State	#	Solar/Wind	County	Project Title	* Capacity (MWH)	* Homes
MN	55	Wind	Jackson	Elm Creek Wind Power Project	247.9	61,975
NV	56	Solar	Nye	Crescent Dunes Solar Energy Project	110	18,040
	57	Solar	Clark	Copper Mountain Solar Project	250	41,000
NJ	58	Solar	Salem	Pilesgrove Solar Project	18	2,952
	59	Solar	Warren	Berry Plastics Corp Solar Farm	14	2,296
	60	Solar	Mercer	McGraw-Hill Solar Farm	14	2,296
	61	Solar	Monmouth	Tinton Falls Solar Farm	19.88	3,260
NM	62	Solar	Luna	Macho Springs Solar Facility	50	8,200
	63	Solar	Colfax	Cimarron Solar Project	30	4,920
	64	Solar	Doña Ana	Roadrunner Solar Electric Facility	20	3,280
NY	65	Wind	Lewis	Maple Ridge Wind Project	321.75	80,437
	66	Solar	Suffolk	Long Island Solar Farm	32	5,248
NC	67	Solar	Halifax	Dogwood Solar Power Project	20	3,280
	68	Solar	Catawba	Apple Data Center Solar Farm	50	8,200
	69	Solar	Beaufort	Washington White Post Solar Project	18	2,952
	70	Solar	Davidson	Davidson County Solar Farm	17.2	2,820
ND	71	Wind	Barnes, Griggs & Steele	Ashtabula Wind Center	378.9	94,725
OH	72	Wind	Van Wert	Blue Creek Wind Farm	304	76,000
	73	Solar	Wyandot	PSEG Wyandot Solar Farm	12	1,968
OK	74	Wind	Caddo, Comanche & Kiowa	Blue Canyon Wind Project	423.45	105,862
	75	Wind	Washington	Crossroads Wind Project	227.5	56,875
OR	76	Wind	Gilliam	Shepherd's Flat Wind Farm	845	211,250
	77	Wind	Sherman	Biglow Canyon Wind Farm	449.7	112,425
	78	Wind	Sherman	Klondike Wind Project	400	100,000
	79	Wind	Gilliam	Leaning Juniper Wind Project	302.1	75,525
PA	80	Solar	Carbon	Pennsylvania Solar Park	10	1,640
SD	81	Wind	Brookings and Deuel	Buffalo Ridge Wind Farm	260.4	65,100
TN	82	Solar	McNairy	Mulberry	20	3,280
	83	Solar	McNairy	Selmer	20	3,280
TX	84	Wind	Nolan	Roscoe Wind Farm	781.5	195,375
	85	Wind	Taylor & Nolan	Horse Hollow Wind Energy Center	738.5	184,625
	86	Wind	Sterling & Coke	Capricorn Ridge Wind Farm	662.5	165,625
	87	Wind	Nolan	Sweetwater Wind Farm	585.3	146,325
	88	Wind	Taylor & Nolan	Buffalo Gap Wind Farm	523.3	130,825
	89	Wind	Howard	Panther Creek Wind Farm	457.5	114,375
	90	Wind	Kenedy	Penascal Wind Farm	403.2	100,800
	91	Wind	Randall	Palo Duro Wind Farm	400	100,000
	92	Wind	Shackelford & Callahan	Lone Star Wind Farm	400	100,000
	93	Wind	San Patricio	Papalote Creek Wind Farm	379.95	94,987
	94	Wind	Pecos	Sherbino Wind Farm	300	75,000
	95	Wind	Kenedy	Gulf Wind Project	283.2	70,800
	96	Wind	Upton	King Mountain Wind Energy Center	278.2	69,550
	97	Wind	Scurry	Camp Springs Wind Project	250.5	62,625
	98	Wind	Archer & Young	Trinity Hills	225	56,250
	99	Solar	Bexar	Alamo Solar Farm	45.4	7,445
	100	Solar	Travis	Austin Energy PV Project	30	4,920
	101	Solar	Bexar	Centennial Solar Farms	20	3,280
UT	102	Wind	Beaver & Millard	Milford Wind Corridor	305.5	76,375
WA	103	Wind	Klickitat	Windy Point / Windy Flats Project	398.8	99,700
	104	Wind	Garfield	Lower Snake River Wind Facility	342.7	85,675
	105	Wind	Umatilla, OR & Walla Walla, WA	Stateline Wind Farm	299.64	74,910
	106	Wind	Kittitas	Wild Horse Wind & Solar Facility	272.6	68,150
	107	Wind	Klickitat	Big Horn Wind Power Project	249.5	62,375
WV	108	Wind	Grant	Mount Storm Wind Farm	264	66,000
WY	109	Wind	Converse	Glenrock	237	59,250

The Demand for Renewable Energy

According to data provided by the U.S. Energy Information Administration, electricity consumption has gone up and will continue to grow at **1 percent** per year until **2035**. Renewable energy technologies, particularly those based on wind and solar energy, are vital to meet increasing energy demands and to protect our environment. Nearly **40 states** have renewable energy portfolios in place, many mandating that **20 percent** or more of total generation derives from sustainable resources.

