



Utah

Solar Development Analysis

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Utah Solar Development ANALYSIS

The state of solar development in Utah can be evaluated by key factors such as federal and local regulations, incentives, grid interconnection and integration. The current state of development activity in Utah is growing considerably and can be seen in this analysis summarizing all facets of solar energy project development.

We will break down the various federal and state incentives available to solar energy developers in Utah and how to access them.

LandGate provides key data to the top developers and financiers in the country. To learn more about access to this platform, or to talk about how to apply the information below to your business, book time with a member of our dedicated energy markets team.



Utah Solar Energy ACTIVITY

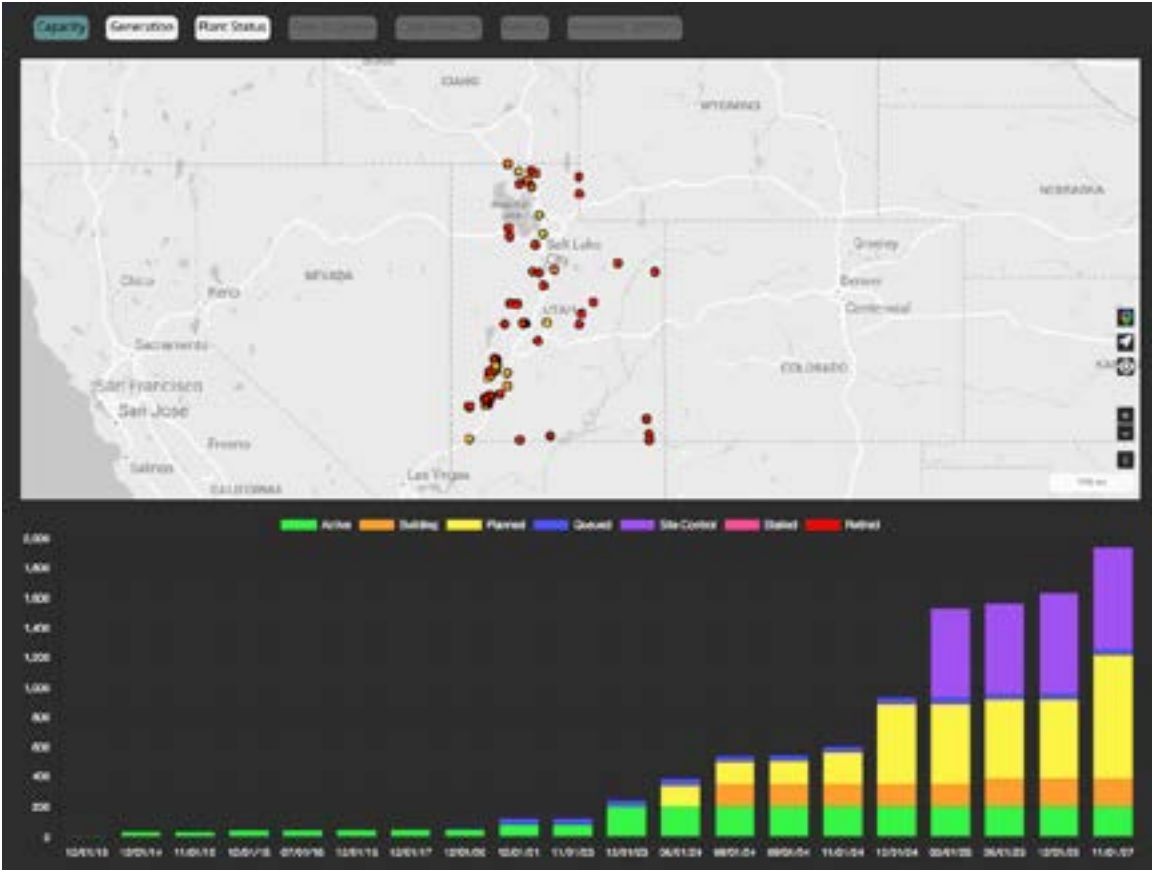
Status	UT Solar Farm Count	UT Solar Farm Capacity (MWac)	UT Solar Farm Generation (MWh)
Operating	54	2,260.7	223,573
Under Construction	5	185	132,601
Planned	15	834.07	465,131
Queued Projects	15	1,848	47,843
Site Control (Lease Options)	3	675	249,461

