3	3	3	3	3	3	3		36	36	35	35	35	34	31	27	20	14	9		.003
.004	2	3	3	4	5	5	6	6	6	6	6		30	30	30	30	30	29	27	24	18	13	8		.004
.005	2	4	5	6	7	8	9	9	10	10	10		25	25	25	25	25	25	24	20	15	11	7		.005
.006	3	5	7	8	10	11	12	13	14	14	15		21	21	21	21	21	21	20	17	13	9	6		.006
.007	3	6	8	11	13	14	16	17	18	19	19		17	17	17	17	17	17	16	14	11	7	5		.007
.008	4	7	10	13	15	17	19	21	22	23	24		13	13	13	13	13	13	13	11	8	6	4		.008
.009	5	8	11	15	18	21	23	25	27	28	29		10	10	10	10	10	10	9	6	4	3			.009
.010	5	9	13	17	21	24	27	30	32	33	35		7	7	7	7	7	7	7	6	5	3	2		.010
.011	6	10	15	19	24	27	31	34	37	39	40		5	5	5	5	5	5	5	4	3	2	1		.011
.012	6	11	16	21	26	31	35	39	42	44	46		3	3	3	3	3	3	3	3	2	1	1		.012
.013	7	12	18	24	29	34	39	43	47	50	53		1	1	1	1	1	1	1	1	1	1	0		.013
.014	8	13	20	26	32	37	43	48	53	56	59		1	1	1	1	1	1	1	1	0	0	0		.014
.015	8	14	21	28	34	40	47	53	58	63	66		0	0	0	0	0	0	0	0	0	0	0		.015
.016	9	16	23	30	37	44	51	58	64	69	74		0	0	0	0	0	0	0	0	0	0	0		.016
.017	10	17	24	32	40	47	55	62	70	76	81		0	0	0	0	0	0	0	0	0	0	0		.017
.018	10	18	26	34	43	50	59	67	75	82	89		0	0	0	0	0	0	0	0	0	0	0		.018

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

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

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
% Diffuse on surface													
HORIZONTAL	31	28	35	38	42	34	46	32	25	25	20	30	33
VERTICAL													
NORTH	100	100	100	98	90	84	89	94	100	100	100	100	94
WEST	44	42	52	56	66	58	66	51	42	42	35	43	52
SOUTH	27	29	46	60	78	79	84	61	42	29	21	25	44
EAST	45	45	50	56	58	54	61	48	46	42	38	42	50
% Possible Sun	67	70	78	76	77	81	76	78	69	77	70	72	75

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

LUBBOCK, TEXAS
WBAN 23042
TABLE H:

TRY Data (1955)

Latitude 33.70 N
Longitude 101.80 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	2044	1908	1565	1244	811	442	247	187	187	2248	1252	1191	1115	928	750	516	321	221	186	186	1288	784	1031
Feb	1989	1866	1604	1366	979	607	355	236	228	2430	1581	1472	1371	1180	1008	743	502	345	273	267	1732	1190	1332
Mar	1683	1655	1564	1466	1191	866	580	369	292	2492	2005	1316	1303	1233	1158	970	757	576	443	392	1776	1516	1762
Apr	1221	1340	1415	1457	1335	1105	827	572	390	2379	2369	1129	1186	1209	1215	1117	957	779	623	517	1807	1827	2168
May	886	1086	1277	1427	1424	1288	1047	784	552	2211	2580	886	1011	1125	1216	1208	1115	959	790	636	1611	1875	2396
Jun	759	973	1204	1399	1453	1360	1150	892	668	2118	2658	807	957	1111	1241	1269	1192	1038	853	689	1717	2106	2544
Jul	811	1014	1226	1394	1427	1313	1098	842	618	2137	2600	859	978	1097	1193	1205	1127	991	833	689	1562	1872	2412
Aug	1058	1208	1326	1403	1337	1150	900	652	456	2251	2407	1004	1129	1216	1270	1212	1062	866	672	515	1826	1952	2208
Sep	1473	1496	1467	1424	1215	937	666	446	335	2378	2092	1182	1186	1157	1120	974	781	595	440	356	1820	1647	1820
Oct	1845	1750	1557	1372	1026	686	433	285	258	2391	1695	1560	1481	1319	1161	879	613	425	318	301	1943	1424	1468
Nov	1980	1849	1527	1241	817	472	267	202	200	2251	1330	1581	1459	1200	977	655	402	255	209	208	1776	1083	1116
Dec	2005	1879	1522	1191	748	398	216	176	176	2155	1156	1297	1219	1005	806	538	324	210	184	184	1364	778	935
Year	1477	1500	1437	1365	1148	887	650	472	364	2286	1979	1188	1198	1148	1093	942	764	606	487	413	1684	1505	1766

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	1749	1604	1302	1035	649	335	181	152	151	1009	930	767	619	414	251	169	151	151
Feb	1661	1548	1331	1135	792	470	262	187	184	1226	1131	973	831	600	393	265	219	216
Mar	1317	1343	1285	1212	974	689	440	278	236	1038	1055	1009	953	791	606	450	346	317
Apr	864	1033	1145	1202	1098	896	651	432	304	848	932	978	995	912	774	620	487	412
May	591	786	1008	1168	1173	1056	838	605	406	657	769	898	992	990	911	773	625	494
Jun	508	683	937	1139	1195	1121	925	697	485	587	707	875	1009	1040	978	836	674	525
Jul	543	724	960	1140	1173	1081	881	655	453	646	745	875	974	988	925	801	662	535
Aug	735	914	1067	1159	1102	941	717	500	350	735	874	985	1049	999	869	695	525	404
Sep	1118	1200	1206	1181	1001	756	517	337	271	902	947	946	925	800	633	468	340	288
Oct	1514	1445	1288	1139	842	542	325	222	209	1282	1222	1088	959	718	486	325	253	244
Nov	1684	1545	1270	1024	660	356	195	163	162	1339	1213	994	803	529	307	193	169	168
Dec	1720	1583	1266	985	596	295	160	143	142	1104	1021	833	666	432	247	162	149	149
Year	1164	1199	1171	1126	938	713	509	365	280	946	961	935	898	769	616	481	384	326

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

WEDFORD, OREGON
WBAN 24225
TABLE A:

TRY Data (1966)

Latitude 42.40 N
Longitude 122.90 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															
55 to 59	0	0	0	1	3	0	0	0	4	47.3	744	15793	0	0	
50 to 54	2	1	0	1	7	8	3	2	24	45.0	737	12090	7	17	
45 to 49	8	3	3	10	18	20	9	7	78	43.3	694	8488	50	135	
40 to 44	11	13	19	18	30	29	15	14	149	39.2	594	5254	150	621	
35 to 39	16	19	17	27	31	29	34	18	191	35.3	401	2722	343	1809	
30 to 34	22	27	24	24	4	7	23	29	160	31.3	224	1143	520	3950	
25 to 29	20	11	13	11	0	0	9	21	85	26.3	105	369	639	6896	
20 to 24	14	17	16	1	0	0	0	2	50	21.6	34	51	710	10298	
15 to 19	0	2	1	0	0	0	0	0	3	18.7	0	0	744	13967	
Feb															
60 to 64	0	0	0	0	1	0	0	0	1	51.0	672	14866	0	0	
55 to 59	0	0	0	7	13	5	0	0	25	48.7	669	11512	3	6	
50 to 54	0	2	3	9	32	32	7	4	89	45.0	623	8265	49	119	
45 to 49	7	5	6	20	19	28	21	6	112	42.7	527	5400	145	614	
40 to 44	27	23	24	26	8	9	29	32	178	39.6	394	3109	278	1683	
35 to 39	14	15	17	9	9	8	14	20	106	34.8	215	1628	457	3562	
30 to 34	18	13	14	8	2	2	9	12	78	30.3	129	784	543	6078	
25 to 29	10	16	10	3	0	0	3	4	46	26.2	59	329	613	8983	
20 to 24	4	3	6	2	0	0	1	6	22	19.8	28	127	644	12141	
15 to 19	4	3	2	0	0	0	0	0	9	15.6	11	31	661	15405	
10 to 14	0	4	2	0	0	0	0	0	6	12.7	0	0	672	18734	
Mar															
70 to 74	0	0	0	0	3	5	0	0	8	53.3	743	21212	1	1	
65 to 69	0	0	0	0	6	6	1	0	13	51.9	729	17527	15	36	
60 to 64	0	0	0	3	12	14	3	0	32	48.9	713	13914	31	143	
55 to 59	0	0	0	12	24	12	5	0	53	46.9	671	10452	73	401	
50 to 54	4	1	3	17	14	25	24	10	98	44.3	611	7237	133	906	
45 to 49	14	9	12	24	16	12	19	21	127	42.5	476	4485	268	1874	
40 to 44	15	15	21	22	11	11	22	21	138	38.9	357	2391	387	3500	
35 to 39	30	26	29	12	6	5	14	28	150	34.7	224	939	520	5768	
30 to 34	24	31	21	3	1	3	5	12	100	31.0	81	227	663	8776	
25 to 29	5	8	5	0	0	0	0	1	19	26.5	16	40	728	12309	
20 to 24	1	3	2	0	0	0	0	0	6	21.8	1	2	743	15991	

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

MEDFORD, OREGON
WBAN 24225
TABLE A:

TRY . . a (1966)

Latitude 42° N
Longitude 122.90 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence In time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Apr														
80 to 84	0	0	0	0	0	1	0	0	1	56.0	720	23358	0	0
75 to 79	0	0	0	0	7	6	0	0	13	55.1	716	19763	4	5
70 to 74	0	0	0	2	5	9	1	0	17	54.0	699	16228	21	70
65 to 69	0	0	0	5	14	10	4	0	33	52.4	682	12775	38	217
60 to 64	0	0	0	17	26	24	11	0	78	51.5	627	9478	93	520
55 to 59	0	0	7	21	14	12	24	9	87	48.9	542	6553	178	1195
50 to 54	17	10	20	19	10	12	18	23	129	46.4	446	4062	274	2304
45 to 49	22	17	17	16	10	9	16	25	132	43.0	309	2186	411	4028
40 to 44	15	16	28	9	4	6	10	13	101	39.3	198	935	522	6377
35 to 39	26	34	15	1	0	1	6	20	103	36.2	82	231	638	9273
30 to 34	9	11	2	0	0	0	0	0	22	31.9	13	29	707	12671
25 to 29	1	2	1	0	0	0	0	0	4	28.5	0	0	720	16242
May														
85 to 89	0	0	0	0	3	2	0	0	5	65.6	742	22661	2	3
80 to 84	0	0	0	0	11	19	0	0	30	61.5	729	18970	15	32
75 to 79	0	0	0	6	18	11	4	0	39	59.9	695	15401	49	183
70 to 74	0	0	0	15	14	10	8	0	47	57.6	652	12028	92	530
65 to 69	0	0	4	15	13	21	16	3	72	54.7	598	8882	146	1104
60 to 64	2	1	16	22	14	5	18	17	95	53.1	511	6099	233	2041
55 to 59	17	4	19	15	12	12	16	18	113	50.1	413	3769	331	3431
50 to 54	14	24	22	13	7	7	12	17	116	46.6	290	1998	454	5380
45 to 49	19	20	24	6	1	4	13	22	109	43.0	185	808	559	7910
40 to 44	35	35	8	1	0	2	6	16	103	39.6	74	161	670	10983
35 to 39	6	8	0	0	0	0	0	0	14	36.1	6	8	738	14550
30 to 34	0	1	0	0	0	0	0	0	1	33.0	0	0	744	18262
Jun														
100 to 104	0	0	0	0	1	0	0	0	1	69.0	720	27391	0	0
95 to 99	0	0	0	0	4	4	0	0	8	65.9	717	23796	3	5
90 to 94	0	0	0	1	1	4	1	0	7	65.3	709	20234	11	43
85 to 89	0	0	0	2	11	11	2	0	26	62.2	698	16712	22	121
80 to 84	0	0	0	7	19	18	6	0	50	60.3	660	13314	60	323
75 to 79	0	0	1	13	15	19	16	0	64	58.7	609	10139	111	748
70 to 74	0	0	4	23	23	18	17	5	90	56.5	533	7282	187	1491
65 to 69	2	0	15	19	10	8	21	19	94	55.5	441	4862	279	2671
60 to 64	19	3	23	17	3	5	16	27	113	53.2	342	2913	378	4322
55 to 59	27	30	28	3	0	0	7	19	114	51.4	221	1512	499	6521
50 to 54	15	24	10	5	2	3	2	10	71	47.1	118	690	602	9299
45 to 49	14	14	7	0	1	0	2	8	46	43.6	60	260	660	12469
40 to 44	11	14	2	0	0	0	0	2	29	40.0	22	54	698	15863
35 to 39	2	5	0	0	0	0	0	0	7	36.3	3	6	717	19415

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

MEDFORD, OREGON
WBAN 24225
TABLE A:

TRY Data (1966)

Latitude 42.40 N
Longitude 122.90 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence In time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Jul															
100 to 104	0	0	0	0	4	6	0	0	10	69.5	744	23303	0	0	
95 to 99	0	0	0	0	12	13	0	0	25	69.2	722	19619	22	36	
90 to 94	0	0	0	6	21	17	6	0	50	67.2	699	16059	45	196	
85 to 89	0	0	0	11	18	12	9	0	50	65.5	641	12714	103	571	
80 to 84	0	0	1	19	13	17	13	3	66	63.8	587	9640	157	1217	
75 to 79	1	0	7	20	10	12	20	8	78	62.1	509	6905	235	2202	
70 to 74	4	1	20	22	10	10	20	18	105	59.5	429	4550	315	3567	
65 to 69	14	5	26	12	5	3	10	21	96	57.6	328	2671	416	5408	
60 to 64	27	29	24	3	0	3	10	22	118	55.2	213	1306	531	7763	
55 to 59	24	27	10	0	0	0	5	14	80	51.4	108	518	636	10695	
50 to 54	13	20	5	0	0	0	0	6	44	47.6	46	144	698	14041	
45 to 49	10	11	0	0	0	0	0	1	22	44.6	11	14	733	17631	
Aug															
95 to 99	0	0	0	0	2	4	0	0	6	67.8	742	20492	2	1	
90 to 94	0	0	0	0	16	21	1	0	38	66.6	731	16803	13	32	
85 to 89	0	0	0	6	37	32	5	0	80	64.9	680	13268	64	217	
80 to 84	0	0	0	20	15	15	17	0	67	63.1	601	10087	143	756	
75 to 79	0	0	4	27	16	17	22	2	88	60.9	520	7283	224	1672	
70 to 74	5	2	10	26	7	4	27	12	93	60.3	437	4894	307	3003	
65 to 69	7	6	23	11	0	0	14	36	97	58.2	343	2952	401	4781	
60 to 64	26	9	30	3	0	0	7	29	104	54.7	236	1508	508	7057	
55 to 59	31	29	19	0	0	0	0	12	91	52.3	139	584	605	9853	
50 to 54	23	30	7	0	0	0	0	2	62	48.6	47	134	697	13123	
45 to 49	1	16	0	0	0	0	0	0	17	45.5	5	9	739	16718	
40 to 44	0	1	0	0	0	0	0	0	1	43.0	0	0	744	20429	
Sep															
100 to 104	0	0	0	0	1	0	0	0	1	67.0	720	28417	0	0	
95 to 99	0	0	0	0	4	5	0	0	9	66.0	718	24821	2	4	
90 to 94	0	0	0	0	8	9	0	0	17	64.4	704	21263	16	46	
85 to 89	0	0	0	2	12	11	0	0	25	61.8	685	17787	35	170	
80 to 84	0	0	0	6	19	14	5	0	44	60.9	652	14428	68	411	
75 to 79	0	0	0	13	16	16	5	0	50	59.6	607	11284	113	867	
70 to 74	0	0	0	17	17	17	15	0	66	57.5	545	8391	175	1574	
65 to 69	0	0	6	25	8	11	23	8	81	55.7	478	5815	242	2598	
60 to 64	8	1	15	16	2	4	25	20	91	53.7	397	3629	323	4012	
55 to 59	25	13	26	8	3	3	13	37	128	51.9	284	1915	436	5898	
50 to 54	33	26	23	2	0	0	2	20	106	48.5	163	801	557	8384	
45 to 49	17	29	15	1	0	0	2	3	67	44.3	72	232	648	11415	
40 to 44	7	21	5	0	0	0	0	2	35	41.3	17	19	703	14802	

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

MEDFORD, OREGON
WBAN 24225
TABLE A:

TRY Data (1966)

Latitude 42.1 N
Longitude 122.90 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence In time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Oct															
90 to 94	0	0	0	0	1	1	0	0	2	61.0	744	30470	0	0	
85 to 89	0	0	0	0	5	8	0	0	13	62.2	739	26757	5	7	
80 to 84	0	0	0	1	11	4	0	0	16	61.2	722	23098	22	68	
75 to 79	0	0	0	2	9	7	0	0	18	61.2	702	19532	42	222	
70 to 74	0	0	0	0	5	7	0	0	21	58.8	683	16065	61	475	
65 to 69	0	0	0	8	7	7	8	0	30	55.8	660	12692	84	822	
60 to 64	0	0	2	10	10	12	10	0	44	52.9	624	9464	120	1314	
55 to 59	0	1	6	14	21	15	14	8	79	50.2	567	6457	177	2027	
50 to 54	17	8	21	24	15	21	21	28	155	48.1	470	3821	274	3111	
45 to 49	33	50	26	14	8	7	19	26	163	44.7	299	1907	445	4917	
40 to 44	25	27	19	7	1	4	16	16	115	40.4	153	790	591	7520	
35 to 39	5	14	12	3	0	0	4	9	47	36.5	63	284	681	10734	
30 to 34	11	7	5	1	0	0	1	6	31	31.5	28	68	716	14238	
25 to 29	2	6	2	0	0	0	0	0	10	28.2	2	2	742	17892	
Nov															
65 to 69	0	0	0	0	5	3	0	0	8	56.4	715	17878	5	4	
60 to 64	0	0	0	1	5	5	0	0	11	54.5	707	14321	13	47	
55 to 59	0	0	0	7	15	10	3	2	37	50.7	689	10813	31	139	
50 to 54	3	0	2	12	20	17	13	6	73	48.5	631	7490	89	416	
45 to 49	13	15	14	19	13	18	15	11	118	45.2	542	4524	178	1050	
40 to 44	22	19	26	25	22	25	30	28	197	40.9	396	2125	324	2251	
35 to 39	30	34	33	19	8	12	24	34	194	36.6	192	639	528	4365	
30 to 34	18	16	10	5	2	0	5	6	62	32.8	38	129	682	7455	
25 to 29	4	6	5	2	0	0	0	3	20	26.9	11	19	709	10945	
Dec															
70 to 74	0	0	0	0	1	0	0	0	1	58.0	744	26247	0	0	
65 to 69	0	0	0	0	0	1	0	0	1	56.0	743	22530	1	3	
60 to 64	0	0	0	0	1	2	3	1	7	53.4	739	18822	5	15	
55 to 59	1	2	0	0	1	1	2	2	9	49.6	731	15144	13	57	
50 to 54	3	1	3	8	17	11	2	1	46	49.2	716	11516	28	149	
45 to 49	8	9	9	10	7	9	9	12	73	46.0	647	8101	97	454	
40 to 44	14	11	10	15	23	24	16	12	125	40.3	569	5043	175	1116	
35 to 39	25	24	22	29	38	33	34	24	229	36.0	411	2558	333	2351	
30 to 34	21	24	28	21	5	9	8	20	136	32.2	160	1126	584	4639	
25 to 29	4	3	1	8	0	3	18	9	46	25.3	104	496	640	7729	
20 to 24	17	14	13	2	0	0	1	12	59	21.0	48	115	696	11068	
15 to 19	0	5	7	0	0	0	0	0	12	17.0	5	6	739	14679	

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

MEDFORD, OREGON
WBAN 24225
TABLE B:

TRY Data (1966)

Latitude 42.40 N
Longitude 122.90 E

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

Dry Bulb range(F)	Number of Hours of Occurrence in time period									Mean Coincident Wet Bulb Temperature (F)								
	Hour of day									Hour of day								
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year
100 to 104	0	0	0	0	6	6	0	0	12	0.0	0.0	0.0	0.0	68.8	69.7	0.0	0.0	69.3
95 to 99	0	0	0	0	22	26	0	0	48	0.0	0.0	0.0	0.0	68.3	67.5	0.0	0.0	67.9
90 to 94	0	0	0	7	47	52	8	0	114	0.0	0.0	0.0	69.1	66.1	66.0	67.0	0.0	66.3
85 to 89	0	0	0	21	86	76	16	0	199	0.0	0.0	0.0	66.3	64.0	63.5	65.3	0.0	64.1
80 to 84	0	0	1	53	88	88	41	3	274	0.0	0.0	67.0	63.9	61.1	61.3	63.3	65.0	62.1
75 to 79	1	0	12	81	91	88	67	10	350	63.0	0.0	64.9	61.4	59.3	58.9	60.8	63.9	60.3
70 to 74	9	3	34	114	85	80	88	35	448	64.1	64.0	61.4	58.4	56.1	56.4	58.6	60.8	58.2
65 to 69	23	11	74	95	68	70	97	87	525	59.9	61.6	57.9	55.2	54.0	54.0	55.7	57.4	56.1
60 to 64	82	43	110	92	74	74	103	116	694	55.1	57.0	54.3	52.9	51.2	51.3	52.4	54.0	53.4
55 to 59	125	106	115	88	106	70	89	121	820	52.1	52.8	51.5	49.6	48.3	48.7	49.8	50.5	50.6
50 to 54	144	147	119	110	124	136	104	129	1013	48.1	48.5	47.8	46.5	46.0	45.6	46.2	47.2	47.1
45 to 49	166	178	133	120	93	107	125	142	1064	44.1	44.7	44.2	43.6	42.7	42.8	43.8	43.8	43.8
40 to 44	182	195	162	123	99	110	144	156	1171	40.3	40.2	40.3	39.8	38.6	38.9	40.0	40.0	39.9
35 to 39	154	179	145	100	92	88	130	153	1041	36.1	36.2	36.4	35.6	34.5	34.6	35.6	35.7	35.7
30 to 34	123	130	104	62	14	21	51	85	590	31.7	31.8	31.9	31.0	30.1	30.1	30.8	31.7	31.5
25 to 29	46	52	37	24	0	3	30	38	230	26.7	26.5	26.8	25.8	0.0	27.3	25.6	25.8	26.3
20 to 24	36	37	37	5	0	0	2	20	137	21.2	20.7	20.8	22.0	0.0	0.0	21.5	21.5	21.0
15 to 19	4	10	10	0	0	0	0	0	24	16.0	16.8	16.8	0.0	0.0	0.0	0.0	0.0	16.7
10 to 14	0	4	2	0	0	0	0	0	6	0.0	13.0	12.0	0.0	0.0	0.0	0.0	0.0	12.7

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

Month	Dry Bulb Temperature (F)					Wet Bulb Ave	Percent Relative Humidity					Average Humidity Ratio (lb moisture/lb dry air)					Average wind MPH
	Ave	Max	Min	Daily			4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
				Max	Min												
Jan	37.9	56	19	46	31	35.7	89	89	71	83	84	0.0039	0.0042	0.0045	0.0042	0.0041	4.5
Feb	39.6	62	20	51	30	35.7	83	79	53	74	74	0.0033	0.0039	0.0039	0.0039	0.0037	5.4
Mar	46.1	81	22	59	35	40.9	88	70	46	68	70	0.0044	0.0048	0.0047	0.0049	0.0046	6.2
Apr	53.3	82	28	70	38	45.2	81	55	35	52	59	0.0044	0.0054	0.0050	0.0050	0.0050	5.3
May	59.1	92	34	75	44	49.4	79	50	32	47	55	0.0053	0.0060	0.0057	0.0058	0.0058	6.0
Jun	64.0	100	35	78	49	52.9	76	49	31	46	53	0.0062	0.0068	0.0061	0.0069	0.0066	6.4
Jul	68.3	99	44	85	53	56.3	76	51	31	43	54	0.0070	0.0081	0.0073	0.0073	0.0075	5.9
Aug	70.5	100	47	89	54	56.6	72	45	26	39	48	0.0069	0.0076	0.0072	0.0068	0.0072	5.7
Sep	64.0	99	41	80	50	54.8	82	59	37	56	62	0.0071	0.0080	0.0076	0.0076	0.0076	5.1
Oct	51.5	86	26	68	38	45.7	86	70	45	70	71	0.0049	0.0059	0.0063	0.0060	0.0057	3.4
Nov	44.8	74	27	53	38	42.3	89	87	71	86	84	0.0052	0.0056	0.0060	0.0057	0.0055	2.5
Dec	40.4	58	26	46	35	38.6	90	89	81	87	87	0.0045	0.0047	0.0052	0.0048	0.0048	2.5
Year	53.4	100	19	67	41	46.2	83	66	47	62	67	0.0053	0.0059	0.0058	0.0058	0.0057	4.9

MEDFORD, OREGON

TRY Data (1966)

Latitude 42.40 N

WBAN 24225

Longitude 122.90 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**		7-9PM**		10PM-6AM**		HEATING		COOLING							
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg	Hrs	Deg						
	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Above (100s)*	Base Heat Cool	Below 100s*	Above 100s*	Below 100s*	Above 100s*						
102	0	599	0	0	503	0	0	429	0	0	435	0	0	521	0	0	1858	0	8760	4346	0	0
101	0	589	0	0	492	0	0	418	0	0	424	0	0	510	0	0	1825	0	8759	4259	1	0
100	0	578	0	0	481	0	3	407	0	3	413	0	0	500	0	0	1792	0	8753	4171	7	0
99	0	567	0	0	471	0	6	396	0	8	402	0	0	489	0	0	1759	0	8745	4084	15	0
98	0	556	0	0	460	0	9	385	0	14	392	0	0	478	0	0	1727	0	8737	3996	23	0
97	0	545	0	0	449	0	12	374	0	19	381	0	0	467	0	0	1694	0	8728	3909	32	1
96	0	534	0	0	438	0	16	363	0	23	370	1	0	456	0	0	1661	0	8720	3822	40	1
95	0	523	0	0	427	0	23	353	1	29	359	1	0	445	0	0	1628	0	8707	3734	53	1
94	0	512	0	0	416	0	32	342	1	34	349	1	0	434	0	0	1595	0	8693	3647	67	2
93	0	501	0	0	405	0	37	331	1	40	338	2	1	423	0	0	1562	0	8681	3561	79	3
92	0	490	0	2	394	0	43	321	2	50	328	2	3	412	0	0	1530	0	8661	3474	99	4
91	0	479	0	4	383	0	52	310	2	61	317	3	5	401	0	0	1497	0	8637	3387	123	5
90	0	468	0	6	372	0	65	300	3	75	307	3	7	390	0	0	1464	0	8606	3301	154	6
89	0	457	0	7	361	0	78	290	3	90	297	4	8	379	0	0	1431	0	8576	3215	184	8
88	0	446	0	10	350	0	88	280	4	104	287	5	9	368	0	0	1398	0	8547	3130	213	10
87	0	435	0	15	340	0	104	270	5	118	277	6	11	358	0	0	1365	0	8511	3044	249	12
86	0	424	0	19	329	1	122	260	6	132	267	7	16	347	1	0	1332	0	8469	2959	291	15
85	0	413	0	25	318	1	147	250	8	149	258	9	22	336	1	0	1300	0	8416	2875	344	18
84	0	402	0	31	307	1	168	241	9	168	248	10	26	325	1	0	1267	0	8365	2791	395	22
83	0	391	0	39	297	1	183	232	11	185	239	12	33	315	1	0	1234	0	8319	2708	441	26
82	0	380	0	49	286	2	204	223	13	200	230	14	43	304	2	0	1201	0	8262	2625	498	30
81	0	370	0	60	276	2	225	214	15	216	221	16	51	294	2	1	1168	0	8205	2542	555	36
80	1	359	0	73	266	3	240	205	17	236	213	18	59	283	3	2	1135	0	8147	2460	613	41
79	2	348	0	90	255	4	257	197	20	256	204	21	70	273	3	3	1103	0	8080	2379	680	48
78	5	337	0	107	245	5	276	188	23	272	196	23	81	263	4	3	1070	0	8014	2299	746	55
77	6	326	0	125	236	6	297	180	25	287	188	26	94	253	5	6	1037	0	7943	2219	817	63
76	8	315	0	139	226	7	315	172	28	306	180	29	109	243	6	9	1004	0	7872	2140	888	71
75	11	304	0	153	217	9	331	165	32	326	172	32	124	233	7	12	971	0	7801	2062	959	81
74	15	293	0	170	207	10	351	157	35	345	164	36	135	223	8	15	939	0	7727	1984	1033	91
73	19	283	1	192	198	12	371	150	39	361	157	39	150	214	10	19	906	1	7646	1907	1114	101
72	25	272	1	216	189	14	382	143	43	377	150	43	169	204	11	28	873	1	7560	1831	1200	113
71	34	261	1	237	180	17	396	136	46	391	143	47	187	195	13	39	841	1	7474	1756	1286	125
70	43	251	2	261	172	19	416	129	50	406	136	51	208	186	15	52	808	2	7371	1682	1389	139
69	50	240	2	282	164	22	431	122	55	424	129	55	228	177	17	67	776	2	7275	1608	1485	153
68	60	230	3	298	156	25	445	115	59	441	122	59	248	169	20	82	744	3	7184	1536	1576	168
67	78	219	3	318	148	28	459	109	64	456	116	64	267	160	22	105	712	4	7076	1465	1684	185
66	96	209	4	341	140	31	474	103	68	468	109	68	285	152	25	130	681	5	6965	1395	1795	202
65	112	199	5	363	133	35	487	97	73	480	103	73	306	144	28	161	649	6	6850	1325	1910	220
64	129	190	6	381	126	38	503	91	78	492	97	78	329	137	31	198	618	8	6726	1258	2034	240
63	148	180	8	404	119	42	519	85	83	508	91	83	351	129	35	235	587	10	6593	1191	2167	261
62	169	171	9	424	112	46	536	79	88	526	85	88	370	122	38	285	557	13	6449	1126	2311	283
61	195	162	11	439	105	51	550	74	94	539	80	94	390	114	42	333	527	16	6312	1062	2448	307
60	221	153	13	454	99	55	560	68	99	552	74	99	410	108	46	388	498	20	6173	999	2587	332
59	244	144	15	473	92	60	578	63	105	567	69	105	428	101	50	451	469	24	6017	938	2743	359
58	270	136	18	491	86	65	598	58	111	579	64	110	448	94	55	515	441	29	5858	879	2902	387
57	294	128	21	507	80	70	617	53	117	591	59	116	468	88	59	578	414	34	5704	821	3056	414

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

MEOFORD, OREGON
WBAN 24225
TABLE D:

TRY Data (1966)

Latitude 42.40 N
Longitude 122.90 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																24 HOUR SUMMARY											
	7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**				10PM-6AM**				HEATING		COOLING	
	Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg	Hrs	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*			
56	320	120	24	522	74	75	637	48	123	606	54	122	485	82	64	653	387	40			5536	765	3224	448				
55	339	112	27	540	69	80	660	44	130	622	49	128	501	76	69	738	361	47			5358	711	3402	482				
54	360	105	31	563	63	86	685	40	137	639	44	135	517	70	74	813	336	55			5181	658	3579	516				
53	385	97	35	589	58	91	704	36	143	661	40	141	536	64	79	891	312	64			4992	607	3768	553				
52	407	90	38	612	53	97	728	32	151	687	36	148	553	59	85	972	288	73			4799	558	3961	592				
51	433	84	43	635	48	104	757	28	158	719	32	155	573	53	90	1057	266	83			4584	511	4176	632				
50	456	77	47	654	44	110	784	25	166	752	28	162	600	48	96	1147	244	94			4366	466	4394	675				
49	476	71	52	676	40	117	805	22	174	778	25	170	629	43	102	1243	223	106			4151	424	4609	720				
48	500	65	57	703	36	124	824	19	182	798	22	178	658	39	109	1343	203	119			3933	383	4827	767				
47	528	59	62	725	32	131	843	17	190	818	19	186	681	35	115	1442	184	133			3721	345	5039	817				
46	558	53	67	747	28	138	862	14	199	838	16	194	704	31	122	1535	166	148			3514	309	5246	868				
45	585	48	73	769	25	146	881	12	207	859	14	203	727	27	130	1631	149	164			3306	275	5454	922				
44	609	43	79	794	22	153	901	10	216	881	11	211	752	23	137	1722	133	180			3101	243	5659	977				
43	640	39	85	819	19	162	921	8	225	898	9	220	782	20	145	1810	118	198			2888	213	5872	1035				
42	673	34	92	845	16	170	938	6	235	918	8	229	813	17	153	1918	104	217			2652	185	6108	1095				
41	702	30	99	870	14	178	954	5	244	941	6	239	840	14	161	2032	90	236			2420	160	6340	1157				
40	738	26	106	892	12	187	975	4	254	968	4	248	867	12	169	2150	79	257			2168	137	6592	1222				
39	776	23	113	913	10	196	999	3	264	994	3	258	893	10	178	2262	68	279			1920	116	6840	1289				
38	810	20	121	932	8	205	1019	2	274	1014	2	268	919	8	187	2361	58	302			1705	98	7055	1358				
37	840	17	130	949	7	215	1037	1	284	1027	2	278	947	6	197	2462	49	327			1496	82	7264	1430				
36	866	15	138	968	5	224	1054	1	295	1042	1	289	973	5	206	2562	42	352			1293	68	7467	1504				
35	892	13	147	991	4	234	1072	0	305	1061	1	299	999	4	216	2655	35	378			1089	56	7671	1579				
34	921	11	156	1015	3	244	1084	0	316	1073	0	310	1020	3	226	2752	29	405			893	46	7867	1657				
33	947	9	165	1030	2	255	1089	0	327	1081	0	321	1034	2	236	2841	24	433			736	38	8024	1737				
32	967	8	175	1042	2	265	1092	0	338	1087	0	331	1044	2	247	2910	20	462			616	32	8144	1817				
31	988	7	185	1052	1	275	1094	0	349	1090	0	342	1053	1	257	2968	17	491			513	26	8247	1899				
30	1004	6	195	1060	1	286	1095	0	360	1092	0	353	1060	1	268	3016	14	521			432	21	8328	1982				
29	1013	5	205	1068	1	297	1095	0	371	1093	0	364	1067	1	279	3053	11	551			369	17	8391	2066				
28	1020	4	215	1075	0	307	1095	0	382	1095	0	375	1074	0	289	3080	9	582			319	14	8441	2150				
27	1027	3	225	1081	0	318	1095	0	393	1095	0	386	1080	0	300	3108	7	613			273	11	8487	2235				
26	1036	3	235	1085	0	329	1095	0	404	1095	0	397	1086	0	311	3135	6	644			226	9	8534	2320				
25	1044	2	246	1088	0	340	1095	0	414	1095	0	408	1091	0	322	3161	4	676			185	7	8575	2406				
24	1049	2	256	1092	0	351	1095	0	425	1095	0	419	1093	0	333	3183	3	707			151	5	8609	2491				
23	1056	1	267	1095	0	362	1095	0	436	1095	0	430	1094	0	344	3201	2	739			123	4	8637	2578				
22	1061	1	277	1095	0	373	1095	0	447	1095	0	441	1095	0	355	3219	1	771			99	2	8661	2664				
21	1067	1	288	1095	0	384	1095	0	458	1095	0	452	1095	0	366	3242	1	804			71	2	8689	2751				
20	1077	0	299	1095	0	395	1095	0	469	1095	0	463	1095	0	376	3261	1	836			42	1	8718	2838				
19	1084	0	310	1095	0	405	1095	0	480	1095	0	474	1095	0	387	3269	0	869			26	1	8734	2925				
18	1087	0	321	1095	0	416	1095	0	491	1095	0	485	1095	0	398	3273	0	902			19	0	8741	3013				
17	1090	0	331	1095	0	427	1095	0	502	1095	0	496	1095	0	409	3276	0	934			14	0	8746	3100				
16	1091	0	342	1095	0	438	1095	0	513	1095	0	506	1095	0	420	3278	0	967			10	0	8750	3188				
15	1092	0	353	1095	0	449	1095	0	524	1095	0	517	1095	0	431	3280	0	1000			7	0	8753	3275				
14	1093	0	364	1095	0	460	1095	0	535	1095	0	528	1095	0	442	3283	0	1033			4	0	8756	3363				
13	1094	0	375	1095	0	471	1095	0	546	1095	0	539	1095	0	453	3285	0	1066			1	0	8759	3450				
12	1095	0	386	1095	0	482	1095	0	557	1095	0	550	1095	0	464	3285	0	1098			0	0	8760	3538				

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

MEDFORD, OREGON
WBAN 24225
TABLE E:

TRY Data (1966)

Latitude 42.40 N
Longitude 122.90 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:	3321	2583	1810	1196	705	346	122	13	0	0	0
Annual Wet Bulb Cooling deg-hrs:	26783.	17558.	10610.	5829.	2774.	1041.	238.	14.	0.	0.	0.

