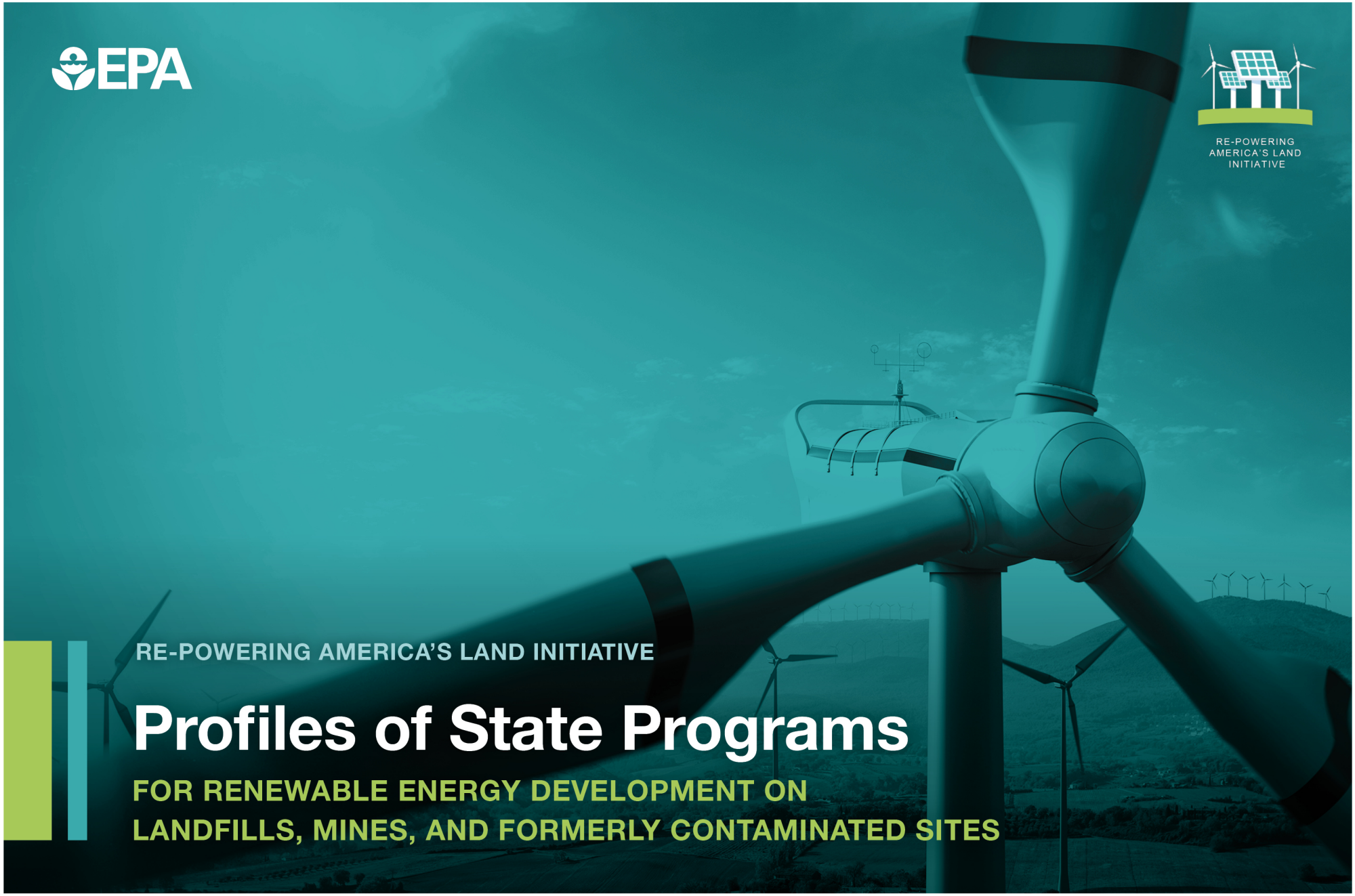

RE-POWERING AMERICA'S LAND INITIATIVE

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Profiles of State Programs

FOR RENEWABLE ENERGY DEVELOPMENT ON LANDFILLS, MINES, AND FORMERLY CONTAMINATED SITES

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Profiles of State Programs for Renewable Energy Development on Landfills, Mines, and Formerly Contaminated Sites for the U.S. Environmental Protection Agency (EPA) RE-Powering America's Land Initiative (RE-Powering)

