CLEAN POWER ANNUAL **2020**

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ACP sincerely thanks its member companies and other organizations for their contributions to the industry data provided in this report. ACP strives to provide the best information on the clean power industry—for the industry and by the industry—and therefore welcomes your comments.

We unite the power of the renewable energy industry.

The American clean power sector is providing cost-effective solutions to the climate crisis while creating jobs, spurring investment, and driving innovation.

The American Clean Power Association enables the transformation of the U.S. power grid to a low-cost, reliable and renewable power system. By uniting the power of wind, solar, transmission and storage companies and their allied industries, both public and private, we are championing policies that enable the continued and aggressive growth in renewable energy in the United States.

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Letter from ACP CEO Heather Zichal

Dear ACP Members:

Just skim the day's headlines or spend a few minutes watching the news, and it's clear we're living through a monumental period of change. After eighteen months of near lock-down and economic shut-down, we're all reimagining what a return to "normal" looks like. At the same time, we're reminded that "normal" isn't coming back anytime soon: none of us want to imagine the climate change exacerbated droughts, wildfires and record-breaking heat waves, as the "normal" we would choose to embrace. Rebuilding the economy and combatting the climate crisis are the best mutually reinforcing win-win we could ask for, to create great jobs and healthier outcomes putting American clean power to work towards a better tomorrow. Crisis is meeting opportunity.

The potential and the reality are unmistakable:

- **Even during a global pandemic, 2020 was a record year for new clean power installations, bringing 26,490 megawatts (MW) of new capacity online.**
- **The U.S. now has enough clean energy capacity to power over 50 million homes, definitive proof the clean energy transition is well underway.**

With this change moving America forward comes a once-in-a-generation job creation engine. Over 415,000 Americans across all 50 states already have direct clean energy jobs, and the clean energy workforce could number over 1 million by 2030. That is exactly the kind of opportunity we must seize as we put Americans back to work. Finding, training, and preparing enough workers to fill these jobs is a test we're eager to meet as we rebuild and decarbonize our economy.

Such a time of change and transition, along with record-breaking growth, also created the need for a new model of clean energy advocacy. That's why I was so excited and honored to lead the launch of the American Clean Power Association (ACP) this year. By uniting the power of wind, solar, storage, and transmission companies and their allied industries, we can enable the transformation of the U.S. power grid to a low-cost, reliable and renewable power system. With your help, we're building a 21st century clean energy economy.

As part of ACP's inaugural year, I'm pleased to present our first-ever Clean Power Annual—a detailed look at everything clean energy from jobs, investment, and environmental benefits to key market data, information on industry leaders, and so much more. Some of the key trends from this year's report include:

Renewables rebuild our economy

Beyond creating jobs in all 50 states, clean power projects brought online in 2020 represent roughly $39 billion dollars in project investments, and since 2005, total project investment is estimated at $334 billion. Clean energy also drives nearly unmatched investment into rural communities—last year alone, the clean power industry paid an estimated $1.7 billion in state and local taxes and nearly $800 million in land lease payments to landowners across the U.S.

Letter from ACP CEO Heather Zichal

Clean energy is red, white, and blue

Eighty-four percent of Congressional districts are home to clean energy projects, manufacturing facilities, or both, and there are direct clean energy jobs in all 50 states. Traditionally red and blue states, and some purple ones, all topped the clean energy leaderboard in 2020—Texas added the most clean power capacity last year with 6,320 MW, followed by California with 2,193 MW, Florida with 1,267 MW, Iowa with 1,218 MW, and Oklahoma with 1,182 MW.

Clean energy dominates new power additions

- **Wind power was the #1 choice of utility-scale power generation in 2020, capturing 50 percent of new additions, while solar was #2 with 26 percent of the market.**
- **Combined wind, solar, and battery storage power represent 78 percent of new power additions for the year. In total, they supplied nearly 11 percent of the country's electricity in 2020.**
- **Iowa led all states with 57.6 percent of electricity generated from clean power in 2020. Rounding out the top five are Kansas (43.4 percent), Oklahoma (35.5 percent), South Dakota (32.9 percent), and North Dakota (30.8 percent).**
- **10 states source at least 20 percent of their electricity from renewables.**

Renewables are cutting carbon, creating cleaner air, and keeping Americans healthier

- **Wind and solar power reduce emissions and deliver long-term health benefits.**
- **Every year, wind and solar projects avoid 71 million cars' worth of carbon dioxide.**
- **Decreases in NOx, SO2, and particulate matter delivered an estimated $16 to $41 billion in 2020 alone in long-term health benefits.**

The path forward

It's no longer a question of whether the country will embrace a future powered by clean energy. Now, it's a matter of when. We have precious little time to avert climate change's worst impacts, and Americans need good-paying jobs and opportunities today, not down the road. That's why we must match policy to potential. With your help, we can create a better future powered by affordable, reliable, clean energy.

Best,

Heather Zichal, CEO
American Clean Power

2020 Clean Power Top Facts

Wind, utility solar, and battery storage power capacity tops 170 GW following a record

26 GW
of installations in 2020.

The U.S. has enough installed utility wind and solar **capacity to power over**

50 million homes.

Wind and solar power were the #1 and #2 choice of utility-scale power generation across all energy types in 2020. Wind, solar, and battery storage power represented 78% of new power additions in 2020.

Business demand for clean power set a record as corporate buyers announced over 10 GW of new clean power contracts in 2020.

Eight states **added over 1 GW of clean power** to the grid in 2020. Each GW = at least

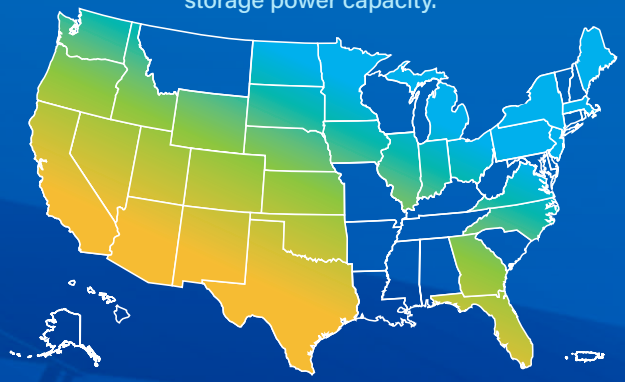
$1.4 billion
in investment.

