

Operational Solar Thermal Power Stations

SNo	Capacity (MW)	Name	Country	Location	Coordinates	Technology type	Notations and references
1	392	Ivanpah Solar Power Facility	USA	San Bernardino County, California	35°34'N 115°28'W / 35.567°N 115.467°W	solar power tower	Completed in February 13, 2014
2	354	Solar Energy Generating Systems	USA	Mojave Desert, California	35°01'54"N 117°20'53"W / 35.03167°N 117.34806°W	parabolic trough	Collection of 9 units
3	280	Solana Generating Station	USA	Gila Bend, Arizona	32°55'N 112°58'W / 32.917°N 112.967°W	parabolic trough	Completed in October 2013, with 6h thermal energy storage
4	200	Solaben Solar Power Station	Spain	Logrosán	39°13'29"N 5°23'26"W / 39.22472°N 5.39056°W	parabolic trough	Solaben 3 completed June 2012 Solaben 2 completed October 2012 Solaben 1 and 6 completed September 2013
5	150	Solnova Solar Power Station	Spain	Sanlúcar la Mayor	37°25'00"N 06°17'20"W / 37.41667°N 6.28889°W	parabolic trough	Solnova 1 completed May 2010 Solnova 3 completed May 2010 Solnova 4 completed August 2010
6	150	Andasol solar power station	Spain	Guadix	37°13'42.70"N 3°4'6.73"W / 37.2285278°N 3.0685361°W	parabolic trough	Andasol 1 completed, 2008, with 7.5h thermal energy storage Andasol 2 completed, 2009, with 7.5h thermal energy storage Andasol 3 completed, 2011, with 7.5h thermal energy storage
							Extresol 1 completed

7	150	Extresol Solar Power Station	Spain	Torre de Miguel Sesmero	38°39'N 6°44'W / 38.650°N 6.733°W	parabolic trough	February 2010, with 7.5h thermal energy storage Extresol 2 completed December 2010, with 7.5h thermal energy storage Extresol 3 completed August 2012, with 7.5h thermal energy storage
8	100	Palma del Rio Solar Power Station	Spain	Palma del Río	37°38'N 5°15'W / 37.633°N 5.250°W	parabolic trough	Palma del Rio 2 completed December 2010 Palma del Rio 1 completed July 2011
9	100	Manchasol Power Station	Spain	Alcázar de San Juan	39°11'N 3°18'W / 39.183°N 3.300°W	parabolic trough	Manchasol-1 completed January 2011, with 7.5h heat storage Manchasol-2 completed April 2011, with 7.5h heat storage
10	100	Valle Solar Power Station	Spain	San José del Valle	36°39'N 5°50'W / 36.650°N 5.833°W	parabolic trough	Completed December 2011, with 7.5h heat storage
11	100	Helioenergy Solar Power Station	Spain	Écija	37°34'43"N 5°9'24"W / 37.57861°N 5.15667°W	parabolic trough	Helioenergy 1 completed September 2011 Helioenergy 2 completed January 2012
12	100	Aste Solar Power Station	Spain	Alcázar de San Juan	39°10'22"N 3°15'58"W / 39.17278°N 3.26611°W	parabolic trough	Aste 1A Completed January 2012, with 8h heat storage Aste 1B Completed January 2012, with 8h heat

							storage
13	100	Solacor Solar Power Station	Spain	El Carpio	37°54'54"N 4°30'9"W / 37.91500°N 4.50250°W	parabolic trough	Solacor 1 completed February 2012 Solacor 2 completed March 2012
14	100	Helios Solar Power Station	Spain	Puerto Lápice	39°14'24"N 3°28'12"W / 39.24000°N 3.47000°W	parabolic trough	Helios 1 completed May 2012 Helios 2 completed August 2012
15	100	Shams	UAE	Abu Dhabi Madinat Zayad	23°34'N 53°42'E / 23.567°N 53.700°E	parabolic trough	Shams 1 completed March 2013
16	100	Termosol Solar Power Station	Spain	Navalvillar de Pela		parabolic trough	Both Termosol 1 and 2 completed in 2013
17	75	Martin Next Generation Solar Energy Center	USA	Indiantown, Florida	27°03'11"N 80°33'00"W / 27.05306°N 80.55000°W	ISCC	steam input into a combined cycle
18	64	Nevada Solar One	USA	Boulder City, Nevada	35°48.0'N 114°58.6'W / 35.8000°N 114.9767°W	parabolic trough	Operational since 2007
19	50	Puertollano Solar Thermal Power Plant	Spain	Puertollano, Ciudad Real	38°39'N 3°58'W / 38.650°N 3.967°W	parabolic trough	Completed May 2009
20	50	Alvarado I	Spain	Badajoz	38°49'37"N 06°49'34"W / 38.82694°N 6.82611°W	parabolic trough	Completed July 2009
21	50	La Florida	Spain	Alvarado (Badajoz)		parabolic trough	Completed July 2010
22	50	Majadas de Tiétar	Spain	Caceres		parabolic trough	Completed August 2010
23	50	La Dehesa	Spain	La Garrovilla (Badajoz)		parabolic trough	Completed November 2010
24	50	Lebrija-1	Spain	Lebrija		parabolic trough	Completed July 2011
25	50	Astexol 2	Spain	Badajoz		parabolic trough	Completed November 2011, with 7.5h thermal energy storage
				Morón de la		parabolic	Completed

