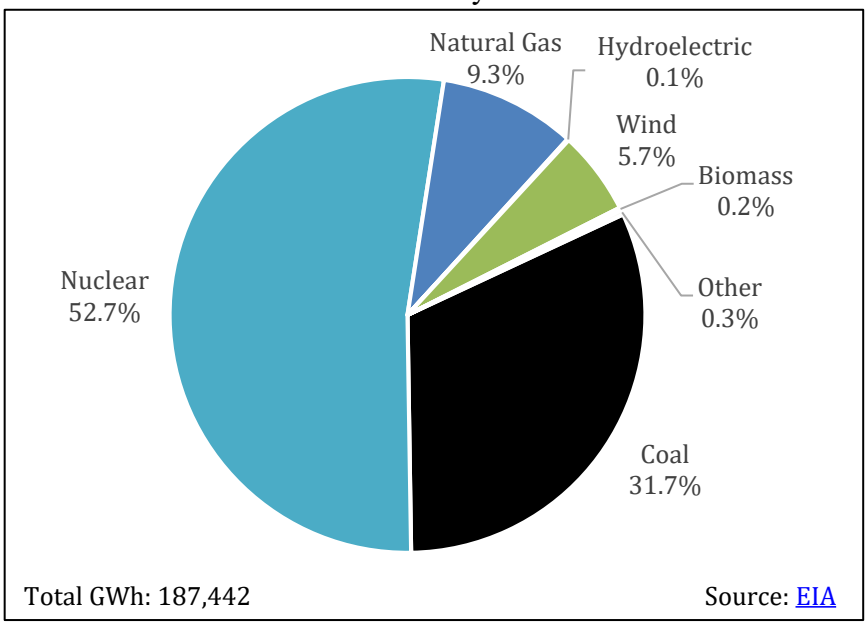
State Brief: Illinois

BACKGROUND

Illinois' energy mix is dominated by nuclear. In 2017, the state ranked first in the nation for net electricity generation from nuclear, and Illinois' nuclear plants accounted for 12% of total U.S. nuclear generation. Illinois has one-fifth of the nation's economically-recoverable coal reserves and is the nation's third-largest bituminous coal producer after West Virginia and Pennsylvania.

Illinois' Electricity Mix 2016



Total GWh: 187,442 Source: EIA

The Prairie State's primary renewable resource is biofuels, and Illinois is a leading producer of both ethanol and biodiesel. In 2017, Illinois was sixth in the nation for installed wind capacity, with approximately 4,300 megawatts (MW) online and an additional 600 MW in development.

The Governor appoints the five members of the bipartisan Illinois Commerce Commission (ICC) to a term of five years. The Democratic Party holds majorities in both chambers of the state's General Assembly. Governor Bruce Rauner (R) was sworn into office in January 2015.

In 2007, the General Assembly created the Illinois Power Agency (IPA) to develop electric procurement plans that "ensure adequate, reliable, affordable, efficient, and environmentally sustainable electric service at the lowest total cost over time." The Agency also develops and implements a long-term renewable resources procurement plan that is intended to meet the goals of the Future Energy Jobs Act (discussed below).

POLICY STRENGTHS AND OPPORTUNITIES[1]

The National Renewable Energy Laboratory (NREL) developed the notion of "policy stacking,"[2] an important framework for policymakers to consider. The basic idea behind policy stacking is that there is an interdependency and sequencing of state policy that, when done effectively, can yield greater market certainty, private sector investment, and likelihood of achieving stated public policy objectives.

In theory, but not always in practice, clean energy policies can be categorized into one of three tiers of the policy stack. Tier 1, market preparation policies, remove technical, legal, regulatory, and infrastructure-related barriers to clean energy technology adoption. Tier 2, market creation policies, create a market and/or signal state support for clean energy technologies. Tier 3, market expansion policies, create incentives and other programs in order to expand an existing clean energy market by encouraging or facilitating technology uptake by additional market participants.

For example, before financial incentives for combined heat and power (CHP) will be successful, two key considerations for deployment are having clear interconnection standards and favorable stand-by rates for customers who opt to add CHP. In this example, states should adopt policies to address interconnection and stand-by rates before adopting financial incentive programs.

