

|                                 |                                    |
|---------------------------------|------------------------------------|
| <b>MUNCHEN, GM</b>              | Station ID = ICAO_EDDM             |
| Latitude = 48.35 N              | Elevation = 1487 Feet              |
| Longitude = 11.79 E             | Average Pressure = 28.41 inches Hg |
| Period of Record = 1988 To 2017 |                                    |

### Design Criteria Data

|                          | Mean Coincident (Average) Values |                           |                        |                  |                             |
|--------------------------|----------------------------------|---------------------------|------------------------|------------------|-----------------------------|
| Dry Bulb Temperature (T) | Design Value (°F)                | Wet Bulb Temperature (°F) | Humidity Ratio (gr/lb) | Wind Speed (mph) | Prevailing Direction (NSEW) |
| Median of Extreme Highs  | 90                               | 67                        | 69                     | 7.3              | VRB                         |
| 0.4% Occurrence          | 86                               | 67                        | 72                     | 7                | E                           |
| 1.0% Occurrence          | 82                               | 65                        | 72                     | 6.8              | E                           |
| 2.0% Occurrence          | 79                               | 64                        | 71                     | 7                | E                           |
| Mean Daily Range         | 16                               | -                         | -                      | -                | E                           |
| 97.5% Occurrence         | 21                               | 20                        | 14                     | 5.8              | E                           |
| 99.0% Occurrence         | 14                               | 13                        | 10                     | 4.9              | E                           |
| 99.6% Occurrence         | 9                                | 9                         | 8                      | 4.4              | E                           |
| Median of Extreme Lows   | 3                                | 3                         | 6                      | 2.9              | SSW                         |

|                                         | Design Value (°F) | Dry Bulb Temperature (°F) | Humidity Ratio (gr/lb) | Wind Speed (mph) | Prevailing Direction (NSEW) |
|-----------------------------------------|-------------------|---------------------------|------------------------|------------------|-----------------------------|
| Wet Bulb Temperature (T <sub>wb</sub> ) |                   |                           |                        |                  |                             |
| Median of Extreme Highs                 | 72                | 85                        | 99                     | 5.8              | VRB                         |
| 0.4% Occurrence                         | 68                | 80                        | 86                     | 6.4              | E                           |
| 1.0% Occurrence                         | 67                | 78                        | 84                     | 6.4              | VRB                         |
| 2.0% Occurrence                         | 66                | 77                        | 82                     | 6.5              | VRB                         |

|                         | Design Value (gr/lb) | Dry Bulb Temperature (°F) | Vapor Pressure (in. Hg) | Wind Speed (mph) | Prevailing Direction (NSEW) |
|-------------------------|----------------------|---------------------------|-------------------------|------------------|-----------------------------|
| Humidity Ratio (HR)     |                      |                           |                         |                  |                             |
| Median of Extreme Highs | 104                  | 78                        | 0.65                    | 7.7              | E                           |
| 0.4% Occurrence         | 95                   | 73                        | 0.61                    | 5.8              | VRB                         |
| 1.0% Occurrence         | 90                   | 71                        | 0.57                    | 5.9              | VRB                         |
| 2.0% Occurrence         | 87                   | 69                        | 0.56                    | 4.6              | SSW                         |

| Air Conditioning/<br>Humid Area Criteria | Threshold  | T ≥ 93 °F | T ≥ 80 °F | Twb ≥ 73 °F | Twb ≥ 67 °F |
|------------------------------------------|------------|-----------|-----------|-------------|-------------|
|                                          | # of Hours | 7         | 159       | 5           | 119         |

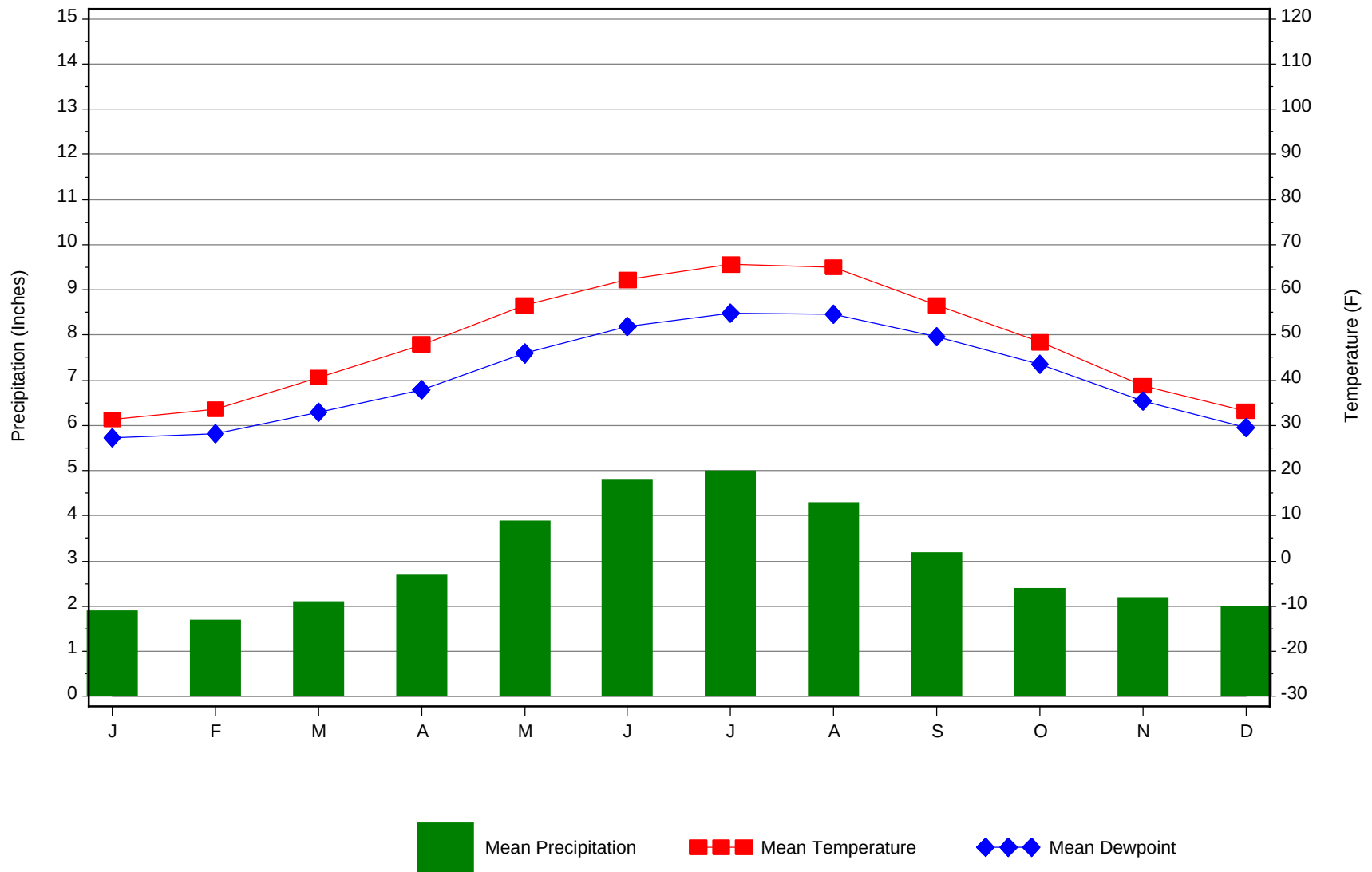
### Other Site Data

| Weather Region                                     | Rain Rate<br>100 Year Recurrence<br>(in./hr) | Basic Wind Speed<br>3 sec gust @ 33 ft<br>50 Year Recurrence (mph) | Ventilation Cooling Load Index<br>(Ton-hr/cfm/yr) Base 75°F-RH 60%<br>Latent + Sensible |
|----------------------------------------------------|----------------------------------------------|--------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 6                                                  | N/A                                          | 90                                                                 | 0.1 + 0.2                                                                               |
| Ground Water<br>Temperature (°F)<br>50 Foot Depth* | Frost Depth<br>50 Year Recurrence<br>(in)    | Ground Snow Load<br>50 Year Recurrence<br>(lb/ft <sup>2</sup> )    | Average Annual<br>Freeze-Thaw Cycles<br>(#)                                             |
| 50.9                                               | 36                                           | 40                                                                 | 50                                                                                      |

