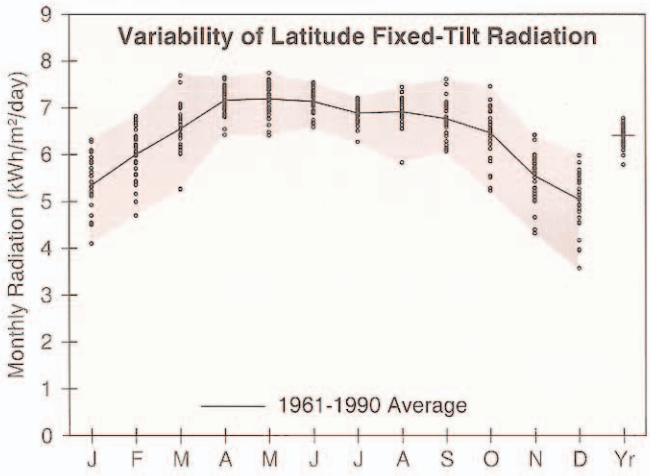
Albuquerque, NM

WBAN NO. 23050

LATITUDE: 35.05° N
LONGITUDE: 106.62° W
ELEVATION: 1619 meters
MEAN PRESSURE: 838 millibars

STATION TYPE: Primary



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	3.2	4.2	5.4	6.8	7.7	8.1	7.5	6.9	5.9	4.7	3.5	2.9	5.6
	Min/Max	2.6/3.7	3.4/4.7	4.4/6.2	6.2/7.3	6.9/8.3	7.4/8.7	6.8/7.9	5.9/7.4	5.4/6.6	4.0/5.3	2.8/3.9	2.2/3.3	5.1/5.9
Latitude -15	Average	4.6	5.4	6.3	7.3	7.7	7.8	7.4	7.2	6.6	5.9	4.8	4.3	6.3
	Min/Max	3.6/5.4	4.3/6.1	5.1/7.3	6.5/7.8	6.8/8.3	7.2/8.3	6.7/7.8	6.1/7.7	6.0/7.4	4.9/6.8	3.8/5.5	3.1/5.0	5.7/6.6
Latitude	Average	5.3	6.0	6.5	7.2	7.2	7.1	6.9	6.9	6.8	6.5	5.5	5.0	6.4
	Min/Max	4.1/6.3	4.7/6.8	5.3/7.7	6.4/7.7	6.4/7.7	6.6/7.5	6.3/7.2	5.8/7.4	6.1/7.6	5.2/7.4	4.3/6.4	3.6/6.0	5.8/6.8
Latitude +15	Average	5.8	6.2	6.5	6.6	6.3	6.1	6.0	6.3	6.5	6.6	5.9	5.5	6.2
	Min/Max	4.4/6.9	4.8/7.1	5.1/7.6	5.9/7.1	5.7/6.8	5.6/6.4	5.5/6.3	5.3/6.7	5.8/7.3	5.3/7.7	4.6/6.9	3.8/6.6	5.5/6.5
90	Average	5.2	5.1	4.5	3.7	2.8	2.4	2.5	3.2	4.2	5.1	5.2	5.1	4.1
	Min/Max	3.9/6.4	3.9/5.8	3.5/5.4	3.4/4.0	2.5/3.0	2.2/2.5	2.3/2.7	2.8/3.4	3.7/4.6	4.0/6.0	3.9/6.2	3.5/6.2	3.5/4.4

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	4.9	6.2	7.6	9.6	10.6	10.9	9.9	9.2	8.3	7.0	5.3	4.5	7.8
	Min/Max	3.7/5.9	4.7/7.1	5.7/9.3	8.4/10.6	9.0/11.8	9.5/12.1	8.5/10.8	7.4/10.3	7.0/9.6	5.5/8.4	4.1/6.3	3.2/5.4	6.9/8.3
Latitude -15	Average	5.9	7.1	8.3	10.0	10.6	10.8	9.9	9.5	8.8	7.9	6.3	5.5	8.4
	Min/Max	4.4/7.2	5.4/8.1	6.2/10.2	8.7/11.0	9.1/11.9	9.5/12.0	8.5/10.8	7.6/10.6	7.5/10.4	6.1/9.5	4.8/7.5	3.8/6.7	7.4/8.9
Latitude	Average	6.5	7.5	8.6	9.9	10.3	10.4	9.5	9.3	9.0	8.3	6.8	6.1	8.5
	Min/Max	4.8/7.9	5.7/8.7	6.4/10.5	8.7/10.9	8.8/11.6	9.1/11.5	8.1/10.4	7.5/10.4	7.6/10.5	6.3/10.0	5.2/8.1	4.2/7.4	7.5/9.1
Latitude +15	Average	6.9	7.7	8.5	9.5	9.7	9.7	8.9	8.9	8.8	8.4	7.1	6.5	8.4
	Min/Max	5.1/8.4	5.8/8.9	6.3/10.4	8.3/10.6	8.3/10.9	8.4/10.7	7.6/9.8	7.1/9.9	7.4/10.3	6.4/10.1	5.3/8.5	4.4/7.9	7.3/8.9