TABLE F:

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

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

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

TABLE G:

Percent Diffuse Solar Radiation*
and Percent Possible Sunshine**

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

% Possible Sun DATA IS NOT AVAILABLE AT THIS TIME

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

MEDFORD, OREGON
WBAN 24225
TABLE H:

TRY Data (1966)

Latitude 42.40 N
Longitude 122.90 E

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

Month	Under Clear Sky Assumption*										Corrected For Cloud Cover**										Obs ***		
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ 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	1764	1642	1310	994	583	290	160	138	137	1758	821	577	544	456	371	258	176	137	129	128	561	355	407
Feb	1881	1756	1460	1184	778	452	256	187	182	2066	1160	715	656	550	453	323	230	185	170	168	756	514	737
Mar	1804	1735	1565	1393	1065	732	474	305	257	2344	1669	943	897	810	727	582	446	347	284	262	1153	917	1133
Apr	1479	1542	1539	1513	1310	1032	750	516	364	2420	2163	1007	1014	982	941	821	681	557	465	413	1405	1329	1639
May	1190	1336	1452	1540	1456	1252	987	725	530	2390	2512	1029	1074	1098	1113	1041	918	782	658	577	1590	1683	2034
Jun	1069	1236	1408	1553	1529	1367	1120	852	642	2368	2680	997	1080	1163	1235	1203	1092	940	777	652	1769	1988	2278
Jul	1126	1284	1432	1548	1494	1316	1064	799	596	2382	2617	1064	1193	1294	1370	1309	1153	948	738	576	2045	2221	2476
Aug	1356	1457	1502	1519	1364	1118	848	605	436	2402	2314	1204	1240	1243	1232	1100	913	724	562	456	1988	1932	2121
Sep	1678	1653	1546	1432	1153	841	578	388	306	2358	1851	1307	1284	1195	1101	898	683	510	388	333	1746	1425	1589
Oct	1870	1756	1497	1256	882	541	329	227	217	2169	1342	1022	955	822	698	519	364	270	222	215	1150	798	982
Nov	1806	1684	1360	1043	643	331	189	153	153	1855	926	533	478	387	307	220	164	141	134	134	528	354	504
Dec	1693	1580	1253	926	526	243	139	126	126	1651	735	533	503	415	324	215	142	117	113	113	507	304	337
Year	1558	1554	1443	1326	1067	795	576	420	330	2180	1735	912	911	870	825	710	582	473	388	336	1270	1155	1353

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	1538	1411	1110	828	470	216	123	113	113	490	459	382	308	211	140	110	105	105
Feb	1615	1489	1231	991	639	348	192	151	149	604	547	455	372	262	183	149	139	137
Mar	1484	1450	1313	1174	886	589	363	236	210	772	741	671	604	480	361	277	228	214
Apr	1139	1247	1276	1267	1094	849	599	397	289	798	822	806	777	676	556	450	373	334
May	863	1027	1180	1278	1212	1038	798	569	401	796	853	893	914	857	753	635	529	460
Jun	753	924	1130	1282	1272	1136	909	672	479	749	834	936	1014	994	903	766	623	508
Jul	802	971	1154	1281	1245	1092	861	629	447	780	915	1044	1130	1086	953	767	583	443
Aug	1019	1153	1232	1265	1137	923	681	471	339	920	984	1014	1017	908	748	583	445	361
Sep	1352	1369	1292	1201	957	682	451	299	249	1058	1060	993	917	742	555	405	306	272
Oct	1591	1486	1265	1059	724	429	249	182	178	861	800	686	582	425	294	214	180	177
Nov	1572	1445	1149	876	517	253	143	126	126	453	398	319	252	179	133	115	110	110
Dec	1484	1368	1062	772	418	182	108	103	103	456	427	347	267	174	114	95	93	93
Year	1265	1277	1199	1107	882	646	458	330	257	729	738	714	681	585	476	382	310	269

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

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NEW ORLEANS, LOUISIANA
WBAN 12916
TABLE A:

TRY Data (1958)

Latitude 29.98 N
Longitude 90.30 E

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

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

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

NEW ORLEANS, LOUISIANA
 MBAN 12916
 TABLE A:

TRY Data (1958)

Latitude 29.98 N
 Longitude 90.30 E

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

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

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

NEW ORLEANS, LOUISIANA

WBAN 12916

TABLE A:

TRY Data (1958)

Latitude 29.98 N

Longitude 90.30 E

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

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

NEW ORLEANS, LOUISIANA
WBAN 12916
TABLE A:

TRY Data (1958)

Latitude 29.98 N
Longitude 90.30 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day										hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24						
Oct														
85 to 89	0	0	0	1	5	1	0	0	7	72.0	744	13606	0	0
80 to 84	0	0	0	10	19	12	0	0	41	69.1	726	9916	18	30
75 to 79	1	0	8	32	38	35	8	4	126	66.6	656	6419	88	253
70 to 74	20	22	29	22	11	26	46	23	199	66.0	503	3502	241	1056
65 to 69	35	30	29	13	8	4	17	41	177	62.1	286	1539	458	2813
60 to 64	28	23	17	8	8	8	13	15	120	56.7	151	475	593	5469
55 to 59	9	14	9	7	4	7	9	10	69	54.5	28	43	716	8757
50 to 54	0	4	1	0	0	0	0	0	5	51.8	0	0	744	12434
Nov														
80 to 84	0	0	0	7	13	2	0	0	22	72.0	719	14137	1	1
75 to 79	0	0	3	16	17	17	1	0	54	69.4	680	10632	40	96
70 to 74	13	13	15	13	19	17	17	15	122	66.3	591	7403	129	467
65 to 69	12	12	14	19	16	21	16	12	122	61.5	482	4726	238	1390
60 to 64	14	17	20	21	14	21	16	14	137	57.2	343	2655	377	2919
55 to 59	20	15	17	5	5	5	28	27	122	52.1	213	1271	507	5135
50 to 54	20	18	11	6	5	3	7	16	86	48.0	97	494	623	7958
45 to 49	8	12	7	0	1	3	2	3	36	42.1	32	182	688	11246
40 to 44	0	0	0	3	0	1	3	2	9	37.0	14	74	706	14738
35 to 39	3	1	2	0	0	0	0	1	7	32.7	8	19	712	18283
30 to 34	0	2	1	0	0	0	0	0	3	30.3	0	0	720	21864
Dec														
75 to 79	0	0	0	2	3	1	0	0	6	68.8	741	18767	3	4
70 to 74	0	0	0	2	6	3	0	0	11	61.4	733	15077	11	34
65 to 69	3	0	1	11	18	11	4	3	51	59.4	717	11441	27	118
60 to 64	6	4	8	17	18	21	10	7	91	55.9	652	8013	92	410
55 to 59	19	20	16	17	12	10	20	18	132	52.6	525	5031	219	1148
50 to 54	18	13	19	19	20	32	27	25	173	47.5	400	2699	344	2536
45 to 49	22	25	26	16	10	7	20	21	147	43.4	218	1191	526	4748
40 to 44	14	17	9	5	6	8	9	13	81	38.5	99	439	645	7716
35 to 39	7	5	10	3	0	0	3	3	31	33.5	37	131	707	11128
30 to 34	4	9	4	1	0	0	0	3	21	29.0	12	14	732	14731

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

NEW ORLEANS, LOUISIANA
WBAN 12916
TABLE B:

TRY Data (1958)

Latitude 29.98 N
Longitude 90.30 E

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

Dry Bulb range(F)	Number of Hours of Occurrence In time period									Mean Coincident Wet Bulb Temperature (F)								
	Hour of day									Hour of day								
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year
90 to 94	0	0	0	29	77	34	0	0	140	0.0	0.0	0.0	77.7	76.3	76.1	0.0	0.0	76.5
85 to 89	0	0	56	210	167	145	10	0	588	0.0	0.0	77.1	76.0	74.7	74.6	76.4	0.0	75.4
80 to 84	14	8	192	160	191	185	185	55	990	77.4	77.8	75.7	73.2	71.7	73.5	75.0	76.5	74.1
75 to 79	296	256	178	148	163	197	216	309	1763	73.8	74.0	72.7	69.4	69.5	69.5	72.9	73.5	72.3
70 to 74	163	197	108	81	97	104	156	143	1049	69.5	69.6	67.4	63.8	61.0	63.6	67.4	68.8	67.1
65 to 69	103	102	81	93	91	88	92	101	751	64.1	64.5	62.7	58.5	56.6	57.7	61.1	62.9	61.1
60 to 64	110	98	97	104	94	104	105	106	818	57.9	58.7	57.6	54.9	54.2	54.8	56.4	57.9	56.6
55 to 59	106	103	96	76	69	77	115	124	766	53.1	53.8	52.6	50.9	49.4	49.7	51.9	52.6	52.0
50 to 54	104	100	79	68	63	77	82	93	666	48.3	48.9	48.8	46.1	44.9	45.8	46.8	47.6	47.3
45 to 49	76	86	75	56	40	42	66	68	509	42.9	43.2	42.8	41.3	40.2	40.0	41.7	42.5	42.1
40 to 44	67	71	56	35	30	31	44	57	391	38.7	39.2	38.8	36.3	36.5	37.8	37.8	38.4	38.2
35 to 39	34	41	54	27	10	8	21	27	222	33.2	33.6	33.3	31.7	32.0	32.8	32.7	33.3	33.0
30 to 34	20	27	20	8	3	3	3	12	96	28.8	28.8	28.6	28.6	30.3	30.0	30.7	29.9	29.0
25 to 29	2	6	3	0	0	0	0	0	11	26.5	25.7	24.3	0.0	0.0	0.0	0.0	0.0	25.5

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Month	Dry Bulb Temperature (F)			Wet Bulb		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	48.3	71	28	56	41	80	66	56	70	69	0.0000	0.0000	0.0000	0.0000	0.0000	10.4
Feb	48.0	75	25	56	41	69	62	53	65	64	0.0000	0.0000	0.0000	0.0000	0.0000	12.5
Mar	58.3	77	43	66	51	77	65	55	67	68	0.0000	0.0000	0.0000	0.0000	0.0000	11.7
Apr	68.9	89	50	77	61	84	62	55	73	71	0.0000	0.0000	0.0000	0.0000	0.0000	11.2
May	75.1	92	55	83	68	86	67	61	76	74	0.0000	0.0000	0.0000	0.0000	0.0000	9.6
Jun	80.8	92	66	88	74	86	65	62	76	74	0.0000	0.0000	0.0000	0.0000	0.0000	8.1
Jul	80.2	94	72	88	75	90	70	74	83	80	0.0000	0.0000	0.0000	0.0000	0.0000	7.0
Aug	80.9	94	68	89	75	87	66	61	77	75	0.0000	0.0000	0.0000	0.0000	0.0000	7.5
Sep	78.7	91	65	86	74	89	73	72	83	80	0.0000	0.0000	0.0000	0.0000	0.0000	8.7
Oct	69.2	87	53	76	63	81	66	58	73	71	0.0000	0.0000	0.0000	0.0000	0.0000	10.9
Nov	62.9	83	34	71	55	84	67	56	77	73	0.0000	0.0000	0.0000	0.0000	0.0000	10.5
Dec	52.3	79	30	60	45	80	70	62	75	73	0.0000	0.0000	0.0000	0.0000	0.0000	10.7
Year	67.1	94	25	75	60	83	67	61	75	73	0.0000	0.0000	0.0000	0.0000	0.0000	9.9

NEW ORLEANS, LOUISIANA
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TRY Data (1958)

Latitude 29.98 N
Longitude 90.30 E

TABLE 0:

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																		24-HOUR SUMMARY			
	7-9AM**			10-12AM**			1-3PM**			4-6PM**			7-9PM**			10PM-6AM**			HEATING		COOLING	
	Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg-Hrs		Hrs	Deg	Hrs	Deg
	Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*			Above (100s)*			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*
95	0	323	0	0	269	0	0	246	0	0	261	0	0	308	0	0	1041	0	8760	2448	0	0
94	0	312	0	0	258	0	2	235	0	0	250	0	0	297	0	0	1008	0	8758	2360	2	0
93	0	301	0	0	247	0	6	224	0	5	239	0	0	286	0	0	975	0	8749	2273	11	0
92	0	290	0	2	236	0	22	215	0	8	228	0	0	275	0	0	942	0	8728	2185	32	0
91	0	279	0	6	225	0	47	202	0	17	217	0	0	264	0	0	909	0	8690	2098	70	0
90	0	269	0	29	214	0	77	192	1	34	207	0	0	253	0	0	876	0	8620	2011	140	1
89	0	258	0	54	204	0	111	182	2	54	196	1	0	242	0	0	844	0	8541	1925	219	3
88	0	247	0	89	193	1	137	172	3	70	186	1	2	231	0	0	811	0	8462	1839	298	5
87	11	236	0	142	183	2	191	162	4	99	175	2	4	220	0	0	778	0	8313	1755	447	8
86	23	225	0	188	174	3	217	153	6	139	165	3	5	209	0	0	745	0	8188	1671	572	12
85	56	214	0	239	165	5	244	144	8	179	156	4	10	199	0	0	712	0	8032	1590	728	18
84	96	204	1	275	156	7	269	136	11	205	147	6	25	188	0	0	679	0	7892	1509	868	25
83	124	194	2	305	148	10	305	127	13	234	138	8	52	177	0	0	646	0	7740	1430	1020	34
82	164	184	3	334	140	13	347	120	16	271	129	10	93	167	1	4	614	0	7547	1353	1213	44
81	203	175	5	356	132	17	384	112	20	323	121	13	132	157	2	21	581	0	7341	1278	1419	56
80	248	166	7	399	125	20	435	105	24	364	113	16	195	147	3	77	548	0	7042	1204	1718	70
79	295	157	9	430	118	24	474	98	28	401	106	20	252	138	5	182	516	1	6726	1134	2034	88
78	332	149	12	464	111	28	507	92	33	457	99	24	301	129	8	353	485	3	6346	1066	2414	108
77	363	142	16	499	105	33	544	86	38	486	93	29	338	122	11	562	456	6	5968	1003	2792	132
76	392	134	19	525	99	38	575	81	43	517	86	33	373	114	14	787	428	12	5591	943	3169	160
75	426	127	23	547	94	43	598	76	49	561	81	39	411	107	18	938	403	20	5279	887	3481	192
74	448	121	27	576	88	49	616	71	55	585	75	44	446	100	22	1075	380	29	5014	835	3746	226
73	466	114	32	590	83	55	639	66	61	607	70	50	490	93	26	1196	358	40	4772	784	3988	264
72	493	108	36	600	78	60	665	61	67	627	65	56	521	87	31	1286	337	52	4568	737	4192	304
71	517	102	41	614	73	66	681	57	74	645	61	62	551	82	37	1352	317	65	4400	691	4360	346
70	534	96	47	628	68	73	695	53	81	665	56	69	567	76	42	1441	298	78	4230	647	4530	389
69	553	90	52	644	63	79	711	49	88	677	52	76	590	71	48	1510	279	93	4075	605	4685	435
68	571	85	57	660	59	85	728	45	95	700	48	82	604	66	54	1566	262	108	3931	564	4829	481
67	587	80	63	684	55	92	749	41	102	713	44	89	612	61	60	1630	244	124	3785	525	4975	530
66	601	75	69	700	50	99	763	38	110	735	40	96	636	56	66	1685	228	140	3640	487	5120	580
65	615	70	75	721	46	106	786	35	117	753	36	104	659	52	72	1747	212	157	3479	450	5281	631
64	630	65	81	741	43	113	808	31	125	776	33	111	674	47	79	1806	196	174	3325	416	5435	684
63	651	60	87	761	39	120	825	29	133	796	30	119	695	43	85	1867	182	192	3165	382	5595	738
62	668	56	94	783	36	128	840	26	142	820	27	127	718	39	92	1933	167	211	2998	351	5762	794
61	693	52	101	808	33	136	857	23	150	840	24	135	746	35	100	2005	154	230	2811	321	5949	851
60	712	48	108	825	30	144	880	21	159	857	21	144	764	32	107	2061	141	250	2661	293	6099	911
59	729	44	115	840	27	152	888	19	167	877	19	152	787	28	115	2133	129	271	2506	266	6254	972
58	757	40	122	856	25	161	902	17	176	895	17	161	817	25	123	2195	117	292	2338	241	6422	1034
57	773	37	130	864	22	169	916	15	185	906	15	170	836	23	131	2258	106	314	2207	218	6553	1099
56	789	34	137	879	20	178	929	13	194	919	13	179	854	20	139	2312	96	337	2078	196	6682	1164
55	808	30	145	901	18	187	949	11	204	934	11	188	879	18	148	2394	86	360	1895	175	6865	1231
54	824	28	153	911	16	196	960	10	213	950	10	197	894	15	156	2452	78	384	1769	156	6991	1300
53	837	25	162	924	14	205	968	9	223	966	8	207	910	13	165	2509	69	408	1646	138	7114	1370
52	858	22	170	950	12	214	981	7	232	989	7	217	930	12	174	2583	61	433	1469	122	7291	1441
51	873	20	178	958	11	223	996	6	242	998	6	227	947	10	184	2641	54	459	1347	107	7413	1514
50	887	18	187	969	9	233	1012	5	252	1011	5	237	961	8	193	2691	48	486	1229	93	7531	1588

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 ORLEANS, LOUISIANA
WBAN 12916

TRY Data (1958)

Latitude 29.98 N
Longitude 90.30 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	Hrs	Deg	Hrs	Deg
	Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*				Below		Above	
	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	100s*	Base	100s*
49	902	16	196	976	8	243	1019	4	262	1018	4	247	970	7	203	2724	42	513
48	915	14	205	992	7	252	1034	4	273	1030	3	257	981	6	213	2764	36	540
47	927	12	214	998	6	262	1041	3	283	1041	3	267	1004	5	222	2818	31	567
46	942	10	224	1012	5	272	1046	2	293	1048	2	278	1017	4	232	2865	27	596
45	962	9	233	1025	4	282	1052	2	304	1053	2	288	1027	3	243	2921	22	624
44	976	7	243	1033	3	293	1060	1	314	1068	1	299	1040	2	253	2961	19	653
43	991	6	252	1037	3	303	1071	1	325	1077	1	309	1054	2	263	3005	15	683
42	1003	5	262	1046	2	313	1078	1	336	1080	1	320	1064	1	274	3043	13	713
41	1008	4	272	1054	2	324	1080	1	346	1081	1	331	1068	1	284	3082	10	744
40	1018	3	282	1060	1	334	1082	1	357	1084	0	342	1071	1	295	3116	8	774
39	1035	3	293	1065	1	345	1083	0	368	1085	0	352	1076	1	306	3135	7	806
38	1045	2	303	1075	1	356	1085	0	379	1091	0	363	1084	0	317	3162	5	837
37	1054	1	313	1079	0	366	1089	0	390	1092	0	374	1088	0	327	3184	4	868
36	1064	1	324	1083	0	377	1091	0	401	1092	0	385	1092	0	338	3204	3	900
35	1072	1	334	1087	0	388	1092	0	411	1092	0	396	1092	0	349	3218	2	932
34	1076	1	345	1090	0	399	1092	0	422	1092	0	407	1092	0	360	3241	1	965
33	1084	0	356	1090	0	410	1092	0	433	1092	0	418	1092	0	371	3251	1	997
32	1087	0	367	1092	0	421	1092	0	444	1093	0	429	1094	0	382	3263	1	1029
31	1088	0	378	1095	0	432	1094	0	455	1095	0	440	1095	0	393	3270	0	1062
30	1092	0	389	1095	0	443	1095	0	466	1095	0	451	1095	0	404	3277	0	1095
29	1094	0	399	1095	0	454	1095	0	477	1095	0	462	1095	0	415	3279	0	1128
28	1094	0	410	1095	0	464	1095	0	488	1095	0	473	1095	0	426	3284	0	1160
27	1094	0	421	1095	0	475	1095	0	499	1095	0	484	1095	0	437	3285	0	1193
26	1094	0	432	1095	0	486	1095	0	510	1095	0	494	1095	0	448	3285	0	1226
25	1095	0	443	1095	0	497	1095	0	521	1095	0	505	1095	0	459	3285	0	1259

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 ORLEANS, LOUISIANA

WBAN 12916

TABLE E:

TRY Data (1958)

Latitude 29.98 N

Longitude 90.30 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:	6835	6287	5734	5271	4812	4421	3902	3235	2050	572	17
Annual Wet Bulb Cooling deg-hrs:	122540.	102595.	84262.	67516.	52176.	38114.	25319.	14210.	5519.	955.	17.

TABLE F:

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

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **											COOLING HUMIDITY RATIO HOURS **											Maintained Indoor Humidity Ratio*
	Heating Degree Base											Cooling Degree Base											
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80	
.001	0	0	0	1	2	3	4	5	6	8	11	0	0	0	0	0	0	0	0	0	0	0	.001
.002	0	0	1	2	3	5	7	9	11	13	18	0	0	0	0	0	0	0	0	0	0	0	.002
.003	0	0	1	3	4	7	9	12	15	18	25	0	0	0	0	0	0	0	0	0	0	0	.003
.004	0	0	1	3	6	9	12	16	19	24	32	0	0	0	0	0	0	0	0	0	0	0	.004
.005	0	1	2	4	7	10	15	19	23	29	39	0	0	0	0	0	0	0	0	0	0	0	.005
.006	0	1	2	5	8	12	17	23	27	34	46	0	0	0	0	0	0	0	0	0	0	0	.006
.007	0	1	2	5	9	14	20	26	32	40	53	0	0	0	0	0	0	0	0	0	0	0	.007
.008	0	1	3	6	10	16	23	30	36	45	60	0	0	0	0	0	0	0	0	0	0	0	.008
.009	0	1	3	7	12	18	25	33	40	50	67	0	0	0	0	0	0	0	0	0	0	0	.009
.010	0	1	3	8	13	20	28	37	44	55	74	0	0	0	0	0	0	0	0	0	0	0	.010
.011	0	1	4	8	14	22	31	40	49	61	81	0	0	0	0	0	0	0	0	0	0	0	.011
.012	0	1	4	9	15	24	33	43	53	66	88	0	0	0	0	0	0	0	0	0	0	0	.012
.013	0	1	4	10	17	26	36	47	57	71	95	0	0	0	0	0	0	0	0	0	0	0	.013
.014	0	2	5	10	18	27	39	50	61	77	102	0	0	0	0	0	0	0	0	0	0	0	.014
.015	0	2	5	11	19	29	41	54	66	82	109	0	0	0	0	0	0	0	0	0	0	0	.015
.016	0	2	5	12	20	31	44	57	70	87	116	0	0	0	0	0	0	0	0	0	0	0	.016
.017	0	2	6	13	22	33	47	61	74	92	123	0	0	0	0	0	0	0	0	0	0	0	.017
.018	0	2	6	13	23	35	49	64	78	98	130	0	0	0	0	0	0	0	0	0	0	0	.018

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

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

TABLE G:

Percent Diffuse Solar Radiation*
and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
* Diffuse on surface													
HORIZONTAL	47	37	44	56	49	44	56	41	57	38	39	43	47
VERTICAL													
NORTH	100	100	100	99	93	87	92	96	100	100	100	100	96
WEST	58	53	62	68	67	66	83	63	76	52	53	59	65
SOUTH	43	40	56	78	85	89	91	73	70	44	37	38	60
EAST	56	55	61	73	69	61	64	58	65	57	53	53	62
* Possible Sun													
	44	62	54	69	59	67	57	55	60	69	55	56	59

FOOTNOTES: * Corrected For Cloud Cover.

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

NEW ORLEANS, LOUISIANA

WBAN 12916

TABLE H:

TRY Data (1958)

Latitude 29.98 N

Longitude 90.30 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/ 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	1767	1653	1377	1125	768	452	265	202	201	2017	1224	935	890	772	662	500	351	256	219	218	1005	696	835
Feb	1687	1598	1405	1226	915	603	374	250	236	2146	1499	1046	986	864	751	578	419	311	258	252	1250	942	1112
Mar	1403	1392	1344	1288	1078	810	561	372	296	2177	1855	1004	986	937	887	760	615	490	401	367	1352	1222	1415
Apr	998	1130	1231	1299	1227	1040	807	575	394	2063	2160	901	937	961	975	923	823	712	605	526	1348	1452	1780
May	722	916	1104	1252	1281	1178	984	755	549	1913	2336	743	822	901	964	968	905	802	687	594	1339	1600	1968
Jun	629	831	1051	1239	1316	1261	1081	867	674	1842	2416	678	795	926	1037	1080	1041	926	791	665	1365	1727	2004
Jul	671	870	1076	1241	1298	1226	1039	823	627	1866	2375	738	856	975	1072	1105	1058	942	807	669	1272	1563	1814
Aug	878	1037	1173	1272	1246	1099	889	662	468	1974	2213	813	912	994	1053	1030	929	788	638	501	1454	1624	1717
Sep	1238	1262	1292	1288	1135	904	664	460	346	2096	1948	900	949	951	939	846	717	590	484	427	1209	1191	1514
Oct	1573	1499	1359	1227	954	662	436	296	268	2124	1609	1049	991	897	808	644	482	368	301	287	1320	1061	1335
Nov	1733	1615	1359	1135	790	478	292	217	216	2042	1302	952	900	774	660	488	333	240	204	202	1074	741	973
Dec	1765	1648	1357	1089	725	411	244	194	194	1963	1148	850	816	700	584	417	274	199	176	175	909	598	779
Year	1253	1287	1260	1223	1062	845	638	474	373	2018	1842	883	903	888	867	779	663	553	465	408	1241	1203	1437

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

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

*** South exposure tilt 45 degrees.

**** Cinquemanl, 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/ NNW	NNE/ NNW	N	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NNW	NNE/ NNW	N
Jan	1503	1382	1145	936	620	345	198	164	163	782	737	640	550	409	278	199	178	177
Feb	1395	1320	1164	1022	747	471	277	197	191	864	809	708	618	469	331	242	208	205
Mar	1076	1121	1103	1066	885	651	432	281	240	791	796	765	728	620	495	388	317	298
Apr	691	862	994	1072	1011	851	639	438	308	688	741	777	796	754	670	573	481	423
May	485	658	869	1025	1054	969	790	586	405	560	631	718	784	789	737	646	547	466
Jun	438	583	817	1009	1082	1036	876	678	489	515	598	734	846	887	854	753	629	512
Jul	463	619	841	1016	1070	1007	841	643	461	571	655	780	880	911	870	768	645	525
Aug	601	775	940	1048	1028	902	710	511	359	600	704	802	866	849	763	635	503	397
Sep	918	1018	1058	1065	934	732	520	350	280	704	768	780	774	695	583	471	383	347
Oct	1274	1229	1122	1016	779	525	330	231	218	851	809	735	663	523	385	289	240	233
Nov	1464	1344	1129	940	638	370	215	176	175	797	745	640	545	395	262	186	165	164
Dec	1508	1382	1128	906	582	314	181	158	157	717	682	582	483	336	215	155	143	142
Year	983	1023	1025	1010	870	682	502	369	288	702	722	722	712	637	538	443	371	325

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

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

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PHOENIX, ARIZONA
WBAN 23183
TABLE A:

TRY Data (1951)

Latitude 33.40 N
Longitude 112.00 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															
80 to 84	0	0	0	1	3	2	0	0	6	55.8	741	23751	3	4	
75 to 79	0	0	0	1	8	5	0	0	14	54.9	733	20062	11	35	
70 to 74	0	0	0	4	17	11	0	0	32	51.7	713	16435	31	128	
65 to 69	0	0	0	10	26	20	1	0	57	49.5	670	12959	74	372	
60 to 64	0	0	0	23	13	17	9	0	62	48.0	696	9756	138	889	
55 to 59	3	1	7	18	9	18	21	7	84	45.9	542	6872	202	1725	
50 to 54	13	10	12	15	14	10	16	20	110	43.1	456	4369	288	2942	
45 to 49	17	15	16	17	3	10	26	20	124	41.0	319	2412	425	4705	
40 to 44	26	19	23	3	0	0	16	30	117	37.1	200	1086	544	7099	
35 to 39	23	25	18	1	0	0	4	16	87	33.6	94	347	650	10080	
30 to 34	11	19	16	0	0	0	0	0	46	29.3	28	49	716	13502	
25 to 29	0	4	1	0	0	0	0	0	5	24.8	2	2	742	17175	
Feb															
85 to 89	0	0	0	0	3	2	0	0	5	61.4	672	21583	0	0	
80 to 84	0	0	0	1	6	7	0	0	14	59.0	665	18242	7	19	
75 to 79	0	0	0	3	8	5	0	0	16	56.7	650	14961	22	98	
70 to 74	0	0	0	6	10	9	1	0	26	54.1	630	11761	42	258	
65 to 69	0	0	0	16	26	21	6	1	70	51.6	583	8693	89	550	
60 to 64	2	0	2	25	19	21	15	6	90	49.5	509	5954	163	1171	
55 to 59	11	2	11	18	6	10	29	16	103	47.4	410	3649	262	2226	
50 to 54	19	11	24	10	6	8	22	27	127	45.3	297	1867	375	3804	
45 to 49	29	41	25	5	0	1	8	25	134	42.4	152	720	520	6017	
40 to 44	11	16	13	0	0	0	3	7	50	38.3	56	227	616	8884	
35 to 39	12	13	7	0	0	0	0	2	34	34.1	19	32	653	12049	
30 to 34	0	1	2	0	0	0	0	0	3	30.7	0	0	672	15377	
Mar															
85 to 89	0	0	0	0	3	2	0	0	5	56.0	743	19960	1	1	
80 to 84	0	0	0	1	23	16	0	0	40	55.4	724	16272	20	33	
75 to 79	0	0	0	15	18	22	1	0	56	52.8	677	12754	67	235	
70 to 74	0	0	0	25	28	25	14	1	93	51.9	612	9510	132	711	
65 to 69	1	0	8	28	9	15	27	4	92	49.2	507	6728	237	1649	
60 to 64	7	0	21	10	3	4	23	21	89	47.4	428	4392	316	3033	
55 to 59	21	17	22	3	7	3	15	33	121	45.0	324	2501	420	4862	
50 to 54	34	22	17	9	2	6	9	18	117	42.2	192	1187	552	7268	
45 to 49	17	29	12	2	0	0	3	11	74	39.0	101	473	643	10274	
40 to 44	10	16	9	0	0	0	1	2	38	37.1	36	141	708	13662	
35 to 39	3	7	3	0	0	0	0	3	16	32.4	10	28	734	17269	
30 to 34	0	2	1	0	0	0	0	0	3	29.0	2	2	742	20963	

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

PHOENIX, ARIZONA
WBAN 23183
TABLE A:

TRY Data (1951)

Latitude 33.4 N
Longitude 112.00 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															
95 to 99	0	0	0	0	1	1	0	0	2	63.0	720	21233	0	0	
90 to 94	0	0	0	0	8	5	0	0	13	59.2	716	17639	4	6	
85 to 89	0	0	0	8	20	20	0	0	48	59.0	693	14108	27	75	
80 to 84	0	0	0	20	23	22	8	0	73	57.8	630	10799	90	366	
75 to 79	0	0	6	20	14	14	23	5	82	56.8	555	7837	165	1004	
70 to 74	4	0	12	19	8	10	22	11	86	55.6	466	5282	254	2049	
65 to 69	10	3	22	7	7	9	17	31	106	54.0	376	3152	344	3519	
60 to 64	35	19	23	11	6	5	8	24	131	51.4	257	1562	463	5529	
55 to 59	23	36	16	5	3	4	10	8	105	50.0	131	597	589	8164	
50 to 54	10	22	9	0	0	0	2	10	53	48.0	40	181	680	11348	
45 to 49	5	3	2	0	0	0	0	1	11	40.9	16	57	704	14824	
40 to 44	3	7	0	0	0	0	0	0	10	38.8	5	3	715	18370	
May															
110 to 114	0	0	0	0	4	3	0	0	7	68.7	744	25795	0	0	
105 to 109	0	0	0	2	9	9	0	0	20	68.3	734	22098	10	23	
100 to 104	0	0	0	5	5	5	4	0	19	66.8	709	18496	35	141	
95 to 99	0	0	1	10	13	10	5	0	39	65.0	686	15001	58	366	
90 to 94	0	0	5	12	30	30	9	0	86	61.9	625	11698	119	783	
85 to 89	0	0	4	27	8	12	16	8	75	60.6	538	8783	206	1588	
80 to 84	8	0	19	15	7	7	23	17	96	59.1	457	6275	287	2800	
75 to 79	9	7	19	7	6	6	18	13	85	56.6	369	4213	375	4458	
70 to 74	14	17	17	6	4	5	5	20	88	55.1	280	2581	464	6546	
65 to 69	26	12	13	1	3	3	6	17	81	52.8	199	1389	545	9074	
60 to 64	16	35	8	3	2	3	4	12	83	50.9	119	616	625	12021	
55 to 59	9	6	6	3	2	0	3	2	31	50.0	49	227	695	15352	
50 to 54	8	12	1	2	0	0	0	4	27	49.3	20	44	724	18889	
45 to 49	3	4	0	0	0	0	0	0	7	44.7	2	1	742	22566	
Jun															
105 to 109	0	0	0	0	7	10	0	0	17	67.8	718	16854	2	2	
100 to 104	0	0	0	3	35	28	2	0	68	66.8	682	13332	38	80	
95 to 99	0	0	1	33	23	29	14	0	100	64.7	591	10118	129	466	
90 to 94	0	0	8	24	19	18	21	5	95	62.3	506	7382	214	1330	
85 to 89	2	0	19	20	6	5	22	3	77	60.7	410	5109	310	2657	
80 to 84	7	6	24	10	0	0	22	22	91	59.7	325	3253	395	4401	
75 to 79	16	5	25	0	0	0	9	25	80	56.8	240	1834	480	6582	
70 to 74	30	26	9	0	0	0	0	27	92	54.5	158	829	562	9177	
65 to 69	21	31	3	0	0	0	0	7	62	51.4	70	262	650	12210	
60 to 64	12	20	1	0	0	0	0	1	34	47.4	22	49	698	15597	
55 to 59	2	2	0	0	0	0	0	0	4	45.8	2	2	718	19150	

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

PHOENIX, ARIZONA
WBAN 23183
TABLE A:

TRY Data (1951)

Latitude 33.40 N
Longitude 112.00 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day 10-12 13-15		16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Jul														
110 to 114	0	0	0	0	2	7	0	0	9	72.9	744	14695	0	0
105 to 109	0	0	0	5	36	37	2	0	80	72.8	712	11021	32	46
100 to 104	0	0	0	30	45	40	24	0	139	72.8	592	7712	152	457
95 to 99	0	0	9	44	9	8	45	5	120	72.7	474	5050	270	1515
90 to 94	3	0	30	11	1	0	15	29	89	71.5	357	2994	387	3179
85 to 89	30	11	41	3	0	0	3	35	123	70.8	267	1427	477	5332
80 to 84	43	48	12	0	0	0	1	19	123	68.8	126	434	618	8059
75 to 79	17	26	1	0	0	1	2	5	52	65.9	31	63	713	11408
70 to 74	0	8	0	0	0	0	1	0	9	65.1	1	1	743	15066
Aug														
105 to 109	0	0	0	0	13	10	0	0	23	73.9	743	14988	1	1
100 to 104	0	0	0	10	44	37	3	0	94	72.7	686	11377	58	110
95 to 99	0	0	3	42	11	19	22	0	97	72.5	579	8196	165	649
90 to 94	4	0	21	16	10	9	25	15	100	72.1	490	5510	254	1683
85 to 89	20	6	28	8	3	4	19	30	118	71.2	380	3306	364	3199
80 to 84	33	31	18	5	4	6	8	22	127	69.8	260	1690	484	5303
75 to 79	18	31	8	5	2	2	8	13	87	69.0	146	703	598	8036
70 to 74	11	16	13	7	6	5	5	8	71	69.1	75	171	669	11224
65 to 69	7	9	2	0	0	1	3	5	27	67.5	4	3	740	14776
Sep														
100 to 104	0	0	0	0	23	14	0	0	37	69.8	718	14138	2	1
95 to 99	0	0	0	22	56	41	0	0	119	69.8	638	10695	82	158
90 to 94	0	0	0	45	8	25	4	0	82	69.8	530	7817	190	880
85 to 89	0	0	14	20	0	7	30	2	73	68.5	449	5365	271	2028
80 to 84	2	0	28	0	3	0	39	16	88	67.8	376	3286	344	3549
75 to 79	19	5	22	3	0	3	11	43	106	66.5	279	1634	441	5497
70 to 74	45	41	21	0	0	0	6	27	140	63.7	166	531	554	7994
65 to 69	24	39	5	0	0	0	0	2	70	60.8	39	60	681	11123
60 to 64	0	5	0	0	0	0	0	0	5	56.6	0	0	720	14663

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

PHOENIX, ARIZONA
WBAN 23183
TABLE A:

TRY Da (1951)

Latitude 33.4
Longitude 112.00 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															
95 to 99	0	0	0	2	11	5	0	0	18	66.0	741	19468	3	2	
90 to 94	0	0	0	9	23	14	0	0	46	65.3	709	15836	35	90	
85 to 89	0	0	2	21	28	19	2	0	72	62.4	650	12414	94	388	
80 to 84	0	0	7	25	17	25	7	0	81	60.8	570	9350	174	1044	
75 to 79	3	0	9	20	5	15	15	11	78	60.5	500	6673	244	2087	
70 to 74	11	4	21	6	1	6	26	11	86	59.3	412	4385	332	3519	
65 to 69	11	18	19	9	8	8	19	21	113	56.9	323	2541	421	5395	
60 to 64	26	18	14	1	0	1	18	30	108	53.8	209	1221	535	7795	
55 to 59	24	26	12	0	0	0	5	16	83	50.3	102	448	642	10742	
50 to 54	16	16	6	0	0	0	1	4	43	47.5	35	109	709	14123	
45 to 49	2	9	3	0	0	0	0	0	14	44.7	8	15	736	17749	
40 to 44	0	2	0	0	0	0	0	0	2	41.5	0	0	744	21454	
Nov															
80 to 84	0	0	0	0	7	2	0	0	9	57.0	720	17590	0	0	
75 to 79	0	0	0	7	20	9	0	0	36	56.4	696	14030	24	40	
70 to 74	0	0	0	19	37	26	0	0	82	56.8	641	10659	79	269	
65 to 69	0	0	2	37	17	24	6	0	86	54.6	560	7637	160	847	
60 to 64	0	0	15	14	2	18	28	5	82	51.9	479	5059	241	1869	
55 to 59	21	9	25	8	7	9	33	35	147	50.8	378	2893	342	3303	
50 to 54	24	24	21	5	0	2	13	26	115	47.7	223	1391	497	5401	
45 to 49	25	33	15	0	0	0	10	14	97	43.8	109	531	611	8141	
40 to 44	14	12	8	0	0	0	0	10	44	40.3	52	145	668	11355	
35 to 39	6	12	4	0	0	0	0	0	22	37.2	11	11	709	14821	
Dec															
75 to 79	0	0	0	0	5	0	0	0	5	56.4	744	19513	0	0	
70 to 74	0	0	0	2	11	6	0	0	19	54.7	730	15816	14	23	
65 to 69	0	0	0	14	22	13	0	0	49	52.9	706	12207	38	134	
60 to 64	3	0	2	19	19	23	4	3	73	51.5	645	8818	99	465	
55 to 59	7	9	12	26	27	28	25	9	143	49.5	538	5809	206	1176	
50 to 54	14	13	20	23	8	16	27	23	144	46.3	388	3473	356	2560	
45 to 49	25	16	20	9	1	6	21	28	126	41.9	257	1867	487	4674	
40 to 44	19	23	19	0	0	1	13	17	92	38.4	156	859	588	7386	
35 to 39	12	13	10	0	0	0	3	12	50	34.5	77	320	667	10567	
30 to 34	13	13	6	0	0	0	0	1	33	30.1	31	71	713	14038	
25 to 29	0	6	4	0	0	0	0	0	10	26.4	3	2	741	17689	

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

PHOENIX, ARIZONA
 MBAN 23183
 TABLE B:

TRY Data (1951)

Latitude 33.40 N
 Longitude 112.00 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
110 to 114	0	0	0	0	6	10	0	0	16	0.0	0.0	0.0	0.0	70.7	71.3	0.0	0.0	71.1
105 to 109	0	0	0	7	65	66	2	0	140	0.0	0.0	0.0	71.6	72.0	71.5	73.0	0.0	71.8
100 to 104	0	0	0	48	152	124	33	0	357	0.0	0.0	0.0	72.0	71.0	70.7	70.8	0.0	71.0
95 to 99	0	0	14	153	124	113	86	5	495	0.0	0.0	71.9	70.3	68.3	68.3	70.6	72.8	69.5
90 to 94	7	0	64	117	99	101	74	49	511	72.1	0.0	69.6	67.5	64.1	65.1	68.3	71.2	67.2
85 to 89	52	17	108	107	71	71	92	78	596	71.2	70.9	68.4	63.2	60.4	61.6	66.3	69.6	65.9
80 to 84	93	85	108	78	93	87	108	96	748	67.2	69.7	64.0	59.3	58.9	59.1	63.5	64.9	63.4
75 to 79	82	74	90	81	86	82	87	115	697	64.0	65.1	60.0	58.0	56.2	56.9	60.2	63.1	60.5
70 to 74	115	112	93	94	122	103	80	105	824	60.4	61.1	59.5	56.0	55.2	55.3	57.3	58.4	57.9
65 to 69	100	112	74	122	118	114	85	88	813	55.8	56.9	54.5	52.7	52.1	52.9	53.5	54.7	54.1
60 to 64	101	97	86	106	64	92	109	102	757	51.0	50.7	50.6	49.6	49.4	50.4	51.2	51.6	50.6
55 to 59	121	108	111	81	61	72	141	126	821	49.1	48.8	48.6	47.9	47.7	47.7	49.1	48.7	48.6
50 to 54	138	130	110	64	30	42	90	132	736	46.0	46.7	45.1	44.1	43.2	44.0	45.4	46.0	45.5
45 to 49	123	150	93	33	4	17	68	99	587	42.1	41.9	41.8	40.8	45.3	41.0	41.8	41.7	41.8
40 to 44	83	95	72	3	0	1	33	66	353	38.2	38.3	37.8	38.0	0.0	38.0	37.0	38.4	38.1
35 to 39	56	70	42	1	0	0	7	33	209	34.6	34.4	34.2	37.0	0.0	0.0	32.9	33.2	34.2
30 to 34	24	35	25	0	0	0	0	1	85	29.8	29.7	29.5	0.0	0.0	0.0	0.0	30.0	29.6
25 to 29	0	10	5	0	0	0	0	0	15	0.0	26.0	25.6	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					Average wind MPH
	Ave	Max	Min	Daily Ave	Max	Min	Ave	4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day
Jan	50.6	84	26	66	38	41.6	65	48	30	54	52	0.0035	0.0040	0.0037	0.0042	0.0038	4.3
Feb	55.4	87	33	69	43	46.1	70	47	32	53	53	0.0047	0.0049	0.0046	0.0053	0.0048	5.0
Mar	60.7	88	31	75	46	46.1	49	29	20	33	35	0.0036	0.0036	0.0032	0.0038	0.0035	5.7
Apr	68.0	95	42	81	54	53.4	59	37	27	41	43	0.0057	0.0059	0.0054	0.0062	0.0058	5.7
May	77.8	111	47	92	61	57.2	46	27	19	26	32	0.0057	0.0061	0.0055	0.0058	0.0058	5.6
Jun	84.1	109	56	100	67	59.3	36	20	14	21	24	0.0055	0.0060	0.0056	0.0062	0.0058	5.4
Jul	92.7	110	72	106	79	71.1	54	34	23	32	38	0.0128	0.0126	0.0112	0.0118	0.0122	5.3
Aug	87.4	108	66	99	76	71.0	64	46	35	49	50	0.0134	0.0136	0.0124	0.0137	0.0133	4.8
Sep	82.9	103	63	98	68	66.8	68	36	27	51	48	0.0113	0.0107	0.0102	0.0126	0.0111	3.7
Oct	71.3	98	43	87	57	57.2	65	36	27	49	47	0.0072	0.0074	0.0070	0.0078	0.0074	4.3
Nov	58.1	81	36	72	45	49.9	80	51	40	64	62	0.0058	0.0063	0.0063	0.0065	0.0062	3.8
Dec	51.3	76	27	64	40	44.6	79	53	45	66	63	0.0048	0.0050	0.0054	0.0054	0.0051	4.1
Year	70.1	111	26	84	56	55.4	61	39	28	45	45	0.0070	0.0072	0.0067	0.0074	0.0071	4.8

PHOENIX, ARIZONA

WBAN 23183

TABLE D:

TRY Data (1951)