Copper is an integral part of renewable energy systems and equipment because of its reliability, efficiency and performance. The use of copper wiring, tubing, busbar, cable, bushings, bearings and myriad electrical and mechanical parts keeps these systems operating longer, and at higher efficiencies. This allows the increased power that is generated to be used rather than lost to the system. The same physical properties are vital in the collection, storage and distribution of energy from solar, wind and other renewable sources.

Copper in Wind Farms

The global market for copper is growing because of the increased installations of wind energy systems. Over the past four years, wind energy has made up **35 percent** of U.S. generating capacity additions. A **1.5-MW wind turbine** relies on approximately **4,000 pounds** of copper – making up the generator, step-up transformer and connecting cables. Depending on the design of a wind farm, the system can contain anywhere **from 4 to 15 million pounds** of copper.

Copper in Solar PVs

Copper intensities in photovoltaic (PV) solar farms are nearly the same as those in wind energy facilities. A well-designed PV plant uses approximately **9,000 pounds of copper per megawatt of peak capacity**, a figure that does not appear to vary significantly over installations ranging from residential rooftop units to multi-megawatt utility farms. Copper is a key component of PV systems, increasing the efficiency and reliability of photovoltaic cells and modules.

Copper. Essential to Sustainable Energy.

The Copper Development Association is the information, education, market and technical development arm of the copper, brass and bronze industries in the USA. For more information about copper in sustainable energy contact Zolaikha Strong, Director, Sustainable Energy at zolaikha.strong@copperalliance.us or visit www.copper.org.

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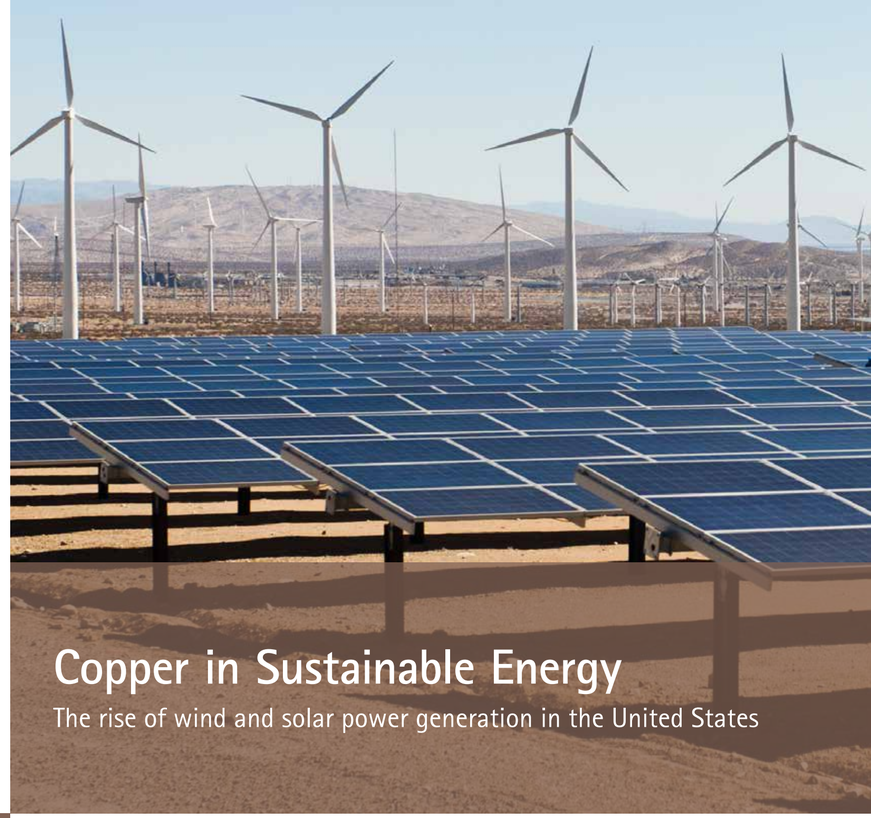