Iowa and Kansas generate more electricity from wind turbines than any other energy technology. **More than 40% of each state's electricity is produced from wind power.**

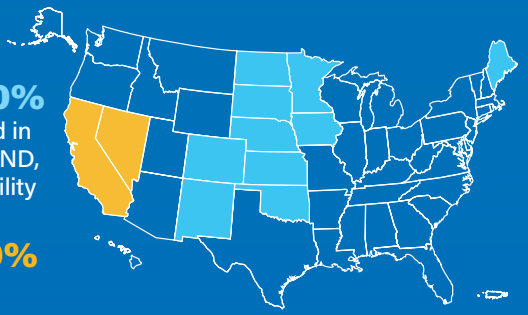
Iowa is the first state where **WIND generates the majority of the state's electricity.**

By the end of 2020, **seven states** issued procurements or state targets totaling nearly 30 GW of offshore wind capacity.

Two-thirds of U.S. states have at least 1 GW of operating wind, utility solar, or battery storage power capacity.



Wind energy delivers over 20% of the electricity produced in 10 states (IA, KS, OK, SD, ND, ME, NE, CO, MN, NM). Utility **solar energy delivers over 10%** in two states (CA, NV).



Clean power reduces carbon emissions and improves air quality. Wind and solar generation prevented 327 million metric tons of CO_2 from being released into the atmosphere. **That's equal to taking over 71 million cars off the road.**

The clean power pipeline continues to swell—there are now nearly 90 GW of projects underway representing over

$120 billion
in new investment.

Clean power supports economic development, delivering

over $2.5 billion

every year in state and local tax payments and landowner lease payments.

Clean power is **red, white, and blue** with projects or manufacturing facilities in **84% of Congressional districts and jobs in all 50 states.**

10.7%

Wind is America's #1 source of renewable electricity.
Combined with solar, these clean power technologies deliver 10.7% of the nation's electricity.

Wind and solar are the most affordable sources of new electricity in most of the country, and costs continue to fall. Wind costs are 70% lower since 2009. Solar costs are down 90%.

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2020 Clean Power Activity

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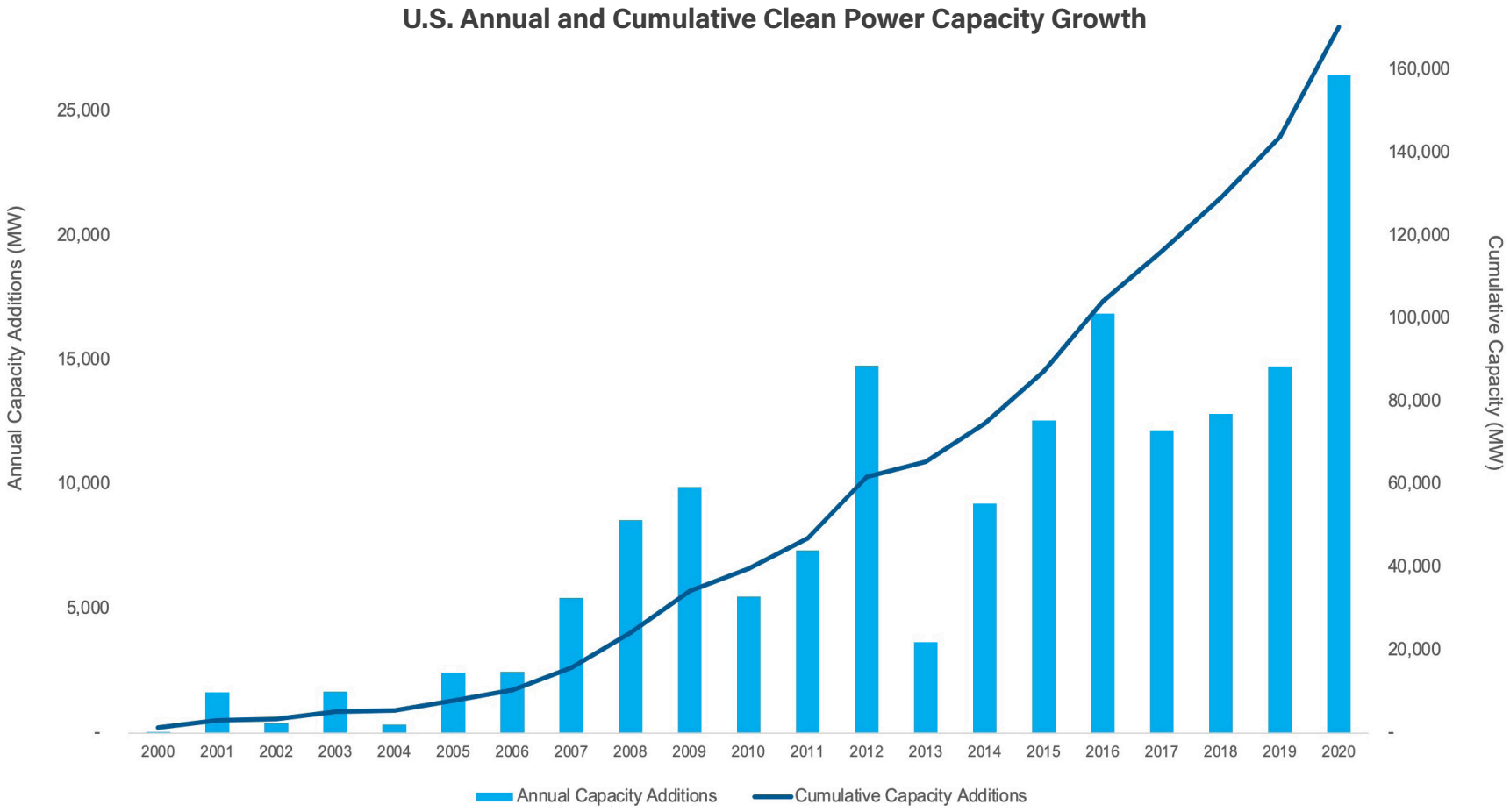
Annual and Cumulative Clean Power Capacity