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[1] For more information on policy opportunities, please visit the SPOT for Clean Energy. For more information on specific policy actions related to these opportunities, please review the *Clean Energy Policy Guide for State Legislatures*.

[2] V.A. Krasko and E. Doris, *National Renewable Energy Laboratory*, 2012. Strategic Sequencing for State Distributed PV Policies: A Quantitative Analysis of Policy Impacts and Interactions. http://www.nrel.gov/docs/fy13osti/56428.pdf.

GRID MODERNIZATION

Policymakers can view grid modernization as creating a policy structure that supports and ties together many other initiatives, such as smart metering infrastructure, customer data management, energy storage, electric vehicle infrastructure, and utility business models.

In the last two decades, new digital technologies have enabled utilities to better manage the grid and provide opportunities for consumers to customize their services to fit their priorities. These technologies allow a two-way flow of information between the electric grid and grid operators and between utilities and their customers. Emerging technologies improve system reliability and resiliency by enabling better tracking and management of resources. These technologies allow grid operators to incorporate central and distributed energy resources, energy storage technologies, electric vehicles, and assist in addressing the challenges associated with planning, congestion, asset utilization, and energy and system efficiency. On the customer's side of the meter, advanced metering infrastructure, dynamic pricing, and other emerging technologies allow an exchange of information and electricity between a consumer and their electric provider.

According to GridWise Alliance's latest Grid Modernization Index, Illinois is second only to California for overall grid modernization efforts. The state's success is a result of several policies, including the Energy Infrastructure Modernization Act of 2011 (EIMA), which authorized electricity providers Commonwealth Edison (ComEd) and Ameren to recover the costs of up to $3.2 billion in grid modernization investments. The Future Energy Jobs Act, which went into effect on June 1, 2017, will enhance grid modernization efforts (discussed below). Launched in March 2017 in response to the Future Energy Jobs Act, NextGrid Illinois is an 18-month collaborative initiative managed by the University of Illinois in consultation with the ICC. The goals of the initiative include developing both a final report detailing the opportunities and challenges of grid modernization, and a "21st Century regulatory model that supports innovation."

ComEd plans to install four million smart meters across northern Illinois by the end of 2018, and by the end of 2019, all Ameren Illinois customers are scheduled to have new meters. ComEd and Ameren are using data collected from smart meters to track emissions reductions associated with such things as reducing outages, decreasing energy demand, and providing access to renewable energy. The Environmental Defense Fund (EDF) expects that this new tool can be used by the utilities to claim the performance-based incentives offered by the state to utilities that meet Illinois' grid modernization goals. In July 2017, the ICC issued an order finalizing the Open Data Access Framework developed by EDF and the Citizens Utility Board. The framework provides guidelines for securing and sharing energy use data to reduce electricity demand. The order requires that Ameren, ComEd, and other stakeholders consider the framework as they design new smart meter-based data services and programs. Improving customer access to data should expedite the grid modernization process.

In line with the notion of policy stacking, discussed above, and to ensure the success of the Future Energy Jobs Act, Illinois' policymakers might consider requiring that utilities develop plans to enhance cybersecurity, integrate distributed energy resources (including electric vehicles and energy storage), and measure and report on the results of these efforts. The state might also expand existing performance-based incentives to reward utilities that meet cybersecurity and distributed energy resource (DER) goals. The adoption of incentives for or a requirement to integrate a certain amount of energy storage on the grid alongside enhancing renewable energy and electric vehicle policies would also support modernization efforts.

ENERGY STORAGE

Energy storage offers a unique opportunity to dynamically manage supply and demand while maximizing the value of grid resources. By deploying storage in strategic locations, utilities can more effectively manage their energy portfolios. First, storage provides management of intermittent demand – helping to flatten peak demand requirements for the utility. Second, the responsiveness of energy storage can allow the utility to implement voltage regulation and other ancillary services, which are useful for improving system efficiency. Third, storage can dispatch power to better integrate intermittent resources like renewable energy. Finally, energy storage can help the commercial sector avoid costly demand charges. As utilities around the country consider extending demand charges to the residential sector, this will become an even more important issue.

