Solar energy jobs united states

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2023 was a banner year for solar installation, with 40.3 GW added in new capacity, a 76% increase compared to 2022.2 Solar energy is the nation"s fastest-growing electricity source.3 This expansion in solar projects translated to thousands of new jobs installing the panels, managing projects, working in IT or sales, and performing many other job roles. Solar accounted for 55% of new electricity-generating capacity added in 2023, the highest proportion since data collection started. For comparison, natural gas accounted for 17% of new capacity in the same year.2

In 2023, the utility-scale sector added 1,888 jobs, an increase of 6.8% (see Solar Jobs by Market Segment). Utility-scale installations more than doubled in 2023, leading to increased demand for workers. This is a notable reversal of the trend in 2022, when the utility-scale sector declined by 18%. Many installations were put online last year after facing delays in 2022 when supply chain bottlenecks and trade disputes had made it difficult for firms to purchase modules for their projects.

Residential solar also grew by 5,945 jobs in 2023, marking notable growth but at a slower rate than in 2022. The residential sector set a record for deployment in 2023 but faced headwinds including high interest rates that dampened consumer purchases of solar installations. In California, the nation"s largest residential solar market, a net metering policy change led to a major slowdown beginning in the latter part of 2023.

The latest jobs data show that solar energy is well established as a low-cost, mainstream power source that is usually cheaper to install than fossil fuel alternatives. The growth of solar and other clean technologies is helping reduce energy bills, confront the threat of climate change, and create thousands of high-quality jobs. The passage of the Inflation Reduction Act (IRA) in 2022 is already driving accelerated solar deployment while expanding equitable consumer access to this renewable resource.

These trends form part of a rapid global transition toward solar and other renewable energy resources. Worldwide, global renewable energy capacity increased nearly 50% in 2023 to about 510 GW.4 In the United States, solar energy is expected to continue on a long-term growth trajectory, thanks to favorable economics and powerful long-term incentives in the IRA. Possible limits to growth include interconnection delays as well as the availability of skilled workers to meet the demand for new jobs. (See Future Solar Job Growth).

The Solar Jobs Census breaks down solar jobs by industry sectors, based on a solar company"s primary area of focus.5 Installation and project development firms account for nearly two-thirds of all solar jobs. These are the firms leading the construction and project management of residential, commercial, and utility-scale solar projects. The industry"s high growth rate means that most solar jobs are in the construction stage. This sector gained 7,254 jobs in 2023, or a 4.3% increase, totaling 178,812 jobs.

Operations and Maintenance jobs saw a notable increase of 4,782 jobs, or 28%, compared to 2022, totaling

21,368 jobs. This reflects the need to maintain and repair a growing fleet of solar installations.

Wholesale Trade and Distribution also saw a significant increase in 2023, with an additional 2,687 jobs, representing 8.8% growth and totaling 33,305 jobs. Wholesale trade and distribution jobs include roles such as logistics, warehousing, and related tasks.

Manufacturing jobs were largely flat for those spending the majority of their time on solar, totaling 33,273 jobs. However, jobs increased by 1,107 for those who spent some of their time in other industries. Portions of the solar supply chain are shared with other industries: For example, utility-scale and low-sloped/flat roof mounting systems can share production facilities with other steel products. (For more details, see Clean Energy Manufacturing).

Among the installation and project development firms, the Census breaks down the jobs by market segment--residential, commercial, community solar, and utility-scale.

The utility-scale segment grew by 6.8%, or 1,888 jobs, reaching a total of 29,708 jobs. This is a rebound from the previous Solar Jobs Census, which found a decline of 18% in utility-scale jobs between 2021 and 2022. The increase in utility-scale jobs was the result of a recent surge in installations. The utility-scale segment added 30.2 GW in 2023, for a growth of 114% compared to 2022 and the highest growth ever recorded. From 2018-2023, utility-scale installations have grown 384%.2

Utility-scale solar growth is driven by national and global trends toward the use of renewable energy and favorable policies such as the IRA. In the near term, the solar industry has also moved past supply chain disruptions that had limited deployment in the previous year. The increased availability of low-cost solar modules made it possible to complete more installations in 2023.