Clean Energy Powers American Business

AMERICAN CLEAN POWER

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Introduction

America is in the midst of an energy transition. Wind turbines, solar farms, and battery storage facilities are popping up across the nation to deliver clean, affordable electricity. At the center of the growing demand for clean power projects are American businesses. Corporations are increasingly turning to clean energy to power their business activities—delivering products, services, and experiences that are clean powered. This report dives into the world of commercial and industrial clean power contracting to better understand which companies are buying clean power and how they are using it every day.

Economic and environmental benefits, as well as growing pressure on corporations to meet sustainability targets, have led to a 100-fold increase in corporate clean power procurement over the past decade. During that same period, solar and wind costs have decreased 71% and 47% respectively, making both more attractive to corporate energy buyers. Low-cost clean electricity also offers the added benefit of protection from price fluctuations common with fossil fuel-fired electricity. American companies are benefiting from—and contributing to—the affordability of clean power.

Demand from commercial and industrial (C&I) customers for clean energy has grown rapidly over the past decade. Google kicked off the modern era of large-scale C&I deals in 2010 with the announcement of a 20-year contract with NextEra Energy to procure 114 MW from the Story County II wind farm located in Iowa. Back in 2010, C&I's announced 116 MW of clean power procurement, a number that rose to a record nearly 20 GW just over a decade later in 2022. During this period, wind and solar prices dropped dramatically, while pressure on corporations to decarbonize increased. Clean power buying grew in tandem with the scaling of the number of companies, large and small, procuring clean energy. Only three companies announced clean power contracts in 2012, a number that grew to a record high of 65 in 2021. In total, 326 companies have clean power procurement agreements in place across the nation.

As of close of 2022, corporate buyers have contracted 77 GW of clean power from utility-scale projects, including 29 GW of land-based wind, 45 GW of solar, and 974 MW of battery storage capacity.[1] Previously, 2021 was record year for corporate procurement with more than 15 GW of new contracted capacity announced. In 2022, corporate buyers shattered that record, announcing nearly 20 GW of new clean power contracts across the nation.

Considering the 77 GW contracted by C&Is, 47% is currently operating, enough to drive 15 million Teslas across the country.[2] The impact of corporate clean power procurement is evident beyond the operating power capacity it supports. Projects with a corporate buyer are supporting local economies with approximately $143 million in state and local tax payments and $147 million in land lease payments to local farmers and landowners. These projects also benefit communities by creating cleaner, healthier environments. As zero emissions energy sources, corporate backed clean power projects have avoided 47 million metric tons of carbon emissions, equivalent to the emissions from almost 10 million gasoline-powered passenger vehicles driven for one year.

Corporate buyers are a critical part of the energy transition. Their accelerated buying of clean energy provides an important source of demand, while their efforts to decarbonize their products and services puts pressure on their supply chain to do the same. C&I procurement of clean energy is growing and will play an important role in supporting wind, solar, and battery storage development. This report details the C&I market for clean energy, highlighting market trends, key players, and the trajectory of this customer class. The focus is on utility-scale wind, solar, and battery storage capacity; rooftop and distributed energy systems are not considered.

Highlights

- **A total of 326 companies have contracted 77.4 GW of clean energy as of the end of 2022**—that's enough clean energy to power over a thousand data centers. This includes 45,052 MW of solar, 28,830 MW of land-based wind, and 974 MW of battery storage.[3]
- **2022 was a record year for corporate procurement.** C&Is announced nearly 20 GW of new clean power contracts, more than 4 GW higher than any other year.
- **Corporations have contracted 36,048 MW of operating clean power,** which accounts for 16% of total operating clean power in the U.S. and represents enough capacity to power 5.9 million American homes.
- **Amazon is the top clean power buyer with over 12.4 GW of utility-scale clean power capacity contracted.** Meta ranks second with 8.7 GW contracted, though Meta has the most contracted clean power that is currently operating (4.8 GW).
- **Technology companies have contracted more clean energy than any other industry at nearly 37 GW.** Technology companies were among the first adopters of clean energy, with procurement announcements dating back to 2010 and consistently growing to an average of 7 GW per year from 2019-2022.
- **Energy companies are emerging as leaders in corporate procurement with nearly 6.7 GW contracted.** Companies historically focused in the oil and gas industry account for more than half of the total clean power capacity contracted by the energy industry.
- **Most companies purchasing clean power are large market cap firms** ($10 billion to $200 billion market capitalization), though mega-cap companies (more than $200 billion market capitalization) account for the majority of contracted capacity.

16%

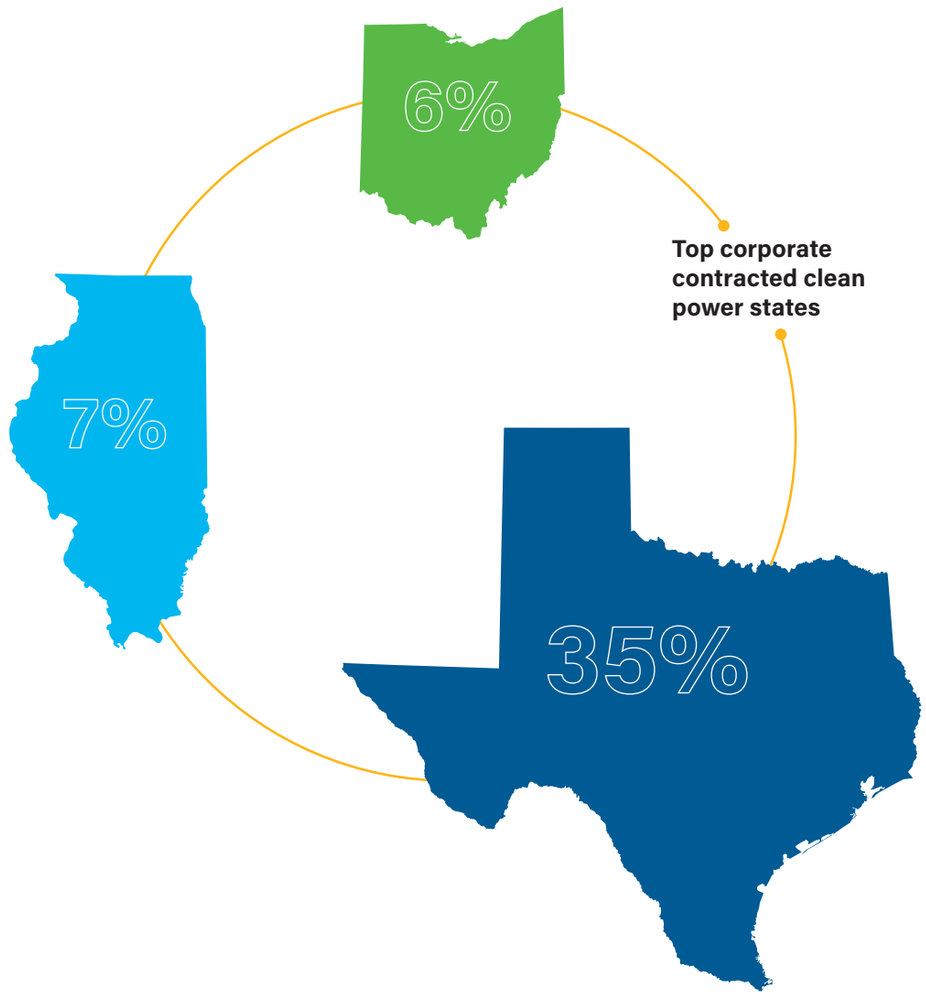
36 GW of operating clean power flowing to corporate buyers accounts for 16% of total operating clean power in the U.S.

326

purchasing companies

Highlights (continued)

- **According to Bloomberg New Energy Finance (BNEF), 37 U.S. RE100 companies achieved 100% renewable electricity in 2021,** but, unless additional renewable energy purchases are made or onsite generation is built, only six companies are expected to achieve 100% renewable electricity in 2030. BNEF estimates that U.S. RE100 members will need to procure an additional 98 TWh of renewable energy goals to achieve 100% renewable energy in 2030.
- **Texas is home to the majority (35%) of corporate contracted clean power, followed by Illinois and Ohio, representing 7% and 6% of contracted capacity, respectively.** Meta has the most geographically diverse footprint, with contracted projects in 22 states, though Amazon is close behind with projects in 20 states.
- **Power purchase agreements (PPAs) are the primary offtake mechanism used by corporate buyers,** accounting for 80% of contracted capacity.
- **PPA prices for corporate buyers are increasing, up 30% year-over-year (YOY) for solar PPAs and 37% for wind PPAs.** Despite this, high wholesale energy prices continue to make PPAs attractive to corporate buyers.
- **Clean power projects fueling corporate buyers have paid an estimated $143 million in state and local taxes and $147 million in land lease payments.** C&I contracted projects also represent a total capital investment of approximately $55 billion. Additionally, C&I backed clean power projects helped avoid 47 million metric tons of CO2 emissions and 25 billion gallons of water use.



Top Corporate Buyers of Clean Energy

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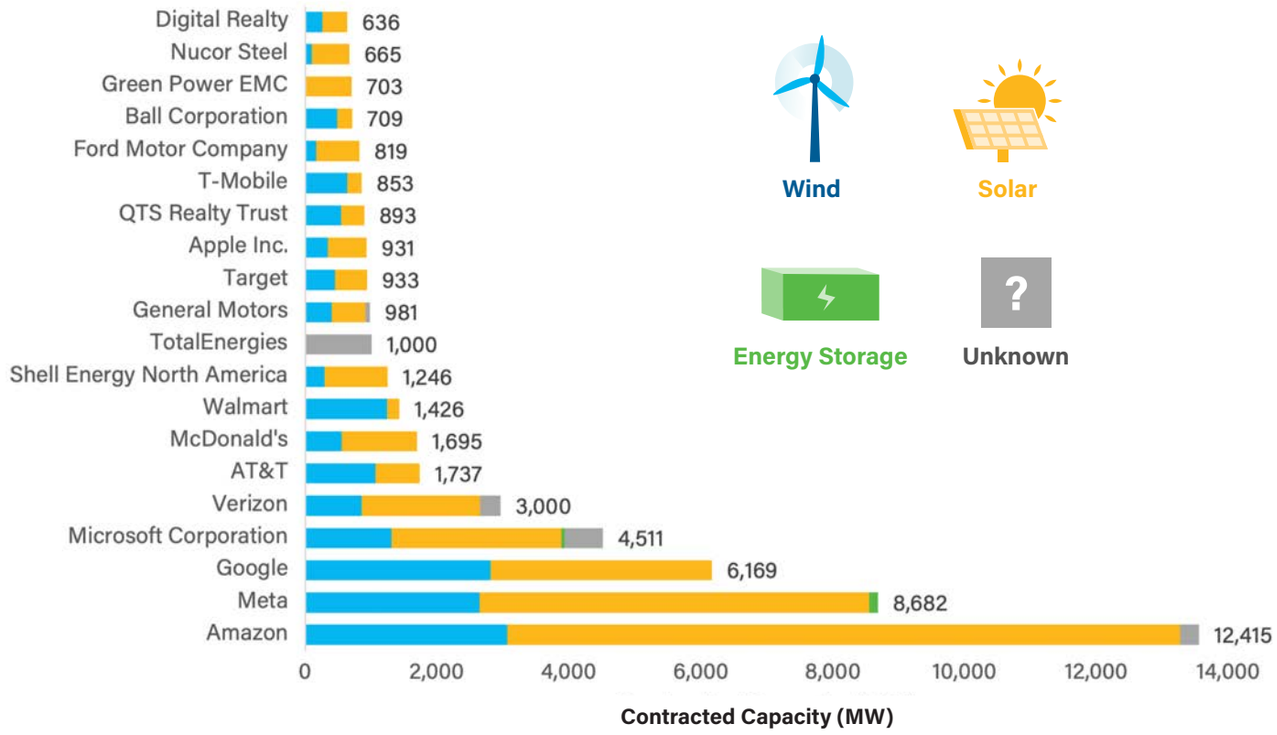
Amazon leads corporate clean energy procurement

A growing number of companies are purchasing clean power, which helps to drive demand for clean energy, lowers a company's carbon footprints, and gives consumers the added benefit of knowing their purchases are made possible by clean energy.

- **In total, 326 corporations are purchasing utility-scale clean power in the United States.** In terms of scale, 106 have 100 MW or more contracted, 24 have 500 MW or more, and only ten have a gigawatt or more of clean power procured.
- With nearly 12.4 GW contracted in the U.S., Amazon is the top corporate purchaser of clean energy. Meta trails by 5 GW with 8.7 GW contracted. Google rounds out the top three with 6.2 GW contracted.
- The top 20 companies account for 61% of total contracted capacity.
- Across all companies, more than half have more wind capacity than solar contracted.
- The average contracted capacity per company is 226 MW, though that ranges widely from less than 1 MW to over 1 GW.
- The majority, 67%, of corporate clean power contracts are less than 100 MW, and 33% are greater than 100 MW in size. However, within the past two years the size of contracts has increased. More than half of the contracts announced in 2021 and 2022 are larger than 100 MW.

Top 20 Purchasers of U.S. Clean Energy by Technology



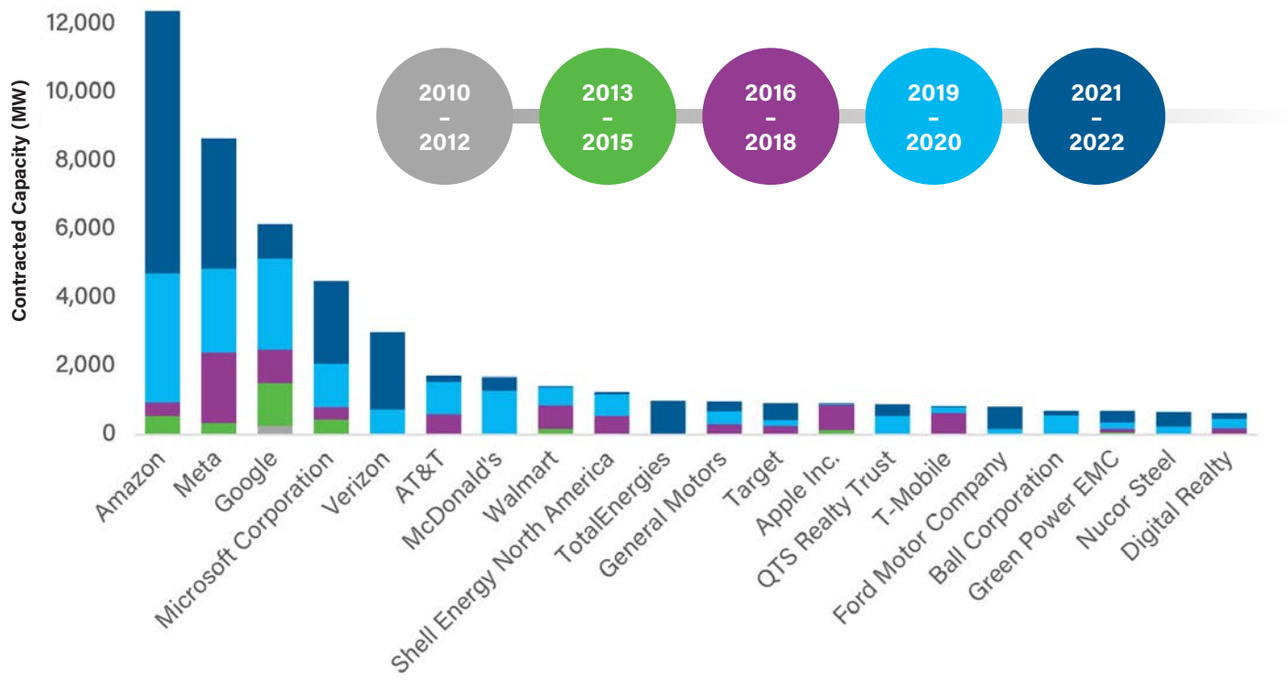
Footnote: Amazon purchases current through September 30, 2022.

Recent announcements by Amazon & Meta thrust them ahead of Google, the former leader

Surging clean power contract announcements over the past three years have shaken up the top clean energy buyers list. Since 2019, C&Is have announced more than 58 GW of clean power contracts, accounting for 76% of total contracted capacity.

- A large volume of PPA announcements over the past three years has pushed Amazon to the top of the corporate purchaser of clean power podium. Between 2020 and 2022, Amazon announced 11 GW of new PPAs. Prior to 2020, the company had less than 2 GW of clean power contracted.
- Meta, the second largest clean power purchaser, began procuring clean power in 2013. Since then, the company has, on average, announced over 940 MW of new clean power procurement each year.
- Google was one of the earliest adopters of clean power, with PPA announcements dating back to 2010. Google's procurement activity remained strong through 2020, and then slowed in 2021 with only 75 MW announced. Announcements rebounded in 2022 at more than 940 MW.
- Only 11 companies, including Google, made clean power procurement announcements for active contracts before 2015. Comparatively, 65 companies made announcements in 2021.

Top 20 Purchasers of U.S. Clean Energy by Announcement Year

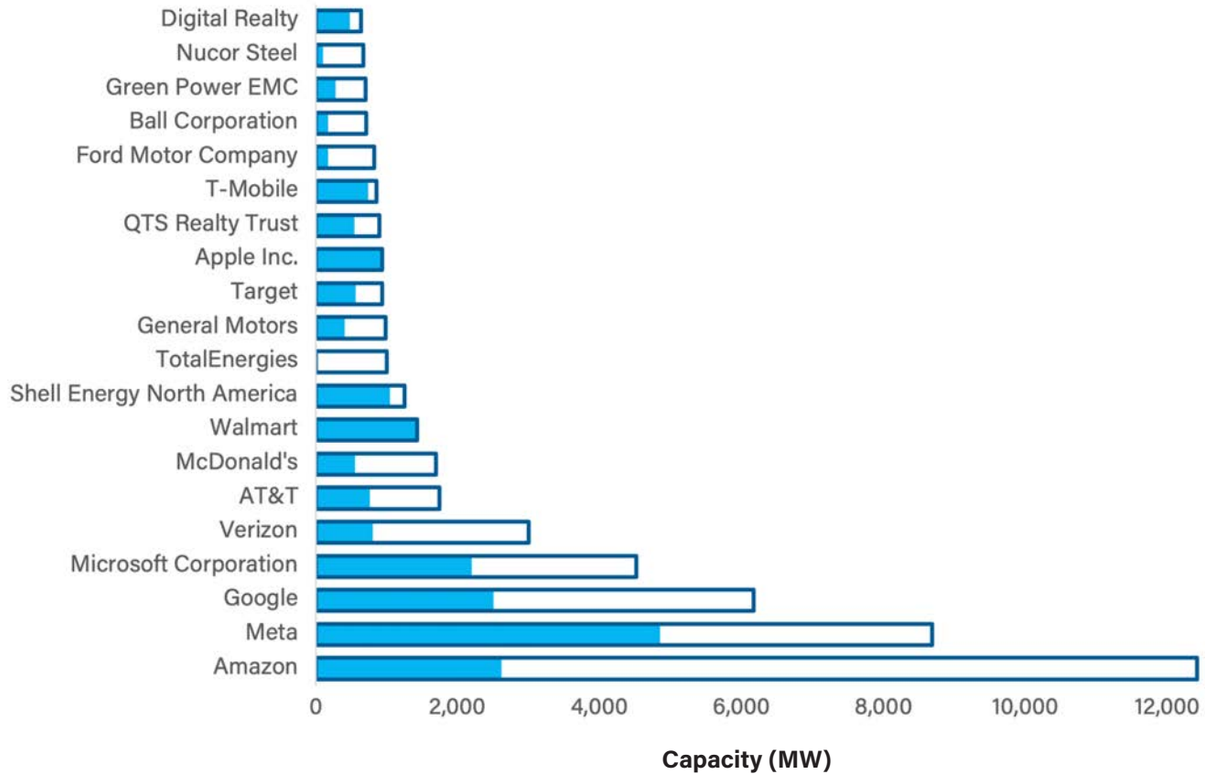


Meta has the most contracted clean energy powering operations

Considering the 77.4 GW contracted by C&Is, 36 GW is online and powering company operations. This means that the many economic and environmental benefits of those projects are being realized now.