The flexibility of battery storage, combined with advanced metering infrastructure, allows customers to control how and when they use energy from the grid or from solar panels installed on their home or business. In most cases, this can provide greater cost savings than standalone solar systems. Combined with time-varying rates or real-time pricing programs, state policy can further support customer choice and open a new market for energy services. Prices that better reflect the time-varying and location-dependent costs of producing and delivering electricity can lead to a number of economic and environmental gains.

Storage provides multiple benefits to both the customer and the utility. State planning and regulatory policies can help maximize these benefits by 1) establishing a framework for easy integration of energy storage into the grid and 2) establishing a marketplace that monetizes the benefits of energy storage for cost effective investment.

The Institute for Sustainability, Energy, and Environment at the University of Illinois at Urbana-Champaign is working on developing energy storage technologies that will enable storing renewable energy, integrating electric vehicles (EVs), and employing thermal energy for enhanced building efficiency. ComEd announced a community energy storage pilot project in March 2017. The project will focus on improving reliability and reducing power outages using a 25 kilowatt hour (kWh) lithium-ion battery in Beecher. In February 2018, the ICC approved ComEd's plan to construct one of the first utility-scale microgrid clusters in the nation in a neighborhood on Chicago's South Side. The utility received over $5 million in grants from the Department of Energy to develop and test the system that will integrate solar and battery storage. In June 2018, the ICC held a policy session to explore barriers to and opportunities for deploying energy storage.

The Illinois Science and Energy Innovation Trust offers financial and technical support to public and private entities for programs and projects that support, encourage, or utilize innovative technologies and methods to modernize the state's electric grid, including energy storage. There are several opportunities for developing supportive state policies:

1. Amend existing interconnection policies to ensure that storage can connect to the grid through a transparent and simple process. The Interstate Renewable Energy Council (IREC) has produced a series of interconnection protocols that states can easily adopt. The state could establish best practices for interconnecting storage in statute, or legislation could provide an instruction to the PUC to update existing policy.

2. Instruct utilities to evaluate the value of energy storage in multiple strategic locations across the utility system and consider a requirement to deploy storage where it will be cost effective, or identify the price point at which it will become cost effective.

3. Require the inclusion of energy storage as a critical piece of the energy system as both a demand and supply management resource. Some states have required that utilities evaluate the cost effectiveness of non-wires alternatives (NWAs) to large transmission and generation investments. Alternatively, states might want to require utilities to develop a distribution investment plan that identifies the locations on the distribution system where energy storage or other distributed resources would offer the greatest value.

4. Consider adding a mandatory energy storage procurement target or requirement for energy storage with a documented process for periodic review of progress towards that goal. Procurement targets can jump-start market creation, spur fast learning, and guide the development of a regulatory framework. Five states currently have energy storage goals that range from five megawatt hours (MWh) to two gigawatts (GW).

5. Finance and incentivize energy storage for customers and utilities. Incentives could enable customers to use storage to manage their electric load and store locally produced renewable energy. Incentives in the form of rebates, grants, and tax credits can provide a bridge to scalable deployment for storage. Incentives can be designed to decline as storage values become more readily monetized. Policymakers could allow utilities that provide incentives to customers to recover the costs of developing programs that enable dynamic and time-varying energy management from multiple distributed battery systems. This should signal to customers the value of leveraging storage while better aligning customer costs with system costs. Financing energy storage installations for commercial customers would help reduce their demand charges. Policymakers might want to start first with a policy to incentivize solar system owners.

MAINSTREAMING RENEWABLES

As the renewable energy industry has matured, technology has improved, and global production of generating equipment has increased, renewable energy is increasingly seen as the least cost and lowest risk form of energy (excluding energy efficiency). A Bloomberg New Energy Finance report from this year predicts that at least 50% of total global electricity will be renewable by 2050. With increased deployment, utilities are learning more about how to integrate renewables effectively, investors are becoming more comfortable with the technologies, and building code officials are recognizing common standards and best practices. For these reasons, it is in the interests of policymakers to ensure that their states are well positioned to benefit from the transition to clean and sustainable energy resources.

To reduce barriers to customer and utility participation in the renewable energy market, policymakers in Illinois might consider several options.