Latitude 33.40 N

Longitude 112.00 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY												24 HOUR SUMMARY									
	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**		HEATING		COOLING							
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg	Hrs	Deg						
	Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Below Base	Above Base	Below Base	Above Base						
	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	100s*	Base	100s*						
112	0	513	0	0	383	0	0	321	0	0	340	0	0	446	0	0	1667	0	8760	3670	0	0
111	0	502	0	0	372	0	1	310	0	0	329	0	0	435	0	0	1634	0	8758	3583	2	0
110	0	491	0	0	361	0	4	299	0	5	318	0	0	424	0	0	1602	0	8750	3495	10	0
109	0	480	0	0	350	0	9	288	0	13	308	0	0	413	0	0	1569	0	8737	3408	23	0
108	0	469	0	0	339	0	17	277	0	20	297	0	0	402	0	0	1536	0	8722	3320	38	0
107	0	458	0	0	328	0	30	266	0	30	286	1	0	391	0	0	1503	0	8699	3233	61	1
106	0	447	0	2	317	0	45	256	1	43	275	1	0	380	0	0	1470	0	8669	3146	91	2
105	0	437	0	5	306	0	60	245	1	63	265	1	1	369	0	0	1437	0	8630	3060	130	3
104	0	426	0	8	295	0	85	235	2	88	255	2	4	359	0	0	1405	0	8574	2974	186	4
103	0	415	0	14	284	0	114	225	3	113	245	3	8	348	0	0	1372	0	8510	2888	250	6
102	0	404	0	24	274	0	142	215	4	138	235	4	12	337	0	0	1339	0	8442	2803	318	9
101	0	393	0	33	263	1	174	206	6	160	226	6	16	326	0	0	1306	0	8376	2719	384	13
100	0	382	0	46	252	1	207	197	8	185	216	8	27	315	1	0	1273	0	8294	2636	466	17
99	0	371	0	67	242	2	233	188	10	212	208	10	38	305	1	0	1240	0	8209	2553	551	22
98	0	360	0	99	232	2	261	180	12	238	199	12	48	294	1	0	1207	0	8112	2472	648	28
97	2	349	0	134	222	4	298	172	15	266	190	14	64	284	2	0	1175	0	7995	2391	765	35
96	6	338	0	163	213	5	322	164	18	289	182	17	85	273	3	0	1142	0	7893	2312	867	43
95	12	327	0	193	203	7	338	156	22	304	174	20	109	264	4	2	1109	0	7800	2233	960	52
94	17	316	0	220	195	9	356	149	25	322	166	23	129	254	5	8	1076	0	7706	2156	1054	62
93	27	306	0	246	186	11	375	141	29	342	159	27	142	244	6	16	1043	0	7609	2079	1151	73
92	41	295	1	270	178	14	396	134	33	360	151	30	155	235	8	28	1011	0	7508	2004	1252	86
91	55	285	1	290	170	17	415	127	37	378	144	34	169	225	9	39	978	1	7412	1929	1348	99
90	70	274	2	312	162	20	435	121	41	401	137	38	185	216	11	52	946	1	7303	1855	1457	112
89	87	264	3	337	154	23	453	114	45	421	130	42	204	207	13	69	914	2	7187	1783	1573	128
88	107	254	4	360	146	26	468	108	50	439	124	46	225	198	15	87	881	3	7072	1712	1688	144
87	127	244	5	382	139	30	483	102	55	457	117	51	241	190	17	111	850	4	6957	1642	1803	161
86	147	235	6	399	132	34	498	96	60	470	111	55	254	181	20	142	818	5	6847	1573	1913	180
85	172	225	8	419	125	38	511	90	65	480	105	60	275	173	23	184	787	6	6717	1505	2043	200
84	197	216	10	439	119	42	528	84	70	496	99	65	299	165	25	238	756	8	6560	1438	2200	221
83	220	207	12	454	112	47	548	78	75	515	93	70	320	157	29	294	726	11	6407	1373	2353	244
82	243	199	14	471	106	52	563	73	81	530	87	75	338	149	32	349	696	14	6265	1310	2495	268
81	264	190	17	489	100	56	579	68	87	545	81	81	359	142	35	401	667	18	6121	1248	2639	294
80	284	182	19	503	94	61	599	63	93	563	76	86	383	135	39	453	638	22	5973	1188	2787	321
79	298	174	22	515	88	66	619	58	99	579	71	92	404	128	43	504	610	27	5839	1129	2921	349
78	315	166	25	527	82	72	639	53	105	596	66	98	427	121	47	555	583	32	5700	1071	3060	379
77	341	159	29	544	76	77	654	49	111	610	61	104	444	114	51	613	556	38	5552	1015	3208	410
76	362	151	32	567	71	83	667	44	118	627	56	110	456	108	56	668	529	45	5410	960	3350	443
75	377	144	36	585	66	88	686	40	125	646	51	116	473	102	61	724	504	52	5268	906	3492	477
74	395	137	40	600	61	94	711	36	132	665	47	123	488	95	65	779	478	59	5121	854	3639	513
73	416	130	44	617	56	100	736	32	139	685	43	130	506	89	70	835	453	67	4963	804	3797	550
72	434	123	48	636	51	107	755	29	146	704	39	137	526	84	76	901	429	76	4802	755	3958	589
71	449	117	52	656	47	113	775	26	154	724	35	144	543	78	81	971	406	85	4641	708	4119	629
70	466	110	57	675	43	120	802	23	162	746	31	151	556	73	86	1044	383	95	4469	662	4291	671
69	482	104	62	693	38	127	825	20	170	771	28	159	569	67	92	1124	361	106	4294	619	4466	715
68	497	98	67	715	35	134	850	17	178	797	25	166	585	62	98	1189	340	118	4124	576	4636	761
67	516	92	72	740	31	141	881	15	187	820	22	175	605	57	104	1246	319	130	3950	536	4810	801

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

PHOENIX, ARIZONA
WBAN 23183
TABLE D:

TRY Data (1951)

Latitude 33.40 N
Longitude 112.00 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY												24-HOUR SUMMARY			
	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**		HEATING		COOLING	
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg	Hrs	Deg
	Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Below	Above	Below	Above
	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	100s*	Base	100s*
66	530	86	77	764	27	148	906	13	196	838	19	183	625	52	110	1310
65	543	81	82	792	24	156	927	11	205	859	17	191	640	48	116	1364
64	557	75	88	821	21	164	943	10	215	879	15	200	658	43	123	1411
63	570	70	93	846	19	173	957	8	224	899	13	209	679	39	129	1462
62	587	65	99	868	16	181	970	7	234	918	11	218	698	35	136	1520
61	606	60	105	884	14	190	982	6	244	936	9	227	718	31	143	1584
60	626	55	111	901	12	199	994	5	253	955	8	237	743	27	151	1650
59	648	51	118	922	10	208	1007	4	263	969	6	246	769	24	158	1715
58	671	46	124	940	9	217	1019	3	274	984	5	256	801	21	166	1780
57	691	42	131	956	7	227	1032	2	284	999	4	266	829	18	174	1846
56	712	38	138	972	6	236	1044	2	294	1011	3	276	854	16	183	1912
55	737	34	145	987	5	246	1055	1	305	1026	2	286	882	13	191	1993
54	759	31	153	1002	4	256	1065	1	315	1042	2	297	904	11	200	2083
53	783	28	161	1017	3	266	1072	0	326	1057	1	307	923	9	209	2171
52	807	25	169	1031	2	276	1077	0	337	1065	1	318	945	8	219	2262
51	828	22	177	1041	2	287	1083	0	348	1069	1	328	964	7	228	2337
50	847	19	185	1051	1	297	1089	0	358	1074	1	339	979	5	238	2402
49	864	17	194	1062	1	308	1092	0	369	1079	0	350	996	4	248	2483
48	883	15	202	1073	1	319	1094	0	380	1083	0	361	1015	3	258	2571
47	907	13	211	1081	0	329	1095	0	391	1087	0	372	1028	3	268	2647
46	929	11	221	1085	0	340	1095	0	402	1090	0	382	1038	2	279	2709
45	945	9	230	1089	0	351	1095	0	413	1093	0	393	1049	1	289	2775
44	960	8	239	1091	0	362	1095	0	424	1094	0	404	1057	1	300	2835
43	975	7	249	1092	0	373	1095	0	435	1095	0	415	1064	1	310	2889
42	987	6	259	1093	0	384	1095	0	446	1095	0	426	1074	0	321	2949
41	999	5	269	1093	0	395	1095	0	457	1095	0	437	1081	0	332	2999
40	1015	4	279	1093	0	406	1095	0	468	1095	0	448	1085	0	342	3037
39	1027	3	289	1094	0	417	1095	0	479	1095	0	459	1089	0	353	3073
38	1036	2	300	1094	0	428	1095	0	490	1095	0	470	1091	0	364	3111
37	1046	2	310	1095	0	438	1095	0	501	1095	0	481	1092	0	375	3147
36	1054	1	320	1095	0	449	1095	0	512	1095	0	492	1093	0	386	3177
35	1060	1	331	1095	0	460	1095	0	523	1095	0	503	1094	0	397	3203
34	1067	1	342	1095	0	471	1095	0	534	1095	0	514	1095	0	408	3223
33	1073	0	352	1095	0	482	1095	0	545	1095	0	525	1095	0	419	3237
32	1080	0	363	1095	0	493	1095	0	555	1095	0	536	1095	0	430	3250
31	1087	0	374	1095	0	504	1095	0	566	1095	0	547	1095	0	441	3263
30	1090	0	385	1095	0	515	1095	0	577	1095	0	558	1095	0	452	3271
29	1090	0	398	1095	0	526	1095	0	588	1095	0	569	1095	0	463	3277
28	1091	0	407	1095	0	537	1095	0	599	1095	0	580	1095	0	474	3281
27	1093	0	418	1095	0	548	1095	0	610	1095	0	590	1095	0	485	3284
26	1094	0	429	1095	0	559	1095	0	621	1095	0	601	1095	0	496	3285
25	1095	0	439	1095	0	570	1095	0	632	1095	0	612	1095	0	507	3285

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

PHOENIX, ARIZONA

WBAN 23183

TABLE E:

TRY Data (1951)

Latitude 33.40 N

Longitude 112.00 E

Annual COOLING Wet Bulb Degree Hour Summary

Wet Bulb Temperature (F) Base:	50	53	56	59	62	65	68	71	74	77	80
Annual Wet Bulb hours ABOVE base:	5956	5055	4210	3424	2757	2188	1693	1064	507	47	4
Annual Wet Bulb Cooling deg-hrs:	74578.	57588.	43293.	31502.	21933.	14289.	8200.	3722.	1067.	77.	7.

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	49	48	47	45	42	39	36	32	27	22	.001		
.002	0	0	0	0	0	0	0	0	0	0	0	40	40	40	39	38	36	33	31	27	23	19	.002		
.003	0	0	0	0	0	0	1	1	1	1	1	32	32	32	32	31	30	28	26	23	20	17	.003		
.004	0	0	0	1	1	1	2	2	2	2	3	25	25	25	25	25	24	23	22	19	17	14	.004		
.005	0	0	1	1	2	3	3	4	4	5	5	20	20	20	20	20	19	18	18	16	14	12	.005		
.006	0	0	1	2	3	4	5	6	7	8	9	15	15	15	15	15	15	15	14	13	11	10	.006		
.007	0	0	1	3	4	6	8	9	11	12	13	12	12	12	12	12	12	12	11	11	9	8	.007		
.008	0	1	2	3	6	8	10	13	15	17	18	9	9	9	9	9	9	9	9	8	7	6	.008		
.009	0	1	2	4	7	10	13	16	19	21	23	7	7	7	7	7	7	7	7	7	6	5	.009		
.010	0	1	2	5	8	12	16	20	23	26	29	5	5	5	5	5	5	5	5	5	4	4	.010		
.011	0	1	3	5	9	14	19	23	28	31	34	4	4	4	4	4	4	4	4	4	3	3	.011		
.012	0	1	3	6	11	16	22	27	32	36	40	2	2	2	2	2	2	2	2	2	2	2	.012		
.013	0	1	3	7	12	18	24	30	36	41	45	2	2	2	2	2	2	2	2	1	1	1	.013		
.014	0	1	3	7	13	20	27	34	41	46	51	1	1	1	1	1	1	1	1	1	1	0	.014		
.015	0	1	4	8	14	22	30	38	45	51	57	0	0	0	0	0	0	0	0	0	0	0	.015		
.016	0	1	4	9	16	24	33	41	49	57	63	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	0	1	4	9	17	26	36	45	54	62	68	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	0	2	5	10	18	28	38	48	58	67	74	0	0	0	0	0	0	0	0	0	0	0	.018		

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

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

TABLE G:

Percent Diffuse Solar Radiation*
and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
§ Diffuse on surface													
HORIZONTAL	27	32	32	46	30	23	30	28	16	23	22	33	28
VERTICAL													
NORTH	100	100	100	98	87	77	86	94	100	100	100	100	92
WEST	40	49	50	66	49	45	55	48	36	41	39	49	48
SOUTH	24	33	42	67	70	72	73	58	32	28	22	28	43
EAST	44	44	49	59	52	45	52	50	36	40	37	45	47
§ Possible Sun	78	80	83	88	93	94	85	85	89	88	83	77	86

FOOTNOTES: * Corrected For Cloud Cover.

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

PHOENIX, ARIZONA
WBAN 23183
TABLE H:

TRY Data (1951)

Latitude 33.40 N
Longitude 112.00 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	1899	1774	1450	1161	749	419	234	185	185	2096	1187	1323	1221	994	796	529	327	219	190	190	1433	858	1021
Feb	1887	1764	1517	1295	924	576	348	234	226	2310	1517	1272	1225	1082	945	706	478	328	257	232	1488	1031	1374
Mar	1631	1604	1517	1423	1157	843	568	366	290	2417	1955	1333	1318	1248	1170	972	750	564	429	378	1815	1538	1814
Apr	1195	1315	1395	1443	1317	1098	830	575	390	2338	2335	1077	1163	1202	1218	1124	977	808	651	537	1650	1694	2355
May	876	1080	1270	1426	1420	1291	1047	784	558	2207	2584	919	1064	1201	1314	1302	1196	1005	805	639	1910	2235	2677
Jun	755	970	1203	1396	1443	1363	1145	892	674	2129	2678	808	994	1196	1366	1404	1330	1135	909	718	2012	2513	2739
Jul	808	1019	1232	1412	1437	1338	1111	854	628	2163	2640	862	1010	1155	1280	1284	1198	1023	830	663	1875	2248	2487
Aug	1054	1210	1336	1427	1352	1176	921	668	465	2264	2428	977	1074	1149	1200	1130	993	806	625	492	1855	1991	2293
Sep	1464	1479	1453	1408	1195	919	654	440	335	2376	2097	1377	1400	1378	1337	1140	885	641	443	345	2216	1978	2015
Oct	1809	1720	1528	1347	1018	682	430	282	258	2354	1679	1493	1427	1274	1127	866	604	413	301	282	1897	1389	1577
Nov	1933	1804	1500	1220	821	478	272	204	202	2198	1307	1424	1348	1141	943	654	403	251	199	197	1602	992	1151
Dec	1912	1775	1430	1121	699	376	208	177	176	2060	1119	1172	1113	928	748	496	304	203	182	182	1236	737	932
Year	1433	1458	1402	1340	1129	882	649	473	366	2242	1963	1169	1196	1162	1121	968	788	618	486	407	1750	1603	1869

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	1638	1502	1219	968	608	318	175	152	151	1135	1027	829	659	428	253	171	156	155
Feb	1590	1476	1269	1081	755	454	258	188	184	1066	1024	905	789	579	379	252	209	206
Mar	1285	1313	1259	1190	959	682	438	277	237	1062	1079	1031	972	802	609	445	337	309
Apr	854	1022	1137	1198	1098	898	657	438	308	826	927	983	1006	930	800	650	515	433
May	589	786	1013	1173	1182	1063	846	611	413	662	804	964	1079	1078	982	815	637	491
Jun	507	683	941	1142	1200	1125	927	698	489	567	718	942	1117	1165	1096	920	716	534
Jul	544	730	975	1160	1197	1106	900	669	461	621	752	920	1047	1061	984	827	656	510
Aug	735	919	1080	1181	1127	966	739	516	358	710	832	931	990	937	811	646	492	389
Sep	1119	1197	1200	1175	994	749	511	335	273	1053	1133	1138	1115	948	722	503	340	282
Oct	1498	1432	1277	1132	839	541	324	222	211	1235	1186	1062	943	711	481	318	239	231
Nov	1659	1522	1258	1021	669	366	205	166	165	1216	1136	956	790	534	312	193	162	161
Dec	1656	1508	1203	932	566	280	159	145	144	1006	942	779	621	403	235	159	149	149
Year	1137	1172	1152	1113	934	714	513	369	284	929	963	953	928	799	640	493	385	321

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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PORTLAND, OREGON
WBAN 24229
TABLE A:

TRY Data (1960)

Latitude 45.60 N
Longitude 122.60 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day			16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Jan															
55 to 59	0	0	0	1	3	2	0	0	6	52.5	741	16504	3	2	
50 to 54	0	0	0	1	4	3	3	0	11	47.5	735	12813	9	31	
45 to 49	6	7	6	9	6	5	3	5	47	43.4	713	9180	31	118	
40 to 44	7	8	9	11	15	14	13	9	86	40.2	654	5759	90	417	
35 to 39	24	17	19	25	29	29	32	27	202	34.7	519	2760	225	1138	
30 to 34	38	42	42	36	30	31	27	36	282	30.7	262	738	482	2836	
25 to 29	18	17	17	10	6	9	15	16	108	26.9	49	69	695	5887	
20 to 24	0	2	0	0	0	0	0	0	2	23.5	0	0	744	9538	
Feb															
55 to 59	0	0	0	0	2	1	2	1	6	50.5	672	10191	0	0	
50 to 54	1	2	0	8	12	14	3	6	46	46.0	659	6859	13	28	
45 to 49	19	18	19	30	53	42	26	17	224	43.0	556	3739	116	268	
40 to 44	34	27	31	28	12	22	34	28	216	39.7	296	1620	376	1509	
35 to 39	11	13	12	15	5	5	16	23	100	34.6	136	608	536	3857	
30 to 34	13	18	16	3	0	0	3	7	60	30.1	50	165	622	6774	
25 to 29	6	4	5	0	0	0	0	2	17	25.0	12	28	660	9997	
20 to 24	0	2	1	0	0	0	0	0	3	20.0	2	1	670	13330	
Mar															
70 to 74	0	0	0	0	1	5	0	0	6	56.5	744	21248	0	0	
65 to 69	0	0	0	0	8	10	0	0	18	55.3	734	17552	10	24	
60 to 64	0	0	0	3	9	8	3	0	23	53.3	710	13938	34	130	
55 to 59	0	0	0	9	11	5	11	4	40	50.5	685	10449	59	361	
50 to 54	2	0	5	21	17	13	14	9	81	46.8	634	7139	110	771	
45 to 49	23	19	26	28	20	16	18	25	175	44.1	495	4230	249	1582	
40 to 44	27	31	26	13	15	24	26	17	179	39.8	318	2161	426	3233	
35 to 39	18	16	13	10	3	3	12	27	102	34.7	186	971	558	5763	
30 to 34	15	17	15	4	6	4	3	5	69	30.4	79	332	665	8844	
25 to 29	7	10	8	5	3	5	6	6	50	25.5	33	44	711	12276	
20 to 24	1	0	0	0	0	0	0	0	1	22.0	0	0	744	15952	

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

PORTLAND, OREGON
WBAH 24229
TABLE A:

TRY Data (1960)

Latitude 45.60 N
Longitude 122.60 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Apr															
75 to 79	0	0	0	0	1	1	0	0	2	60.5	720	19519	0	0	
70 to 74	0	0	0	0	6	9	0	0	15	58.3	715	15927	5	8	
65 to 69	0	0	0	4	9	7	2	1	23	55.9	696	12399	24	80	
60 to 64	6	2	0	15	15	12	13	5	68	52.2	663	8994	57	275	
55 to 59	0	3	10	18	21	10	11	8	81	49.9	593	5867	127	748	
50 to 54	13	8	18	21	21	30	18	17	146	47.8	481	3161	239	1642	
45 to 49	28	27	32	26	15	18	35	32	213	44.4	289	1179	431	3260	
40 to 44	37	28	29	6	2	3	11	26	142	40.2	110	237	610	5918	
35 to 39	6	22	1	0	0	0	0	1	30	37.1	6	5	714	9286	
May															
75 to 79	0	0	0	1	3	2	0	0	6	59.2	741	17788	3	3	
70 to 74	0	0	0	3	7	8	1	0	19	59.2	735	14098	9	33	
65 to 69	0	0	2	6	12	9	6	0	35	56.4	709	10483	35	138	
60 to 64	3	0	5	12	22	15	10	7	74	53.6	670	7037	74	412	
55 to 59	12	14	16	29	27	32	23	18	171	51.4	552	3943	192	1038	
50 to 54	26	23	34	34	13	22	35	28	215	48.5	346	1666	398	2481	
45 to 49	35	31	29	8	9	5	16	32	165	44.6	147	424	597	4959	
40 to 44	16	23	7	0	0	0	2	8	56	41.1	24	48	720	8303	
35 to 39	1	0	0	0	0	0	0	0	1	36.0	3	9	741	11984	
30 to 34	0	2	0	0	0	0	0	0	2	33.5	0	0	744	15695	
Jun															
85 to 89	0	0	0	0	2	1	0	0	3	66.7	720	17607	0	0	
80 to 84	0	0	0	1	11	17	0	0	29	62.1	714	14020	6	13	
75 to 79	0	0	0	6	21	19	8	0	54	60.8	662	10567	58	160	
70 to 74	0	0	0	17	19	15	16	0	67	59.9	606	7368	114	561	
65 to 69	0	0	6	24	20	24	29	14	117	56.7	522	4516	198	1309	
60 to 64	18	8	25	35	15	11	22	32	166	55.1	381	2226	339	2619	
55 to 59	37	26	49	7	2	3	13	31	168	51.9	203	731	517	4724	
50 to 54	35	53	10	0	0	0	2	12	112	48.7	59	88	661	7681	
45 to 49	0	3	0	0	0	0	0	1	4	46.0	0	0	720	11193	

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

PORTLAND, OREGON
WBAN 24229
TABLE A:

TRY Data (1960)

Latitude 45.60 N
Longitude 122.60 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Jul															
95 to 99	0	0	0	0	3	2	0	0	5	68.0	744	21459	0	0	
90 to 94	0	0	0	1	9	12	1	0	23	66.9	730	17766	14	27	
85 to 89	0	0	0	3	12	13	3	0	31	66.6	707	14176	37	157	
80 to 84	0	0	0	11	25	27	11	0	74	64.1	664	10742	80	443	
75 to 79	0	0	1	19	21	18	24	3	86	62.0	576	7636	168	1057	
70 to 74	4	0	11	20	15	14	22	17	103	60.3	484	4957	260	2098	
65 to 69	12	3	19	26	5	4	20	25	114	58.0	378	2793	366	3654	
60 to 64	27	33	32	11	3	3	10	27	146	55.3	246	1201	498	5782	
55 to 59	36	30	29	2	0	0	2	19	118	51.8	113	308	631	8609	
50 to 54	13	23	1	0	0	0	0	2	39	49.2	13	27	731	12048	
45 to 49	1	4	0	0	0	0	0	0	5	46.0	1	1	743	15742	
Aug															
95 to 99	0	0	0	1	3	3	0	0	7	65.4	740	24381	4	5	
90 to 94	0	0	0	1	3	2	1	0	7	66.9	734	20695	10	39	
85 to 89	0	0	0	0	4	7	2	0	13	64.8	721	17052	23	116	
80 to 84	0	0	0	3	4	4	2	0	13	65.2	713	13464	31	248	
75 to 79	0	0	0	5	13	18	7	1	44	63.0	688	9945	56	449	
70 to 74	0	0	3	10	33	30	16	6	98	60.2	627	6629	117	853	
65 to 69	3	0	9	38	17	14	26	14	121	57.8	520	3757	224	1701	
60 to 64	37	28	45	31	13	13	29	33	229	55.9	363	1482	381	3146	
55 to 59	46	48	32	4	3	2	10	39	184	53.0	137	289	607	5673	
50 to 54	6	17	4	0	0	0	0	0	27	49.0	14	20	730	9124	
45 to 49	1	0	0	0	0	0	0	0	1	46.0	0	0	744	12824	
Sep															
85 to 89	0	0	0	1	7	3	0	0	11	63.7	719	18776	1	2	
80 to 84	0	0	0	2	7	9	0	0	18	61.8	699	15220	21	46	
75 to 79	0	0	0	6	10	12	6	0	34	61.1	676	11768	44	194	
70 to 74	0	0	0	7	14	15	4	1	41	59.9	642	8469	78	495	
65 to 69	3	1	6	15	32	34	18	5	114	57.4	582	5391	138	1017	
60 to 64	17	16	19	38	14	14	42	24	184	56.0	451	2808	269	2034	
55 to 59	37	27	37	18	6	3	17	46	191	52.9	237	1093	483	3919	
50 to 54	17	21	16	3	0	0	3	10	70	49.4	91	348	629	6774	
45 to 49	14	21	11	0	0	0	0	4	50	45.4	25	54	695	10080	
40 to 44	2	4	1	0	0	0	0	0	7	41.9	1	1	719	13627	

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

PORTLAND, OREGON
WBAN 24229
TABLE A:

TRY Data (1960)

Latitude 45.60 N
Longitude 122.60 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day 10-12 13-15		16-18	19-21	22-24	hours below			degree hours	hours above	degree hours	
Oct															
75 to 79	0	0	0	0	8	4	0	0	12	61.3	743	17033	1	1	
70 to 74	0	0	0	0	12	9	0	0	21	61.0	727	13359	17	47	
65 to 69	0	0	0	10	16	14	4	2	46	59.0	693	9796	51	204	
60 to 64	5	0	2	18	15	17	16	7	80	56.5	642	6453	102	581	
55 to 59	13	12	17	28	26	26	31	20	173	53.2	527	3493	217	1341	
50 to 54	36	42	42	27	16	18	26	39	246	50.4	284	1388	460	2956	
45 to 49	23	20	19	7	0	5	15	17	106	45.9	112	456	632	5744	
40 to 44	13	14	11	3	0	0	1	8	50	41.2	44	111	700	9119	
35 to 39	3	4	2	0	0	0	0	0	9	37.1	7	10	737	12738	
30 to 34	0	1	0	0	0	0	0	0	1	34.0	0	0	744	16448	
Nov															
60 to 64	0	0	0	1	7	2	0	0	10	52.8	720	11280	0	0	
55 to 59	1	1	5	14	23	17	7	4	72	50.0	698	7719	22	39	
50 to 54	15	17	13	32	29	23	17	19	165	48.8	568	4497	152	417	
45 to 49	32	28	29	25	23	24	32	32	225	44.3	400	2060	320	1580	
40 to 44	24	27	26	11	7	20	24	23	162	40.1	182	673	538	3793	
35 to 39	12	14	14	5	1	4	9	9	68	36.2	61	144	659	6864	
30 to 34	6	3	3	2	0	0	1	3	18	32.7	6	6	714	10326	
Dec															
50 to 54	0	0	0	4	13	1	0	0	18	46.7	740	10200	4	6	
45 to 49	9	7	8	18	29	24	12	11	118	42.2	700	6574	44	100	
40 to 44	17	23	17	29	21	28	16	12	163	39.1	536	3473	208	719	
35 to 39	36	25	33	28	27	35	47	45	276	35.1	347	1210	397	2176	
30 to 34	23	28	29	14	3	5	18	24	144	32.0	89	192	655	4878	
25 to 29	8	9	6	0	0	0	0	1	24	27.8	8	13	736	8419	
20 to 24	0	1	0	0	0	0	0	0	1	23.0	0	0	744	12126	

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

PORTLAND, OREGON
WBAN 24229
TABLE B:

TRY Data (1960)

Latitude 45.60 N
Longitude 122.60 E

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

Dry Bulb range(F)	Number of Hours of Occurrence in time period									Mean Coincident Wet Bulb Temperature (F)								
	Hour of day									Hour of day								
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year
95 to 99	0	0	0	1	6	5	0	0	12	0.0	0.0	0.0	65.0	67.2	66.0	0.0	0.0	66.5
90 to 94	0	0	0	2	12	14	2	0	30	0.0	0.0	0.0	68.5	67.4	66.3	66.5	0.0	66.9
85 to 89	0	0	0	4	25	24	5	0	58	0.0	0.0	0.0	65.8	65.5	66.0	65.0	0.0	65.7
80 to 84	0	0	0	17	47	57	13	0	134	0.0	0.0	0.0	64.9	63.2	62.9	65.3	0.0	63.5
75 to 79	0	0	1	37	77	74	45	4	238	0.0	0.0	66.0	61.6	61.4	61.5	62.2	63.0	61.7
70 to 74	4	0	14	57	107	105	59	24	370	62.0	0.0	61.6	60.1	59.4	59.5	60.4	62.1	60.0
65 to 69	18	4	42	123	119	116	105	61	588	58.8	60.3	59.1	57.6	56.5	56.2	58.0	58.5	57.4
60 to 64	113	87	128	164	113	95	145	135	980	56.2	56.6	55.9	54.5	53.9	54.2	54.9	55.8	55.2
55 to 59	182	161	195	130	124	101	127	190	1210	52.7	53.1	52.4	51.2	50.5	50.6	52.0	52.3	52.0
50 to 54	164	206	143	151	125	124	121	142	1176	49.4	49.6	49.4	48.2	47.6	47.7	48.3	48.9	48.7
45 to 49	191	185	179	151	155	139	157	176	1333	44.7	44.6	44.6	43.5	42.8	43.3	44.0	44.5	44.1
40 to 44	177	185	157	101	72	111	127	131	1061	40.4	40.5	40.2	39.6	38.7	38.7	39.9	40.3	39.9
35 to 39	111	111	94	85	65	76	116	132	788	35.4	36.0	35.5	34.6	34.8	34.7	34.6	34.9	35.1
30 to 34	95	111	105	59	39	40	52	75	576	31.1	31.2	30.6	30.7	30.8	31.1	31.3	31.2	31.0
25 to 29	39	40	36	15	9	14	21	25	199	26.3	26.2	26.1	26.6	27.9	27.4	26.9	26.3	26.5
20 to 24	1	5	1	0	0	0	0	0	7	22.0	22.0	20.0	0.0	0.0	0.0	0.0	0.0	21.7

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Dry Bulb Temperature (F)						Wet Bulb	Percent Relative Humidity					Average Humidity Ratio					Average wind
Month	Ave	Max	Min	Daily Ave			Ave	4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	
				Max	Min	(lb moisture/lb dry air)											
Jan	35.3	58	23	39	32	33.5	87	83	82	87	85	0.0035	0.0035	0.0038	0.0037	0.0036	11.8
Feb	42.3	57	22	49	36	39.3	83	81	64	76	77	0.0043	0.0045	0.0044	0.0044	0.0044	9.4
Mar	43.9	72	24	52	37	40.5	88	77	62	76	77	0.0044	0.0048	0.0049	0.0048	0.0047	9.0
Apr	50.4	76	36	59	42	46.0	84	71	61	73	74	0.0052	0.0057	0.0058	0.0058	0.0056	8.6
May	53.6	79	33	62	46	48.9	84	70	61	73	74	0.0059	0.0064	0.0065	0.0065	0.0063	7.3
Jun	63.0	86	48	74	53	54.8	78	60	43	56	62	0.0070	0.0074	0.0072	0.0075	0.0073	7.6
Jul	68.7	97	47	82	56	58.0	75	54	36	49	56	0.0075	0.0081	0.0079	0.0084	0.0080	7.5
Aug	64.7	99	49	75	56	56.8	79	63	46	60	64	0.0080	0.0081	0.0079	0.0082	0.0081	7.3
Sep	61.4	89	42	72	52	54.6	81	68	49	66	68	0.0073	0.0077	0.0077	0.0080	0.0076	6.1
Oct	54.6	78	34	64	46	51.3	92	84	63	82	82	0.0069	0.0075	0.0075	0.0076	0.0074	5.4
Nov	46.8	61	31	53	41	44.0	88	81	74	82	82	0.0054	0.0056	0.0056	0.0054	0.0055	9.1
Dec	38.8	54	24	44	34	36.5	86	85	76	82	83	0.0038	0.0040	0.0042	0.0040	0.0040	10.4
Year	52.0	99	22	60	44	47.1	84	73	60	72	74	0.0058	0.0061	0.0061	0.0062	0.0060	8.3

PORTLAND, OREGON
WBAN 24229
TABLE 0:

TRY Data (1960)

Latitude 45.60 N
Longitude 122.60 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																24 HOUR SUMMARY											
	7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**				10PM-6AM**				HEATING		COOLING	
	Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs	Hrs	Deg-Hrs				
	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			
100	0	563	0	0	502	0	0	454	0	0	461	0	0	513	0	0	1711	0	8760	4203	0	0						
99	0	552	0	0	491	0	1	443	0	0	451	0	0	502	0	0	1678	0	8758	4116	2	0						
98	0	541	0	0	480	0	2	432	0	1	440	0	0	491	0	0	1645	0	8756	4028	4	0						
97	0	530	0	0	469	0	3	421	0	3	429	0	0	480	0	0	1613	0	8753	3941	7	0						
96	0	519	0	0	458	0	5	410	0	4	418	0	0	469	0	0	1580	0	8750	3853	10	0						
95	0	508	0	0	447	0	5	399	0	5	407	0	0	458	0	0	1547	0	8749	3766	11	0						
94	0	497	0	1	436	0	6	388	0	6	396	0	0	447	0	0	1514	0	8746	3678	14	0						
93	0	486	0	1	425	0	8	377	0	9	385	0	1	436	0	0	1481	0	8740	3591	20	1						
92	0	475	0	1	414	0	11	367	0	13	374	0	1	425	0	0	1448	0	8733	3503	27	1						
91	0	464	0	2	403	0	14	356	1	15	363	1	1	414	0	0	1415	0	8726	3416	34	1						
90	0	453	0	3	392	0	17	345	1	18	353	1	1	403	0	0	1383	0	8720	3329	40	1						
89	0	442	0	3	381	0	20	334	1	23	342	1	2	392	0	0	1350	0	8711	3242	49	2						
88	0	431	0	3	370	0	24	323	1	27	331	1	4	381	0	0	1317	0	8701	3155	59	2						
87	0	421	0	4	359	0	27	313	1	28	321	1	5	371	0	0	1284	0	8695	3068	65	3						
86	0	410	0	4	348	0	32	302	2	33	310	2	5	360	0	0	1251	0	8684	2981	76	4						
85	0	399	0	6	338	0	39	292	2	39	299	2	6	349	0	0	1218	0	8668	2894	92	5						
84	0	388	0	8	327	0	48	281	2	47	289	2	9	338	0	0	1185	0	8647	2807	113	6						
83	0	377	0	9	316	0	55	271	3	53	278	3	13	327	0	0	1153	0	8628	2721	132	7						
82	0	366	0	12	305	1	64	260	4	63	268	4	14	316	1	0	1120	0	8606	2635	154	8						
81	0	355	0	15	294	1	74	250	4	78	258	4	16	305	1	0	1087	0	8575	2549	185	10						
80	0	344	0	20	283	1	84	240	5	93	248	5	18	295	1	0	1054	0	8543	2463	217	12						
79	0	333	0	26	273	1	98	230	6	107	238	6	23	284	1	0	1021	0	8504	2378	256	14						
78	0	322	0	33	262	1	114	220	7	120	228	7	34	273	1	1	988	0	8456	2293	304	17						
77	1	311	0	39	251	2	129	210	8	133	218	9	43	263	2	1	956	0	8413	2209	347	20						
76	1	300	0	45	241	2	141	201	10	144	209	10	51	252	2	1	923	0	8376	2125	384	24						
75	1	289	0	55	230	3	156	191	11	162	199	11	60	242	3	3	890	0	8322	2041	438	28						
74	3	278	0	65	220	3	174	182	13	183	190	13	67	232	3	5	857	0	8261	1959	499	33						
73	5	267	0	74	210	4	193	173	15	203	181	15	77	221	4	9	824	0	8197	1876	563	38						
72	6	256	0	86	200	5	215	164	17	223	172	17	91	211	5	15	792	0	8122	1795	638	44						
71	7	246	0	100	190	6	237	155	19	244	164	20	103	201	6	20	759	0	8048	1714	712	51						
70	12	235	0	112	180	7	261	147	21	267	155	22	115	191	7	27	726	1	7965	1634	795	58						
69	17	224	0	132	170	8	285	138	24	288	147	25	133	182	8	37	694	1	7866	1554	894	67						
68	24	213	1	154	160	9	307	130	27	309	139	28	153	172	10	47	661	1	7764	1476	986	76						
67	31	202	1	171	151	11	329	123	30	332	131	31	174	163	11	62	629	2	7659	1399	1101	86						
66	39	192	1	195	142	13	355	115	34	358	124	35	195	154	13	82	597	3	7534	1323	1226	98						
65	50	181	2	225	133	15	382	108	37	384	116	38	217	145	15	104	565	4	7397	1248	1363	111						
64	64	171	2	254	125	17	406	101	41	405	109	42	240	136	18	129	533	5	7260	1175	1500	125						
63	85	161	3	283	116	20	429	94	45	427	103	46	267	128	20	170	502	6	7098	1103	1662	141						
62	112	151	4	317	108	23	451	87	50	448	96	51	297	120	23	226	471	8	6907	1033	1853	159						
61	139	141	5	353	101	26	477	81	54	464	90	55	327	112	26	303	441	11	6695	965	2065	178						
60	169	132	7	387	94	30	498	75	59	480	84	60	358	104	29	400	411	14	6466	899	2294	200						
59	204	123	9	416	87	34	515	69	64	501	77	65	387	97	33	494	383	19	6241	836	2519	224						
58	247	114	11	441	80	38	535	64	70	521	72	70	412	90	37	585	355	24	6017	774	2743	250						
57	290	106	14	466	74	43	561	58	75	538	66	75	433	83	41	696	329	30	5774	715	2986	279						
56	326	98	17	491	67	48	587	53	81	554	61	81	456	77	46	814	304	38	5531	659	3229	310						
55	362	90	20	520	62	53	613	48	87	576	55	86	485	71	51	925	280	47	5277	605	3483	343						

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, OREGON
WBAN 24229
TABLE D:

TRY Data (1960)

Latitude 45.60 N
Longitude 122.60 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			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg	Hrs	Deg
	Above (100s)*	Base	Heat	Cool	Above (100s)*	Base	Heat	Cool	Above (100s)*	Base	Heat	Cool	Above (100s)*	Base	Heat	Cool	Above (100s)*	Base	Heat	Cool	Above (100s)*	Base	Heat	Cool	Below Base 100s*	Above Base 100s*	Below Base 100s*	Above Base 100s*
54	398	83	24	551	56	58	646	43	93	610	50	92	516	65	56	1053	257	57						4984	553	3776	380	
53	426	76	28	582	51	64	672	39	100	639	46	99	539	59	61	1174	235	68						4726	505	4034	419	
52	451	70	32	616	46	70	697	35	107	656	41	105	558	53	66	1265	214	80						4515	459	4245	460	
51	480	63	37	648	41	76	723	31	114	673	37	112	584	48	72	1357	195	93						4292	415	4468	504	
50	509	57	42	673	37	83	745	27	121	699	33	119	611	43	78	1451	176	107						4071	373	4689	550	
49	539	52	47	702	33	90	767	24	129	729	29	126	635	39	84	1540	158	122						3846	333	4914	598	
48	574	46	53	735	29	97	799	21	136	758	25	133	665	34	91	1645	141	138						3583	296	5177	648	
47	613	41	59	768	25	104	835	18	145	788	22	141	703	30	98	1772	125	155						3279	262	5481	701	
46	649	37	65	795	22	112	868	16	153	818	19	149	740	26	105	1897	111	173						2992	231	5768	757	
45	683	32	72	821	19	120	897	14	162	843	17	157	767	23	112	2000	97	193						2747	202	6013	816	
44	718	28	79	849	17	129	919	12	171	867	14	166	792	20	120	2100	85	213						2513	176	6247	878	
43	748	25	86	873	15	137	939	10	180	891	12	175	818	17	128	2210	74	235						2280	152	6480	941	
42	782	21	94	897	12	146	953	9	190	914	10	184	844	14	137	2325	63	258						2044	130	6716	1007	
41	816	19	102	918	11	155	965	7	199	937	8	193	872	12	145	2423	54	281						1827	111	6933	1076	
40	844	16	110	932	9	164	977	6	209	957	7	202	897	10	154	2500	46	306						1651	93	7109	1146	
39	868	14	119	948	7	174	989	5	219	971	6	212	916	8	163	2568	39	331						1499	78	7261	1218	
38	885	11	127	966	6	183	1004	4	229	986	4	222	940	6	172	2632	32	357						1346	63	7414	1291	
37	907	9	136	982	5	193	1015	3	239	1002	3	232	967	5	182	2713	26	384						1173	51	7587	1366	
36	929	8	146	996	4	203	1025	2	249	1019	3	242	990	4	192	2792	20	412						1008	40	7752	1443	
35	945	6	155	1012	3	213	1039	2	260	1034	2	252	1011	3	202	2859	16	440						858	31	7902	1521	
34	967	5	164	1027	2	223	1054	1	270	1048	1	263	1033	2	212	2935	12	469						695	23	8065	1601	
33	984	3	174	1040	1	234	1063	1	281	1060	1	273	1050	1	222	3013	9	499						547	17	8213	1682	
32	1004	2	184	1056	1	244	1070	0	291	1066	1	284	1059	1	233	3083	6	529						421	12	8339	1765	
31	1029	2	194	1068	1	255	1076	0	302	1071	0	294	1065	1	243	3133	5	560						316	8	8444	1849	
30	1048	1	205	1076	0	265	1082	0	313	1078	0	305	1070	0	254	3163	3	592						241	6	8519	1934	
29	1062	1	215	1080	0	276	1089	0	324	1086	0	316	1079	0	265	3187	2	624						176	4	8584	2020	
28	1068	0	226	1084	0	287	1093	0	335	1093	0	327	1087	0	276	3210	1	656						124	2	8636	2106	
27	1077	0	237	1090	0	298	1095	0	346	1095	0	338	1092	0	287	3230	1	688						79	1	8681	2192	
26	1087	0	248	1094	0	309	1095	0	357	1095	0	349	1094	0	298	3249	0	720						44	0	8716	2279	
25	1092	0	258	1095	0	320	1095	0	367	1095	0	360	1094	0	309	3268	0	753						19	0	8741	2367	
24	1094	0	269	1095	0	331	1095	0	378	1095	0	371	1095	0	319	3280	0	786						5	0	8755	2454	
23	1094	0	280	1095	0	342	1095	0	389	1095	0	382	1095	0	330	3283	0	818						3	0	8757	2542	
22	1094	0	291	1095	0	353	1095	0	400	1095	0	393	1095	0	341	3284	0	851						1	0	8759	2629	
21	1095	0	302	1095	0	364	1095	0	411	1095	0	404	1095	0	352	3285	0	884						0	0	8760	2717	

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, OREGON

WBAN 24229

TABLE E:

TRY Data (1960)

Latitude 45.60 N

Longitude 122.60 E

Annual COOLING Wet Bulb Degree Hour Summary

Wet Bulb Temperature (F) Base:	50	53	56	59	62	65	68	71	74	77	80
Annual Wet Bulb hours ABOVE base:	3878	2847	1830	997	452	169	38	2	0	0	0
Annual Wet Bulb Cooling deg-hrs:	26631.	15977.	8471.	3859.	1448.	409.	63.	2.	0.	0.	0.