- In terms of contracted capacity currently operating, Meta is the market leader. The tech giant currently has more than 4.8 GW of clean energy powering its operations, of which 3 GW are solar and 1.8 GW are wind.
- Of the nearly 12.4 GW Amazon has contracted, only 19% is currently operational. These operating projects came online between 2015 and 2022.
- Google closes out the top three purchasers of operating clean power neck and neck with Amazon, with 2.5 GW procured and operating, the majority of which is wind capacity.
- 271 companies are purchasing operating clean power. Of those, 73 companies are purchasing 100 MW or more, 15 are purchasing 500 GW or more, and six are purchasing more than 1 GW.
- Wind accounts for two-thirds of operating clean power capacity contracted to a corporate purchaser.

Top 20 Purchasers of Clean Energy, Operating and Contracted Capacity



Meta has the most contracted clean energy powering operations
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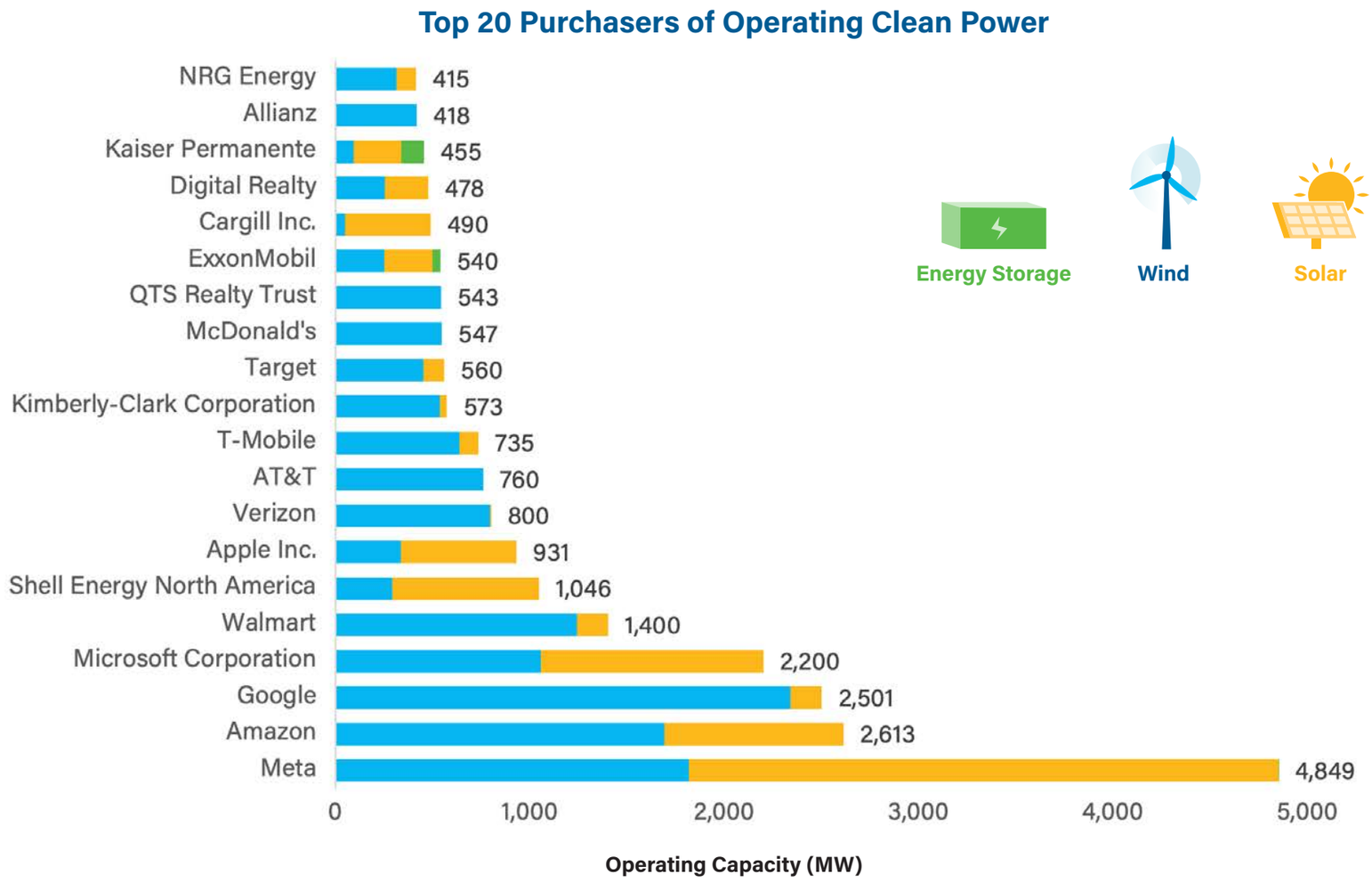
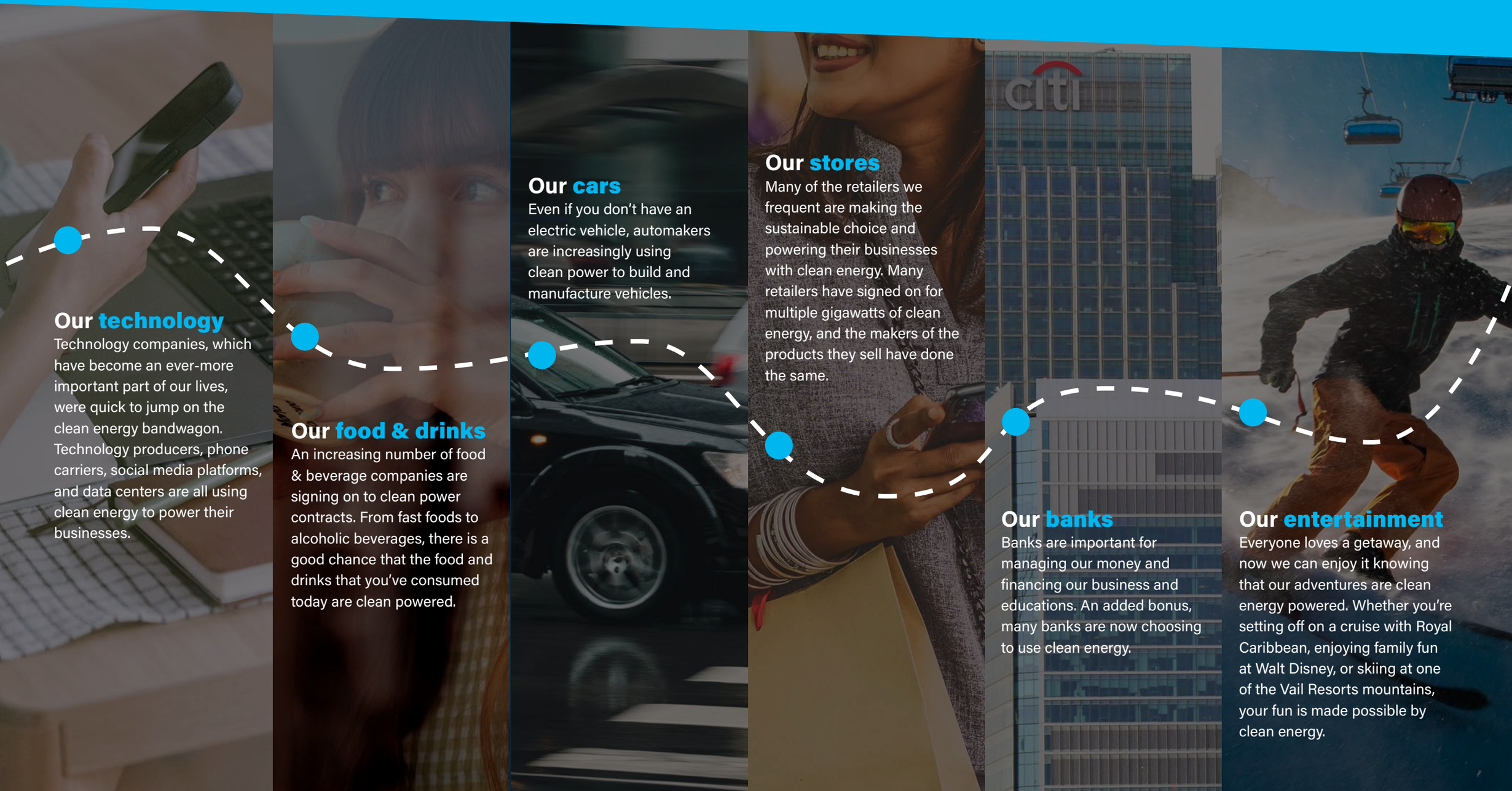


A Day Powered by Clean Energy

Clean energy powers nearly every aspect of our daily lives, from the food we eat to the products we use. Let's take a closer look:



Our technology

Technology companies, which have become an ever-more important part of our lives, were quick to jump on the clean energy bandwagon. Technology producers, phone carriers, social media platforms, and data centers are all using clean energy to power their businesses.

Our food & drinks

An increasing number of food & beverage companies are signing on to clean power contracts. From fast foods to alcoholic beverages, there is a good chance that the food and drinks that you've consumed today are clean powered.

Our cars

Even if you don't have an electric vehicle, automakers are increasingly using clean power to build and manufacture vehicles.

Our stores

Many of the retailers we frequent are making the sustainable choice and powering their businesses with clean energy. Many retailers have signed on for multiple gigawatts of clean energy, and the makers of the products they sell have done the same.

Our banks

Banks are important for managing our money and financing our business and educations. An added bonus, many banks are now choosing to use clean energy.

Our entertainment

Everyone loves a getaway, and now we can enjoy it knowing that our adventures are clean energy powered. Whether you're setting off on a cruise with Royal Caribbean, enjoying family fun at Walt Disney, or skiing at one of the Vail Resorts mountains, your fun is made possible by clean energy.

Solar Powers American Business

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45 GW of solar capacity contracted

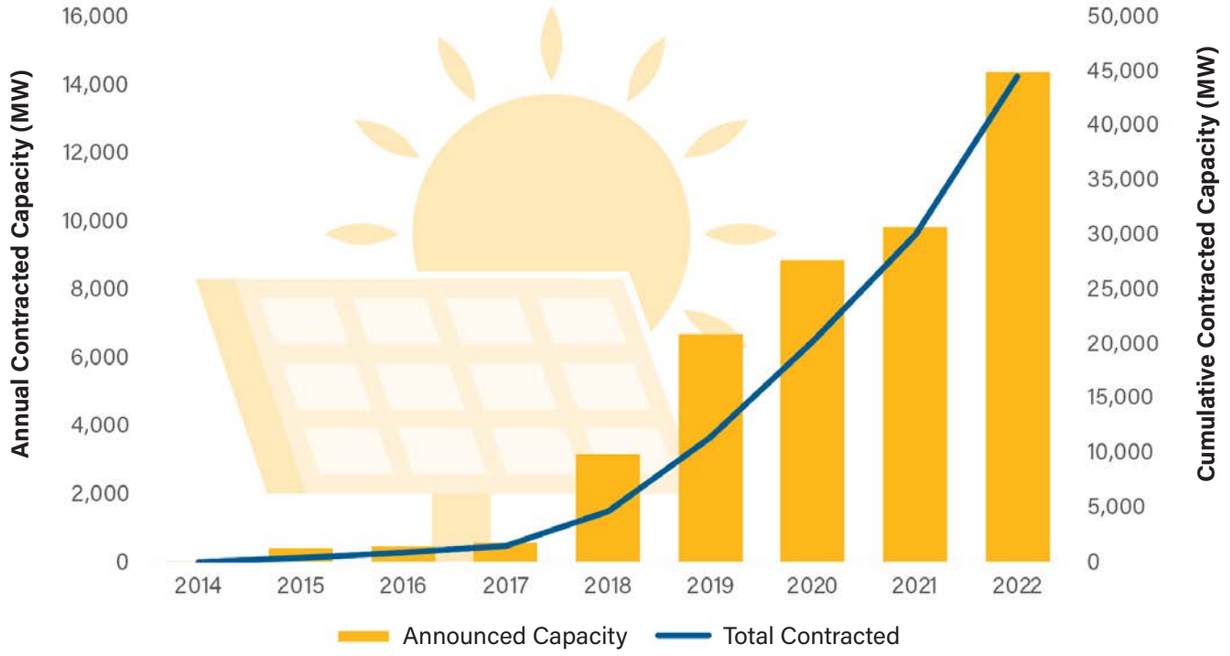
Across the clean power industry, development of solar capacity has increased, growing from little to no solar installs in the early 2000s to accounting for almost half of the installed capacity in the first half of 2022. In tandem, corporate buyers are showing more interest in solar power, allowing them to balance their portfolios after years of wind-focused procurement.

- American businesses have contracted 45 GW of utility-scale solar power. Of that, 12.5 GW, or 28%, is currently operating, while the remaining 72% is in development.
- Solar procurement announcements grew rapidly from 2017 to 2022 and has reached a new high in 2022 at 14.4 GW.[4] By comparison, only about 576 MW of solar capacity procurement was announced in 2017.

58%

Utility-scale solar accounts for 58% of corporate contracted clean power.

Corporate Contracted Solar Capacity by Announcement Year

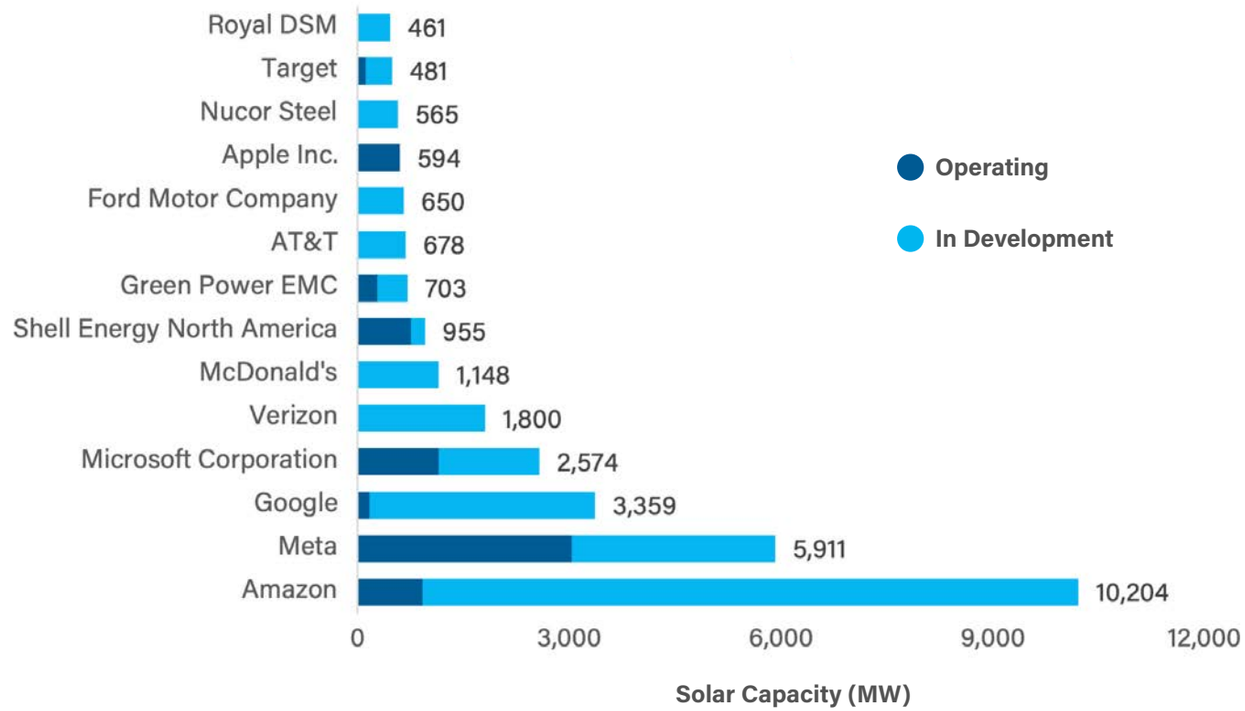


Amazon leads solar procurement

- In total, 169 companies are procuring solar power in the U.S., 69 of which are procuring 100 MW or more, and 13 are procuring 500 MW or more. Only six corporations are purchasing more than 1 GW of solar capacity.
- Amazon leads in total solar capacity contracted at over 10.2 GW, accounting for a fifth of total solar capacity contracted by commercial & industrial offtakers.
- Meta ranks second for total contracted solar capacity, but first for operating contracted solar—51% of the 5.9 GW Meta has contracted is currently operating.
- Google, at 3.4 GW, has the third most contracted solar capacity. The majority of that capacity, over 2.3 GW, was announced before 2021.
- Corporate buyers contracted an average of 88 MW of solar capacity per offtake agreement. The average offtake capacity has increased significantly over time, averaging 55 MW for announcements in 2015, and up to 139 MW of announcements in 2022.