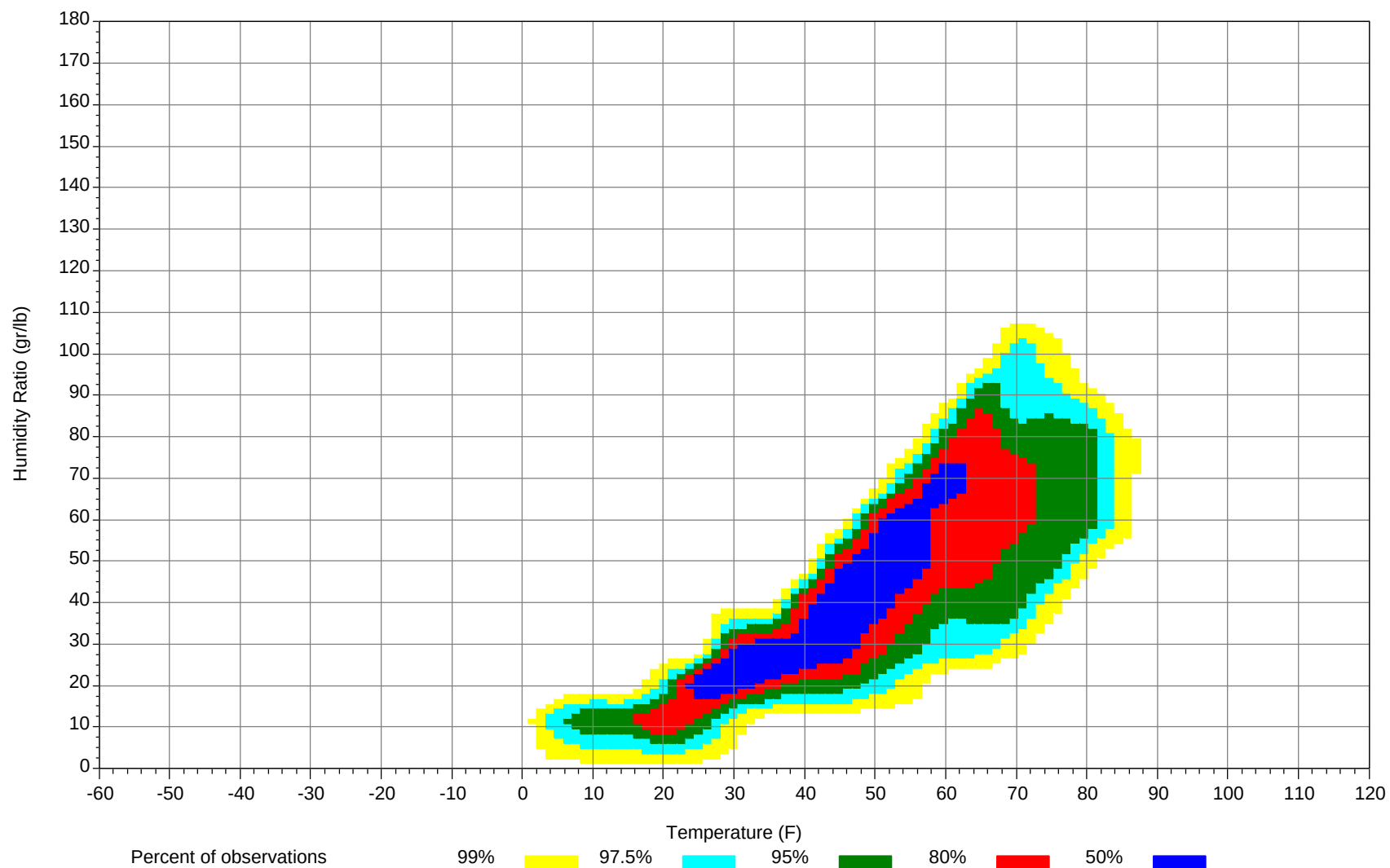
\*Note: Temperatures at greater depths can be estimated by adding 1.5°F per 100 feet additional depth.



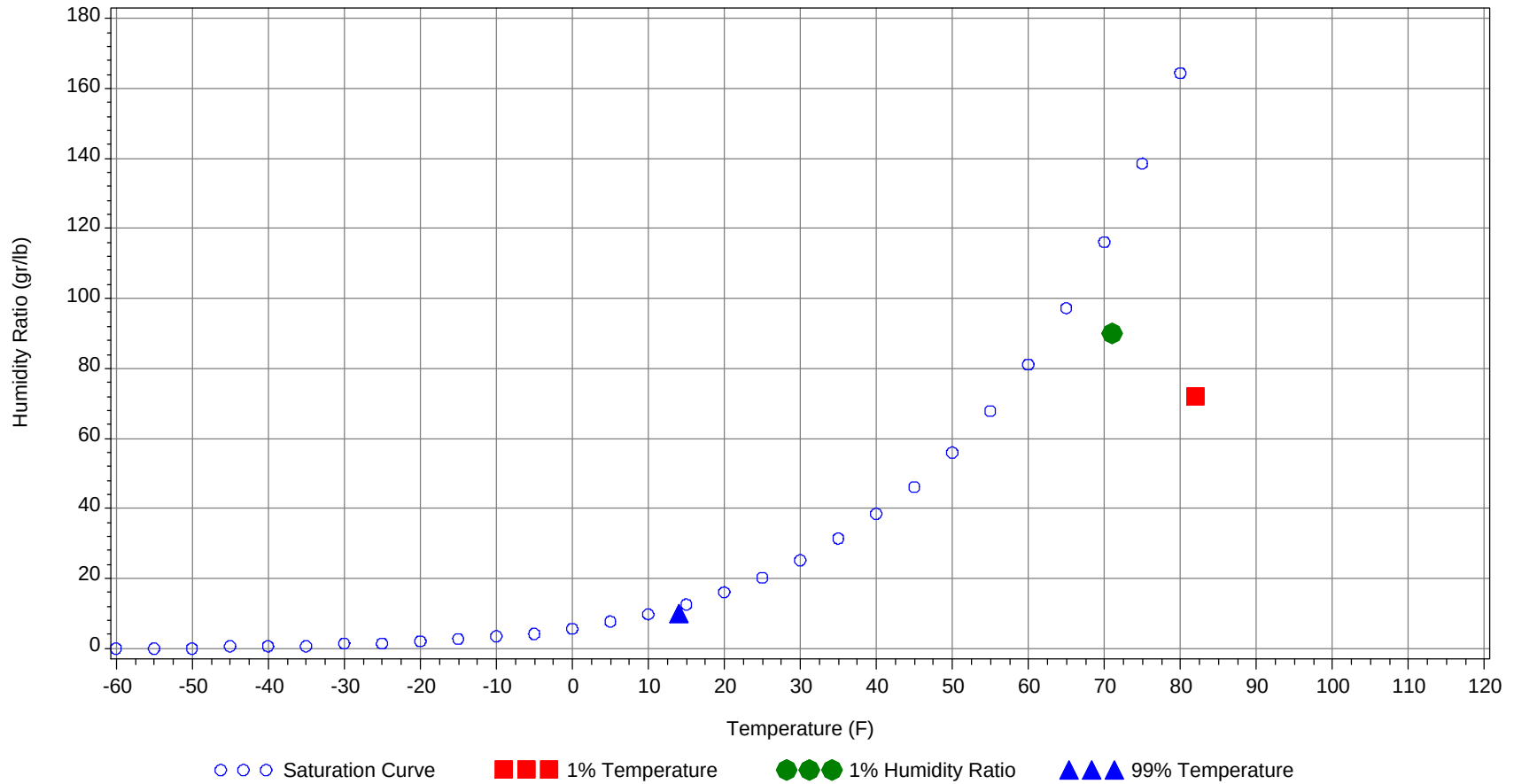
# Average Annual Climate



# Long Term Psychrometric Summary



# Psychrometric Summary of Peak Design Values



|                     | (° F) /<br>(gr/lb) | MCDB<br>(° F) | MCWB<br>(° F) | MCDP<br>(° F) | MCHR<br>(gr/lb) | Enthalpy<br>(btu/lb) |
|---------------------|--------------------|---------------|---------------|---------------|-----------------|----------------------|
| 1.0% Dry Bulb       | 82.0               |               | 65            |               | 72.0            | 31.0                 |
| 99.0% Dry Bulb      | 14.0               |               |               |               | 10.0            | 4.9                  |
| 1.0% Humidity Ratio | 90.0               | 71.0          | 65.2          | 62.6          |                 | 30.9                 |