*est is the estimated peak total electricity generation that those solar farms will produce once operational

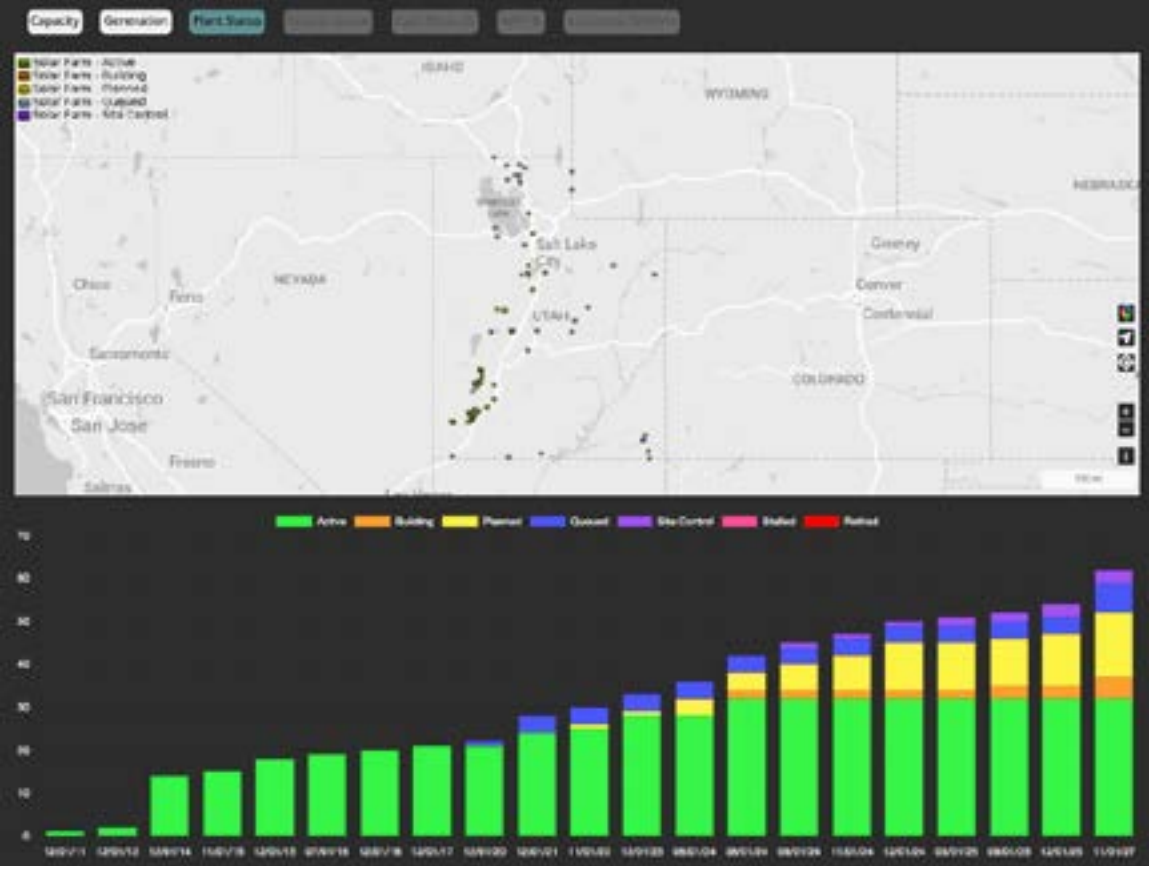
Utah currently has 54 active and operating utility-scale solar farms with a total capacity of 2.3 GW. Utah also has an extensive pipeline for future development with 5 farms under construction, 15 planned farms, 15 queued projects with a total capacity of over 2.8 GW, and 3 site control farms with a total capacity of 675 MW.

Overall, if all under construction, planned, queued, and site control farms go into operating status, Utah will expand its capacity by nearly 3.5 GW! In Utah, the average solar farm size is 240 acres, producing 41.9 MW of electricity under ideal conditions.