TABLE F:

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

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **												COOLING HUMIDITY RATIO HOURS **												Maintained Indoor Humidity Ratio*
	Heating Degree Base												Cooling Degree Base												
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80			
.001	0	0	0	0	0	0	0	0	0	0	0	40	38	36	33	27	21	14	9	5	3	1	.001		
.002	0	0	0	0	0	0	0	0	0	0	0	31	31	29	27	23	18	12	7	4	2	1	.002		
.003	0	0	1	1	1	1	1	1	1	1	1	23	23	23	21	18	14	10	6	4	2	1	.003		
.004	0	1	2	2	2	2	2	2	2	2	2	16	16	16	15	14	11	8	5	3	2	1	.004		
.005	1	2	3	4	5	5	5	5	5	5	5	10	10	10	10	9	8	6	4	2	1	1	.005		
.006	1	3	5	7	8	9	9	9	9	9	9	5	5	5	5	5	5	4	2	1	1	0	.006		
.007	1	4	6	9	12	14	14	15	15	15	15	3	3	3	3	3	2	2	1	1	1	0	.007		
.008	1	4	8	12	16	19	20	21	22	22	22	1	1	1	1	1	1	1	1	0	0	0	.008		
.009	1	5	10	15	20	24	27	28	29	30	30	0	0	0	0	0	0	0	0	0	0	0	.009		
.010	2	6	11	17	24	29	33	36	37	38	39	0	0	0	0	0	0	0	0	0	0	0	.010		
.011	2	7	13	20	28	34	39	43	45	46	47	0	0	0	0	0	0	0	0	0	0	0	.011		
.012	2	7	14	23	32	39	46	50	53	55	56	0	0	0	0	0	0	0	0	0	0	0	.012		
.013	2	8	16	25	36	44	52	58	61	63	64	0	0	0	0	0	0	0	0	0	0	0	.013		
.014	2	9	17	28	40	49	58	65	69	71	73	0	0	0	0	0	0	0	0	0	0	0	.014		
.015	3	10	19	31	44	55	65	72	77	79	81	0	0	0	0	0	0	0	0	0	0	0	.015		
.016	3	11	21	33	48	60	71	80	85	88	90	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	3	11	22	36	52	65	77	87	93	96	98	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	3	12	24	38	56	70	84	94	101	104	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	91	56	62	79	82	43	29	50	46	54	65	64	53
VERTICAL													
NORTH	100	100	100	100	98	87	84	96	100	100	100	100	95
WEST	85	59	66	86	89	56	45	55	53	58	69	71	62
SOUTH	83	48	62	84	90	70	56	66	50	49	53	45	64
EAST	95	66	80	84	90	64	51	73	68	75	71	68	71
% Possible Sun	25	36	44	51	55	53	69	64	59	42	29	20	48

FOOTNOTES: * Corrected For Cloud Cover.

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

PORTLAND, OREGON
WBAN 24229

TRY Data (1960)

Latitude 45.60 N
Longitude 122.60 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	1642	1531	1214	904	511	242	135	119	119	1580	682	274	255	216	179	140	115	105	102	102	251	200	310
Feb	1833	1708	1405	1119	715	401	224	169	165	1939	1022	611	567	481	402	296	216	170	152	150	628	428	554
Mar	1827	1750	1558	1365	1021	687	439	284	243	2274	1543	735	678	598	525	424	342	292	263	255	816	672	895
Apr	1556	1601	1570	1517	1290	1000	721	495	354	2411	2071	866	867	831	788	698	605	531	476	445	988	964	1308
May	1292	1421	1513	1576	1465	1244	969	712	526	2422	2457	928	939	928	912	847	765	688	625	590	1123	1200	1663
Jun	1177	1328	1477	1595	1543	1361	1103	836	637	2419	2642	1045	1091	1141	1180	1129	1017	878	741	656	1695	1860	1773
Jul	1232	1374	1497	1589	1509	1309	1049	786	592	2425	2572	1140	1204	1266	1311	1237	1086	905	727	609	2015	2149	2037
Aug	1444	1525	1543	1534	1353	1093	820	586	428	2411	2237	1026	985	947	911	815	705	603	522	476	1421	1391	1674
Sep	1723	1687	1552	1415	1117	800	543	366	293	2312	1738	1000	916	813	726	590	465	378	326	305	1213	990	1217
Oct	1846	1731	1460	1203	825	492	297	208	200	2059	1205	726	649	539	445	333	252	212	194	191	772	554	724
Nov	1707	1590	1272	954	566	280	159	135	135	1692	785	480	450	376	303	217	155	129	121	121	463	307	388
Dec	1566	1458	1149	833	455	201	117	108	108	1472	600	455	430	356	276	178	118	99	96	96	422	248	260
Year	1569	1557	1434	1301	1032	761	550	402	318	2118	1633	774	753	709	664	577	488	417	363	334	986	916	1067

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	1424	1312	1022	745	405	177	104	97	97	226	208	175	145	114	93	85	83	83
Feb	1574	1447	1181	932	581	305	168	136	135	512	470	397	331	241	173	136	123	122
Mar	1510	1462	1302	1144	843	547	333	220	198	604	555	489	429	345	277	235	213	207
Apr	1216	1299	1298	1264	1070	815	570	378	280	700	706	679	646	571	494	431	384	361
May	958	1103	1230	1305	1216	1027	784	560	398	747	761	756	744	691	624	559	507	478
Jun	851	1008	1188	1319	1283	1131	896	662	478	801	856	922	968	930	838	716	598	514
Jul	900	1052	1209	1315	1255	1087	850	620	445	856	933	1020	1078	1022	897	736	582	469
Aug	1108	1220	1268	1276	1125	898	657	455	333	809	789	769	746	670	577	490	421	381
Sep	1402	1400	1297	1185	924	645	422	283	239	817	749	667	597	481	375	304	263	249
Oct	1571	1463	1229	1010	672	387	224	167	164	608	536	442	364	269	204	171	158	156
Nov	1477	1357	1066	793	448	209	120	110	110	404	375	310	250	175	124	103	99	98
Dec	1362	1255	966	686	355	148	91	88	88	386	363	296	225	141	93	79	78	78
Year	1277	1280	1188	1082	849	616	436	316	248	623	609	578	545	472	399	338	293	267

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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SACRAMENTO, CALIFORNIA
WBAN 23232
TABLE A:

TRY Data (1962)

Latitude 38.50 N
Longitude 121.50 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*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Jan															
65 to 69	0	0	0	0	3	1	0	0	4	51.3	744	20242	0	0	
60 to 64	0	0	0	0	8	8	0	0	16	52.1	734	16539	10	17	
55 to 59	0	0	0	3	11	8	0	0	22	49.4	713	12915	31	113	
50 to 54	0	0	0	6	19	13	5	0	43	45.2	692	9397	52	315	
45 to 49	5	1	3	18	23	25	21	9	105	43.3	632	6077	112	715	
40 to 44	10	7	9	31	22	30	29	24	162	39.6	512	3223	232	1581	
35 to 39	49	42	36	27	4	5	32	43	238	36.5	278	1182	466	3260	
30 to 34	23	29	29	4	3	3	5	13	109	30.6	109	308	635	6106	
25 to 29	6	14	16	4	0	0	1	4	45	25.6	19	24	725	9542	
Feb															
60 to 64	0	0	0	2	4	0	0	0	6	56.8	672	10709	0	0	
55 to 59	1	3	3	8	28	21	4	5	73	53.0	647	7380	25	31	
50 to 54	18	15	18	31	24	31	28	17	182	49.8	534	4388	138	399	
45 to 49	22	18	20	18	15	20	24	25	162	44.8	349	2216	323	1587	
40 to 44	16	16	16	15	13	12	23	17	128	40.5	195	870	477	3601	
35 to 39	21	21	21	10	0	0	5	15	93	36.2	66	215	606	6306	
30 to 34	6	8	5	0	0	0	0	5	24	28.3	14	30	658	9481	
25 to 29	0	3	1	0	0	0	0	0	4	24.0	0	0	672	12811	
Mar															
70 to 74	0	0	0	0	5	5	0	0	10	58.1	743	16612	1	1	
65 to 69	0	0	0	2	12	13	0	0	27	57.3	722	12941	22	50	
60 to 64	0	0	0	10	19	15	6	0	50	53.6	693	9395	51	224	
55 to 59	0	0	1	26	45	35	12	0	119	49.7	624	6073	120	622	
50 to 54	3	3	15	48	8	24	36	20	157	47.6	474	3311	270	1580	
45 to 49	41	25	39	7	4	1	33	49	199	44.9	305	1329	439	3318	
40 to 44	39	41	27	0	0	0	6	24	137	40.7	114	325	630	6034	
35 to 39	10	23	10	0	0	0	0	0	43	36.3	21	31	723	9460	
30 to 34	0	1	1	0	0	0	0	0	2	32.5	0	0	744	13149	

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

SACRAMENTO, CALIFORNIA

WBAN 23232

TABLE A:

TRY Data (1962)

Latitude 38.50 N

Longitude 121.50 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									MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day 10-12 13-15 16-18			19-21	22-24	Month Total		hours below	degree hours	hours above	degree hours
Apr														
85 to 89	0	0	0	0	6	3	0	0	9	65.8	720	19620	0	0
80 to 84	0	0	0	3	17	20	0	0	40	62.5	703	16056	17	36
75 to 79	0	0	0	12	25	14	4	0	55	60.3	653	12680	67	260
70 to 74	0	0	1	24	20	21	6	0	72	58.8	591	9564	129	744
65 to 69	0	0	5	20	13	18	17	3	76	56.6	518	6788	202	1568
60 to 64	2	0	17	18	6	9	15	15	82	54.4	438	4401	282	2781
55 to 59	18	6	27	11	3	5	30	17	117	51.8	344	2434	376	4414
50 to 54	26	27	26	2	0	0	16	33	130	48.3	220	1018	500	6598
45 to 49	35	37	13	0	0	0	2	20	107	45.1	92	249	628	9429
40 to 44	9	19	1	0	0	0	0	2	31	41.4	15	17	705	12797
35 to 39	0	1	0	0	0	0	0	0	1	39.0	0	0	720	16380
May														
90 to 94	0	0	0	0	2	0	0	0	2	66.0	744	23016	0	0
85 to 89	0	0	0	1	8	7	0	0	16	63.3	739	19304	5	8
80 to 84	0	0	0	6	21	15	0	0	42	62.8	714	15667	30	91
75 to 79	0	0	1	13	9	13	3	0	39	61.4	669	12216	75	360
70 to 74	0	0	2	20	33	23	7	1	86	58.1	621	8981	123	845
65 to 69	0	0	8	29	15	24	12	4	92	56.0	521	6118	223	1702
60 to 64	2	1	27	19	5	10	25	6	95	54.0	432	3740	312	3044
55 to 59	15	3	33	5	0	1	34	28	119	51.4	334	1829	410	4853
50 to 54	48	55	21	0	0	0	12	51	187	48.5	186	506	558	7250
45 to 49	28	32	1	0	0	0	0	3	64	45.5	29	36	715	10500
40 to 44	0	2	0	0	0	0	0	0	2	43.0	0	0	744	14184
Jun														
100 to 104	0	0	0	0	8	7	0	0	15	70.7	715	23438	5	5
95 to 99	0	0	0	4	4	4	0	0	12	70.9	700	19905	20	72
90 to 94	0	0	0	10	22	16	3	0	51	66.2	678	16439	42	206
85 to 89	0	0	3	10	17	18	5	0	53	64.8	622	13194	98	561
80 to 84	0	0	4	16	17	17	6	0	60	63.7	571	10213	149	1180
75 to 79	0	0	9	16	15	16	10	2	68	61.1	496	7536	224	2103
70 to 74	5	2	13	19	6	9	17	10	81	59.7	428	5217	292	3384
65 to 69	9	7	18	13	1	2	21	10	81	57.5	349	3272	371	5039
60 to 64	10	8	25	1	0	1	17	25	87	55.1	264	1737	456	7104
55 to 59	33	26	16	1	0	0	10	24	110	52.4	174	636	546	9603
50 to 54	32	44	2	0	0	0	1	19	98	49.8	47	61	673	12628
45 to 49	1	3	0	0	0	0	0	0	4	45.8	0	0	720	16167

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

SACRAMENTO, CALIFORNIA

TRY Data (1962)

Latitude 38.50 N

WBAN 23232

Longitude 121.50 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	4	4	0	0	8	69.4	743	22403	1	1
95 to 99	0	0	0	1	17	15	0	0	33	68.5	726	18720	18	38
90 to 94	0	0	0	9	31	31	2	0	73	68.0	681	15188	63	226
85 to 89	0	0	0	14	29	25	4	0	72	67.1	603	11980	141	738
80 to 84	0	0	4	25	12	14	13	0	68	65.5	533	9143	211	1621
75 to 79	0	0	1	23	0	4	16	0	44	63.5	470	6637	274	2835
70 to 74	0	0	18	17	0	0	27	5	67	61.3	415	4396	329	4314
65 to 69	5	0	30	4	0	0	22	33	94	58.4	345	2472	399	6110
60 to 64	42	25	28	0	0	0	9	39	143	55.9	233	1012	511	8370
55 to 59	40	43	12	0	0	0	0	16	111	53.7	97	218	647	11296
50 to 54	6	25	0	0	0	0	0	0	31	51.6	1	1	743	14799
Aug														
100 to 104	0	0	0	0	2	6	0	0	8	69.6	743	22343	1	2
95 to 99	0	0	0	1	21	16	0	0	38	68.1	726	18656	18	35
90 to 94	0	0	0	8	29	26	0	0	63	68.0	676	15146	68	245
85 to 89	0	0	0	17	12	10	6	0	45	66.9	615	11921	129	740
80 to 84	0	0	2	21	17	18	10	0	68	65.8	569	8951	175	1490
75 to 79	0	0	9	26	12	12	17	0	76	63.7	493	6304	251	2563
70 to 74	0	0	17	17	0	5	29	12	80	61.5	416	4043	328	4022
65 to 69	20	2	32	3	0	0	22	29	108	59.1	334	2161	410	5860
60 to 64	38	34	22	0	0	0	8	37	139	57.2	209	794	535	8213
55 to 59	35	46	10	0	0	0	1	15	107	54.9	60	114	684	11253
50 to 54	0	11	1	0	0	0	0	0	12	52.3	1	1	743	14860
Sep														
95 to 99	0	0	0	0	3	5	0	0	8	66.4	720	20998	0	0
90 to 94	0	0	0	1	22	15	0	0	38	67.3	699	17431	21	33
85 to 89	0	0	0	7	19	15	1	0	42	66.2	659	14037	61	239
80 to 84	0	0	0	16	25	21	2	0	64	64.9	605	10863	115	665
75 to 79	0	0	3	22	14	16	9	1	65	63.2	535	7997	185	1399
70 to 74	0	0	4	28	2	13	20	4	71	61.4	480	5453	240	2455
65 to 69	4	1	18	16	5	4	32	13	93	59.5	402	3246	318	3848
60 to 64	26	9	30	0	0	1	22	38	126	57.0	298	1504	422	5706
55 to 59	52	43	31	0	0	0	4	34	164	54.4	148	371	572	8173
50 to 54	8	37	4	0	0	0	0	0	49	51.8	8	8	712	11410

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

SACRAMENTO, CALIFORNIA

TRY Data (1962)

Latitude 38.50 N

WBAN 23232

Longitude 121.50 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	Hour of Day 10-12 13-15 16-18			19-21	22-24	hours below			degree hours	hours above	degree hours	
Oct															
90 to 94	0	0	0	0	3	2	0	0	5	67.2	744	23505	0	0	
85 to 89	0	0	0	1	0	1	0	0	2	66.0	739	19803	5	18	
80 to 84	0	0	0	3	5	1	1	0	10	66.2	737	16114	7	49	
75 to 79	0	0	1	5	25	15	0	0	46	62.1	717	12469	27	124	
70 to 74	0	0	0	15	22	21	2	0	60	61.3	662	9029	82	404	
65 to 69	0	0	7	26	17	26	14	2	92	60.6	585	5903	159	998	
60 to 64	11	5	16	20	11	10	35	20	128	58.0	480	3230	264	2045	
55 to 59	39	31	30	18	10	17	37	51	233	54.9	312	1178	432	3713	
50 to 54	40	47	32	5	0	0	4	18	146	50.8	97	192	647	6447	
45 to 49	3	10	7	0	0	0	0	2	22	47.1	6	3	738	9978	
Nov															
75 to 79	0	0	0	0	4	1	0	0	5	66.4	719	17256	1	1	
70 to 74	0	0	0	3	10	5	0	0	18	63.4	712	13678	8	23	
65 to 69	0	0	0	12	27	17	2	0	58	60.0	679	10180	41	125	
60 to 64	0	0	3	21	27	26	10	1	88	56.5	615	6941	105	486	
55 to 59	10	4	11	25	20	24	29	17	140	53.0	505	4134	215	1279	
50 to 54	29	27	22	22	2	16	30	34	182	49.9	337	1993	383	2738	
45 to 49	24	24	28	7	0	1	17	25	126	45.5	175	754	545	5099	
40 to 44	22	27	18	0	0	0	2	10	79	40.8	62	169	658	8114	
35 to 39	5	8	8	0	0	0	0	3	24	34.8	10	17	710	11562	
Dec															
60 to 64	0	0	0	0	6	3	0	0	9	55.8	744	12926	0	0	
55 to 59	5	5	6	13	20	16	10	7	82	53.9	714	9255	30	49	
50 to 54	13	13	14	14	16	19	17	11	117	50.2	600	5918	144	432	
45 to 49	19	12	13	28	43	38	25	28	206	45.3	469	3206	275	1440	
40 to 44	35	35	33	27	8	17	25	23	203	41.6	221	1432	523	3386	
35 to 39	1	7	6	6	0	0	15	7	42	35.7	107	684	637	6358	
30 to 34	12	7	8	4	0	0	1	13	45	30.7	67	247	677	9641	
25 to 29	8	14	13	1	0	0	0	4	40	27.2	21	20	723	13134	

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

SACRAMENTO, CALIFORNIA
WBAN 23232
TABLE B:

TRY Data (1962)

Latitude 38.50 N
Longitude 121.50 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
100 to 104	0	0	0	0	14	17	0	0	31	0.0	0.0	0.0	0.0	70.2	69.9	0.0	0.0	70.1
95 to 99	0	0	0	6	45	40	0	0	91	0.0	0.0	0.0	70.2	68.6	68.1	0.0	0.0	68.5
90 to 94	0	0	0	28	109	90	5	0	232	0.0	0.0	0.0	67.9	67.6	67.2	68.2	0.0	67.5
85 to 89	0	0	3	50	91	79	16	0	239	0.0	0.0	67.3	66.0	66.2	65.9	66.3	0.0	66.1
80 to 84	0	0	10	90	114	106	32	0	352	0.0	0.0	64.6	65.1	64.4	63.9	64.7	0.0	64.5
75 to 79	0	0	24	117	104	91	59	3	398	0.0	0.0	62.5	63.4	61.4	61.7	62.4	62.3	62.3
70 to 74	5	2	55	143	98	102	108	32	545	59.6	62.0	61.1	60.7	59.4	59.6	60.9	59.8	60.3
65 to 69	38	10	118	125	93	105	142	94	725	57.6	58.2	59.1	58.1	58.5	57.8	58.8	58.2	58.4
60 to 64	131	82	168	91	86	83	147	181	969	56.3	56.2	56.2	55.8	54.9	54.7	56.1	56.7	56.0
55 to 59	248	210	180	110	137	127	171	214	1397	53.6	54.0	53.5	52.9	51.2	51.8	52.9	53.6	53.1
50 to 54	223	304	155	128	69	103	149	203	1334	50.0	50.1	50.0	48.7	47.2	47.8	48.9	49.4	49.4
45 to 49	178	162	124	78	85	85	122	161	995	45.2	45.4	45.5	44.5	44.1	43.9	44.8	45.3	45.0
40 to 44	131	147	104	73	43	59	85	100	742	41.2	41.2	41.1	40.3	40.0	39.5	40.4	40.7	40.7
35 to 39	86	102	81	43	4	5	52	68	441	36.6	36.3	36.2	36.0	36.8	35.8	35.0	36.7	36.2
30 to 34	41	45	43	8	3	3	6	31	180	30.0	30.5	30.9	30.8	27.0	27.0	30.2	30.4	30.3
25 to 29	14	31	30	5	0	0	1	8	89	26.3	26.2	26.1	26.6	0.0	0.0	27.0	26.3	26.2

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Dry Bulb Temperature (F)						Wet Bulb	Percent Relative Humidity					Average Humidity Ratio (lb moisture/lb dry air)					Average wind MPH
Month	Daily Ave						Ave	Average					Average				
	Ave	Max	Min	Max	Min	4AM		10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	40.3	65	25	51	33	37.9	90	87	66	83	83	0.0038	0.0043	0.0047	0.0045	0.0043	5.7
Feb	46.6	60	28	53	42	44.4	91	85	75	86	85	0.0055	0.0059	0.0063	0.0059	0.0059	9.1
Mar	50.2	73	34	61	41	46.1	88	76	58	76	76	0.0051	0.0061	0.0062	0.0060	0.0058	7.7
Apr	60.3	87	39	76	47	52.6	83	61	41	64	65	0.0060	0.0075	0.0072	0.0070	0.0068	7.3
May	61.6	90	44	77	49	53.3	83	54	38	63	62	0.0064	0.0073	0.0069	0.0070	0.0069	8.9
Jun	70.0	104	48	88	54	58.1	78	47	28	53	53	0.0072	0.0083	0.0076	0.0081	0.0078	8.6
Jul	72.4	103	52	93	56	60.5	80	51	28	53	56	0.0079	0.0094	0.0090	0.0089	0.0087	7.0
Aug	72.5	104	52	91	58	61.2	80	52	30	55	58	0.0085	0.0099	0.0089	0.0090	0.0091	6.7
Sep	68.3	96	50	86	55	59.3	85	58	36	64	64	0.0082	0.0093	0.0089	0.0090	0.0088	6.4
Oct	60.9	92	47	72	52	56.3	89	77	61	83	79	0.0079	0.0090	0.0093	0.0091	0.0087	5.6
Nov	53.5	78	35	65	45	50.3	93	82	63	82	82	0.0064	0.0076	0.0079	0.0073	0.0072	3.6
Dec	45.1	62	25	52	40	43.8	94	92	80	92	91	0.0054	0.0058	0.0064	0.0060	0.0059	2.9
Year	58.5	104	25	72	48	52.0	86	69	50	71	71	0.0065	0.0075	0.0075	0.0073	0.0072	6.6

SACRAMENTO, CALIFORNIA

TRY Data (1962)

Latitude 38.50 N

WBAN 23232

Longitude 121.50 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	Above (100s)*	Base Heat	Above (100s)*	Base Heat	Above (100s)*	Base Heat	Above (100s)*	Base Heat	Above (100s)*	Base Heat	Below Base	Above 100s*	Below Base	Above 100s*
105	0	562	0	0	452	0	0	379	0	0	397	0	0	1777	0	0
104	0	551	0	0	441	0	0	368	0	1	386	0	0	1744	0	0
103	0	540	0	0	430	0	2	357	0	3	375	0	0	1711	0	0
102	0	529	0	0	419	0	6	346	0	5	364	0	0	1679	0	0
101	0	518	0	0	408	0	9	335	0	8	353	0	0	1646	0	0
100	0	507	0	0	397	0	11	324	0	13	343	0	0	1613	0	0
99	0	496	0	0	386	0	16	313	0	19	332	0	0	1580	0	0
98	0	485	0	0	375	0	23	302	1	25	321	1	0	1547	0	0
97	0	474	0	0	364	0	31	292	1	31	310	1	0	1514	0	0
96	0	463	0	2	353	0	41	281	1	41	300	1	0	1481	0	0
95	0	452	0	5	342	0	53	271	2	52	289	2	0	1449	0	0
94	0	441	0	7	332	0	66	260	2	62	279	2	0	1416	0	0
93	0	430	0	9	321	0	83	250	3	77	269	3	1	1383	0	0
92	0	419	0	13	310	0	104	240	4	95	259	4	2	1350	0	0
91	0	408	0	19	299	0	128	230	5	114	249	5	2	1317	0	0
90	0	397	0	28	288	1	155	221	6	136	239	6	4	1284	0	0
89	0	386	0	37	278	1	174	212	8	156	230	8	6	1251	0	0
88	1	375	0	44	267	1	189	202	10	174	220	9	7	1219	0	0
87	1	365	0	52	257	2	208	193	12	192	211	11	10	1186	0	0
86	1	354	0	63	246	2	226	185	14	208	202	13	13	1153	0	0
85	2	343	0	77	236	3	247	176	16	220	193	15	17	1120	0	0
84	3	332	0	88	226	4	268	168	19	234	185	17	21	1087	0	0
83	4	321	0	101	216	5	287	160	22	255	176	20	23	1054	0	0
82	6	310	0	119	206	6	310	152	25	277	168	23	29	1022	0	0
81	8	299	0	135	196	7	336	144	28	298	160	25	39	989	0	0
80	10	288	0	157	187	9	360	136	32	320	152	29	49	956	0	0
79	13	277	0	185	178	10	386	129	35	343	144	32	60	923	0	0
78	15	267	1	207	169	12	410	122	39	362	137	35	72	890	0	0
77	21	256	1	226	160	15	430	115	43	379	130	39	80	857	0	0
76	28	245	1	248	151	17	451	109	48	398	123	43	92	824	0	0
75	34	234	1	276	143	20	470	103	52	415	116	47	106	792	0	0
74	40	224	2	305	135	22	486	96	57	433	109	51	125	759	0	0
73	47	213	2	333	127	26	502	90	62	450	103	56	150	726	0	0
72	54	203	3	362	120	29	518	85	67	466	96	60	169	693	0	0
71	68	193	3	392	113	33	536	79	73	486	90	65	184	661	0	0
70	85	182	4	421	106	37	560	73	78	510	84	70	206	628	1	0
69	96	172	5	449	99	41	590	68	84	533	78	75	229	595	1	0
68	108	162	6	477	93	46	616	63	90	552	73	81	253	563	2	0
67	132	153	7	500	87	51	633	59	96	575	67	86	285	531	2	0
66	162	143	9	522	81	56	645	54	103	597	62	92	314	499	3	0
65	194	134	10	547	75	61	659	50	109	619	57	98	344	468	5	0
64	227	125	12	569	70	67	675	45	116	639	53	105	377	437	7	0
63	253	117	15	588	65	73	689	41	123	655	48	111	404	407	9	0
62	280	108	18	603	60	79	706	37	129	670	44	118	435	377	12	0
61	317	100	21	621	55	85	723	33	137	686	40	124	470	348	16	0
60	358	93	24	640	50	91	742	30	144	703	36	131	497	320	21	0
74	40	224	2	305	135	22	486	96	57	433	109	51	125	759	0	0
73	47	213	2	333	127	26	502	90	62	450	103	56	150	726	0	0
72	54	203	3	362	120	29	518	85	67	466	96	60	169	693	0	0
71	68	193	3	392	113	33	536	79	73	486	90	65	184	661	0	0
70	85	182	4	421	106	37	560	73	78	510	84	70	206	628	1	0
69	96	172	5	449	99	41	590	68	84	533	78	75	229	595	1	0
68	108	162	6	477	93	46	616	63	90	552	73	81	253	563	2	0
67	132	153	7	500	87	51	633	59	96	575	67	86	285	531	2	0
66	162	143	9	522	81	56	645	54	103	597	62	92	314	499	3	0
65	194	134	10	547	75	61	659	50	109	619	57	98	344	468	5	0
64	227	125	12	569	70	67	675	45	116	639	53	105	377	437	7	0
63	253	117	15	588	65	73	689	41	123	655	48	111	404	407	9	0
62	280	108	18	603	60	79	706	37	129	670	44	118	435	377	12	0
61	317	100	21	621	55	85	723	33	137	686	40	124	470	348	16	0
60	358	93	24	640	50	91	742	30	144	703	36	131	497	320	21	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

SACRAMENTO, CALIFORNIA
 WBAN 23232
 TABLE D:

TRY Data (1962)

Latitude 38.50 N
 Longitude 121.50 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	Below Base	Hrs
59	393	86	28	660	46	98	767	26	152	722	32	139	525	56	53	627	293	27		5065	538	3695	495
58	429	79	32	681	42	104	796	23	159	743	28	146	558	50	59	740	267	34		4812	489	3948	533
57	467	72	36	698	38	111	821	20	167	768	25	153	594	45	65	866	242	42		4544	442	4216	574
56	504	66	41	718	34	118	847	18	176	797	22	161	627	40	71	995	218	51		4270	398	4490	618
55	540	60	46	746	30	126	877	15	184	827	19	169	661	36	77	1156	196	61		3952	357	4808	664
54	572	55	52	779	27	133	898	13	193	848	16	178	695	32	84	1333	176	74		3634	319	5126	714
53	605	50	58	809	24	141	911	11	202	867	14	186	729	28	91	1496	157	88		3342	284	5418	767
52	637	45	64	833	21	149	921	10	212	889	12	195	762	24	98	1654	140	104		3062	252	5698	822
51	668	41	71	858	18	158	936	8	221	910	10	204	789	21	106	1800	124	121		2797	223	5963	881
50	700	37	77	879	16	167	952	7	230	931	8	213	816	18	114	1924	110	140		2556	196	6204	942
49	728	33	85	893	14	175	972	5	240	949	7	223	843	15	123	2021	97	160		2351	172	6409	1005
48	755	29	92	906	12	184	998	4	250	964	5	232	871	13	131	2108	85	180		2156	149	6604	1070
47	775	26	100	919	10	194	1017	3	260	985	4	242	897	11	140	2210	74	202		1956	128	6804	1137
46	797	23	107	935	9	203	1026	3	270	1005	3	252	921	9	149	2319	63	225		1755	110	7005	1206
45	823	20	116	956	7	212	1038	2	280	1020	2	262	942	8	158	2426	54	248		1553	93	7207	1277
44	848	18	124	973	6	222	1051	1	291	1036	2	272	957	6	168	2526	46	273		1367	79	7393	1350
43	870	15	133	988	5	232	1061	1	301	1051	1	283	973	5	178	2615	39	299		1201	66	7559	1425
42	891	13	141	1006	4	242	1068	1	312	1064	1	293	992	4	187	2697	33	325		1040	55	7720	1501
41	910	11	150	1020	3	252	1078	0	323	1074	0	304	1010	3	197	2764	27	353		902	45	7858	1579
40	930	9	160	1032	2	262	1086	0	334	1082	0	315	1027	2	208	2825	22	381		776	37	7984	1658
39	950	8	169	1045	2	272	1088	0	344	1089	0	326	1043	1	218	2893	18	409		651	30	8109	1739
38	967	7	179	1058	1	283	1090	0	355	1091	0	337	1056	1	228	2959	15	439		537	24	8223	1821
37	984	5	188	1069	1	294	1091	0	366	1092	0	348	1067	1	239	3019	12	468		436	19	8324	1903
36	1000	4	198	1077	1	304	1092	0	377	1092	0	359	1077	0	250	3062	9	499		359	15	8401	1987
35	1015	3	208	1081	1	315	1092	0	388	1092	0	369	1084	0	261	3096	7	530		298	12	8462	2071
34	1028	3	219	1083	0	326	1092	0	399	1092	0	380	1089	0	272	3131	6	561		245	9	8515	2156
33	1040	2	229	1084	0	337	1092	0	410	1092	0	391	1091	0	282	3155	4	592		205	7	8555	2242
32	1048	2	239	1085	0	348	1092	0	421	1093	0	402	1092	0	293	3178	3	624		171	5	8589	2327
31	1055	1	250	1087	0	359	1093	0	432	1094	0	413	1092	0	304	3204	2	656		134	3	8626	2413
30	1062	1	260	1089	0	369	1094	0	443	1094	0	424	1093	0	315	3224	1	688		103	2	8657	2500
29	1067	0	271	1091	0	380	1095	0	454	1095	0	435	1094	0	326	3238	1	720		78	1	8682	2587
28	1075	0	282	1093	0	391	1095	0	465	1095	0	446	1095	0	337	3252	0	753		54	1	8706	2673
27	1084	0	293	1094	0	402	1095	0	476	1095	0	457	1095	0	348	3267	0	785		28	0	8732	2761
26	1090	0	303	1095	0	413	1095	0	487	1095	0	468	1095	0	359	3278	0	818		11	0	8749	2848
25	1093	0	314	1095	0	424	1095	0	497	1095	0	479	1095	0	370	3283	0	851		3	0	8757	2936
24	1095	0	325	1095	0	435	1095	0	508	1095	0	490	1095	0	381	3285	0	884		0	0	8760	3023

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

SACRAMENTO, CALIFORNIA

WBAN 23232

TABLE E:

TRY Data (1962)

Latitude 38.50 N

Longitude 121.50 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:	5496	4468	3282	2243	1490	817	301	45	0	0	0
Annual Wet Bulb Cooling deg-hrs:	48759.	33276.	21034.	12317.	6382.	2584.	647.	61.	0.	0.	0.

TABLE F:

Annual Humidification/Dehumidification Requirements

At various Indoor Conditions and Degree Day Bases

(Pounds of Moisture)

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS ** Heating Degree Base												COOLING HUMIDITY RATIO HOURS ** Cooling Degree Base												Maintained Indoor Humidity Ratio*
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	49	49	48	45	40	32	24	18	13	9	6	.001		
.002	0	0	0	0	0	0	0	0	0	0	0	41	41	40	37	34	27	20	15	11	8	5	.002		
.003	0	0	0	0	0	0	0	0	0	0	0	32	32	32	30	28	23	17	13	9	7	5	.003		
.004	0	0	1	1	1	1	1	1	1	1	1	24	24	24	23	22	18	14	10	8	6	4	.004		
.005	0	1	1	2	2	2	2	2	2	2	2	17	17	17	17	16	14	11	8	6	4	3	.005		
.006	0	1	2	3	4	4	5	5	5	5	5	11	11	11	11	11	9	7	6	4	3	2	.006		
.007	0	1	3	5	6	7	8	8	9	9	9	6	6	6	6	6	6	5	4	3	2	1	.007		
.008	1	2	3	6	9	11	12	13	13	14	14	3	3	3	3	3	3	2	2	1	1	1	.008		
.009	1	2	4	7	11	15	17	19	20	20	21	1	1	1	1	1	1	1	1	1	0	0	.009		
.010	1	2	5	9	14	19	22	25	26	27	28	0	0	0	0	0	0	0	0	0	0	0	.010		
.011	1	2	6	10	16	22	28	31	33	35	36	0	0	0	0	0	0	0	0	0	0	0	.011		
.012	1	3	6	12	18	26	33	37	40	42	43	0	0	0	0	0	0	0	0	0	0	0	.012		
.013	1	3	7	13	21	30	38	43	47	49	51	0	0	0	0	0	0	0	0	0	0	0	.013		
.014	1	3	8	15	23	34	43	49	53	57	59	0	0	0	0	0	0	0	0	0	0	0	.014		
.015	1	3	8	16	26	37	48	55	60	64	67	0	0	0	0	0	0	0	0	0	0	0	.015		
.016	1	4	9	18	28	41	53	61	67	72	75	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	1	4	10	19	31	45	59	68	74	79	83	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	1	4	11	21	33	49	64	74	81	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	33	52	45	33	37	22	21	18	18	30	33	54	29
VERTICAL													
NORTH	100	100	100	98	89	78	81	92	100	100	100	100	91
WEST	39	58	58	53	55	44	42	39	37	41	41	54	46
SOUTH	26	49	52	52	69	62	58	42	31	32	27	41	44
EAST	51	61	56	51	55	43	44	38	37	50	50	70	48
% Possible Sun	46	62	71	79	87	92	97	96	92	84	63	46	79

FOOTNOTES: * Corrected For Cloud Cover.