## Dry-Bulb Temperature Hours For An Average Year

|                        | January      |              |              |           |              | February     |              |              |           |              | March        |              |              |           |              |
|------------------------|--------------|--------------|--------------|-----------|--------------|--------------|--------------|--------------|-----------|--------------|--------------|--------------|--------------|-----------|--------------|
| Temperature Range (°F) | 01 To 08 LST | 09 To 16 LST | 17 to 00 LST | Total Obs | M C W B (°F) | 01 To 08 LST | 09 To 16 LST | 17 to 00 LST | Total Obs | M C W B (°F) | 01 To 08 LST | 09 To 16 LST | 17 to 00 LST | Total Obs | M C W B (°F) |
| 95/ 99                 |              |              |              |           |              |              |              |              |           |              |              |              |              |           |              |
| 90/ 94                 |              |              |              |           |              |              |              |              |           |              |              |              |              |           |              |
| 85/ 89                 |              |              |              |           |              |              |              |              |           |              |              |              |              |           |              |
| 80/ 84                 |              |              |              |           |              |              |              |              |           |              |              |              |              |           |              |
| 75/ 79                 |              |              |              |           |              |              |              |              |           |              |              | 0            |              | 0         | 54           |
| 70/ 74                 |              |              |              |           |              |              | 0            |              | 0         | 50           |              | 1            | 0            | 1         | 52.8         |
| 65/ 69                 |              |              |              |           |              |              | 0            | 0            | 0         | 51           |              | 3            | 1            | 4         | 51.7         |
| 60/ 64                 |              | 0            |              | 0         | 49.7         |              | 2            | 0            | 2         | 48.9         | 0            | 12           | 5            | 17        | 49.7         |
| 55/ 59                 | 0            | 3            | 1            | 4         | 48.1         | 0            | 6            | 2            | 8         | 47.1         | 1            | 24           | 13           | 38        | 47.8         |
| 50/ 54                 | 5            | 11           | 6            | 22        | 45.7         | 3            | 17           | 9            | 29        | 44.8         | 7            | 38           | 31           | 76        | 45.5         |
| 45/ 49                 | 10           | 22           | 16           | 48        | 42           | 10           | 28           | 19           | 57        | 41.5         | 28           | 50           | 49           | 127       | 42.3         |
| 40/ 44                 | 14           | 23           | 19           | 56        | 39.2         | 15           | 29           | 26           | 70        | 38.6         | 32           | 35           | 39           | 106       | 39           |
| 35/ 39                 | 37           | 46           | 45           | 128       | 35.5         | 41           | 48           | 50           | 139       | 35.1         | 61           | 47           | 55           | 163       | 35.2         |
| 30/ 34                 | 63           | 59           | 65           | 187       | 30.9         | 60           | 46           | 56           | 162       | 30.8         | 68           | 26           | 40           | 134       | 30.7         |
| 25/ 29                 | 54           | 46           | 48           | 148       | 25.8         | 46           | 27           | 33           | 106       | 25.8         | 36           | 9            | 12           | 57        | 25.8         |
| 20/ 24                 | 22           | 18           | 21           | 61        | 21.3         | 18           | 11           | 14           | 43        | 21.2         | 8            | 2            | 2            | 12        | 21.1         |
| 15/ 19                 | 20           | 13           | 16           | 49        | 17.1         | 14           | 6            | 8            | 28        | 16.9         | 4            | 0            | 1            | 5         | 17.2         |
| 10/ 14                 | 13           | 5            | 8            | 26        | 12.1         | 10           | 3            | 4            | 17        | 11.9         | 1            | 0            | 0            | 1         | 12           |
| 5/ 9                   | 7            | 1            | 2            | 10        | 6.8          | 5            | 1            | 2            | 8         | 6.7          | 0            | 0            | 0            | 0         | 6.7          |
| 0/ 4                   | 2            | 0            | 1            | 3         | 1.8          | 2            | 0            | 1            | 3         | 1.5          | 0            | 0            | 0            | 0         | 0.3          |
| -5/ -1                 | 0            | 0            | 0            | 0         | -3.8         | 0            | 0            | 0            | 0         | -3.8         | 0            |              | 0            | 0         | -3.3         |
| -10/ -6                | 0            |              | 0            | 0         | -6.2         | 0            |              | 0            | 0         | -6.8         | 0            |              |              | 0         | -7.3         |
| -15/-11                |              |              |              |           |              |              |              |              |           |              | 0            |              |              | 0         | -12          |

Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary and the ventilation and infiltration load pages in this manual.

## Dry-Bulb Temperature Hours For An Average Year

|                        | April        |              |              |           |              | May          |              |              |           |              | June         |              |              |           |              |
|------------------------|--------------|--------------|--------------|-----------|--------------|--------------|--------------|--------------|-----------|--------------|--------------|--------------|--------------|-----------|--------------|
| Temperature Range (°F) | 01 To 08 LST | 09 To 16 LST | 17 to 00 LST | Total Obs | M C W B (°F) | 01 To 08 LST | 09 To 16 LST | 17 to 00 LST | Total Obs | M C W B (°F) | 01 To 08 LST | 09 To 16 LST | 17 to 00 LST | Total Obs | M C W B (°F) |
| 95/ 99                 |              |              |              |           |              |              |              |              |           |              |              | 0            |              | 0         | 64           |
| 90/ 94                 |              |              |              |           |              |              |              |              |           |              |              | 1            | 0            | 1         | 67.7         |
| 85/ 89                 |              | 0            |              | 0         | 59           |              | 0            | 0            | 0         | 63.5         |              | 4            | 2            | 6         | 67.2         |
| 80/ 84                 |              | 0            | 0            | 0         | 59           |              | 5            | 2            | 7         | 62.8         |              | 17           | 9            | 26        | 66           |
| 75/ 79                 |              | 2            | 1            | 3         | 56.8         |              | 17           | 8            | 25        | 61           | 0            | 33           | 20           | 53        | 63.6         |
| 70/ 74                 | 0            | 11           | 5            | 16        | 55           | 0            | 34           | 18           | 52        | 57.9         | 5            | 46           | 33           | 84        | 61           |
| 65/ 69                 | 0            | 14           | 7            | 21        | 53.5         | 2            | 33           | 20           | 55        | 56.4         | 13           | 35           | 29           | 77        | 59.2         |
| 60/ 64                 | 0            | 33           | 19           | 52        | 51.3         | 12           | 54           | 44           | 110       | 54.5         | 47           | 51           | 53           | 151       | 57.3         |
| 55/ 59                 | 5            | 43           | 33           | 81        | 49           | 47           | 51           | 62           | 160       | 52.1         | 73           | 37           | 54           | 164       | 53.8         |
| 50/ 54                 | 26           | 47           | 48           | 121       | 46.4         | 81           | 36           | 56           | 173       | 48.8         | 68           | 14           | 31           | 113       | 50.3         |
| 45/ 49                 | 62           | 44           | 57           | 163       | 43           | 68           | 15           | 30           | 113       | 44.4         | 28           | 3            | 7            | 38        | 45.3         |
| 40/ 44                 | 45           | 22           | 31           | 98        | 39.3         | 23           | 2            | 7            | 32        | 40.3         | 5            |              | 1            | 6         | 41.5         |
| 35/ 39                 | 60           | 19           | 29           | 108       | 35.7         | 13           | 0            | 2            | 15        | 36.9         | 1            |              |              | 1         | 38.1         |
| 30/ 34                 | 35           | 4            | 10           | 49        | 31.1         | 2            |              | 0            | 2         | 32.2         |              |              |              |           |              |
| 25/ 29                 | 7            | 0            | 0            | 7         | 26.3         |              |              |              |           |              |              |              |              |           |              |
| 20/ 24                 | 0            |              |              | 0         | 21.9         |              |              |              |           |              |              |              |              |           |              |
| 15/ 19                 |              |              |              |           |              |              |              |              |           |              |              |              |              |           |              |
| 10/ 14                 |              |              |              |           |              |              |              |              |           |              |              |              |              |           |              |
| 5/ 9                   |              |              |              |           |              |              |              |              |           |              |              |              |              |           |              |
| 0/ 4                   |              |              |              |           |              |              |              |              |           |              |              |              |              |           |              |
| -5/ -1                 |              |              |              |           |              |              |              |              |           |              |              |              |              |           |              |
| -10/ -6                |              |              |              |           |              |              |              |              |           |              |              |              |              |           |              |
| -15/-11                |              |              |              |           |              |              |              |              |           |              |              |              |              |           |              |

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## Dry-Bulb Temperature Hours For An Average Year