Solar Farm Count in Utah



Solar Farm Capacity by Farm Status in Utah



Past, Present & Future of Solar in UT

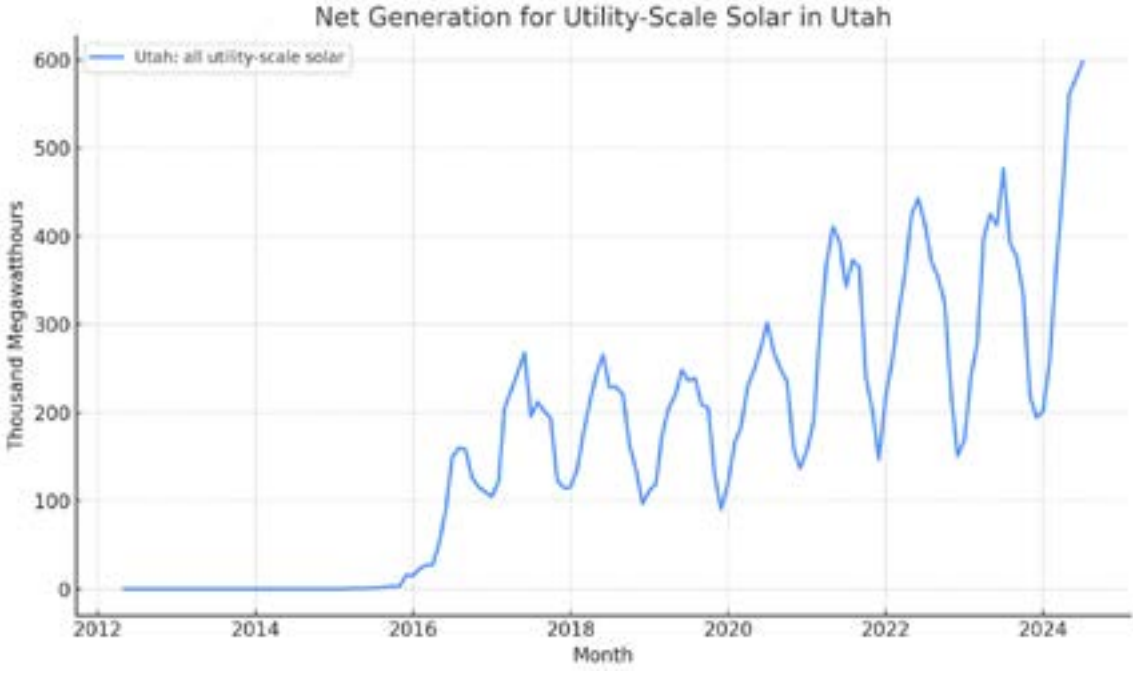
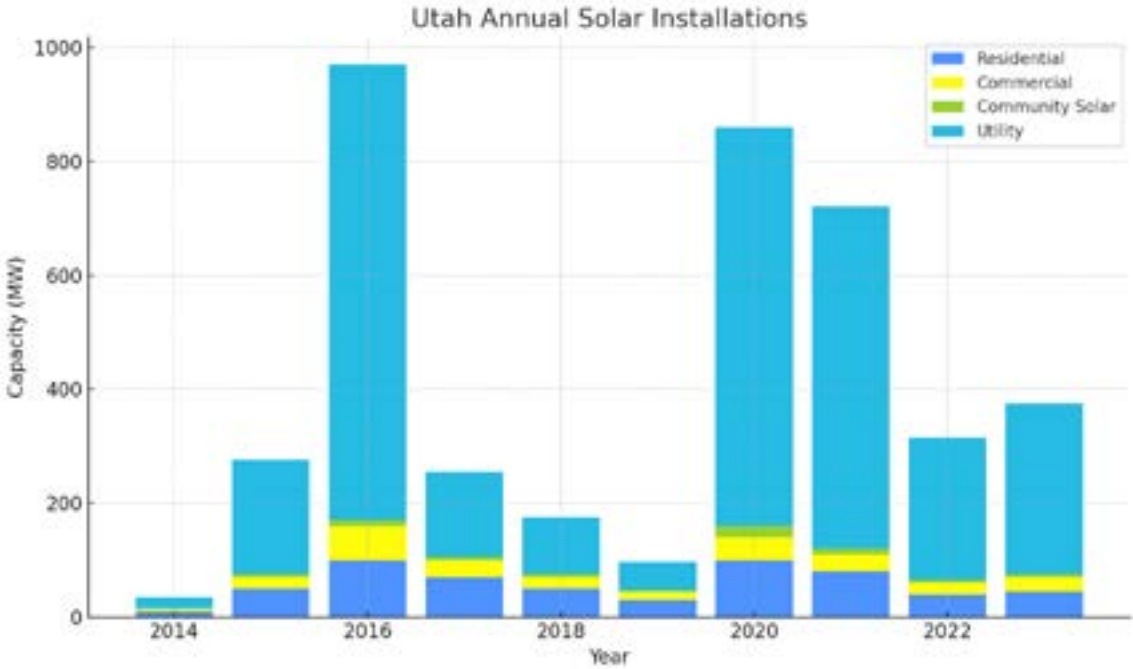
Overview