26	50	Morón	Spain	Frontera		trough	May 2012
27	50	La Africana	Spain	Posada		parabolic trough	Completed July 2012, with 7.5h thermal energy storag
28	50	Guzman	Spain	Palma del Río		parabolic trough	Completed July 2012
29	50	Olivenza 1	Spain	Olivenza		parabolic trough	Completed July 2012
30	50	Orellana	Spain	Orellana la Vieja		parabolic trough	Completed August 2012
31	50	Godawari Green Energy Limited	India	Nokh	27°36'01"N 72°13'25"E / 27.60028°N 72.22361°E	parabolic trough	2013
32	50	Enerstar Villena Power Plant	Spain	Villena		parabolic trough	Completed 2013
33	31.4	Puerto Errado	Spain	Murcia	38°16'42"N 01°36'01"W / 38.27833°N 1.60028°W	fresnel reflector	Puerto Errado 1 completed April 2009 Puerto Errado 2 completed February 2012
34	25	Hassi R'Mel integrated solar combined cycle power station	Algeria	Hassi R'mel	33°07'29"N 03°21'07"E / 33.12472°N 3.35194°E	ISCC	Completed June 2011
35	22.5	Termosolar Borges	Spain	Borges Blanques		parabolic trough	Completed December 2012
36	20	PS20 solar power tower	Spain	Seville	37°26'38"N 06°15'34"W / 37.44389°N 6.25944°W	solar power tower	Completed April 2009
37	20	Kuraymat Plant	Egypt	Kuraymat		ISCC	Completed December 2010
38	20	Ain Beni Mathar Integrated Thermo Solar Combined Cycle Power Plant	Morocco	Ain Bni Mathar		ISCC	
39	19.9	Gemasolar	Spain	Fuentes de Andalucía (Seville)	37°33'38.17"N 05°19'53.61"W / 37.5606028°N 5.3315583°W	solar power tower	Completed May 2011 With 15h heat storage
40	17	Yazd integrated solar combined cycle power station	Iran	Yazd	31°57'5"N 54°5'30"E / 31.95139°N 54.09167°E	ISCC	World's first solar combined cycle power plant, to be constructed

41	11	PS10 solar power tower	Spain	Seville	37°26'36.42"N 06°15'14.28"W / 37.4434500°N 6.2539667°W	solar power tower	World's first commercial solar tower
42	10	Delingha Solar Power Plant	China	Delingha		solar power tower	Phase 1 of project completed in July 2013, total 50 MW planned
43	5	Kimberlina Solar Thermal Energy Plant	USA	Bakersfield, California	35°34'06"N 119°12'06"W / 35.56833°N 119.20167°W	fresnel reflector	AREVA Solar, formerly Ausra demonstration plant
44	5	Sierra SunTower	USA	Lancaster, California	34°46'0.0"N 118°8'0.0"W / 34.766667°N 118.133333°W	solar power tower	North America's first solar tower, completed August 2009
45	5	Archimede solar power plant	Italy	Syracuse, Sicily	37°8'0"N 15°12'58"E / 37.13333°N 15.21611°E	parabolic trough	ISCC with heat storage Completed July 2010
46	5	Thai Solar Energy (TSE) 1	Thailand	Huaykrachao		parabolic trough	Completed November 2011
47	9	Liddell Power Station Solar Steam Generator	Australia	New South Wales	32°22'26"S 150°58'40"E / 32.37389°S 150.97778°E	fresnel reflector	electrical equivalent steam boost for coal station
48	2.5	Acme Solar Thermal Tower	India			solar power tower	Completed 2012
49	2	Keahole Solar Power	USA	Hawaii	19°42'54"N 156°2'7"W / 19.71500°N 156.03528°W	parabolic trough	
50	1.5	Jülich Solar Tower	Germany	Jülich	50°54'54"N 06°23'16"E / 50.91500°N 6.38778°E	solar power tower	Completed December 2008
51	1.5	Beijing Badaling Solar Tower	China	Beijing	40°40'N 116°30'E / 40.667°N 116.500°E	solar power tower	Completed August 2012
52	1	Saguaro Solar Power Station	USA	Red Rock, Arizona		parabolic trough	
53	1	Yanqing Solar Power Station	China	Yanqing County	40°27'24"N 115°58'30"E / 40.45667°N 115.97500°E	solar power tower	Completed August 2010