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

SACRAMENTO, CALIFORNIA
WBAN 23232
TABLE H:

TRY Data (1962)

Latitude 38.50 N
Longitude 121.50 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	2009	1859	1490	1146	695	352	191	160	160	2097	1060	1081	967	761	585	379	237	170	155	155	1109	622	597
Feb	2031	1903	1608	1330	910	545	310	213	205	2340	1402	743	704	621	545	425	316	241	203	197	809	592	939
Mar	1793	1737	1594	1449	1137	799	523	333	274	2466	1855	1080	1064	994	918	760	595	463	372	339	1341	1111	1458
Apr	1362	1449	1481	1488	1321	1062	782	540	374	2394	2247	1246	1302	1306	1293	1157	965	767	598	482	1932	1863	2004
May	1033	1196	1339	1448	1405	1232	988	734	532	2252	2477	964	1069	1154	1220	1182	1059	895	723	590	1707	1894	2435
Jun	906	1084	1273	1423	1438	1312	1094	844	648	2157	2552	914	1076	1246	1380	1391	1272	1071	842	660	2036	2402	2684
Jul	962	1132	1297	1431	1417	1274	1047	798	601	2194	2521	971	1116	1260	1378	1360	1226	1019	794	620	2097	2407	2688
Aug	1186	1301	1375	1424	1312	1099	851	616	443	2242	2266	1161	1273	1339	1383	1272	1066	828	605	441	2154	2172	2368
Sep	1561	1558	1491	1411	1167	875	613	413	319	2323	1925	1443	1438	1377	1305	1087	828	595	417	331	2125	1790	1907
Oct	1871	1759	1521	1304	940	595	367	250	235	2279	1503	1160	1050	892	764	572	403	296	237	226	1376	967	1315
Nov	1963	1835	1500	1183	758	410	231	176	176	2108	1133	1140	1029	826	648	430	270	196	174	173	1200	703	782
Dec	1926	1791	1426	1072	634	305	169	148	148	1964	951	683	612	485	375	253	172	145	140	140	670	407	538
Year	1547	1548	1448	1342	1095	823	599	437	344	2234	1826	1050	1060	1023	984	857	703	559	440	364	1549	1414	1643

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	S	Under Clear Sky*								N	Corrected For Cloud Cover**								N
		SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NNW	NNE/ NNW	NNE/ NNW		S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ NNW	NNE/ NNW	
Jan	1743	1586	1253	953	559	262	144	131	131	928	812	630	480	306	185	135	127	127	127
Feb	1724	1599	1344	1110	743	420	230	170	166	616	580	513	452	349	253	190	163	161	161
Mar	1450	1437	1329	1216	941	641	399	255	224	872	876	823	764	627	482	368	296	276	276
Apr	1017	1151	1216	1237	1097	870	623	413	295	960	1042	1069	1068	955	790	617	471	386	386
May	724	899	1077	1196	1163	1017	795	572	399	719	827	934	1005	977	873	724	574	459	459
Jun	622	789	1006	1169	1189	1085	884	664	480	642	794	988	1134	1149	1052	867	665	495	495
Jul	668	838	1037	1179	1175	1053	845	626	449	687	836	1009	1134	1126	1013	824	626	468	468
Aug	867	1014	1121	1179	1089	905	682	478	344	853	994	1093	1145	1055	878	664	470	344	344
Sep	1233	1276	1236	1177	966	709	478	317	260	1139	1176	1140	1087	899	672	467	322	269	269
Oct	1574	1476	1278	1093	770	472	277	198	192	968	869	739	632	466	324	232	190	185	185
Nov	1699	1564	1265	994	613	315	172	145	144	978	866	688	537	346	213	155	142	142	142
Dec	1682	1540	1204	895	505	228	129	122	122	584	513	401	308	203	138	118	115	115	115
Year	1247	1262	1196	1116	901	666	473	342	268	829	850	837	813	706	574	448	348	286	286

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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SALT LAKE CITY, UTAH

WBAN 24127

TABLE A:

TRY Data (1948)

Latitude 40.80 N

Longitude 112.00 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															
50 to 54	0	0	0	1	5	0	2	2	10	43.5	740	16845	4	4	
45 to 49	0	0	1	7	7	5	2	1	23	41.0	724	13179	20	58	
40 to 44	5	7	8	10	23	17	4	3	77	37.5	687	9632	57	231	
35 to 39	17	10	11	22	26	24	17	18	145	33.9	581	6430	163	749	
30 to 34	20	25	21	27	18	20	22	20	173	29.1	433	3898	311	1937	
25 to 29	6	6	11	16	10	19	21	11	100	24.7	271	2184	473	3943	
20 to 24	21	12	7	8	4	6	12	20	90	20.1	179	1060	565	6539	
15 to 19	10	15	20	2	0	2	12	10	71	15.6	93	385	651	9584	
10 to 14	13	14	10	0	0	0	1	8	46	11.0	29	81	715	13000	
5 to 9	1	3	4	0	0	0	0	0	8	6.1	5	12	739	16651	
0 to 4	0	1	0	0	0	0	0	0	1	4.0	0	0	744	20359	
Feb															
55 to 59	0	0	0	1	7	3	0	0	11	44.2	670	16286	2	1	
50 to 54	0	0	0	9	4	2	0	0	15	41.6	653	12976	19	51	
45 to 49	2	1	3	8	19	15	1	1	50	38.6	629	9749	43	184	
40 to 44	9	8	10	13	16	15	19	12	102	36.4	548	6768	124	563	
35 to 39	11	12	14	23	14	20	11	15	120	32.1	437	4272	235	1427	
30 to 34	11	14	19	13	11	13	26	19	126	29.2	323	2348	349	2863	
25 to 29	31	25	17	6	12	11	10	21	133	24.6	185	1058	487	4933	
20 to 24	13	6	8	10	1	5	14	10	67	19.4	87	414	585	7649	
15 to 19	2	13	9	1	0	0	3	4	32	15.3	33	126	639	10721	
10 to 14	5	4	2	0	0	0	0	2	13	11.1	9	31	663	13986	
5 to 9	0	1	1	0	0	0	0	0	2	5.5	3	6	669	17321	
0 to 4	0	0	1	0	0	0	0	0	1	3.0	0	0	672	20675	
Mar															
60 to 64	0	0	0	1	5	2	0	0	8	45.1	743	20228	1	1	
55 to 59	0	0	0	5	4	8	0	0	17	42.8	731	16543	13	36	
50 to 54	1	3	3	7	10	7	6	2	39	41.1	705	12947	39	160	
45 to 49	7	1	5	5	6	7	7	8	46	38.3	669	9517	75	450	
40 to 44	11	10	11	19	20	21	14	12	118	35.5	582	6347	162	1000	
35 to 39	7	13	18	23	23	26	15	11	136	32.8	457	3717	287	2090	
30 to 34	25	18	25	20	18	13	31	27	177	29.6	305	1762	439	3855	
25 to 29	22	19	13	11	7	9	17	20	118	25.2	142	668	602	6481	
20 to 24	13	17	13	2	0	0	2	10	57	20.5	57	199	687	9732	
15 to 19	6	9	4	0	0	0	1	3	23	15.9	16	32	728	13285	
10 to 14	1	3	1	0	0	0	0	0	5	12.6	0	0	744	16973	

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

SALT LAKE CITY, UTAH
WBAN 24127
TABLE A:

TRY Data (1948)

Latitude 40.80 N
Longitude 112.00 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	1	0	0	0	1	53.0	720	23762	0	0
75 to 79	0	0	0	1	2	4	0	0	7	51.9	715	20169	5	7
70 to 74	0	0	0	5	10	10	1	0	26	51.7	708	16607	12	45
65 to 69	0	0	2	6	7	8	4	1	28	50.2	678	13157	42	195
60 to 64	5	4	11	13	16	13	9	6	77	47.3	635	9851	85	489
55 to 59	8	8	10	15	12	11	13	10	87	45.1	544	6900	176	1138
50 to 54	10	6	8	17	21	19	16	11	108	42.0	459	4380	261	2218
45 to 49	16	7	20	20	11	16	22	16	128	39.8	342	2379	376	3817
40 to 44	23	25	22	6	9	4	14	24	127	37.7	209	1006	511	6044
35 to 39	19	30	8	5	1	4	10	18	95	34.6	79	285	641	8923
30 to 34	8	4	7	2	0	1	1	4	27	31.2	15	64	705	12302
25 to 29	1	5	2	0	0	0	0	0	8	25.6	5	9	715	15847
20 to 24	0	1	0	0	0	0	0	0	1	22.0	0	0	720	19438
May														
85 to 89	0	0	0	2	5	5	0	0	12	55.8	741	20916	3	3
80 to 84	0	0	0	8	21	16	1	0	46	55.2	717	17253	27	60
75 to 79	0	0	4	15	13	21	10	0	63	53.3	673	13785	71	312
70 to 74	1	0	12	14	11	10	16	6	70	52.0	597	10613	147	860
65 to 69	5	6	18	14	9	8	16	18	94	50.5	515	7813	229	1780
60 to 64	15	9	11	10	6	9	13	12	85	47.6	429	5469	315	3156
55 to 59	12	12	10	8	10	6	11	16	85	44.8	341	3544	403	4951
50 to 54	15	15	12	6	9	17	10	8	92	42.6	253	2062	491	7189
45 to 49	7	10	14	13	9	1	10	10	74	39.8	172	1008	572	9855
40 to 44	19	21	12	3	0	0	6	18	79	37.1	90	354	654	12921
35 to 39	14	15	0	0	0	0	0	4	33	34.5	27	77	717	16364
30 to 34	5	4	0	0	0	0	0	1	10	31.0	5	8	739	20015
25 to 29	0	1	0	0	0	0	0	0	1	28.0	0	0	744	23727
Jun														
90 to 94	0	0	0	0	1	6	0	0	7	59.7	718	17206	2	1
85 to 89	0	0	0	6	26	27	3	0	62	57.8	694	13645	26	40
80 to 84	0	0	0	30	16	17	12	0	75	56.9	623	10353	97	348
75 to 79	0	0	17	20	24	16	18	0	95	56.4	541	7438	179	1033
70 to 74	1	0	22	17	7	13	21	9	90	55.3	454	4973	266	2168
65 to 69	11	8	28	4	6	4	17	26	104	53.6	351	2957	369	3752
60 to 64	29	24	9	6	4	1	8	33	114	51.9	244	1459	476	5854
55 to 59	34	33	5	2	6	3	5	12	100	50.4	129	539	591	8534
50 to 54	12	22	9	5	0	3	5	7	63	48.7	53	98	667	11693
45 to 49	3	3	0	0	0	0	1	3	10	46.9	2	1	718	15196

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

SALT LAKE CITY, UTAH
WBAN 24127
TABLE A:

TRY Data (1948)

Latitude 40.80 N
Longitude 112.00 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	hours below			degree hours	hours above	degree hours	
Jul															
100 to 104	0	0	0	0	0	1	0	0	1	60.0	744	19499	0	0	
95 to 99	0	0	0	0	11	12	0	0	23	60.9	739	15784	5	5	
90 to 94	0	0	0	9	22	29	5	0	65	60.4	700	12174	44	115	
85 to 89	0	0	4	40	39	28	12	0	123	59.5	607	8877	137	538	
80 to 84	1	0	22	27	12	13	24	2	101	59.2	494	6146	250	1527	
75 to 79	8	9	28	10	5	5	27	9	101	57.4	392	3930	352	3031	
70 to 74	15	10	21	4	1	3	14	32	100	56.0	291	2241	453	5062	
65 to 69	30	23	11	2	3	2	9	35	115	53.3	187	1038	557	7579	
60 to 64	24	28	5	1	0	0	1	12	71	51.2	77	375	667	10636	
55 to 59	11	13	2	0	0	0	1	1	28	47.2	36	113	708	14094	
50 to 54	2	8	0	0	0	0	0	2	12	45.1	5	23	739	17724	
45 to 49	2	2	0	0	0	0	0	0	4	40.3	2	2	742	21423	
Aug															
95 to 99	0	0	0	0	7	8	0	0	15	61.3	743	16341	1	1	
90 to 94	0	0	0	9	35	27	1	0	72	60.6	715	12683	29	63	
85 to 89	0	0	1	36	31	34	9	0	111	59.1	608	9346	136	446	
80 to 84	0	0	13	30	12	14	19	0	88	58.9	508	6557	236	1377	
75 to 79	3	0	28	9	7	9	33	12	101	57.6	424	4222	320	2762	
70 to 74	20	20	25	8	1	1	18	23	116	55.7	320	2363	424	4623	
65 to 69	30	28	16	1	0	0	10	33	118	53.2	193	1081	551	7061	
60 to 64	23	24	7	0	0	0	3	21	78	52.5	84	392	660	10092	
55 to 59	11	9	3	0	0	0	0	3	26	49.0	35	123	709	13543	
50 to 54	6	10	0	0	0	0	0	1	17	46.6	10	18	734	17158	
45 to 49	0	2	0	0	0	0	0	0	2	43.0	1	1	743	20861	
Sep															
95 to 99	0	0	0	0	1	1	0	0	2	58.5	720	22385	0	0	
90 to 94	0	0	0	3	20	17	0	0	40	59.3	707	18801	13	16	
85 to 89	0	0	0	15	8	9	0	0	32	57.0	667	15375	53	190	
80 to 84	0	0	2	11	15	15	3	0	46	56.8	628	12126	92	541	
75 to 79	2	2	11	21	13	17	10	0	76	55.3	572	9116	148	1131	
70 to 74	10	7	16	10	13	8	20	8	92	53.4	482	6454	238	2069	
65 to 69	13	12	14	12	10	7	17	24	109	52.0	391	4254	329	3469	
60 to 64	9	12	13	9	10	11	18	10	92	50.3	284	2577	436	5392	
55 to 59	13	8	14	9	0	5	16	19	84	48.1	194	1386	526	7801	
50 to 54	21	19	11	0	0	0	4	20	75	45.3	124	604	596	10619	
45 to 49	17	18	6	0	0	0	2	7	50	42.0	52	193	668	13808	
40 to 44	4	9	2	0	0	0	0	2	17	38.8	16	41	704	17256	
35 to 39	1	3	1	0	0	0	0	0	5	35.0	2	5	718	20820	

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

SALT LAKE CITY, UTAH
WBAN 24127
TABLE A:

TRY Data (1948)

Latitude 40.80 N
Longitude 112.00 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Oct															
80 to 84	0	0	0	2	9	4	0	0	15	55.1	742	21991	2	1	
75 to 79	0	0	0	8	14	8	0	0	30	53.5	716	18331	28	61	
70 to 74	0	0	1	15	17	15	1	2	51	51.8	684	14831	60	281	
65 to 69	4	0	6	11	7	8	5	4	45	50.0	631	11555	113	725	
60 to 64	7	7	8	15	14	15	11	5	82	48.4	575	8522	169	1412	
55 to 59	1	3	12	13	14	12	12	3	70	46.3	495	5853	249	2463	
50 to 54	11	10	14	15	12	19	18	12	111	44.1	420	3567	324	3897	
45 to 49	19	19	18	8	1	6	23	22	116	41.2	282	1800	462	5850	
40 to 44	27	28	20	3	3	3	20	30	134	37.8	166	658	578	8428	
35 to 39	16	18	10	3	2	3	3	14	69	35.2	51	129	693	11619	
30 to 34	8	8	3	0	0	0	0	1	20	31.3	3	5	741	15215	
25 to 29	0	0	1	0	0	0	0	0	1	27.0	0	0	744	18930	
Nov															
60 to 64	0	0	0	2	6	3	0	0	11	47.0	718	19126	2	2	
55 to 59	2	3	3	10	10	6	3	4	41	45.4	695	15582	25	58	
50 to 54	6	6	5	8	5	7	2	4	43	42.7	649	12211	71	287	
45 to 49	1	0	5	5	8	5	8	3	35	40.3	613	9062	107	738	
40 to 44	6	6	4	8	11	15	10	6	66	36.6	568	6095	152	1371	
35 to 39	13	11	12	25	30	17	17	17	142	33.0	466	3471	254	2347	
30 to 34	31	32	29	26	18	27	20	25	208	30.1	276	1545	444	4021	
25 to 29	14	12	19	6	2	9	23	16	101	25.6	122	595	598	6671	
20 to 24	9	11	9	0	0	0	4	12	45	20.9	53	178	667	9854	
15 to 19	8	9	4	0	0	1	2	2	26	16.7	9	13	711	13289	
10 to 14	0	0	0	0	0	0	1	1	2	13.0	0	0	720	16876	
Dec															
50 to 54	0	0	0	3	6	1	0	0	10	40.1	744	19499	0	0	
45 to 49	1	5	6	5	3	8	9	2	39	37.5	713	15831	31	52	
40 to 44	6	3	5	6	9	3	4	10	46	35.5	681	12334	63	275	
35 to 39	7	6	7	8	11	10	9	10	68	32.8	630	9064	114	725	
30 to 34	14	8	4	16	18	22	14	9	105	28.9	542	6117	202	1498	
25 to 29	9	15	16	26	29	16	6	8	125	25.2	429	3676	315	2777	
20 to 24	29	29	30	18	13	18	23	30	190	21.0	269	1873	475	4694	
15 to 19	9	13	10	7	4	9	12	4	68	16.5	129	941	615	7482	
10 to 14	5	6	8	4	0	4	7	8	42	11.9	72	445	672	10706	
5 to 9	7	2	1	0	0	2	7	5	24	7.4	36	177	708	14158	
0 to 4	5	4	6	0	0	0	2	7	24	1.8	20	37	724	17738	
-5 to -1	1	2	0	0	0	0	0	0	3	-2.0	1	2	743	21423	

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

SALT LAKE CITY, UTAH

WBAN 24127

TABLE B:

TRY Data (1948)

Latitude 40.80 N

Longitude 112.00 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	1	0	0	1	0.0	0.0	0.0	0.0	0.0	60.0	0.0	0.0	60.0
95 to 99	0	0	0	0	19	21	0	0	40	0.0	0.0	0.0	0.0	60.6	61.2	0.0	0.0	60.9
90 to 94	0	0	0	21	78	79	6	0	184	0.0	0.0	0.0	61.5	60.2	59.9	60.5	0.0	60.2
85 to 89	0	0	5	99	109	103	24	0	340	0.0	0.0	60.6	59.1	58.6	58.2	59.5	0.0	58.7
80 to 84	1	0	37	108	86	79	59	2	372	60.0	0.0	59.2	57.4	56.9	57.4	58.4	61.5	57.7
75 to 79	13	11	88	84	78	80	98	21	473	57.1	56.7	56.9	55.9	55.1	54.9	56.6	57.3	56.0
70 to 74	47	37	97	73	60	60	91	80	545	54.8	55.0	55.4	53.2	51.9	53.2	54.7	55.2	54.3
65 to 69	93	77	95	50	42	37	78	141	613	52.7	52.9	52.7	50.3	50.5	51.1	53.4	52.4	52.3
60 to 64	112	108	64	57	61	54	63	99	618	50.7	50.7	49.7	48.6	48.0	48.0	50.1	50.8	49.9
55 to 59	92	89	59	63	63	54	61	68	549	48.1	48.0	46.9	45.1	45.1	45.3	47.7	47.4	46.9
50 to 54	84	99	62	71	72	75	63	69	595	44.8	45.1	44.3	42.5	42.0	42.8	43.7	44.5	43.8
45 to 49	75	68	78	71	64	63	85	73	577	40.8	41.1	39.9	39.3	38.7	39.4	40.5	40.7	40.1
40 to 44	110	117	94	68	91	78	91	117	766	37.2	37.4	37.1	36.3	35.4	36.0	37.7	37.6	36.9
35 to 39	105	118	81	109	107	104	82	107	813	34.3	34.1	33.6	32.4	32.4	33.0	33.7	34.0	33.4
30 to 34	122	113	108	104	83	96	114	106	846	30.2	30.1	29.6	28.8	28.3	29.2	29.9	30.0	29.6
25 to 29	83	83	79	65	60	64	77	76	587	25.6	25.7	25.1	24.6	24.4	24.7	24.9	25.0	25.0
20 to 24	85	76	67	38	18	29	55	82	450	20.2	20.9	21.3	19.8	20.0	19.6	20.4	20.8	20.5
15 to 19	35	59	47	10	4	12	30	23	220	16.2	16.3	16.2	14.9	16.5	16.3	15.8	14.8	16.0
10 to 14	24	27	21	4	0	4	9	19	108	11.0	11.3	11.8	11.5	0.0	12.5	11.9	11.6	11.5
5 to 9	8	6	6	0	0	2	7	5	34	6.9	6.3	6.5	0.0	0.0	8.0	7.0	8.0	7.0
0 to 4	5	5	7	0	0	0	2	7	26	2.0	1.4	2.0	0.0	0.0	0.0	2.5	2.0	1.9
-5 to -1	1	2	0	0	0	0	0	0	3	-1.0	-2.5	0.0	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		4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	29.9	54	4	39	22	27.1	83	70	64	77	75	0.0027	0.0030	0.0033	0.0030	0.0030	7.0
Feb	33.3	58	4	42	25	29.0	74	59	54	74	67	0.0027	0.0028	0.0032	0.0032	0.0029	9.9
Mar	35.3	63	14	44	27	30.8	76	61	56	70	68	0.0029	0.0031	0.0032	0.0034	0.0032	10.3
Apr	49.5	80	23	60	39	41.0	69	49	42	58	55	0.0045	0.0044	0.0044	0.0049	0.0045	11.1
May	59.4	89	29	72	45	45.8	59	34	27	40	42	0.0047	0.0045	0.0043	0.0051	0.0047	10.2
Jun	68.6	93	47	81	55	53.7	63	36	28	44	45	0.0070	0.0068	0.0060	0.0074	0.0069	9.0
Jul	76.3	100	46	90	61	56.3	48	26	19	31	33	0.0069	0.0068	0.0061	0.0072	0.0068	10.4
Aug	75.5	98	47	90	62	56.2	49	27	19	34	35	0.0070	0.0069	0.0061	0.0072	0.0069	12.1
Sep	66.4	95	35	81	52	51.0	55	33	24	44	41	0.0058	0.0060	0.0053	0.0065	0.0059	9.1
Oct	52.9	83	29	67	42	43.5	67	44	38	62	55	0.0046	0.0049	0.0050	0.0055	0.0049	8.5
Nov	35.9	64	13	45	28	31.9	80	68	57	76	72	0.0035	0.0037	0.0035	0.0035	0.0035	8.9
Dec	26.3	52	-4	34	18	23.8	85	74	73	82	80	0.0024	0.0025	0.0028	0.0025	0.0025	9.6
Year	50.9	100	-4	62	40	40.9	67	48	42	58	56	0.0046	0.0046	0.0044	0.0050	0.0046	9.7

SALT LAKE CITY, UTAH

WBAN 24127

TABLE D:

TRY Data (1948)

Latitude 40.80 N

Longitude 112.00 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																24-HOUR SUMMARY			
	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**		HEATING		COOLING					
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg	Hrs	Deg				
	Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Below		Above					
	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	100s*	Base	100s*				
101	0	576	0	0	489	0	0	452	0	0	467	0	0	1859	0	8760	4391	0	0	
100	0	565	0	0	478	0	0	441	0	0	456	0	0	1826	0	8759	4303	1	0	
99	0	554	0	0	467	0	0	431	0	1	445	0	0	1793	0	8759	4216	1	0	
98	0	543	0	0	456	0	1	420	0	2	434	0	0	1760	0	8756	4128	4	0	
97	0	532	0	0	445	0	4	409	0	5	423	0	0	1727	0	8751	4041	9	0	
96	0	521	0	0	434	0	7	398	0	11	412	0	0	1695	0	8741	3953	19	0	
95	0	511	0	0	424	0	14	387	0	19	402	0	0	1662	0	8727	3866	33	0	
94	0	500	0	1	413	0	23	376	0	27	391	1	0	1629	0	8707	3779	53	1	
93	0	489	0	4	402	0	32	365	1	39	380	1	0	1596	0	8684	3692	76	2	
92	0	478	0	6	391	0	45	355	1	52	370	1	2	1563	0	8654	3605	106	2	
91	0	467	0	9	380	0	66	344	2	67	359	2	3	1530	0	8613	3519	147	4	
90	0	456	0	16	369	0	87	334	2	89	349	3	5	1497	0	8562	3433	198	5	
89	0	445	0	27	358	0	106	324	3	113	339	4	7	1465	0	8506	3347	254	8	
88	0	434	0	42	348	1	131	315	4	135	330	5	10	1432	0	8441	3262	319	10	
87	0	423	0	61	337	1	159	305	6	154	320	6	15	1399	0	8370	3178	390	14	
86	1	412	0	81	327	2	179	296	8	172	311	8	21	1366	0	8305	3095	455	18	
85	3	401	0	104	317	3	197	287	10	192	302	10	27	1333	0	8235	3012	525	23	
84	5	390	0	133	307	4	215	278	12	210	293	12	34	1300	0	8160	2930	600	29	
83	9	379	0	157	298	6	235	269	14	224	284	14	43	1267	0	8091	2849	669	35	
82	17	368	0	180	288	7	254	261	16	239	275	16	56	1235	0	8013	2769	747	42	
81	26	358	0	198	279	9	269	252	19	255	267	19	68	1202	0	7943	2689	817	50	
80	36	347	1	215	271	11	284	244	22	272	258	21	80	1169	0	7869	2610	891	58	
79	48	337	1	233	262	14	298	236	25	292	250	24	95	1136	0	7787	2531	973	68	
78	64	326	2	246	253	16	313	228	28	311	242	27	110	1103	0	7704	2454	1056	78	
77	83	316	2	265	245	18	327	220	31	327	235	30	130	1071	0	7610	2377	1150	89	
76	101	306	3	286	237	21	340	213	34	339	227	34	156	1038	0	7512	2302	1248	101	
75	120	296	5	303	229	24	359	205	38	354	220	37	179	1005	1	7405	2227	1355	114	
74	139	286	6	320	221	27	377	198	41	369	212	41	195	973	1	7298	2154	1462	128	
73	157	277	7	336	213	31	388	191	45	380	205	45	211	941	2	7203	2081	1557	143	
72	178	268	9	352	206	34	399	184	49	390	198	48	229	909	3	7104	2010	1656	159	
71	200	259	11	366	198	38	413	177	53	404	191	52	246	877	4	6991	1939	1769	176	
70	219	250	13	378	191	41	425	170	57	417	184	57	266	846	6	6869	1870	1891	194	
69	234	241	15	394	184	45	435	164	62	425	177	61	287	815	8	6751	1802	2009	214	
68	254	233	18	408	177	49	443	157	66	433	171	65	304	785	10	6633	1735	2127	235	
67	275	224	20	420	170	53	448	151	71	442	164	69	320	755	13	6515	1669	2245	257	
66	291	216	23	427	164	58	455	144	75	449	158	74	334	726	17	6403	1604	2357	280	
65	311	208	26	431	157	62	466	138	80	456	151	78	348	698	21	6268	1541	2492	304	
64	329	200	29	441	150	66	476	132	84	462	145	83	363	670	27	6130	1479	2630	329	
63	343	193	33	451	144	71	486	125	89	470	139	88	378	643	33	6009	1418	2751	356	
62	355	185	36	460	137	75	498	119	94	482	132	92	390	617	39	5883	1359	2877	384	
61	367	178	40	473	131	80	511	114	99	495	126	97	398	591	46	5764	1301	2996	414	
60	379	171	44	486	125	85	525	108	104	507	120	102	410	566	54	5643	1244	3117	444	
59	394	164	47	496	119	90	543	102	110	520	115	107	424	542	63	5516	1188	3244	476	
58	410	157	51	504	113	95	559	97	115	532	109	113	435	518	71	5408	1133	3352	509	
57	423	150	56	515	107	100	571	91	121	540	103	118	447	494	81	5307	1080	3453	543	
56	433	143	60	529	101	105	582	86	127	550	98	124	462	471	91	5202	1027	3558	578	

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

SALT LAKE CITY, UTAH
WBAN 24127

TRY Data (1948)

Latitude 40.80 N
Longitude 112.00 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*
55	441	137	64	545	96	110	591	81	132	562	92	129	475	121	77	1058	449	101	5086	976	3674	614
54	451	130	69	561	90	116	603	76	138	577	87	135	486	115	82	1117	427	112	4964	925	3796	652
53	461	124	73	573	85	122	615	71	145	593	82	141	495	109	87	1162	405	123	4859	876	3901	690
52	473	118	78	588	80	127	628	67	151	605	77	147	503	103	92	1212	384	135	4749	828	4011	730
51	486	111	83	604	75	133	644	62	157	618	72	153	513	97	97	1267	364	147	4625	781	4135	770
50	499	105	88	619	70	139	660	58	164	634	68	159	531	91	102	1317	344	160	4498	736	4262	812
49	514	100	93	633	66	146	675	53	170	649	63	165	548	86	108	1365	324	174	4374	691	4386	856
48	527	94	98	648	61	152	691	49	177	661	59	172	563	80	113	1407	305	188	4260	648	4500	900
47	543	88	103	662	57	159	705	45	184	672	54	179	582	75	119	1445	287	202	4149	606	4611	946
46	560	83	109	675	52	165	717	41	191	685	50	185	603	70	125	1485	269	217	4034	565	4726	992
45	576	78	115	689	48	172	727	38	198	699	46	192	621	65	131	1534	251	232	3912	526	4848	1040
44	591	72	120	704	44	179	744	34	206	716	42	199	641	60	137	1590	234	247	3772	487	4988	1089
43	612	67	126	719	40	186	761	31	213	732	39	207	664	56	144	1652	217	263	3619	450	5141	1140
42	639	63	133	735	37	194	774	27	221	744	35	214	682	52	151	1718	201	280	3467	415	5293	1192
41	655	58	139	749	33	201	790	24	229	758	32	222	697	48	158	1788	186	298	3321	381	5439	1246
40	669	54	146	759	30	208	811	21	237	774	28	229	712	44	165	1863	171	316	3170	348	5590	1301
39	685	50	152	777	26	216	838	19	245	794	25	237	725	40	172	1937	157	335	3003	317	5757	1358
38	701	46	159	802	23	224	868	16	254	814	22	245	739	36	179	2010	144	355	2824	288	5936	1416
37	717	42	167	826	21	232	892	14	262	837	20	253	755	33	187	2079	132	375	2652	261	6108	1476
36	731	38	174	843	18	241	907	12	271	857	17	262	772	30	194	2136	120	396	2512	235	6248	1538
35	749	35	181	861	16	249	922	10	281	876	15	271	791	26	202	2198	109	418	2362	211	6398	1601
34	771	31	189	885	13	258	936	9	290	899	13	279	812	24	210	2274	98	440	2181	188	6579	1666
33	794	28	197	909	11	267	949	7	299	926	11	289	837	21	218	2348	88	463	1995	167	6765	1733
32	815	25	205	932	10	276	968	6	309	947	9	298	866	18	227	2413	79	487	1817	148	6943	1801
31	833	23	213	950	8	285	985	5	319	961	8	307	891	16	236	2480	71	512	1658	131	7102	1872
30	854	20	221	968	7	295	1002	4	329	977	7	317	908	14	245	2544	63	537	1506	115	7254	1943
29	877	18	230	986	6	305	1021	3	339	991	6	327	921	13	254	2606	56	563	1356	100	7404	2017
28	894	16	239	1001	5	315	1035	2	349	1007	5	337	935	11	263	2669	50	589	1219	88	7541	2092
27	909	14	248	1014	4	325	1046	2	359	1020	4	347	949	9	272	2720	44	616	1100	76	7660	2168
26	925	12	257	1027	3	335	1058	1	370	1032	3	357	967	8	282	2760	38	643	989	66	7771	2245
25	940	10	266	1038	2	345	1068	1	381	1043	3	368	984	7	292	2798	33	671	886	56	7874	2323
24	954	9	276	1048	2	356	1076	1	391	1050	2	378	999	6	302	2837	29	699	794	48	7966	2402
23	976	8	285	1059	1	366	1080	0	402	1055	2	389	1013	5	312	2880	24	728	696	40	8064	2482
22	996	7	295	1065	1	377	1084	0	413	1061	1	399	1023	4	322	2931	21	757	599	34	8161	2563
21	1005	6	305	1069	1	388	1086	0	424	1068	1	410	1031	3	332	2982	17	787	518	28	8242	2646
20	1011	5	315	1077	1	398	1089	0	435	1074	1	421	1041	3	343	3031	15	817	436	24	8324	2728
19	1020	4	326	1081	0	409	1091	0	446	1078	1	432	1050	2	353	3074	12	847	364	20	8396	2812
18	1031	3	336	1083	0	420	1092	0	456	1081	0	442	1056	2	364	3107	10	878	308	16	8452	2896
17	1043	3	346	1085	0	431	1094	0	467	1084	0	453	1061	2	374	3135	9	909	256	14	8504	2981
16	1052	2	357	1088	0	442	1095	0	478	1087	0	464	1069	1	385	3152	7	941	216	11	8544	3066
15	1058	2	367	1090	0	453	1095	0	489	1089	0	475	1075	1	396	3167	6	972	185	9	8575	3152
14	1066	1	378	1091	0	463	1095	0	500	1089	0	486	1077	1	406	3185	5	1004	156	8	8604	3238
13	1073	1	389	1092	0	474	1095	0	511	1091	0	497	1079	1	417	3204	4	1036	125	6	8635	3324
12	1076	1	399	1093	0	485	1095	0	522	1092	0	508	1083	1	428	3219	3	1068	100	5	8660	3411
11	1078	1	410	1095	0	496	1095	0	533	1093	0	519	1084	0	439	3229	3	1101	85	4	8675	3497
10	1080	1	421	1095	0	507	1095	0	544	1093	0	529	1085	0	450	3240	2	1133	71	3	8689	3584

FOOTNOTES: * Heating and Cooling Degree Hrs are in Hundreds * 565 x 100 = 56500 Deg Hrs)
** The Hours Below the Base Temp for any X-Hr per 1 * calculated by subtracting the Hrs Above from X times 365

SALT LAKE CITY, UTAH
WBAN 24127
TABLE 0:

TRY Date (1948)

Latitude 40.80 N
Longitude 112.00 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BY TIME OF DAY														2A. HOURLY SUMMARY			
BASE	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**		HEATING		COOLING		
TEMP Hrs	Deg-Hrs		Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg	Hrs	Deg	
(F) Above (100s)*	Above (100s)*		Above (100s)*	Above (100s)*	Above (100s)*	Above (100s)*	Above (100s)*	Above (100s)*	Above (100s)*	Above (100s)*	Above (100s)*	Above (100s)*	Below Hrs	Above Hrs	Below Hrs	Above Hrs	
Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	
9 1083	1	432	1095	0	518	1095	0	555	1093	0	540	1086	0	460	3249	2	1165
8 1085	0	443	1095	0	529	1095	0	566	1094	0	551	1088	0	471	3254	2	1198
7 1086	0	453	1095	0	540	1095	0	577	1095	0	562	1090	0	482	3256	1	1230
6 1087	0	464	1095	0	551	1095	0	588	1095	0	573	1092	0	493	3259	1	1263
5 1088	0	475	1095	0	562	1095	0	599	1095	0	584	1093	0	504	3263	1	1296
4 1089	0	486	1095	0	573	1095	0	610	1095	0	595	1093	0	515	3266	1	1328
3 1090	0	497	1095	0	584	1095	0	621	1095	0	606	1094	0	526	3269	0	1361
2 1091	0	508	1095	0	595	1095	0	632	1095	0	617	1094	0	537	3272	0	1394
1 1093	0	519	1095	0	606	1095	0	643	1095	0	628	1095	0	548	3276	0	1426
0 1094	0	530	1095	0	617	1095	0	654	1095	0	639	1095	0	559	3280	0	1459
-1 1095	0	541	1095	0	628	1095	0	664	1095	0	650	1095	0	570	3283	0	1492
-2 1095	0	552	1095	0	639	1095	0	675	1095	0	661	1095	0	581	3284	0	1525
-3 1095	0	563	1095	0	650	1095	0	686	1095	0	672	1095	0	592	3284	0	1558
-4 1095	0	574	1095	0	661	1095	0	697	1095	0	683	1095	0	603	3284	0	1590
-5 1095	0	584	1095	0	671	1095	0	708	1095	0	694	1095	0	613	3285	0	1623

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

SALT LAKE CITY, UTAH

TRY Data (1948)

Latitude 40.80 N

WBAN 24127

Longitude 112.00 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:	2889	2156	1337	657	211	29	3	0	0	0	0
Annual Wet Bulb Cooling deg-hrs:	18902.	10981.	5269.	1935.	444.	50.	3.	0.	0.	0.	0.

TABLE F:

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

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **												COOLING HUMIDITY RATIO HOURS **												Maintained Indoor Humidity Ratio
	Heating Degree Base												Cooling Degree Base												
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80			
.001	0	0	0	0	0	0	0	0	0	0	0	26	25	23	21	19	17	15	11	9	6	4	.001		
.002	1	1	1	1	1	1	1	1	1	1	1	19	19	17	16	15	13	11	9	7	5	3	.002		
.003	2	2	3	3	3	3	3	3	3	3	3	13	13	12	12	11	10	8	7	5	3	2	.003		
.004	3	5	5	6	6	6	6	6	6	6	6	8	8	8	7	7	7	6	5	3	2	1	.004		
.005	5	7	8	9	10	10	11	11	11	11	12	5	5	5	4	4	4	4	3	2	1	1	.005		
.006	6	9	11	13	14	15	16	16	17	17	18	3	3	3	3	2	2	2	2	1	1	0	.006		
.007	8	11	14	17	19	20	21	22	23	24	25	1	1	1	1	1	1	1	1	1	0	0	.007		
.008	9	14	17	21	23	25	27	28	30	31	32	1	1	1	1	1	1	1	0	0	0	0	.008		
.009	11	16	21	25	27	30	32	34	36	38	40	0	0	0	0	0	0	0	0	0	0	0	.009		
.010	12	18	24	28	32	35	38	40	43	45	47	0	0	0	0	0	0	0	0	0	0	0	.010		
.011	13	20	27	32	36	40	43	47	50	53	55	0	0	0	0	0	0	0	0	0	0	0	.011		
.012	15	23	30	36	41	45	49	53	57	60	63	0	0	0	0	0	0	0	0	0	0	0	.012		
.013	16	25	33	40	45	50	54	59	63	67	71	0	0	0	0	0	0	0	0	0	0	0	.013		
.014	18	27	36	44	50	55	60	65	70	75	78	0	0	0	0	0	0	0	0	0	0	0	.014		
.015	19	30	39	48	54	60	66	71	77	82	86	0	0	0	0	0	0	0	0	0	0	0	.015		
.016	21	32	42	52	59	65	71	78	84	89	94	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	22	34	45	55	63	70	77	84	91	97	102	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	23	36	48	59	67	75	82	90	97	104	110	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	36	46	48	55	41	40	23	20	22	26	40	57	34
VERTICAL													
NORTH	100	100	100	99	92	87	83	92	100	100	100	100	93
WEST	46	55	63	67	61	60	46	42	39	40	52	61	52
SOUTH	26	40	50	68	68	74	56	41	32	26	32	43	46
EAST	44	57	57	69	60	58	42	38	39	41	49	69	50
% Possible Sun	48	56	64	67	73	79	84	83	84	73	54	45	70

FOOTNOTES: * Corrected For Cloud Cover.

