



SOLAR MEANS BUSINESS

2024
REPORT



Photo: Prologis

About SEIA



The Solar Energy Industries Association® (SEIA) is leading the transformation to a clean energy economy, creating the framework for solar to achieve 30% of U.S. electricity generation by 2030. SEIA works with its 1,200 member companies and other strategic partners to fight for policies that create jobs in every community and shape fair market rules that promote competition and the growth of reliable, low-cost solar power. Founded in 1974, SEIA is the national trade association for the solar and solar + storage industries, building a comprehensive vision for the Solar+ Decade through research, education and advocacy.

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About this Report

Solar Means Business tracks U.S. solar photovoltaic (PV) installations that support commercial activities at U.S. facilities.

The report focuses on America's largest companies but includes available data for companies of all sizes. Systems can be located on-site and provide electricity to the facility directly, or off-site and offset grid electricity costs for a company through Virtual Net Metering, Physical and Virtual Power Purchase Agreements (PPA), Green Tariffs or similar arrangements. Both company-owned and third party-owned (PPA or lease) systems are included.

All projects included involve the direct purchase of electricity from a specific installation. Arrangements in which the commercial buyer is only purchasing Renewable Energy Credits (RECs) from a project, or the commercial entity is a Tax Equity investor on the project without consuming electricity from the project are not included.

The rankings in this report represent systems operating by the end of Mar 2024.

All solar capacity data in this report are presented in watts (W), kilowatts (kW), megawatts (MW) or gigawatts (GW) direct current (DC). The storage capacity data presented in alternating current (AC) are labeled as such in the report.

This is the 10th edition of this report and the first since 2022. You can find previous versions at solarmeansbusiness.com.

This report does not capture data on every commercial solar installation in the U.S., but every attempt has been made to ensure that the solar portfolios of America's largest corporate users are accurately represented.

Rankings and analysis are derived from a variety of sources:

- Directly from the system owners or hosts
- From installers, with permission of system owners or hosts
- From publicly available data sources such as state regulatory bodies, press reports and research reports

All data in this report can be cited to SEIA Solar Means Business 2024, unless otherwise noted.

Companies interested in submitting data for future editions of this report should visit solarmeansbusiness.com to download a project submission form.

Introduction

For well over a decade, corporations large and small have been critical to the growth and advancement of the U.S. solar industry. Currently, corporate procurement represents over 18% of total U.S. solar capacity, and 20% of all installations in 2023 had a corporate offtaker. These businesses are a cornerstone of renewable energy demand in the United States and are driving new deployments, creating new energy demand, and shaping the U.S. energy transition.

Over the last decade, the solar procurement landscape for large corporations has seen market expansion from small-scale rooftop systems to include larger on-site arrays and power purchase agreements (PPAs) with off-site utility scale projects. Today, companies are taking a more and more sophisticated and diversified approach. Individual companies are tailoring their procurement strategy to their specific needs to hit both carbon reduction goals and achieve energy resilience. Companies continue to install on-site solar, sign off-site PPAs, and procure renewable energy credits (RECs), but show increasing interest in community solar, becoming tax equity investors, building microgrids, and investing heavily into battery storage. As more innovative procurement mechanisms gain ground, more companies will have the opportunity and incentive to make solar a cornerstone of their power supply.

Expectations of increased electricity demand and other inflationary pressures have companies looking for ways to secure affordable energy supplies. Creating resilience and price certainty for themselves through on-site generation or locked in energy procurement drives down risk creating more long-term security and stability. In this report we explore the top companies for solar procurement, as well as for on-site, off-site, battery storage, and which firms have the largest pipeline of projects to build.