54	0.25	Shiraz solar power plant	Iran	Shiraz	31°56'N 54°02'E / 31.933°N 54.033°E	parabolic trough	Iran's first solar power plant
55	0.25	Augustin Fresnel Solar Power Station	France	Targassonne		fresnel reflector	prototype, completed 2012, 0.25h thermal energy storage

Solar Thermal Power Stations under construction

SNo	Capacity (MW)	Name	Country	Location	Co- ordinates	Expected completion	Technology	Notes
1	280	Mojave Solar Project	USA	Barstow, California	35°00'40"N 117°19'30"W / 35.01111°N 117.32500°W	2014	parabolic trough	
2	250	Genesis Solar Energy Project	USA	Blythe, California	33°38'37.68"N 114°59'16.8"W / 33.6438000°N 114.988000°W	2014	parabolic trough	
3	160	Ouarzazate solar power station	Morocco	Ouarzazate		2015	parabolic trough	with 3h heat storage
4	121	Ashalim power station 1	Israel	Negev desert	30°58'N 34°42'E / 30.967°N 34.700°E	2017	solar power tower	
5	110	Crescent Dunes Solar Energy Project	USA	Nye County, Nevada	38°14'N 117°22'W / 38.233°N 117.367°W	2013/14	solar power tower	with 10h heat storage
6	100	KaXu Solar One	South Africa	Pofadder, Northern Cape		2014	parabolic trough	with 2.5h heat storage
7	100	El Rebozo 2+3	Spain	El Puebla del Rio (Seville)		2015	parabolic trough	
8	100	Dhursar	India			2014	fresnel reflector	
9	100	Diwakar	India	Askandra		2014	parabolic trough	with 3h heat storage
10	100	KVK Energy Solar Project	India	Askandra		2014	parabolic trough	with 4h heat storage
11	50	Arenales PS	Spain	Moron de la Frontera (Seville)		2013	parabolic trough	
12	50	Casablanca	Spain	Casablanca		2013	parabolic trough	

13	50	Erdos Solar Power Plant	China	Hanggin Banner		2013	parabolic trough	
14	50	Khi Solar One	South Africa	Upington		2014	power tower	with 2h heat storage
15	50	Megha Solar Plant	India	Anantapur		2013	parabolic trough	
16	50	Bokpoort	South Africa	Groblershoop		2015	parabolic trough	with 9h heat storage
17	44	Kogan Creek Solar Boost	Australia	Chinchilla		2013	fresnel reflector	
18	27.5	Jinshawan	China	China			solar updraft tower	Operations underway at 200 kW.
19	25	Gujarat Solar One	India	Kutch	23°22.233'N 70°41.988'E / 23.370550°N 70.699800°E	2013	parabolic trough	with 9h heat storage
20	12	Alba Nova 1	France	Corsica		2013	Fresnel	First utility-scale solar thermal plant in France
21	3	Airlight Energy Ait Baha Plant	Morocco	Ait Baha		2013	parabolic trough	with 12h heat storage
22	1.5	Tooele Army Depot	USA	Tooele		2013	dish	
23	1.4	THEMIS Solar Power Tower	France	Pyrénées-Orientales	42°30'5"N 1°58'27"E / 42.50139°N 1.97417°E		solar power tower	Hybrid solar/gas power plant
24	1	e-Cube 1	China	Hainan		2013	Modular Heliostat	First Modular Heliostat solar thermal plant in the world
25	1	Renovalia	Spain	Albacete			dish	

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