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

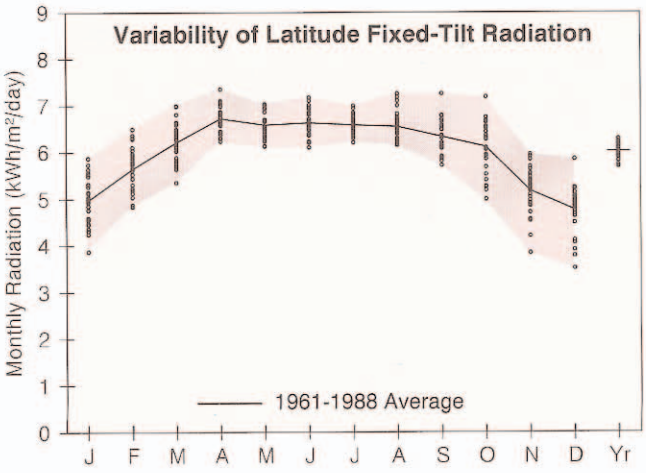
Tracker		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
2-Axis	Average	6.9	7.7	8.6	10.0	10.8	11.1	10.0	9.5	9.0	8.4	7.2	6.6	8.8
	Min/Max	5.1/8.5	5.8/8.9	6.4/10.5	8.8/11.1	9.2/12.1	9.7/12.3	8.6/11.0	7.7/10.6	7.6/10.5	6.4/10.1	5.3/8.6	4.4/8.1	7.7/9.4

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	4.5	4.6	4.6	5.3	5.9	6.3	5.5	5.2	4.9	5.1	4.6	4.4	5.1
	Min/Max	3.1/5.8	3.0/5.7	3.0/6.2	4.3/6.1	4.7/7.1	5.3/7.4	4.3/6.4	3.7/6.0	3.9/6.2	3.3/6.5	2.8/5.9	2.6/5.7	4.3/5.5
1-Axis, N-S Horiz Axis	Average	3.7	4.6	5.6	7.2	8.0	8.4	7.2	6.7	6.2	5.4	4.0	3.4	5.9
	Min/Max	2.5/4.8	3.0/5.7	3.4/7.6	5.7/8.4	6.1/9.7	6.8/10.0	5.4/8.4	4.7/7.9	4.7/7.9	3.4/7.2	2.4/5.2	2.0/4.5	4.8/6.4
1-Axis, N-S Tilt=Latitude	Average	5.1	5.7	6.3	7.4	7.7	7.8	6.8	6.8	6.7	6.5	5.4	4.8	6.4
	Min/Max	3.4/6.6	3.7/7.2	3.9/8.6	5.8/8.6	5.9/9.3	6.4/9.4	5.1/7.9	4.7/8.0	5.1/8.6	4.1/8.6	3.2/6.9	2.8/6.3	5.3/7.0
2-Axis	Average	5.4	5.9	6.3	7.5	8.1	8.5	7.3	7.0	6.8	6.6	5.7	5.2	6.7
	Min/Max	3.7/7.1	3.8/7.3	3.9/8.6	5.9/8.8	6.2/9.9	6.9/10.2	5.5/8.5	4.9/8.2	5.2/8.7	4.2/8.6	3.4/7.3	3.1/6.8	5.6/7.3