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

SALT LAKE CITY, UTAH
WBAN 24127
TABLE H:

TRY Data (1948)

Latitude 40.80 N
Longitude 112.00 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	1951	1819	1457	1113	663	336	177	148	148	1981	949	959	903	741	584	377	226	150	135	135	963	517	639
Feb	2042	1906	1588	1299	866	500	285	195	193	2289	1313	835	783	668	563	407	282	212	182	180	893	589	989
Mar	1908	1841	1675	1506	1156	793	512	327	268	2544	1844	1023	1016	942	857	689	524	404	329	304	1218	967	1454
Apr	1519	1597	1608	1591	1386	1097	801	543	378	2580	2347	1056	1068	1041	1004	889	752	631	535	480	1414	1355	1894
May	1191	1359	1498	1600	1517	1317	1038	756	540	2510	2690	1057	1141	1195	1230	1160	1031	870	713	598	1739	1867	2362
Jun	1050	1242	1438	1595	1573	1424	1158	873	648	2470	2847	1002	1112	1221	1309	1284	1183	1014	838	691	1784	2042	2561
Jul	1113	1296	1467	1597	1550	1382	1108	826	604	2489	2785	1089	1254	1393	1496	1446	1295	1058	816	625	2196	2448	2590
Aug	1373	1490	1558	1589	1439	1194	907	640	449	2537	2487	1268	1380	1430	1446	1305	1085	837	611	450	2219	2162	2254
Sep	1751	1727	1618	1502	1215	887	606	401	314	2533	2020	1506	1497	1408	1309	1068	800	575	412	341	2107	1712	1843
Oct	2001	1885	1624	1368	973	609	363	244	227	2374	1497	1354	1269	1095	927	675	447	301	232	222	1564	1020	1293
Nov	1987	1842	1488	1153	712	370	204	164	164	2079	1062	885	839	704	571	384	238	167	150	149	905	529	788
Dec	1898	1766	1402	1050	601	289	156	137	136	1882	857	613	562	454	353	232	160	132	127	127	591	354	570
Year	1646	1646	1535	1414	1139	852	611	439	340	2355	1895	1055	1070	1027	973	829	671	531	424	359	1470	1301	1603

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	1692	1553	1226	926	531	248	135	121	120	822	764	620	485	304	174	118	110	110
Feb	1738	1603	1331	1081	701	385	207	158	157	701	650	554	464	329	224	166	148	147
Mar	1551	1525	1393	1256	954	638	391	248	218	835	840	780	710	565	423	320	261	247
Apr	1148	1273	1320	1324	1152	898	632	414	297	832	861	850	824	728	610	506	427	387
May	840	1025	1204	1319	1260	1082	831	585	400	801	889	963	1007	954	842	700	566	469
Jun	722	910	1141	1310	1307	1172	935	685	479	750	854	979	1073	1061	972	823	670	538
Jul	773	959	1168	1314	1286	1134	892	645	446	781	945	1114	1230	1196	1060	851	640	473
Aug	1009	1162	1266	1316	1193	975	719	491	345	946	1084	1163	1195	1079	884	665	472	351
Sep	1391	1417	1345	1258	1007	717	470	305	255	1200	1228	1169	1092	883	649	451	318	277
Oct	1686	1583	1358	1147	796	475	272	192	185	1139	1062	912	773	550	351	232	186	181
Nov	1713	1563	1247	956	570	276	152	134	133	754	706	589	473	309	184	131	122	121
Dec	1648	1511	1178	868	479	210	119	111	111	521	472	376	288	187	127	106	103	103
Year	1323	1339	1264	1173	938	686	481	342	263	841	864	841	803	681	544	424	336	284

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

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

SAN ANTONIO, TEXAS
WBAN 12921
TABLE A:

TRY Data (1960)

Latitude 29.50 N
Longitude 98.50 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	10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Jan														
75 to 79	0	0	0	0	1	1	0	0	2	57.0	744	20550	0	0
70 to 74	0	0	0	2	11	11	0	0	24	62.2	738	16839	6	9
65 to 69	12	12	11	10	13	11	13	10	92	63.5	696	13239	48	129
60 to 64	3	3	3	9	17	22	8	5	70	53.9	605	10033	139	643
55 to 59	3	3	5	19	9	7	10	6	62	51.5	525	7193	219	1523
50 to 54	14	7	6	9	12	9	20	18	95	46.9	461	4707	283	2757
45 to 49	12	10	11	17	22	26	18	15	131	42.5	351	2669	393	4439
40 to 44	21	27	27	23	5	3	16	17	139	39.6	192	1278	552	6768
35 to 39	13	12	13	3	3	3	6	10	63	34.0	102	572	642	9782
30 to 34	9	9	11	1	0	0	2	9	41	29.2	52	204	692	13134
25 to 29	6	7	2	0	0	0	0	3	18	25.2	16	40	728	16696
20 to 24	0	3	4	0	0	0	0	0	7	22.9	0	0	744	20370
Feb														
85 to 89	0	0	0	0	1	2	0	0	3	59.0	672	25147	0	0
80 to 84	0	0	0	0	2	1	0	0	3	59.7	668	21799	4	12
75 to 79	0	0	0	0	0	0	0	1	1	54.0	666	18465	6	38
70 to 74	1	0	0	2	6	6	1	2	18	52.8	660	15142	12	75
65 to 69	1	0	0	4	8	10	4	0	27	50.8	641	11894	31	187
60 to 64	3	3	2	6	28	27	8	3	80	52.3	595	8785	77	438
55 to 59	7	5	6	27	13	13	24	13	108	50.8	508	6025	164	1038
50 to 54	16	10	15	17	10	9	17	20	114	47.2	374	3799	298	2172
45 to 49	19	27	25	16	6	7	13	16	129	42.4	263	2175	409	3908
40 to 44	10	6	7	6	7	4	10	14	64	37.8	158	1155	514	6248
35 to 39	18	14	11	3	0	2	4	10	62	34.5	90	510	582	8963
30 to 34	5	12	12	3	3	3	1	2	41	29.9	48	167	624	11980
25 to 29	4	4	5	0	0	0	2	3	18	25.2	13	32	659	15205
20 to 24	0	3	1	0	0	0	0	0	4	21.5	0	0	672	18533
Mar														
85 to 89	0	0	0	0	2	3	0	0	5	59.8	743	24545	1	1
80 to 84	0	0	0	0	3	4	1	0	8	60.3	738	20845	6	21
75 to 79	0	0	0	2	16	18	2	0	38	58.3	714	17190	30	86
70 to 74	0	0	0	8	12	14	14	0	48	58.6	684	13711	60	327
65 to 69	0	1	4	17	10	10	13	10	65	59.5	625	10453	119	789
60 to 64	12	9	16	14	11	5	14	16	97	57.4	536	7525	208	1581
55 to 59	20	13	10	9	8	9	11	17	97	53.8	447	5060	297	2836
50 to 54	13	14	12	10	10	11	10	14	94	47.2	352	3080	392	4576
45 to 49	19	20	21	14	6	4	10	8	102	42.8	252	1578	492	6794
40 to 44	15	19	13	11	9	9	11	18	105	39.3	131	582	613	9518
35 to 39	12	14	15	8	6	6	4	9	74	35.1	60	112	684	12768
30 to 34	2	3	2	0	0	0	3	1	11	32.5	2	2	742	16378

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

SAN ANTONIO, TEXAS

WBAN 12921

TABLE A:

TRY Data (1960)

Latitude 29.50 N

Longitude 98.50 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*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Apr															
85 to 89	0	0	0	0	6	10	0	0	16	66.9	718	13382	2	1	
80 to 84	0	0	0	4	39	30	3	0	76	66.4	681	9857	39	76	
75 to 79	0	0	0	22	15	21	27	0	85	66.9	593	6659	127	478	
70 to 74	7	2	12	34	21	19	32	19	146	64.5	490	3913	230	1332	
65 to 69	44	45	42	22	7	6	15	45	226	63.4	276	1890	444	2909	
60 to 64	12	11	17	7	2	3	8	11	71	56.4	131	943	589	5562	
55 to 59	10	8	10	1	0	1	5	9	44	50.3	84	421	636	8640	
50 to 54	15	16	8	0	0	0	0	5	44	46.5	37	102	683	11921	
45 to 49	2	6	0	0	0	0	0	1	9	43.2	5	16	715	15435	
40 to 44	0	2	1	0	0	0	0	0	3	38.3	0	0	720	19019	
May															
90 to 94	0	0	0	0	7	7	0	0	14	72.4	744	14663	0	0	
85 to 89	0	0	0	1	23	28	1	0	53	71.4	712	10999	32	56	
80 to 84	0	0	0	22	28	28	24	0	102	70.1	628	7599	116	376	
75 to 79	5	2	18	38	18	12	35	29	157	69.4	519	4711	225	1208	
70 to 74	44	41	36	13	8	9	14	27	192	67.2	346	2531	398	2748	
65 to 69	8	14	13	13	8	6	13	9	84	61.8	184	1290	560	5227	
60 to 64	16	11	15	6	1	1	3	18	71	58.0	110	555	634	8212	
55 to 59	12	14	8	0	0	2	3	10	49	52.7	54	171	690	11548	
50 to 54	8	8	3	0	0	0	0	0	19	48.4	14	22	730	15119	
45 to 49	0	3	0	0	0	0	0	0	3	46.7	0	0	744	18817	
Jun															
100 to 104	0	0	0	0	4	9	0	0	13	71.2	719	14481	1	1	
95 to 99	0	0	0	1	22	32	6	0	61	72.9	699	10928	21	48	
90 to 94	0	0	0	10	37	34	20	0	101	72.6	619	7644	101	364	
85 to 89	0	0	0	39	19	6	34	6	104	72.3	500	4848	220	1168	
80 to 84	5	0	18	31	2	2	20	40	118	72.0	397	2615	323	2535	
75 to 79	56	24	49	5	1	2	4	35	176	71.5	263	937	457	4457	
70 to 74	28	59	22	4	5	5	6	9	138	70.1	65	97	655	7217	
65 to 69	1	7	1	0	0	0	0	0	9	64.9	3	4	717	10724	

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

SAN ANTONIO, TEXAS
WBAN 12921
TABLE A:

TRY Data (1960)

Latitude 29.50 N
Longitude 98.50 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	Total					
Jul														
100 to 104	0	0	0	0	3	6	0	0	9	75.7	743	14385	1	1
95 to 99	0	0	0	5	16	18	4	0	43	75.1	724	10705	20	41
90 to 94	0	0	0	14	49	44	20	1	128	74.9	642	7234	102	290
85 to 89	0	0	6	45	16	14	36	6	123	74.7	512	4356	232	1132
80 to 84	6	0	25	20	4	6	22	45	128	73.9	396	2087	348	2583
75 to 79	77	64	54	6	3	5	11	36	256	73.5	228	485	516	4701
70 to 74	10	29	8	3	2	0	0	5	57	72.0	5	3	739	7939
Aug														
95 to 99	0	0	0	1	10	17	0	0	28	74.6	743	11469	1	1
90 to 94	0	0	0	11	47	37	7	0	102	76.0	676	7877	68	129
85 to 89	2	0	2	42	23	18	30	2	119	75.6	569	4752	175	724
80 to 84	3	3	33	31	9	14	31	39	163	75.2	436	2212	308	1904
75 to 79	70	72	49	7	3	7	22	41	271	74.8	221	488	523	3900
70 to 74	18	15	9	1	1	0	3	11	58	71.9	13	27	731	7159
65 to 69	0	3	0	0	0	0	0	0	3	68.0	0	0	744	10852
Sep														
90 to 94	0	0	0	2	45	41	0	0	88	70.9	709	10210	11	7
85 to 89	0	0	0	38	33	29	13	0	113	71.6	593	6965	127	362
80 to 84	0	0	9	41	10	12	45	5	122	70.9	463	4308	257	1305
75 to 79	18	7	34	7	2	4	19	50	141	71.2	347	2268	373	2865
70 to 74	47	40	27	2	0	2	8	17	143	68.9	194	920	526	5117
65 to 69	10	23	15	0	0	2	5	15	70	64.0	79	275	641	8072
60 to 64	15	17	4	0	0	0	0	3	39	58.7	23	37	697	11434
55 to 59	0	3	1	0	0	0	0	0	4	55.5	0	0	720	14997

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

SAN ANTONIO, TEXAS

WBAW 12921

TABLE A:

TRY Data (1960)

Latitude 29.50 N

Longitude 98.50 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*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Oct															
90 to 94	0	0	0	0	9	6	0	0	15	71.1	743	14500	1	2	
85 to 89	0	0	0	10	27	24	0	0	61	69.0	707	10849	37	7	
80 to 84	0	0	0	22	17	21	20	0	80	71.2	641	7475	103	417	
75 to 79	7	8	15	21	16	15	26	21	129	71.1	551	4490	193	1152	
70 to 74	36	29	29	23	19	16	27	43	222	69.1	373	2121	371	2503	
65 to 69	34	31	33	11	5	10	10	18	152	65.3	141	827	603	4929	
60 to 64	7	16	7	6	0	1	5	3	45	57.7	67	347	677	8169	
55 to 59	4	1	5	0	0	0	5	6	21	51.7	33	109	711	11651	
50 to 54	5	8	4	0	0	0	0	2	19	49.8	7	4	737	15266	
Nov															
85 to 89	0	0	0	0	3	1	0	0	4	65.5	720	18117	0	0	
80 to 84	0	0	0	1	2	4	0	0	7	67.9	714	14529	6	12	
75 to 79	0	0	0	14	21	15	1	0	51	67.5	692	10986	28	69	
70 to 74	13	12	14	16	23	22	21	15	136	65.7	623	7678	97	361	
65 to 69	13	13	13	18	13	15	14	15	114	61.2	482	4931	238	1214	
60 to 64	11	11	12	19	18	20	23	15	129	56.7	367	2820	353	2703	
55 to 59	25	23	27	16	7	9	21	25	153	54.0	218	1339	502	4822	
50 to 54	14	11	7	3	0	1	4	13	53	47.8	98	619	622	7702	
45 to 49	11	13	11	0	3	3	2	2	45	41.9	55	238	665	10921	
40 to 44	0	4	5	3	0	0	4	5	21	36.5	18	63	702	14346	
35 to 39	3	3	0	0	0	0	0	0	6	33.2	7	14	713	17897	
30 to 34	0	0	1	0	0	0	0	0	1	32.0	0	0	720	21483	
Dec															
75 to 79	0	0	0	0	4	2	0	0	6	67.7	744	20614	0	0	
70 to 74	0	0	1	4	2	5	3	1	16	67.1	730	16918	14	24	
65 to 69	5	3	3	4	18	11	6	5	55	61.6	695	13323	49	149	
60 to 64	7	9	8	15	13	14	5	6	77	57.6	639	9969	105	515	
55 to 59	9	9	7	13	14	13	12	9	86	52.2	562	6972	182	1238	
50 to 54	6	3	6	14	11	14	11	6	71	46.5	477	4411	267	2397	
45 to 49	9	11	17	24	24	22	25	18	150	44.0	395	2211	349	3917	
40 to 44	33	29	27	19	7	12	31	38	196	39.9	170	740	574	6166	
35 to 39	16	19	17	0	0	0	0	7	59	35.0	59	215	685	9361	
30 to 34	8	8	5	0	0	0	0	3	24	29.3	20	42	724	12908	
25 to 29	0	2	2	0	0	0	0	0	4	26.0	1	1	743	16587	

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

SAN ANTONIO, TEXAS
WBAN 12921
TABLE B:

TRY Data (1960)

Latitude 29.50 N
Longitude 98.50 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
100 to 104	0	0	0	0	7	15	0	0	22	0.0	0.0	0.0	0.0	73.3	72.9	0.0	0.0	73.0
95 to 99	0	0	0	7	48	67	10	0	132	0.0	0.0	0.0	74.0	74.3	73.8	73.4	0.0	74.0
90 to 94	0	0	0	37	194	169	47	1	448	0.0	0.0	0.0	75.2	73.9	73.1	73.3	77.0	73.6
85 to 89	2	0	8	175	153	135	114	14	601	76.5	0.0	73.9	73.9	71.7	70.8	73.2	73.4	72.5
80 to 84	14	3	85	172	116	122	166	129	807	72.2	72.7	74.6	72.3	68.8	69.6	71.9	73.5	71.7
75 to 79	233	177	219	122	100	102	147	213	1313	73.3	73.9	73.2	69.1	66.4	66.3	70.1	72.2	71.4
70 to 74	204	227	158	112	110	109	129	149	1198	70.0	70.3	69.2	65.2	61.6	62.5	65.4	68.5	67.4
65 to 69	128	152	135	99	82	81	93	127	897	65.2	65.7	64.2	59.3	58.2	58.3	61.2	63.8	62.6
60 to 64	86	90	84	82	90	93	74	80	679	59.2	59.1	57.8	55.9	53.1	53.7	54.9	57.5	56.4
55 to 59	90	79	79	85	51	54	91	95	624	53.8	54.6	53.4	51.6	50.0	49.5	51.7	53.3	52.5
50 to 54	91	77	61	53	43	44	62	78	509	48.5	49.6	49.8	45.3	44.1	44.0	45.9	47.2	47.2
45 to 49	72	90	85	71	61	62	68	60	569	42.6	43.4	43.6	42.6	42.7	42.3	42.8	43.0	42.9
40 to 44	79	87	80	62	28	28	72	92	528	40.1	40.1	39.3	37.9	38.8	40.1	38.8	39.2	39.3
35 to 39	62	62	56	14	9	11	14	36	264	34.8	34.5	34.8	33.9	35.0	35.1	34.1	34.7	34.6
30 to 34	24	32	31	4	3	3	6	15	118	29.5	29.7	29.7	29.3	29.0	29.7	31.0	30.3	29.8
25 to 29	10	13	9	0	0	0	2	6	40	24.3	25.6	25.9	0.0	0.0	0.0	25.5	25.2	25.3
20 to 24	0	6	5	0	0	0	0	0	11	0.0	22.3	22.4	0.0	0.0	0.0	0.0	0.0	22.4

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 wind MPH
Month	Ave	Max	Min	Daily Max	Ave Min		4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
Jan	49.9	76	23	59	41	45.6	85	74	59	73	74	0.0059	0.0062	0.0063	0.0064	0.0061	9.2
Feb	50.1	87	23	61	39	44.0	79	69	48	61	66	0.0049	0.0055	0.0050	0.0051	0.0051	11.6
Mar	54.5	88	31	65	46	48.9	83	73	53	67	72	0.0065	0.0067	0.0064	0.0067	0.0066	10.5
Apr	68.9	88	43	80	60	61.6	84	67	49	65	69	0.0108	0.0106	0.0103	0.0110	0.0107	11.1
May	72.8	91	48	83	64	65.4	87	68	51	67	71	0.0127	0.0124	0.0122	0.0129	0.0125	10.8
Jun	82.4	103	66	94	72	71.6	85	64	40	52	64	0.0155	0.0154	0.0130	0.0139	0.0147	9.6
Jul	83.2	103	72	93	74	74.0	89	66	47	60	69	0.0173	0.0167	0.0152	0.0162	0.0165	9.0
Aug	82.1	98	69	92	75	74.9	92	72	52	70	75	0.0185	0.0178	0.0159	0.0172	0.0176	9.2
Sep	78.3	94	59	90	68	69.3	89	62	42	61	67	0.0141	0.0146	0.0124	0.0135	0.0139	8.0
Oct	73.0	94	52	83	65	67.3	93	77	57	73	77	0.0140	0.0141	0.0130	0.0134	0.0137	9.0
Nov	62.3	86	34	71	55	57.1	84	71	59	76	74	0.0093	0.0095	0.0093	0.0097	0.0094	9.5
Dec	49.8	75	27	58	42	46.2	87	74	65	79	78	0.0062	0.0062	0.0066	0.0065	0.0063	10.2
Year	67.4	103	23	77	59	60.6	86	70	52	67	71	0.0113	0.0114	0.0105	0.0111	0.0111	9.8

SAN ANTONIO, TEXAS

WBAN 12921

TABLE D:

TRY Data (1960)

Latitude 29.50 N

Longitude 98.50 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE TEMP (F)	BY TIME OF DAY																24-HOUR SUMMARY			
	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**		HEATING				COOLING			
	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg	Below	Deg	Hrs	Deg	Below	Deg
	Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Above (100s)*		Base	100s*	Base	100s*	Base	100s*	Base	100s*
	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat	Base	Heat
104	0	453	0	0	371	0	0	316	0	0	317	0	0	383	0	0	1371	0	8760	3210
103	0	442	0	0	360	0	0	305	0	1	306	0	0	372	0	0	1338	0	8759	3123
102	0	432	0	0	349	0	0	294	0	2	295	0	0	361	0	0	1305	0	8757	3035
101	0	421	0	0	338	0	2	283	0	6	284	0	0	350	0	0	1272	0	8751	2948
100	0	410	0	0	327	0	5	272	0	12	273	0	0	339	0	0	1239	0	8742	2860
99	0	399	0	0	316	0	9	261	0	15	263	0	0	328	0	0	1206	0	8735	2773
98	0	388	0	0	305	0	14	250	0	19	252	0	0	317	0	0	1173	0	8725	2685
97	0	377	0	1	294	0	22	240	0	33	241	1	3	306	0	0	1141	0	8700	2598
96	0	366	0	3	283	0	35	229	1	53	231	1	5	295	0	0	1108	0	8663	2511
95	0	355	0	5	273	0	49	218	1	72	220	2	8	284	0	0	1075	0	8624	2425
94	0	344	0	8	262	0	65	208	2	88	210	3	11	273	0	0	1042	0	8587	2339
93	0	333	0	11	251	0	91	198	2	118	200	4	16	262	0	0	1009	0	8523	2253
92	0	322	0	15	240	0	130	188	3	157	191	5	25	252	1	0	976	0	8432	2168
91	0	311	0	21	229	1	172	178	5	192	181	7	36	241	1	0	944	0	8337	2085
90	0	300	0	35	218	1	220	169	7	231	172	9	50	230	1	1	911	0	8222	2002
89	0	289	0	54	208	1	271	161	9	268	164	11	65	220	2	2	878	0	8098	1920
88	1	278	0	80	198	2	306	153	12	298	156	14	84	210	3	3	845	0	7986	1840
87	2	267	0	114	188	3	334	145	16	321	148	17	107	200	4	5	812	0	7875	1760
86	3	256	0	153	178	4	363	138	19	343	140	21	131	190	5	8	779	0	7757	1682
85	6	245	0	196	169	6	389	131	23	371	133	24	157	181	6	13	747	0	7627	1605
84	10	235	0	239	160	8	414	124	27	398	126	28	189	171	8	26	714	0	7484	1530
83	19	224	0	279	152	11	435	117	31	426	119	32	225	163	10	44	681	1	7330	1456
82	32	213	1	321	144	14	456	110	36	452	113	36	258	154	12	67	649	1	7172	1383
81	50	203	1	353	136	17	481	104	40	471	106	41	287	146	15	98	617	2	7019	1312
80	77	192	2	376	129	21	506	98	45	494	100	46	319	138	18	139	585	3	6847	1243
79	108	182	2	408	122	25	528	92	50	521	94	51	350	130	22	202	554	5	6642	1175
78	149	172	4	434	115	29	551	87	56	546	89	56	379	123	25	292	524	7	6408	1110
77	200	163	5	454	109	33	575	82	61	567	83	62	410	116	29	409	494	11	6144	1047
76	250	155	8	474	102	38	592	76	67	585	78	68	440	109	33	552	466	15	5865	987
75	293	146	10	498	96	43	608	71	73	602	73	74	469	103	38	707	440	22	5581	930
74	325	139	14	528	90	48	627	67	79	624	68	80	496	97	43	854	415	30	5305	875
73	355	131	17	553	85	53	646	62	86	650	64	86	522	91	48	986	391	39	5047	824
72	391	124	21	573	80	59	668	58	92	674	59	93	547	85	53	1103	369	49	4802	774
71	420	117	25	593	74	65	690	54	99	694	55	100	573	80	59	1208	347	61	4580	728
70	450	110	29	613	70	71	714	50	106	711	51	107	599	75	65	1313	327	74	4358	683
69	487	104	34	641	65	77	738	46	113	728	48	114	623	70	71	1420	308	87	4121	640
68	517	98	39	667	60	84	757	42	121	745	44	121	644	65	77	1516	290	102	3913	600
67	543	92	44	684	56	90	773	39	129	762	41	129	663	61	84	1600	273	118	3734	562
66	568	87	50	700	52	97	786	36	136	780	37	136	682	57	90	1675	256	134	3568	526
65	593	82	56	716	48	104	801	33	144	794	34	144	699	53	97	1740	240	151	3415	491
64	612	77	62	735	45	112	817	30	152	808	31	152	712	49	104	1809	225	169	3264	457
63	626	72	68	754	41	119	834	27	161	825	29	160	724	45	112	1866	211	187	3130	425
62	641	68	74	768	38	127	851	25	169	843	26	169	735	41	119	1908	197	206	3012	395
61	661	63	81	783	35	135	869	23	178	861	23	177	750	38	126	1956	183	225	2878	365
60	680	59	87	798	32	142	890	20	186	882	21	186	769	35	134	2005	170	245	2734	337
59	695	55	94	812	29	151	907	18	195	897	19	195	790	31	142	2052	158	265	2606	311

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

SAN ANTONIO, TEXAS
WBAN 12921
TABLE D:

TRY Data (1960)

Latitude 29.50 N
Longitude 98.50 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		Below	Hrs	Above	Hrs
(F)	Above	(100s)*		Above	(100s)*		Above	(100s)*		Above	(100s)*		Above	(100s)*		Above	(100s)*		Base	100s*	Base	100s*
	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool	Base	Heat	Cool				
58	707	51	101	828	26	159	918	17	205	909	17	204	808	28	150	2098	146	286	2490	285	6270	1104
57	722	47	108	847	23	167	926	15	214	920	16	213	829	26	158	2154	134	307	2361	261	6399	1168
56	739	44	116	864	21	176	936	13	223	929	14	222	848	23	166	2212	123	329	2229	238	6531	1232
55	757	40	123	882	19	184	946	12	233	941	12	232	863	21	175	2266	113	352	2103	216	6657	1298
54	776	37	131	897	17	193	956	10	242	951	11	241	879	18	183	2318	103	375	1981	196	6779	1365
53	791	34	139	908	15	202	964	9	252	961	9	251	892	16	192	2370	93	398	1871	177	6889	1434
52	806	31	147	918	13	211	972	8	261	970	8	260	902	14	201	2426	84	422	1764	158	6996	1503
51	817	28	155	925	11	221	982	7	271	978	7	270	915	13	210	2479	76	447	1663	141	7097	1574
50	825	25	163	936	10	230	990	5	281	986	6	280	927	11	220	2520	68	472	1573	125	7187	1645
49	835	23	171	948	8	239	999	4	291	997	5	290	939	9	229	2560	61	497	1480	110	7280	1717
48	849	20	180	961	7	249	1010	4	301	1011	4	300	952	8	238	2599	54	523	1376	95	7384	1791
47	864	18	188	976	5	259	1025	3	311	1024	3	310	966	6	248	2640	47	549	1263	82	7497	1865
46	879	15	197	991	4	268	1040	2	321	1034	2	320	982	5	258	2686	41	576	1146	70	7614	1941
45	900	13	206	1007	3	278	1051	2	332	1045	2	331	996	4	268	2735	35	603	1024	59	7736	2017
44	924	11	215	1024	3	289	1057	1	342	1059	1	341	1011	3	278	2793	30	630	889	50	7871	2095
43	944	10	224	1039	2	299	1067	1	353	1069	1	352	1031	2	288	2864	25	659	743	42	8017	2175
42	961	8	234	1048	1	309	1077	1	364	1075	1	363	1045	2	298	2923	21	688	629	35	8131	2256
41	975	7	244	1058	1	320	1081	1	375	1079	1	374	1054	1	309	2960	18	717	551	29	8209	2337
40	988	6	253	1070	1	331	1083	0	385	1081	1	384	1066	1	319	2998	15	747	473	24	8287	2420
39	1001	5	263	1078	1	341	1084	0	396	1082	0	395	1074	1	330	3040	12	777	399	19	8361	2503
38	1012	4	273	1082	0	352	1086	0	407	1084	0	406	1076	1	341	3076	10	808	342	16	8418	2587
37	1023	3	284	1085	0	363	1089	0	418	1087	0	417	1079	1	352	3102	8	839	293	13	8467	2672
36	1035	3	294	1088	0	374	1092	0	429	1090	0	428	1083	0	362	3135	6	870	236	10	8524	2756
35	1045	2	304	1090	0	385	1092	0	440	1091	0	439	1086	0	373	3168	5	901	187	8	8573	2842
34	1052	2	315	1091	0	396	1092	0	451	1092	0	450	1088	0	384	3186	4	933	157	6	8603	2928
33	1058	1	325	1092	0	407	1092	0	462	1093	0	460	1090	0	395	3200	3	965	133	5	8627	3014
32	1065	1	336	1092	0	417	1093	0	473	1094	0	471	1091	0	406	3214	2	997	109	4	8651	3100
31	1072	1	347	1093	0	428	1095	0	484	1095	0	482	1092	0	417	3227	2	1029	85	3	8675	3187
30	1078	1	357	1094	0	439	1095	0	495	1095	0	493	1093	0	428	3241	1	1062	62	2	8698	3274
29	1082	0	368	1095	0	450	1095	0	505	1095	0	504	1093	0	439	3251	1	1094	48	1	8712	3361
28	1085	0	379	1095	0	461	1095	0	516	1095	0	515	1094	0	450	3257	1	1127	38	1	8722	3448
27	1087	0	390	1095	0	472	1095	0	527	1095	0	526	1095	0	461	3266	0	1159	26	1	8734	3535
26	1088	0	401	1095	0	483	1095	0	538	1095	0	537	1095	0	472	3271	0	1192	21	0	8739	3623
25	1089	0	412	1095	0	494	1095	0	549	1095	0	548	1095	0	483	3276	0	1225	15	0	8745	3710
24	1091	0	423	1095	0	505	1095	0	560	1095	0	559	1095	0	493	3281	0	1257	7	0	8753	3798
23	1094	0	434	1095	0	516	1095	0	571	1095	0	570	1095	0	504	3284	0	1290	2	0	8758	3885
22	1095	0	444	1095	0	527	1095	0	582	1095	0	581	1095	0	515	3285	0	1323	0	0	8760	3973

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

SAN ANTONIO, TEXAS

TRY Data (1960)

Latitude 29.50 N

WBAN 12921

Longitude 98.50 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:	6609	6229	5837	5391	4998	4558	3809	2878	1520	183	1
Annual Wet Bulb Cooling deg-hrs:	119292.	99827.	81532.	64491.	48714.	34130.	21219.	10617.	3194.	228.	1.

TABLE F:

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

HEATING HUMIDITY RATIO HOURS **													COOLING HUMIDITY RATIO HOURS **												
Heating Degree Base													Cooling Degree Base												
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	Indoor Humidity Ratio		
.001	0	0	0	0	0	0	0	0	0	0	0	84	84	83	82	80	77	73	68	57	41	24	.001		
.002	0	0	0	0	0	0	0	0	0	0	0	76	76	75	74	73	71	67	62	53	38	22	.002		
.003	0	0	0	0	0	0	0	0	0	1	1	67	67	67	67	66	64	61	57	49	35	20	.003		
.004	0	0	1	1	1	1	1	1	1	1	1	60	60	60	59	59	58	55	52	45	32	18	.004		
.005	0	0	1	2	2	2	3	3	3	3	3	52	52	52	52	52	51	50	47	40	29	16	.005		
.006	0	1	1	2	3	4	4	5	5	5	5	46	46	46	46	46	45	44	42	36	26	15	.006		
.007	0	1	2	3	5	6	6	7	7	8	8	40	40	40	40	40	39	39	37	32	23	13	.007		
.008	0	1	2	4	6	8	9	9	10	10	10	34	34	34	34	34	34	33	32	28	20	11	.008		
.009	0	1	3	5	8	10	11	12	13	13	14	28	28	28	28	28	28	28	27	24	17	9	.009		
.010	0	1	3	6	9	12	14	15	16	17	17	23	23	23	23	23	23	23	23	20	15	8	.010		
.011	0	1	4	7	11	14	16	18	19	20	21	18	18	18	18	18	18	18	18	16	12	6	.011		
.012	1	2	4	8	12	16	19	21	23	24	25	14	14	14	14	14	14	14	14	13	9	5	.012		
.013	1	2	4	9	14	18	22	25	27	28	29	10	10	10	10	10	10	10	10	9	7	3	.013		
.014	1	2	5	10	16	20	24	28	31	33	34	7	7	7	7	7	7	7	7	6	5	2	.014		
.015	1	2	5	11	17	22	27	31	35	37	39	4	4	4	4	4	4	4	4	4	3	1	.015		
.016	1	2	6	12	19	24	30	35	39	42	44	2	2	2	2	2	2	2	2	2	2	1	.016		
.017	1	3	6	13	20	26	32	38	43	48	50	1	1	1	1	1	1	1	1	1	1	0	.017		
.018	1	3	7	14	22	28	35	41	48	53	57	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	33	54	56	50	40	42	55	30	53	46	43	46
VERTICAL													
NORTH	100	100	100	99	92	87	89	97	100	100	100	100	95
WEST	62	48	63	67	63	59	60	71	50	62	58	57	61
SOUTH	46	37	67	76	86	89	87	83	49	59	45	39	62
EAST	63	55	73	77	73	66	67	75	48	71	61	58	66
% Possible Sun	49	53	58	55	56	68	75	74	67	65	56	51	61

FOOTNOTES: * Corrected For Cloud Cover.

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

SAN ANTONIO, TEXAS

WBAN 12921

TABLE H:

TRY Data (1960)

Latitude 29.50 N

Longitude 98.50 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	1841	1716	1422	1167	787	458	267	204	203	2121	1292	842	798	688	586	436	310	239	213	212	914	660	895
Feb	1742	1634	1432	1253	928	602	372	251	239	2235	1567	1116	1032	897	779	591	420	314	260	254	1357	1014	1154
Mar	1426	1424	1383	1329	1118	846	587	382	297	2236	1914	929	884	841	799	703	596	502	430	397	1215	1149	1450
Apr	994	1126	1230	1303	1221	1047	807	575	394	2089	2195	860	864	870	872	815	732	636	553	496	1279	1365	1612
May	712	915	1112	1275	1300	1214	1013	781	569	1924	2361	773	840	912	975	970	917	816	708	637	1386	1662	1895
Jun	614	821	1054	1247	1323	1277	1105	882	685	1839	2420	702	807	927	1028	1058	1021	914	785	700	1496	1899	2069
Jul	660	862	1074	1253	1309	1243	1064	839	640	1862	2380	728	831	935	1026	1040	989	880	750	663	1467	1818	2121
Aug	867	1026	1164	1271	1237	1102	886	662	472	1981	2231	810	851	887	916	882	813	716	621	551	1290	1464	1947
Sep	1240	1279	1291	1281	1121	894	657	453	343	2127	1984	1094	1143	1155	1147	1018	838	649	482	389	1716	1627	1638
Oct	1608	1539	1398	1265	989	691	453	301	271	2191	1665	932	878	801	729	603	485	399	343	328	1131	974	1350
Nov	1787	1680	1421	1188	831	512	302	221	218	2124	1361	813	763	660	568	431	315	241	207	205	914	671	1009
Dec	1823	1702	1390	1118	728	416	235	195	194	2052	1210	859	810	682	566	402	273	200	181	181	922	619	847
Year	1274	1308	1280	1246	1075	860	647	480	378	2064	1883	869	874	854	832	746	643	543	462	419	1255	1244	1499

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**										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	1569	1435	1185	968	635	350	197	166	165	165	704	660	568	482	353	245	189	174	173	173	173
Feb	1440	1348	1187	1039	755	473	277	199	194	194	922	846	735	637	477	334	245	209	206	206	206
Mar	1090	1148	1138	1105	921	679	450	288	242	242	728	710	684	655	574	482	402	344	323	323	323
Apr	683	857	991	1072	1010	851	640	436	308	308	659	684	702	709	664	592	512	442	400	400	400
May	479	653	874	1039	1076	996	813	605	418	418	584	649	728	790	792	745	658	565	499	499	499
Jun	433	576	815	1013	1092	1053	892	692	498	498	530	609	730	831	864	832	736	624	539	539	539
Jul	456	610	839	1020	1079	1024	857	657	469	469	547	631	741	831	849	806	707	595	514	514	514
Aug	591	765	931	1043	1021	901	708	510	362	362	619	667	714	745	720	660	577	497	440	440	440
Sep	915	1016	1055	1062	928	725	513	344	279	279	824	914	947	950	844	683	512	373	316	316	316
Oct	1302	1265	1159	1055	813	549	342	234	221	221	752	713	654	598	493	393	318	275	267	267	267
Nov	1511	1399	1181	987	676	393	225	179	177	177	677	628	543	468	351	250	189	168	166	166	166
Dec	1560	1427	1158	924	588	311	178	158	158	158	725	674	564	465	325	213	158	147	147	147	147
Year	1000	1040	1042	1027	883	693	509	373	291	291	688	697	692	680	609	521	435	369	333	333	333

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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SAN DIEGO, CALIFORNIA
 WBAN 23188
 TABLE A:

TRY Data (1974)

Latitude 32.40 N
 Longitude 117.20 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	3	7	0	0	0	10	56.4	744	11860	0	0	
65 to 69	0	0	0	16	19	6	0	1	42	54.5	721	8182	23	42	
60 to 64	9	6	9	25	25	32	16	7	129	54.2	655	4713	89	293	
55 to 59	26	23	35	45	41	50	55	41	316	51.2	440	1849	304	1149	
50 to 54	41	36	32	4	1	5	22	41	182	47.4	151	430	593	3450	
45 to 49	17	28	17	0	0	0	0	3	65	42.9	28	29	716	6769	
Feb															
75 to 79	0	0	0	3	7	3	0	0	13	52.5	668	13193	4	2	
70 to 74	0	0	0	6	10	10	1	0	27	52.2	654	9885	18	54	
65 to 69	0	0	2	17	27	11	5	0	62	50.5	612	6708	60	237	
60 to 64	0	0	5	38	31	33	20	4	131	51.3	515	3842	157	731	
55 to 59	21	15	35	20	9	27	55	49	231	50.0	353	1605	319	1854	
50 to 54	53	37	30	0	0	0	3	31	154	45.4	153	397	519	4006	
45 to 49	10	32	12	0	0	0	0	0	54	40.8	19	20	653	6989	
Mar															
70 to 74	0	0	0	1	1	0	0	0	2	58.0	744	10342	0	0	
65 to 69	0	0	0	17	29	7	0	0	53	56.8	734	6634	10	12	
60 to 64	1	2	17	55	55	61	31	12	234	55.2	631	3163	113	261	
55 to 59	65	54	52	18	7	23	59	65	343	53.0	222	815	522	1633	
50 to 54	27	22	20	2	1	2	3	16	93	48.0	74	142	670	4680	
45 to 49	0	15	4	0	0	0	0	0	19	43.6	3	2	741	8260	

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

SAN DIEGO, CALIFORNIA
WBAN 23188
TABLE A:

TRY Data (1974)

Latitude 32.40 N
Longitude 117.20 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Apr														
80 to 84	0	0	0	1	0	0	0	0	1	54.0	720	15190	0	0
75 to 79	0	0	0	3	5	1	0	0	9	54.6	719	11593	1	3
70 to 74	0	0	1	9	11	8	0	0	29	58.3	704	8034	16	44
65 to 69	0	0	8	37	46	24	8	1	124	57.0	644	4617	76	227
60 to 64	8	3	44	40	28	55	51	30	259	54.7	452	1787	268	997
55 to 59	78	71	36	0	0	2	31	59	277	52.2	121	210	599	3020
50 to 54	4	16	1	0	0	0	0	0	21	48.7	1	1	719	6411
May														
75 to 79	0	0	0	0	1	0	0	0	1	65.0	744	11253	0	0
70 to 74	0	0	1	12	11	1	0	0	25	62.0	741	7537	3	4
65 to 69	0	0	9	28	49	27	8	2	123	58.6	682	3948	62	135
60 to 64	64	56	71	53	32	65	69	73	483	55.8	455	960	289	867
55 to 59	29	35	12	0	0	0	16	18	110	52.5	16	22	728	3649
50 to 54	0	2	0	0	0	0	0	0	2	48.0	0	0	744	7347
Jun														
80 to 84	0	0	0	1	2	0	0	0	3	67.3	720	11621	0	0
75 to 79	0	0	0	5	10	11	0	0	26	65.8	711	8036	9	15
70 to 74	0	0	10	39	42	25	12	0	128	63.3	674	4565	46	144
65 to 69	21	18	41	42	34	40	38	36	270	61.0	467	1655	253	834
60 to 64	69	72	39	3	2	14	40	54	293	58.5	112	84	608	2863

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

SAN DIEGO, CALIFORNIA
WBAW 23188
TABLE A:

TRY Data (1974)

Latitude 32.40 N
Longitude 117.20 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence In time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24			hours below	degree hours	hours above	degree hours
Jul														
85 to 89	0	0	0	1	1	0	0	0	2	67.5	744	12714	0	0
80 to 84	0	0	2	10	8	3	0	0	23	69.3	734	9008	10	14
75 to 79	2	0	15	20	30	25	6	3	101	67.7	697	5409	47	135
70 to 74	25	24	31	49	46	40	42	31	288	65.4	544	2255	200	701
65 to 69	42	47	40	13	8	25	40	49	264	62.1	177	441	567	2607
60 to 64	24	22	5	0	0	0	5	10	66	58.7	2	1	742	5887
Aug														
75 to 79	0	0	0	4	11	1	0	0	16	66.6	744	6186	0	0
70 to 74	13	14	34	85	82	73	19	13	333	64.6	629	2595	115	129
65 to 69	75	68	55	4	0	19	74	80	375	62.1	233	381	511	1635
60 to 64	5	11	4	0	0	0	0	0	20	59.9	1	1	745	4975
Sep														
80 to 84	0	0	0	2	3	0	0	0	5	68.2	719	9504	1	1
75 to 79	0	0	1	17	24	8	0	0	50	67.9	706	5927	14	24
70 to 74	7	4	21	59	54	50	21	18	234	65.3	590	2601	130	298
65 to 69	78	79	65	12	9	32	69	72	416	62.7	247	347	473	1644
60 to 64	5	7	3	0	0	0	0	0	15	60.3	3	2	717	4899

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

SAN DIEGO, CALIFORNIA
WBAH 23188
TABLE A:

TRY Data (1974)

Latitude 32.40 N
Longitude 117.20 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														
90 to 94	0	0	0	1	0	0	0	0	1	62.0	744	19650	0	0
85 to 89	0	0	0	3	4	3	0	0	10	61.7	740	15936	4	6
80 to 84	0	0	1	3	5	3	0	0	12	64.0	729	12263	15	53
75 to 79	0	0	2	2	0	2	3	0	9	61.7	717	8654	27	164
70 to 74	0	0	4	31	38	9	3	4	89	62.3	704	5086	40	316
65 to 69	35	25	43	45	40	63	58	41	350	60.2	537	1909	207	859
60 to 64	48	53	40	6	6	13	29	45	240	57.8	127	290	617	2960
55 to 59	10	15	3	2	0	0	0	3	33	54.2	11	14	733	6404
Nov														
85 to 89	0	0	0	4	3	0	0	0	7	59.3	717	18562	3	3
80 to 84	0	0	1	1	3	2	0	0	7	57.4	711	14992	9	33
75 to 79	0	0	0	7	9	5	0	0	21	55.0	697	11459	23	100
70 to 74	0	0	2	14	15	10	2	0	43	55.4	675	8025	45	266
65 to 69	0	0	6	26	42	17	13	2	106	56.5	623	4779	97	620
60 to 64	22	13	35	34	17	54	54	37	266	55.0	469	2025	251	1466
55 to 59	53	47	33	4	1	2	21	49	210	51.6	158	484	562	3525
50 to 54	14	26	11	0	0	0	0	2	53	47.4	33	61	687	6702
45 to 49	1	4	2	0	0	0	0	0	7	43.6	1	1	719	10242
Dec														
75 to 79	0	0	0	0	3	0	0	0	3	56.3	744	15829	0	0
70 to 74	0	0	0	7	7	4	0	0	18	52.9	737	12122	7	13
65 to 69	0	0	0	17	23	11	3	0	54	53.3	698	8508	46	119
60 to 64	4	3	10	38	45	40	16	9	165	53.1	621	5163	123	494
55 to 59	12	8	27	25	15	33	53	33	206	49.5	426	2530	318	1581
50 to 54	50	38	29	6	0	5	18	37	183	45.6	222	928	522	3699
45 to 49	16	31	20	0	0	0	3	12	82	41.0	72	235	672	6726
40 to 44	11	11	6	0	0	0	0	2	30	33.8	17	35	727	10246
35 to 39	0	2	1	0	0	0	0	0	3	30.0	0	0	744	13931

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

SAN DIEGO, CALIFORNIA
WBAN 23188
TABLE B:

TRY Data (1974)

