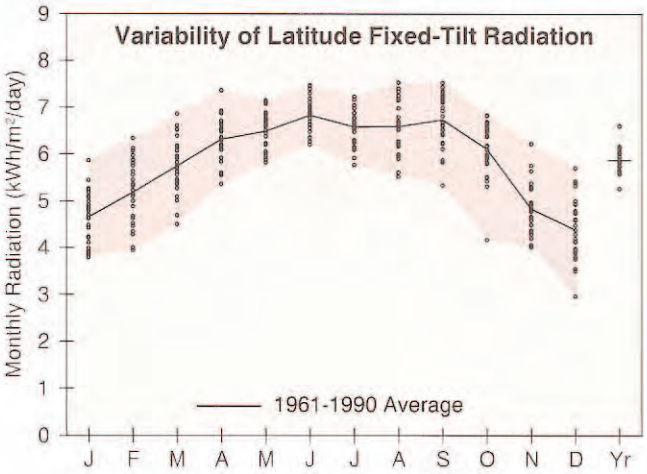


# Cedar City, UT

## WBAN NO. 93129

LATITUDE: 37.70° N
LONGITUDE: 113.10° W
ELEVATION: 1712 meters
MEAN PRESSURE: 829 millibars

STATION TYPE: Secondary

### Solar Radiation for Flat-Plate Collectors Facing South at a Fixed Tilt (kWh/m²/day), Uncertainty ±9%

| Tilt (°) | | Jan | Feb | Mar | Apr | May | June | July | Aug | Sept | Oct | Nov | Dec | Year |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | Average | 2.7 | 3.5 | 4.6 | 6.0 | 7.0 | 7.8 | 7.3 | 6.5 | 5.7 | 4.3 | 2.9 | 2.4 | 5.0 |
| | Min/Max | 2.3/3.1 | 2.9/4.0 | 3.9/5.4 | 5.2/6.8 | 6.3/7.6 | 7.0/8.6 | 6.3/8.0 | 5.5/7.4 | 4.7/6.3 | 3.2/4.7 | 2.6/3.5 | 1.9/2.8 | 4.7/5.5 |
| Latitude -15 | Average | 4.0 | 4.7 | 5.5 | 6.4 | 7.0 | 7.5 | 7.1 | 6.8 | 6.6 | 5.6 | 4.2 | 3.7 | 5.8 |
| | Min/Max | 3.3/4.9 | 3.7/5.6 | 4.4/6.5 | 5.5/7.4 | 6.2/7.6 | 6.8/8.2 | 6.2/7.9 | 5.7/7.8 | 5.3/7.3 | 3.9/6.3 | 3.6/5.4 | 2.6/4.8 | 5.2/6.4 |
| Latitude | Average | 4.6 | 5.2 | 5.7 | 6.3 | 6.5 | 6.8 | 6.6 | 6.6 | 6.7 | 6.1 | 4.8 | 4.4 | 5.9 |
| | Min/Max | 3.8/5.9 | 4.0/6.3 | 4.5/6.9 | 5.4/7.4 | 5.8/7.2 | 6.2/7.5 | 5.8/7.2 | 5.5/7.5 | 5.3/7.5 | 4.2/6.8 | 4.0/6.2 | 3.0/5.7 | 5.3/6.6 |
| Latitude +15 | Average | 5.0 | 5.4 | 5.7 | 5.9 | 5.7 | 5.9 | 5.7 | 6.0 | 6.5 | 6.2 | 5.1 | 4.8 | 5.7 |
| | Min/Max | 4.0/6.5 | 4.0/6.7 | 4.4/6.8 | 5.0/6.8 | 5.2/6.3 | 5.4/6.4 | 5.0/6.3 | 5.0/6.8 | 5.1/7.3 | 4.2/7.0 | 4.2/6.7 | 3.2/6.3 | 5.0/6.4 |
| 90 | Average | 4.7 | 4.7 | 4.2 | 3.6 | 2.8 | 2.6 | 2.6 | 3.3 | 4.3 | 5.0 | 4.6 | 4.6 | 3.9 |
| | Min/Max | 3.7/6.4 | 3.3/5.8 | 3.3/5.0 | 3.1/4.0 | 2.6/3.1 | 2.5/2.7 | 2.4/2.8 | 2.8/3.6 | 3.4/4.8 | 3.3/5.6 | 3.7/6.1 | 2.9/6.0 | 3.4/4.5 |