#1	Amazon	10.2 GW
#2	Meta	5.9 GW
#3	Google	3.4 GW

Corporate Contracted Utility-Scale Solar, by Status

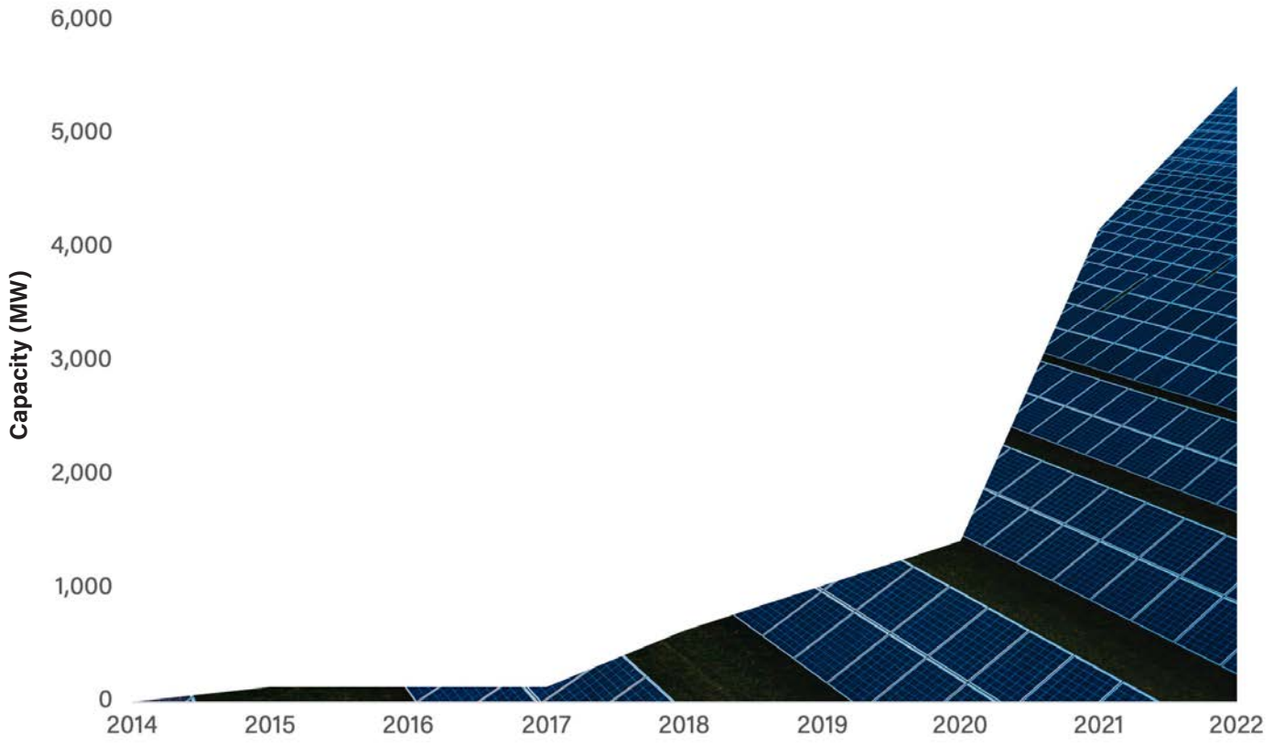


Corporate procurement of solar + storage projects soars in 2022

To date, solar + storage corporate deals have been limited but are starting to gain popularity. Pairing solar with storage allows C&Is to benefit from firmed generation and the ancillary services available from battery storage, depending on contract terms. Growth in corporate interest in solar + storage is paired with increasing availability of these hybrid projects. Online solar + storage capacity has nearly quadrupled over the past five years and the list of solar + storage projects in the pipeline swells.

- So far, corporate buyers have primarily opted to contract for stand-alone solar power. Of the 45 GW of solar capacity that corporate entities contracted, only 8% is part of a hybrid solar + storage project. In total, corporate buyers have contracted for 5,455 MW of solar + storage project capacity. This includes contracts for only the solar portion of solar + storage projects.
- Interest in hybrid projects is increasing. In 2021, corporate buyers announced offtake agreements for 2.7 GW of solar + storage capacity, accounting for more than half all C&I solar + storage procured capacity. Other than 2021, solar + storage offtake announcements have been below 600 MW from 2018 to 2021. In 2022, over 1.3 GW of solar + storage C&I contracts were announced.
- Amazon has contracted the most solar + storage capacity at 1,100 MW, followed by TotalEnergies at 1,000 MW, and Meta with 615 MW.

Corporate Contracted Hybrid Solar + Storage Capacity



Wind Powers American Business

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Land-based wind accounts for 37% of corporate procurement

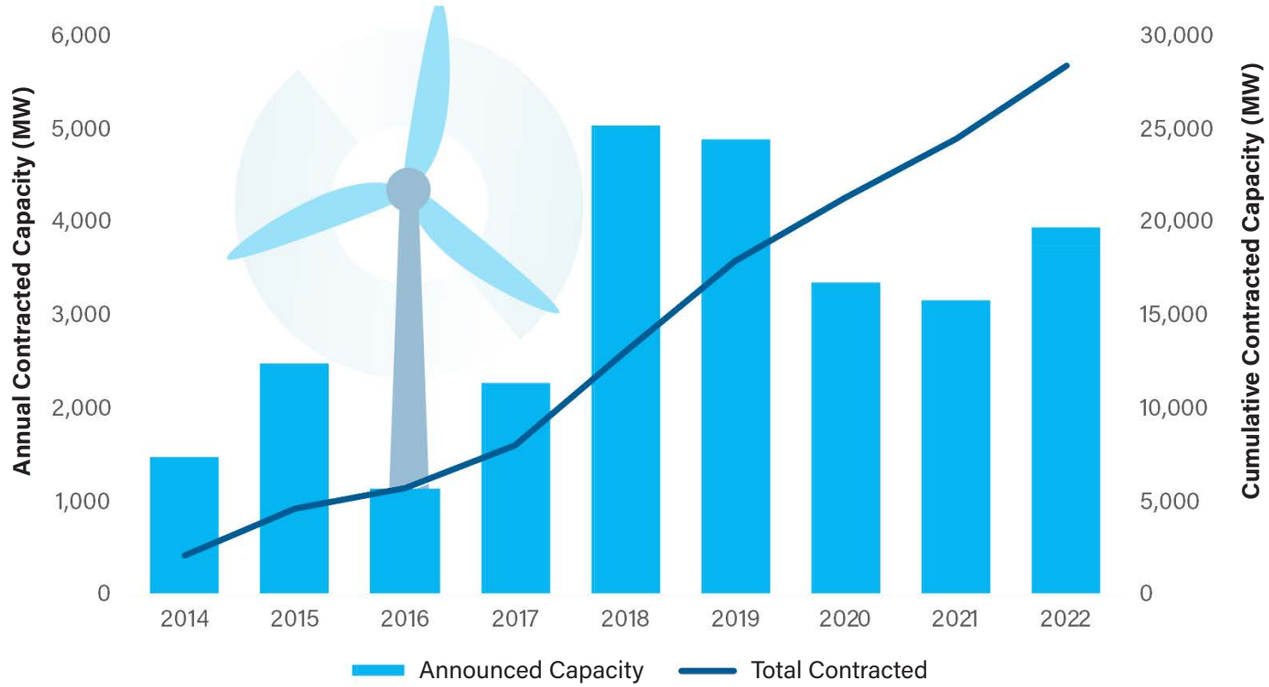
Wind, the longer established clean power technology, was the first choice for corporate buyers for many years, making up the majority of contracted capacity from 2010 to 2018.

- In total, 206 corporations have signed contracts to receive energy from utility-scale, land-based wind projects. These contracts total 28.8 GW, with 81% of that capacity currently operating and powering those business' operations.
- Annual land-based wind procurement peaked in 2018 at over 5 GW. Since then, C&Is have decreased their wind energy procurement by an average of 18% each year through 2021. In 2022, corporate wind procurement resurged slightly, increasing 25% from 2021 to 4 GW of new wind offtake announcements.
- Wind accounts for 37% of total clean power capacity contracted by businesses in the U.S., and 65% of the contracted capacity that is currently operational.
- Currently, no corporations have offtake agreements for offshore wind in the U.S.

37%

37% of corporate clean energy procurement

Corporate Contracted Wind Capacity by Announcement Year



Footnote: ACP is unable to determine the announcement date for 398 MW of corporate wind procurement.

Amazon edges out Google and Meta for top wind purchaser spot

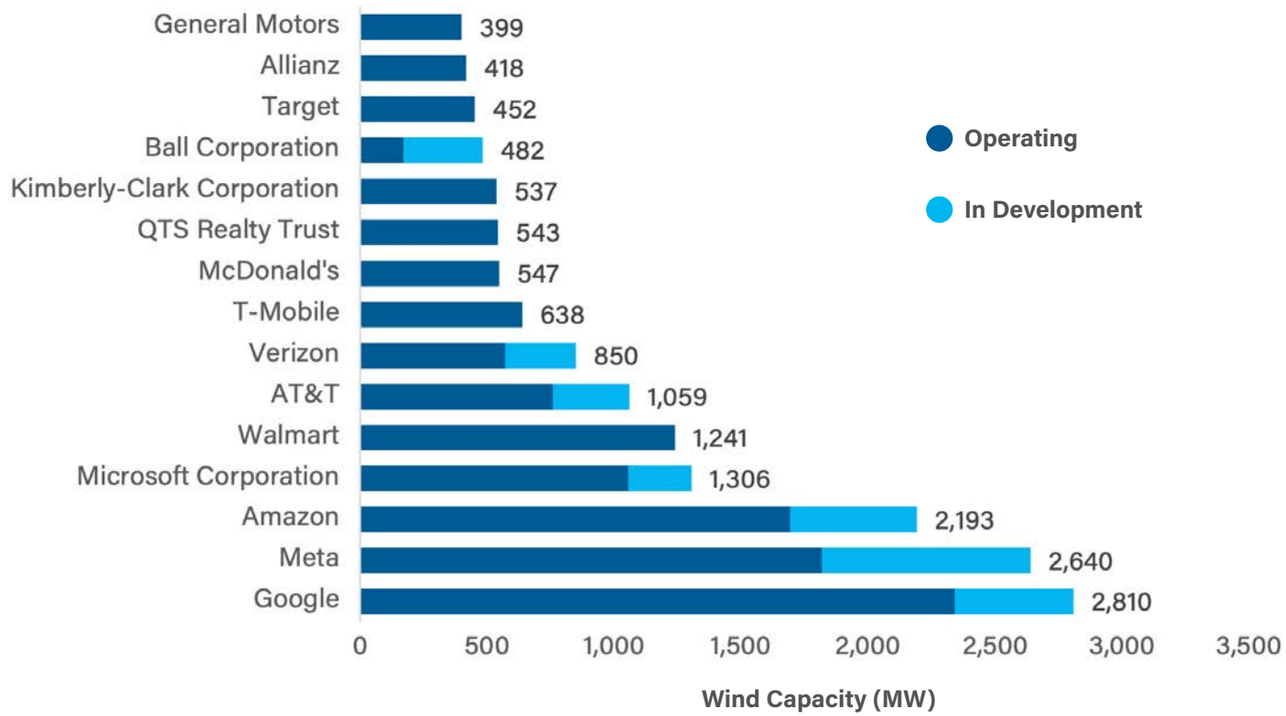
- **Google takes the top spot for total contracted and operating contracted wind capacity.** The company alone accounts for 10% of total wind capacity with a corporate buyer.
- Meta is a close second, only 170 MW behind Google with 2,640 MW of wind capacity contracted. Google is also the leader for operating contracted wind capacity, with 83% of its contracted capacity operating, compared to 69% of Meta's contracted capacity.
- Amazon is the only other corporate entities with more than 2 GW of wind capacity contracted. Amazon has contracted 2.2 GW of wind capacity in the U.S., 77% of which is currently operating.
- In total, 206 companies have contracted with U.S. wind projects to power their businesses. Of those, 61 have contracted 100 MW or more, 11 have contracted 500 MW or more, and six have contracted over a GW of wind capacity.

10%

Google alone accounts for 10% of total wind capacity with a corporate buyer.

206 companies have contracted with U.S. wind projects to power their businesses.

Corporate Contracted Utility-Scale Wind, by Status



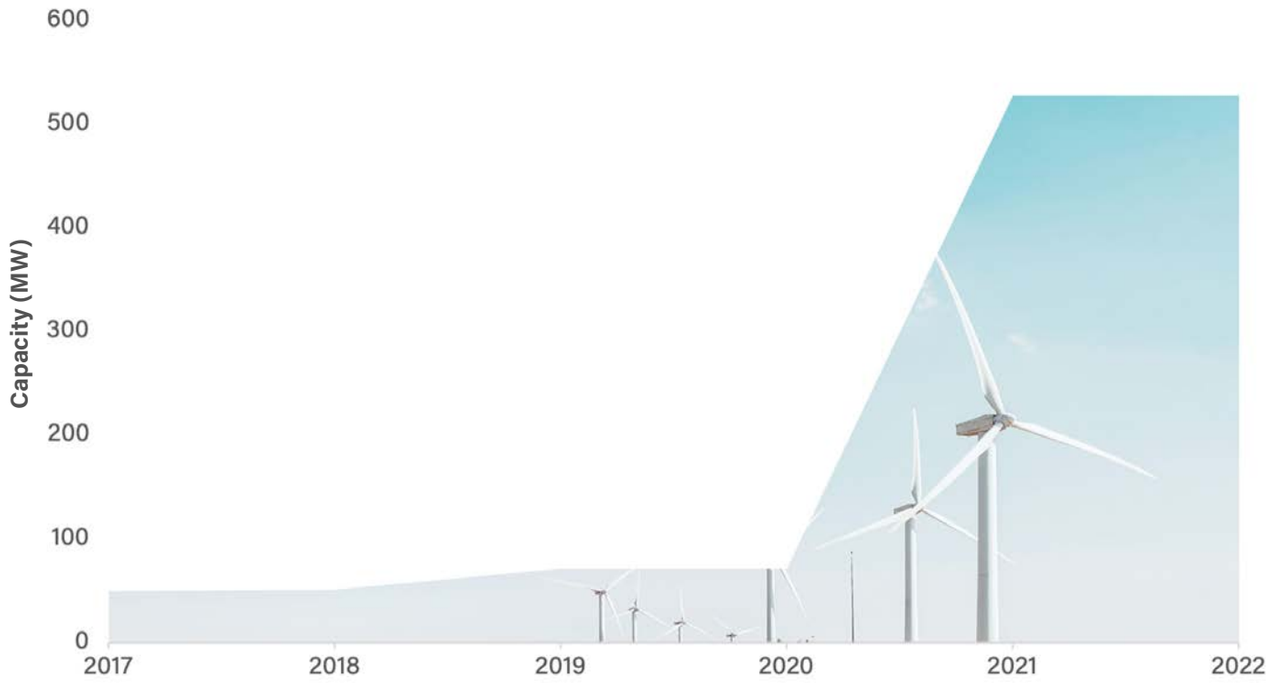
Footnote: Amazon purchases current through September 30, 2022.

Corporations have contracted with three wind + storage projects

Wind plus storage projects, generally less common than solar plus storage projects, have attracted fewer corporate buyers. However, there have been a few corporate deals for this type of hybrid project.

- So far, 12 corporations have contracted 548 MW from wind + storage hybrid projects. These contracts relate to three projects: Casa Mesa, High Lonesome Hybrid, and the Azure Sky Wind + Storage project.
- C&I account for 14% of total wind + storage project capacity online or in development in the U.S.
- An unidentified corporate buyer has contracted the most wind + storage hybrid capacity at 131 MW, followed by Kellogg Company with 100 MW contracted. Merck & Co and MilliporeSigma tie for the third spot with 68 MW contracted each.

Corporate Contracted Hybrid Wind + Storage Capacity



From Ambition to Impact: Clean Energy Drivers for Corporate Customers

CEBA
Clean Energy Buyers Association

As highlighted in this Clean Energy Powers American Business, commercial and industrial sector energy customers have driven the clean energy transition through their demand for carbon-free energy. The Clean Energy Buyers Association (CEBA) — a business association that represents the energy customer voice with 340+ members, many of whom are highlighted in this report — supports the continued deployment of market and policy solutions to accelerate progress toward its goal of a carbon-free U.S. electricity system by 2030.

The energy market is in a period of rapid change, marked by an imbalance between growing customer demand and constrained supply of clean energy projects, alongside broader disruptions to global supply chains, contributing to rising costs for power purchase agreements. As corporate energy customers navigate challenging market dynamics, they continue to demonstrate their commitment to action by advancing clean energy procurement in the U.S. as well as global energy markets.

Each year since 2017, CEBA has reported a new record volume of clean energy procured by commercial and industrial (C&I) customers in the U.S., with 2022 poised to continue that trend. **This statistic is strengthened by the information shared in this report, and supported by three key strategic actions from energy customers:**

1. Prioritization of carbon-free energy as a key element of broader sustainability or environmental, social, and governance (ESG) targets.
2. Innovation to unlock markets and accelerate electricity decarbonization through adopting new contracting mechanisms, piloting emerging clean technologies, and utilizing their collective voice to advocate for improved access to clean energy.
3. Collaboration with key stakeholders across the energy market, including utilities, regulators, energy and service providers, NGOs, community leaders, and sector peers.

From Ambition to Impact: Clean Energy Drivers for Corporate Customers
(continued)

These strategic actions are evident in the ambitious target-setting that has continued across the market:

- In the first three quarters of 2022, more than 200 U.S.-based companies committed to set climate science-based decarbonization targets through the Science-based Targets initiative (SBTi) — a 70% increase from the end of 2021.
- Forty-eight companies signed on to the RE100 initiative through early November 2022, representing 14% growth and bringing the platform to nearly 400 signatories. The impact of RE100, representing companies with 100% annual clean energy targets, is covered further in this report.
- The United Nations' 24/7 carbon-free energy compact, launched in 2021 with 56 signatories, grew to more than 90 signatories in 2022.

They are also demonstrated through customer engagement with key energy market stakeholders and partners:

- CEBA tracked more than 40 companies which engaged in brand-forward policy engagements in 2021 at the state, regional, and federal levels.
- Nearly a third of corporate clean energy deals with known procurement types in 2021 were through utilities — either bilateral agreements or green tariff programs designed to meet the needs of a broad set of customers.

These engagements are key to expanding clean energy access, particularly as many look toward the impacts of landmark legislation passed in 2022 including the Inflation Reduction Act (IRA). CEBA looks forward to sharing additional information about how these impacts advanced in 2022 in upcoming publications.

CEBA anticipates another record-breaking year for clean energy procurement, with energy customers continuing to lead the charge in accelerating the market and placing positive pressure on energy providers, utilities, regulators, and other market actors to advance the impact of clean energy procurement and create a carbon-free energy future for all.