Latitude 32.40 N
Longitude 117.20 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
90 to 94	0	0	0	1	0	0	0	0	1	0.0	0.0	0.0	62.0	0.0	0.0	0.0	0.0	62.0
85 to 89	0	0	0	8	8	3	0	0	19	0.0	0.0	0.0	61.6	61.8	60.0	0.0	0.0	61.4
80 to 84	0	0	4	18	21	8	0	0	51	0.0	0.0	63.3	67.2	66.6	62.5	0.0	0.0	65.9
75 to 79	2	0	18	61	100	56	9	3	249	66.0	0.0	68.0	64.8	64.3	64.6	63.8	66.3	64.8
70 to 74	45	42	104	315	324	230	100	66	1226	66.2	66.5	64.6	63.0	62.7	62.9	64.8	65.6	63.6
65 to 69	251	237	269	274	326	282	316	284	2239	62.1	62.2	61.0	57.7	57.5	59.6	60.9	61.8	60.2
60 to 64	259	248	282	292	241	367	331	281	2301	57.2	57.5	55.6	54.1	54.4	55.0	55.6	56.3	55.7
55 to 59	294	268	233	114	73	137	290	317	1726	52.0	52.1	51.2	49.5	49.5	50.9	52.0	52.1	51.6
50 to 54	189	177	123	12	2	12	46	127	688	46.9	47.1	46.0	43.4	48.5	44.3	45.4	47.1	46.6
45 to 49	44	110	55	0	0	0	3	15	227	42.8	41.9	41.7	0.0	0.0	0.0	38.3	38.7	41.8
40 to 44	11	11	6	0	0	0	0	2	30	33.5	33.7	34.0	0.0	0.0	0.0	0.0	34.5	33.8
35 to 39	0	2	1	0	0	0	0	0	3	0.0	30.0	30.0	0.0	0.0	0.0	0.0	0.0	30.0

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

Dry Bulb Temperature (F)						Wet Bulb Ave	Percent Relative Humidity Average					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	56.6	72	45	63	51	50.3	71	58	61	70	66	0.0059	0.0060	0.0067	0.0068	0.0063	6.7
Feb	57.9	78	45	67	49	48.6	58	43	46	58	53	0.0046	0.0046	0.0055	0.0058	0.0052	5.6
Mar	58.6	72	47	64	54	53.1	76	66	64	74	71	0.0071	0.0073	0.0076	0.0076	0.0073	7.3
Apr	61.4	80	52	68	56	54.1	71	55	56	67	64	0.0069	0.0070	0.0074	0.0074	0.0072	7.7
May	62.4	75	54	67	59	56.0	73	64	62	70	68	0.0079	0.0081	0.0081	0.0081	0.0081	7.5
Jun	66.4	81	60	71	62	60.6	80	69	66	75	73	0.0098	0.0102	0.0102	0.0100	0.0100	7.9
Jul	70.4	85	62	75	67	64.1	78	67	65	73	72	0.0113	0.0117	0.0113	0.0112	0.0114	7.4
Aug	69.2	76	62	74	66	63.2	78	68	67	75	73	0.0110	0.0112	0.0112	0.0110	0.0111	7.6
Sep	69.3	83	62	74	66	63.9	81	71	68	76	75	0.0113	0.0117	0.0115	0.0113	0.0115	7.0
Oct	66.1	90	55	71	62	59.5	75	64	63	72	70	0.0091	0.0093	0.0094	0.0096	0.0094	6.9
Nov	61.7	89	47	70	55	53.7	68	51	56	66	61	0.0065	0.0066	0.0076	0.0075	0.0069	5.1
Dec	56.2	76	38	65	48	48.1	66	47	48	60	56	0.0051	0.0051	0.0058	0.0058	0.0054	5.4
Year	63.0	90	38	69	58	56.3	73	60	60	70	67	0.0081	0.0083	0.0085	0.0085	0.0083	6.9

SAN DIEGO, CALIFORNIA
 WBAN 23188
 TABLE D:

TRY Data (1974)

Latitude 32.40 N
 Longitude 117.20 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)*	Base	Heat Cool	Above (100s)*	Above (100s)*	Base	Heat Cool	Above (100s)*	Above (100s)*	Base	Heat Cool	Above (100s)*	Above (100s)*	Base	Heat Cool	Above (100s)*	Above (100s)*	Base	Heat Cool	Below Base 100s*	Above Base 100s*	Below Base 100s*	Above Base 100s*				
91	0	325	0		0	264	0		0	251	0		0	278	0		0	311	0		0	1022	0		8760	2450	0	0
90	0	314	0		0	253	0		0	240	0		0	267	0		0	300	0		0	990	0		8759	2362	1	0
89	0	303	0		2	242	0		0	229	0		0	256	0		0	289	0		0	957	0		8757	2275	3	0
88	0	292	0		4	231	0		1	218	0		0	245	0		0	278	0		0	924	0		8754	2187	6	0
87	0	281	0		5	220	0		3	207	0		0	234	0		0	267	0		0	891	0		8751	2100	9	0
86	0	270	0		5	209	0		5	196	0		1	223	0		0	256	0		0	858	0		8748	2012	12	0
85	0	259	0		7	198	0		7	185	0		3	212	0		0	245	0		0	825	0		8745	1925	17	0
84	0	248	0		10	187	0		9	174	0		3	201	0		0	234	0		0	792	0		8737	1837	23	1
83	0	237	0		13	177	0		12	163	0		4	190	0		0	223	0		0	760	0		8729	1750	31	1
82	1	226	0		15	166	1		16	153	0		5	179	0		0	212	0		0	727	0		8721	1663	39	1
81	2	215	0		19	155	1		19	142	1		7	168	0		0	201	0		0	694	0		8711	1576	49	2
80	3	204	0		24	144	1		25	131	1		10	158	0		0	190	0		0	661	0		8697	1489	63	2
79	4	193	0		29	134	1		34	121	1		14	147	0		0	179	0		0	628	0		8678	1402	82	3
78	5	182	0		36	123	2		46	110	2		20	136	1		1	168	0		0	595	0		8651	1315	109	4
77	8	172	0		47	112	2		62	100	2		28	125	1		2	157	0		0	563	0		8612	1229	148	5
76	12	161	0		62	102	2		84	89	3		39	115	1		3	146	0		0	530	0		8558	1143	202	7
75	18	150	0		79	92	3		113	79	4		56	104	2		6	136	0		3	497	0		8483	1057	277	9
74	26	139	1		105	82	4		151	70	5		73	94	2		11	125	0		6	464	0		8385	973	375	12
73	37	129	1		152	72	5		205	60	7		97	84	3		19	114	0		14	431	0		8235	890	525	17
72	48	118	1		218	63	7		273	52	9		142	74	4		30	103	1		35	399	0		8012	808	748	23
71	67	108	2		295	55	10		343	44	12		199	65	6		46	93	1		55	366	1		7753	730	1007	32
70	103	97	3		369	47	13		415	37	16		262	56	8		83	82	1		109	334	1		7418	653	1342	43
69	152	88	4		428	40	17		484	30	21		332	48	11		134	72	3		211	303	3		7018	581	1742	58
68	200	79	6		481	34	22		551	25	26		401	41	15		192	63	4		335	273	6		6598	513	2162	78
67	251	70	8		536	28	27		614	20	32		458	34	19		258	54	6		481	244	10		6160	449	2600	102
66	310	62	11		587	22	32		672	15	38		508	28	24		326	46	9		650	216	15		5705	390	3055	130
65	368	54	14		644	18	38		741	11	45		557	22	29		393	39	13		836	191	23		5219	335	3541	163
64	419	47	18		714	13	45		819	8	53		616	17	35		447	32	17		1013	167	32		4730	285	4030	201
63	466	41	23		788	10	53		891	6	61		691	13	42		498	26	22		1161	146	43		4264	240	4496	243
62	516	35	28		859	7	61		942	4	71		774	9	49		558	20	27		1298	125	55		3811	200	4949	290
61	573	29	33		908	5	70		976	3	80		850	6	57		629	15	33		1454	106	69		3370	164	5390	342
60	639	24	39		946	4	79		1005	1	90		913	4	66		711	11	40		1627	88	84		2917	133	5843	398
59	707	20	46		984	2	89		1038	1	100		965	3	75		800	8	47		1833	73	102		2432	106	6328	459
58	768	16	53		1019	1	99		1067	0	111		1001	2	85		883	5	56		2052	59	121		1968	84	6792	525
57	812	13	61		1051	1	109		1082	0	122		1034	1	95		949	3	65		2224	48	143		1606	67	7154	595
56	845	11	69		1069	0	120		1087	0	133		1060	0	106		999	2	75		2373	38	165		1326	52	7434	668
55	887	8	78		1079	0	131		1091	0	143		1076	0	117		1033	1	85		2525	30	190		1067	40	7693	744
54	925	7	87		1086	0	141		1094	0	154		1088	0	127		1053	1	95		2649	23	216		864	31	7896	822
53	953	5	97		1090	0	152		1095	0	165		1093	0	138		1064	1	106		2757	17	243		707	23	8053	902
52	978	4	106		1093	0	163		1095	0	176		1094	0	149		1075	0	117		2868	12	271		556	16	8204	983
51	999	3	116		1094	0	174		1095	0	187		1095	0	160		1085	0	128		2966	9	300		424	12	8336	1066
50	1020	2	126		1095	0	185		1095	0	198		1095	0	171		1090	0	138		3049	6	330		315	8	8445	1150
49	1043	1	137		1095	0	196		1095	0	209		1095	0	182		1092	0	149		3117	4	361		222	5	8538	1235
48	1058	1	147		1095	0	207		1095	0	220		1095	0	193		1094	0	160		3169	3	393		153	3	8607	1320
47	1070	1	158		1095	0	218		1095	0	231		1095	0	204		1095	0	171		3210	2	425		100	2	8660	1407
46	1079	0	168		1095	0	229		1095	0	242		1095	0	215		1095	0	182		3238	1	457		62	1	8698	1493

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

SAN DIEGO, CALIFORNIA

TRY Data (1974)

Latitude 32.40 N

WBAN 23188

Longitude 117.20 E

TABLE D:

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BY TIME OF DAY														24-HOUR SUMMARY			
BASE	7-9AM**		10-12AM**		1-3PM**		4-6PM**		7-9PM**		10PM-6AM**		HEATING		COOLING		
TEMP	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	Hrs	Deg-Hrs	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*	
45	1085	0 179	1095	0 240	1095	0 253	1095	0 226	1095	0 193	3254	1 490	40	1	8720	1581	
44	1089	0 190	1095	0 251	1095	0 264	1095	0 237	1095	0 204	3262	1 522	28	1	8732	1668	
43	1091	0 201	1095	0 262	1095	0 275	1095	0 248	1095	0 215	3268	0 555	20	0	8740	1755	
42	1092	0 212	1095	0 273	1095	0 286	1095	0 259	1095	0 226	3272	0 587	15	0	8745	1843	
41	1093	0 223	1095	0 284	1095	0 297	1095	0 270	1095	0 237	3276	0 620	10	0	8750	1930	
40	1094	0 234	1095	0 295	1095	0 308	1095	0 281	1095	0 248	3280	0 653	5	0	8755	2018	
39	1094	0 245	1095	0 306	1095	0 319	1095	0 292	1095	0 259	3283	0 686	2	0	8758	2105	
38	1095	0 256	1095	0 316	1095	0 330	1095	0 303	1095	0 270	3284	0 719	1	0	8759	2193	
37	1095	0 267	1095	0 327	1095	0 341	1095	0 314	1095	0 281	3285	0 752	0	0	8760	2280	

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

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

SAN DIEGO, CALIFORNIA

TRY Data (1974)

Latitude 32.40 N

WBAN 23188

Longitude 117.20 E

TABLE E:

Annual COOLING Wet Bulb Degree Hour Summary

Wet Bulb Temperature (F) Base:	50	53	56	59	62	65	68	71	74	77	80
Annual Wet Bulb hours ABOVE base:	7429	6427	4904	3509	2241	897	153	9	0	0	0
Annual Wet Bulb Cooling deg-hrs:	69081	47769	29858	16627	7379	2094	254	9	0	0	0

TABLE F:

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

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS ** Heating Degree Base												COOLING HUMIDITY RATIO HOURS ** Cooling Degree Base												Maintained Indoor Humidity Ratio*
	30	35	40	45	50	55	60	65	70	75	80		30	35	40	45	50	55	60	65	70	75	80		
.001	0	0	0	0	0	0	0	0	0	0	0	60	60	60	60	59	55	44	29	10	2	0	.001		
.002	0	0	0	0	0	0	0	0	0	0	0	51	51	51	51	51	48	39	26	9	2	0	.002		
.003	0	0	0	0	0	0	0	0	0	0	0	43	43	43	43	42	40	33	22	8	2	0	.003		
.004	0	0	0	0	0	0	1	1	1	1	1	35	35	35	35	34	33	28	19	7	1	0	.004		
.005	0	0	0	0	0	1	1	2	2	2	2	27	27	27	27	27	26	23	16	6	1	0	.005		
.006	0	0	0	0	1	2	2	3	3	3	4	20	20	20	20	20	19	18	13	5	1	0	.006		
.007	0	0	0	0	1	2	4	5	6	6	6	13	13	13	13	13	13	13	10	4	1	0	.007		
.008	0	0	0	0	1	3	6	8	9	10	10	9	9	9	9	9	9	8	7	3	1	0	.008		
.009	0	0	0	0	1	4	9	13	14	15	15	5	5	5	5	5	5	5	4	2	0	0	.009		
.010	0	0	0	0	2	5	12	17	20	21	21	2	2	2	2	2	2	2	2	1	0	0	.010		
.011	0	0	0	0	2	6	14	22	27	28	28	1	1	1	1	1	1	1	1	1	0	0	.011		
.012	0	0	0	0	2	7	17	27	34	36	36	0	0	0	0	0	0	0	0	0	0	0	.012		
.013	0	0	0	0	2	8	20	32	41	44	45	0	0	0	0	0	0	0	0	0	0	0	.013		
.014	0	0	0	0	3	9	22	37	48	53	54	0	0	0	0	0	0	0	0	0	0	0	.014		
.015	0	0	0	0	3	10	25	42	55	61	62	0	0	0	0	0	0	0	0	0	0	0	.015		
.016	0	0	0	0	3	11	28	47	63	70	71	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	0	0	0	1	4	12	30	52	70	78	80	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	0	0	0	1	4	13	33	57	77	86	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)-50%RH and 78 deg(F)-50%RH yield humidity ratios of .005 and .010 respectively.
 ** Heating (Cooling) Humidity Ratio Hours are defined as the summation of the differences between the maintained indoor humidity ratio and the observed outdoor humidity ratio when both the hourly dry bulb temperature and the humidity ratio are above (below) the base levels.

TABLE G:

Percent Diffuse Solar Radiation*
and Percent Possible Sunshine**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
% Diffuse on surface													
HORIZONTAL	39	26	52	27	54	36	34	40	38	40	26	24	37
VERTICAL													
NORTH	100	100	100	97	96	87	90	97	100	100	100	100	96
WEST	50	41	65	43	67	52	52	49	47	49	40	37	50
SOUTH	35	28	60	52	85	82	77	67	55	45	26	21	48
EAST	53	43	68	56	83	68	70	86	77	68	43	39	64
% Possible Sun	71	72	71	66	59	57	68	69	68	67	74	72	67

FOOTNOTES: * Corrected For Cloud Cover.

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

SAN DIEGO, CALIFORNIA
WBAN 23188

TRY Data (1974)

Latitude 32.40 N
Longitude 117.20 E

TABLE H:

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

Month	Under Clear Sky Assumption*										Corrected For Cloud Cover**										Obs ****		
	S	SSE/ SSW	SE/ SW	ESE/ WSW	E/ W	ENE/ WNW	NE/ 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	2093	1952	1607	1287	849	468	262	195	195	2336	1330	1011	941	788	646	459	302	221	193	193	1092	704	976
Feb	1993	1873	1619	1390	1006	632	371	244	234	2478	1645	1431	1341	1159	997	742	502	341	263	256	1719	1191	1266
Mar	1639	1617	1540	1454	1193	876	591	376	295	2475	2028	1051	1020	957	892	758	617	505	427	398	1328	1185	1632
Apr	1154	1281	1367	1418	1312	1095	825	575	392	2307	2336	1057	1058	1064	1057	963	816	658	523	442	1878	1910	1937
May	824	1022	1214	1366	1375	1251	1028	777	552	2103	2494	773	790	818	844	823	766	691	614	570	1294	1503	2003
Jun	704	911	1135	1327	1389	1309	1117	875	665	1987	2530	693	762	844	918	929	873	778	665	610	1493	1840	2062
Jul	750	947	1151	1316	1356	1258	1062	824	616	1993	2462	723	773	829	875	865	795	703	601	562	1526	1827	2187
Aug	986	1137	1260	1342	1292	1121	887	650	458	2135	2321	873	806	782	761	706	627	555	499	480	1493	1605	2057
Sep	1399	1430	1415	1385	1195	932	669	451	338	2301	2062	1040	925	845	781	670	559	474	419	392	1524	1435	1717
Oct	1800	1710	1532	1361	1030	696	444	292	263	2371	1716	1059	939	812	706	548	417	337	295	287	1297	1020	1373
Nov	1986	1854	1538	1259	840	491	280	209	207	2293	1385	1318	1213	1005	829	575	372	250	206	204	1490	946	1063
Dec	2041	1911	1554	1225	780	420	229	184	183	2225	1223	1388	1288	1047	830	545	322	205	176	176	1493	853	904
Year	1444	1468	1410	1344	1135	880	649	472	367	2249	1962	1032	985	910	843	714	581	477	407	382	1466	1334	1598

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**										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	1796	1647	1345	1079	686	359	193	159	159	195	1330	857	786	655	537	371	239	173	158	157	976
Feb	1673	1565	1355	1166	823	494	276	194	191	2478	1645	1198	1114	964	831	607	397	263	212	209	1266
Mar	1281	1318	1274	1212	985	704	453	285	241	2475	2028	842	830	784	734	620	500	403	342	324	1185
Apr	814	989	1112	1177	1086	895	656	437	307	2307	2336	775	823	855	864	784	660	524	412	353	1910
May	552	741	962	1123	1137	1032	827	603	408	2103	2494	588	618	654	682	667	621	557	493	455	1503
Jun	479	642	887	1084	1146	1083	903	688	486	1987	2530	507	574	666	741	754	711	625	530	471	1840
Jul	509	678	904	1079	1119	1040	857	646	455	1993	2462	523	585	652	703	696	643	560	478	438	1605
Aug	681	858	1014	1111	1066	919	708	500	352	2135	2321	652	627	619	611	564	503	447	405	384	1493
Sep	1055	1147	1166	1153	988	755	522	343	274	2301	2062	807	732	678	630	538	448	382	338	318	1435
Oct	1477	1417	1274	1136	850	555	335	228	214	2371	1716	868	765	662	576	445	335	268	239	234	1020
Nov	1699	1559	1290	1050	686	376	207	170	169	2293	1385	1119	1013	837	687	470	291	192	168	167	946
Dec	1762	1621	1304	1023	629	317	171	150	150	2225	1223	1192	1087	874	690	441	248	158	144	143	853
Year	1145	1180	1156	1116	934	712	510	368	284	2249	1962	825	793	740	689	579	466	380	327	305	1334

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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SAN FRANCISCO, CALIFORNIA

TRY Data (1974)

Latitude 37.60 N

WBAN 23234

Longitude 122.40 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															
65 to 69	0	0	0	1	5	0	0	0	6	56.7	744	14250	0	0	
60 to 64	0	0	6	8	9	8	3	0	34	54.8	732	10556	12	26	
55 to 59	12	10	4	16	27	16	12	14	111	52.7	663	7028	81	218	
50 to 54	9	11	18	33	23	33	28	13	168	48.0	533	4003	211	913	
45 to 49	24	26	25	13	17	21	23	31	180	44.5	333	1774	411	2404	
40 to 44	37	28	30	21	10	12	23	32	193	38.8	187	475	557	4825	
35 to 39	11	18	10	1	2	3	4	3	52	35.6	19	28	725	8098	
Feb															
60 to 64	0	0	0	0	9	10	0	0	19	51.0	670	8636	2	1	
55 to 59	0	0	3	13	47	25	12	0	100	48.8	624	5372	48	97	
50 to 54	15	9	14	63	24	40	29	21	215	46.9	488	2542	184	627	
45 to 49	37	28	44	8	4	9	43	55	228	43.9	214	741	458	2186	
40 to 44	32	43	22	0	0	0	0	8	105	39.9	61	107	611	4912	
35 to 39	0	4	1	0	0	0	0	0	5	36.2	1	1	671	8166	
Mar															
70 to 74	0	0	0	0	0	1	0	0	1	60.0	744	14868	0	0	
65 to 69	0	0	0	1	7	2	1	0	11	57.0	740	11153	4	5	
60 to 64	0	0	2	13	22	13	4	2	56	55.9	719	7495	25	67	
55 to 59	15	14	21	35	39	29	19	12	184	52.9	625	4079	119	371	
50 to 54	34	27	37	37	21	40	46	40	282	48.6	381	1506	363	1518	
45 to 49	33	36	25	7	4	8	20	34	167	45.3	96	327	648	4059	
40 to 44	10	10	7	0	0	0	3	5	35	39.9	25	60	719	7512	
35 to 39	1	6	1	0	0	0	0	0	8	36.8	0	0	744	11172	

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

SAN FRANCISCO, CALIFORNIA

WBAN 23234

TABLE A:

TRY Data (1974)

Latitude 37.60 N

Longitude 122.40 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	Hour of Day											hours below	degree hours	hours above	degree hours
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24							
Apr															
75 to 79	0	0	0	1	3	0	0	0	4	59.3	720	16877	0	0	
70 to 74	0	0	0	5	8	3	0	0	16	56.6	714	13290	6	13	
65 to 69	0	0	1	8	9	11	1	0	30	54.3	690	9772	30	95	
60 to 64	0	0	6	13	15	11	8	1	54	53.0	654	6405	66	328	
55 to 59	7	5	23	45	48	35	16	15	194	50.9	552	3322	168	845	
50 to 54	30	19	48	17	7	30	56	48	255	48.1	341	1100	379	2223	
45 to 49	49	56	12	1	0	0	9	25	152	45.6	59	122	661	4845	
40 to 44	4	10	0	0	0	0	0	1	15	41.2	8	4	712	8327	
May															
85 to 89	0	0	0	1	1	0	0	0	2	68.5	743	24445	1	1	
80 to 84	0	0	0	1	1	0	0	0	2	66.0	742	20734	2	10	
75 to 79	0	0	0	0	1	0	0	0	1	64.0	739	17033	5	29	
70 to 74	0	0	0	2	2	2	0	0	6	60.7	737	13340	7	56	
65 to 69	0	0	2	11	8	3	0	0	24	57.5	728	9674	16	110	
60 to 64	0	0	8	33	40	19	2	0	102	54.6	675	6139	69	295	
55 to 59	3	2	36	40	40	51	15	6	193	51.0	543	3038	201	914	
50 to 54	51	43	44	5	0	18	71	68	300	48.4	329	851	415	2447	
45 to 49	38	46	3	0	0	0	5	19	111	45.7	23	30	721	5346	
40 to 44	1	2	0	0	0	0	0	0	3	41.7	0	0	744	9036	
Jun															
85 to 89	0	0	0	0	2	0	0	0	2	67.5	720	20630	0	0	
80 to 84	0	0	1	4	3	0	0	0	8	61.6	716	17038	4	8	
75 to 79	0	0	1	3	1	1	0	0	6	62.5	708	13485	12	55	
70 to 74	0	0	2	9	7	3	0	0	21	61.3	699	9963	21	133	
65 to 69	0	0	7	17	34	14	0	0	72	58.0	671	6530	49	300	
60 to 64	0	1	25	48	42	46	18	0	180	55.8	531	3439	189	809	
55 to 59	32	31	44	9	1	25	53	51	246	53.3	346	1207	374	2177	
50 to 54	53	57	10	0	0	1	19	39	179	50.1	86	126	634	4696	
45 to 49	5	1	0	0	0	0	0	0	6	47.5	0	0	720	8170	

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

SAN FRANCISCO, CALIFORNIA
WBAN 23234
TABLE A:

TRY Data (1974)

Latitude 37.60 N
Longitude 122.40 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence In time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	Hour of Day 10-12 13-15 16-18			19-21	22-24	hours below			degree hours	hours above	degree hours	
Jul															
85 to 89	0	0	0	0	5	1	0	0	6	66.0	742	19525	2	2	
80 to 84	0	0	0	2	3	4	0	0	9	65.2	733	15837	11	34	
75 to 79	0	0	0	5	2	2	2	0	11	64.1	725	12191	19	108	
70 to 74	1	1	3	13	21	4	2	3	48	61.8	712	8593	32	230	
65 to 69	2	2	10	30	40	31	3	1	119	59.2	641	5201	103	558	
60 to 64	12	10	37	40	20	47	26	13	205	57.3	478	2370	266	1447	
55 to 59	50	44	42	3	2	4	60	73	278	54.5	238	523	506	3320	
50 to 54	28	36	1	0	0	0	0	3	68	51.6	2	1	742	6518	
Aug															
80 to 84	0	0	0	2	7	1	0	0	10	65.4	741	15578	3	5	
75 to 79	0	0	0	3	5	3	0	0	11	64.3	732	11895	12	42	
70 to 74	0	0	0	21	40	12	0	0	73	62.3	707	8275	37	142	
65 to 69	0	0	13	39	24	31	5	0	112	59.8	623	4945	121	532	
60 to 64	1	1	44	22	17	42	39	16	182	57.4	482	2159	262	1466	
55 to 59	89	75	36	6	0	4	49	77	336	55.0	192	320	552	3347	
50 to 54	3	17	0	0	0	0	0	0	20	52.5	0	0	744	6747	
Sep															
85 to 89	0	0	0	2	2	0	0	0	4	63.8	719	19516	1	2	
80 to 84	0	0	0	2	8	0	0	0	10	66.2	713	15935	7	21	
75 to 79	0	0	0	5	5	3	0	0	13	64.7	701	12396	19	82	
70 to 74	0	0	1	8	14	8	0	0	31	62.0	685	8923	35	209	
65 to 69	0	0	9	28	32	27	4	1	101	59.8	631	5604	89	490	
60 to 64	2	1	20	34	29	35	32	14	167	57.2	511	2726	209	1212	
55 to 59	60	54	48	11	0	17	48	54	292	54.8	290	678	430	2764	
50 to 54	28	35	12	0	0	0	6	21	102	52.3	5	5	715	5691	

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

SAN FRANCISCO, CALIFORNIA
 MBAN 23234
 TABLE A:

TRY Data (1974)

Latitude 37.60 N
 Longitude 122.40 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	hours below			degree hours	hours above	degree hours	
Oct															
85 to 89	0	0	0	0	2	2	0	0	4	62.5	744	20216	0	0	
80 to 84	0	0	0	1	10	4	0	0	15	61.4	737	16511	7	15	
75 to 79	0	0	0	6	8	3	1	0	18	59.5	717	12880	27	104	
70 to 74	0	0	2	16	12	9	4	0	43	59.2	696	9336	48	280	
65 to 69	1	0	10	21	32	16	6	3	89	58.3	644	5974	100	638	
60 to 64	10	5	25	39	17	32	26	19	173	56.2	507	3041	237	1425	
55 to 59	44	43	36	7	12	24	48	47	261	53.8	304	968	440	3072	
50 to 54	35	39	20	3	0	3	8	24	132	50.5	59	95	685	5919	
45 to 49	3	6	0	0	0	0	0	0	9	47.4	1	1	743	9545	
Nov															
65 to 69	0	0	0	2	11	5	0	0	18	57.5	718	9990	2	2	
60 to 64	0	1	2	12	26	16	5	1	63	54.2	683	6470	37	82	
55 to 59	15	10	15	51	48	44	29	21	233	52.3	567	3267	153	479	
50 to 54	38	28	38	25	5	25	53	49	261	49.7	254	1148	466	1960	
45 to 49	28	27	21	0	0	0	3	18	97	45.3	98	323	622	4735	
40 to 44	9	22	14	0	0	0	0	1	46	41.7	19	29	701	8041	
35 to 39	0	2	0	0	0	0	0	0	2	38.0	0	0	720	11612	
Dec															
60 to 64	0	0	0	0	2	0	0	0	2	52.5	744	10389	0	0	
55 to 59	0	0	0	9	27	19	7	0	62	51.5	732	6685	12	16	
50 to 54	16	13	19	46	55	55	42	29	275	48.1	591	3272	153	323	
45 to 49	45	38	41	31	9	18	36	45	263	44.3	285	1071	459	1842	
40 to 44	24	36	26	7	0	1	6	15	115	39.4	75	222	669	4713	
35 to 39	8	3	6	0	0	0	2	4	23	34.9	14	31	730	8242	
30 to 34	0	3	1	0	0	0	0	0	4	33.0	1	1	743	11932	

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

SAN FRANCISCO, CALIFORNIA

TRY Data (1974)

Latitude 37.60 N

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Longitude 122.40 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
85 to 89	0	0	0	3	12	3	0	0	18	0.0	0.0	0.0	64.7	65.5	64.3	0.0	0.0	65.2
80 to 84	0	0	1	12	32	9	0	0	54	0.0	0.0	56.0	63.5	64.7	62.3	0.0	0.0	63.9
75 to 79	0	0	1	23	25	12	3	0	64	0.0	0.0	57.0	63.1	62.4	62.5	60.3	0.0	62.5
70 to 74	1	1	8	74	104	42	6	3	239	62.0	62.0	60.8	61.5	61.4	60.3	57.5	61.3	61.1
65 to 69	3	2	52	158	202	140	20	5	582	57.7	61.0	59.7	59.0	58.4	58.6	58.1	56.6	58.7
60 to 64	25	19	175	262	248	279	163	66	1237	57.0	56.1	56.5	56.2	55.5	56.0	56.3	56.5	56.1
55 to 59	327	288	308	245	291	293	368	370	2490	54.2	54.1	53.7	52.1	51.0	51.7	53.7	54.1	53.1
50 to 54	340	334	261	229	135	245	358	355	2257	49.8	50.0	49.2	47.8	46.8	48.0	48.5	49.2	48.9
45 to 49	262	264	171	60	34	56	139	227	1213	45.4	45.3	44.7	43.2	43.9	43.2	44.4	44.9	44.8
40 to 44	117	151	99	28	10	13	32	62	512	39.4	40.0	40.0	39.7	38.5	38.7	39.3	38.8	39.6
35 to 39	20	33	18	1	2	3	6	7	90	35.5	35.8	34.8	38.0	37.0	36.7	35.3	36.3	35.6
30 to 34	0	3	1	0	0	0	0	0	4	0.0	33.3	32.0	0.0	0.0	0.0	0.0	0.0	33.0

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Dry Bulb Temperature (F)						Wet Bulb	Percent Relative Humidity					Average Humidity Ratio (lb moisture/lb dry air)					Average wind MPH
Month	Ave	Max	Min	Daily Ave			Ave	4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	
				Max	Min												
Jan	48.3	66	35	54	43	45.0	85	76	69	79	78	0.0055	0.0057	0.0058	0.0058	0.0057	7.9
Feb	49.7	63	37	57	43	45.1	80	71	60	71	72	0.0050	0.0055	0.0054	0.0053	0.0053	8.5
Mar	52.5	70	38	59	47	49.1	85	77	71	81	79	0.0063	0.0068	0.0068	0.0066	0.0066	9.7
Apr	54.1	76	42	62	47	49.1	82	66	62	73	72	0.0059	0.0064	0.0064	0.0061	0.0062	10.7
May	54.6	88	43	63	49	50.0	84	67	64	77	74	0.0063	0.0071	0.0068	0.0064	0.0066	14.2
Jun	58.8	86	49	67	52	54.0	85	66	64	78	75	0.0073	0.0081	0.0080	0.0076	0.0078	13.5
Jul	61.3	89	52	70	55	56.6	88	71	65	81	77	0.0084	0.0089	0.0090	0.0086	0.0087	14.0
Aug	61.6	84	53	71	56	57.2	89	73	66	83	79	0.0085	0.0094	0.0093	0.0089	0.0090	12.2
Sep	60.4	89	50	70	54	56.4	90	74	68	84	80	0.0083	0.0091	0.0092	0.0088	0.0088	11.2
Oct	60.3	86	47	70	53	54.9	83	71	61	74	74	0.0074	0.0086	0.0080	0.0078	0.0079	8.4
Nov	53.6	69	38	61	47	50.0	87	79	66	78	79	0.0064	0.0073	0.0070	0.0070	0.0068	7.8
Dec	48.5	61	32	54	43	45.2	86	78	69	77	79	0.0055	0.0057	0.0059	0.0058	0.0057	8.1
Year	55.3	89	32	63	49	51.1	85	72	66	78	77	0.0068	0.0074	0.0073	0.0071	0.0071	10.5

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TRY Data (1974)

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

BASE TEMP (F)	BY TIME OF DAY																24-HOUR SUMMARY			
	7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**			
	Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs			Hrs	Deg-Hrs		
	Above (100s)*	Base Heat	Cool		Above (100s)*	Base Heat	Cool		Above (100s)*	Base Heat	Cool		Above (100s)*	Base Heat	Cool		Above (100s)*	Base Heat	Cool	
90	0	395	0		0	335	0		0	309	0		0	343	0		0	388	0	
89	0	384	0		0	324	0		1	298	0		0	332	0		0	377	0	
88	0	373	0		0	313	0		3	288	0		0	321	0		0	366	0	
87	0	362	0		1	302	0		5	277	0		0	310	0		0	355	0	
86	0	352	0		2	291	0		8	266	0		0	299	0		0	344	0	
85	0	341	0		2	280	0		10	255	0		2	288	0		0	333	0	
84	0	330	0		3	269	0		16	244	0		4	277	0		0	322	0	
83	0	319	0		4	258	0		22	233	1		5	266	0		0	311	0	
82	0	308	0		7	247	0		27	223	1		6	256	0		0	300	0	
81	0	297	0		11	236	0		33	212	1		8	245	0		0	289	0	
80	0	286	0		13	226	0		40	201	1		11	234	0		0	278	0	
79	1	275	0		17	215	1		46	191	2		13	223	0		0	267	0	
78	1	264	0		21	204	1		51	180	2		16	212	1		0	256	0	
77	1	253	0		23	193	1		55	170	3		17	201	1		1	245	0	
76	2	242	0		26	183	1		59	160	3		19	191	1		2	235	0	
75	2	231	0		33	172	1		65	149	4		22	180	1		2	224	0	
74	2	220	0		41	161	2		70	139	5		26	169	1		3	213	0	
73	3	209	0		49	151	2		81	129	6		31	159	2		3	202	0	
72	4	198	0		59	141	3		99	119	6		37	148	2		3	191	0	
71	6	187	0		74	130	3		121	109	7		46	137	2		5	180	0	
70	8	177	0		98	120	4		154	99	9		59	127	3		8	169	0	
69	11	166	0		121	110	5		185	90	11		71	117	4		10	158	0	
68	15	155	1		145	101	7		209	81	13		85	106	4		12	147	0	
67	21	144	1		175	91	8		234	72	15		105	96	5		14	137	1	
66	31	133	1		208	82	10		280	64	17		136	87	6		18	126	1	
65	50	123	1		248	74	13		344	56	20		181	77	8		25	115	1	
64	71	113	2		297	65	15		405	49	24		229	68	10		36	104	1	
63	92	102	3		353	58	18		465	42	28		280	60	13		52	94	2	
62	118	93	4		406	50	22		514	36	33		333	52	16		77	83	2	
61	150	83	5		455	44	27		558	31	39		386	45	19		116	73	3	
60	202	74	7		506	38	31		603	26	45		450	38	23		166	64	5	
59	263	65	9		557	32	37		652	21	51		513	32	28		232	55	7	
58	320	57	12		611	27	43		709	17	58		565	26	34		309	47	9	
57	387	50	16		662	22	49		772	13	65		615	21	40		376	39	13	
56	455	43	20		706	18	56		837	10	73		675	17	46		439	32	17	
55	516	37	25		751	15	63		890	8	82		743	13	53		516	26	21	
54	572	31	30		804	11	71		932	6	91		812	10	61		586	21	27	
53	632	26	36		858	9	79		967	5	100		868	7	69		657	16	33	
52	688	22	43		909	7	88		994	4	110		921	5	78		736	12	40	
51	734	18	50		951	5	97		1014	3	120		970	4	88		805	9	48	
50	780	15	57		988	4	107		1036	2	131		1006	3	98		879	6	56	
49	831	12	65		1016	3	117		1052	1	141		1031	2	108		944	4	66	
48	877	9	74		1031	2	127		1058	1	152		1048	1	118		990	3	75	
47	912	8	83		1041	2	138		1066	1	162		1061	1	129		1022	2	85	
46	939	6	92		1055	1	148		1074	1	173		1070	1	140		1042	2	96	
45	964	4	102		1064	1	159		1079	0	184		1076	1	150		1053	1	106	

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

SAN FRANCISCO, CALIFORNIA

TRY Data (1974)

Latitude 37.60 N

WBAN 23234

Longitude 122.40 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*				
44	989	3	112		1069	1	169		1085	0	194		1080	0	161		1062	1	117		2924	11	256		550	16	8210	1010
43	1008	2	122		1076	0	180		1090	0	205		1084	0	172		1070	1	127		2996	7	286		435	11	8325	1092
42	1025	1	132		1084	0	191		1092	0	216		1088	0	183		1076	0	138		3066	5	316		328	7	8432	1176
41	1045	1	142		1088	0	202		1092	0	227		1091	0	194		1082	0	149		3122	3	347		239	4	8521	1261
40	1065	0	153		1092	0	213		1092	0	238		1092	0	205		1086	0	160		3186	2	379		145	2	8615	1347
39	1079	0	163		1094	0	224		1093	0	249		1092	0	215		1091	0	171		3233	1	411		76	1	8684	1433
38	1085	0	174		1095	0	235		1094	0	260		1093	0	226		1094	0	182		3252	1	443		46	1	8714	1520
37	1090	0	185		1095	0	246		1095	0	271		1094	0	237		1095	0	193		3262	0	476		28	0	8732	1608
36	1092	0	196		1095	0	257		1095	0	282		1095	0	248		1095	0	204		3269	0	509		18	0	8742	1695
35	1093	0	207		1095	0	267		1095	0	293		1095	0	259		1095	0	214		3277	0	541		9	0	8751	1782
34	1094	0	218		1095	0	278		1095	0	304		1095	0	270		1095	0	225		3283	0	574		2	0	8758	1870
33	1094	0	229		1095	0	289		1095	0	315		1095	0	281		1095	0	236		3285	0	607		1	0	8759	1958
32	1094	0	240		1095	0	300		1095	0	326		1095	0	292		1095	0	247		3285	0	640		0	0	8760	2045
31	1095	0	251		1095	0	311		1095	0	337		1095	0	303		1095	0	258		3285	0	673		0	0	8760	2133

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

SAN FRANCISCO, CALIFORNIA

TRY Data (1974)

Latitude 37.60 N

WBAN 23234

Longitude 122.40 E

TABLE E:

Annual COOLING Wet Bulb Degree Hour Summary

Wet Bulb Temperature (F) Base:	50	53	56	59	62	65	68	71	74	77	80
Annual Wet Bulb hours ABOVE base:	5436	3881	2144	790	277	55	8	0	0	0	0
Annual Wet Bulb Cooling deg-hrs:	32053	17265	7289	2434	665	119	9	0	0	0	0

TABLE F:

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

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS **												COOLING HUMIDITY RATIO HOURS **												Maintained Indoor Humidity Ratio*
	Heating Degree Base												Cooling Degree Base												
	30	35	40	45	50	55	60	65	70	75	80	30	35	40	45	50	55	60	65	70	75	80			
.001	0	0	0	0	0	0	0	0	0	0	0	49	49	49	47	40	28	13	6	2	1	0	.001		
.002	0	0	0	0	0	0	0	0	0	0	0	40	40	40	39	34	24	11	5	2	1	0	.002		
.003	0	0	0	0	0	0	0	0	0	0	0	32	32	32	31	27	19	9	4	2	1	0	.003		
.004	0	0	0	0	0	1	1	1	1	1	1	24	24	24	23	21	15	8	3	1	0	0	.004		
.005	0	0	0	1	1	1	2	2	2	2	2	16	16	16	16	15	11	6	3	1	0	0	.005		
.006	0	0	0	1	2	3	4	4	4	4	4	9	9	9	9	9	8	4	2	1	0	0	.006		
.007	0	0	0	2	4	6	7	8	8	8	8	5	5	5	5	5	4	2	1	0	0	0	.007		
.008	0	0	0	2	6	10	13	13	13	14	14	2	2	2	2	2	1	1	1	0	0	0	.008		
.009	0	0	1	3	8	14	19	20	21	21	21	0	0	0	0	0	0	0	0	0	0	0	.009		
.010	0	0	1	4	10	18	25	28	29	29	30	0	0	0	0	0	0	0	0	0	0	0	.010		
.011	0	0	1	4	11	23	32	36	37	38	38	0	0	0	0	0	0	0	0	0	0	0	.011		
.012	0	0	1	5	13	27	38	44	46	47	47	0	0	0	0	0	0	0	0	0	0	0	.012		
.013	0	0	1	6	15	31	45	51	54	55	56	0	0	0	0	0	0	0	0	0	0	0	.013		
.014	0	0	1	6	17	35	52	59	63	64	64	0	0	0	0	0	0	0	0	0	0	0	.014		
.015	0	0	1	7	19	39	58	67	71	73	73	0	0	0	0	0	0	0	0	0	0	0	.015		
.016	0	0	1	7	21	43	65	75	79	81	82	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	0	0	1	8	22	47	71	83	88	90	90	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	0	0	1	9	24	51	78	90	96	98	99	0	0	0	0	0	0	0	0	0	0	0	.018		

FOOTNOTES: * Indoor Humidity Level is measured in pounds of moisture per pound of dry air. Indoor set points of 72 deg(F)-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	42	34	57	36	27	30	32	28	22	27	34	38	32
VERTICAL													
NORTH	100	100	100	97	88	84	87	94	100	100	100	100	93
WEST	49	47	67	53	47	48	48	46	34	41	48	46	47
SOUTH	34	31	60	56	60	69	68	53	35	30	29	29	45
EAST	58	46	69	53	51	57	60	55	55	44	45	50	54
% Possible Sun	56	62	69	73	72	73	66	65	72	70	62	53	67

FOOTNOTES: * Corrected For Cloud Cover.