In the past, solar energy in Utah was a niche market, limited by high costs and minimal infrastructure. The state's solar sector was relatively underdeveloped, with few installations and limited public awareness or support. Early adopters faced significant financial and technical challenges, making solar energy an option primarily for environmentally conscious individuals and businesses willing to invest in the technology despite the barriers.

Currently, Utah is a leading state in solar energy production, boasting over 3 GW of installed solar capacity. This growth has been fueled by supportive state policies, such as the Renewable Energy Systems Tax Credit and net metering programs, as well as increasing investments from both the public and private sectors. The economic and environmental benefits of solar energy have made it an integral part of Utah's energy mix. The state has seen a surge in both residential and utility-scale solar installations, driven by declining costs and growing awareness of renewable energy's advantages. Looking towards the future, Utah's solar energy sector is poised for continued expansion. Advances in solar technology, energy storage, and grid management are expected to enhance the efficiency and reliability of solar power. Moreover, ongoing investments and supportive regulatory frameworks will likely drive further adoption of solar energy. As a result, Utah is well-positioned to be a leader in the transition to renewable energy, contributing significantly to a sustainable and resilient energy future. The state's commitment to renewable energy is expected to grow, further solidifying its role in the national and global shift towards cleaner energy sources.

Utah has a robust solar energy sector, with 3 GW of installed solar capacity, making it the 13th-ranked state in the nation, a significant rise from 34th in

2023. This capacity is enough to power 586,004 homes, and solar energy accounts for 15.18% of the state’s electricity. The industry employs 7,310 people across 133 solar companies, which include 19 manufacturers, 61 installers and developers, and 53 companies in other related areas. The total solar investment in Utah amounts to \$4.7 billion, and the cost of solar has decreased by 43% over the last decade. Looking ahead, Utah is projected to add 5,630 MW of solar capacity over the next five years, ranking 11th for growth. Currently, there are 73,571 solar installations in the state.



Rapid Growth Phase (2015-2016)

As seen in the graphic above, much of Utah's net generation distributed via solar originated post-2014. Starting around 2015, there is a noticeable uptick in solar generation, marking the beginning of a rapid growth phase. This sudden increase can be attributed to the completion of several large-scale solar projects and enhanced state and federal incentives promoting solar energy investments.

Steady Growth & Seasonal Fluctuations (2017-2023)

From 2017 onwards, the graph shows a steady increase in net solar generation, with noticeable seasonal fluctuations. The peaks and troughs represent higher production during the sunnier months and lower production during the winter months when sunlight is less abundant. This period highlights the maturation of the solar industry in Utah, with continued investment and the commissioning of additional solar capacity.

Recent Surge (2023-2024)

The latest data for 2023 and 2024 indicates a significant surge in solar energy production, reaching new highs. This recent spike suggests a combination of further expansions in solar capacity, possibly due to new projects coming online, and continued improvements in solar technology and efficiency.

Utility-Scale SOLAR

Utility-scale solar refers to solar farms often created and managed by utilities, independent power producers, or energy firms. These projects aim to produce electricity on a large scale and deliver it directly into the distribution grid. These solar farms generally have more than 10 MW in capacity.

Below is a breakdown of the different types of solar farms and their development statuses.

Utility-Scale

The state of Utah is not part of a particular RTO or ISO. However, The Utah Corporation Commission (ACC) oversees the electric power industry in Utah.