Clean power achieves banner year of installations at over 26 GW



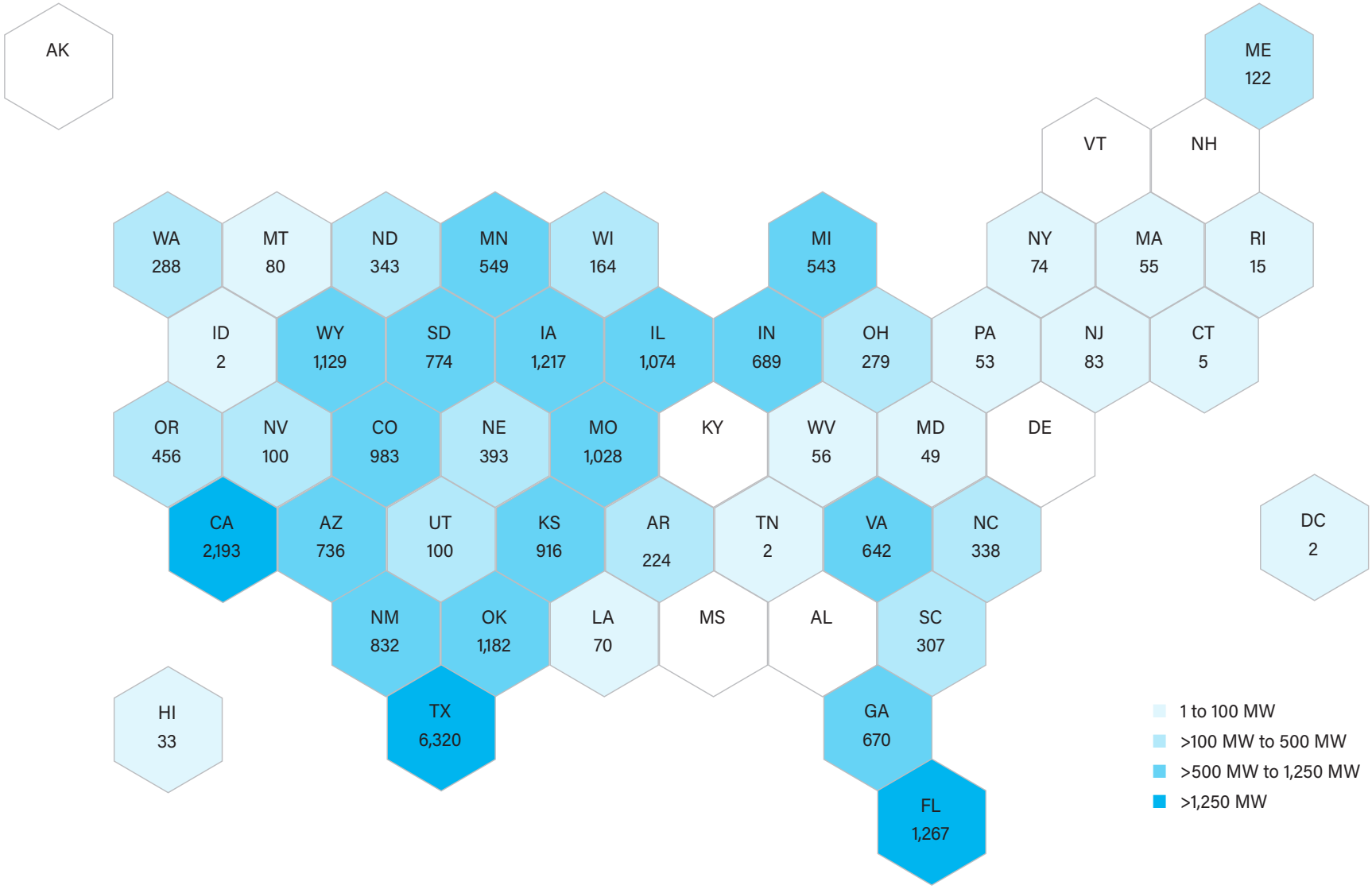
The U.S. electricity sector added 16,836 MW of wind power, 8,894 MW of utility solar, and 760 MW of battery storage for a grand total of 26,490 MW installed.

This brings cumulative total installed clean power capacity to 170,378 MW by the end of 2020. The only other competitor to clean power was natural gas with 7,283 MW installed.

The clean power capacity added in 2020 reflects major capital investments. The 26,490 MW of new clean power plants brought online represents roughly $39 billion dollars in project investments. Since 2005, total project investment is estimated at $334 billion.

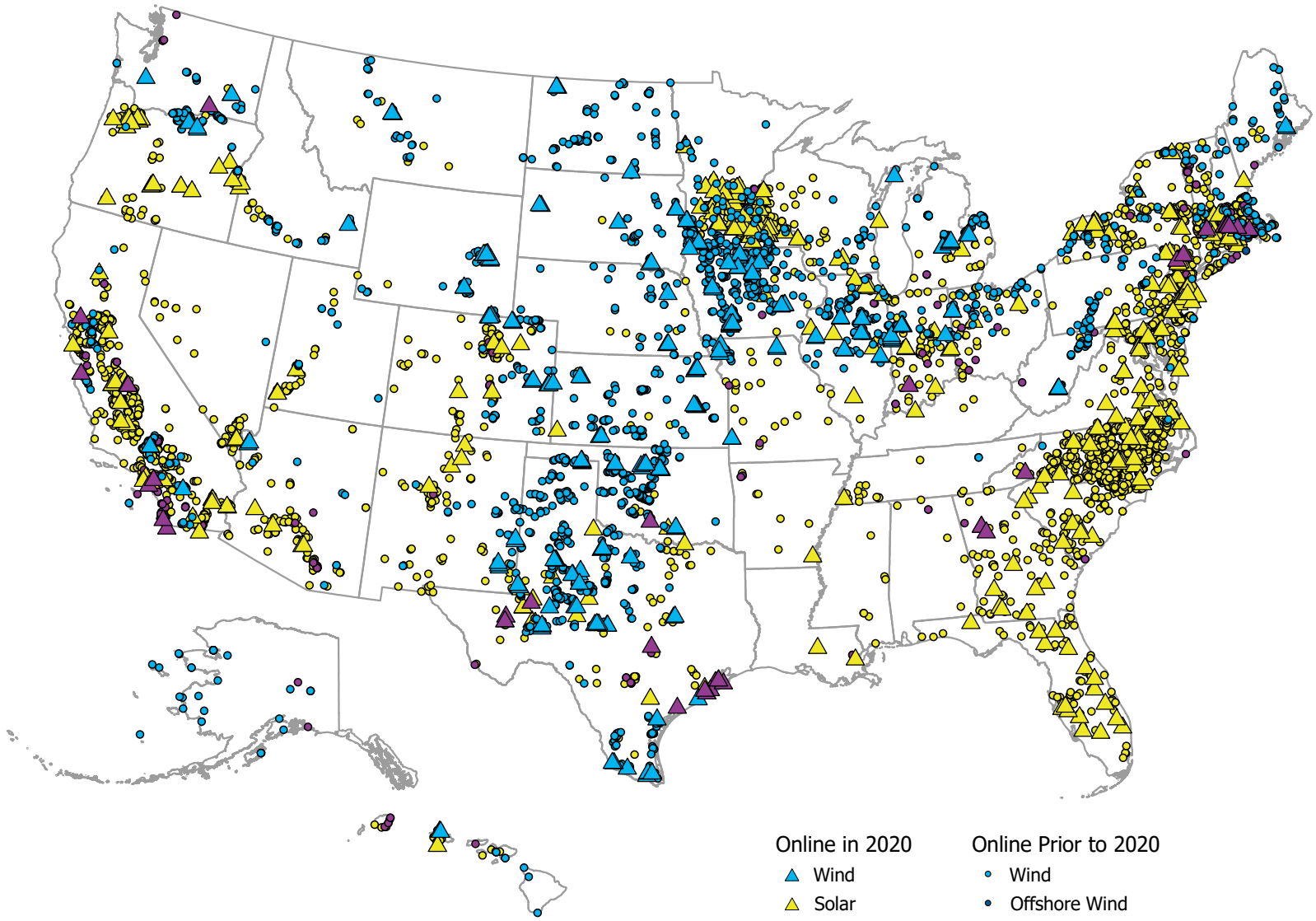
Clean Power Capacity Installations in 2020