Industry Breakout

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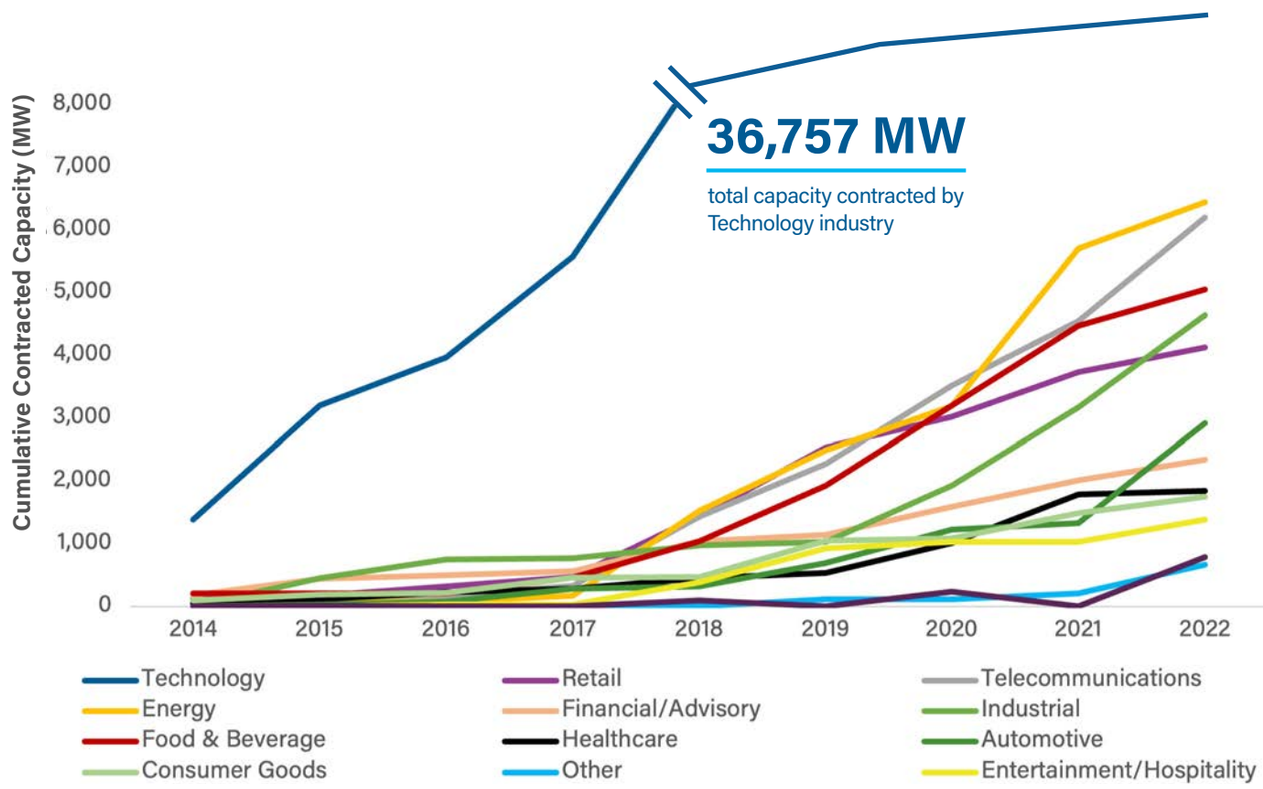
Technology and energy industries set strong lead in clean power procurement

Across the corporate landscape, industries are adopting clean energy at varying rates. Some have been purchasing clean energy for more than 15 years, while others are more recent adopters. Industries also have different electricity demands, therefore requiring different levels of procurement to meet renewable electricity targets.

- Technology companies are the largest buyers of clean power, contracting 48% of the 77.4 GW bought by C&I customers. Amazon, with 12.4 GW procured, accounts for 34% of capacity procured by the industry in the U.S. 24 other technology companies, including Meta, Google, Microsoft, and Apple, are procuring U.S. clean energy.
- Technology companies are among the earliest adopters of clean energy, with procurement announcements dating back to 2010. To date they have contracted 36.8 GW of clean power in the country, of which 65% is solar.
- The energy industry now has the second most clean power capacity contracted at 6.7 GW. Between 2014 and 2017 procurement activity slowed but picked up to nearly 1.3 GW on average each year from 2018 to 2022. Companies that have historically been focused on petroleum and oil, such as Shell and TotalEnergies, now have contracts in place for over a gigawatt of clean energy. In total historically petroleum and oil companies account for 60% of the capacity contracted by the energy industry.

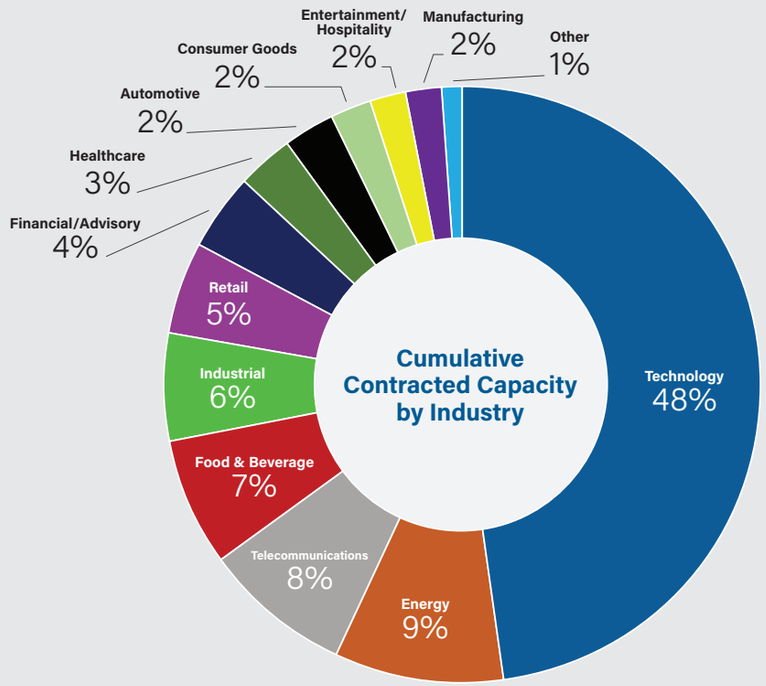
Cumulative Contracted Capacity by Industry



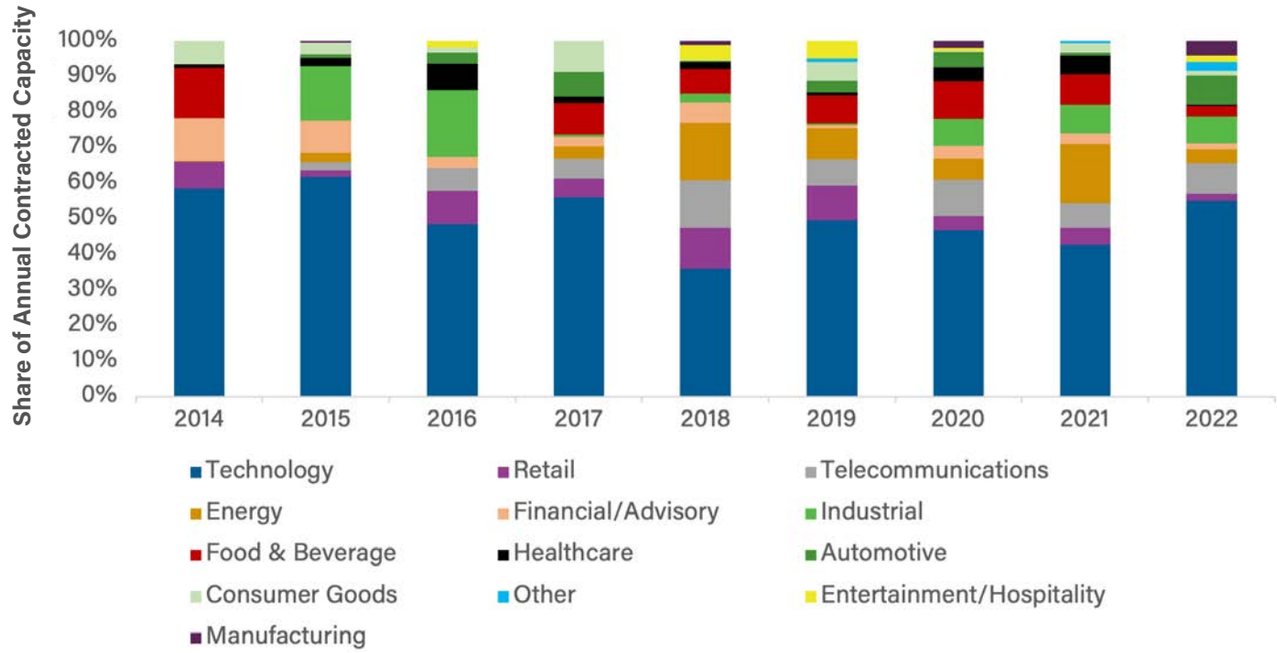
ACP is unable to determine the announcement year for 1,478 MW of contracted capacity.

Technology and energy industries set strong lead in clean power procurement (continued)

- After making their first clean power procurement announcements in 2015, the telecommunications industry is rapidly increasing procurement activity. Between 2018 and 2022 the industry announced an average of 1.2 GW of new clean power procurement annually. In 2022, the industry announced a record 1.7 GW of clean power contracts.
- Besides the broad "Other" category, the entertainment and hospitality industry and manufacturing industry were the latest adopters to clean energy, with no procurement activity until 2015 and 2016. Both industries still rank last in terms of total procured clean power.



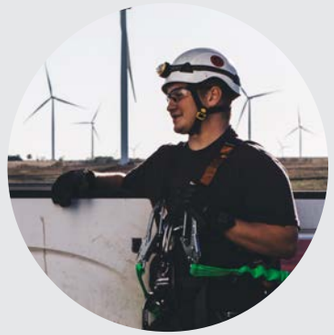
Cumulative Contracted Capacity by Industry



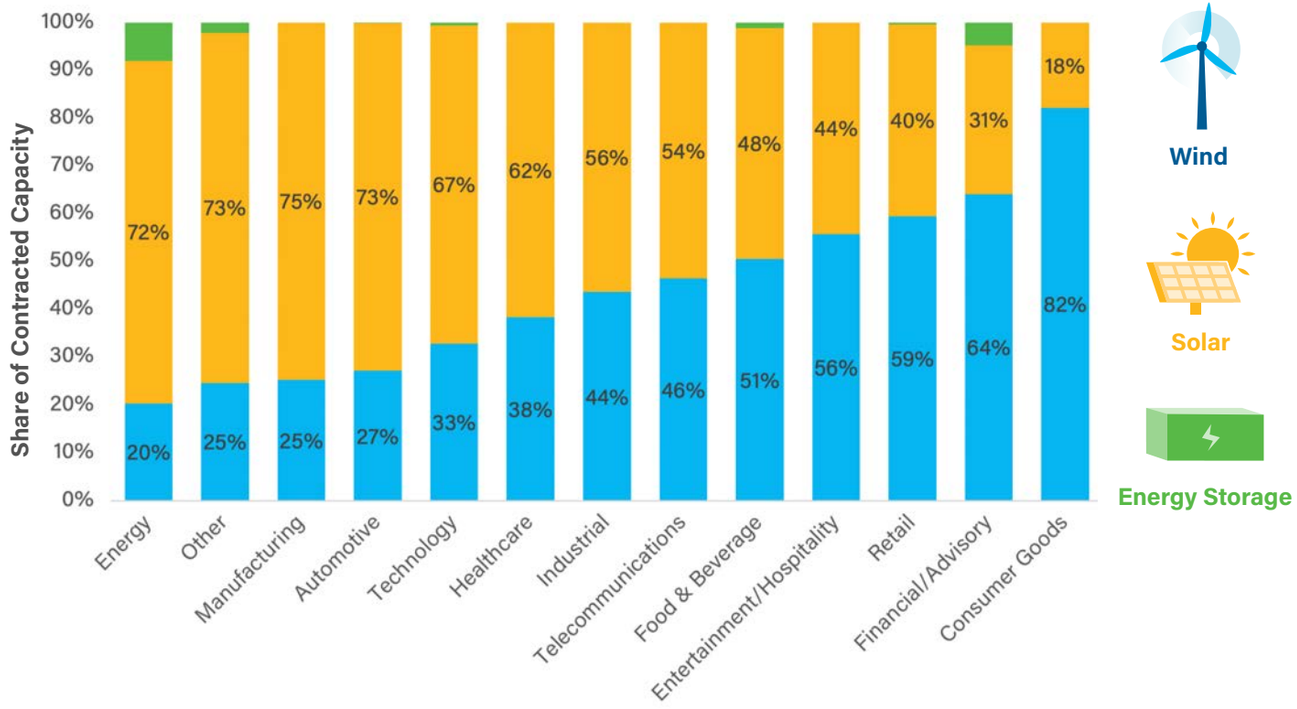
Footnote: There is 1,073 MW of capacity where the announcement year is unknown. Additionally, ACP is not able to determine the industry for unknown C&I buyers, who are contracting 1,067 MW of clean power.

Industries split between wind and solar procurement

- Considering the 13-industry groupings analyzed, eight have more solar procured than wind, and five have more wind procured than solar. All industries are procuring both wind and solar power.
- The energy sector has the highest percentage of total procurement coming from battery storage and has the most battery storage capacity contracted, 452 MW.
- The most wind dominant industries are consumer goods, financial/advisory, and retail.
- The most solar dominant industries include energy, automotive, and manufacturing.

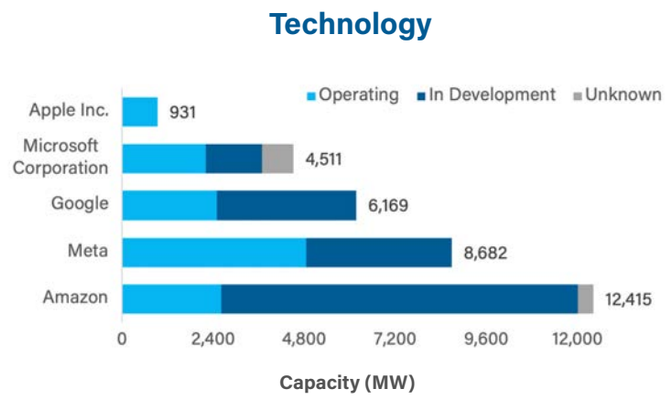


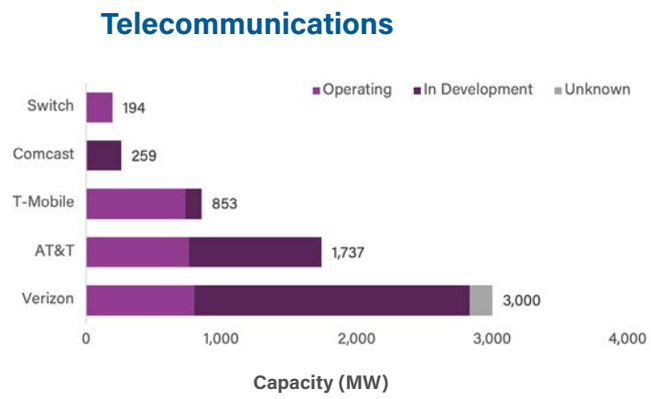
Technology Share of Clean Power Procurement, by Industry

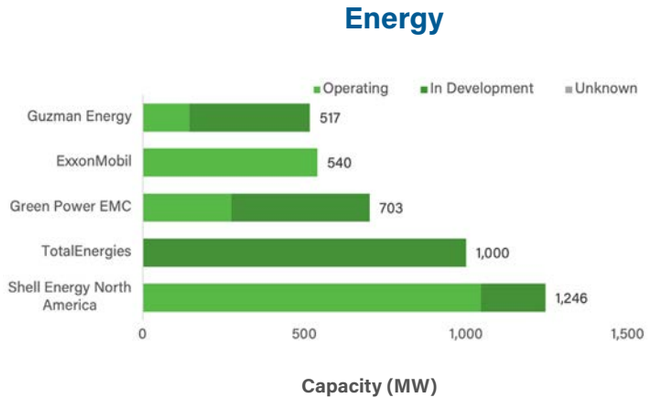


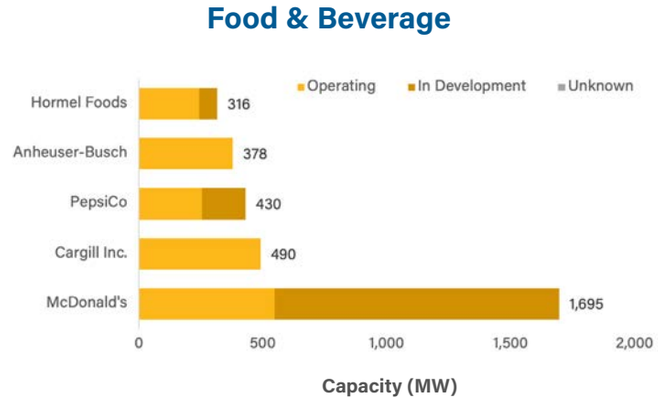
Clear leaders within top procuring industries

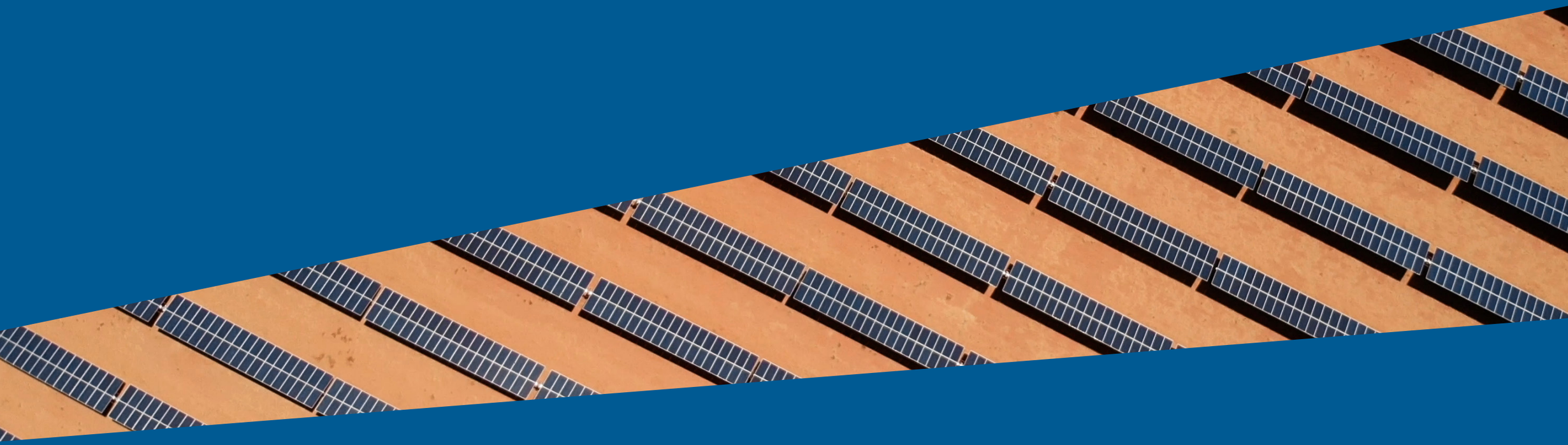
- **With nearly 12.4 GW procured Amazon leads the 25 technology companies buying clean power.** Amazon accounts for 34% of total procurement by technology companies. Meta follows with 8.7 GW of procurement activity announced, and Google ranks third with 6.2 GW procured.
- **35 energy companies announced 6.7 GW of clean power procurement between 2014 and 2022.** Shell contracted the most clean energy in that period, buying over 1.2 GW.
- **Within the telecommunications industry, nine companies have announced 6.3 GW of clean power procurement.** Verizon leads the industry with 3 GW procured, nearly 1.3 GW more than the next largest telecommunications purchaser, AT&T (1.7 GW). Together AT&T and Verizon are the only telecommunications companies with more than a gigawatt of clean power contracted.
- **A larger volume of food and beverage companies, 44, are procuring clean power within the U.S. McDonald's leads the charge with nearly 1.7 GW of capacity procured.** Cargill Inc. and PepsiCo rank second and third within the industry with 490 MW and 430 MW, respectively, of clean power capacity procured.