|                        | July         |              |              |           |              | August       |              |              |           |              | September    |              |              |           |              |
|------------------------|--------------|--------------|--------------|-----------|--------------|--------------|--------------|--------------|-----------|--------------|--------------|--------------|--------------|-----------|--------------|
| Temperature Range (°F) | 01 To 08 LST | 09 To 16 LST | 17 to 00 LST | Total Obs | M C W B (°F) | 01 To 08 LST | 09 To 16 LST | 17 to 00 LST | Total Obs | M C W B (°F) | 01 To 08 LST | 09 To 16 LST | 17 to 00 LST | Total Obs | M C W B (°F) |
| 95/ 99                 |              | 0            |              | 0         | 68           |              | 0            | 0            | 0         | 66           |              |              |              |           |              |
| 90/ 94                 |              | 4            | 1            | 5         | 68           |              | 5            | 2            | 7         | 66.8         |              |              |              |           |              |
| 85/ 89                 |              | 8            | 4            | 12        | 67.1         |              | 8            | 4            | 12        | 66.7         |              | 0            |              | 0         | 65.3         |
| 80/ 84                 |              | 29           | 14           | 43        | 65.7         |              | 25           | 12           | 37        | 65.6         |              | 4            | 1            | 5         | 64           |
| 75/ 79                 | 1            | 47           | 27           | 75        | 63.9         | 0            | 47           | 25           | 72        | 63.9         |              | 15           | 5            | 20        | 63.2         |
| 70/ 74                 | 8            | 57           | 43           | 108       | 61.9         | 6            | 56           | 41           | 103       | 62           | 0            | 29           | 13           | 42        | 61           |
| 65/ 69                 | 21           | 39           | 40           | 100       | 60.6         | 16           | 39           | 37           | 92        | 60.6         | 1            | 30           | 16           | 47        | 59.2         |
| 60/ 64                 | 78           | 41           | 65           | 184       | 58.6         | 72           | 44           | 68           | 184       | 58.8         | 15           | 58           | 46           | 119       | 56.9         |
| 55/ 59                 | 90           | 20           | 42           | 152       | 54.8         | 92           | 20           | 43           | 155       | 55.1         | 52           | 59           | 67           | 178       | 53.8         |
| 50/ 54                 | 42           | 3            | 11           | 56        | 50.8         | 48           | 4            | 14           | 66        | 50.8         | 78           | 37           | 60           | 175       | 50           |
| 45/ 49                 | 8            | 0            | 0            | 8         | 46.1         | 13           | 0            | 2            | 15        | 46           | 63           | 8            | 28           | 99        | 45.6         |
| 40/ 44                 | 0            |              |              | 0         | 42.7         | 1            |              | 0            | 1         | 41.8         | 20           | 1            | 4            | 25        | 41.5         |
| 35/ 39                 |              |              |              |           |              | 1            |              | 0            | 1         | 38.4         | 10           | 0            | 1            | 11        | 37.5         |
| 30/ 34                 |              |              |              |           |              |              |              |              |           |              | 2            |              | 0            | 2         | 33.1         |
| 25/ 29                 |              |              |              |           |              |              |              |              |           |              |              |              |              |           |              |
| 20/ 24                 |              |              |              |           |              |              |              |              |           |              |              |              |              |           |              |
| 15/ 19                 |              |              |              |           |              |              |              |              |           |              |              |              |              |           |              |
| 10/ 14                 |              |              |              |           |              |              |              |              |           |              |              |              |              |           |              |
| 5/ 9                   |              |              |              |           |              |              |              |              |           |              |              |              |              |           |              |
| 0/ 4                   |              |              |              |           |              |              |              |              |           |              |              |              |              |           |              |
| -5/ -1                 |              |              |              |           |              |              |              |              |           |              |              |              |              |           |              |
| -10/ -6                |              |              |              |           |              |              |              |              |           |              |              |              |              |           |              |
| -15/-11                |              |              |              |           |              |              |              |              |           |              |              |              |              |           |              |

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## Dry-Bulb Temperature Hours For An Average Year

|                        | October      |              |              |           |              | November     |              |              |           |              | December     |              |              |           |              |
|------------------------|--------------|--------------|--------------|-----------|--------------|--------------|--------------|--------------|-----------|--------------|--------------|--------------|--------------|-----------|--------------|
| Temperature Range (°F) | 01 To 08 LST | 09 To 16 LST | 17 to 00 LST | Total Obs | M C W B (°F) | 01 To 08 LST | 09 To 16 LST | 17 to 00 LST | Total Obs | M C W B (°F) | 01 To 08 LST | 09 To 16 LST | 17 to 00 LST | Total Obs | M C W B (°F) |
| 95/ 99                 |              |              |              |           |              |              |              |              |           |              |              |              |              |           |              |
| 90/ 94                 |              |              |              |           |              |              |              |              |           |              |              |              |              |           |              |
| 85/ 89                 |              |              |              |           |              |              |              |              |           |              |              |              |              |           |              |
| 80/ 84                 |              | 0            |              | 0         | 62           |              |              |              |           |              |              |              |              |           |              |
| 75/ 79                 |              | 1            | 0            | 1         | 61.5         |              |              |              |           |              |              |              |              |           |              |
| 70/ 74                 |              | 8            | 1            | 9         | 59.6         |              | 0            |              | 0         | 53           |              |              |              |           |              |
| 65/ 69                 | 0            | 12           | 3            | 15        | 58.1         |              | 0            |              | 0         | 55.3         |              | 0            |              | 0         | 53           |
| 60/ 64                 | 2            | 32           | 14           | 48        | 55.8         | 0            | 5            | 1            | 6         | 53.6         | 0            | 0            | 0            | 0         | 52.3         |
| 55/ 59                 | 14           | 50           | 38           | 102       | 52.9         | 2            | 11           | 5            | 18        | 50.8         | 0            | 2            | 0            | 2         | 48.5         |
| 50/ 54                 | 49           | 57           | 62           | 168       | 49.5         | 8            | 26           | 16           | 50        | 47.9         | 4            | 10           | 6            | 20        | 46.3         |
| 45/ 49                 | 68           | 50           | 61           | 179       | 44.7         | 25           | 49           | 40           | 114       | 44           | 13           | 26           | 18           | 57        | 42.9         |
| 40/ 44                 | 41           | 21           | 35           | 97        | 40.7         | 40           | 38           | 42           | 120       | 40.6         | 17           | 26           | 23           | 66        | 39.6         |
| 35/ 39                 | 43           | 13           | 26           | 82        | 36.7         | 62           | 54           | 62           | 178       | 36.4         | 48           | 57           | 56           | 161       | 35.8         |
| 30/ 34                 | 24           | 3            | 7            | 34        | 31.7         | 62           | 42           | 50           | 154       | 31.4         | 72           | 65           | 70           | 207       | 31.1         |
| 25/ 29                 | 6            | 0            | 2            | 8         | 26.9         | 25           | 10           | 18           | 53        | 26.4         | 54           | 41           | 47           | 142       | 26.1         |
| 20/ 24                 | 1            |              |              | 1         | 22           | 9            | 3            | 4            | 16        | 21.7         | 17           | 11           | 13           | 41        | 21.5         |
| 15/ 19                 |              |              |              |           |              | 5            | 1            | 2            | 8         | 17.5         | 12           | 6            | 7            | 25        | 17.2         |
| 10/ 14                 |              |              |              |           |              | 1            | 0            | 0            | 1         | 12.2         | 4            | 3            | 4            | 11        | 11.6         |
| 5/ 9                   |              |              |              |           |              | 0            | 0            | 0            | 0         | 7.5          | 4            | 1            | 3            | 8         | 6.5          |
| 0/ 4                   |              |              |              |           |              | 0            |              |              | 0         | 3            | 2            | 0            | 0            | 2         | 1.3          |
| -5/ -1                 |              |              |              |           |              |              |              |              |           |              | 0            | 0            |              | 0         | -3.2         |
| -10/ -6                |              |              |              |           |              |              |              |              |           |              | 0            |              |              | 0         | -7           |
| -15/-11                |              |              |              |           |              |              |              |              |           |              |              |              |              |           |              |

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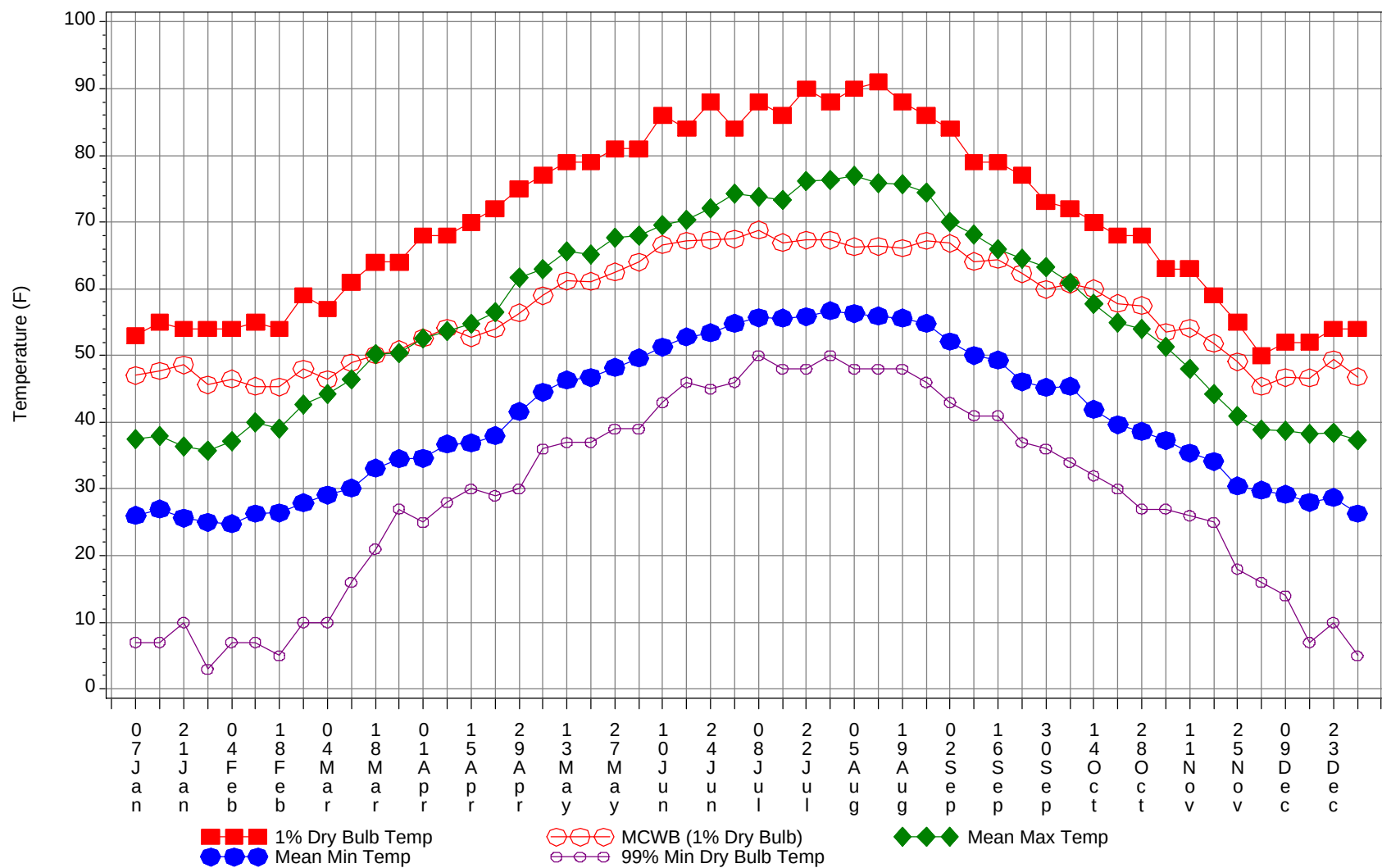