Table of Contents

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Overview of Report

Background and Purpose

Renewable energy projects on landfills, mines, and current and formerly contaminated sites (hereafter "RE-Powering sites") have been successfully developed in 46 states and territories. These projects are engineered, constructed, and operated so that the renewable technologies do not interfere with existing or future corrective actions and, thereby, do not increase threats to human health or the environment from the sites. Most of the states with the highest levels of project development on RE-Powering sites have designed and implemented longstanding, state-specific programs targeted at such sites (hereafter "RE-Powering programs"). Additional states such as Illinois are implementing newer programs for renewables on these types of sites and seeing project development and deployment growth. Many other states, as well as local communities and utilities, are considering similar programs to expand landfill, mine, and contaminated site reuse and steer renewable development away from greenfield sites and agricultural lands, where feasible.

The state program summaries in this document are geared toward multiple audiences: state and local government energy, environmental, and economic development agency staff; legislators; renewable energy developers; land use, environmental, business, and labor officials; electric utility staff members in states considering adopting or expanding RE-Powering programs; and EPA headquarters and regional staff. The summaries are meant to educate readers about key aspects of relevant programs, allowing audiences to more fully and quickly address initial questions from state, local, regional, and other officials on program features and if, how, and why those features are associated with program success. Providing quick access to key program features through these summaries will help with replication and adaptation of best practices nationally as well as ensure efficiency in research and communication.

RE-Powering is piloting these program summaries with information from the three states with the most RE-Powering sites hosting renewable energy projects—Massachusetts, New Jersey, and New York—and a fourth state, Illinois, which requires that a portion of its new utility-scale solar projects be on RE-Powering sites. The summaries are informed by secondary source research and interviews with state agency staff, renewable energy developers, and other stakeholders in each state, but they are not meant to be comprehensive. Similar summaries of programs in other states may be added to the document in the future.

Overall Observations on State Program Design

One key observation from comparing the program designs implemented in Massachusetts, New Jersey, New York, and Illinois is how different they are as a result of being tailored to specific state market characteristics.

Another observation is that state programs can be grouped into eight categories:

1. Direct Financial Incentives
2. Procurement Preferences or Requirements
3. Streamlined Permitting & Environmental Reviews
4. Liability Relief
5. Site Identification & Development Support
6. Education & Outreach
7. General Brownfield[1] Reuse (not specific to, but also applicable to, renewable energy reuse)
8. Interagency Coordination

States with high levels of RE-Powering project deployment have all consistently implemented programs in several categories for many years. While their specific program designs vary widely, the following success factors appear to be universally applicable: (1) analyzing in-state markets to identify high-potential program components; (2) building on existing, broader renewable energy efforts in the state; (3) engaging with stakeholders to design the components; and (4) and ensuring that they complement broader trends and energy policies in the state.

[1] EPA defines a brownfield as "a property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant." See EPA, *Overview of EPA's Brownfields Program*, 2021, https://www.epa.gov/brownfields/overview-epas-brownfields-program.

Highlighting Individual State Program Best Practices

Massachusetts, New Jersey, and New York have achieved high levels of deployment for RE-Powering projects by implementing different programs tailored to their market characteristics, and Illinois is following a similar path.

In **Massachusetts**, the overall solar photovoltaic (PV) market has grown rapidly since 2010, spurred by solar-specific financial incentives and a virtual net metering (VNM) program that offers flexibility in allocating solar output credits produced in locations with little onsite electricity consumption (e.g., a landfill) to locations where there is substantial onsite consumption (e.g., municipal buildings in the town owning the landfill). That market backdrop, together with rules that incentivize solar projects, has been conducive to the development of landfill-based solar projects. The potential for such projects was very large, due to the number of municipal-owned landfills with between 5 and 30 acres suitable for ground-mounted solar projects. Dozens of such sites have already been converted to renewable reuse over the past decade.

To help capture this potential, Massachusetts implemented (starting in 2011) a long-term collaboration called the Clean Energy Results Program (CERP) between state departments managing environmental protection and energy resources. This and related programs offered a wide range of site identification and assessment, education, technical assistance, stakeholder engagement, streamlined permitting, and liability relief services focused particularly on solar and wind redevelopment of RE-Powering sites. Because Massachusetts has a strong tradition of home rule, programs tended to be implemented on a "bottom-up" basis that encouraged, rather than actively managed or required, local participation. As a critical accompaniment to these programs and a main driver of the state's significant solar market growth, Massachusetts implemented the Solar Renewable Energy Certificate and Solar Massachusetts Renewable Target incentive programs. These incentive programs have included enhanced financial benefits for solar projects on landfills and brownfields for the past 10 years.