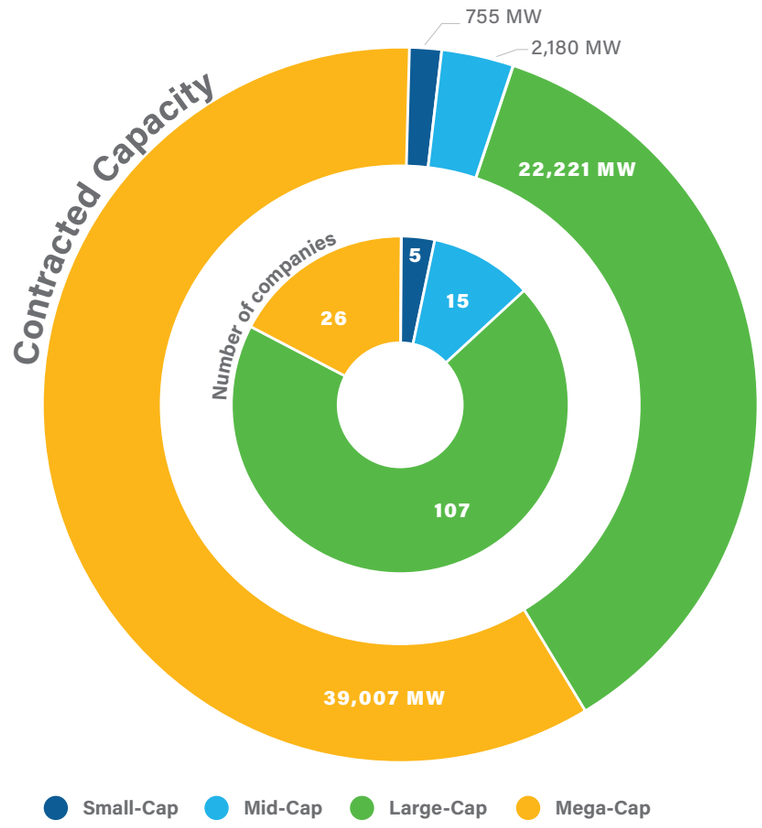
Breakdown by Business Size

Majority of corporate buyers in large market cap

Companies small and large are realizing the benefits of clean power. ACP utilizes the market capitalization or market cap to break down the sizes of companies contracting clean power. The market cap refers to the company's value determined by the stock market.

- **The majority of corporate buyers, 70%, fall in the large market cap ($10 billion to $200 billion).** 17% of corporate clean power buyers are in the mega-cap (more than $20 billion), and 10% are in the mid-cap ($2 billion to $10 billion).
- Only 3% are in the small market cap ($200 million to $2 billion). It is likely that many of the 173 companies ACP was not able to find data on fall into this market cap.
- While most companies are large-cap, the 26 mega-cap companies account for the majority of contracted capacity.

Contracted Capacity and Number of Companies by Market Cap



Footnote: Of the 326 companies buying clean energy in the U.S., ACP determined the market cap for 153 companies.

Mega-cap companies dominate contracted capacity

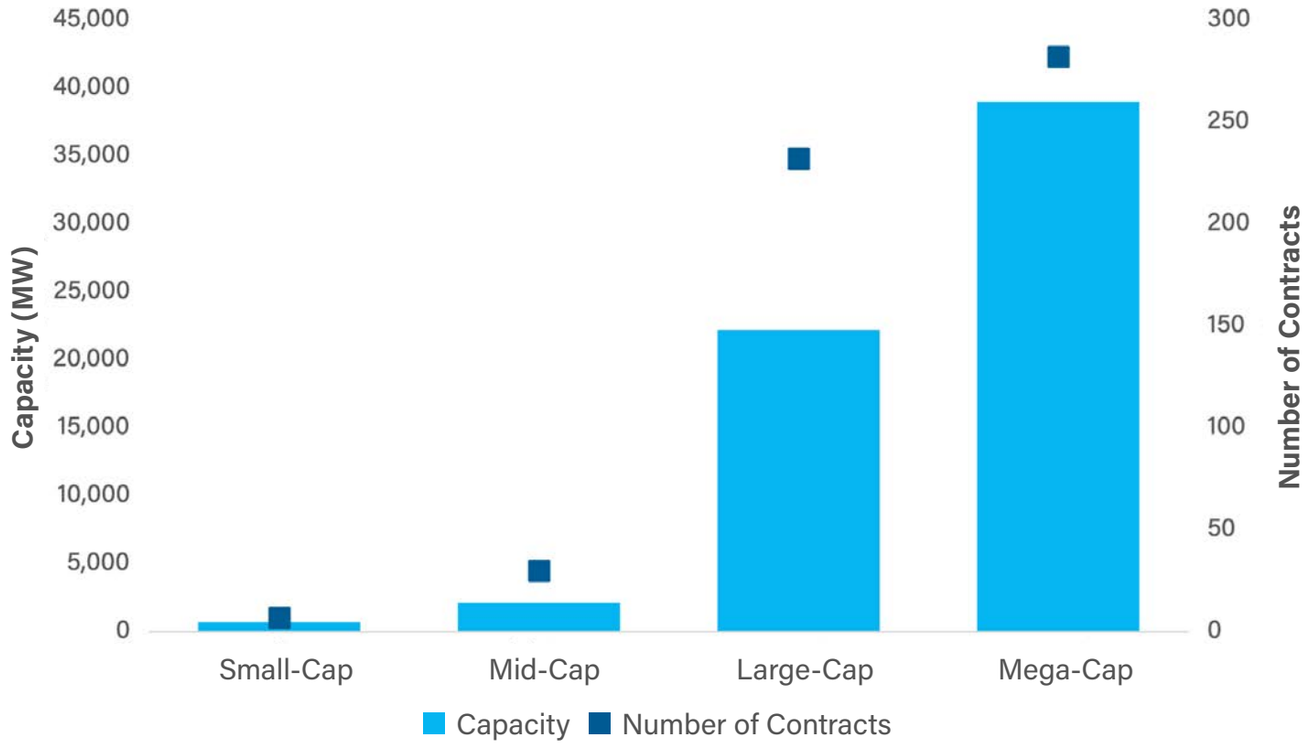
Mega-cap companies account for the majority of clean power contracted by corporate buyers. This creates space and opportunity in the market for smaller companies to start purchasing clean power.

- Businesses with known market caps account for 83% of total capacity contracted by corporate buyers.
- Companies in the mega-cap account for 61% of contracted capacity where the market cap is known, and companies in the large-cap account for 35% of contracted capacity.
- Companies in the small-cap account for only 1% of contracted capacity. This is likely an underestimate due to lack of data availability for companies in this size range.
- Larger companies tend to contract for larger capacities than smaller companies. The average contract size for companies in the mega-cap is 114 MW, compared to 31 MW to 73 MW for companies in the small and mid-caps.

61%

Mega-cap companies account for 61% of total contacted capacity where the market cap is known.

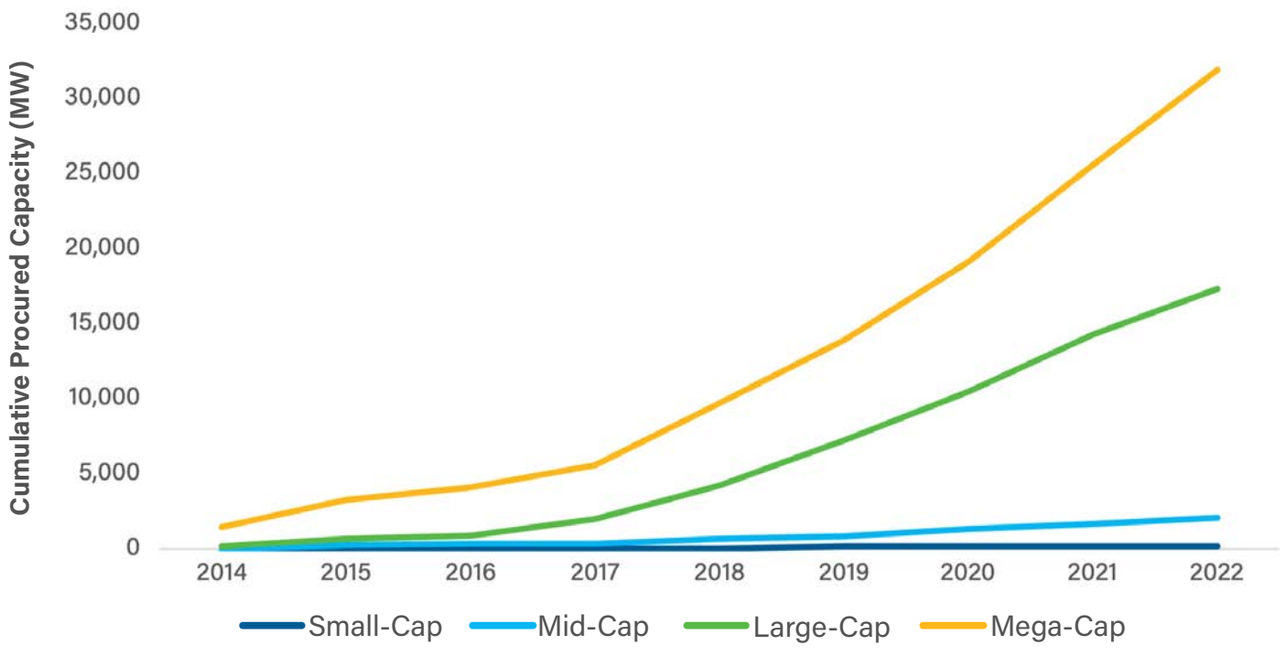
Total Contracted Capacity and Number of Companies by Market Cap



Large companies early adopters of clean energy

- Mega-cap companies were the first to announce clean power contracts and were not joined by large-cap companies until 2013.
- On average, mega-cap companies have increased their total contracted capacity by 66% each year since 2010. Within the past four years mega-cap companies have more than doubled their capacity contracted.
- Large-cap companies have rapidly increased their presence in the clean power buyer space. After starting with only 30 MW of contracted capacity announced in 2013, the group now has more than 17.3 GW of clean power procured. In 2022 alone large-cap companies announced over 5.6 GW of new clean power contracts.
- Mid-cap companies began procuring clean energy in 2015. While the growth rate of announcements for this group has been slower than mega and large-cap companies, mid-cap companies have surpassed 2 GW of contracted capacity.
- The last adopters to clean energy were small-cap companies, with the first offtake announcement not occurring until 2016. Through the end of 2022 small-cap companies have contracted more than 210 MW of clean power.

Cumulative Clean Power Procurement Over Time by Market Cap



Company Spotlight

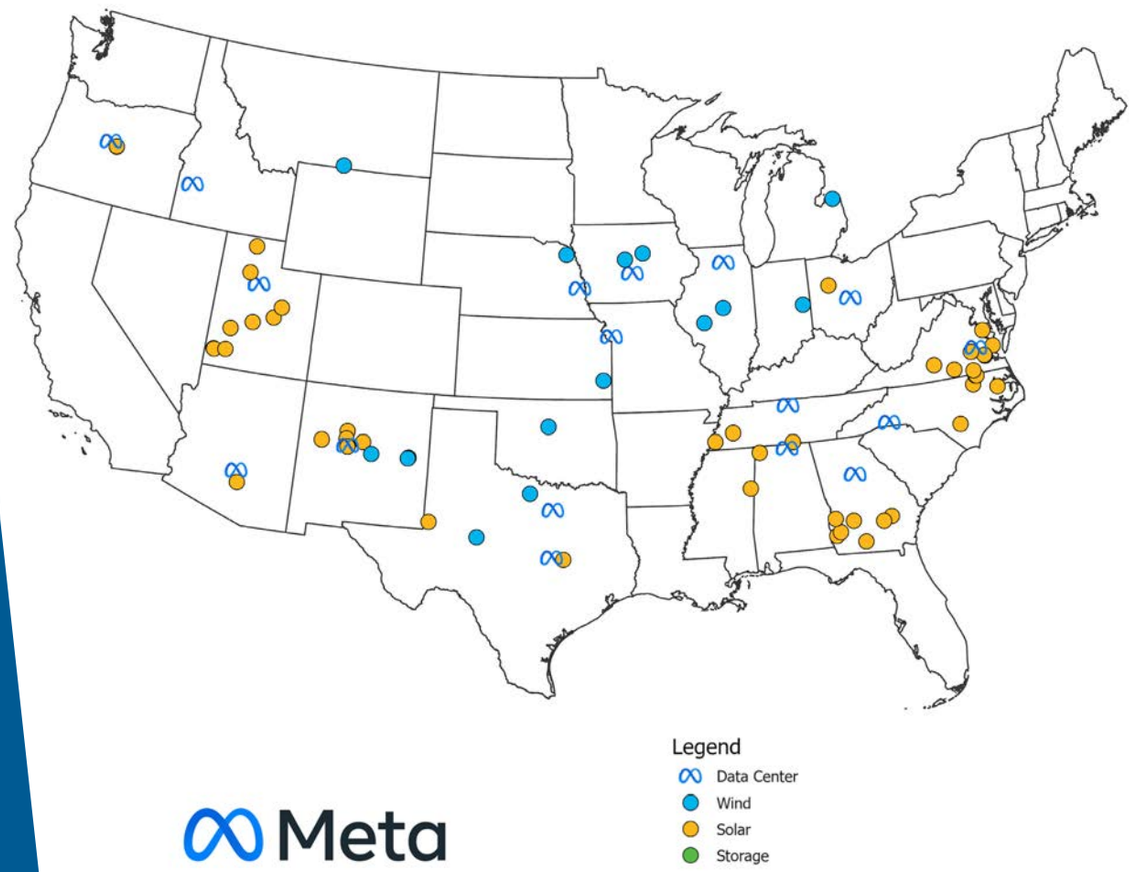
Meta

Meta, an early adopter of renewable energy, is one of the world's largest corporate buyers of clean power. The technology company was one of the first corporations in the U.S. to sign a long-term, large-scale contract for wind energy. Meta announced its first clean energy contract in 2013 and has progressed to announcing an average of 1.6 GW of renewable energy per year since 2018. In 2022, Meta announced 2 GW of new clean power offtake in the U.S. Today, Meta has procured nearly 8.7 GW of wind and solar energy in the U.S. spanning 22 states.

Meta's clean energy purchases are driven by a commitment the company made in 2017 to reduce their Scope 1 greenhouse gas emissions by 75% and to power its global operations with 100% renewable energy by the end of 2020, targeting the company's Scope 2 emissions. Meta achieved both goals in 2020 and in 2021 its renewable energy purchases exceeded its operating needs. Going forward, Meta is addressing Scope 3 emissions with the goal to achieve net-zero value chain emissions by 2030. They are doing so by engaging with suppliers to use less new materials in manufacturing hardware components and selecting construction materials with low-carbon footprint.

Meta's data centers account for the largest percentage of the company's energy use. When purchasing renewable energy, Meta has focused on selecting projects that operate on the same grids as their data centers and other operations. For example, Meta's Eagle Mountain Data Center in Utah is powered by solar energy from Graphite Solar, Horseshoe Solar, Rocket Solar, Appaloosa Solar, Rocket Solar, and Cove Mountain Solar, all Utah-based solar projects. All of Meta's data centers, with the exception of the Kuna Data Center currently under construction, are supported by neighboring clean power projects.

Meta Data Centers & Contracted Clean Power Projects



Footnote: The locations have not yet been announced for the four Tennessee and three Georgia projects for which Meta is contracting with Silicon Ranch.

RE100 Progress

AMERICAN CLEAN POWER

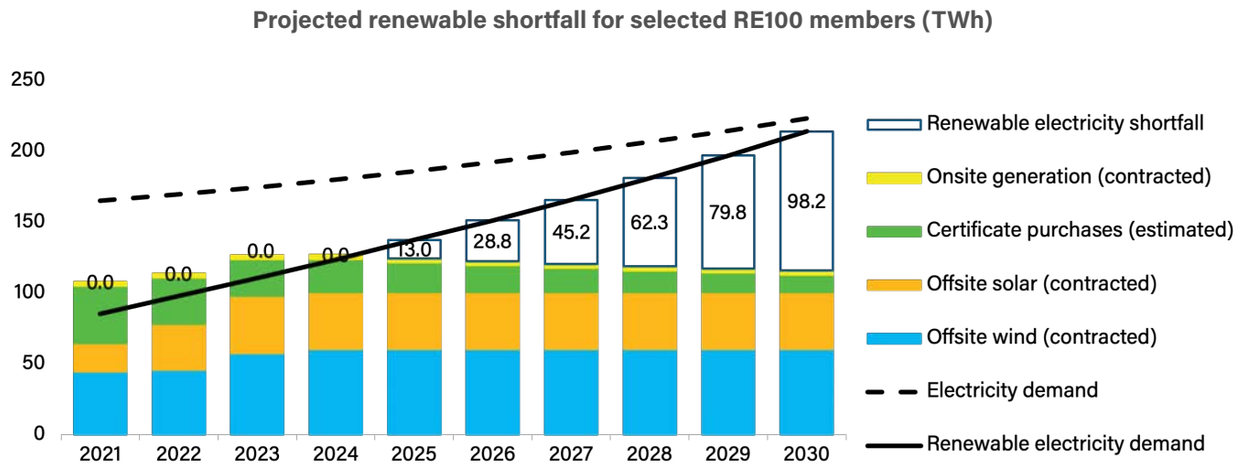
U.S. RE100 members need to ramp up procurement to achieve 100% renewable electricity

RE100 aims to bring together hundreds of large companies across the globe committed to 100% renewable electricity. Comprised of more than 380 members, 100 are headquartered in the U.S. and many more have operations in the U.S. All RE100 companies must commit to, at a minimum, achieving 60% renewable electricity by 2030, 90% by 2040, and 100% by 2050.

Most companies currently are far exceeding those minimum requirements. On average, RE100 members are targeting 2028 to achieve 100% renewable power, while 75% plan to reach 100% renewable electricity by 2030.[5] In 2021, 45% of reported electricity consumption from RE100 members was renewable, up from 41% in 2020.[6]

- According to data from BNEF, 37 U.S. companies that report data achieved 100% renewable electricity in 2021, though only eight are expected to be able to maintain it in 2022 without new renewable energy procurement.
- By 2030, BNEF estimates that only six RE100 companies reporting data in the U.S. — eBay, Fifth Third Bank, DaVita Kidney Care, Meta, Hewlett-Packard Co, and Steelcase — will still be able to maintain 100% renewable electricity without additional clean energy purchases or onsite generation. Companies currently achieving 100% renewable energy will need to make additional purchases to continue to meet that goal.
- Based on expected onsite and contracted renewable energy, BNEF estimates that, based on the current trajectory, U.S. RE100 members will need to procure 98.2 TWh of additional renewable energy to meet demand.

