



Illinois

Solar Development Analysis

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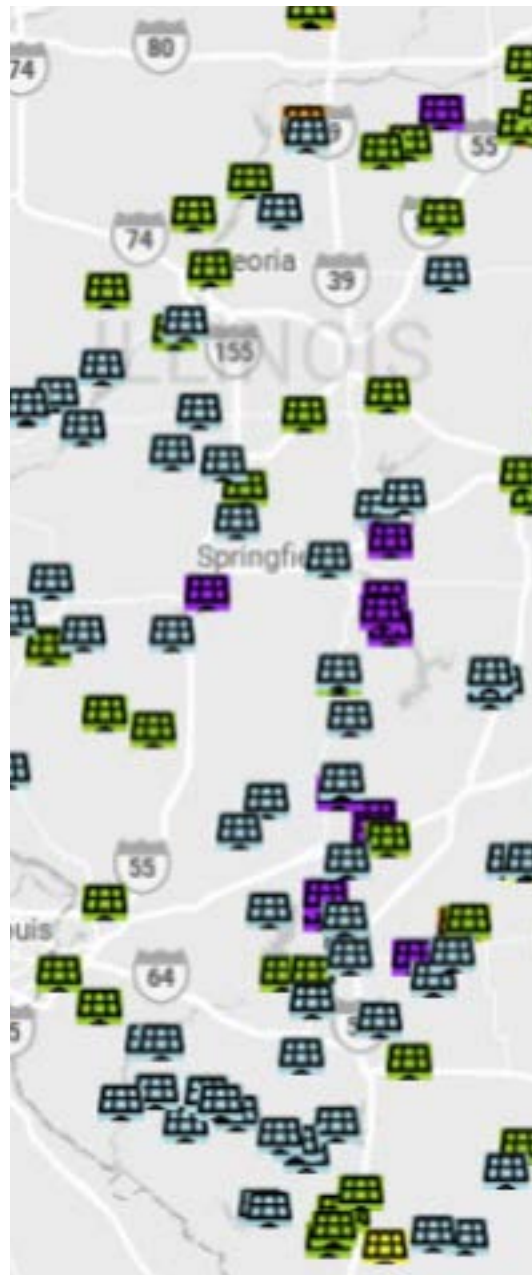
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Illinois Solar Development ANALYSIS

The state of solar development in Illinois can be evaluated by key factors such as federal and local regulations, incentives, grid interconnection and integration. The current state of development activity in Illinois is growing 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 Illinois 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.



Illinois Solar Energy ACTIVITY

Status	IL Solar Farm Count	IL Solar Farm Capacity (MWac)	IL Solar Farm Generation (MWh)
Operating	122	875	544,136 (est.)
Under Construction	11	105	120,047 (est.)
Planned	12	1,328	423,084 (est.)
Queued Projects	230	27,092	2,166,914 (est.)
Site Control (Lease Options)	17	980	1,811 (est.)

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

As of August 2023, Illinois has 121 solar farms already operating with a current capacity of 875 MW¹ and a current electricity generation of 5,44,136 MWh. Illinois has a significant amount of operating solar farms compared to the other states in the US, and it has one the largest development of solar farms with 11 solar farms under construction of 105 MW capacity total, 12 planned solar farms with 1,328 MW capacity total, as well as 230 Utility-Scale Queued projects and 17 site control projects.

Overall, if all planned and under construction farms go into operating status, Illinois will expand its capacity by 1,433 MW. That's a 64% growth in capacity for the state! In Illinois, the average solar farm size is 50 acres, producing 9MW of electricity under ideal conditions. So a solar farm in Illinois needs an average of 5 acres per MW of capacity.

Utility-Scale vs. Community-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. Contrarily, community-scale solar refers to smaller-scale solar power facilities, **under 10 MW**, that are primarily intended to serve local communities or particular user groups. Below is a breakdown of the different types of solar farms and their development statuses.

Utility-Scale

Illinois is a particular state for solar development where the south of the state is regulated by Mid-continent Independent System Operator (MISO), and the north of the state is regulated by Pennsylvania-New Jersey-Maryland Interconnection (PJM).

Projects Queued for Development in Illinois

ISO	Number of Solar Farms	Capacity (MWac)
MISO	91	15,615
PJM	139	11,477

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 Illinois is **35 months!** As per the projected in-service dates for the current projects in queue, Illinois will most likely add **5 GW** of Utility Scale farms by the end of 2024, which is a **250%** increase in operational capacity.