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

SAN FRANCISCO, CALIFORNIA
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TRY Data (1974)

Latitude 37.60 N
Longitude 122.40 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	2012	1863	1496	1159	709	367	198	165	165	2121	1094	908	826	665	523	350	231	174	162	931	708
Feb	2013	1887	1600	1331	915	554	319	218	208	2345	1429	1199	1133	972	820	588	393	271	220	1327	1009
Mar	1762	1710	1577	1440	1137	805	530	338	277	2455	1871	983	956	883	809	672	538	438	372	1163	1455
Apr	1325	1418	1458	1474	1316	1064	787	545	376	2367	2247	1133	1185	1198	1196	1081	909	729	575	1742	1920
May	998	1165	1312	1426	1389	1222	986	734	533	2217	2466	959	1044	1123	1185	1139	1008	842	671	1869	2226
Jun	873	1053	1245	1400	1419	1304	1088	841	646	2120	2536	838	919	1015	1093	1085	997	857	706	1746	2377
Jul	918	1087	1252	1387	1378	1248	1029	789	598	2115	2457	882	946	1018	1079	1051	957	819	676	1743	2392
Aug	1152	1273	1354	1411	1307	1102	858	623	447	2215	2263	1031	1051	1064	1070	976	830	680	543	1811	2117
Sep	1530	1530	1471	1399	1164	878	617	417	322	2306	1935	1289	1137	1017	918	746	580	454	369	1890	1742
Oct	1850	1743	1513	1304	948	606	375	254	239	2279	1526	1228	1146	999	871	655	452	314	241	1480	1226
Nov	1963	1832	1503	1191	772	421	240	181	181	2128	1165	1120	1061	894	728	501	312	216	182	1188	821
Dec	1938	1799	1435	1086	649	316	177	154	154	1994	986	973	896	721	558	363	219	158	147	979	642
Year	1525	1528	1433	1334	1093	825	602	439	346	2271	1833	1043	1024	963	904	768	620	497	406	1489	1553

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

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

*** South exposure till 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	1737	1580	1255	960	569	272	149	135	135	774	690	550	428	282	181	138	132	132
Feb	1707	1585	1338	1111	750	429	236	173	170	1012	947	810	681	481	310	210	178	176
Mar	1415	1409	1311	1206	940	645	404	257	226	798	784	728	668	551	435	349	299	288
Apr	978	1118	1193	1222	1090	871	626	416	296	866	944	980	987	892	744	586	453	374
May	690	867	1050	1172	1147	1007	790	569	397	691	791	896	966	932	825	676	529	417
Jun	594	760	979	1145	1170	1073	877	660	476	599	686	800	886	885	813	689	561	464
Jul	631	797	993	1134	1136	1024	826	616	444	637	715	808	874	857	777	656	536	457
Aug	830	982	1098	1163	1081	904	684	481	345	763	816	855	870	796	674	542	429	360
Sep	1195	1245	1214	1162	960	708	480	318	261	1014	908	818	743	601	464	362	292	264
Oct	1547	1455	1265	1089	774	478	282	201	195	1020	950	831	723	535	360	243	192	188
Nov	1688	1551	1260	996	621	323	177	148	147	954	894	747	607	405	245	167	149	148
Dec	1678	1532	1202	900	514	236	134	125	125	833	755	598	460	291	169	125	120	120
Year	1222	1238	1179	1105	897	665	473	343	269	828	822	784	741	626	501	396	323	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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SEATTLE-TACOMA, WASHINGTON
WBAN 24233
TABLE A:

TRY Data (1960)

Latitude 47.50 N
Longitude 122.30 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	1-3	4-6	7-9	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	2	0	0	0	2	47.0	744	17817	0	0
55 to 59	0	0	1	2	6	2	0	0	11	49.2	739	14107	5	10
50 to 54	4	4	5	5	1	10	7	4	40	47.3	720	10443	24	66
45 to 49	8	7	2	11	17	9	11	10	75	44.5	672	6962	72	305
40 to 44	14	16	20	17	30	27	17	18	159	38.8	565	3843	179	906
35 to 39	27	26	31	41	25	27	26	23	226	34.7	376	1470	368	2253
30 to 34	28	31	28	16	12	18	29	34	196	30.7	99	242	645	4745
25 to 29	12	9	6	1	0	0	3	4	35	26.8	12	15	732	8238
Feb														
50 to 54	4	0	3	5	10	8	6	4	40	44.9	672	7631	0	0
45 to 49	14	15	10	23	43	36	7	10	158	42.6	602	4424	70	153
40 to 44	24	22	26	36	20	26	52	33	239	39.9	357	1983	315	1072
35 to 39	21	21	21	15	11	13	9	22	133	35.0	157	726	515	3175
30 to 34	15	17	17	5	0	1	10	13	78	30.0	59	174	613	5983
25 to 29	6	9	7	0	0	0	0	2	24	23.3	10	19	662	9188
Mar														
65 to 69	0	0	0	0	1	1	0	0	2	56.5	744	18706	0	0
60 to 64	0	0	0	3	4	5	0	0	12	54.3	738	14995	6	9
55 to 59	0	0	0	3	17	11	4	1	36	51.3	717	11342	27	76
50 to 54	1	0	2	6	15	14	11	7	56	46.8	678	7850	66	304
45 to 49	19	9	9	25	21	30	29	22	164	43.9	597	4640	147	814
40 to 44	32	39	39	36	22	14	22	27	231	40.6	380	2168	364	2062
35 to 39	24	20	26	14	9	11	15	25	144	35.2	188	819	556	4433
30 to 34	14	17	9	3	1	4	8	8	64	28.4	66	218	678	7552
25 to 29	3	8	8	1	3	3	4	3	33	23.9	10	20	734	11074
20 to 24	0	0	0	2	0	0	0	0	2	24.0	0	0	744	14774

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

SEATTLE-TACOMA, WASHINGTON

WBAN 24233

TABLE A:

TRY Data (1960)

Latitude 47.50 N

Longitude 122.30 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															
70 to 74	0	0	0	0	1	0	0	0	1	51.0	720	17550	0	0	
65 to 69	0	0	0	2	10	8	0	0	20	55.0	713	13960	7	10	
60 to 64	0	0	1	7	15	14	2	0	39	53.2	684	10461	36	111	
55 to 59	0	0	2	17	14	13	15	2	63	50.3	641	7142	79	392	
50 to 54	13	5	18	26	19	23	20	24	148	47.5	558	4112	162	962	
45 to 49	18	21	27	25	28	29	30	20	198	44.4	375	1762	345	2212	
40 to 44	41	43	33	13	3	2	22	35	192	41.2	152	435	568	4485	
35 to 39	16	19	9	0	0	1	1	9	57	36.7	32	49	688	7699	
30 to 34	0	2	0	0	0	0	0	0	2	33.0	0	0	720	11250	
May															
75 to 79	0	0	0	0	1	3	0	0	4	57.8	744	19230	0	0	
70 to 74	0	0	0	1	2	0	2	0	5	55.4	738	15526	6	16	
65 to 69	0	0	0	1	4	2	0	0	7	55.0	734	11847	10	57	
60 to 64	0	0	2	10	27	17	5	1	62	53.7	711	8214	33	144	
55 to 59	3	1	7	36	35	36	16	7	141	51.3	624	4836	120	486	
50 to 54	19	17	39	37	21	26	46	39	244	48.8	441	2137	303	1507	
45 to 49	51	44	38	8	3	8	19	32	203	45.3	200	588	544	3678	
40 to 44	15	28	7	0	0	1	5	14	70	41.4	42	71	702	6881	
35 to 39	5	3	0	0	0	0	0	0	8	38.4	0	0	744	10530	
Jun															
80 to 84	0	0	0	0	2	1	0	0	3	63.7	720	17097	0	0	
75 to 79	0	0	0	0	6	10	0	0	16	60.9	715	13507	5	10	
70 to 74	0	0	0	9	27	21	6	0	63	59.2	680	10001	40	104	
65 to 69	0	0	1	23	12	19	18	0	73	57.0	613	6769	107	472	
60 to 64	2	0	17	18	29	26	31	14	137	54.8	523	3904	197	1207	
55 to 59	28	12	34	34	12	11	24	42	197	52.8	354	1693	366	2596	
50 to 54	42	48	34	5	2	2	8	28	169	49.4	153	432	567	4935	
45 to 49	17	30	4	1	0	0	3	5	60	46.0	28	36	692	8139	
40 to 44	1	0	0	0	0	0	0	1	2	43.0	0	0	720	11703	

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

SEATTLE-TACOMA, WASHINGTON
WBAN 24233
TABLE A:

TRY Data (1960)

Latitude 47.50 N
Longitude 122.30 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period									Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	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															
90 to 94	0	0	0	0	5	3	0	0	8	67.8	744	19600	0	0	
85 to 89	0	0	0	2	8	16	2	0	28	66.1	730	15912	14	32	
80 to 84	0	0	0	7	20	17	10	0	54	64.4	686	12363	58	203	
75 to 79	0	0	2	20	23	26	15	3	89	62.1	633	9064	111	624	
70 to 74	0	0	8	17	18	14	22	13	92	59.8	535	6169	209	1449	
65 to 69	13	2	17	23	6	5	20	22	108	58.2	439	3741	305	2741	
60 to 64	25	16	25	12	11	12	17	22	140	55.6	304	1869	440	4589	
55 to 59	24	29	23	11	2	0	7	24	120	53.3	176	674	568	7114	
50 to 54	29	39	18	1	0	0	0	9	96	49.7	58	94	686	10254	
45 to 49	2	7	0	0	0	0	0	0	9	47.0	2	1	742	13881	
Aug															
95 to 99	0	0	0	1	6	5	0	0	12	67.2	743	26834	1	1	
90 to 94	0	0	0	2	0	1	0	0	3	67.7	731	23158	13	45	
85 to 89	0	0	0	3	0	3	2	0	8	66.6	728	19511	16	118	
80 to 84	0	0	2	0	5	3	3	1	14	64.6	718	15899	26	226	
75 to 79	1	0	1	4	2	2	3	3	16	62.9	703	12355	41	402	
70 to 74	4	1	3	2	17	15	6	3	51	62.0	674	8899	70	666	
65 to 69	2	5	3	16	29	24	10	3	92	58.8	620	5666	124	1153	
60 to 64	12	6	17	31	25	25	36	24	176	56.9	481	2869	263	2076	
55 to 59	45	40	40	29	8	10	22	39	233	54.3	284	918	460	3845	
50 to 54	26	38	26	5	1	5	11	18	130	50.8	65	103	679	6750	
45 to 49	3	3	1	0	0	0	0	2	9	46.2	3	4	741	10371	
Sep															
80 to 84	0	0	0	0	4	1	0	0	5	63.2	720	18182	0	0	
75 to 79	0	0	0	2	5	5	0	0	12	62.3	713	14601	7	19	
70 to 74	0	0	0	4	6	8	1	0	19	60.5	699	11075	21	93	
65 to 69	0	0	2	10	20	16	7	0	55	58.9	668	7649	52	267	
60 to 64	2	0	4	21	35	35	22	9	128	56.2	592	4475	128	693	
55 to 59	31	21	27	41	18	21	39	40	238	54.1	416	1912	304	1730	
50 to 54	42	49	44	11	2	4	20	34	206	50.9	163	452	557	3870	
45 to 49	14	14	10	1	0	0	1	7	47	46.6	34	79	686	7097	
40 to 44	1	6	3	0	0	0	0	0	10	42.0	4	5	716	10623	

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

SEATTLE-TACOMA, WASHINGTON
WBAN 24233
TABLE A:

TRY Data (1960)

Latitude 47.50 N
Longitude 122.30 E

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

Dry Bulb Range(F)	Number of Hours of Occurrence in time period								Month Total	MCWB Temp(F)	HEATING*		COOLING*	
	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	0	2	1	0	0	3	60.0	744	14949	0	0
65 to 69	0	0	0	3	10	5	1	0	19	58.2	740	11239	4	10
60 to 64	1	1	0	13	24	19	5	1	64	55.7	693	7629	51	120
55 to 59	12	10	17	26	23	25	26	18	157	53.1	608	4322	136	533
50 to 54	43	36	33	36	27	33	35	42	285	49.5	391	1741	353	1672
45 to 49	21	31	31	13	7	10	25	22	160	45.1	156	459	588	4110
40 to 44	13	9	9	2	0	0	1	10	44	41.4	25	75	719	7446
35 to 39	3	6	3	0	0	0	0	0	12	36.2	8	8	736	11099
Nov														
60 to 64	0	0	0	0	3	1	0	0	4	50.5	716	13250	4	3
55 to 59	0	0	0	3	5	2	1	0	11	50.0	712	9674	8	27
50 to 54	5	3	7	23	36	21	10	8	113	47.2	675	6166	45	119
45 to 49	28	32	25	29	27	38	35	30	244	43.3	526	3141	194	694
40 to 44	36	28	30	23	8	19	31	37	212	39.8	267	1201	453	2354
35 to 39	12	20	17	9	8	3	7	4	80	35.0	101	383	619	5136
30 to 34	7	6	9	3	3	6	6	9	49	31.4	27	58	693	8411
25 to 29	2	1	2	0	0	0	0	2	7	27.9	1	1	719	11954
Dec														
55 to 59	0	3	3	3	3	1	0	0	13	51.0	742	13086	2	1
50 to 54	2	0	1	5	10	4	2	3	27	44.6	727	9415	17	50
45 to 49	13	15	10	15	19	16	12	6	106	43.1	674	5878	70	233
40 to 44	20	14	20	33	42	44	34	39	246	39.4	504	2872	240	947
35 to 39	31	30	30	23	11	21	30	27	203	35.4	258	991	486	2786
30 to 34	22	27	23	14	8	7	15	18	134	31.7	88	148	656	5663
25 to 29	5	4	6	0	0	0	0	0	15	27.9	3	4	741	9239

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

SEATTLE-TACOMA, WASHINGTON

WBAN 24233

TABLE B:

TRY Data (1960)

Latitude 47.50 N

Longitude 122.30 E

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

Dry Bulb range(F)	Number of Hours of Occurrence in time period										Mean Coincident Wet Bulb Temperature (F)									
	Hour of day										Hour of day									
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	Year		
95 to 99	0	0	0	1	6	5	0	0	12	0.0	0.0	0.0	69.0	67.8	66.0	0.0	0.0	67.2		
90 to 94	0	0	0	2	5	4	0	0	11	0.0	0.0	0.0	68.0	69.0	66.0	0.0	0.0	67.7		
85 to 89	0	0	0	5	8	19	4	0	36	0.0	0.0	0.0	67.8	66.4	65.9	65.8	0.0	66.3		
80 to 84	0	0	2	7	31	22	13	1	76	0.0	0.0	66.0	66.7	64.4	63.6	64.0	64.0	64.4		
75 to 79	1	0	3	26	37	46	18	6	137	60.0	0.0	65.0	63.4	61.7	61.0	62.1	62.3	61.9		
70 to 74	4	1	11	33	73	59	37	16	234	62.0	60.0	62.1	59.8	59.8	60.1	59.6	60.9	60.1		
65 to 69	15	7	23	78	92	80	56	25	376	59.5	60.3	59.4	58.1	57.7	57.4	57.8	58.3	58.0		
60 to 64	42	23	66	115	175	154	118	71	764	56.3	57.4	56.5	55.8	54.7	54.9	55.8	56.1	55.5		
55 to 59	143	116	154	205	143	132	154	173	1220	53.9	54.3	53.5	52.7	51.7	51.9	52.6	53.6	53.0		
50 to 54	230	239	230	165	144	150	176	220	1554	49.5	50.1	49.6	48.1	46.9	47.7	49.2	49.3	49.0		
45 to 49	208	228	167	151	165	176	172	166	1433	44.9	45.1	44.8	44.0	43.4	43.4	43.5	44.3	44.2		
40 to 44	197	205	187	160	125	133	184	214	1405	40.6	40.8	40.8	39.7	38.9	39.2	39.9	40.1	40.1		
35 to 39	141	145	137	102	64	76	88	110	863	35.9	35.7	35.3	34.6	34.2	34.1	35.0	35.5	35.2		
30 to 34	86	100	86	41	24	36	68	82	523	30.4	31.1	30.7	30.3	31.5	30.9	30.5	30.1	30.6		
25 to 29	28	31	29	2	3	3	7	11	114	26.2	24.9	25.1	25.0	25.0	26.7	26.4	25.3	25.4		
20 to 24	0	0	0	2	0	0	0	0	2	0.0	0.0	0.0	24.0	0.0	0.0	0.0	0.0	24.0		

TABLE C:

Annual and Monthly Temperature, Humidity and Windspeed Summary

Dry Bulb Temperature (F)						Wet Bulb Ave	Percent Relative Humidity Average					Average Humidity Ratio (lb moisture/lb dry air)					Average wind MPH
Month	Ave	Max	Min	Daily Ave			4AM	10AM	4PM	10PM	Day	4AM	10AM	4PM	10PM	Day	
				Max	Min												
Jan	38.6	60	25	43	35	36.1	82	80	77	82	80	0.0038	0.0039	0.0043	0.0041	0.0040	8.2
Feb	41.1	52	25	47	37	38.1	83	79	69	75	77	0.0041	0.0044	0.0044	0.0043	0.0043	10.8
Mar	42.4	65	24	49	36	39.7	86	82	70	80	81	0.0045	0.0048	0.0050	0.0048	0.0047	11.0
Apr	48.1	71	34	56	42	44.8	93	78	65	81	80	0.0055	0.0059	0.0058	0.0058	0.0057	11.4
May	51.7	76	38	59	45	48.1	93	76	65	79	79	0.0063	0.0066	0.0065	0.0066	0.0064	10.1
Jun	58.8	80	44	68	50	53.0	88	70	54	66	71	0.0071	0.0076	0.0076	0.0073	0.0074	9.4
Jul	66.2	92	47	78	54	57.2	82	60	42	54	62	0.0077	0.0085	0.0083	0.0081	0.0082	8.5
Aug	61.4	98	46	70	54	56.1	86	75	59	74	75	0.0083	0.0087	0.0085	0.0087	0.0086	9.4
Sep	57.2	81	40	66	50	53.6	92	82	67	79	81	0.0077	0.0082	0.0085	0.0081	0.0081	8.9
Oct	52.4	71	35	59	47	49.4	90	81	71	81	82	0.0068	0.0071	0.0072	0.0069	0.0070	9.3
Nov	44.1	64	27	50	39	41.1	84	78	74	79	79	0.0048	0.0049	0.0051	0.0048	0.0049	10.7
Dec	39.9	58	26	45	35	37.6	85	82	79	84	83	0.0041	0.0043	0.0046	0.0043	0.0043	8.2
Year	50.2	98	24	58	44	46.3	87	77	66	76	78	0.0059	0.0063	0.0063	0.0062	0.0061	9.7

SEATTLE-TACOMA, WASHINGTON
WBAN 24233
TABLE D:

TRY Data (1960)

Latitude 47.50 N
Longitude 122.30 E

Annual Heating and Cooling Degree Hour Summary for All Degree Bases

BASE	BY TIME OF DAY																24-HOUR SUMMARY											
	7-9AM**				10-12AM**				1-3PM**				4-6PM**				7-9PM**				10PM-6AM**				HEATING		COOLING	
	Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs		Hrs		Deg-Hrs	
	(F) 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*	
99	0	565	0	0	511	0	0	473	0	0	482	0	0	525	0	0	1718	0	8760	4274	0	0						
98	0	554	0	0	500	0	0	462	0	0	471	0	0	514	0	0	1685	0	8759	4187	1	0						
97	0	543	0	0	489	0	1	451	0	1	460	0	0	503	0	0	1652	0	8757	4099	3	0						
96	0	532	0	0	478	0	4	440	0	2	450	0	0	492	0	0	1620	0	8753	4012	7	0						
95	0	521	0	0	467	0	5	429	0	4	439	0	0	482	0	0	1587	0	8750	3924	10	0						
94	0	510	0	1	456	0	6	418	0	5	428	0	0	471	0	0	1554	0	8748	3837	12	0						
93	0	499	0	1	445	0	6	407	0	5	417	0	0	460	0	0	1521	0	8747	3749	13	0						
92	0	488	0	1	435	0	6	396	0	7	406	0	0	449	0	0	1488	0	8745	3662	15	1						
91	0	477	0	2	424	0	7	385	0	8	395	0	0	438	0	0	1455	0	8742	3574	18	1						
90	0	466	0	2	413	0	9	375	0	9	384	0	0	427	0	0	1422	0	8739	3487	21	1						
89	0	455	0	3	402	0	11	364	1	9	373	0	0	416	0	0	1390	0	8736	3399	24	1						
88	0	444	0	3	391	0	12	353	1	11	362	1	1	405	0	0	1357	0	8732	3312	28	1						
87	0	433	0	4	380	0	13	342	1	15	352	1	1	394	0	0	1324	0	8725	3225	35	2						
86	0	422	0	6	369	0	16	331	1	18	341	1	2	383	0	0	1291	0	8716	3138	44	2						
85	0	411	0	7	358	0	18	320	1	24	330	1	3	372	0	0	1258	0	8706	3050	54	3						
84	0	401	0	9	347	0	22	310	1	31	319	1	5	361	0	0	1225	0	8692	2963	68	3						
83	1	390	0	10	336	0	28	299	2	34	309	2	6	350	0	0	1192	0	8680	2877	80	4						
82	1	379	0	11	326	1	33	288	2	37	298	2	8	339	0	0	1160	0	8668	2790	92	5						
81	1	368	0	12	315	1	38	278	2	43	288	2	11	329	0	1	1127	0	8652	2703	108	6						
80	2	357	0	14	304	1	45	267	3	47	277	3	15	318	0	1	1094	0	8634	2617	126	7						
79	2	346	0	17	293	1	52	257	3	52	267	3	17	307	1	1	1061	0	8617	2530	143	8						
78	2	335	0	21	282	1	55	246	4	57	256	4	19	296	1	2	1028	0	8603	2444	157	10						
77	3	324	0	25	272	1	62	236	4	65	246	5	23	285	1	3	995	0	8578	2358	182	11						
76	4	313	0	30	261	2	72	226	5	80	236	5	28	275	1	4	963	0	8540	2273	220	13						
75	5	302	0	37	250	2	82	216	6	92	226	6	32	264	2	6	930	0	8503	2188	257	16						
74	5	291	0	44	240	2	92	205	7	100	216	7	38	254	2	9	897	0	8470	2103	290	18						
73	7	280	0	48	229	3	105	195	8	109	206	8	44	243	2	12	864	0	8433	2018	327	22						
72	10	270	0	52	219	3	120	186	9	120	196	9	50	233	3	15	832	0	8391	1934	369	25						
71	14	259	1	59	209	4	139	176	10	134	186	11	57	222	3	20	799	1	8336	1850	424	29						
70	16	248	1	69	198	5	154	167	11	149	177	12	66	212	4	26	766	1	8278	1767	482	33						
69	18	237	1	78	188	5	164	157	13	161	167	14	74	202	5	31	734	1	8232	1685	528	39						
68	22	226	1	90	178	6	173	148	15	172	158	15	83	191	5	38	701	2	8180	1603	580	44						
67	26	216	1	105	168	7	188	139	16	184	149	17	97	181	6	48	669	2	8110	1521	650	50						
66	32	205	2	122	158	8	206	130	18	201	140	19	111	171	7	60	636	2	8025	1441	735	57						
65	37	194	2	142	148	10	234	121	21	223	131	21	123	162	9	71	604	3	7950	1361	830	65						
64	44	184	2	160	139	11	266	113	23	251	122	23	139	152	10	83	572	4	7815	1282	945	74						
63	55	173	3	178	130	13	300	104	26	288	114	26	160	143	11	100	540	5	7677	1204	1083	84						
62	66	163	3	198	121	15	337	97	29	325	106	29	178	133	13	120	509	6	7534	1128	1226	95						
61	79	153	4	227	112	17	366	89	33	351	99	33	202	124	15	148	477	7	7384	1054	1376	108						
60	96	143	5	256	103	19	403	82	36	375	91	36	232	115	17	188	446	9	7208	981	1552	123						
59	115	133	6	287	95	22	441	75	41	399	84	40	257	107	20	246	415	11	7014	910	1746	139						
58	138	123	7	332	87	25	467	69	45	422	77	44	283	99	22	315	385	14	6800	840	1960	158						
57	165	114	9	373	80	29	493	63	50	449	71	48	314	91	25	397	356	17	6567	774	2193	178						
56	200	105	11	410	73	32	522	57	55	476	65	53	347	83	29	485	327	22	6319	709	2441	202						
55	240	96	13	452	66	37	553	51	61	505	59	58	382	76	32	585	300	27	6041	647	2719	227						
54	284	87	15	488	60	41	583	46	66	536	53	63	420	69	36	702	273	33	5746	588	3014	256						

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

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

SEATTLE-TACOMA, WASHINGTON
WBAN 24233

TRY Data (1960)

Latitude 47.50 N
Longitude 122.30 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		
(F)	Above	(100s)*			Above	(100s)*			Above	(100s)*			Above	(100s)*			Above	(100s)*			Below	Hrs	Above	Hrs	Below	Hrs		
	Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	Heat	Cool		Base	100s*	Base	100s*	Base	100s*		
53	337	80	19		521	54	46		607	41	72		564	47	69		459	62	41		822	248	41		5449	532	3311	288
52	385	72	22		555	48	52		632	36	78		589	42	74		500	56	45		967	224	50		5130	479	3630	322
51	431	65	26		587	43	58		663	32	85		621	37	81		538	50	51		1130	202	60		4788	430	3972	360
50	472	59	31		620	38	64		697	28	92		655	33	87		565	45	56		1271	181	73		4478	383	4282	402
49	509	53	36		650	34	70		730	24	99		684	28	94		583	40	62		1383	161	86		4219	340	4541	446
48	540	47	41		678	29	77		760	20	106		715	24	101		601	35	68		1480	143	100		3984	299	4776	492
47	566	42	46		705	25	84		792	17	114		754	21	108		633	30	74		1600	125	115		3707	260	5053	541
46	600	37	52		731	22	91		828	14	122		793	18	116		681	25	80		1738	109	132		3387	225	5373	593
45	637	32	58		766	18	98		862	12	131		829	15	124		728	22	88		1868	94	150		3067	193	5693	649
44	682	28	65		807	15	106		898	10	139		862	12	132		770	18	95		2008	81	170		2732	164	6028	707
43	723	24	72		846	12	114		928	8	149		888	10	141		811	15	103		2135	69	190		2427	138	6333	769
42	762	20	80		883	10	123		951	6	158		914	8	150		851	12	111		2263	58	212		2135	115	6625	834
41	798	17	87		913	8	132		971	5	168		941	7	159		886	10	120		2394	48	236		1856	95	6904	902
40	827	14	95		937	6	141		991	4	177		967	5	169		916	8	129		2501	40	260		1620	78	7140	972
39	860	12	104		962	5	151		1014	3	187		986	4	179		944	7	138		2600	33	286		1392	63	7368	1045
38	890	9	113		986	4	161		1029	2	198		1003	3	189		965	5	148		2684	26	312		1201	50	7559	1119
37	912	8	122		1009	3	170		1037	2	208		1018	2	199		980	4	158		2760	21	339		1042	39	7718	1196
36	937	6	131		1030	2	181		1049	1	218		1033	1	209		990	3	167		2835	16	367		884	29	7876	1274
35	967	4	140		1044	1	191		1062	1	229		1050	1	219		1007	2	177		2907	12	396		721	21	8039	1353
34	992	3	150		1054	1	202		1072	1	240		1062	1	230		1032	1	188		2992	8	426		554	15	8206	1435
33	1015	2	160		1065	1	212		1079	0	250		1075	0	241		1054	1	198		3067	6	456		404	10	8356	1517
32	1034	2	171		1076	0	223		1085	0	261		1086	0	251		1069	0	209		3121	4	487		287	7	8473	1602
31	1049	1	181		1085	0	234		1090	0	272		1090	0	262		1080	0	219		3161	3	518		203	4	8557	1687
30	1060	1	192		1089	0	245		1092	0	283		1091	0	273		1086	0	230		3196	1	550		144	3	8616	1773
29	1072	0	202		1091	0	255		1092	0	294		1093	0	284		1090	0	241		3228	1	582		93	1	8667	1859
28	1080	0	213		1091	0	266		1092	0	305		1095	0	295		1094	0	252		3253	0	615		53	1	8707	1946
27	1084	0	224		1092	0	277		1093	0	316		1095	0	306		1095	0	263		3270	0	647		29	0	8731	2033
26	1087	0	235		1092	0	288		1094	0	327		1095	0	317		1095	0	274		3278	0	680		19	0	8741	2121
25	1091	0	246		1092	0	299		1094	0	338		1095	0	328		1095	0	285		3283	0	713		8	0	8752	2208
24	1095	0	257		1094	0	310		1095	0	349		1095	0	339		1095	0	296		3285	0	746		1	0	8759	2296
23	1095	0	267		1095	0	321		1095	0	360		1095	0	350		1095	0	307		3285	0	779		0	0	8760	2383

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

SEATTLE-TACOMA, WASHINGTON

TRY Data (1960)

Latitude 47.50 N

WBAN 24233

Longitude 122.30 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:	3492	2393	1418	676	298	103	21	0	0	0	0
Annual Wet Bulb Cooling deg-hrs:	21445.	12082.	5971.	2498.	922.	249.	34.	0.	0.	0.	0.

TABLE F:

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

Maintained Indoor Humidity Ratio*	HEATING HUMIDITY RATIO HOURS ** Heating Degree Base												COOLING HUMIDITY RATIO HOURS ** Cooling Degree Base												Maintained Indoor Humidity Ratio*
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	41	39	37	32	26	17	10	6	3	2	1	.001		
.002	0	0	0	0	0	0	0	0	0	0	0	32	32	30	26	22	15	9	5	3	2	1	.002		
.003	0	0	1	1	1	1	1	1	1	1	1	24	24	23	21	18	12	7	4	2	1	1	.003		
.004	0	1	2	2	2	2	2	2	2	2	2	17	17	16	15	13	9	6	3	2	1	1	.004		
.005	0	2	3	4	5	5	5	5	5	5	5	10	10	10	10	9	7	4	2	1	1	0	.005		
.006	1	2	5	7	8	9	9	9	9	9	9	6	6	6	6	6	5	3	2	1	1	0	.006		
.007	1	3	6	10	13	14	14	15	15	15	15	3	3	3	3	3	2	2	1	1	0	0	.007		
.008	1	4	8	13	17	20	21	21	21	22	22	1	1	1	1	1	1	1	0	0	0	0	.008		
.009	1	4	9	16	21	25	28	29	29	29	30	0	0	0	0	0	0	0	0	0	0	0	.009		
.010	1	5	11	19	26	31	35	37	37	38	38	0	0	0	0	0	0	0	0	0	0	0	.010		
.011	1	5	12	21	30	37	42	44	46	46	47	0	0	0	0	0	0	0	0	0	0	0	.011		
.012	1	6	14	24	34	43	49	52	54	55	55	0	0	0	0	0	0	0	0	0	0	0	.012		
.013	1	7	15	27	39	49	56	60	62	63	64	0	0	0	0	0	0	0	0	0	0	0	.013		
.014	1	7	17	30	43	55	63	68	70	72	73	0	0	0	0	0	0	0	0	0	0	0	.014		
.015	2	8	18	33	47	61	70	76	79	80	81	0	0	0	0	0	0	0	0	0	0	0	.015		
.016	2	9	20	36	52	67	77	84	87	89	90	0	0	0	0	0	0	0	0	0	0	0	.016		
.017	2	9	21	39	56	73	84	92	95	97	98	0	0	0	0	0	0	0	0	0	0	0	.017		
.018	2	10	23	42	60	78	92	100	103	106	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	70	50	64	71	74	48	34	62	46	59	54	70	55
VERTICAL													
NORTH	100	100	100	100	98	90	87	97	100	100	100	100	95
WEST	73	58	69	80	83	60	51	65	53	63	59	69	64
SOUTH	50	41	60	77	85	72	59	75	49	53	39	50	62
EAST	70	56	76	78	86	67	52	79	66	70	62	74	69
% Possible Sun	21	41	49	52	58	55	65	61	58	43	28	18	49

FOOTNOTES: * Corrected For Cloud Cover.

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

SEATTLE-TACOMA, WASHINGTON
WBAN 24233

TRY Data (1960)

Latitude 47.50 N
Longitude 122.30 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	1429	1333	1055	778	434	204	121	110	110	1345	564	368	351	293	233	157	106	88	85	85	340	206	262
Feb	1650	1537	1260	996	631	353	201	158	156	1704	875	608	575	489	406	289	197	145	128	126	621	389	495
Mar	1697	1623	1437	1250	929	624	402	268	234	2052	1365	657	615	546	479	380	299	250	226	219	713	565	849
Apr	1495	1528	1484	1423	1202	929	674	470	347	2226	1879	839	840	804	761	665	566	486	427	398	982	934	1294
May	1282	1390	1461	1506	1389	1178	921	686	518	2275	2268	906	908	890	870	802	720	641	578	539	1132	1182	1714
Jun	1186	1318	1440	1535	1471	1293	1046	801	626	2292	2458	968	1013	1046	1069	1012	906	780	661	594	1487	1605	1802
Jul	1235	1357	1458	1530	1442	1248	999	758	584	2295	2391	1126	1202	1255	1289	1207	1056	875	704	593	1863	1952	2248
Aug	1413	1477	1479	1458	1278	1031	777	564	424	2253	2056	884	858	826	795	717	628	547	483	444	1132	1119	1616
Sep	1631	1592	1454	1317	1033	738	506	350	287	2117	1565	896	829	737	657	531	416	336	285	264	1072	855	1148
Oct	1687	1583	1330	1088	740	441	272	198	191	1835	1051	628	581	498	424	324	243	197	175	172	652	470	656
Nov	1511	1406	1122	835	489	242	143	126	126	1464	660	512	477	391	303	201	132	104	98	98	491	284	337
Dec	1352	1257	990	711	382	170	105	99	99	1244	491	369	344	281	216	143	99	85	83	83	336	200	211
Year	1463	1449	1331	1203	953	706	516	384	309	1926	1472	730	716	672	626	537	449	379	329	302	903	816	1053

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**										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	1242	1147	890	642	343	151	95	90	90	1242	312	295	244	192	126	84	71	69	69	69	69
Feb	1415	1301	1057	826	510	267	152	128	127	1415	512	480	406	335	235	155	114	103	103	103	103
Mar	1408	1357	1201	1046	765	495	306	209	190	1408	542	506	448	392	308	240	201	183	178	178	178
Apr	1179	1244	1227	1184	994	755	532	361	275	1179	675	684	658	624	544	460	391	343	322	322	322
May	964	1087	1188	1245	1150	968	743	538	393	964	725	730	721	708	654	586	521	468	434	434	434
Jun	873	1009	1159	1265	1218	1068	849	635	473	873	748	800	846	876	832	743	632	531	468	468	468
Jul	919	1050	1178	1264	1196	1032	810	600	443	919	860	943	1016	1061	997	868	709	563	461	461	461
Aug	1096	1187	1216	1211	1059	843	621	438	331	1096	703	689	671	651	587	513	444	389	356	356	356
Sep	1331	1320	1213	1099	850	593	393	271	233	1331	731	677	604	539	432	335	269	229	215	215	215
Oct	1434	1334	1115	909	599	346	205	158	156	1434	523	480	410	349	263	195	157	142	140	140	140
Nov	1307	1200	940	693	386	180	109	102	102	1307	436	402	324	249	161	103	83	80	80	80	80
Dec	1177	1084	832	584	297	125	83	81	81	1177	313	289	231	176	115	79	69	68	68	68	68
Year	1194	1192	1101	998	782	570	410	302	242	1194	590	581	549	513	439	365	306	265	242	242	242

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

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

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APPENDIX A

COMPUTATION PROCEDURES USED FOR WEATHER SUMMARIES

APPENDIX A

COMPUTATION PROCEDURES USED FOR WEATHER SUMMARIES

The basic computational procedures used to obtain weather summaries are the same as those associated with the DOE-2.1A computer program, which is capable of rapid and detailed analysis of energy consumption in buildings (York and Capiello 1981). To perform its hourly simulation, DOE-2 needs hourly weather information. A weather processor package prepares the information from a variety of weather data sources, in particular TRY and WYEC tapes. The algorithms described in this section are developed from the weather processor program and the LOADS simulation portion of DOE-2. Therefore, any simplified energy calculations completed using the weather data in this report are based on the same original hourly TRY or WYEC data processed by DOE-2. Moreover, except for the summary tabulations the algorithms are identical. Volume V contains listings of computer programs used in the computations.

DATA SUMMARY PROCEDURES

Procedures used for performing the tabulations for most tables are straightforward. A primary assumption for the tabulations is that no data is missing for any hour during the year. To meet this requirement a procedure for filling in missing data values was implemented. It is described subsequently. Weather parameters assumed to be available are DBT, dry bulb temperature (°F); WBT, wet bulb temperature (°F); DTP, dew point; PATM, atmospheric pressure (in. Hg); WINDSP, wind speed (knots); TCA, total cloud amount (tenths); ICA, cloud amount in layer 1, 2, 3 or 4; ICT, cloud type in layer 1, 2, 3 or 4; and RADOBS, observed total solar radiation on horizontal surface (WYEC only). All other parameters are derived from these, and in the case of solar radiation, the location's latitude and time zone.

The summaries given in Section 3 are usually self-explanatory. The table numbers A through I refer to tables produced for each city in Section 3. In Table A a count of the hourly dry bulb temperatures occurring in 5°F temperature ranges and at specific times of the day is given for each month.

For all hours that occur in a specific DBT bin, the average of the corresponding wet bulb temperature is computed, giving the Mean Coincident Wet Bulb Temperature (MCWB). Table B is tabulated in the same manner except on an annual basis. The monthly and annual averages in Table C are computed in the obvious way.

Heating (cooling) degree hours (Tables D and E) are the summation of each degree the hourly DBT temperature is below (above) a selected base temperature. They may be related to heating and cooling degree days by dividing by 24. Heating (cooling) humidity ratio hours (Table F) are the summation of hourly differences between ambient humidity ratios (lbs moisture/lb dry air) and the balance point humidity ratio base, when both the hourly dry bulb temperature and the ambient humidity ratio are below (above) their respective base. These summations are completed for all hours in the time bin under consideration.

The values in Tables G, H and I are monthly averages of selected solar radiation parameters. An exception is percent possible sunshine which is the long term normal values available in Local Climatological Data Annual Summaries, NOAA.

FILL-IN PROCEDURES FOR MISSING DATA

When missing data occurs for any hour or any weather parameter, it is filled in by using neighboring values. For continuous parameters, such as DBT, WBT, PATM, DPT and WINDSP, a linear interpolation from the previously available value to the next available value is used. Discrete parameters, TCA, ICA and ICT are assigned the previous available value. WBT is always forced to be less than or equal to DBT. 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 DOE-2.1A and described in its Engineering Manual. For WYEC weather data, observed total solar radiation on a horizontal surface is available. An alternative in this case, not used in this report, is to divide the observed radiation into direct and diffuse components using an empirical model.

The primary calculation is direct normal solar radiation (that is, beam radiation on a surface perpendicular to the incoming radiation). Clear (cloudless) sky conditions are assumed. All remaining calculations are based on this computation. An overview of the relationships of the other radiation parameters is given in Figure A.1. Two parallel computations are completed. Solar radiation under cloudless conditions for horizontal (B) and vertical (E) surfaces and solar heat gain for glass (G) are completed. This requires no input data from TRY or WYEC weather tapes. A similar sequence (C, D, E, G) is followed when hourly cloud cover information is added. In the latter case

cloud cover correction factors are applied to cloudless direct normal and horizontal surface radiation values. These "corrected" values are then used in the same vertical surface (E) and solar heat gain for glass (G) algorithms used for cloudless condition.

The solar radiation algorithms are empirically based. A key component of the algorithms is splitting total radiation on a surface into direct and diffuse radiation. In some cases the algorithm results in greater total radiation on a vertical surface under cloudy conditions than for cloudless conditions. This is a direct result of the empirical algorithm performing the split between diffuse and direct. For this reason, the solar data corrected for cloud cover should be used with this caveat in mind.

A detailed discussion of the solar radiation calculations is given in Volume V.

FIGURE A.1 Flow Diagram of Solar Radiation Algorithms

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