Projects Queued for Development in Utah

Number of Solar Farms	Capacity(MWac)	Solar Farm Generation (MWh)
15	1848	47,843

A project in queue means that the project enters the interconnection queue of that region waiting for regulatory approval. During this period, the analysis of possible engineering and land factors is conducted to determine the feasibility of the project to be constructed and connected to the grid. The average amount of time it takes for a farm to go from queue to operational in Utah is ~ 3.51 years! As per the projected in-service dates for the current projects in queue, Utah will most likely add ~ 3.5 GW of Utility Scale farms by the end of 2025.

How do developers screen and run due diligence for those solar farm projects in queues?

Factors to take into consideration:

- Electricity generation
- Electricity commodity prices (LMP, incentives, PPA)
- Capital costs
- Operating costs
- Timing
- Risks

Using the factors above and a standard solar panel size, the buildable acreage and a land coverage ratio (encompassing row spacing and maintenance spacing) we calculate the maximum number of panels that could fit on the parcel. This helps us estimate the capacity the project lease will add to the grid and calculates a Market Value of the solar project.

Solar PowerVal enables similar capabilities to evaluate land

parcels for solar development and get an independent economic report for solar projects of all statuses. This tool allows developers and project financiers to fast-track the process of submitting a feasibility study to the queue for approval through independently produced Engineering & Economic analytics and Solar 8760 reports or evaluate projects and parcels for origination and M&A.

Major Utility in Utah: Deep Dive



PacifiCorp, operating through its Rocky Mountain Power division, is the most prominent utility company in Utah. Rocky Mountain Power serves over 1.2 million customers across Utah, Wyoming, and Idaho, with the majority of its customer base in Utah. Headquartered in Salt Lake City, Rocky Mountain Power is a key player in the region's energy infrastructure, delivering reliable and increasingly sustainable energy to its customers. PacifiCorp, as a whole, is one of the largest utilities in the western United States, serving a total of 2.1 million customers across six states. The company is notable for its extensive investment in renewable energy and its commitment to enhancing the resilience of the electrical grid.

Highlights: Notable Solar Installations in Utah

Project	Capacity	Description
Escalante Solar	415.5 MW	Located in Milford, Utah, this project was completed by SunEdison in 2016. It has enough capacity to power over 78,000 homes.
Cove Mountain Solar	230.6 MW	Developed by D.E. Shaw Renewables Investments, this solar farm in Beryl, Utah came online in 2020 and powers over 43,000 homes.
Appaloosa Solar 1	200 MW	Located in Iron County, Utah, this project commenced construction in 2022 and is expected to provide long-term power purchase agreements under Rocky Mountain Power's green energy tariff.
Graphite Solar	104 MW	Completed in 2022 and located in Carbon County, Utah, this farm supports Meta's sustainability goals and contributes significantly to local renewable energy generation.
Green River Energy Center	400 MW	This solar plus storage project in Emery County is under construction as of early 2023. It represents a \$750 million investment and will significantly contribute to Utah's renewable capacity.
Rocket Solar	80 MW	Located near Corinne, Utah, this facility began operations in 2024 and is designed to support Meta's data center operations with 100% renewable energy.
Horseshoe Solar	75 MW	This utility-scale facility near Grantsville, Utah, became operational in 2024 and provides power to large corporate clients like Meta.

How is a Utility-Scale Solar Project Submitted to the Queue to Connect to the Electric Grid?

Typically, the queue submission process within an ISO or Utility area follows similar steps.

The solar developer needs to complete and submit an official interconnection request form provided by the ISO or utility, that captures essential project details and starts the interconnection process. Project specifications should include details like name, location (latitude and longitude), point of interconnection, capacity, expected energy production, environmental impact, technology layout- inverters, solar panels, system layout through a Feasibility study with an 8760 report to help initially assess the project's compatibility with the existing grid infrastructure. The Solar developer will also have to pay an initial payment to secure a position in the interconnection queue and contribute towards the cost of initial studies and evaluations conducted by the ISO/Utility. Post the submission of the form, reports and payment, the project is now effectively in the queue.