Industry built over 400 clean power projects across 43 states



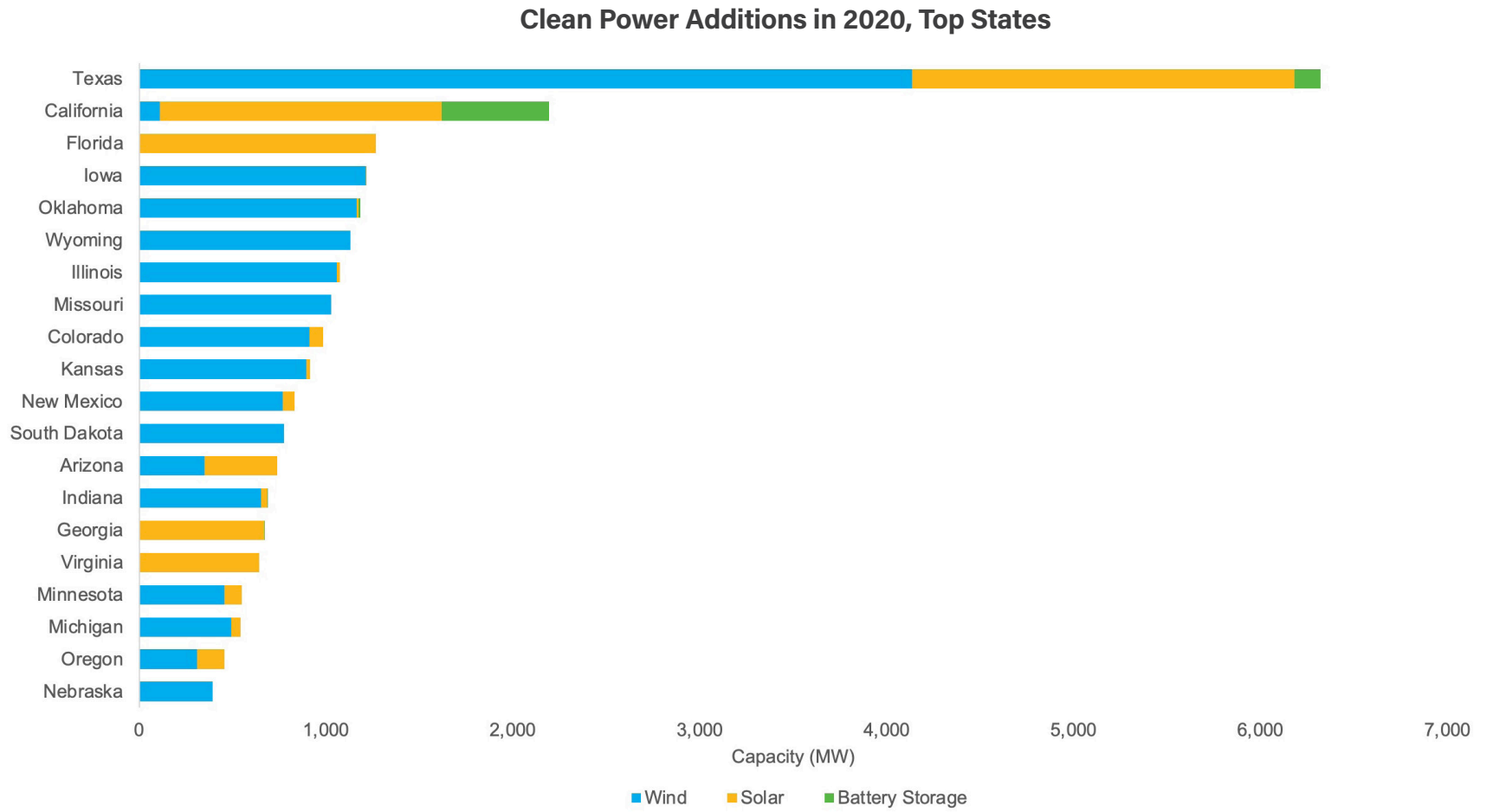
U.S. Clean Power Projects

Projects generate renewable energy in all 50 states



Clean Power Additions, Top States

Clean power is the #1 source of new capacity in California, Midwest, Plains, Mountain West, Northwest, and Texas



Texas added the most clean power capacity in 2020 with 6,320 MW, followed by California with 2,193 MW, Florida with 1,267 MW, Iowa with 1,217 MW, and Oklahoma with 1,182 MW.

Texas led all states in land-based wind capacity additions with 4,137 MW and utility-scale solar capacity additions with 2,044 MW. California led in battery storage additions, with 573 MW of capacity.

Texas leads all states with 37,443 MW of cumulative clean power capacity installed, followed by California (20,354 MW), Iowa (11,394 MW), Oklahoma (9,395 MW), and Kansas (7,058 MW).