Customer-Oriented Policies

1. Interconnection, net metering, and streamlined permitting – In general, customers want a clear, streamlined, affordable, and predictable system for connecting renewable energy systems to the grid. To ensure this, Illinois policymakers could consider removing net metering system size limitations and the aggregate capacity limit. The Future Energy Jobs Act preserved the state's net metering rules and net metering will continue in Illinois until the aggregate cap is reached. After that, solar owners will receive "an up-front value of solar rebate to account for their geographic, time, and performance-based values to the grid." The ICC began investigating compensation options in March 2018. The Future Energy Jobs Act also amended net metering provisions to provide for community solar and aggregated net metering for any facility with a nameplate capacity of no more than 2 MW. Expanding this policy by increasing system size limitations and explicitly allowing aggregated net metering on a single property would be especially beneficial to the state's agricultural operations. Other applications for aggregated net metering include commercial properties and public entities like state and local governments, universities, and schools. The state might also consider establishing either statewide standards for streamlined permitting processes, or resources to support local governments that voluntarily implement a streamlined program, as Chicago has done. State incentives, such as tax credits, financial incentives, or loans can be tied to systems that are established within a designated streamlined permitting jurisdiction.

2. Shared Renewables – Due to building and property attributes and ownership issues, many customers are unable to install renewable energy technologies. Allowing shared, or community, renewable energy projects addresses these barriers. These projects have multiple owners or subscribers who pay for a portion of the generation provided by the system. The Future Energy Jobs Act requires that the IPA develop a community renewable generation program for residential and business customers, including those served by municipal and cooperative utilities. As part of this requirement, the IPA will also "establish an adjustable block program for distributed and community solar projects that includes administratively determined renewable energy credit (REC) prices." To expand access to the program, policymakers might consider increasing both the program cap of 400 MW by 2030 and system size limitations. Advanced Energy Economy (AEE) found that the program cap "is likely to fall short of meeting customer demand [as the cap] would only allow the program to serve about 2% of residential customers in Illinois – far lower than the 47% of residential customers that have expressed interest." AEE also suggests that "because solar projects often drop in cost at approximately 5 MW, allowing larger projects would facilitate greater participation and enable all customers to benefit from improved economies of scale."

   Shared renewables policies can also be designed to drive low-income participation, as credit ratings often exclude participation in renewable energy markets for low-income populations. Ensuring participation by low- and moderate-income households can increase adoption of renewable technologies and reduce energy costs. Illinois could also coordinate its program with the state's Weatherization Assistance Program to assist recipients with participation in a shared renewable system.

   The Solar for All program, created by the Future Energy Jobs Act, will increase access to solar in economically disadvantaged communities and in areas that meet program standards for designation as environmental justice communities. Three of Solar for All's four subprograms target different types of customers and provide financial incentives to developers. The first provides funding for solar projects for single- and multi-family housing in low-income areas. Projects must coordinate with the Solar Training Pipeline and two other workforce development

programs. This is intended to help the program meet a goal that 50% of trainees come from environmental justice communities and that 2000 jobs are created for people with a legal record and/or who are alumni of the foster care system. The second subprogram encourages participation in community solar projects by waiving subscription fees for low-income participants and offering incentives for projects that can demonstrate that they are 100% low-income subscriber owned. The third provides financial incentives for on-site projects for non-profit and public sector customers. To qualify, projects must demonstrate input from the community and/or that the project is located at a facility owned by an organization that is a critical service provider in the community. The IPA's long-term procurement plan, approved by the ICC in April 2018, sets aside $30 million for implementing the program.

There are additional policy options that Illinois might consider to promote renewable energy uptake by low- and moderate-income consumers. Generally, successful state policies should be tailored to these customers, be cost-effective and financially sustainable, have measurable performance indicators, and be flexible enough to allow later changes in design.

3. Corporate Procurement – Many Fortune 100 and 500 companies have established either climate goals or commitments to purchase renewable energy. In just the last four years, over nine gigawatts (GW) of renewable contracts have been announced by corporate entities. In the first quarter of 2018 alone, corporations signed 14 agreements for over 1700 MW of renewable energy. This is leading policymakers to provide additional avenues for businesses to procure renewable energy. Ikea has pledged to meet a 100% renewable energy target by 2020. The company owns three of the Illinois' largest solar rooftop installations. In 2017, Illinois ranked second in the Corporate Clean Energy Procurement Index for the ease with which companies located in the state can procure renewable energy. Illinois' policy provides companies multiple options for purchasing renewable energy. To expand access, the state might consider amending the community solar program as described above. In addition, it is prudent to incorporate corporate renewable purchase commitments into long-term plans. Integrating renewable purchase commitments into the IPA's planning process would help to ensure that state and corporate renewable energy goals are met.