These longstanding actions have helped Massachusetts RE-Powering projects overcome inherent barriers to development and ride the wave of rapid overall solar development in the state. The outcome is that Massachusetts is the most frequent implementer of RE-Powering projects in the United States with 128 total projects deployed, equal to 28% of all RE-Powering projects nationally.

New Jersey has the highest population density of any state and has been encouraging reuse of landfills, brownfields, and other types of underutilized sites for solar for more than a decade to preserve its limited greenspace. Its overall solar market has long been one

of the 10 largest in the United States, and RE-Powering sites have hosted 6% to 12% of all new solar capacity in the state each year between 2010 and 2019.

New Jersey has achieved this high share of RE-Powering sites through a combination of carefully managed procurement preferences for brownfields and landfills, direct incentive factors, and numerous other programs designed to reduce development costs, risks, and timelines for renewable reuse. In each iteration of the state's overall solar policy, it has included specific mechanisms for encouraging landfill and brownfield site reuse, including utility-scale and community solar procurement preferences in the Successor Solar Incentive Program established in 2021. The Office of Permitting and Project Navigation provides a one-stop shop to accelerate environmental permit coordination and review. The state has also been a leader in making data on RE-Powering sites available to potential developers, with a suite of free mapping tools that includes a community solar PV siting tool that integrates utility data on how much new solar can be accommodated at points on the grid with renewable energy potential and land use data layers.

In **New York**, a long tradition of providing streamlined permitting and environmental reviews for site redevelopment, clear capacity-based incentives for solar projects, and educational materials has contributed to steady growth, consistently placing the state near the top of the list nationally in RE-Powering sites. Those efforts helped two RE-Powering wind projects become operational near Buffalo, totaling 35 megawatts (MW) in capacity, and three to five new RE-Powering solar projects to typically become operational throughout the state each year.

In 2020, significant new legislation was enacted in New York that aims to greatly accelerate the deployment of 20+ MW renewable energy projects, with an emphasis on using underutilized lands (such as landfills and brownfields) where possible to meet the state's 70% by 2030 renewable energy goal. That legislation launched the Build-Ready Program, under which the state's energy agency will directly advance underutilized sites until the development projects on those sites can be auctioned to the private market. The Build-Ready Program seeks to identify, develop, and de-risk landfills, brownfields, mines, and other underused sites in collaboration with their host communities to overcome market barriers. This program began screening more than 500 sites in its first year.

Illinois implemented a procurement requirement in the Future Energy Jobs Act of 2017 that at least 2% of new utility-scale solar PV output must come from brownfield or landfill sites.[2] That requirement and other parts of the legislation have led to significant new

[2] Though the requirement is written for brownfield solar, its definition also includes solid waste sites such as landfills. See State of Illinois, *Future Energy Jobs Act*, https://www.ilga.gov/legislation/publicacts/99/PDF/099-0906.pdf.

RE-Powering project capacity in development. In the Climate and Equitable Jobs Act passed in September 2021, the state increased that requirement to 3% and expanded the definition of qualifying sites to include closed coal mines. The Climate and Equitable Jobs Act calls for significant acceleration of clean energy statewide, and the legislation assures that RE-Powering sites will be a part of that growth. The legislation complements a formal interagency Climate Working Group organized by the Illinois EPA and a brownfield loan program managed by that agency that can be useful for renewable energy reuse.

Individual State Program Profiles

Organization of the Profiles

The state program profiles are presented as short facts and observations in table format to make the information user friendly and allow for efficient updating in the future. Each state summary comprises the following sections:

- Overview
- Program profiles
    - Grouped by the eight program categories identified above
- Program best practices/success factors
- Achievements to date (including deployment trends)
- General electricity market factors
- Points of contact for more information

The state summaries were prepared by ICF Incorporated, LLC (ICF), under contract to EPA, with assistance from EPA contractor General Dynamics Information Technology in the production of certain charts. Links to data sources are provided in the right margin of the document, where appropriate, and were current at the time of publication. Summary data attributed to the RE-Powering *Tracking Matrix* are from the October 2021 edition, unless otherwise noted. A list of acronyms and abbreviations used can be found at the end of the document.