## ***Dry-Bulb Temperature Hours For An Average Year***

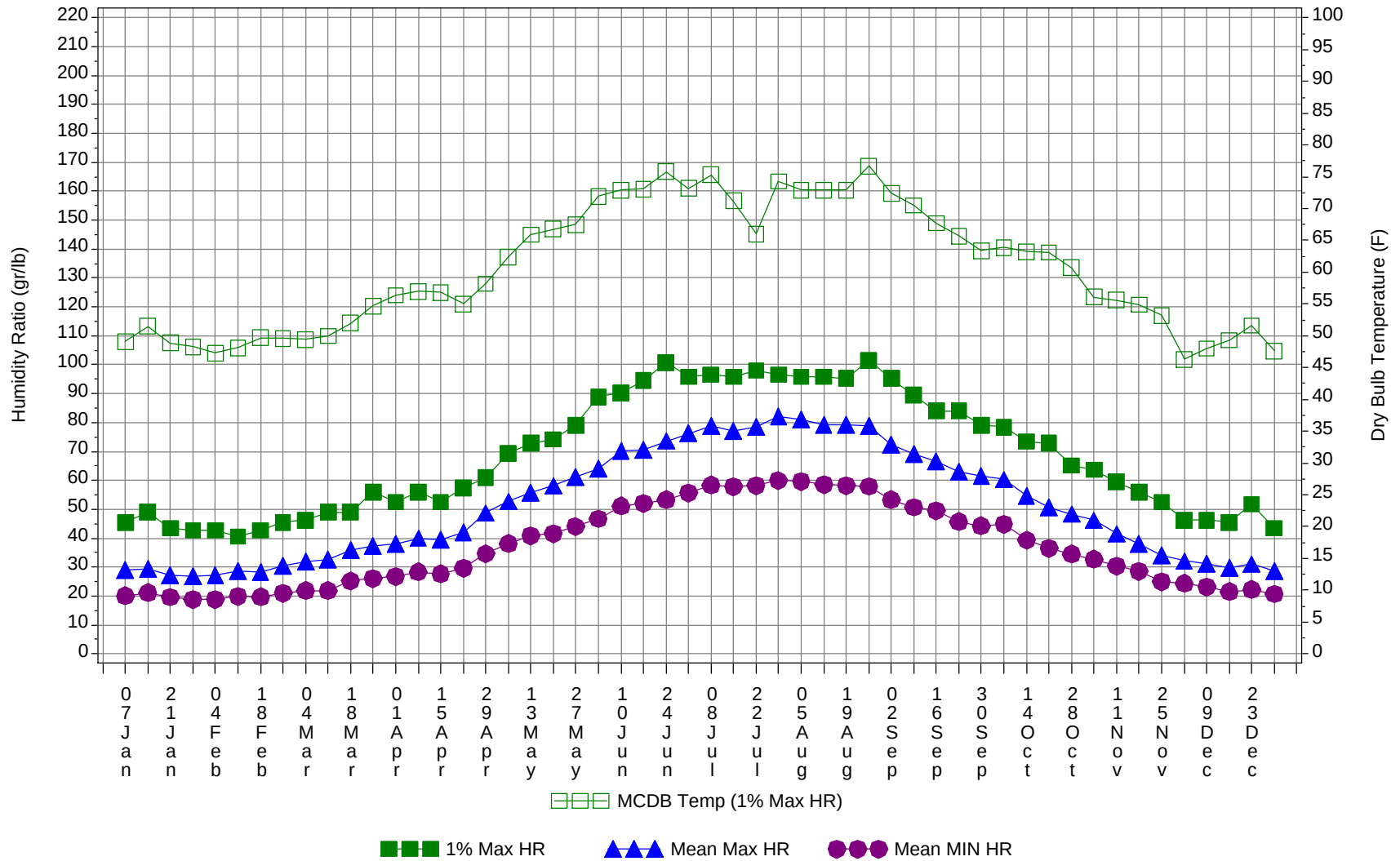
|                           | Annual       |              |              |           |              |
|---------------------------|--------------|--------------|--------------|-----------|--------------|
| Temperature Range<br>(°F) | 01 To 08 LST | 09 To 16 LST | 17 to 00 LST | Total Obs | M C W B (°F) |
| 95/ 99                    |              | 0            | 0            | 0         | 66.2         |
| 90/ 94                    |              | 10           | 4            | 14        | 67.4         |
| 85/ 89                    |              | 20           | 10           | 30        | 66.9         |
| 80/ 84                    |              | 79           | 37           | 116       | 65.5         |
| 75/ 79                    | 1            | 161          | 86           | 248       | 63.4         |
| 70/ 74                    | 20           | 244          | 153          | 417       | 60.8         |
| 65/ 69                    | 52           | 205          | 154          | 411       | 59.1         |
| 60/ 64                    | 226          | 332          | 315          | 873       | 56.9         |
| 55/ 59                    | 378          | 325          | 359          | 1062      | 53.1         |
| 50/ 54                    | 418          | 301          | 349          | 1068      | 48.7         |
| 45/ 49                    | 394          | 296          | 326          | 1016      | 43.7         |
| 40/ 44                    | 254          | 198          | 227          | 679       | 39.8         |
| 35/ 39                    | 377          | 284          | 327          | 988       | 35.8         |
| 30/ 34                    | 388          | 245          | 298          | 931       | 31           |
| 25/ 29                    | 227          | 134          | 161          | 522       | 26           |
| 20/ 24                    | 74           | 44           | 55           | 173       | 21.4         |
| 15/ 19                    | 56           | 27           | 34           | 117       | 17.1         |
| 10/ 14                    | 30           | 11           | 16           | 57        | 11.9         |
| 5/ 9                      | 16           | 3            | 7            | 26        | 6.7          |
| 0/ 4                      | 6            | 1            | 2            | 9         | 1.5          |
| -5/ -1                    | 1            | 0            | 0            | 1         | -3.5         |
| -10/ -6                   | 1            |              | 0            | 1         | -6.8         |
| -15/-11                   | 0            |              |              | 0         | -12          |

Caution: This summary reflects the typical distribtion of temperature in a typical year. It does not reflect the typical mositure distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary and the ventilation and infiltration load pages in this manual.

# Annual Summary of Temperatures



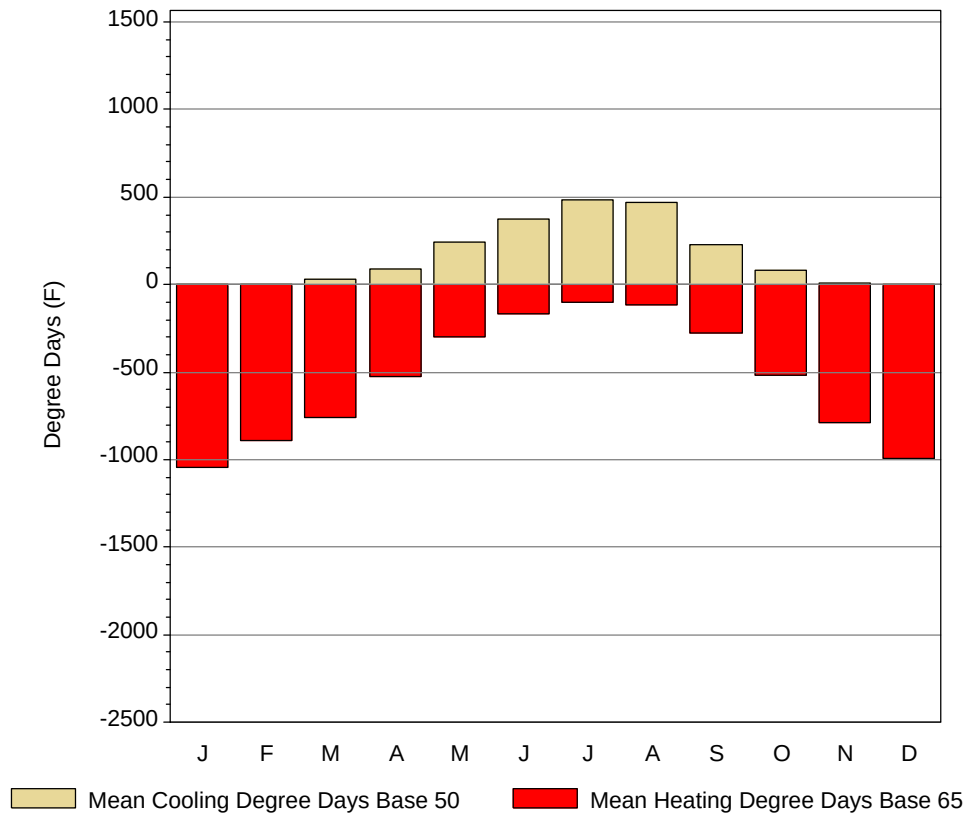
# Long Term Humidity and Dry Bulb Temperature Summary