Projects Under Site Control

Site Control is land under lease or under option to lease. Solar developers run an initial assessment of the suitability of parcels for solar farms. After they put the land under option, they need time to run their due diligence and submit the project to the queue. When the solar project is about to be approved by the queue, the solar developer exercises the solar farm option agreement to convert it to a solar farm lease agreement. These site control projects have not entered the interconnection queue yet. Currently there are 17 project leases with an estimated capacity of 980 MW.

Did you know?

LandGate's PowerCapital solution is the only technology suite offering a complete M&A database and research analytics for wind, solar, and CCS project development.

LandGate analyzes county tax & deed assessor records to find lease agreements already in place between developers and landowners. This unique dataset is continuously updated by a process that locates new lease documents within days of new agreements being filed with each county.

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

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.

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.

Commercial, Community & Behind-the-Meter Solar Farms

Projects under development in Illinois

Illinois is a state where the Northern region is regulated by Commonwealth Edison for small-scale solar farms and the Southern region is regulated by Ameren Illinois. Below is an analysis of community solar farms and other small-scale solar projects in the queue.

Property Type	Count	Capacity (MWac)
Commercial/Business	443	192
Community Supply	1,729	4,268
Industrial	14	32

Glossary

■ **Commercial/Business:** Commercial solar is simply solar for a commercial business

■ **Community Supply:** Community Solar

■ **Industrial:** An industrial photovoltaic system or industrial solar PV system refers to a system with a power output greater than 100 kWp, an ideal capacity for many types of companies for purposes of self-consumption as well as production and sale of electrical energy.

■ **Residential/Home:** “Residential solar” means solar panels to power a single house. The panels are typically mounted on a homeowner’s roof, but could also be mounted in the backyard.

With over 1700 applications being processed, Illinois will see a growth of 4.2 GW in Community and Distributed generation. Supporting the fact that Illinois is one of the fastest growing states for small scale generators.

How does a Community or Distributed Generation project connect to the electric grid?



These projects almost always connect to a three-phase distribution line. A distribution line is conceptually the same as a transmission line but moves electricity at a much lower voltage. A distribution line must be within one mile of your property (or preferably much less) to make interconnection cost-effective. Through LandGate’s accessible distribution line data, developers and landowners can evaluate land parcels based on segments & feeders, proximity to existing distribution lines and distribution hosting capacity.

Illinois

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.

Illinois saw the average LMP price increase by 40.3% in the past 3 years with an average price of \$25.81 \$/MWh in 2023. This price is expected to increase by 14.5% in 2024 and attract several renewable energy developers for utility and community scale solar projects. Similarly, consumer electricity purchase cost has also increased drastically for the past few years

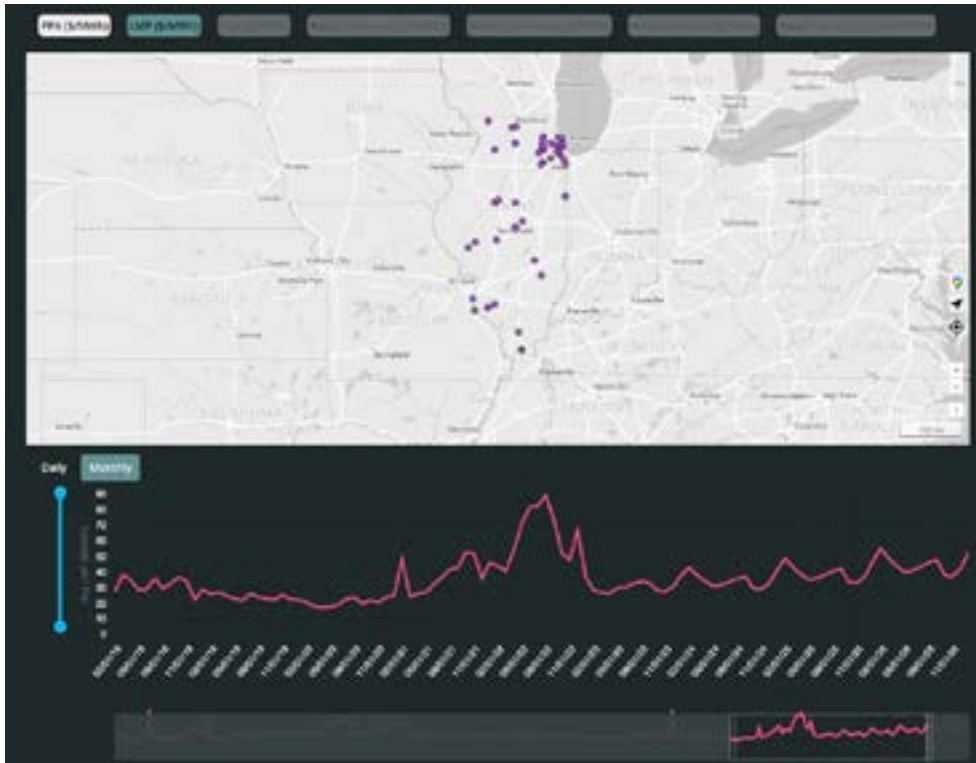
in Illinois. The current commercial electricity rate is 11.74 ¢/kWh which is a 32.6% increase compared to the commercial electricity rate of 8.85 ¢/kWh in 2020.