After the project has entered the queue, Injection reliability study and system impact study is conducted. These studies determine the exact impact of the project on existing infrastructure and identifies any potential network updates required to reliably interconnect the solar project to the grid. Once the study is completed, the developer gets a complete picture of the financial cost of the solar farm with regards to the complete CAPEX and Budget. This helps the decision making process of whether to move forward with the development of the solar project or withdraw the application from the queue. If the project seems viable to move forward the developer signs an interconnection agreement with the ISO/Utility and essentially looks to produce Economic and Financial reports for Bankers and Investors to help facilitate the construction of the solar project.

How Does a Utility-Scale Project Connect to the Electric Grid?



These projects are interconnected through transmission lines that carry electricity from one point to another in an electric power system grid. These lines are used to transmit electrical power from power generation sources to distribution centers, which are then distributed to end-users. Through LandGate's accessible transmission line data, developers and landowners can evaluate land parcels based on segments & feeders, proximity to existing distribution lines and distribution hosting capacity.

Commercial, Community & Behind-the-Meter Solar Farms

Community solar programs in Utah have been gaining traction as an effective means to increase access to solar energy for residents and businesses who may not have the option to install solar panels on their own properties. These programs allow multiple participants to invest in or subscribe to a shared solar energy project, which can be located off-site. The electricity generated by the community solar project is then credited to the participants' energy bills, usually in the form of a monetary credit or a reduction in kilowatt-hour usage.

These programs have grown in popularity due to several factors. They provide access to solar energy for renters, homeowners with unsuitable roofs, and businesses that cannot install their own solar panels, thereby broadening the reach of solar benefits across various demographics. Participants in community solar programs can achieve significant savings on their electricity bills, and these programs often require lower upfront costs compared to individual solar installations, making solar energy more financially accessible. By increasing the adoption of solar energy, community solar programs contribute to reducing the state's carbon footprint and promoting cleaner energy sources, aligning with Utah's broader goals of enhancing sustainability and energy independence.

Several community solar initiatives have been launched in Utah, supported by utilities, local governments, and private companies. Notable programs include Rocky Mountain Power's Subscriber Solar Program, which allows customers to purchase solar power generated from a large-scale solar farm. Subscribers can offset a portion or all of their electricity usage with solar energy without having to install panels on their properties. Some municipalities in Utah have developed their own community solar projects to encourage local participation and investment in renewable energy. These city-led initiatives often partner with solar developers and utilities to streamline the process for residents and businesses.

While community solar programs offer numerous benefits, they also face certain challenges. Navigating the regulatory landscape can be complex, with varying policies and incentives that may impact the development and operation of community solar projects. Increasing public awareness and understanding of community solar programs is essential for their success, necessitating outreach and education efforts to inform potential participants about the benefits and how to get involved. Securing financing for community solar projects can also be challenging, particularly for smaller or community-led initiatives, but innovative financing models and supportive policies can help address this barrier.

The future of community solar programs in Utah looks promising, with continued growth expected as more residents and businesses seek renewable energy solutions. Advances in solar technology, declining costs, and supportive state policies will likely drive further adoption of community solar. Increased collaboration between utilities, local governments, and private sector partners can enhance the development and success of these programs. As community solar becomes more prevalent, it will play a crucial role in Utah's transition to a more sustainable and resilient energy system.

Utah

LMP Data

LMP (Locational Marginal Price) is a pricing mechanism used in wholesale/merchant energy markets to determine the cost of electricity at specific locations (node) within the grid. LMP considers a number of variables, including the cost of generating power, transmission constraints, grid congestion, losses, and load at certain nodes or locations within the electrical grid. The prices at which electricity is bought and sold in the market in real time or on an hourly basis are reflected in its calculation, which is done through market procedures.