Copper in Sustainable Energy

The rise of wind and solar power generation in the United States

Cu **Copper Development Association Inc.**
Copper Alliance

www.copper.org

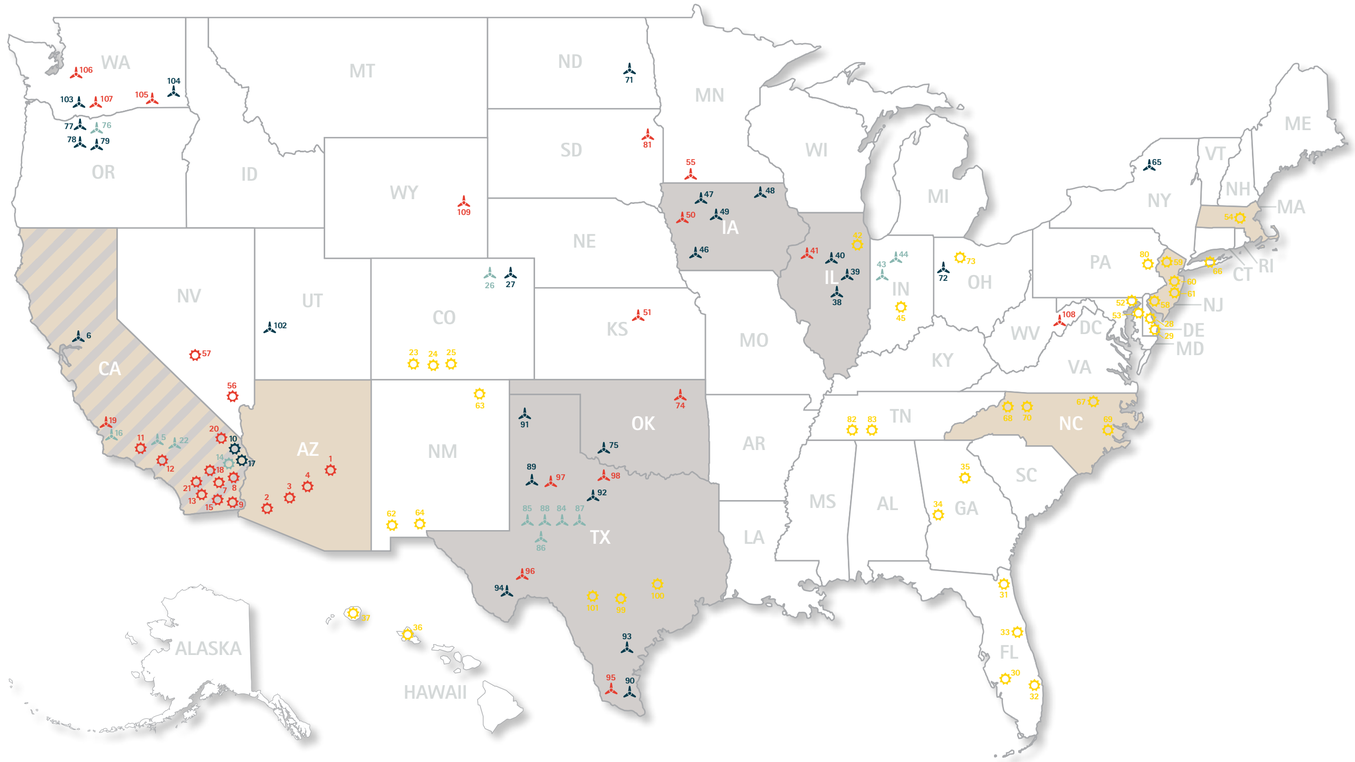
A Snapshot of the Top U.S. Solar & Wind Installations *(as of January 2015)*