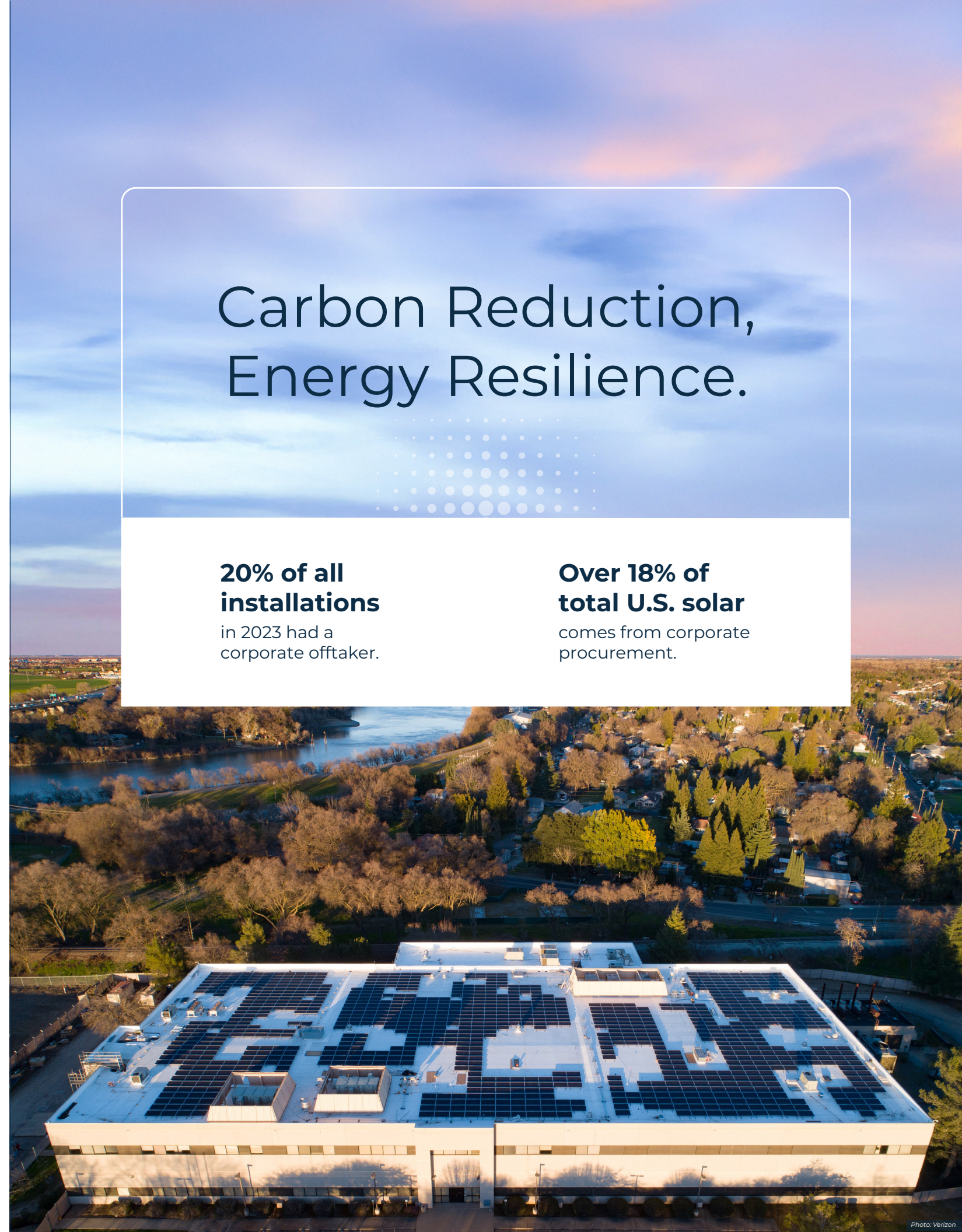
Carbon Reduction, Energy Resilience.

**20% of all
installations**

in 2023 had a
corporate offtaker.

**Over 18% of
total U.S. solar**

comes from corporate
procurement.



Overall Rankings

When the Solar Means Business (SMB) report was published in 2019, no corporation had more than 400 MWdc of installed solar capacity. The top ten companies accounted for 2.3 GW of installed solar. Now **the top 10 corporations account for 16.8 GW, roughly the same installed solar capacity as the state of Florida**, the #3 state in the country for cumulative solar capacity.

Through Q1 of 2024, Meta has procured more than 5.1 GW¹ of solar capacity in the United States, growing by more than 1.5 GW since their #1 ranking in 2022. Amazon, Google, and Apple come in at #2, #3, #4 respectively, and, along with Meta, make up the four corporations with more than 1.0 GW of cumulative solar capacity. Google has made the largest jump in the SMB rankings moving from the #23 spot in 2022 to #3 spot today. This is in part due to Google focusing more heavily on wind during the earlier part of its renewable energy strategy and now diversifying into solar and building its battery storage portfolio.