Utility-Oriented Policies

Some states have created programs that aim to reduce greenhouse gas emissions and increase investments in clean energy resources. States might see an emissions or clean peak standard as the next step in a progression from renewable portfolio standards (RPSs). Illinois' RPS was adopted in 2007. The policy required that large investor-owned electric utilities (IOUs) and alternative retail electric suppliers (ARES) meet a 25%-by-2025 renewable target. Complications in funding left renewable procurement "at a standstill." The Future Energy Jobs Act addressed this issue and instituted a long-term procurement plan requiring that companies meet the RPS by securing RECs from new projects. The Act also gave preference to in-state projects. One of the more significant changes, the Act phases in programs and renewable procurements for all retail customers, not just those who remain on utility default service. IPA's recently approved long-term renewable resources procurement plan is expected to result in the development of an additional 2500 MW to 3000 MW of solar and 1400 MW of wind. While ComEd has committed to meet Illinois' 25%-by-2025 RPS, Ameren has a goal to reduce its carbon emissions 80% by 2050.

To increase utility adoption of clean energy technologies, Illinois' policymakers might consider the following:

1. Emissions standards can take a technology neutral approach that looks at the total emissions of the utility portfolio and drive emissions down with a combination of renewables, traditional fuels, efficiency, and technological advances. Emissions reductions can be achieved through 1) a carbon portfolio standard approach, or 2) a market-based approach. A portfolio emissions standard sets emissions reduction targets to be achieved over time. This can be implemented through the IRP process or by establishing a maximum allowable rate of emissions per unit. Under a market-based approach, a state or a group of states might set a certain emissions reduction target, for example, 20% below 1990 levels by 2040. This reduction is achieved by the distribution of annual emission allowances that decrease to the point that the standard is met in 2040. One of the advantages of a market-based program is that it is designed to reduce emissions in the most economically efficient manner possible. Such a standard can also address other concerns such as pollution, asthma risk, environmental justice and water use.

2. Clean Peak Standards aim to increase the share of clean energy resources used to meet peak demand and decrease energy bills over the long-term by reducing peak demand in the hours when energy costs are highest.

These objectives can be met through different policy options including: planning and procurement that focuses on peak demand; a moratorium on the construction of new peaking units or a phase out of existing units; incentives – including carve-outs in states with RPSs – for clean energy resources delivered during peak times; and/or adopting a new clean peak standard that sets a target for clean energy deliveries during peak times.

ELECTRIFICATION OF THE TRANSPORTATION SECTOR

An estimated 55% of new car sales will be electric by 2040. Therefore, a key part of building a modernized grid involves designing infrastructure that will facilitate easy connection of electric vehicles (EVs) to the grid. One of the most important barriers to increased adoption of EVs is the consumer's awareness of the availability of EV charging stations. Ultimately, drivers want to be sure that their car will get them where they need to go. Another important barrier to increased adoption of EVs is their higher up-front cost as compared to similar conventionally fueled vehicles. The good news is that both supportive policies for developing charging infrastructure and technological advancements have eased "range anxiety."

The Illinois Science and Energy Innovation Trust offers financial and technical support to public and private entities for programs and projects that support, encourage, or utilize innovative technologies and methods to modernize the state's electric grid, including EVs and EV supply equipment (EVSE) that allows EVs to engage in smart grid functions. The Illinois Department of Transportation is required to install at least one EVSE at each interstate highway rest area where electrical service will reasonably permit by January 1, 2016, or as soon as possible thereafter. EVs are eligible for a discounted registration fee and are exempt from state motor vehicle emissions inspections. Illinois also has also adopted legislation for an Alternative Fuel Rebate Program and an EVSE rebate, but both programs are currently suspended. The Illinois Electric Cooperative provides low-interest loans to members purchasing an EV.