### Solar Radiation for 1-Axis Tracking Flat-Plate Collectors with a North-South Axis (kWh/m²/day), Uncertainty ±9%

| Axis Tilt (°) | | Jan | Feb | Mar | Apr | May | June | July | Aug | Sept | Oct | Nov | Dec | Year |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | Average | 4.2 | 5.2 | 6.6 | 8.4 | 9.6 | 10.8 | 10.1 | 9.2 | 8.4 | 6.6 | 4.5 | 3.8 | 7.3 |
| | Min/Max | 3.4/5.3 | 3.8/6.4 | 5.1/8.1 | 6.8/9.9 | 8.4/10.8 | 9.3/12.2 | 8.3/11.5 | 7.3/10.8 | 6.3/9.6 | 4.4/7.4 | 3.7/5.8 | 2.5/4.9 | 6.4/8.2 |
| Latitude -15 | Average | 5.1 | 6.1 | 7.3 | 8.8 | 9.7 | 10.8 | 10.1 | 9.5 | 9.1 | 7.5 | 5.4 | 4.7 | 7.9 |
| | Min/Max | 4.1/6.6 | 4.4/7.6 | 5.5/9.0 | 7.1/10.4 | 8.5/10.9 | 9.3/12.2 | 8.4/11.5 | 7.6/11.2 | 6.8/10.5 | 4.9/8.5 | 4.4/7.2 | 3.1/6.3 | 6.8/8.9 |
| Latitude | Average | 5.6 | 6.5 | 7.5 | 8.7 | 9.4 | 10.3 | 9.7 | 9.4 | 9.3 | 7.9 | 5.9 | 5.3 | 8.0 |
| | Min/Max | 4.5/7.3 | 4.6/8.2 | 5.6/9.3 | 7.1/10.4 | 8.3/10.6 | 8.9/11.7 | 8.1/11.1 | 7.4/11.1 | 6.8/10.6 | 5.1/8.9 | 4.8/7.8 | 3.3/7.0 | 6.9/9.1 |
| Latitude +15 | Average | 5.9 | 6.6 | 7.4 | 8.4 | 8.9 | 9.7 | 9.1 | 9.0 | 9.1 | 8.0 | 6.1 | 5.6 | 7.8 |
| | Min/Max | 4.7/7.8 | 4.6/8.4 | 5.5/9.2 | 6.8/10.0 | 7.8/10.1 | 8.3/10.9 | 7.6/10.4 | 7.1/10.6 | 6.6/10.4 | 5.1/9.1 | 5.0/8.2 | 3.5/7.4 | 6.7/9.0 |

### Solar Radiation for 2-Axis Tracking Flat-Plate Collectors (kWh/m²/day), Uncertainty ±9%

| Tracker | | Jan | Feb | Mar | Apr | May | June | July | Aug | Sept | Oct | Nov | Dec | Year |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-Axis | Average | 6.0 | 6.6 | 7.5 | 8.8 | 9.9 | 11.0 | 10.3 | 9.6 | 9.3 | 8.0 | 6.2 | 5.7 | 8.3 |
| | Min/Max | 4.7/7.8 | 4.7/8.4 | 5.6/9.3 | 7.2/10.5 | 8.6/11.1 | 9.5/12.5 | 8.5/11.7 | 7.6/11.3 | 6.8/10.6 | 5.1/9.1 | 5.0/8.2 | 3.6/7.6 | 7.1/9.4 |