These four tech giants have dominated the U.S. corporate solar installation rankings for the past several years. As the use of artificial intelligence (AI) grows, tech giants are building large data centers to meet the demand of new technologies. With that comes a massive increase in energy demand to power those data centers. After remaining flat in recent years, research groups have forecasted that U.S. electricity demand is expected to rise 5-10% total over the next five years, faster than it has in decades.²

¹ Conversions between MWac and MWdc were made using publicly available data and industry averages. Unless otherwise noted, all capacity units in this report are in watts direct-current (Wdc)

² The Era of Flat Power Demand is Over, Grid Strategies, 2023. <https://gridstrategiesllc.com/wp-content/uploads/2023/12/National-Load-Growth-Report-2023.pdf>

Meta
5,177 MWdc



Adding new solar energy to the grid is a critical aspect of our approach to ensuring our data centers are supported by clean and renewable energy. We're thrilled to rank number one for corporate solar procurement in SEIA's report this year.

—Carolyn Campbell
Head of Clean and Renewable Energy, East, at Meta

amazon
4,668 MWdc

Google
2,595 MWdc

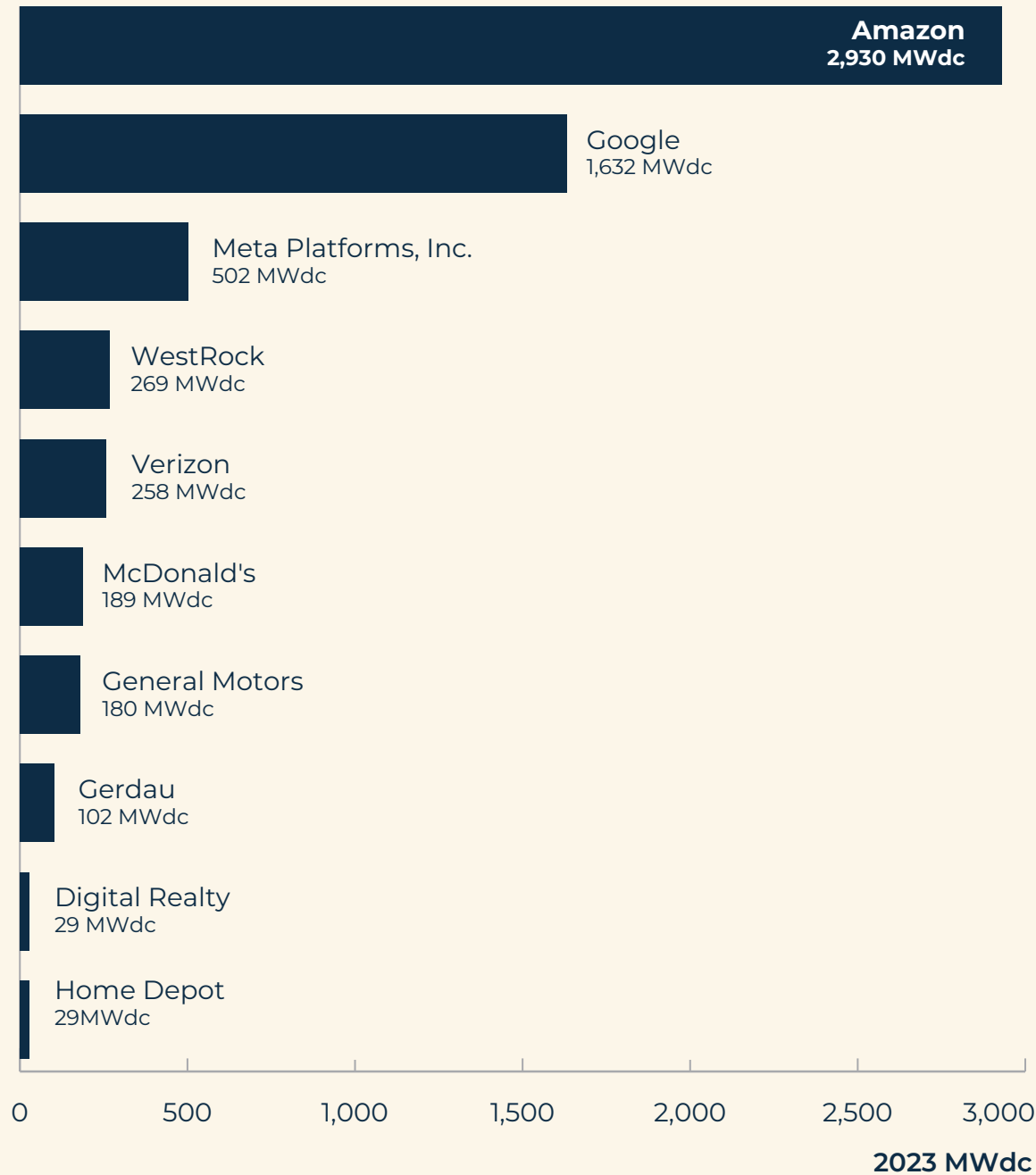
Apple
1,156 MWdc

Walmart
860 MWdc

Top 25 Companies by Solar Capacity

RANK	COMPANY	CAPACITY (MWdc)
1	Meta Platforms, Inc.	5,177
2	Amazon	4,668
3	Google	2,595
4	Apple Inc.	1,156
5	Walmart Inc.	860
6	Target Corporation	598
7	Microsoft	551
8	Digital Realty	435
9	Verizon	391
10	Home Depot	343
11	Cargill	342
12	Anheuser-Busch	301
13	Evrz North America	300
14	Kaiser Permanente	299
15	WestRock	269
16	Prologis	235
17	McDonald's	189
18	General Motors	182
19	Switch	179
20	Starbucks Coffee Company	162
21	Fifth Third Bank	155
22	Allianz	153
23	Intel	141
24	Blackstone	135
25	T-Mobile USA, Inc.	125

Top 10 Companies by 2023 Installations



2023 Rankings

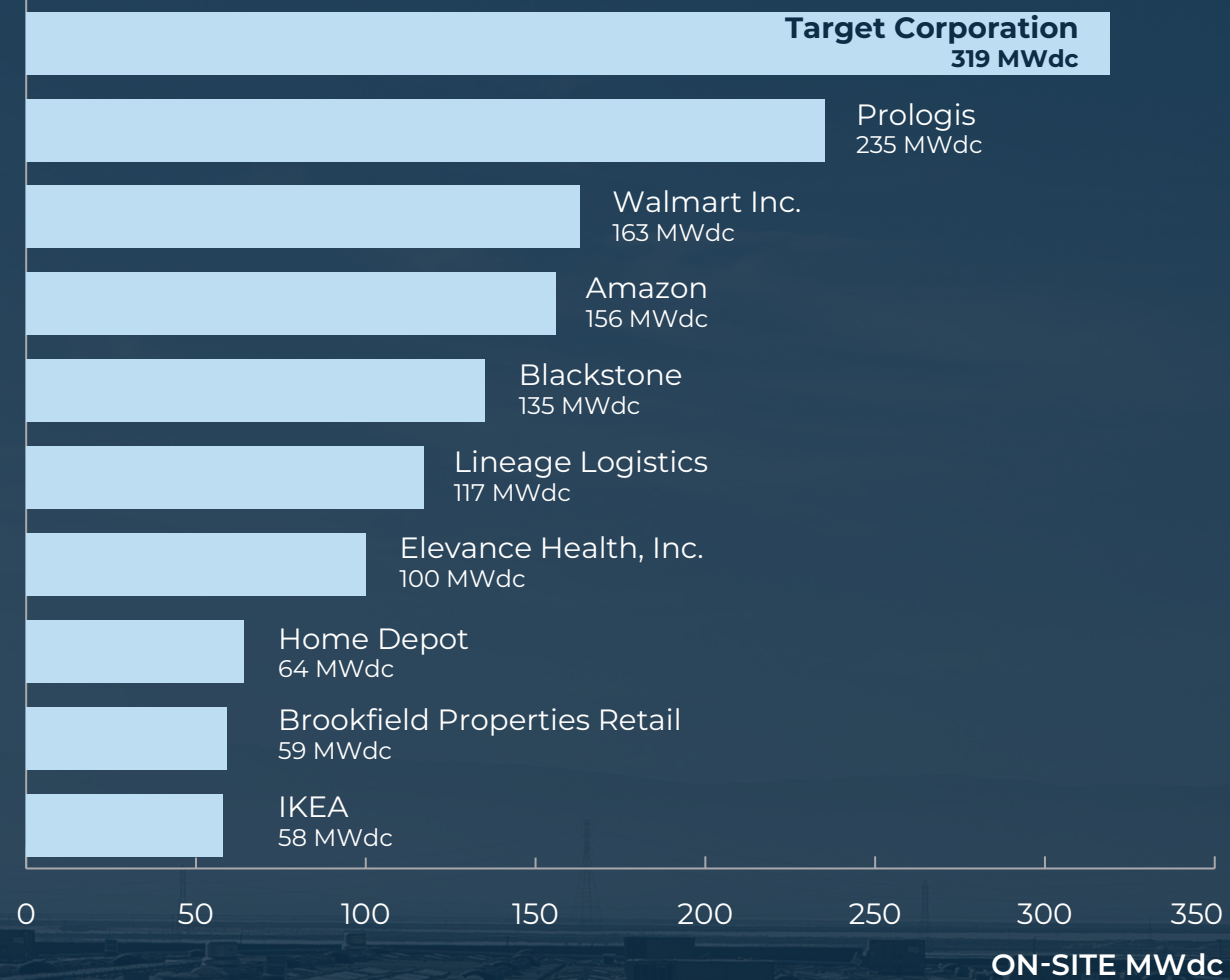
Amazon was the #1 corporation for 2023 growth, installing nearly 3 GW in 2023 and more than doubling its total solar portfolio. In what was a record year for utility-scale deployment in the broader solar market, corporate PPAs for utility-scale solar dominated the corporate segment, representing over 95% of annual corporate procurement. Each of the top eight companies for 2023 capacity additions brought online 100 MW or more, representing larger volumes than many states installed in that year.