U.S. RE100 Member Renewable Electricity Supply and Demand, 2021-2030



Source: BloombergNEF, Bloomberg Terminal, The Climate Group, company sustainability reports

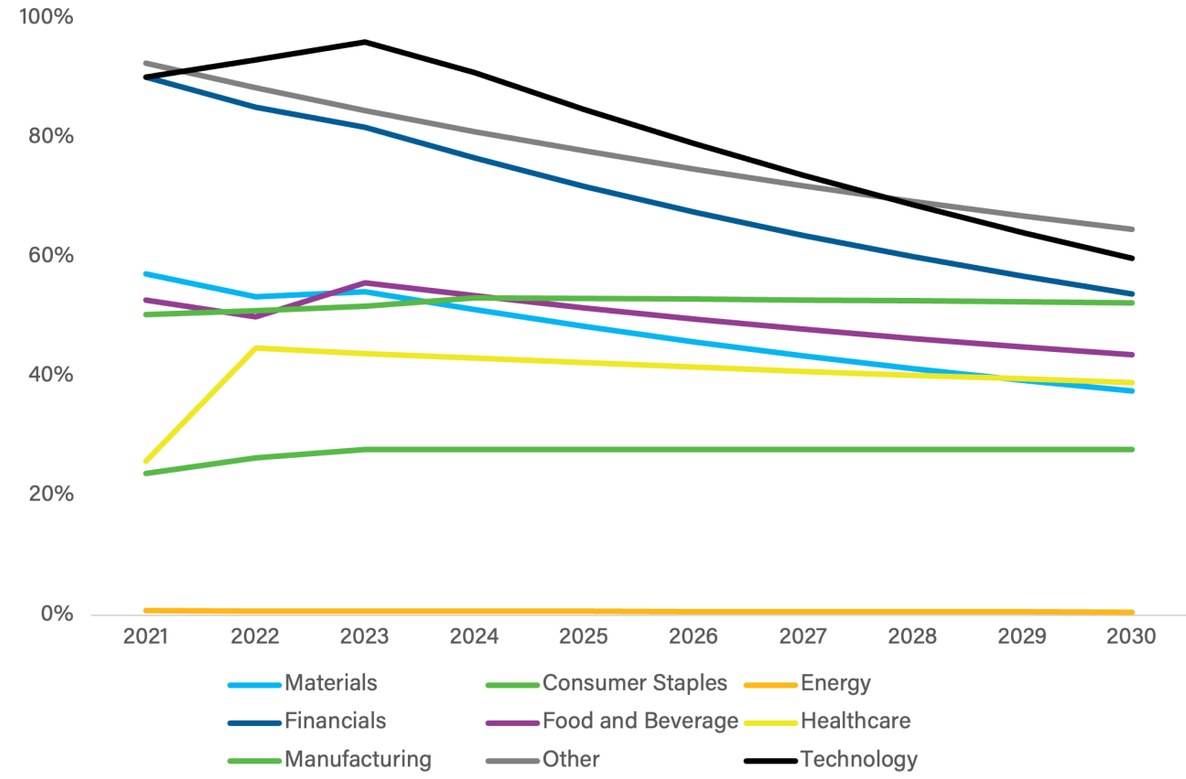
Note: Assumes no additional clean power procurement 2022–2030

Technology RE100 members producing the largest share of electricity with renewables

Corporations across the U.S. are striving to meet renewable energy goals, and many industries are close to achieving 100% renewable electricity. However, increasing energy demand will require C&Is to continue to procure high levels of clean energy to achieve 100% renewable electricity in the coming decade.

- The financial sector was closest to achieving 100% renewable electricity in 2021 at 91%. However, absent additional purchases, the industry will see a steady decline in the portion of electricity demand met by renewables, reaching a low of 54% by 2030. Financial companies will need to procure an additional 4.1 TWh of renewable energy to cover the remaining 46% of electricity demand.
- In 2021, U.S.-based RE100 members in the technology sector met 90% of their electricity demand with renewable energy. The industry, absent additional purchases, is expected to continue to increase the percent of electricity from renewables to a peak of 102% in 2023, then gradually drop to only 65% renewable by 2030. To keep up with growing energy demands, the industry will need to purchase an additional 39.2 TWh of renewable energy.
- This trend of the percentage of electricity demand met by renewables dropping over time is true across all industries except consumer staples, healthcare, and manufacturing, which are expected to experience modest increases. To avoid this attrition, corporations will have to increase clean power procurement and onsite generation to keep up with increasing electricity demand.

Renewables Share of Total Electricity by U.S. RE100 Members by Industry, 2021–2030



Source: BloombergNEF

Note: Assumes no additional clean power procurement 2023–2030

Company Spotlight

Verizon

Verizon is one of the leading corporate buyers of renewable energy in the U.S. Since 2019, the company has entered into 24 long-term renewable energy purchase agreements (REPAs), surpassing 3 gigawatts (GW) of contracted renewable energy capacity.

As one of the world's leading providers of technology and communications services, Verizon has set long-term and interim goals in support of renewable energy and the transition to a greener grid. By 2035, Verizon expects to achieve net zero emissions in its operations. In support of this goal, the company has two interim targets: By 2025, it expects to source or generate renewable energy equivalent to 50% of its total annual electricity usage; and by 2030, it expects to reduce absolute Scope 1 and 2 GHG emissions by 53% over a 2019 baseline. In addition to its net zero goal, Verizon expects to achieve a 40% reduction in its Scope 3 emissions from its value chain by 2035 over a 2019 baseline. By 2030, the company's solutions are also expected to help its customers avoid 20 million metric tons of CO_2e annually.

One of the ways Verizon is improving its energy efficiency across its networks is by migrating copper-based services to fiber technology. The company's fiber-delivered broadband services are at least 100 times more efficient on a kilowatt hour (kWh) per gigabyte basis than copper-delivered broadband services. Verizon is also maximizing energy efficiency through a variety of interventions targeting network cooling. By deploying smart cooling systems across a number of technical network facilities, the company optimizes the cooling system capacity and telecommunications equipment demand through AI and machine learning algorithms.

To help fund its renewable energy goals, Verizon has issued $4 billion in green bonds since 2019, making it one of the largest corporate green bond issuers in the U.S. The company has allocated nearly $3 billion of net proceeds, and intends to allocate the remaining net proceeds primarily to finance VPPAs for new renewable energy projects. The company's green bond program is integral to its efforts to meet its long-term operational net zero goal and interim renewable energy goal.

The company's actions towards renewable energy support Citizen Verizon, the company's responsible business plan for economic, environmental and social advancement.

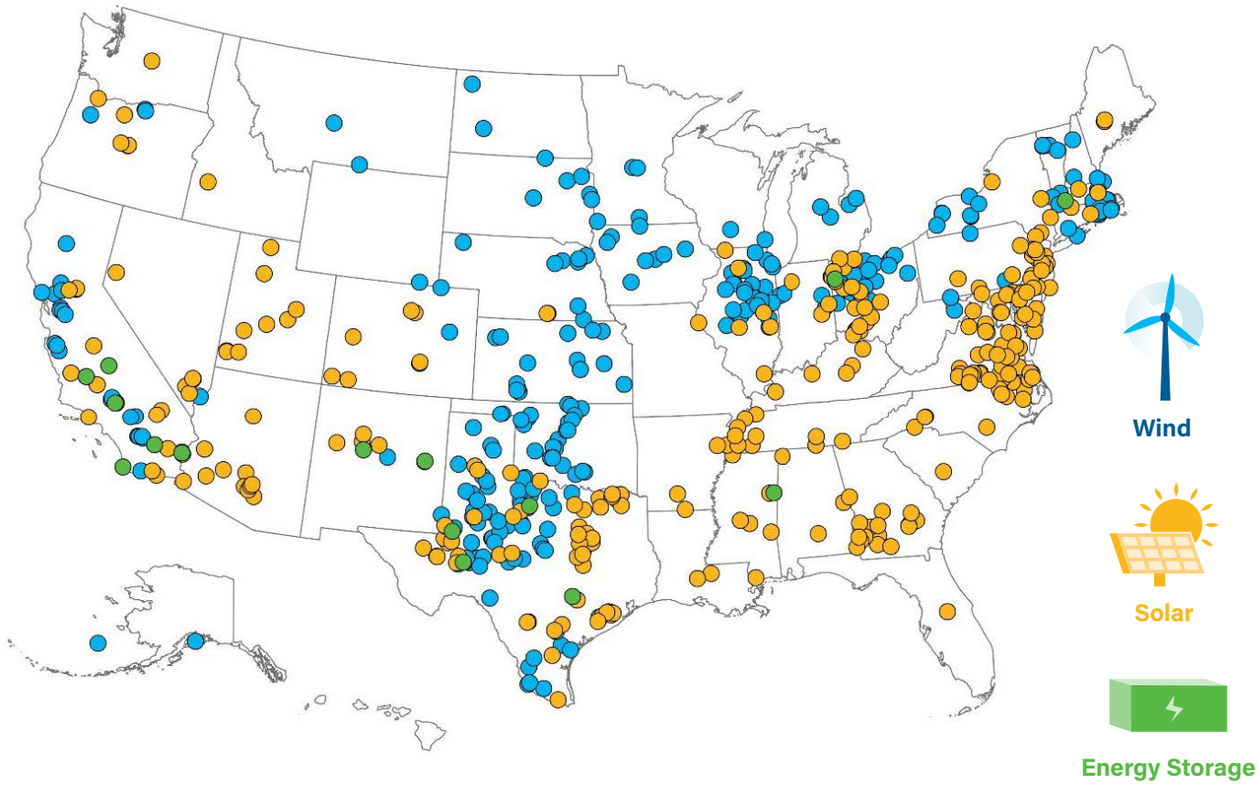
verizon

State Breakdown

Corporations are purchasing clean power all across the country

The portfolio of corporate contracted projects is widespread. Corporations are purchasing clean energy from 540 projects spread across 49 states, DC and Puerto Rico. **This means that communities across the nation are benefiting from clean power projects sited in their communities thanks in part to corporate buyers.**

Projects with a corporate buyer



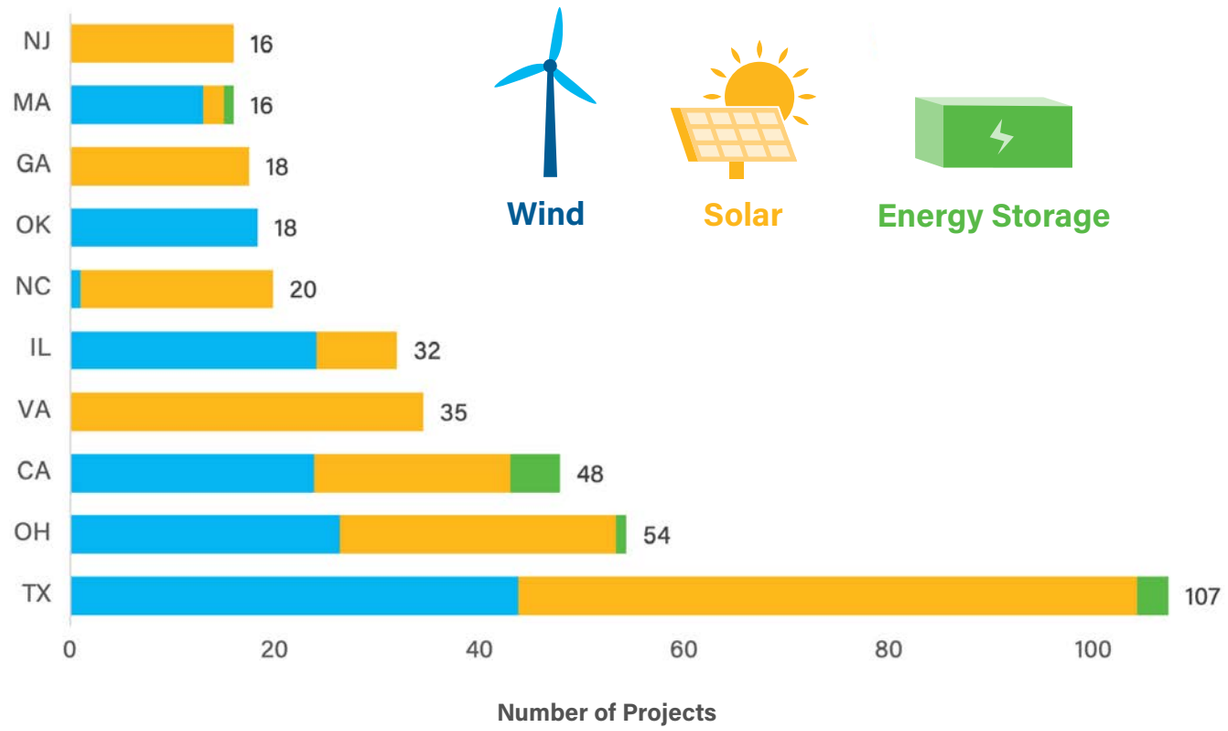
Note: ACP is unable to plot the locations of 24 projects

More than a third of contracted clean power located in Texas

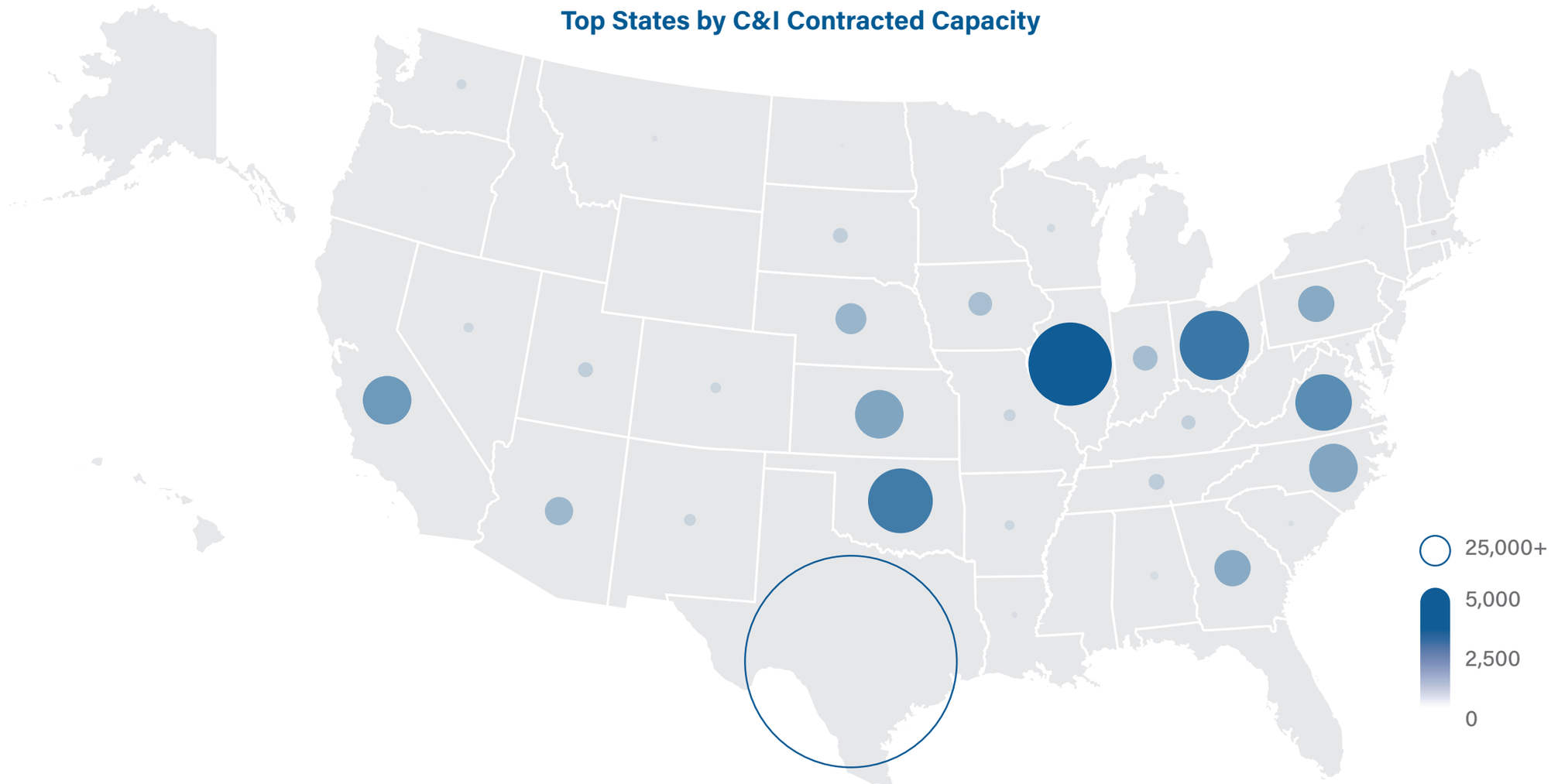
Thanks to virtual power purchase agreements, clean power projects don't always need to be located where companies are operating. However, there is an emerging trend of co-locating load and generation for corporate buyers.

- Texas is the dominant state for hosting clean power projects contracted to C&I buyers. Texas accounts for 35% of contracted capacity and 20% of projects. Corporate buyers are choosing Texas-based projects at a higher rate than developers are choosing to site projects in the state—just 21% of all clean power capacity online or in development is located in Texas.
- Corporate buyers have contracted with 107 clean power projects in Texas for a total capacity of 27 GW. Illinois ranks second with 32 projects contracted for 5.1 GW of offtake.
- 37 states have 100 MW or more contracted to corporate buyers, 27 have 500 MW or more contracted, and 17 have more than 1 GW of clean power contracted.
- There are numerous factors that determine what state a corporation chooses to source its clean power. As noted, corporations are tending to purchase power from projects located near load centers, such as data centers or offices. Additionally, the PPA prices in different states can be another driving factor. For instance, as noted by LevelTen Energy, ERCOT has some of lowest solar and wind corporate PPA prices.