State Capacity Rankings

Two-thirds of U.S. states are Giga-states with 1 GW each of clean power capacity

U.S. Clean Power Capacity Rankings

Rank	State	Capacity Additions in 2020 (MW)
1	Texas	6,320
2	California	2,193
3	Florida	1,267
4	Iowa	1,217
5	Oklahoma	1,182
6	Wyoming	1,129
7	Illinois	1,074
8	Missouri	1,028
9	Colorado	983
10	Kansas	916
11	New Mexico	832
12	South Dakota	774
13	Arizona	736
14	Indiana	689
15	Georgia	670
	Rest of U.S.	**5,481**

Rank	State	Cumulative Capacity(MW)
1	Texas	37,443
2	California	20,354
3	Iowa	11,394
4	Oklahoma	9,395
5	Kansas	7,058
6	Illinois	6,600
7	Colorado	5,385
8	Minnesota	5,316
9	North Carolina	5,064
10	Oregon	4,290
11	North Dakota	3,989
12	New Mexico	3,457
13	Florida	3,436
14	Washington	3,422
15	Indiana	3,280
	Rest of U.S.	**40,494**

Rank	State	One Year Growth Rate
1	Louisiana	3500%
2	Missouri	100%
3	Virginia	99%
4	Arkansas	81%
5	Wyoming	69%
6	Florida	58%
7	South Dakota	50%
8	South Carolina	46%
9	Georgia	46%
10	New Mexico	32%
11	Ohio	32%
12	Arizona	31%
13	Indiana	27%
14	Michigan	24%
15	Colorado	22%
	Rest of U.S.	**14%**

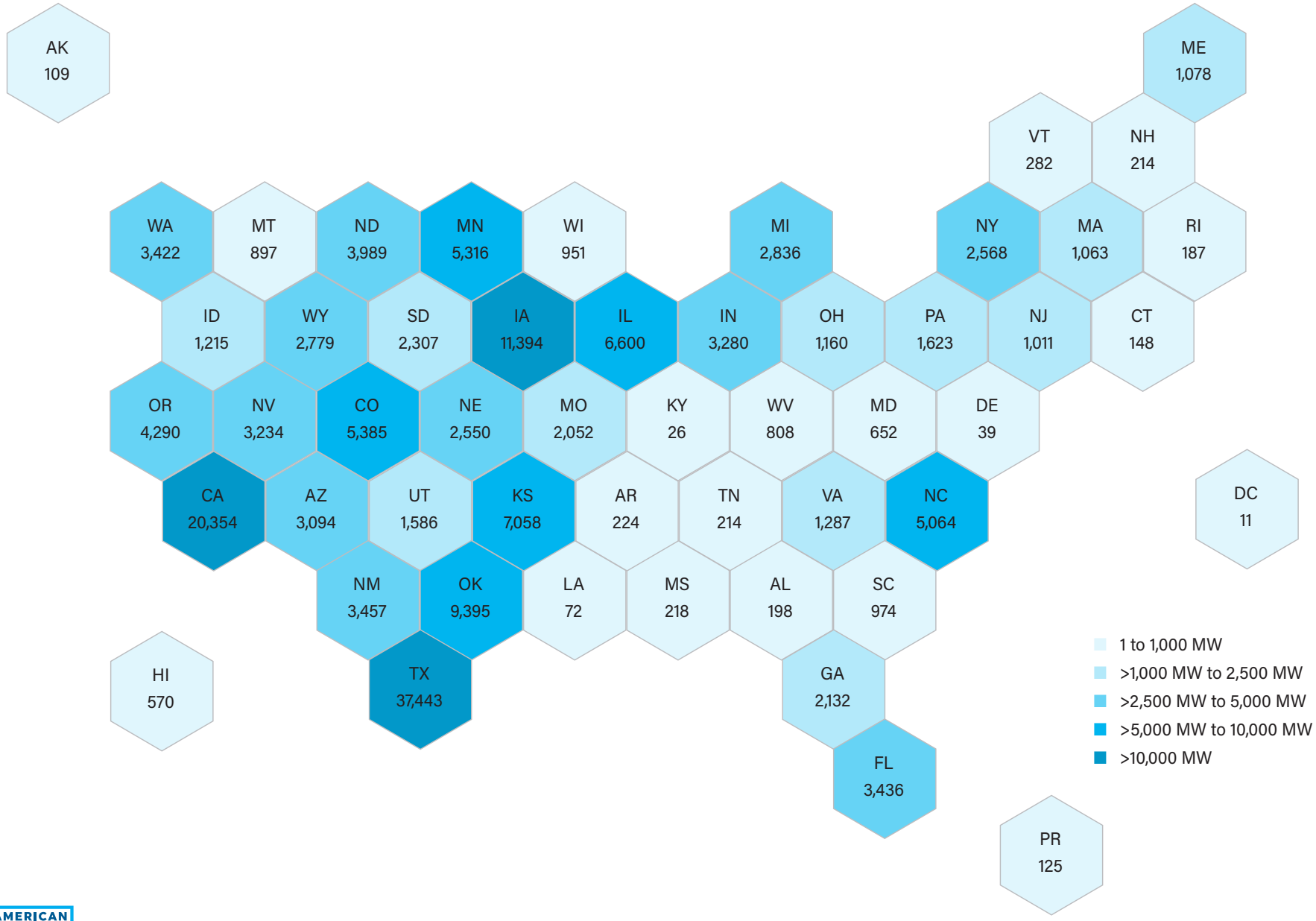
Eight states added over 1 GW each of clean power to the grid in 2020. Each GW added represents at least $1.4 billion in investment. Two-thirds of U.S. states are in the clean power gigawatt club with at least 1 GW of operating wind, utility solar, or battery storage power capacity.

In 2020 the top 10 states for new installed annual capacity were Texas (6,320 MW), California (2,193 MW), Florida (1,267 MW), Iowa (1,217 MW), Oklahoma (1,182 MW), Wyoming (1,129 MW), Illinois (1,074 MW), Missouri (1,028 MW), Colorado (983 MW) and Kansas (916 MW).

Total cumulative capacity for top 10 states includes most of the same states with Texas (37,443 MW), California (20,354 MW), Iowa (11,394 MW), Oklahoma (9,395 MW), Kansas (7,058 MW), Illinois (6,600 MW), Colorado (5,385 MW), Minnesota (5,316 MW), North Carolina (5,064 MW), and Oregon (4,290 MW).