While tech giants and big box retail companies continue to lead the market, companies in new sectors have recently emerged as significant buyers. General Motors installed a 180 MW solar facility in Arkansas to power three assembly plants. McDonald's signed a virtual power purchase agreement (VPPA) for 89 MW in Texas to cover power for its U.S. logistics supply chain. Westrock, a paper and packing solutions company, signed VPPAs for power from two solar projects in Texas to power its operations.

While data center load from large tech firms continues to be a large driver of new energy demand and corporate solar projects, we are seeing a diverse slate of companies turn to renewable energy procurement to help lower their carbon footprint, reduce their energy costs, and reduce their exposure to local energy market volatility.



Top 10 Companies by On-site Solar Capacity



On-site

Target has maintained its position as the #1 company for onsite solar with Prologis, Walmart, and Amazon all maintaining their rankings from our previous 2022 report. Blackstone moved up the rankings from #6 to #5, beating out Lineage Logistics by 18 MW. If it were a state, Target would be the 13th largest for on-site solar ahead of Texas and Florida. Overall, the top 10 companies for on-site solar make up 1.36 GW of solar of 6.8% of total U.S. on-site solar capacity.

Across the whole United States, rooftop commercial solar capacity has grown at 12% compound annual growth rate (CAGR) for the past five years³. For many companies with large brick-and-mortar locations, on-site solar will continue to be a cornerstone of their energy procurement strategy. Much of the growth in this space has come from historical leaders in on-site deployment. These companies have a strong understanding of the development process and established relationships with solar industry partners working across a variety of project sites, enabling expansion into new markets.

Multiple companies have reported rising costs as stifling the growth of their on-site solar portfolios. Inflation has raised costs for labor and hardware, and subsequent interest rate hikes have made financing and capital costs less attractive to companies looking to invest in solar on their businesses. In addition, broader trends within the solar industry, such as supply chain disruptions, changing net metering policy, particularly in California, and interconnection delays have introduced new risks and increased costs. Despite headwinds, on-site solar remains a key part of the corporate solar procurement mix, as companies with significant energy demand and aggressive climate goals continue to place on-site solar in their energy procurement strategies. Enhancements to federal tax credits in 2022 have helped to mitigate some of these headwinds by helping to cover some interconnection costs, incentivizing sourcing domestic hardware, and extra credit for building in areas with a historical dependence on fossil fuel.

³ Solar Market Insight Report, Q3 2024.
<https://seia.org/research-resources/us-solar-market-insight/>

Storage

In our first battery storage⁴ ranking for corporations, Google has emerged at the top with 312 MWac of storage capacity. Google has 25% more battery storage installed than the rest of the top ten combined.