Average Climatic Conditions

Element	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Temperature (°C)	1.2	4.4	8.3	12.9	17.9	23.4	25.8	24.4	20.3	13.9	6.8	1.8	13.4
Daily Minimum Temp	-5.7	-3.1	0.1	4.2	9.2	14.6	18.0	17.0	12.9	6.1	-0.4	-4.9	5.7
Daily Maximum Temp	8.2	11.9	16.3	21.6	26.5	32.2	33.6	31.7	27.7	21.7	14.1	8.6	21.2
Record Minimum Temp	-27.2	-20.6	-13.3	-7.2	-2.2	4.4	11.1	11.1	2.8	-6.1	-21.7	-21.7	-27.2
Record Maximum Temp	20.6	24.4	29.4	31.7	36.7	40.6	40.6	38.3	37.8	32.8	25.0	22.2	40.6
HDD, Base 18.3°C	531	389	312	167	49	0	0	0	10	144	345	512	2458
CDD, Base 18.3°C	0	0	0	4	36	155	233	188	70	6	0	0	691
Relative Humidity (%)	56	50	40	33	31	30	42	47	48	45	50	57	44
Wind Speed (m/s)	3.7	3.9	4.5	4.9	4.8	4.5	4.0	3.8	3.8	3.6	3.6	3.5	4.1



Tucumcari, NM

WBAN NO. 23048

LATITUDE: 35.18° N
LONGITUDE: 103.60° W
ELEVATION: 1231 meters
MEAN PRESSURE: 878 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	3.0	3.9	5.1	6.4	7.0	7.5	7.2	6.5	5.5	4.5	3.3	2.7	5.2
	Min/Max	2.5/3.3	3.5/4.3	4.5/5.6	5.9/6.9	6.5/7.5	6.8/8.1	6.7/7.7	6.1/7.3	5.1/6.2	3.8/5.1	2.7/3.6	2.2/3.1	5.0/5.4
Latitude -15	Average	4.3	5.1	5.9	6.8	7.0	7.2	7.1	6.8	6.2	5.6	4.5	4.0	5.9
	Min/Max	3.4/5.0	4.4/5.8	5.2/6.6	6.3/7.4	6.5/7.5	6.6/7.8	6.7/7.6	6.4/7.5	5.7/7.1	4.7/6.5	3.5/5.2	3.1/4.9	5.6/6.1
Latitude	Average	5.0	5.6	6.2	6.7	6.6	6.6	6.6	6.5	6.3	6.1	5.2	4.8	6.0
	Min/Max	3.9/5.9	4.8/6.5	5.3/7.0	6.2/7.3	6.1/7.0	6.1/7.2	6.2/7.0	6.2/7.3	5.7/7.3	5.0/7.2	3.8/5.9	3.5/5.8	5.7/6.3
Latitude +15	Average	5.4	5.9	6.1	6.2	5.8	5.7	5.7	5.9	6.1	6.2	5.5	5.2	5.8
	Min/Max	4.1/6.4	5.0/6.8	5.3/6.9	5.8/6.8	5.4/6.2	5.3/6.1	5.4/6.0	5.6/6.6	5.5/7.0	5.0/7.4	4.0/6.4	3.7/6.4	5.5/6.1
90	Average	4.9	4.8	4.3	3.5	2.7	2.3	2.4	3.1	3.9	4.8	4.8	4.8	3.9
	Min/Max	3.7/5.9	4.0/5.6	3.7/4.9	3.3/3.8	2.5/2.8	2.2/2.4	2.4/2.5	2.9/3.3	3.5/4.5	3.8/5.8	3.4/5.7	3.3/6.1	3.5/4.1

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	4.6	5.8	7.2	8.9	9.4	10.0	9.6	8.9	7.7	6.6	4.9	4.2	7.3
	Min/Max	3.5/5.4	4.8/6.7	5.9/8.3	7.9/9.9	8.4/10.5	8.7/11.2	8.7/10.6	8.1/10.3	6.9/9.1	5.3/8.0	3.6/5.7	3.0/5.2	6.8/7.8
Latitude -15	Average	5.5	6.6	7.9	9.3	9.5	9.9	9.6	9.1	8.3	7.5	5.9	5.2	7.9
	Min/Max	4.2/6.6	5.5/7.8	6.5/9.1	8.2/10.3	8.5/10.6	8.6/11.1	8.7/10.6	8.3/10.6	7.4/9.8	5.9/9.0	4.2/6.8	3.7/6.5	7.3/8.3
Latitude	Average	6.0	7.1	8.1	9.2	9.3	9.5	9.3	9.0	8.4	7.9	6.4	5.7	8.0
	Min/Max	4.6/7.3	5.8/8.3	6.6/9.4	8.1/10.3	8.3/10.3	8.2/10.7	8.4/10.2	8.2/10.4	7.4/9.9	6.2/9.5	4.5/7.4	4.0/7.2	7.4/8.5
Latitude +15	Average	6.3	7.2	8.0	8.9	8.7	8.9	8.7	8.5	8.2	7.9	6.6	6.1	7.8
	Min/Max	4.8/7.7	5.9/8.5	6.5/9.3	7.8/9.9	7.8/9.7	7.7/10.0	7.8/9.6	7.8/9.9	7.2/9.7	6.2/9.6	4.7/7.7	4.2/7.7	7.2/8.3

