

# Insolation Levels (Nth America)

## Average Insolation (10 year average) kWh/m<sup>2</sup>/day

Countr	State/City	Latitude	Longitud	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year Avg
AL	Birmingham	33' 34" N	86' 45" W	2.29	3.31	4.04	5.14	5.92	5.98	5.81	5.7	4.8	3.93	2.96	2.25	4.34
AK	Anchorage	61' 10" N	150' 1" W	0.21	0.76	1.68	3.12	3.98	4.58	4.25	3.16	1.98	0.98	0.37	0.12	2.09
AR	Little Rock	32' 25" N	94' 44" W	2.36	3.39	4.01	5.32	5.71	6.19	6.15	5.85	5.25	4.17	2.95	2.25	4.46
AZ	Phoenix	33' 26" N	112' 1" W	3.25	4.41	5.17	6.76	7.42	7.7	6.99	6.11	6.02	4.44	3.52	2.75	5.38
CA	Los Angeles	34' N	118' W	3.09	4.25	5.09	6.58	7.29	7.62	7.45	6.72	6.11	4.42	3.43	2.72	5.4
CA	San Francisco	38' 31" N	121' 30" W	2.35	3.33	4.42	5.95	6.84	7.39	7.55	6.51	5.75	3.92	2.65	2.06	4.89
CO	Denver	39' 45" N	104' 52" W	2.25	3.2	4.32	5.61	6.11	6.71	6.5	5.86	5.47	4.01	2.59	1.98	4.55
CT	Hartford	41' 44" N	72' 39" W	1.7	2.43	3.48	4.07	5.14	5.58	5.38	5.04	4.13	2.91	1.81	1.42	3.59
DE	Dover	39' 8" N	75' 28" W	1.85	2.62	3.6	4.33	5.44	5.91	5.64	5.3	4.38	3.23	2.21	1.66	3.84
FL	Miami	25' 48" N	80' 16" W	3.72	4.61	5.42	6.4	6.61	6.29	6.26	6.08	5.47	4.84	3.96	3.46	5.26
GA	Atlanta	33' 39" N	84' 26" W	2.31	3.37	4.08	5.2	6.02	6.01	5.81	5.59	4.76	3.95	2.98	2.33	4.37
HI	Honolulu	21' 20" N	157' 55" W	4.38	5.15	5.99	6.69	7.05	7.48	7.37	7.07	6.51	5.46	4.41	4.01	5.96
IA	Dubuque	42' 24" N	90' 42" W	1.64	2.58	3.34	4.57	5.54	6.06	5.81	5.26	4.33	3.03	1.72	1.35	3.77
ID	Boise	43' 34" N	116' 13" W	1.73	2.72	3.77	5.22	5.9	6.57	7.17	6.12	5.28	3.29	1.74	1.46	4.24
IN	Indianapolis	39' 44" N	86' 17" W	1.67	2.59	3.28	4.67	5.46	6.11	5.79	5.37	4.76	3.33	1.97	1.46	3.87
IL	Chicago	41' 53" N	87' 38" W	1.5	2.45	3.2	4.48	5.56	6.07	5.68	5.27	4.51	3.07	1.69	1.26	3.72
KS	Kansas City	39' 12" N	94' 36" W	2.06	2.89	3.62	4.92	5.58	6.17	6.21	5.59	4.9	3.49	2.2	1.75	4.11
KY	Louisville	38' 11" N	85' 44" W	1.71	2.65	3.32	4.73	5.38	6.08	5.79	5.35	4.8	3.42	2.1	1.56	3.9
LA	New Orleans	29' 37" N	90' 5" W	2.64	3.73	4.67	5.8	6.6	6.15	6.09	5.7	5.13	4.48	3.49	2.68	4.76
MA	Boston	42' 22" N	71' 2" W	1.66	2.5	3.51	4.13	5.11	5.47	5.44	5.05	4.12	2.84	1.74	1.4	3.58
MD	Annapolis	38' 35" N	76' 21" W	1.96	2.8	3.71	4.55	5.54	6.03	5.77	5.34	4.48	3.4	2.37	1.81	3.98
ME	Portland	45' 36" N	122' 36" W	1.38	2.33	3.49	4.57	5.46	6.09	6.64	5.78	4.8	2.79	1.41	1.1	3.82
MI	Detroit	42' 25" N	83' 1" W	1.43	2.33	3.19	4.34	5.44	5.98	5.64	4.99	4.25	2.73	1.52	1.14	3.58
MO	St. Louis	38' 45" N	90' 23" W	2.02	2.82	3.52	4.97	5.56	6.21	6.05	5.63	4.91	3.55	2.21	1.73	4.09
MN	Minneapolis	44' 53" N	93' 13" W	1.6	2.61	3.3	4.55	5.44	5.86	5.77	5.12	4.12	2.9	1.62	1.34	3.68
MS	Jackson	42' 16" N	84' 28" W	1.47	2.41	3.22	4.33	5.46	5.93	5.57	4.99	4.3	2.78	1.55	1.17	3.59
MT	Billings	45' 48" N	108' 32" W	1.55	2.57	3.52	4.82	5.63	6.45	6.39	5.75	4.67	3.19	1.77	1.3	3.96
MT	Great Falls	43' 33" N	96' 42" W	1.3	2.36	3.41	4.84	5.56	6.18	6.44	5.53	4.4	2.9	1.53	1.11	3.79