Top States by Number of C&I Contracted Projects



More than a third of contracted clean power located in Texas
(continued)

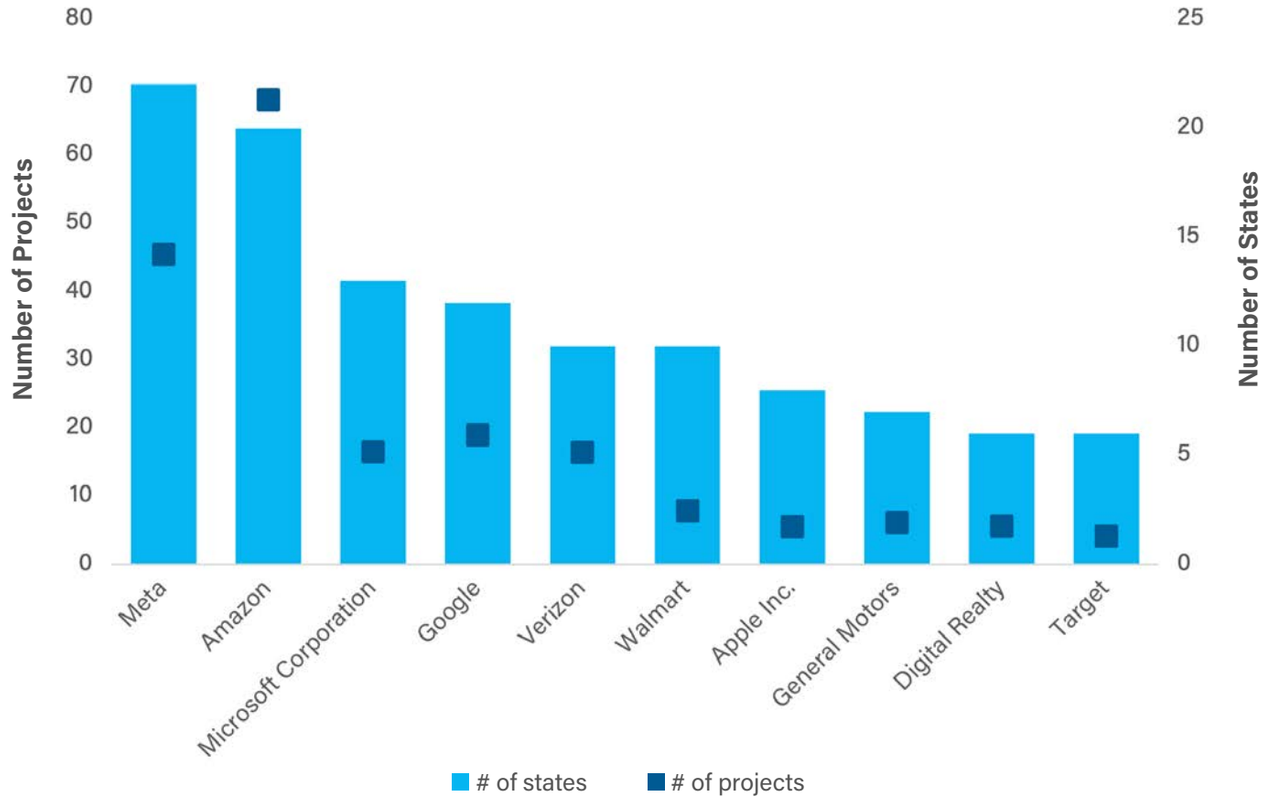


Meta, the most geographically diverse purchaser

Corporations often choose to contract with clean power projects close to where their offices, warehouses, or other operations are located. Because of the expansive geographic footprint of some corporations, many have clean power portfolios spanning multiple states.

- With contracts spanning 22 states, Meta has the most geographically diverse clean power portfolio. Meta has data centers in 16 states, necessitating contracts with projects all over the country to supply each data center with clean power.
- Amazon, despite having a larger number of contracts, is slightly less geographically diverse with projects spanning 20 states.
- Google, Microsoft, Verizon, and Walmart are the only other companies with clean power contracts in ten or more states.
- In total, ten companies have contracts in place in 5 or more states, and 262 have contracts located in only one state.

Corporate Buyers with the Most Geographically Diverse Purchase Footprint



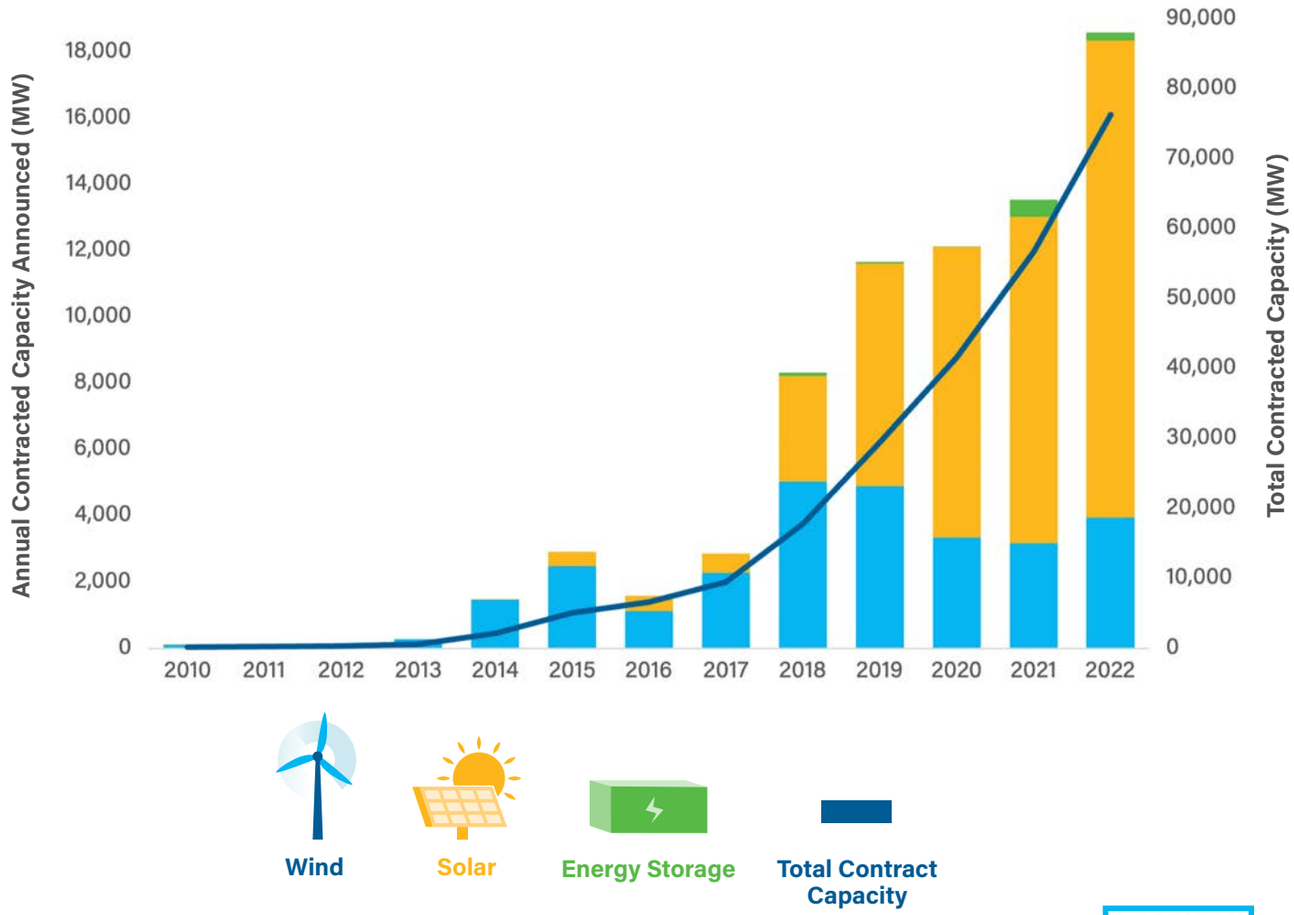
Corporate Offtake Trends Over Time

Rapid growth in corporate clean power procurement

Procurement of clean energy by U.S. corporations has increased rapidly over the past decade. Between 2012 and 2022, corporate buyers of clean power increased total procured capacity by an average of 73% each year. Annual capacity announced has increased by an average of 25% each year between 2019 and 2022.

- In 2022, corporate buyers have announced a record 19.6 GW of clean power purchases, more than 4 GW higher than any other year.
- Wind was the technology of choice for corporate buyers of clean power through 2018, accounting for more than 95% of announcements from 2010 to 2014, then falling to 60% in 2018. Starting in 2015 solar began to account for an increasing percentage of announcements starting at 15% and climbing to 73% in 2022. Solar surpassed wind to make up 58% of announced capacity in 2019.

Corporate Clean Power Procurement by Announcement Year



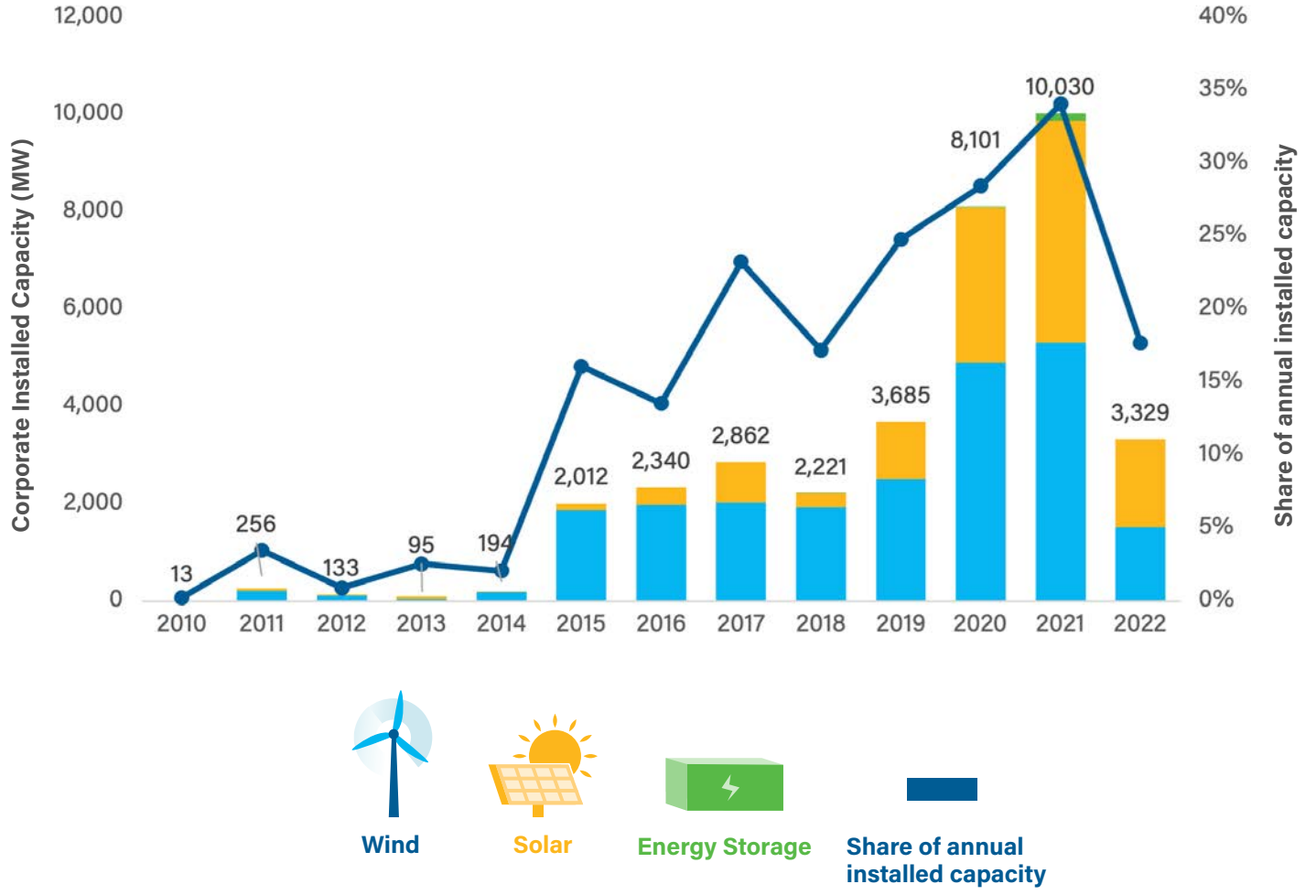
Note: ACP is unable to determine the announcement year for 1,073 MW of corporate contracted capacity

C&Is account for 16% of operating clean power in the U.S.

Corporate demand for clean and sustainable energy to to power their operations is a key driver in wind, solar, and battery storage development.

- C&I customers have contracts in place with 36 GW of the more than 220 GW of operating clean power capacity. That means 16% of clean power is flowing to corporate buyers as of the end of 2022.
- The share of annual installed capacity with a corporate buyer has increased significantly over time, representing less than 1% of installed capacity in 2010, and increasing to a peak of 34% in 2021. In 2022 18% of installed capacity has a corporate buyer.
- Clean power installations in 2022 have been slow, down approximately 35% compared to 2021. The share of installed capacity contracted by C&Is is also low, 18% compared to approximately 30% over the past few years. In 2022, a large volume of projects have experienced delays, including many with a corporate buyer. Despite the slowed installations, the growing pipeline of corporate contracted projects ensures that the share of operating capacity procured by corporate buyers will continue to grow.

Installed Capacity by Year with a Corporate Buyer



PPAs dominant offtake mechanism

There are numerous offtake mechanisms for corporate buyers from which to choose. Power purchase agreements (PPAs) are the most popular, accounting for 80% of total contracted clean power offtake by corporations. Within PPAs, virtual PPAs are most prevalent.

- Green tariffs, under which a utility will supply an organization with clean power owned or contracted by the utility, make up 12% of corporate contracted clean power. Green tariffs are becoming increasingly popular, with an average of 1.6 GW announced annually between 2019 and 2022.
- Corporations tend to favor PPAs more than the broader clean power buyer and owner market. ACP's Q3 2022 Clean Power Quarterly Market Report found that 47% of capacity brought online in 2022 has a PPA in place.

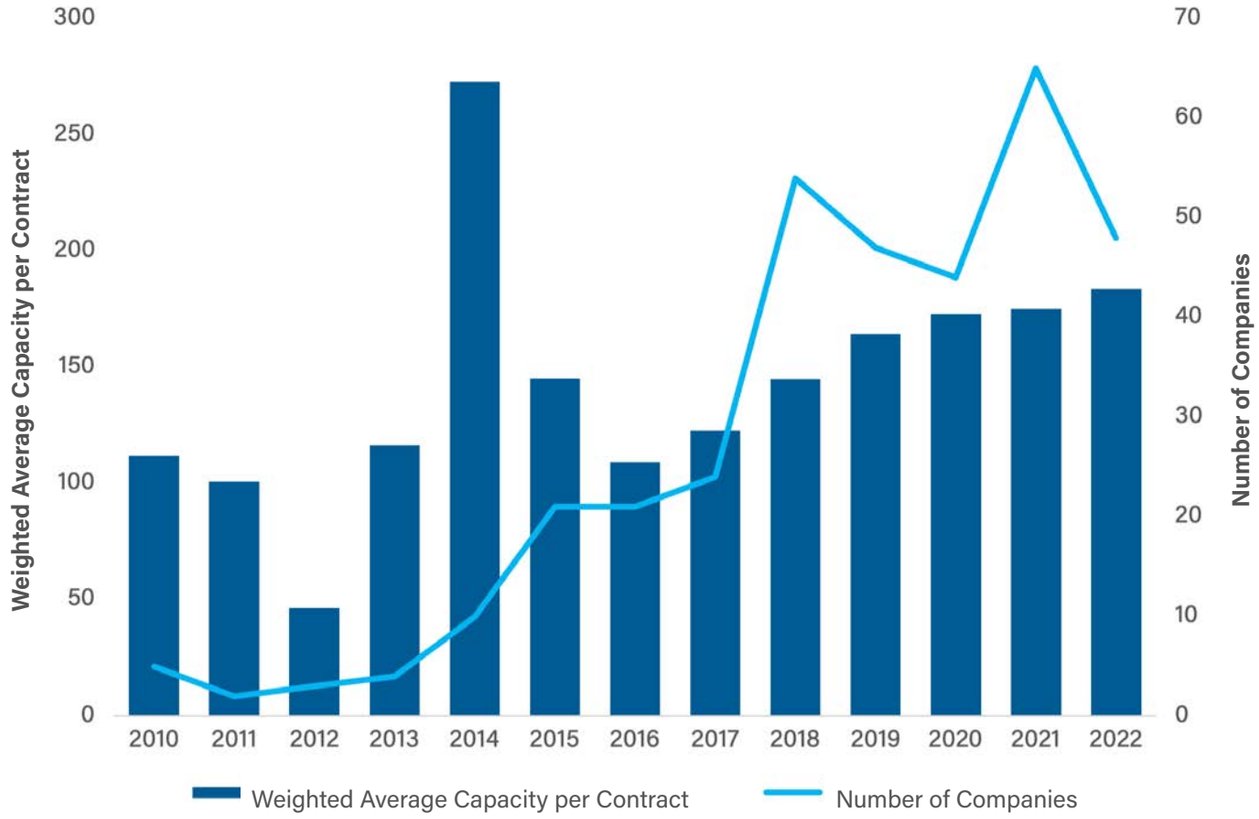
Corporate Clean Power Offtake by Offtake Type Over Time

Average contracted capacity up 295% since 2012

The number of companies in the clean power market has been gradually increasing over the past two decades. Back in 2010, only five companies announced clean power offtake. Fast forward to 2021 and the number peaked at 65 companies signing deals that year.

- With some fluctuations, the number of companies announcing new PPAs has increased by an average of 35% annually between 2010 and 2022.
- In 2022, despite a record year for procured capacity announced, only 48 companies announced clean power procurement, a 26% decrease from the high achieved in 2021. Consequently, the average capacity per contract in 2022 is the highest since 2014.
- Between 2017 and 2022, the average capacity per contract has been on a steady rise, despite a slight drop in 2021, increasing 50% over that time.
- The average capacity per contract spikes in 2014 due to Google's 495 MW announcement for Highland I Wind and Mars Inc's 211 MW announcement for Mesquite Creek wind. Without those projects, the average capacity per contract in 2014 would be 93 MW.