Higher LMP prices correspond to higher electricity costs, which could mean more money for solar installations. When compared to solar projects in areas with lower LMP pricing, locations with higher LMP prices may result in higher revenue. Power purchase agreements (PPAs) and solar project participation in energy markets are both impacted by LMP. The ability to engage in market transactions and maybe land more advantageous PPAs gives solar projects situated in areas with favorable LMP pricing a competitive edge in the electricity markets. LMP can affect the PPAs for solar projects' pricing conditions, lengths, and general allure.

By offering participants in community solar more potential power bill savings, higher LMP pricing can improve the value proposition. Greater adoption of community solar may result from community solar projects situated in regions with higher LMP prices being more economically feasible and appealing to potential members.

Illinois

LMP Scorecard



Merchant Energy Pricing: Market: MISO & PJM Hub: Illinois Hub	
Number of price nodes active:	46
Average LMP price as of 07/01/23:	\$25.81
Average retail price as of 07/01/23 (how much a community solar farm or behind the meter electricity generation sales electricity for + consumer purchase cost)	11.74¢/kWh Current commercial electricity rate 8.85¢/kWh Rate in January 2020, +32.6% incr.
Percentage change in average LMP in the past 3 years	+40.27%
Forecasted percentage change in average LMP Price for 2024:	+14.45%

Average LMP Prices: Historical & Forecasts

Year	Avg LMP Price (\$/MWh)
2018	\$33.69
2019	\$23.56
2020	\$18.65
2021	\$34.84
2022	\$60.21
2023	\$26.16
2024 (est.)	\$29.94
2025 (est.)	\$33.55
2026 (est.)	\$37.76

Based on the LMP and ISOs data in Illinois, the 2024 average LMP is estimated to be \$29.94 / MWh, increasing by 15% compared to 2023.

Illinois

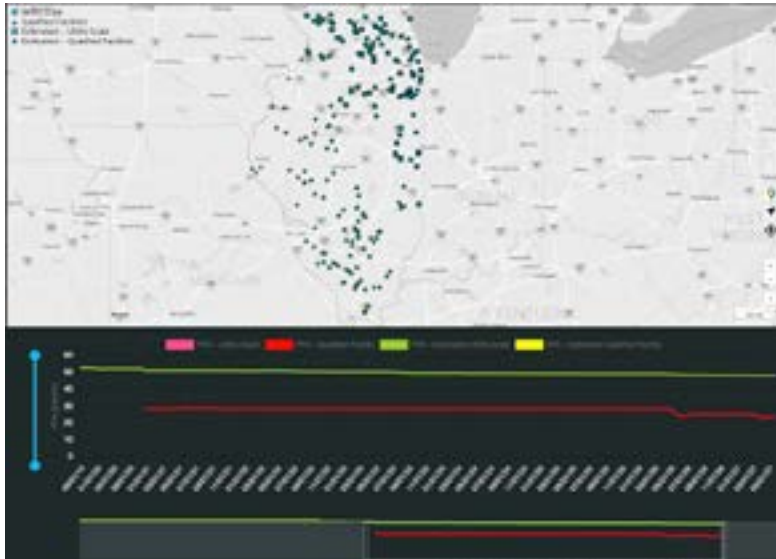
PPA Data

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 Utility-Scale PPA price in Illinois is \$79.14 \$/MWh. This price has decreased by 4.5% in the past 3 years. A lower PPA price means that the cost of power from the particular project is now more competitive when compared to other energy sources. It implies that a solar or wind farm, for example, has become more cost-effective and is now able to offer electricity at a cheaper cost, making it a more alluring option for

consumers. Electricity consumers may benefit from cheaper electricity prices as a result of a drop in PPA prices. This can lower consumers' overall energy expenses and have a positive effect on their electricity bills, whether they are residential, commercial, or industrial customers.