**Long Term Humidity and Dry Bulb Temperature Summary**

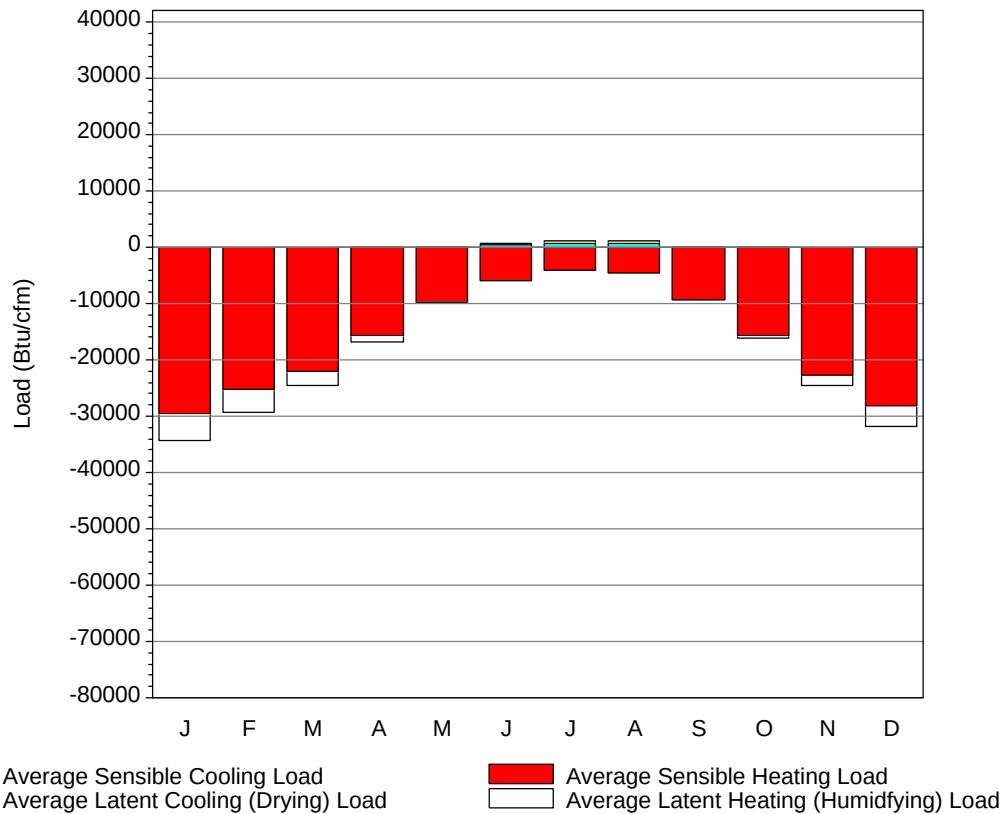
| Week Ending | 1.0% Temp (° F) | MCWB@ 1% Temp (° F) | Mean Max Temp (° F) | Mean Min Temp (° F) | 99% Temp (° F) | 1.0% HR (gr/lb) | MCDB@ 1% HR (° F) | Mean Max HR (gr/lb) | Mean Min HR (gr/lb) |
|-------------|-----------------|---------------------|---------------------|---------------------|----------------|-----------------|-------------------|---------------------|---------------------|
| 7-Jan       | 53              | 47                  | 37.5                | 26                  | 7              | 45.5            | 49.1              | 28.9                | 20                  |
| 14-Jan      | 55              | 47.7                | 38                  | 27                  | 7              | 49              | 51.5              | 29.5                | 21.2                |
| 21-Jan      | 54              | 48.6                | 36.3                | 25.6                | 10             | 43.4            | 48.9              | 27.3                | 19.6                |
| 28-Jan      | 54              | 45.6                | 35.8                | 25                  | 3              | 42.7            | 48.3              | 26.9                | 18.8                |
| 4-Feb       | 54              | 46.5                | 37.2                | 24.8                | 7              | 42.7            | 47.3              | 27.3                | 18.8                |
| 11-Feb      | 55              | 45.4                | 40                  | 26.3                | 7              | 40.6            | 48.1              | 28.6                | 19.8                |
| 18-Feb      | 54              | 45.3                | 39                  | 26.4                | 5              | 42.7            | 49.7              | 28.4                | 19.7                |
| 25-Feb      | 59              | 48                  | 42.7                | 27.9                | 10             | 45.5            | 49.6              | 30.4                | 21                  |
| 4-Mar       | 57              | 46.4                | 44.2                | 29.1                | 10             | 46.2            | 49.4              | 31.9                | 21.8                |
| 11-Mar      | 61              | 48.9                | 46.5                | 30.1                | 16             | 49              | 50                | 32.7                | 21.9                |
| 18-Mar      | 64              | 50.1                | 50.2                | 33.1                | 21             | 49              | 52                | 35.9                | 25.2                |
| 25-Mar      | 64              | 50.9                | 50.3                | 34.5                | 27             | 56              | 54.7              | 37.3                | 26                  |
| 1-Apr       | 68              | 52.6                | 52.5                | 34.6                | 25             | 52.5            | 56.4              | 38                  | 26.7                |
| 8-Apr       | 68              | 54.1                | 53.7                | 36.7                | 28             | 56              | 57                | 40                  | 28.3                |
| 15-Apr      | 70              | 52.7                | 54.7                | 36.9                | 30             | 52.5            | 56.8              | 39.6                | 27.7                |
| 22-Apr      | 72              | 54                  | 56.5                | 38                  | 29             | 57.4            | 55                | 42                  | 29.7                |
| 29-Apr      | 75              | 56.4                | 61.7                | 41.6                | 30             | 60.9            | 58.2              | 48.7                | 34.6                |
| 6-May       | 77              | 59                  | 63                  | 44.5                | 36             | 69.3            | 62.4              | 52.7                | 38.2                |
| 13-May      | 79              | 61.2                | 65.6                | 46.3                | 37             | 72.8            | 65.9              | 55.8                | 40.8                |
| 20-May      | 79              | 61.1                | 65.1                | 46.7                | 37             | 74.2            | 66.8              | 58.1                | 41.6                |
| 27-May      | 81              | 62.5                | 67.6                | 48.2                | 39             | 79.1            | 67.5              | 61.1                | 44                  |
| 4-Jun       | 81              | 64                  | 68                  | 49.6                | 39             | 88.9            | 71.9              | 64                  | 46.7                |
| 10-Jun      | 86              | 66.6                | 69.5                | 51.3                | 43             | 90.3            | 72.9              | 70.1                | 51.1                |
| 17-Jun      | 84              | 67.2                | 70.4                | 52.8                | 46             | 94.5            | 73.1              | 70.7                | 52.1                |
| 24-Jun      | 88              | 67.3                | 72.1                | 53.4                | 45             | 100.8           | 75.8              | 73.6                | 53.3                |
| 1-Jul       | 84              | 67.5                | 74.2                | 54.8                | 46             | 95.9            | 73.2              | 76.3                | 55.6                |
| 8-Jul       | 88              | 68.8                | 73.8                | 55.7                | 50             | 96.6            | 75.3              | 79                  | 58.3                |
| 15-Jul      | 86              | 66.9                | 73.3                | 55.6                | 48             | 95.9            | 71.2              | 77.2                | 57.8                |
| 22-Jul      | 90              | 67.3                | 76.2                | 55.8                | 48             | 98              | 66                | 78.4                | 58.1                |
| 29-Jul      | 88              | 67.3                | 76.3                | 56.7                | 50             | 96.6            | 74.3              | 82                  | 59.9                |
| 5-Aug       | 90              | 66.3                | 76.9                | 56.3                | 48             | 95.9            | 72.9              | 80.9                | 59.7                |
| 12-Aug      | 91              | 66.4                | 75.9                | 55.9                | 48             | 95.9            | 72.9              | 79.3                | 58.5                |
| 19-Aug      | 88              | 66.1                | 75.7                | 55.6                | 48             | 95.2            | 72.9              | 79.3                | 58.1                |
| 26-Aug      | 86              | 67.2                | 74.4                | 54.8                | 46             | 101.5           | 76.7              | 78.9                | 57.9                |
| 2-Sep       | 84              | 66.8                | 70                  | 52.1                | 43             | 95.2            | 72.4              | 72.5                | 53.3                |
| 9-Sep       | 79              | 64.1                | 68.2                | 50                  | 41             | 89.6            | 70.5              | 69                  | 50.7                |
| 16-Sep      | 79              | 64.4                | 65.9                | 49.3                | 41             | 84              | 67.7              | 66.7                | 49.5                |
| 23-Sep      | 77              | 62.3                | 64.5                | 46.1                | 37             | 84              | 65.7              | 63.1                | 45.7                |
| 30-Sep      | 73              | 59.9                | 63.2                | 45.2                | 36             | 79.1            | 63.4              | 61.6                | 44.2                |
| 7-Oct       | 72              | 60.7                | 60.9                | 45.4                | 34             | 78.4            | 63.9              | 60.3                | 44.8                |
| 14-Oct      | 70              | 60                  | 57.8                | 41.9                | 32             | 73.5            | 63.2              | 54.8                | 39.3                |
| 21-Oct      | 68              | 57.8                | 55                  | 39.6                | 30             | 72.8            | 63.1              | 50.8                | 36.5                |
| 28-Oct      | 68              | 57.5                | 54                  | 38.6                | 27             | 65.1            | 60.7              | 48.3                | 34.5                |
| 4-Nov       | 63              | 53.5                | 51.3                | 37.3                | 27             | 63.7            | 56.1              | 46.2                | 32.7                |
| 11-Nov      | 63              | 54.1                | 48                  | 35.4                | 26             | 59.5            | 55.6              | 41.5                | 30.4                |
| 18-Nov      | 59              | 51.8                | 44.3                | 34.1                | 25             | 56              | 54.9              | 38                  | 28.6                |
| 25-Nov      | 55              | 49.1                | 40.9                | 30.4                | 18             | 52.5            | 53.2              | 34.1                | 25                  |
| 2-Dec       | 50              | 45.4                | 38.9                | 29.8                | 16             | 46.2            | 46.3              | 32.1                | 24.4                |
| 9-Dec       | 52              | 46.7                | 38.7                | 29.2                | 14             | 46.2            | 48                | 31.1                | 23.2                |
| 16-Dec      | 52              | 46.6                | 38.2                | 28                  | 7              | 45.5            | 49.3              | 29.7                | 21.5                |
| 23-Dec      | 54              | 49.4                | 38.4                | 28.7                | 10             | 51.8            | 51.6              | 31                  | 22.2                |
| 31-Dec      | 54              | 46.8                | 37.3                | 26.3                | 5              | 43.4            | 47.6              | 28.7                | 20.7                |