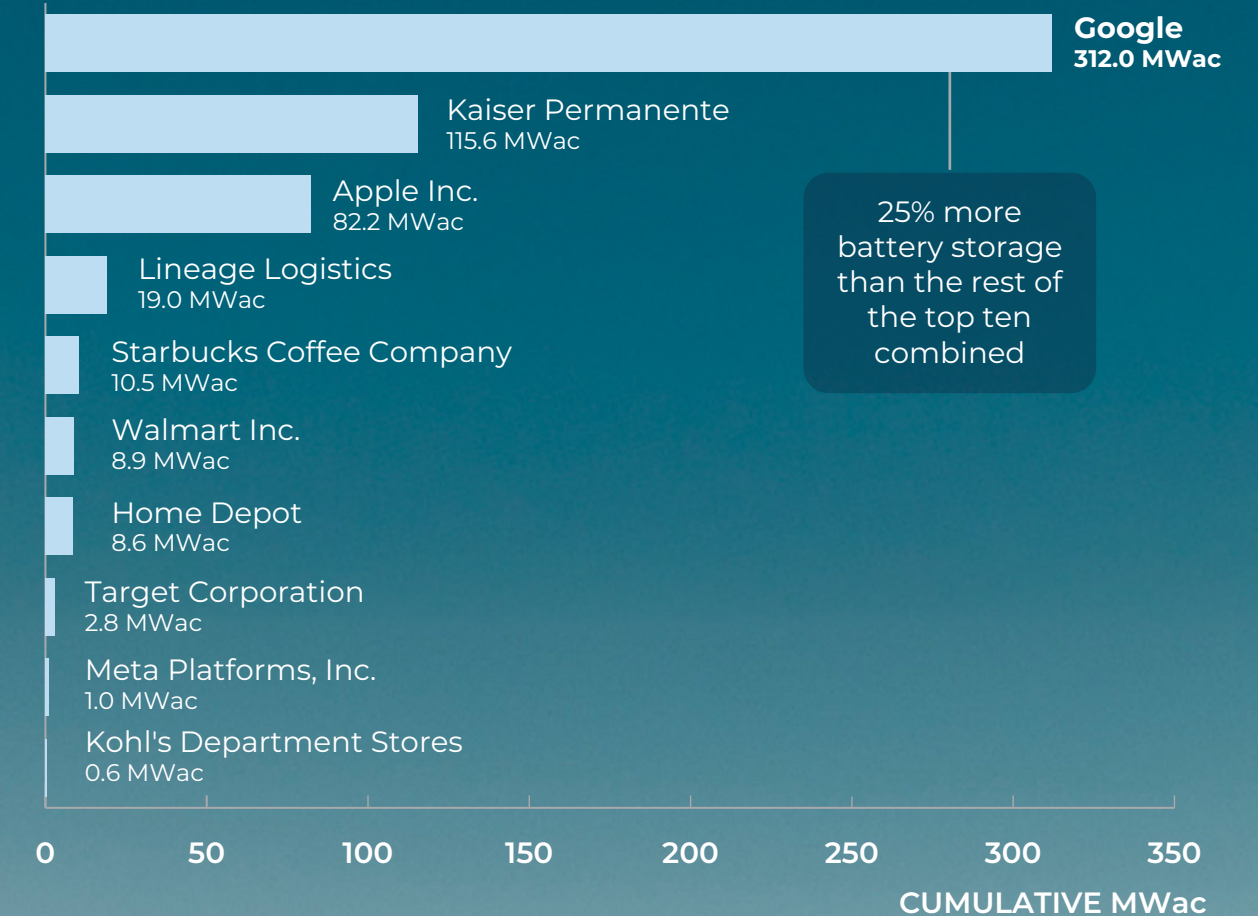
The tech giant's investments in large-scale storage reflect broader market trends as storage becomes an increasingly crucial element of the grid mix but also allows Google to cover more of its power needs on a real-time basis. **Over 6.5 GWac of grid-scale battery storage came online in 2023,** and 2024 is expected to be another major growth year for the technology.

The addition of battery storage will be one of the next big waves of renewable energy procurement strategy for corporate buyers. As companies start diversifying into both on-site and off-site solar projects, the next big wave of renewable energy integration will be the addition of on-site and off-site batteries. Several states and utilities have aimed to increase battery storage on their grids, and corporate renewable buyers are positioned to be leaders in this market. Not only will it allow them to better utilize existing solar facilities and build additional ones, but it will allow corporations to better control their energy costs, protect against power outages, facilitate ancillary services, help power EV fleets, and more.

Kaiser Permanente has utilized this well, installing batteries to power microgrids at its medical centers to make them more resilient to power outages. Starbucks has installed battery facilities to help power EV charging stations for its customers to use. As storage, including both standalone systems and systems paired with solar, becomes a larger component of the energy transition, companies can continue to use these investments to provide resilience and meet their specific energy goals.