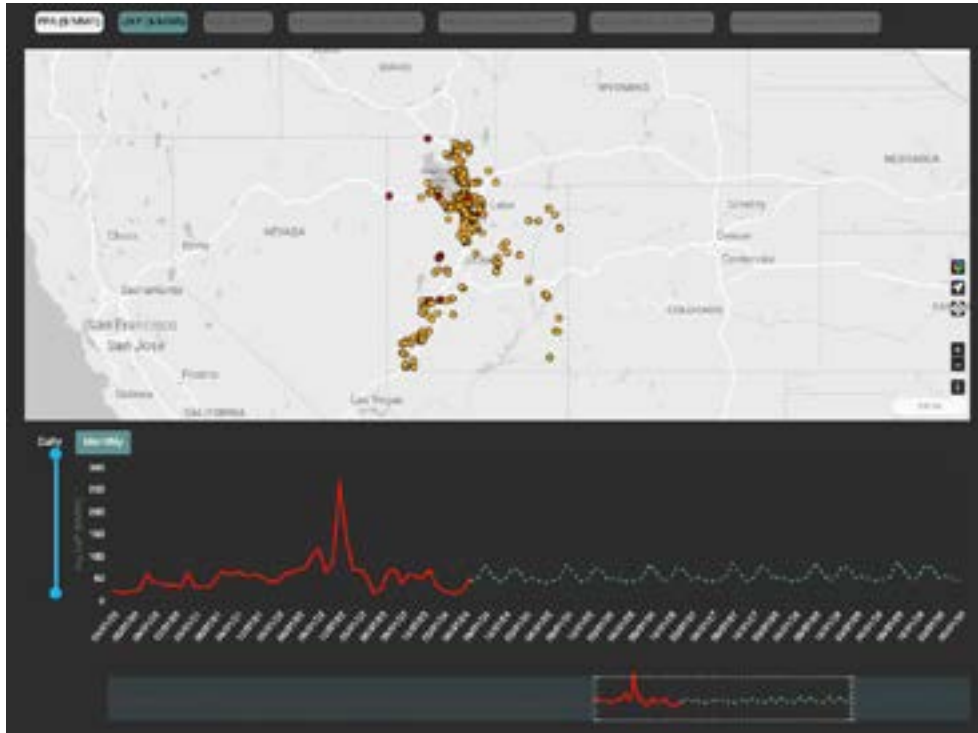
Utah saw the average LMP price increase by 74.27% in the past 3 years with an average price of \$71.99 \$/MWh in the year of 2024. This price is forecasted to further increase by 1.78% in 2025 to \$73.28. Similarly, consumer electricity purchase cost has also increased for the past few years in Utah. The current commercial electricity rate is 8.43 ¢/kWh which is a 10.48% increase compared to the commercial electricity rate of 7.63 ¢/

kWh in 2020.

The combination of increased LMP and PPA pricing suggests a favorable economic environment for solar energy. Solar energy becomes more economically viable compared to traditional energy sources due to the higher costs of conventional electricity. This economic viability attracts more investment in solar projects, leading to increased solar capacity and generation. As the cost dynamics shift in favor of solar energy, both utilities and large-scale energy consumers are more likely to adopt solar solutions to hedge against rising electricity prices. This shift not only promotes the growth of the solar industry but also supports the transition to a more sustainable and resilient energy system in Utah.

Utah

LMP Scorecard



Merchant Energy Pricing: Market: UT	
Number of price nodes active:	631
Average LMP price as of 09/01/24:	\$71.99
Current commercial electricity rate	8.43¢/kWh
Percentage change in average LMP in the past 3 years (\$41.31 in 2021)	+74.27%
Commercial electricity rate in January 2020	\$7.63¢/kWh

Average LMP Prices: Historical & Forecasts

Year	Avg LMP Price (\$/MWh)
2019	\$30.04
2020	\$30.68
2021	\$41.31
2022	\$94.48
2023	\$104.66
2024	\$71.99
2025 (est.)	\$73.28
2026 (est.)	\$74.74

Based on the LMP and ISOs data in Utah, the 2024 average LMP is estimated to be \$54.61/MWh, decreasing by 40.6% compared to 2023.

Utah PPA Data

Utility-scale solar can be integrated into the grid and electricity can be sold at a predetermined price thanks to PPAs (Power Purchase Agreements) with utilities or power purchasers. Even if they are unable to put solar panels on their own homes, PPAs for community-scale solar projects allow local participants to profit from solar energy generation. The time and amount of power sales are governed by the PPA's terms, which guarantees a steady market for the solar installation.

The average Estimated Utility-Scale PPA price in Utah is \$95.11 \$/MWh. This demand influences PPA prices as developers strive to meet regulatory requirements while remaining profitable. Additionally, limited land availability poses challenges for large-scale renewable projects, increasing costs associated with land acquisition and development, thus impacting PPA prices.