NC	Charlotte	35' 13" N	80' 56" W	2.22	3.17	3.95	4.98	5.8	6.01	5.76	5.27	4.58	3.75	2.76	2.21	4.2
ND	Fargo	46' 54" N	96' 48" W	1.44	2.39	3.36	4.79	5.62	5.82	5.94	5.14	4.01	2.83	1.59	1.31	3.68
NE	Omaha	41' 18" N	95' 54" W	1.92	2.76	3.45	4.74	5.6	6.14	6.11	5.46	4.74	3.34	2	1.57	3.98
NH	Manchester	42' 56" N	71' 26" W	1.66	2.5	3.51	4.13	5.11	5.47	5.44	5.05	4.12	2.84	1.74	1.4	3.58
NJ	Trenton	40' 13" N	74' 46" W	1.71	2.39	3.43	4.04	5.26	5.67	5.39	5.14	4.18	3	1.98	1.48	3.63
NM	Albuquerque	35' 3" N	106' 37" W	2.92	3.97	4.92	6.3	6.68	6.94	6.66	5.8	5.68	4.18	3.16	2.5	4.97
NV	Las Vegas	36' 18" N	115' 16" W	3.02	4.13	5.05	6.57	7.25	7.69	7.37	6.42	6.08	4.26	3.18	2.6	5.3
NY	New York	41' N	74' W	1.67	2.37	3.41	3.93	5.11	5.48	5.26	5.01	4.05	2.85	1.82	1.4	3.53
OH	Columbus	39' 16" N	85' 54" W	1.64	2.57	3.26	4.63	5.4	6.08	5.73	5.29	4.74	3.29	1.96	1.45	3.83
OK	Tulsa	36' 12" N	95' 54" W	2.33	3.22	3.9	5.25	5.58	6.32	6.4	5.8	5.08	3.8	2.62	2.06	4.36
OR	Portland	45' 32" N	122' 40" W	1.38	2.33	3.49	4.57	5.46	6.09	6.64	5.78	4.8	2.79	1.41	1.1	3.82
PA	Philadelphia	39' 53" N	75' 15" W	1.85	2.62	3.6	4.33	5.44	5.91	5.64	5.3	4.38	3.23	2.21	1.66	3.84
PA	Pittsburgh	40' 27" N	79' 57" W	1.59	2.4	3.26	4.07	5.05	5.53	5.27	4.94	4.05	2.88	1.86	1.41	3.53
RI	Providence	41' 44" N	71' 26" W	1.7	2.46	3.53	4.2	5.17	5.67	5.48	5.08	4.21	2.97	1.8	1.43	3.64
SC	Columbia	38' 58" N	92' 22" W	2.14	2.91	3.62	5.03	5.56	6.22	6.13	5.64	4.95	3.57	2.25	1.82	4.15
SD	Sioux Falls	45' 27" N	98' 25" W	1.72	2.71	3.31	4.65	5.61	6.1	6.04	5.42	4.47	3.2	1.78	1.43	3.87
TN	Nashville	36' 7" N	86' 41" W	1.94	2.9	3.54	4.76	5.57	5.9	5.86	5.62	4.63	3.53	2.45	1.82	4.04
TX	San Antonio	29' 32" N	98' 28" W	2.57	3.7	4.43	5.54	5.94	6.62	6.49	6.28	5.7	4.67	3.43	2.62	4.83
TX	Houston	29' 59" N	95' 22" W	2.47	3.5	4.4	5.59	6.03	6.45	6.36	6.07	5.46	4.61	3.3	2.44	4.72
UT	Salt Lake City	40' 46" N	111' 52" W	2.23	3.15	4.09	5.57	6.26	6.98	6.86	5.98	5.39	3.68	2.29	1.97	4.53
VA	Washington	38' 51" N	77' 2" W	1.95	2.8	3.66	4.46	5.42	5.88	5.63	5.22	4.38	3.36	2.34	1.79	3.9
VT	Montpelier	44' 16" N	72' 35" W	1.58	2.54	3.5	4.05	5	5.24	5.37	4.92	3.79	2.46	1.52	1.28	3.43
WA	Seattle	47' 32" N	122' 18" W	1.14	2.04	3.23	4.26	5.19	5.75	6.27	5.46	4.43	2.5	1.21	0.9	3.53
WI	Milwaukee	42' 57" N	87' 54" W	1.43	2.41	3.29	4.48	5.6	6.09	5.74	5.21	4.34	2.9	1.6	1.2	3.69
WV	Charleston	38' 22" N	81' 36" W	1.75	2.64	3.34	4.26	5.2	5.67	5.49	5.19	4.26	3.19	2.15	1.62	3.73
WY	Casper	42' 55" N	106' 28" W	1.93	2.8	3.79	5.13	5.9	6.68	6.5	5.9	5.13	3.59	2.06	1.65	4.25

Data courtesy of: [NASA - Surface meteorology and Solar Energy Data Set](#)

**Reference:**

Whitlock, C. E., et al., Release 3 NASA Surface Meteorology and Solar Energy Data Set for Renewable Energy Industry Use. Rise & Shine 2000, the 26th Annual Conference of the Solar Energy Society of Canada Inc. and Solar, Oct. 21-24, 2000, Halifax, Nova Scotia, Canada.

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