# Degree Days, Heating and Cooling (Base 65 F) & Cooling (Base 50F)



| Month | Mean Cooling Degree Days (°F) Base 50 | Mean Cooling Degree Days (°F) Base 65 | Mean Heating Degree Days (°F) Base 65 |
|-------|---------------------------------------|---------------------------------------|---------------------------------------|
| JAN   | 2.7                                   | 0                                     | 1045.5                                |
| FEB   | 5.2                                   | 0                                     | 889                                   |
| MAR   | 28.5                                  | 0.7                                   | 756.9                                 |
| APR   | 91.9                                  | 7.6                                   | 521.5                                 |
| MAY   | 240.4                                 | 35.3                                  | 295                                   |
| JUN   | 373                                   | 79.8                                  | 164.2                                 |
| JUL   | 484.2                                 | 121                                   | 102.8                                 |
| AUG   | 467                                   | 115.6                                 | 116.1                                 |
| SEP   | 226.4                                 | 27.7                                  | 279.2                                 |
| OCT   | 85.3                                  | 4                                     | 518                                   |
| NOV   | 11.4                                  | 0                                     | 787.6                                 |
| DEC   | 2.2                                   | 0                                     | 990.3                                 |
| ANN   | 2018.2                                | 391.7                                 | 6466.1                                |

# Average Ventilation and Infiltration Loads (Outside Air vs 75F, 60% RH summer; 68F, 30% RH winter)



| Month | Average Sensible Cooling Load (Btu/cfm) | Average Sensible Heating Load (Btu/cfm) | Average Latent Cooling Load (Btu/cfm) | Average Latent Heating Load (Btu/cfm) |
|-------|-----------------------------------------|-----------------------------------------|---------------------------------------|---------------------------------------|
| JAN   | 0                                       | -29508                                  | 0                                     | -4703                                 |
| FEB   | 0                                       | -25240                                  | 0                                     | -3947                                 |
| MAR   | 0                                       | -22017                                  | 0                                     | -2573                                 |
| APR   | 5                                       | -15743                                  | 0                                     | -1075                                 |
| MAY   | 96                                      | -9666                                   | 9                                     | -130                                  |
| JUN   | 386                                     | -5866                                   | 271                                   | -5                                    |
| JUL   | 709                                     | -4070                                   | 492                                   | 0                                     |
| AUG   | 701                                     | -4473                                   | 416                                   | 0                                     |
| SEP   | 64                                      | -9252                                   | 50                                    | -12                                   |
| OCT   | 2                                       | -15774                                  | 0                                     | -379                                  |
| NOV   | 0                                       | -22747                                  | 0                                     | -1708                                 |
| DEC   | 0                                       | -28080                                  | 0                                     | -3765                                 |
| ANN   | 1963                                    | -192436                                 | 1238                                  | -18297                                |

| Station Information |     | Shading<br>Geometry in<br>Dimensionless<br>Units |     |
|---------------------|-----|--------------------------------------------------|-----|
| City, State, WBAN   | N/A | N/A                                              | N/A |
| Lat, Lon, Elev      | N/A | N/A                                              | N/A |
| Press Stn Type      | N/A | N/A                                              | N/A |

| AVERAGE INCIDENT SOLAR RADIATION<br>(Btu/sq.ft./day), Percentage Uncertainty = 9 |          |     |     |     |     |     |     |     |     |     |     |     |     |      |
|----------------------------------------------------------------------------------|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
|                                                                                  |          | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Year |
| HORIZ.                                                                           | Global   |     |     |     |     |     |     |     |     |     |     |     |     |      |
|                                                                                  | Std.Dev. |     |     |     |     |     |     |     |     |     |     |     |     |      |
|                                                                                  | Minimum  |     |     |     |     |     |     |     |     |     |     |     |     |      |
|                                                                                  | Maximum  |     |     |     |     |     |     |     |     |     |     |     |     |      |
|                                                                                  | Diffuse  |     |     |     |     |     |     |     |     |     |     |     |     |      |
| Clear Day                                                                        | Global   |     |     |     |     |     |     |     |     |     |     |     |     |      |
| NORTH                                                                            | Global   |     |     |     |     |     |     |     |     |     |     |     |     |      |
|                                                                                  | Diffuse  |     |     |     |     |     |     |     |     |     |     |     |     |      |
| Clear Day                                                                        | Global   |     |     |     |     |     |     |     |     |     |     |     |     |      |
| EAST                                                                             | Global   |     |     |     |     |     |     |     |     |     |     |     |     |      |
|                                                                                  | Diffuse  |     |     |     |     |     |     |     |     |     |     |     |     |      |
| Clear Day                                                                        | Global   |     |     |     |     |     |     |     |     |     |     |     |     |      |
| SOUTH                                                                            | Global   |     |     |     |     |     |     |     |     |     |     |     |     |      |
|                                                                                  | Diffuse  |     |     |     |     |     |     |     |     |     |     |     |     |      |
| Clear Day                                                                        | Global   |     |     |     |     |     |     |     |     |     |     |     |     |      |
| WEST                                                                             | Global   |     |     |     |     |     |     |     |     |     |     |     |     |      |
|                                                                                  | Diffuse  |     |     |     |     |     |     |     |     |     |     |     |     |      |
| Clear Day                                                                        | Global   |     |     |     |     |     |     |     |     |     |     |     |     |      |

**Average Annual Solar Radiation - Nearest Available Site Source: National Renewable Energy Laboratory, Golden CO, 1995**