⁴ To reconcile data submitted in both power (MWac) and energy (MWh) units, industry average conversion rates were used to provide a ranking in MWac

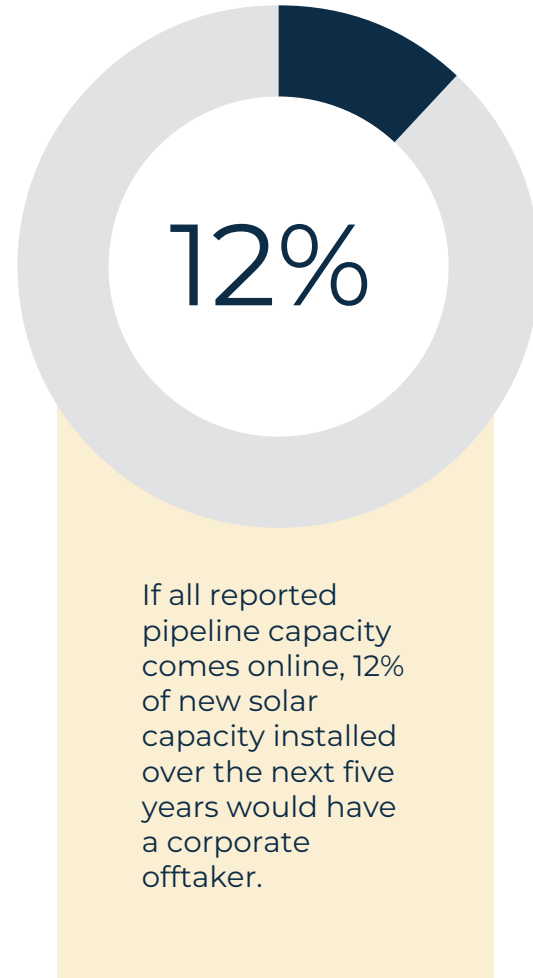
Top 10 Companies by Installed Battery Storage