The Illinois Electric Vehicle Advisory Council outlined strategies for increasing EV adoption in its 2011 Final Report. To complement the ICC's policy session on the "Nexus between EVs and grid stabilization," legislation could require an update to this study. Policymakers might want to coordinate with regional efforts. Charge Up Midwest and the Great Plains Institute co-convened the Midcontinent Transportation Electrification Collaborative (M-TEC), which coordinates regionally to increase EV use and has been working to address potential challenges for DC fast charging along highway corridors. M-TEC's April 2018 whitepaper sets out consensus guiding principles for utility EV program design.

There are several additional opportunities to expand the market for EVs in Illinois:

1. EV and EVSE Financing and Financial Incentives – Providing additional financial incentives and innovative financing options can help spur greater market penetration of EVs. Sales, property, and income tax credits are some of the simplest methods for addressing high up-front costs of EVs and EVSE. While sales tax credits are typically applied at the time of purchase, property and income tax credits may do less to address upfront cost barriers as receipt of the credit is typically removed in time from the purchase.[3] Some states have adopted other financial incentives including low-interest loans and grants. A handful of states qualify EVSE under their property assessed clean energy (PACE) programs. A simple solution is to increase and expand existing tax credits to incentivize commercial, publicly available charging stations. Policymakers might also refund and redesign the Alternative Fuel Vehicle (AFV) and Alternative Fuel Rebates and the EVSE Rebate programs.

2. Charging Infrastructure Plan – Locating charging infrastructure is different from locating conventional fueling stations. For the most part, EVs are cars used for commuting and local trips. Furthermore, while a driver of a conventional vehicle stops only briefly at a gas station for the specific purpose of filling up, a driver of an EV is generally looking to refuel when they are parked for a longer period of time, for example when going shopping, going to a restaurant, or going to work. Charging infrastructure plans should target these types of locations and attempt to pair the appropriate level of charging infrastructure with a reasonable amount of time a person will be at that location. Legislation could direct a state agency to develop such a plan through a stakeholder process.

[3] A study by the Congressional Budget Office however suggests that tax credits are important tools for ensuring increased adoption of alternative-fueled vehicles.

Illinois could also participate in a regional plan to promote EV adoption across multiple states. For example, eight Western state governors recently signed a memorandum of understanding to create a regional EV infrastructure plan (the REV West Plan).

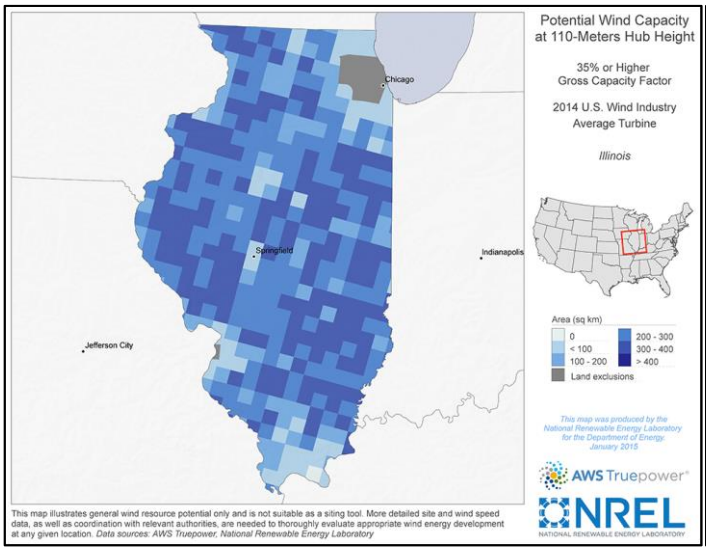
3. Parking Infrastructure Requirements – In tandem with the development of a statewide plan, legislation could set requirements for EV parking infrastructure. Some states have adopted permitting standards for parking lots, requiring, for instance, that for every 100 parking spaces, there must be at least one EV charging space. Legislation could also incentivize utilities to develop make-ready locations. These locations supply power to the point where a utility or third-party developer might install an EV charging station. Illinois' statewide building energy code could also be updated to include requirements for EV charging infrastructure.