State	#	Solar/Wind	County	Project Title	* Capacity (MWH)	* Homes
AZ	1	Solar	Gila	Solana	280	45,920
	2	Solar	Yuma	Agua Caliente	290	47,560
	3	Solar	Maricopa	Mesquite Solar	150	24,600
	4	Solar	Maricopa	Arlington Valley Solar Project	250	41,000
CA	5	Wind	Kern	Alta Wind Energy Center	1,548	387,000
	6	Wind	Solano	Shiloh Wind Power Plant	402.5	100,625
	7	Solar	Imperial	Mount Signal Solar Farm	200	32,800
	8	Solar	Imperial	Centinela Solar Energy	170	27,880
	9	Solar	Imperial	Imperial Valley Solar 1	206	33,784
	10	Solar	San Bernardino	Ivanpah Solar Electric Generating System	392	64,288
	11	Solar	Kern	Catalina Solar Project	143.2	23,485
	12	Solar	Kern	AV Solar Ranch One	230	37,720
	13	Solar	Imperial	Campo Verde	139	22,796
	14	Solar	Riverside	Desert Sunlight	550	90,200
	15	Solar	Imperial	Imperial Solar Energy Center South	130	21,320
	16	Solar	San Luis Obsipo	Topaz Solar Farm	550	90,200
	17	Solar	San Bernardino	Solar Energy Generating System (SEGS)	310	50,840
	18	Solar	Riverside	Genesis Solar Energy Center	250	41,000
	19	Solar	San Luis Obsipo	California Valley Solar Ranch	250	41,000
	20	Solar	San Bernardino	Mojave Solar	280	45,920
	21	Solar	Imperial	Solar Gen 2	150	24,600
	22	Solar	Kern	Solar Star	579	94,956
CO	23	Solar	Alamosa	Alamosa Solar Generating Project	30	4,920
	24	Solar	Alamosa	San Luis Valley Solar Ranch	30	4,920
	25	Solar	Alamosa	Greater Sandhill Solar Plant	19	3,116
	26	Wind	Weld	Cedar Creek Wind Farm	551.3	137,825
	27	Wind	Logan	Peetz Table Wind Energy Center	430.2	107,550
DE	28	Solar	Kent	Dover SUN Park	10	1,640
	29	Solar	Kent	Milford Solar Farm	15	2,460
FL	30	Solar	DeSoto	DeSoto Next Generation Solar Energy Center	25	4,100
	31	Solar	Duval	Jacksonville Solar	15	2,460
	32	Solar	Martin	Martin Next Generation Solar Energy Center	75	12,300
	33	Solar	Brevard	Space Coast Next Generation Solar Energy Center	10	1,640
GA	34	Solar	Meriwether	Woodbury Solar Farm	12	1,968
	35	Solar	Walton	Simon Solar Farm	30	4,920
HI	36	Solar	Oahu	Kalaeloa Solar One	10	1,640
	37	Solar	Kauai	Grove Farm	12	1,968
IL	38	Wind	McLean	Twin Groves Wind Farm	396	99,000
	39	Wind	Livingston	Streator Cayuga Ridge South	300	75,000
	40	Wind	La Salle	Top Crop Wind Farm	300	75,000
	41	Wind	Bureau & Lee	Big Sky Wind Facility	239.4	59,850
	42	Solar	LaSalle	Grand Ridge Solar Plant	20	3,280
IN	43	Wind	Benton	Fowler Ridge Wind Farm	599.8	149,950
	44	Wind	White	Meadow Lake Wind Farm	502.95	125,737
	45	Solar	Marion	Indianapolis Aiport Solar Farm	10	1,640
IA	46	Wind	Adair, Adams & Cass	Rolling Hills Wind Farm	443.9	110,975
	47	Wind	Hancock	Crystal Lake Wind Energy Center	416	104,000
	48	Wind	Howard & Mitchell	Pioneer Prairie Wind Farm	300.3	75,075
	49	Wind	Story & Hardin	Story County Wind Farm	300	75,000
	50	Wind	Pocahontas & Calhoun	Pomeroy Wind Project	286.4	71,600
KS	51	Wind	Lincoln & Ellsworth	Smoky Hills Wind Farm	249.3	62,325
MD	52	Solar	Washington	Maryland Solar Farm	20	3,280
	53	Solar	Frederick	Mount St. Mary's University Solar Farm	16	2,624
MA	54	Solar	Worcester	Warren Solar Farm	14	2,296

* Average U.S. homes supplied with wind energy = (capacity in MW) x 250 homes

* Average U.S. homes supplied with solar energy = (capacity in MW) x 164 homes

* Sources: seia.org; awea.org; windpowerengineering.com



The Top 5 States Using Solar Energy*

1. California
2. Arizona
3. North Carolina
4. Massachusetts
5. New Jersey

The Top 5 States Using Wind Energy*

1. Texas
2. California
3. Iowa
4. Oklahoma
5. Illinois

KEY:

Solar Installation

Wind Installation

Capacity:

99 <	100 - 299	300 - 499	500 >

Wind:
The largest installations in each state with a minimum capacity of 225 MWH.

Solar:
The largest installations (max. 4) in each state with a minimum capacity of 10 MWH. For states with projects over 100 MWH, all installations were included.