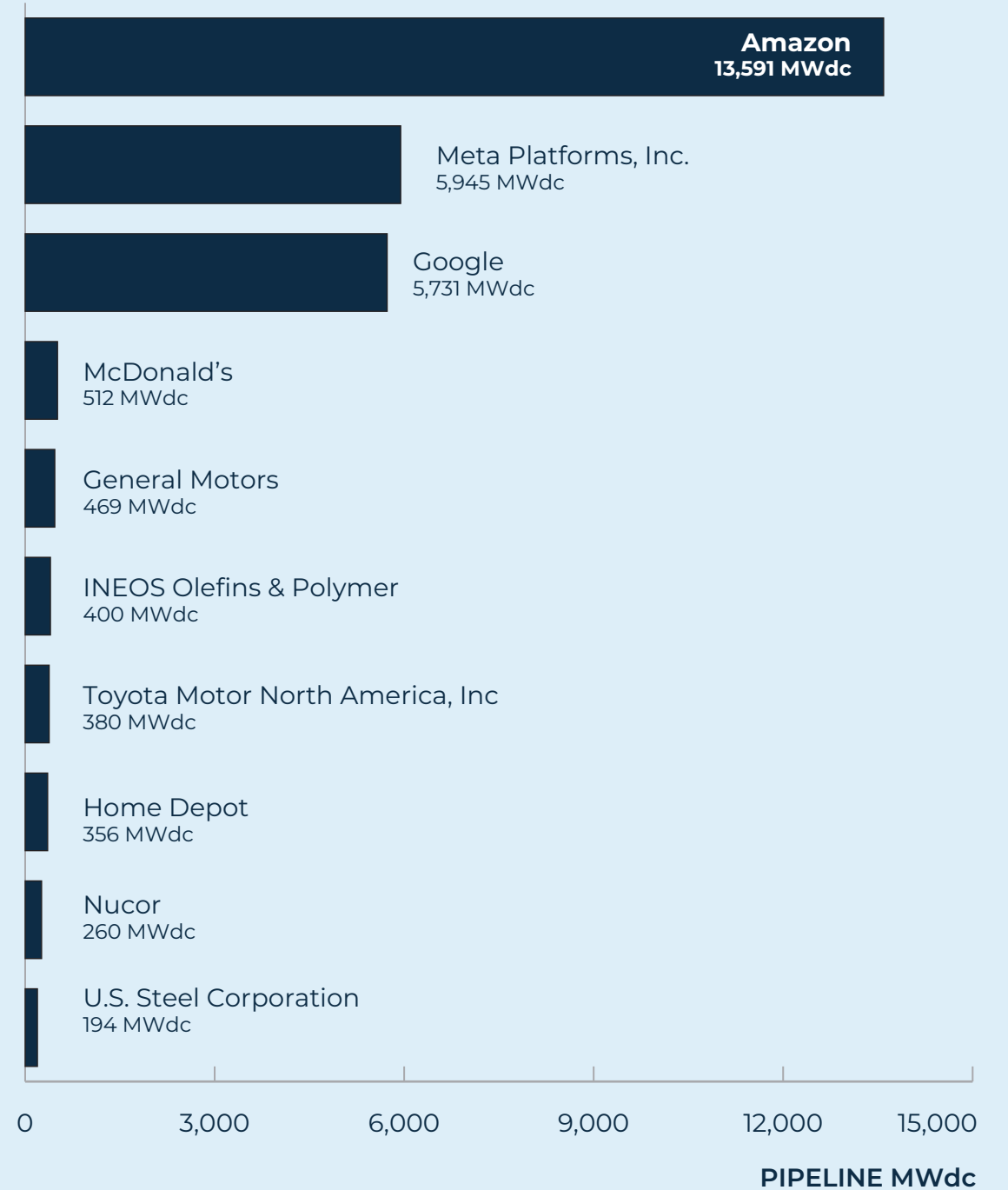
Pipeline

The top ten corporate buyers of solar currently hold a pipeline of 27.8 GWdc of solar. If this full volume comes online, it would total more than the capacity additions of all solar in the United States that came online in 2022. Amazon alone maintains a pipeline of 13.6 GWdc of solar in development with Meta and Google at 5.9 GWdc and 5.7 GWdc, respectively.

The overall pipeline is likely even larger as some companies do not disclose pending or in-progress projects. It is likely that many more projects are in the planning stages but have not yet progressed far enough to announce publicly. Though this data is not comprehensive, it illustrates the ambitious plans major corporations have for their solar portfolios in the coming years. Commercial load growth and growing sustainability ambitions have grown the pipeline of solar investments, and solar is poised to be a key energy solution for growing businesses well into the future.



Top 10 Companies by Reported Solar Pipeline



If all tracked capacity comes online, the corporate solar market would represent:

64 GW

of cumulative corporate solar capacity

11 Million

homes powered annually

68 Million

metric tons of CO₂ emissions avoided annually

Outlook

Corporate adoption of solar continues to break records and grow across the United States. Individual companies have begun to rival entire states with the sheer volume of solar procurement.

This year's survey also captured qualitative results from company interviews, helping to illustrate new and interesting trends in the sector.

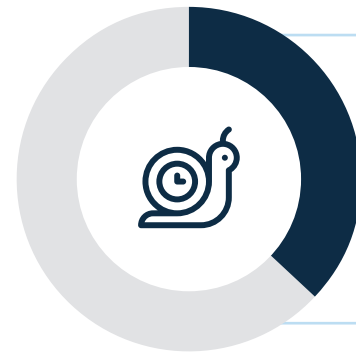
Overall, the headwinds seem to be related to market instability.



52% of companies surveyed suggested that **high or volatile prices and/or financial and budget challenges** were a factor preventing them from procuring solar. The cost of capital remains high and companies see it as a barrier to greater levels of solar procurement.



56% of companies cited **permitting and interconnection delays as being a top challenge** to further solar procurement. Interconnection delays have slowed growth in both the on-site and off-site solar markets and present a serious challenge not only to the corporate procurement space, but solar growth in all segments. Similarly, while federal policy and supply chain diversification have partially mitigated project delays due to equipment procurement, many buyers still report facing difficulties.



37% of buyers surveyed reported that these types of **delays have slowed their growth** and continue to remain a challenge in the market.

Most companies surveyed listed the incentives from the **Inflation Reduction Act as a major reason for expansion of their renewable energy procurement**. Buyers cited the long-term security of the ITC extension and the upside of the ITC adders as being tailwinds for further development in new markets, particularly in an environment where development costs have been on the rise.

On the other end of the spectrum, several tailwinds emerged. Only one company reported the inability to find suitable partners or lack of institutional support as a hindrance. Across the country, most companies seem to be moving up the learning curve both in knowing what to pursue but also in being able to find the right partners for development, financing, permitting, and engineering to complete.

Looking ahead, several companies cited interconnection reform, new community solar legislation, and improved marketplaces for tax credit monetization as policy areas that would increase solar procurement expectations. Companies are clearly growing more knowledgeable and more sophisticated about how they procure renewable energy and approach long term energy sustainability.

Companies are not only diversifying into both on-site and off-site solar but expanding into battery storage development and exploring novel procurement strategies to manage their energy needs.

Buyer sentiment suggests that there is strong interest in participating in new procurement markets, and that positive policy developments could unlock even stronger growth. As corporations continue to innovate in their energy planning through microgrids, participation in ancillary services, or participation as solar tax equity investors, the procurement market will continue to adapt to ensure demand for carbon free power is met.





Leading the **Transformation**
to a Clean Energy Economy



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