The state profiles are presented in order of the number of RE-Powering projects installed, with Massachusetts listed first, followed by New Jersey, New York, and Illinois.

Topic	Massachusetts Data	Sources
	Overview	
	Massachusetts has more renewable energy projects and generation capacity on RE-Powering sites than any other state (per RE-Powering's *Tracking Matrix*). This fact is even more remarkable given that Massachusetts' aggregate electricity consumption is only the 29th largest of the states (per the U.S. Energy Information Administration).[3] More than 97% of the renewable project capacity on RE-Powering sites is for solar photovoltaic (PV), with the remainder being wind projects. Massachusetts began several efforts encouraging solar projects on RE-Powering sites in 2011, and double-digit deployment of such projects began the following year and was achieved in most years thereafter. Massachusetts' achievement is due to: (i) A decade of landfill- and brownfield-specific programs (e.g., added financial incentives for landfills and brownfields, streamlined permitting, liability relief, education) with dedicated staff, pursued in a collaboration between the state's energy and environmental agencies, and with consistent support from elected officials; and (ii) General features of Massachusetts' solar market. In the latter category, there are strong solar incentive programs, a virtual net metering (VNM) policy conducive to municipalities building solar projects at landfills and other sites, and high retail electricity prices by national standards. Massachusetts' success is largely attributable to this combination of factors, together with program rules and the prevalence of municipal-owned landfills with 5-30 acres of land suitable for solar-led	

[3] Data on total retail electricity sales from U.S. Energy Information Administration (EIA), U.S. Department of Energy, *State Electricity Profiles*, release date November 4, 2021, https://www.eia.gov/electricity/state/.

Massachusetts		
Topic	**Data**	**Sources**
	RE-Powering development to be concentrated between 1 megawatt (MW) and 6 MW in capacity (103 of Massachusetts' 125 RE-Powering solar projects are in that size range). In other states, the "sweet spot" size for RE-Powering development can differ.	
Program Profiles		
Direct Financial Incentives	There is a $0.04/kilowatt hour (kWh) adder for landfill solar projects and a $0.03/kWh adder for brownfield solar projects in the current Solar Massachusetts Renewable Target (**SMART**) tariff program. There is also a subtractor for greenfield projects. • The adders were established following a cost study of incentives necessary to put landfill and brownfield sites on equal footing with other sites. • Due to the design of this program, participants know at the outset of the development process what the incentive will be for the project over the tariff term of 10 or 20 years.	https://www.mass.gov/solar-massachusetts-renewable-target-smart
	Under its previous solar renewable energy certificate (SREC) program, landfill and brownfield solar projects had a SREC factor (i.e., multiplier) higher than other ground-mount sites in the state's **SREC-II** program (0.8 vs. 0.7) and were not subject to the same capacity cap as large greenfield sites. • The SREC-II program, like SMART, was performance-based (i.e., incentives were based on the kWh output of solar projects).	https://www.mass.gov/guides/solar-carve-out-and-solar-carve-out-ii-program-information

Topic	Massachusetts Data	Sources
	• Net SREC prices, before original multipliers ranging from 1.0 to 0.7, were $0.285/kWh through an auction process and were often higher in bilateral market transactions. • While there was an auction floor price in the SREC-II program that provided certainty to participants on minimum SREC prices each year, there was considerable uncertainty around realized SREC prices among participants forgoing the auction process and selling their SRECs through other mechanisms.	
Streamlined Permitting & Environmental Review	Massachusetts has various programs to **accelerate environmental review** steps and timelines for qualifying renewable energy projects.	https://www.mass.gov/siting-clean-energy-at-closed-landfills https://www.mass.gov/clean-energy-results-program
Liability Relief	"For renewable energy project developers interested in contaminated properties, Chapter 21E provides a number of **statutory liability protections** associated with contamination at the property for qualifying persons." "The liability protections most likely to be used by renewable energy developers are" for (i) eligible tenants, and (ii) eligible persons. • Eligible tenant protections include: Section 2 of Chapter 21E "is intended to exclude certain tenants from the statutory liability they may otherwise have merely as current operators at a contaminated site."	https://www.mass.gov/doc/addressing-renewable-energy-development-at-contaminated-properties-in-massachusetts-managing/download

Topic	Massachusetts Data	Sources
	• Eligible persons protections include: "Owners and operators who did not cause or contribute to contamination at the site and who meet other... requirements receive liability protection upon the completion of a cleanup."	