Clean Power Capacity, by State

Texas is the clean power leader; 9 states have 5 GW or more installed

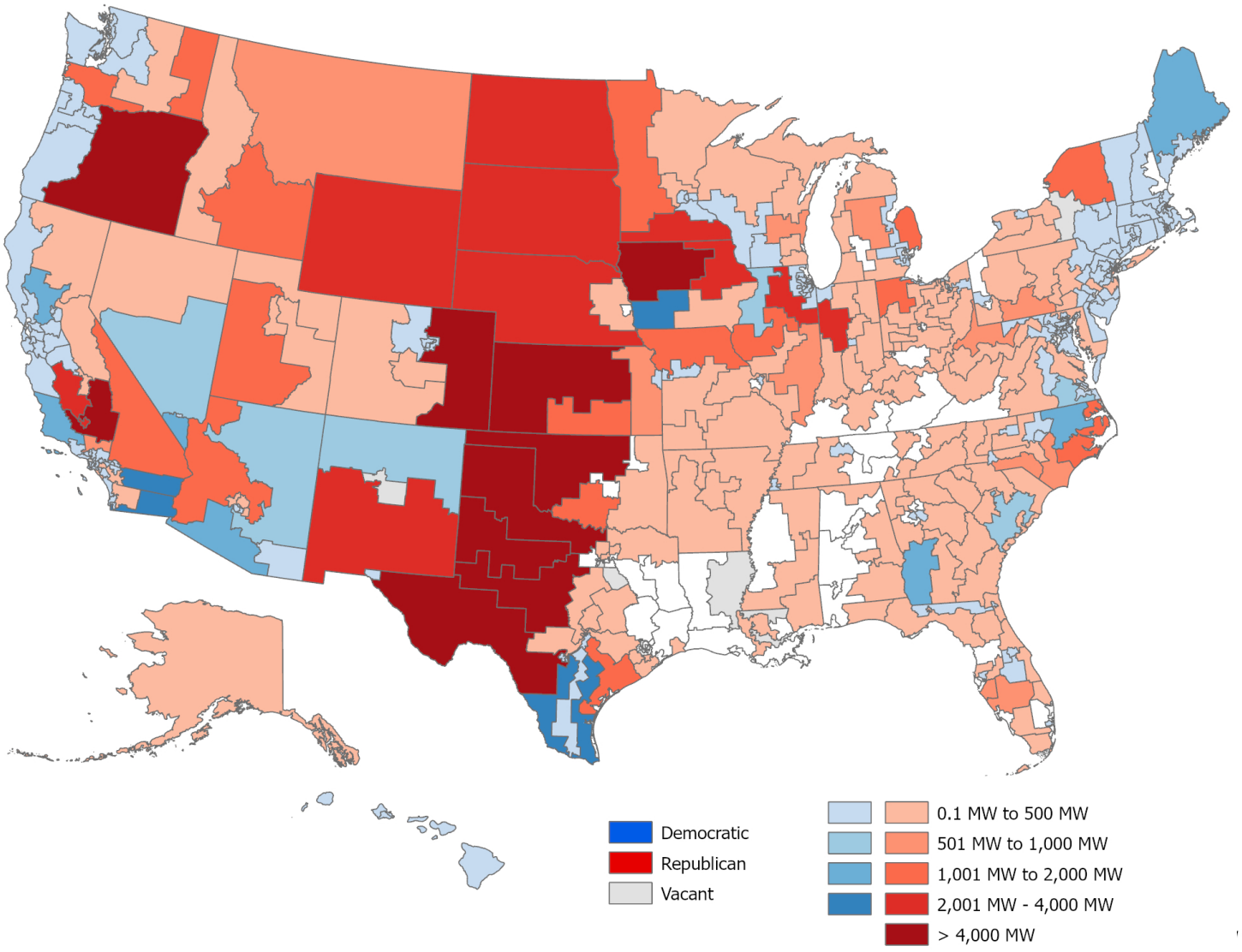


Clean Power Capacity by U.S. Congressional District

Projects and/or manufacturing present in 84% of U.S. congressional districts

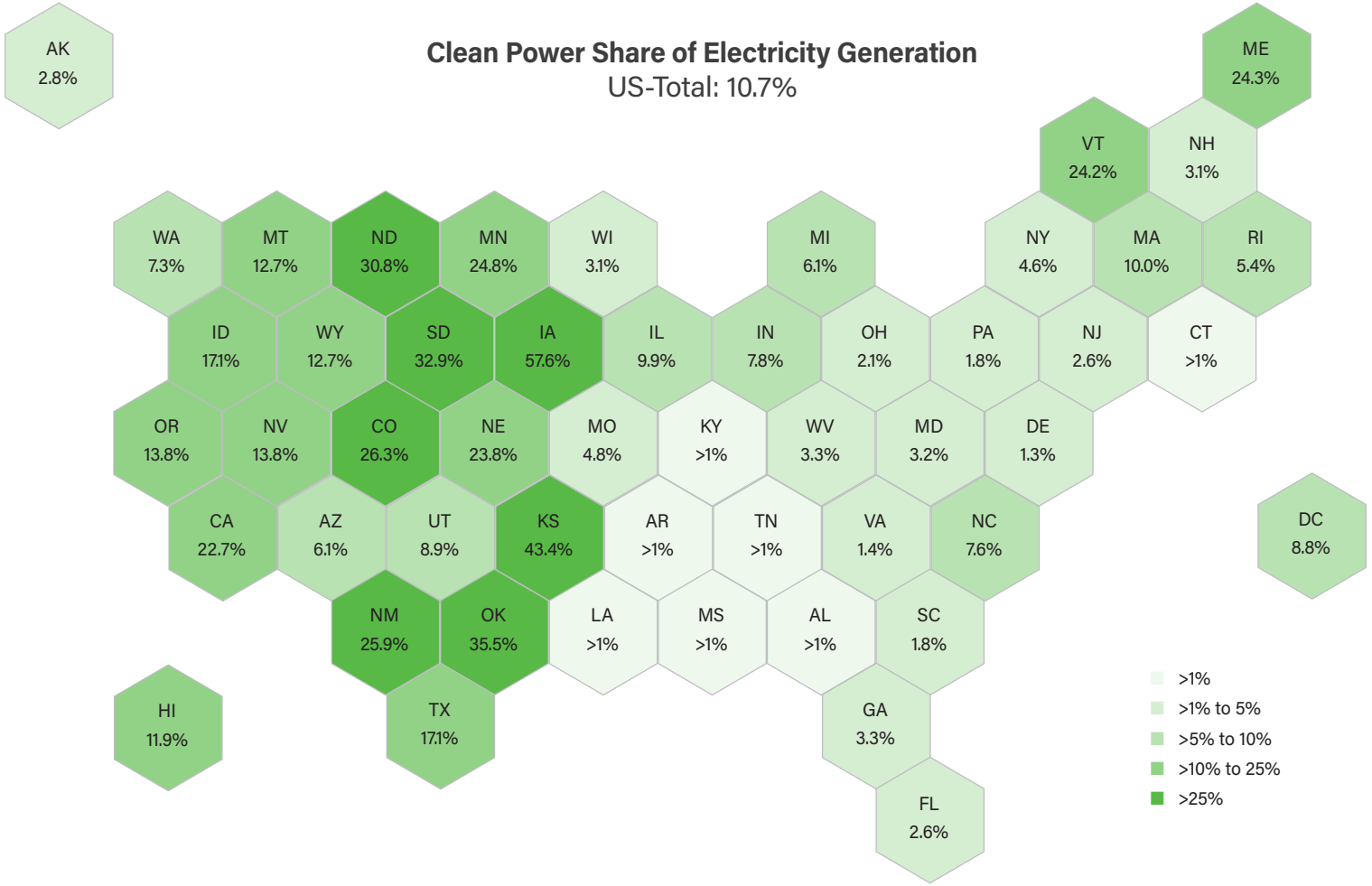
Clean power is red, white, and blue with projects or manufacturing facilities in 84% of congressional districts and jobs in all 50 states. These districts feel the local economic benefits of wind, solar and energy storage projects.