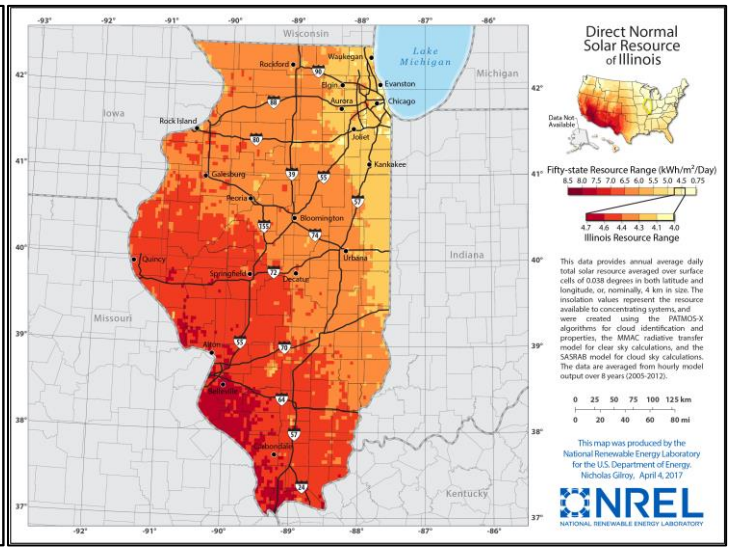
NEWS

- July 15, 2018: New Program Makes Soaking up the Sun Easy
- July 13, 2018: Solar Farm Projected for 2019 Completion
- July 5, 2018: Industry, Regulators React to FERC Rejection of PJM Market Reform Proposals
- June 21, 2018: Illinois Energy Law Lures Northeast Commercial-Industrial Solar Developer
- June 6, 2018: Illinois Bills for Solar on Farmland Await Governor's Signature
- May 31, 2018: U.S. Energy Regulators Back Illinois Legislation
- May 16, 2018: Ameren Illinois Becoming More Energy Efficient Over the Next Few Years
- April 25, 2016: In Illinois, Blockchain Startups Seek to Work with Utilities on Grid Software
- April 5, 2018: Illinois Regulators Adopt Ambitious Renewables Plan
- April 2, 2018: In Illinois, The Humble Utility Pole Meets the Smart Grid

ILLINOIS' WIND AND SOLAR RESOURCES

WIND https://windexchange.energy.gov/states/il[4]
SOLAR https://www.nrel.gov/gis/solar.html





[4] Please see your packet for a higher resolution wind energy capacity map.

OTHER RESOURCES

- American Wind Energy Association (AWEA), Illinois: http://awea.files.cms-plus.com/FileDownloads/pdfs/Illinois.pdf
- Illinois Department of Commerce & Economic Opportunity: https://www.illinois.gov/dceo/Pages/default.aspx
- The Illinois Power Agency: https://www2.illinois.gov/sites/ipa/Pages/default.aspx
- The American Council for an Energy-Efficient Economy State and Local Policy Database, Illinois: https://database.aceee.org/state/illinois
- The Database of State Incentives for Renewables and Efficiency, Illinois: http://programs.dsireusa.org/system/program?fromSir=0&state=IL
- U.S. Energy Information Administration, Illinois: https://www.eia.gov/state/?sid=IL
- National Renewable Energy Laboratory Biomass Maps: https://www.nrel.gov/gis/biomass.html
- U.S. Department of Energy's Alternative Fuels Data Center, Illinois: https://www.afdc.energy.gov/laws/state_summary?state=IL
- SPOT for Clean Energy, Illinois: https://spotforcleanenergy.org/state/illinois/
- Advanced Energy Economy, Advanced Energy Roadmap for Illinois: https://info.aee.net/advanced-energy-roadmap-for-illinois
- The Rocky Mountain Institute: From Gas to Grid – Building Charging Infrastructure to Power Electric Vehicle Demand
- The GridWise Alliance, EVs - Driving Adoption, Capturing Benefits: http://gridwise.org/evs-driving-adoption-capturing-benefits/
- The Regulatory Assistance Project, Performance-Based Regulation: https://www.raponline.org/event/performance-based-regulation-the-power-of-outcomes-part-1/

Our Resources

CNEE Homepage: http://cnee.colostate.edu/

The SPOT for Clean Energy: https://spotforcleanenergy.org/

The Advanced Energy Legislation (AEL) Tracker: https://www.aeltracker.org/

Clean Energy Policy Guide for State Legislatures: http://cnee.colostate.edu/cleanenergypolicyguide/

The Energy Policy Podcast: http://energypodcast.colostate.edu/

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