Site Identification & Development Support	To **aid in identifying promising sites** for reuse and ascertaining characteristics of existing sites that are hosting renewables, Massachusetts publishes:
	
	• A **database** of RE-Powering sites with general and renewable-related characteristics.
	  ○ The database has more than 1,000 site records and includes renewable energy-related information such as wind speed, local utility provider, and distance to transmission line for each record.
	
	• A **detailed map** showing operating solar and wind projects as well as in-development solar projects on landfills.
	
	• **Copies of permits** from approved landfill renewable energy projects.
	  ○ The approved project permit documents include site descriptions, summaries of environmental evaluations, and permit conditions.
	
	Massachusetts Department of Environmental Protection (MassDEP) staff also provide **post-closure landfill technical assistance** (e.g., with regard to solar development and other topics) on a regional basis.
		https://www.mass.gov/lists/developing-solar-photovoltaics-on-contaminated-land
		
		https://maps.env.state.ma.us/dep/arcgis/js/templates/RenewablesAtLandfills/
		
		https://www.mass.gov/lists/closed-landfills-with-permits-for-renewable-energy#communities-a-c-
		
		https://www.mass.gov/service-details/clean-energy-results-contact-services

Topic	Massachusetts Data	Sources
Education & Outreach	The state has produced and maintains an **extensive set of educational materials** and conducts in-person and online outreach, including: • Training presentations on renewables and complementary topics such as greener cleanups. • An extensive Q&A document on ground-mounted solar. • A detailed ***Guide to Developing Solar Photovoltaics at Massachusetts Landfills.*** ○ This guide includes insights on ownership structures, system design, permitting and utility interconnection, managing procurement, and operations and maintenance of constructed PV systems.	https://www.mass.gov/lists/developing-solar-photovoltaics-on-contaminated-land#technical-resources- https://www.mass.gov/doc/photovoltaics-on-massachusetts-landfills-0/download
General Brownfield Reuse	Among brownfield reuse programs, Massachusetts has a **Brownfields Redevelopment Fund** that "finances the environmental assessment and remediation of brownfield sites in designated Economically Distressed Areas." The fund is administered by MassDevelopment. There are two programs within this fund that can support site reuse separately or jointly: • Environmental assessments of up to $100,000. • Loans for "cleanup required for redevelopment" of up to $500,000.	https://www.massdevelopment.com/assets/what-we-offer/brochures/brownfieldsredevelopmentfund_brochure.pdf https://www.massdevelopment.com/what-we-offer/financing/loans-and-guarantees/ https://www.mass.gov/brownfields-cleanup

Topic	Massachusetts Data	Sources
	Additional general brownfields site assessment and cleanup programs in Massachusetts are described in the link to the right.	https://www.mass.gov/doc/brownfields-site-assessment-cleanup-funding/download
Interagency Coordination	This **collaboration between the Massachusetts Department of Energy Resources (DOER) and MassDEP** was established in 2011 and continues to operate to remove regulatory and other barriers to clean energy development in the state. • Clean Energy Results Program (CERP) activities pertain to renewable energy on landfills and brownfields as well as energy efficiency, anaerobic digestion and other waste diversion, and other air pollution control measures. There is also an emphasis on wastewater treatment facilities. • Technical assistance, regulatory guidance, and outreach are provided on a regional basis. There are four regions of the state, each with its own coordinator for different aspects of CERP (such as closed landfill renewable development support) who devotes a portion of their job to CERP. • The agencies also coordinate on incentives; DOER approves landfill and brownfield incentives after MassDEP completes its environmental review and approval processes. Note: Some of the program components mentioned earlier in this summary also fall under the CERP umbrella.	https://www.mass.gov/service-details/clean-energy-results-contact-services https://www.mass.gov/lists/clean-energy-results-progress-reports