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	6.4	7.2	8.1	9.3	9.6	10.1	9.8	9.2	8.4	8.0	6.7	6.2	8.3
	Min/Max	4.8/7.8	5.9/8.6	6.6/9.4	8.2/10.4	8.6/10.7	8.8/11.4	8.8/10.8	8.4/10.6	7.4/9.9	6.2/9.6	4.7/7.8	4.3/7.8	7.6/8.8

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	4.1	4.3	4.4	4.9	5.1	5.6	5.3	4.8	4.5	4.7	4.2	4.1	4.7
	Min/Max	2.6/5.4	3.1/5.4	3.1/5.4	4.0/5.8	4.2/6.1	4.4/6.7	4.4/6.1	4.1/6.1	3.8/5.8	3.3/6.2	2.5/5.2	2.4/5.7	4.1/5.1
1-Axis, N-S Horiz Axis	Average	3.3	4.2	5.2	6.6	6.8	7.4	6.9	6.3	5.7	5.1	3.7	3.1	5.4
	Min/Max	2.1/4.4	3.0/5.4	3.6/6.4	5.2/7.8	5.6/8.2	5.6/8.9	5.7/8.2	5.4/8.3	4.6/7.3	3.5/6.7	2.1/4.5	1.8/4.4	4.7/5.9
1-Axis, N-S Tilt=Latitude	Average	4.6	5.3	6.0	6.8	6.6	6.9	6.6	6.4	6.2	6.1	4.9	4.4	5.9
	Min/Max	2.9/6.0	3.8/6.8	4.1/7.3	5.4/8.0	5.4/7.9	5.3/8.4	5.4/7.7	5.5/8.3	5.1/8.0	4.2/8.1	2.9/6.1	2.6/6.2	5.1/6.5
2-Axis	Average	4.9	5.5	6.0	6.9	7.0	7.5	7.0	6.6	6.2	6.2	5.1	4.8	6.1
	Min/Max	3.1/6.4	3.9/6.9	4.1/7.3	5.5/8.2	5.7/8.4	5.7/9.1	5.8/8.3	5.6/8.5	5.1/8.0	4.3/8.2	3.0/6.4	2.8/6.7	5.3/6.7

Average Climatic Conditions

Element	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Temperature (°C)	2.9	5.0	9.1	14.1	18.8	23.6	25.8	24.6	20.6	15.1	8.8	3.4	14.3
Daily Minimum Temp	-5.7	-3.6	0.3	5.4	10.3	15.3	17.9	16.7	12.8	6.4	0.6	-4.8	5.9
Daily Maximum Temp	11.6	13.6	17.9	22.8	27.2	31.9	33.7	32.3	28.3	23.7	16.9	11.7	22.6
Record Minimum Temp	-27.8	-19.0	-12.8	-9.4	0.0	6.1	11.7	10.6	1.7	-3.9	-16.1	-23.9	-27.8
Record Maximum Temp	25.6	27.2	36.7	34.4	36.7	42.8	40.0	38.9	38.3	36.1	30.0	25.6	42.8
HDD, Base 18.3°C	477	373	286	136	31	4	0	0	8	110	287	462	2173
CDD, Base 18.3°C	0	0	0	9	45	162	231	193	76	10	0	0	726
Relative Humidity (%)	58	56	48	43	46	47	52	56	58	52	56	58	53
Wind Speed (m/s)	4.3	4.4	4.9	5.1	4.8	4.6	4.3	3.9	4.1	4.0	4.3	4.2	4.4