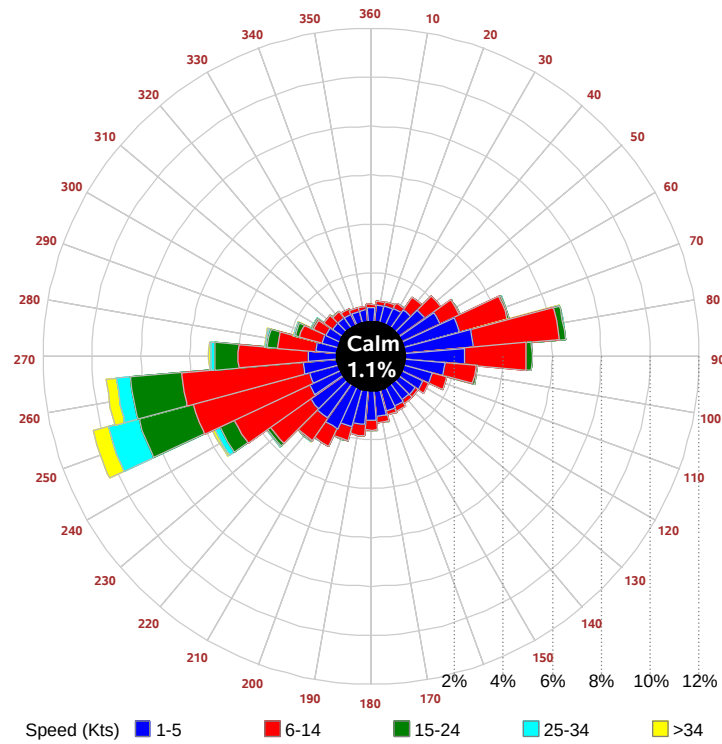
| AVERAGE TRANSMITTED SOLAR RADIATION (Btu/sq.ft./day) FOR DOUBLE GLAZING, Percentage Uncertainty = 9 |          |     |     |     |     |     |     |     |     |     |     |     |     |      |
|-----------------------------------------------------------------------------------------------------|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
|                                                                                                     |          | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Year |
| HORIZ.                                                                                              | Unshaded |     |     |     |     |     |     |     |     |     |     |     |     |      |
| NORTH                                                                                               | Unshaded |     |     |     |     |     |     |     |     |     |     |     |     |      |
|                                                                                                     | Shaded   |     |     |     |     |     |     |     |     |     |     |     |     |      |
| EAST                                                                                                | Unshaded |     |     |     |     |     |     |     |     |     |     |     |     |      |
|                                                                                                     | Shaded   |     |     |     |     |     |     |     |     |     |     |     |     |      |
| SOUTH                                                                                               | Unshaded |     |     |     |     |     |     |     |     |     |     |     |     |      |
|                                                                                                     | Shaded   |     |     |     |     |     |     |     |     |     |     |     |     |      |
| WEST                                                                                                | Unshaded |     |     |     |     |     |     |     |     |     |     |     |     |      |
|                                                                                                     | Shaded   |     |     |     |     |     |     |     |     |     |     |     |     |      |

| AVERAGE INCIDENT ILLUMINANCE (klux-hr) FOR MOSTLY CLEAR AND MOSTLY CLOUDY CONDITIONS, Percentage Uncertainty = 9 |          |     |      |       |     |     |     |      |     |      |     |  |
|------------------------------------------------------------------------------------------------------------------|----------|-----|------|-------|-----|-----|-----|------|-----|------|-----|--|
|                                                                                                                  |          |     |      | March |     |     |     |      |     | June |     |  |
|                                                                                                                  |          | 9am | 11am | 1pm   | 3pm | 5pm | 9am | 11am | 1pm | 3pm  | 5pm |  |
| HORIZ.                                                                                                           | M.Clear  |     |      |       |     |     |     |      |     |      |     |  |
|                                                                                                                  | M.Cloudy |     |      |       |     |     |     |      |     |      |     |  |
| NORTH                                                                                                            | M.Clear  |     |      |       |     |     |     |      |     |      |     |  |
|                                                                                                                  | M.Cloudy |     |      |       |     |     |     |      |     |      |     |  |
| EAST                                                                                                             | M.Clear  |     |      |       |     |     |     |      |     |      |     |  |
|                                                                                                                  | M.Cloudy |     |      |       |     |     |     |      |     |      |     |  |
| SOUTH                                                                                                            | M.Clear  |     |      |       |     |     |     |      |     |      |     |  |
|                                                                                                                  | M.Cloudy |     |      |       |     |     |     |      |     |      |     |  |
| WEST                                                                                                             | M.Clear  |     |      |       |     |     |     |      |     |      |     |  |
|                                                                                                                  | M.Cloudy |     |      |       |     |     |     |      |     |      |     |  |
| M.Clear                                                                                                          | (% hrs)  |     |      |       |     |     |     |      |     |      |     |  |

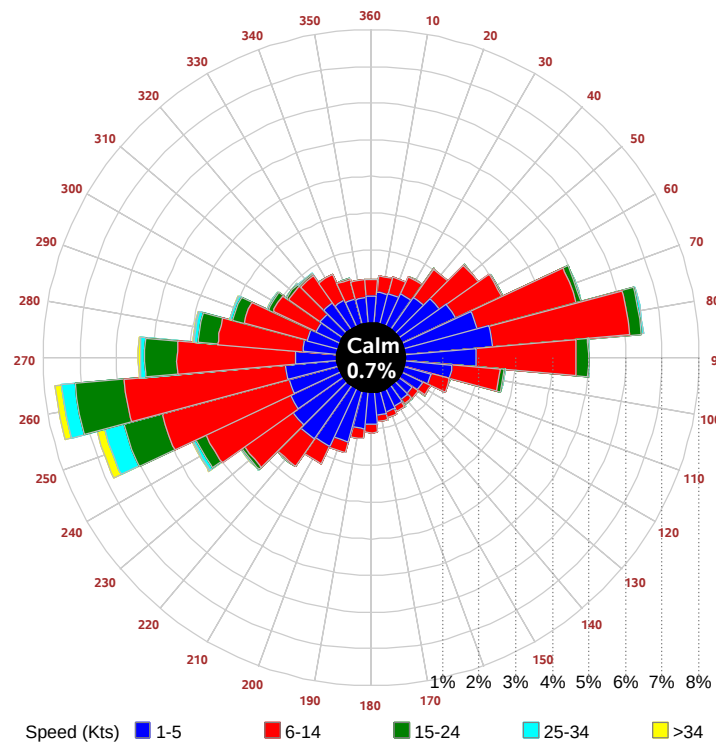
|         |          |     |      | Sept |     |     |     |      |     | Dec |     |  |
|---------|----------|-----|------|------|-----|-----|-----|------|-----|-----|-----|--|
|         |          | 9am | 11am | 1pm  | 3pm | 5pm | 9am | 11am | 1pm | 3pm | 5pm |  |
| HORIZ.  | M.Clear  |     |      |      |     |     |     |      |     |     |     |  |
|         | M.Cloudy |     |      |      |     |     |     |      |     |     |     |  |
| NORTH   | M.Clear  |     |      |      |     |     |     |      |     |     |     |  |
|         | M.Cloudy |     |      |      |     |     |     |      |     |     |     |  |
| EAST    | M.Clear  |     |      |      |     |     |     |      |     |     |     |  |
|         | M.Cloudy |     |      |      |     |     |     |      |     |     |     |  |
| SOUTH   | M.Clear  |     |      |      |     |     |     |      |     |     |     |  |
|         | M.Cloudy |     |      |      |     |     |     |      |     |     |     |  |
| WEST    | M.Clear  |     |      |      |     |     |     |      |     |     |     |  |
|         | M.Cloudy |     |      |      |     |     |     |      |     |     |     |  |
| M.Clear | (% hrs)  |     |      |      |     |     |     |      |     |     |     |  |



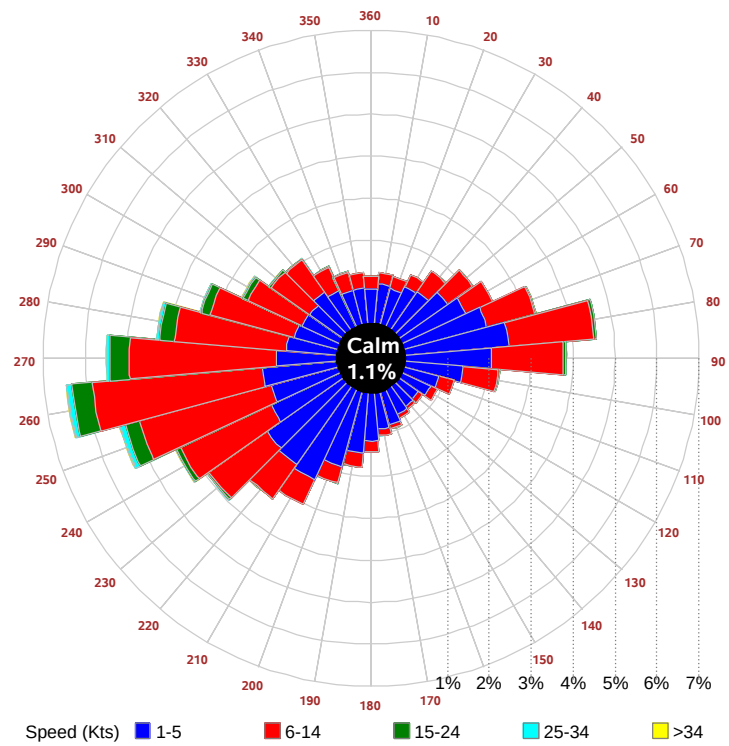
## Wind Summary - December, January, and February



## Wind Summary - March, April, and May



## Wind Summary - June, July, and August



## Wind Summary - September, October, and November