Topic	Massachusetts Data	Sources
Program Best Practices/Success Factors		
Strong, Consistent Government Sponsorship	Consistent policies, programmatic support, and knowledge of renewable energy development in general and reuse of RE-Powering sites in particular, from the legislature, governor, and DOER and MassDEP agency leadership. For example, see Global Warming Solutions Act (https://www.mass.gov/service-details/global-warming-solutions-act-background) and Climate Change Strategy Executive Order (https://www.mass.gov/news/governor-baker-signs-climate-change-strategy-executive-order).	
Interagency Coordination	Strong links between DOER and MassDEP efforts through CERP and otherwise, as well as important contributions from the Massachusetts Clean Energy Center and MassDevelopment.	
Dedicated & Decentralized Staffing	According to EPA RE-Powering data, CERP originally had 29 staff members partially or fully supporting it; that total had declined to 16 staff members as of 2019. Post-closure landfill technical assistance (e.g., with regard to solar development) is performed on a regional basis. Many MassDEP staff have renewable support for landfills as a component of their jobs.	
Significant Financial Incentives	Favorable multipliers in the prior SREC-II program and adders of $0.03/kWh (brownfield) to $0.04/kWh (landfill) in the current SMART program for solar projects.	
Numerous Complementary Programs	To complement financial incentives, Massachusetts offers streamlined environmental review processes, liability relief provisions, sophisticated mapping tools and site databases, general brownfield loans, and extensive education and outreach materials. Agency staff are active in stakeholder settings and via conferences and webinars and have produced guides specifically tailored to RE-Powering sites.	

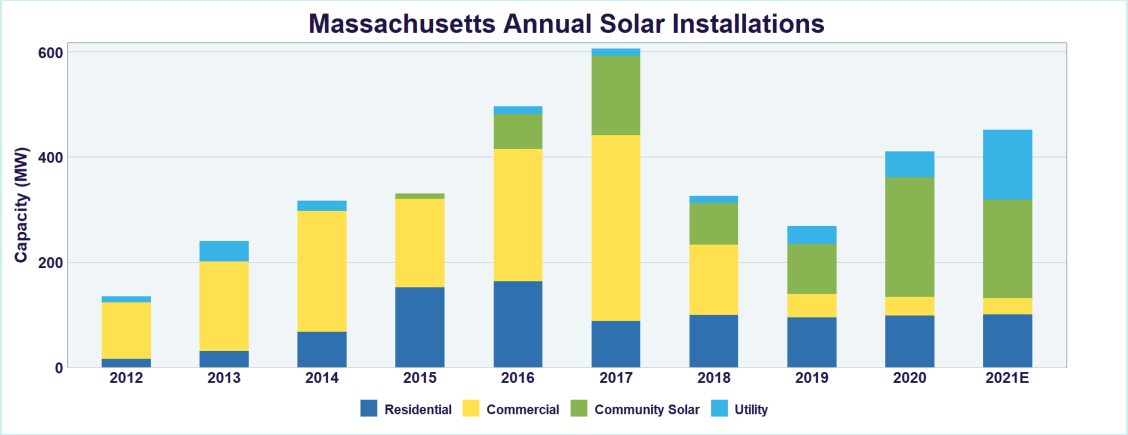
Massachusetts		
Topic	**Data**	**Sources**
Learning Curve (Internal and External)	MassDEP is experienced in landfill and brownfield project reviews, which expedites development of viable projects. • For brownfield determinations, sites must have evidence of past contamination AND technical or community difficulties in site reuse for other purposes. This is to avoid solar on sites that could be redeveloped for other purposes. The widespread development of solar projects on RE-Powering sites helps with community acceptance and reduces not-in-my-backyard (NIMBY) pushback. Solar landfill and brownfield projects are now widely accepted by the public and elected leaders. Nonetheless, there is still an abiding interest of communities in being assured of the safety of placing solar on landfills and brownfields.	
Barrier: Strong Home Rule	Because Massachusetts has strong home rule provisions and many towns, it can be difficult to impose state-level development requirements or hands-on development programs. This has affected Massachusetts' renewable program design (e.g., a program like New York's Build-Ready might face major local opposition if adopted in Massachusetts).	
Achievements to Date		
RE-Powering Data on All Renewable Technologies (as of Oct. 2021, unless otherwise noted)	• 128 operational projects (90% more than any other state, and 28% of all projects nationally). • 346 MW of installed capacity (more than any other state). • Three projects (aggregate capacity of 8 MW) are wind; the rest are solar. • Cumulatively, 12% of all state solar capacity is on RE-Powering sites, as of the end of 2020.	https://www.epa.gov/re-powering/re-powering-tracking-matrix https://www.eia.gov/electricity/state/massachusetts/