Illinois PPA Scorecard



Average PPA price 2023:	\$79.14
Average PPA price change in the last 3 years	-4.5%
Largest PPA buyers:	Amazon & Meta

Average PPA Prices:

Year	Price (\$/MWh)
2018	\$90.25
2019	\$88.23
2020	\$82.90
2021	\$79.99
2022	\$79.14
2023	\$79.14

Federal & Illinois State Tax Incentives for Solar Developers

There are several federal and state incentives available for solar development in Illinois, 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.

IL Solar Development Incentive	Type	About
Illinois Adjustable Block Program (ABP)	State	The ABP provides payments, known as Adjustable Block Credits (ABCs), to developers based on the energy produced by their solar projects.
Renewable Portfolio Standard (RPS)	State	The Illinois Power Agency sets targets for the RPS which is the percentage of energy that utilities must derive from renewable sources. Under the RPS the Illinois Power Agency manages RECs (Renewable Energy Credits)
Future Energy Jobs Act	State	The FEJA promotes renewable energy development, energy efficiency, and job creation in the state.
Federal Solar Tax Credit (ITC)	Federal	Developers can claim 30% of the installation cost as a credit on their federal income taxes.

Illinois Adjustable Block Program (ABP)

The ABP is an Illinois state program that offers incentives for the development of solar projects, including community-scale and utility-scale installations. The ABP provides payments, known as Adjustable Block Credits (ABCs), to developers based on the energy produced by their solar projects. These credits can be sold to utilities or other entities that need to meet their renewable energy requirements, creating an additional revenue stream for developers.

In Illinois, the Adjustable Block Program (ABP) offers SRECs to solar energy system owners, including solar developers. SRECs serve as a financial incentive and can be earned based on the amount of solar electricity generated by a solar installation. The credits can be sold on the market to utilities or other entities seeking to meet their renewable energy targets or compliance obligations.

The value of SRECs can vary depending on factors such as market demand, supply of SRECs, and specific program rules. Developers of community-scale and utility-scale solar projects can benefit from the revenue generated by selling SRECs as an additional source of income to support their projects.

Illinois Power Agency: Renewable Portfolio Standard (RPS)

Illinois has a Renewable Portfolio Standard, which sets targets for the percentage of energy that utilities must derive from renewable sources. The RPS creates a market demand for renewable energy, including solar power. As a developer of community-scale or utility-scale solar projects, you can benefit from this policy as utilities seek to procure renewable energy to meet their obligations. This can provide opportunities for power purchase agreements (PPAs) or other contractual arrangements. Under the current standard

Illinois Power Agency is requiring large electric utility companies to source a minimum of 25% of their electricity from renewable sources by 2025. However, in 2022, only 13.5% of the electricity generated came from renewable sources. This was short of their 19% goal.

Since coming up short of this goal, Illinois is providing Renewable Energy Credits (RECs). RECs are certificates that are created when a renewable energy generating facility produces electricity. RECs may be sold to the utility for meeting the state's Renewable Portfolio Standards.



Current Status: 10% (as of 2021)

Future Energy Jobs Act

The Future Energy Jobs Act (FEJA) is an important legislation in Illinois that was enacted to promote renewable energy development, energy efficiency, and job creation in the state. It includes provisions specifically aimed at supporting developers of renewable energy projects, including solar developers.

FEJA introduced a **Community Solar Program**, which allows for the development of shared solar projects. These projects enable individuals and organizations that cannot install solar panels on their own properties to benefit from solar energy. Developers can build and operate community solar projects and offer subscriptions to community members who receive credits on their electricity bills based on the energy generated by their subscribed share of the project.

Federal Solar Tax Credit, also known as the Investment Solar Tax Credit (ITC)

Developers of community-scale and utility-scale solar projects are eligible for the Federal Solar Tax Credit as long as the solar energy systems they install meet the requirements. The tax credit percentage for community-scale solar and utility-scale solar projects is also 30% of the total project cost. This means that developers can claim 30% of the installation cost as a credit on their federal income taxes.



With such a wealth of new data on the state of Solar Development in Illinois, we imagine you might have questions about how to apply these trends, data, and tools to your own solar development efforts in Illinois. 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. Scan the code to the right to schedule time with our team to talk one on one.



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