Number of Companies and Average Capacity Contracted



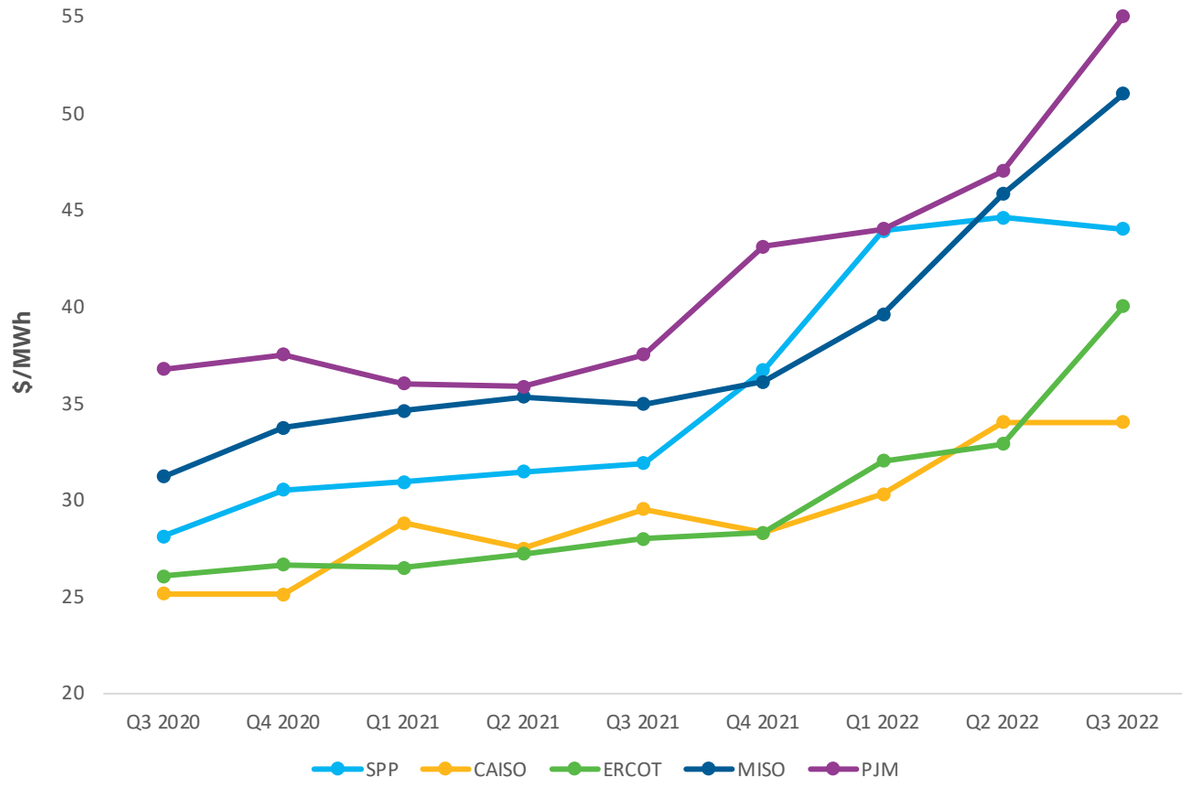
Corporate PPA Pricing

AMERICAN CLEAN POWER

Solar PPA prices increase 30% year-over-year

- Each quarter, LevelTen Energy reports corporate PPA price trends for wind and solar projects. According to the LevelTen Energy Q3 2022 report, the corporate solar PPA national index price is now $42.21 per MWh, an 8% increase since the second quarter, and a 30% increase since last year.
- Compared to the second quarter of 2022, ERCOT experienced the highest PPA price increase of 22%, followed by PJM at 17%.
- Annually, SPP experienced the most significant price increase, 28%. Notably, SPP was the only region to have a slight decline in the third quarter, a 1% drop compared to the second quarter.
- Corporate solar PPA prices in PJM have consistently been the highest over the past two years, though prices in MISO are rising to a similar level.
- ERCOT and CAISO consistently have the lowest PPA prices, due to high solar volumes operating and in development within both regions.

Solar PPA Prices, Q3 2020 – Q3 2022

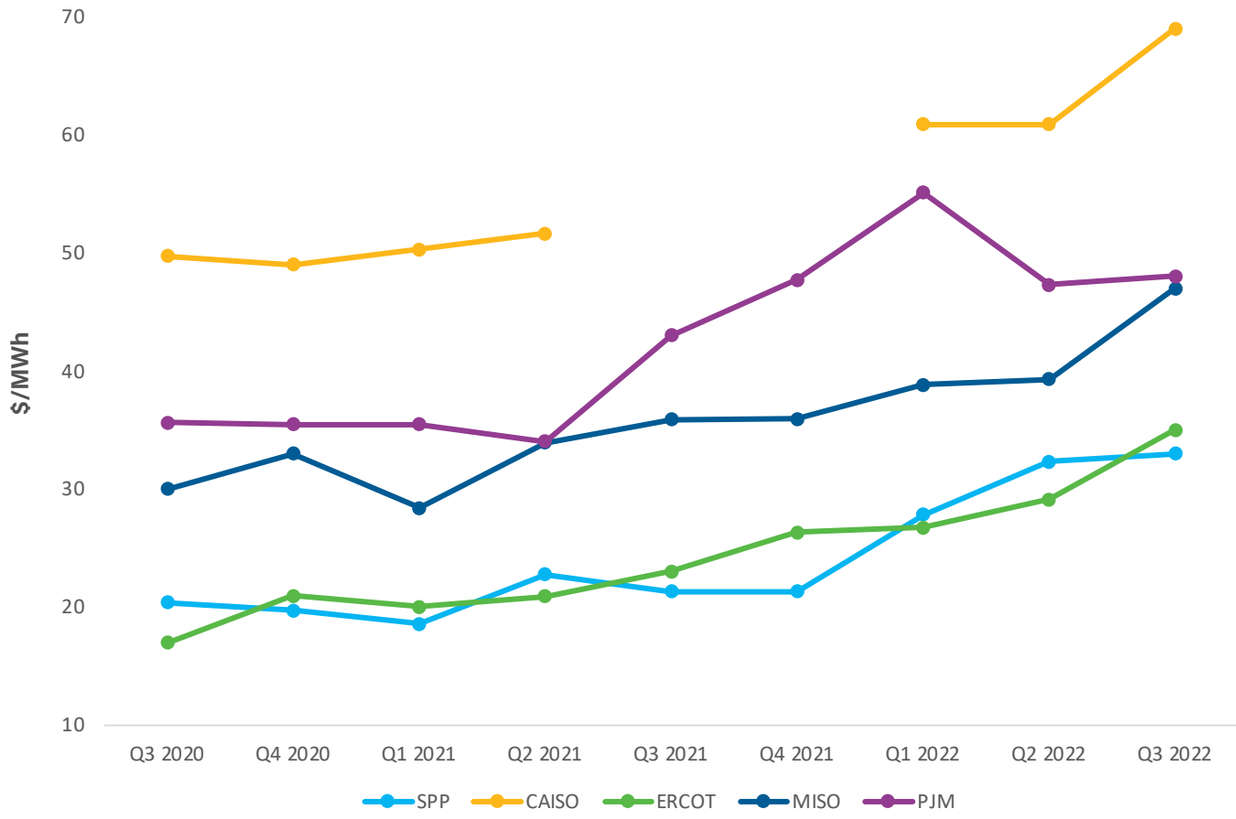


Source: LevelTen Energy Q4 2022 report not yet available at the time of this report release.

Wind PPA prices increase 37% year-over-year

- At $49.66/MWh, national average corporate wind PPA prices have increased 11% since the second quarter of 2022, and 37% year-over-year.
- SPP experienced the highest annual increase in wind PPA pricing, 55%, but the second lowest quarterly increase at only 2%.
- Wind prices in PJM continue to moderate, increasing just 1% in the third quarter. Since the beginning of the year, wind prices in PJM have fallen 13% from a high of $55.10/MWh.
- SPP and ERCOT consistently have the lowest price for corporate wind PPAs. CAISO is the highest priced market.
- Despite rising wind and solar prices, both remain attractive options to corporate buyers due to high wholesale prices. While most corporations don't purchase electricity in the wholesale market, higher wholesale prices are ultimately reflected on their utility bill. Additionally, corporations still need to meet renewable energy goals, so are more motivated to sign PPA contracts, even at higher prices.

Wind PPA Prices, Q3 2020 – Q3 2022



Source: LevelTen Energy

Company Spotlight

Amazon

Amazon procured an impressive 12.4 GW of clean power in the U.S. as of 2022, establishing itself as a dominant leader in corporate clean power procurement. Amazon first announced clean power contracts in 2015 and has since progressed to announcing an average of more than one GW per year between 2019 and 2021. In 2022 alone, Amazon announced 5.3 GW of new clean power offtake in the U.S. Once fully operational, the global renewable energy portfolio will generate 50,000 gigawatt hours (GWh) of clean energy, which is the equivalent amount of electricity needed to power 4.6 million US homes each year.

In April of 2022, Amazon reported that the company is on track to meet its 100% clean energy goal five years ahead of its original 2030 target. On that date, Amazon announced its largest procurement of clean energy to date, 3.5 GW from 37 renewable energy projects spread across 19 countries. Of that, 23 projects with a total capacity of 3.2 GW are based in the United States.

Amazon's CEO Andy Jassy is quoted as saying, *"Our commitment to protecting the planet and limiting Amazon's impact on the environment has led us to become the largest corporate buyer of renewable energy in the world in both 2020 and 2021. Given the growth of our business, and our mission to run 100% of Amazon's operations on renewable energy, we aren't slowing our renewable investments down."*[8]

In September of 2022, Amazon made further progress towards that commitment by announcing another 2 GW of clean power contracts in the U.S.

Amazon co-founded The Climate Pledge in 2019 and was the first company to sign it. Under The Climate Pledge, companies commit to reaching net-zero carbon emissions by 2040 – 10 years ahead of the Paris Agreement.[9] According to reporting by Amazon, in 2021 the company achieved 85% renewable energy across the business globally. Renewable energy is used to supply electricity to a variety of Amazons facilities, including corporate offices, fulfillment centers, data centers, and physical stores.[10]

Community Benefits

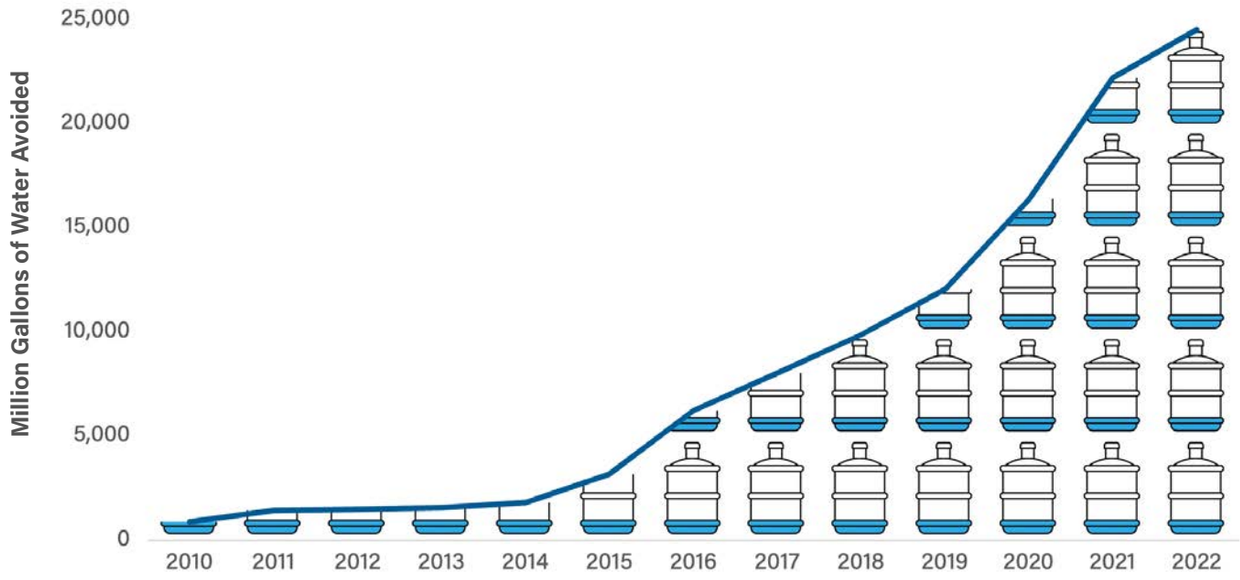
AMERICAN CLEAN POWER

Nearly 47 million metric tons of emissions avoided

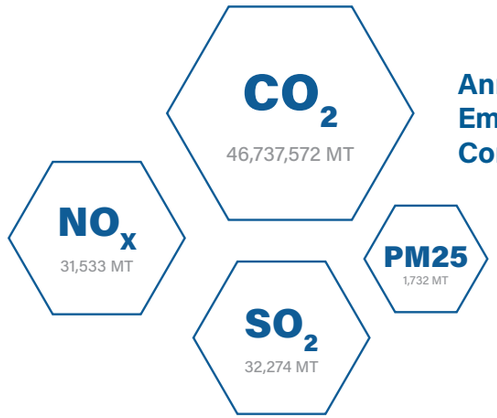
Wind and solar power produce zero CO_2 emissions, the greenhouse gas primarily responsible for climate change. Therefore, clean power technologies are critical parts of reducing greenhouse gas emissions and combating climate change.

- A typical wind project repays its carbon footprint in approximately six months, providing decades of emissions free energy.[11]
- The carbon footprint of a typical solar plant is 11x smaller than a natural gas plant, and 23x smaller than a coal plant.[12]
- Clean power projects operating as of the end of 2022 with a corporate buyer in place avoid emitting nearly 47 million metric tons of carbon dioxide per year. This is equivalent to the emissions from 10 million gasoline-powered passenger vehicles driven for one year.
- Additionally, operating clean power projects with a corporate buyer avoid 32,000 metric tons of nitrogen oxides, 32,000 metric tons of sulfur oxides, and 1,700 metric tons of PM25 from being emitted into the atmosphere. This translates to improved air quality and healthier communities.
- Clean power also saves water because it does not require cooling like conventional power plants. Corporate contracted clean power saves nearly 25 billion gallons of water, equivalent to over 3 billion 16oz water bottles.

Millions of Gallons of Water Saved by Corporate Contracted Projects



Annual Metric Tons of Emissions Avoided by Corporate Contracted Projects



Clean power supports taxes and investment in local communities

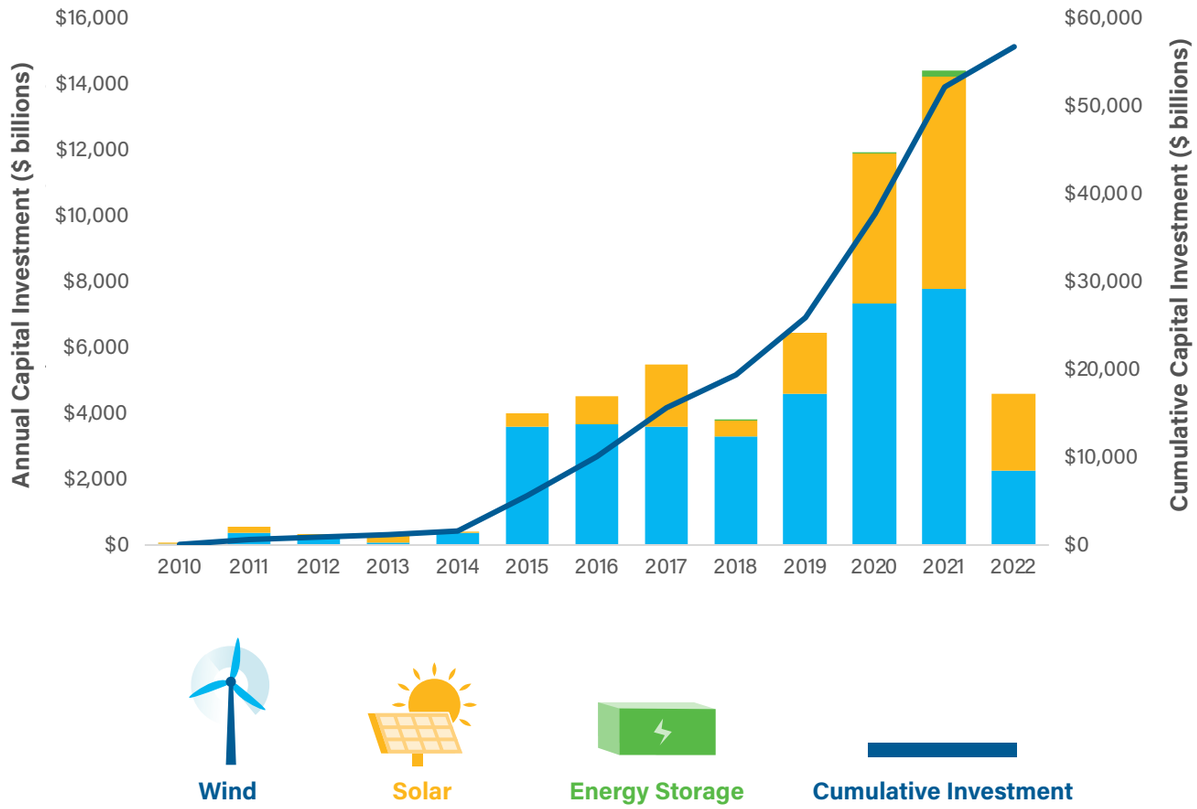
Clean power projects play an important role in supporting local communities via capital investment, job creation, tax payments, and lease payments to landowners.

- Corporate buyers are purchasing 36 GW of operating clean power in the U.S. Those projects represent $55 billion in capital investment. Annual capital investment has increased rapidly over time, reaching a record $14.4 billion in 2021. Investment in clean energy is an important driver of economic development, particularly in rural areas.
- Annually wind, solar, and battery storage projects supplying corporate buyers deliver an estimated $290 million in localized payments, including $143 million in state and local tax payments, and $147 million in land lease payments. Land lease payments provide a reliable income source for landowners, while state and local tax payments go towards funding everything from road maintenance to local schools.[13]
- Corporate backed clean energy projects impact communities in more ways than just taxes and lease payments. For example, Microsoft's solar PPA with Volt Energy includes investment in environmental justice-focused community impact funding initiatives.[14]

$147 million
in land lease payments

$143 million
in state & local taxes

Annual and Cumulative Capital Investment



Endnotes

1 ACP is not able to determine the technology for 2,526 MW of contracted clean power.

2 Based on a 2021 Tesla Model 3 with a standard-range battery rating of 24 kWh/100 miles.

3 ACP is not able to determine the technology for 2,526 MW of contracted clean power.

4 ACP is unable to determine the announcement date of 651 MW of contracted solar capacity.

5 RE100 Annual Report 2020. Available at https://www.there100.org/growing-renewable-power-companies-seizing-leadership-opportunities.

6 RE100 2021 Annual Disclosure Report. Available at https://www.there100.org/stepping-re100-gathers-speed-challenging-markets.

7 U.S.-based RE100 members in the broad "other" category were the closest to achieving 100% renewable electricity in 2021. Technology companies achieved the highest share of the eight defined industries.

8 Amazon. Amazon extends position as world's largest corporate buyer of renewable energy. April 20, 2022. Available at https://www.aboutamazon.com/news/sustainability/amazon-extends-position-as-worlds-largest-corporate-buyer-of-renewable-energy.

9 Amazon. The Climate Pledge. Available at https://sustainability.aboutamazon.com/environment/the-climate-pledge.

10 Amazon Sustainability. Available at https://sustainability.aboutamazon.com/environment/renewable-energy?energyType=true.

11 GWEC's Global Wind Report 2021 states that the carbon emissions payback period for a wind project is between 5.4 and 7.8 months depending on the project size.

12 NREL. September 2021. Life Cycle Greenhouse Gas Emissions from Electricity Generation: Update.

13 Land lease and state and local tax payments are estimated based on a survey of ACP members' projects.

14 Solar Power World. Microsoft enters 250-MW solar power PPA with Volt Energy that includes environmental justice donations. July 14, 2021. https://www.solarpowerworldonline.com/2021/07/microsoft-volt-energy-solar-ppa-environmental-justice-initiative.

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