### Direct Beam Solar Radiation for Concentrating Collectors (kWh/m²/day), Uncertainty ±8%

| Tracker | | Jan | Feb | Mar | Apr | May | June | July | Aug | Sept | Oct | Nov | Dec | Year |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-Axis, E-W Horiz Axis | Average | 3.7 | 3.8 | 3.8 | 4.5 | 5.1 | 6.2 | 5.5 | 5.1 | 5.1 | 4.8 | 3.9 | 3.7 | 4.6 |
| | Min/Max | 2.5/5.2 | 2.3/5.4 | 2.1/5.4 | 3.0/5.9 | 4.1/6.2 | 4.8/7.5 | 4.1/6.9 | 3.6/6.6 | 3.2/6.3 | 2.3/5.8 | 2.8/5.8 | 1.9/5.6 | 3.6/5.6 |
| 1-Axis, N-S Horiz Axis | Average | 2.9 | 3.6 | 4.6 | 6.0 | 7.0 | 8.3 | 7.5 | 6.9 | 6.6 | 5.1 | 3.3 | 2.7 | 5.4 |
| | Min/Max | 2.0/4.1 | 2.0/5.2 | 2.6/6.5 | 4.1/7.9 | 5.6/8.5 | 6.3/10.1 | 5.5/9.4 | 4.8/9.0 | 4.0/8.1 | 2.5/6.1 | 2.3/4.9 | 1.4/4.1 | 4.2/6.5 |
| 1-Axis, N-S Tilt=Latitude | Average | 4.2 | 4.7 | 5.3 | 6.3 | 6.8 | 7.8 | 7.1 | 7.0 | 7.2 | 6.3 | 4.5 | 4.0 | 5.9 |
| | Min/Max | 2.8/5.8 | 2.7/6.7 | 3.0/7.5 | 4.3/8.2 | 5.5/8.3 | 6.0/9.5 | 5.2/9.0 | 4.9/9.1 | 4.4/9.0 | 3.0/7.5 | 3.2/6.8 | 2.0/6.0 | 4.6/7.2 |
| 2-Axis | Average | 4.5 | 4.8 | 5.3 | 6.4 | 7.2 | 8.5 | 7.7 | 7.2 | 7.2 | 6.4 | 4.7 | 4.4 | 6.2 |
| | Min/Max | 3.0/6.2 | 2.8/6.9 | 3.0/7.5 | 4.3/8.4 | 5.8/8.7 | 6.5/10.3 | 5.6/9.6 | 5.0/9.4 | 4.4/9.0 | 3.1/7.6 | 3.4/7.1 | 2.2/6.6 | 4.8/7.5 |

### Average Climatic Conditions

| Element | Jan | Feb | Mar | Apr | May | June | July | Aug | Sept | Oct | Nov | Dec | Year |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temperature (°C) | -1.4 | 1.4 | 4.4 | 8.6 | 13.6 | 19.3 | 23.4 | 22.2 | 17.2 | 10.9 | 4.3 | -0.8 | 10.3 |
| Daily Minimum Temp | -8.2 | -5.5 | -2.7 | 0.8 | 5.1 | 9.8 | 14.4 | 13.6 | 8.4 | 2.3 | -2.9 | -7.7 | 2.3 |
| Daily Maximum Temp | 5.4 | 8.3 | 11.6 | 16.4 | 22.2 | 28.7 | 32.3 | 30.8 | 26.1 | 19.4 | 11.5 | 6.1 | 18.2 |
| Record Minimum Temp | -26.7 | -30.6 | -16.1 | -12.2 | -5.6 | 0.0 | 5.6 | 3.9 | -4.4 | -20.0 | -20.0 | -30.6 | -30.6 |
| Record Maximum Temp | 19.4 | 22.2 | 23.9 | 27.8 | 33.3 | 38.3 | 39.4 | 37.2 | 33.9 | 29.4 | 23.3 | 18.9 | 39.4 |
| HDD, Base 18.3°C | 612 | 473 | 431 | 292 | 153 | 33 | 0 | 0 | 72 | 234 | 422 | 592 | 3312 |
| CDD, Base 18.3°C | 0 | 0 | 0 | 0 | 7 | 62 | 157 | 122 | 38 | 3 | 0 | 0 | 388 |
| Relative Humidity (%) | 66 | 62 | 56 | 46 | 40 | 31 | 35 | 40 | 41 | 47 | 58 | 65 | 49 |
| Wind Speed (m/s) | 2.7 | 3.1 | 3.7 | 4.0 | 3.9 | 3.8 | 3.6 | 3.4 | 3.4 | 3.0 | 3.3 | 2.7 | 3.4 |