



Microclimate monitoring supports solar commercial and industrial growth

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According to International Energy Agency (IEA), solar, wind and other renewable energy sources are expected to continue growing, increasing installed capacity by 75% through 2027. This new growth shows there will be as much capacity added in the next five years as in the last 20, adding about 2,400 GW over the period.



In the US, solar generation is projected to be 20% by 2050, including significant growth in the commercial and industrial (C&I) segment of the PV solar market. Why has this occurred?

Increasing awareness and emphasis on corporate sustainability and environmental responsibility is a contributing factor. As the cost of PV solar technology has been decreasing, it has become more affordable for C&I companies to install solar panel systems. Some of the cost factors driving this growth include government incentives. Many governments offer financial incentives

and tax breaks for businesses that install PV solar systems, which is helping to drive adoption in the C&I segment.

Energy independence matters too. Many businesses are looking to become more energy independent, and PV solar systems can help them achieve this goal.

Environmental concerns are another contributing factor, with businesses increasingly looking to reduce their carbon footprint, and PV solar systems are a clean and renewable source of energy that can help them achieve this goal.

Finally, as the cost of energy storage decreases and the technology improves, more businesses are installing PV solar systems with energy storage, which allows them to use the energy they generate during the day and store it for use at night.

In the United States, led by tech and retail giants such as Meta, Amazon, Apple Walmart, Microsoft and more, companies are installing record-levels of solar to power their operations. In fact, 23 US companies have installed at least 100 MW of solar capacity, up from 11 companies in 2019.

According to The Solar Means Business Report, 'As solar prices have fallen and options for investing in clean energy have expanded, the number of commercial solar installations has grown rapidly across the country. From rooftop systems on local businesses, to solar parking canopies supporting a corporate headquarters, to large off-site installations powering data centers, these projects are as diverse and varied as the companies themselves.'

Through June 2022, this report tracked more than 18,500 megawatts (MW) of installed solar capacity across 48,000 projects, representing more than 70% of all commercial solar capacity installed in the US.

Key benefits of utilizing solar power

- Reduce overhead costs
- Future longevity
- Energy independence
- Tax benefits
- Financial and environmental returns

One corporate example is Target, which aims to source 100% of the company's electricity from renewable sources by 2030. It plans to purchase nearly 50% of its electricity from renewable sources once these projects are operational. John Leisen, Target's vice president of property management, believes that the company's new solar and wind contracts 'represent a big step toward reaching our climate goals and nurturing a healthier planet for the communities we call home.'

Overall, the C&I segment is expected to be a key driver of growth in the PV solar market in the coming years, and it is likely to continue to be a major focus for companies in the industry.

Michelle Davis, Principal Analyst, US Distributed Solar at Wood Mackenzie Power & Renewables, said recently, 'The potential of commercial solar has always been something that people generally will look at on a theoretical basis and think, 'Oh wow, there is a lot of potential in this space. Why is no one tapping into that potential?'' certainty to businesses, encouraging them to invest in solar energy systems.

'The global Solar Photovoltaic Panels Market size accounted for USD 183.4 Billion in 2022, growing at a CAGR of 12.9% from 2023 to 2033. The solar photovoltaic (PV) panels market has been rapidly growing in recent years due to increasing demand for renewable energy sources and government incentives to reduce carbon emissions.'

- Custom Market Insights January 2023



However, even with this new growth, the industry will need to consider how efficient and successful commercial solar installations can help to create maximum production with minimum energy costs. Microclimate monitoring is one way to help maximize production by improving operational efficiency and results.

Microclimate monitoring for the PV solar industry involves measuring various environmental factors such as temperature, humidity, wind speed, and solar radiation at a specific location where a solar panel system is installed. This information is used to optimize the performance of the solar panels and ensure they are functioning at their maximum efficiency. The data collected from the microclimate monitoring system can also be used to predict system failures and plan for maintenance.

Declining costs of solar panels, favorable government policies and incentives, and increasing awareness of the benefits of renewable energy all contribute to the growth of the commercial sector. Policies and incentives have played a crucial role in encouraging large-scale companies to get on board. Various federal, state, and local programs have been implemented to incentivize solar installations through tax credits, grants, and favorable regulations.

In addition, businesses are increasingly looking for ways to reduce their carbon footprint and enhance their sustainability credentials, and solar energy provides a clean and reliable source of power that can help them achieve these goals.

Additionally, technological advancements and innovation have played a significant role in the C&I solar sector's growth. Improvements in solar panel efficiency,

energy storage systems, and smart grid technologies have enhanced the reliability and performance of solar installations, making them more appealing to commercial and industrial entities.

As more businesses adopt solar energy, a positive trend has emerged where organizations are increasingly exploring ways to optimize their energy consumption. This includes implementing energy management systems, integrating solar power with other renewable energy sources, and utilizing advanced monitoring and control systems to maximize the benefits of their solar installations.

In summary, the commercial and industrial solar sector in North America has experienced substantial growth over the past five years, driven by declining costs, increased corporate sustainability efforts, supportive government policies, technological advancements, and a growing focus on energy optimization. These trends indicate a promising future for the C&I solar market, as more businesses recognize the economic, environmental, and social benefits of harnessing solar energy.

As a result, C&I installations of PV solar have grown rapidly, and this trend is expected to continue in the coming years.

With corporate solar adoption in the US soaring, accounting for 14 percent of the US solar market, the potential for commercial solar only improves with microclimate monitoring. Commercial enterprises and utilities can reap the benefits of maximized performance, production, and profitability through accurate monitoring.

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