In Utah, Power Purchase Agreement (PPA) prices are influenced by a diverse array of factors. The state's energy mix, comprising coal, natural gas, nuclear, hydroelectric, and wind energy, along with the increasing competitiveness of renewable sources like wind power due to technological advancements, significantly impacts PPA rates. As Utah's energy landscape evolves, with a growing emphasis on renewables and technological innovation, the dynamics driving PPA prices continue to evolve, reflecting the complexities of the state's energy market.

Furthermore, Utah's low development costs have contributed to stable PPA prices. Advancements in solar technology have led to increased efficiency and lower manufacturing costs, making solar panels more affordable to install and maintain. These technological innovations have also improved the overall performance and reliability of solar systems, reducing operational expenses and enhancing long-term cost competitiveness.

Additionally, economies of scale and growing market maturity have contributed to stable PPA prices in Utah. As the solar industry expands and more projects come online, developers benefit from economies of scale in manufacturing, installation, and project development, driving down overall costs. Moreover, increased competition among solar developers and suppliers has spurred innovation and efficiency improvements throughout the value chain.

Utah

PPA Scorecard



Average PPA price 2024:	\$21.84 (Utility Scale)
Average Utility-Scale PPA price change in the last 3 years	+19.65%
Largest PPA buyer:	PacifiCorp, Rocky Mountain Power

Average PPA Prices:

Year	Price (\$/MWh)
2020	\$36.78
2021	\$38.33
2022	\$44.06
2023	\$42.75
2024	\$45.86

Federal & Utah State Tax Incentives for Solar Developers

There are several federal and state incentives available for solar development in Utah, intended to encourage the use of solar energy by making solar power more affordable for businesses and organizations that install solar systems. These incentives can improve the financial viability of solar projects since they lower the initial costs and increase the return on investment. Solar project incentives aid in the switch to clean, renewable energy sources, which lower greenhouse gas emissions and slow climate change. Incentives aid in increasing the deployment of solar projects by making solar energy more financially appealing, replacing fossil fuel-based power and lowering the environmental effects related to traditional energy sources.

UT Solar Development Incentive	Type	About
Federal Solar Tax Credit, Solar Tax Credit (ITC)	Federal	Developers can claim 30% of the installation cost as a credit on their federal income taxes.
Utah Solar State Tax Credit	State	Although this credit is set to expire at the end of 2024, it currently allows for a 25% credit of the system cost, up to \$800. This can be combined with the federal ITC for additional savings.
Sales Tax Exemption	State	Utah offers a sales tax exemption for solar panel systems, which can save residents 6.1% on their system costs.
Net Metering	State	While not mandated state-wide, many utilities in Utah, such as Rocky Mountain Power, offer net billing. This allows homeowners to earn credits on their electricity bills for excess energy their solar panels generate, though the credit rates are lower than retail rates.
Rocky Mountain Power Programs	State	This utility offers specific programs like the Wattsmart Battery Program, which provides rebates for installing energy storage systems with solar panels. Additionally, there are rebates of \$400 per kilowatt, capped at 30 kilowatts, for solar installations.

Renewable Portfolio Standard (RPS) Goal: Utah's RPS, officially referred to as a Renewable Energy Goal, is a voluntary target rather than a mandatory requirement. The goal is for utilities to derive 20% of their adjusted retail electric sales from renewable energy sources by 2025, provided it is cost-effective for them to do so.

The key points of Utah's RPS are:

1. **Voluntary Target:** Unlike mandatory RPS programs, Utah's goal is voluntary, meaning utilities are encouraged but not required to meet the target.
2. **Target Year:** The target year for achieving the goal is 2025.
3. **Cost-Effectiveness:** Utilities are only required to meet the goal if it can be done in a cost-effective manner, ensuring that renewable energy adoption does not lead to significant cost increases for consumers.





With such a wealth of new data on the state of Solar Development in Utah, we imagine you might have questions about how to apply these trends, data, and tools to your own solar development efforts in Utah. Our dedicated energy markets team can help walk you through how to access and interpret this information in a way that is relevant to your business needs. Schedule time with our team here to talk one on one.



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