In 2020, the clean power industry paid an estimated $1.7 billion in state and local taxes and nearly $800 million in land-lease payments to landowners across the U.S. Since wind and solar projects operate reliably and profitably for more than 25 years, these local economic benefits become an equally reliable revenue stream in thousands of communities across the U.S.



Clean Power Share of Electricity Generation

Wind and solar provided 10.7% of the nation's electricity in 2020



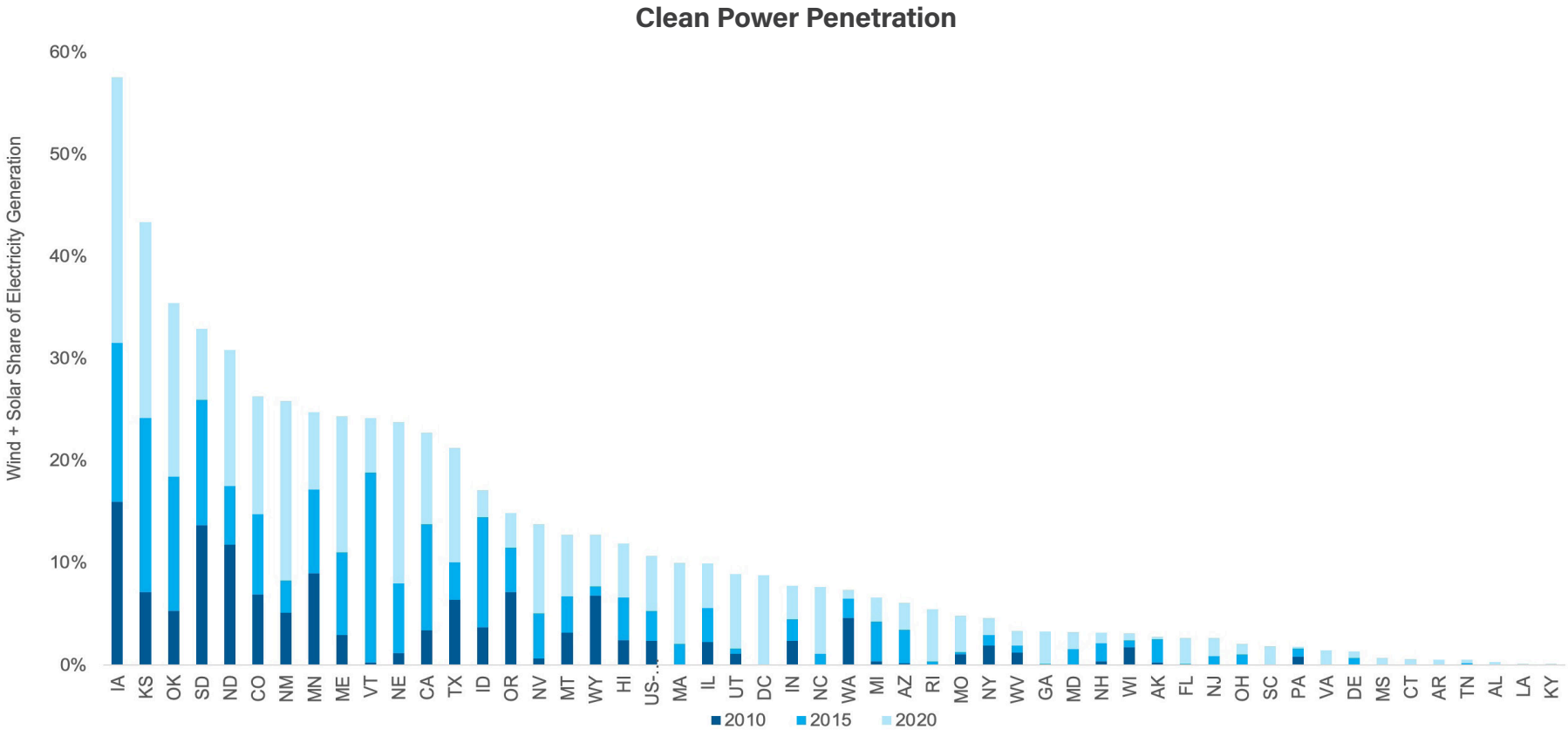
By the end of last year 20 U.S. states were sourcing double-digit percentage levels of wind and solar energy. Iowa holds an impressive lead at 57%, followed by Kansas at 43%. Oklahoma, South Dakota, and North Dakota are all in the 30% range. The eight next states in the ranking order are in the 20% and above clean power penetration range followed by another eight states in the 10% and above range. The remaining 24 states are between 1% and 10% clean power penetration.

The noticeable pattern of top performers coincides with the windiest Midwest states and since there is more than double the wind power capacity installed nationally than solar energy it is the states with excellent wind resources and high levels of wind plants in operation that also rank high in market shares of overall clean power.

Source: ACP, EIA

Penetration of Clean Power over Time

Seven states generate at least 25% of their electricity from wind and solar



Wind and solar energy are becoming key resources in many states' electricity portfolio. Wind was the largest source of electricity generation in both Iowa and Kansas in 2020, while solar was the second largest source of electricity in California and Nevada. This is the second year in a row that wind energy has been the number one source of electricity for a state.

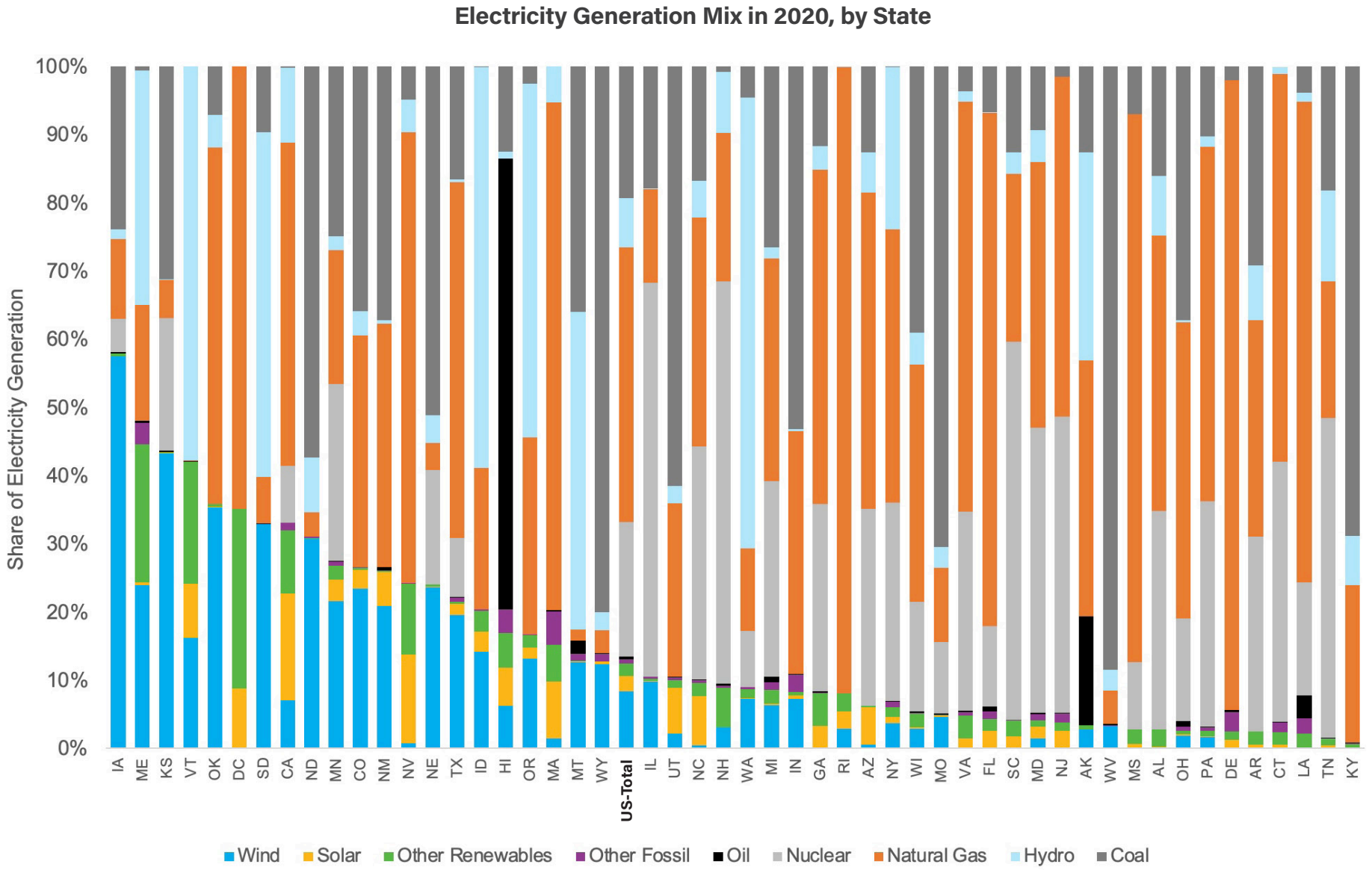
Wind and solar power's share of electricity generation has grown significantly at the state level during the last decade. In 2010, 11 states produced more than 5% of their electricity from wind and solar while three states exceeded 10% wind and solar generation. By 2015, 21 states produced at least 5% of their electricity from wind and solar and 13 states generated over 10%, with three states (Iowa, Kansas, and South Dakota) reaching over 20%. Five years later, the number of states exceeding 5% of electricity generation from wind and solar increased to 30; 14 states generate over 15%, and five states produce more than 30% of their electricity from wind.

At the national level, the share of wind and solar electricity generation has grown from just 2.3% in 2010 to 10.7% in 2020.

Source: ACP, EIA

Electricity Generation Mix by State

Iowa leads all states by generating 57% of its electricity from wind and solar



Source: ACP, EIA

State Generation Rankings

Texas produces the most clean electricity; Iowa leads clean power penetration

State Clean Power Generation Rankings

Rank	State	Clean Power Share (%)
1	Iowa	57.6%
2	Kansas	43.4%
3	Oklahoma	35.5%
4	South Dakota	32.9%
5	North Dakota	30.8%
6	Colorado	26.3%
7	New Mexico	25.9%
8	Minnesota	24.8%
9	Maine	24.3%
10	Vermont	24.2%
11	Nebraska	23.8%
12	California	22.7%
13	Texas	21.2%
14	Idaho	17.1%
15	Oregon	14.8%

Rank	State	Clean Generation (MWh)
1	Texas	100,896,585
2	California	44,158,997
3	Iowa	34,174,172
4	Oklahoma	29,638,724
5	Kansas	23,572,071
6	Illinois	17,203,857
7	Colorado	14,241,103
8	Minnesota	13,997,509
9	North Dakota	13,183,213
10	Oregon	9,624,835
11	North Carolina	9,479,302
12	New Mexico	8,889,128
13	Nebraska	8,771,310
14	Washington	8,373,080
15	Indiana	6,971,294

Another way to look at state rankings of clean power generation is the total annual energy production (AEP) measured in total megawatt-hours (MWh) generated. While there may be a high penetration rate of 57% clean power in Iowa, the total electricity demand load generated in the state is much less than load demanded in much bigger states.

When looking at total clean power generation of the much larger population states of Texas and California, they overwhelmingly take the lead for total generation produced from clean power even if their clean power penetration percentages (21.2%) and (22.7%) are relatively low.

In Texas, for example, the 100,896,585 MWh generated from clean power plants is more than double California at 44,158,997 MWh. That is more than three times Iowa, which leads in percentage of clean power penetration.

Source: ACP, EIA

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American Clean Power is the voice of companies from across the clean power sector that are powering America's future, providing cost-effective solutions to the climate crisis while creating jobs, spurring massive investment in the U.S. economy and driving high-tech innovation across the nation. We are uniting the power of America's renewable energy industry to advance our shared goals and to transform the U.S. power grid to a low-cost, reliable, and renewable power system. Learn more about the benefits clean power brings to America at CleanPower.org.

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