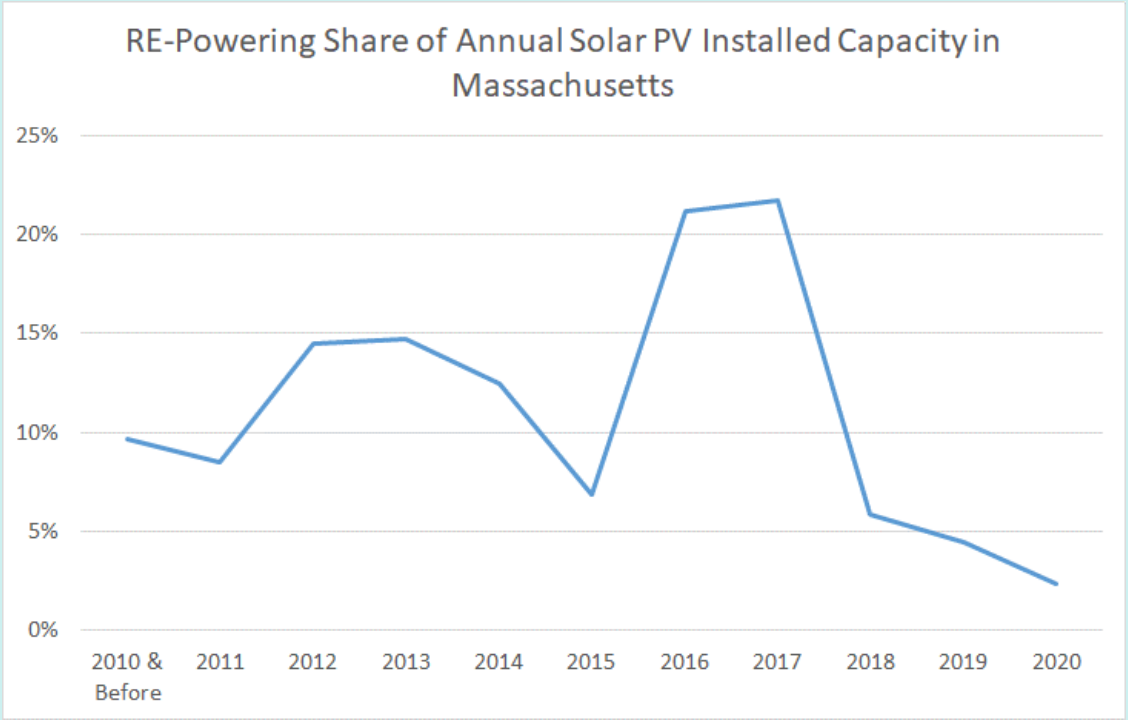
Topic	Massachusetts Data	Sources
	• Projects are most commonly 1-6 MW solar installations at municipal landfills. That size reflects incentive and VNM policies in this state as well as the large number of towns in Massachusetts with landfill acreage suitable for solar projects of that size.	
Massachusetts-Reported Data for Operational Solar Projects (only from SREC-II and SMART programs)	**<u>SREC-II-Approved Projects (2014-2018)</u>** Landfill and brownfield combined: 71 projects with a combined capacity of 185 $MW_{Direct\ Current\ (DC)}$; average capacity/project of 2.6 MW_{DC} • Landfill: 52 projects with a combined capacity of 134 MW_{DC}; average capacity/project of 2.6 MW_{DC} • Brownfield: 19 projects with a combined capacity of 51 MW_{DC}; average capacity/project of 2.7 MW_{DC} **<u>SMART-Approved Projects (2018-March 16, 2022)</u>** Landfill and brownfield combined: 15 projects with a combined capacity of 33.5 $MW_{Alternating\ Current\ (AC)}$; average capacity/project of 2.2 MW_{AC} • Landfill: 13 projects with a combined capacity of 28.4 MW_{AC}; average capacity/project of 2.2 MW_{AC} • Brownfield: Two projects with a combined capacity of 5.1 MW_{AC}; average capacity/project of 2.6 MW_{AC}	https://www.mass.gov/doc/solar-carve-out-ii-qualified-renewable-generation-units https://www.mass.gov/doc/smart-solar-tariff-generation-units

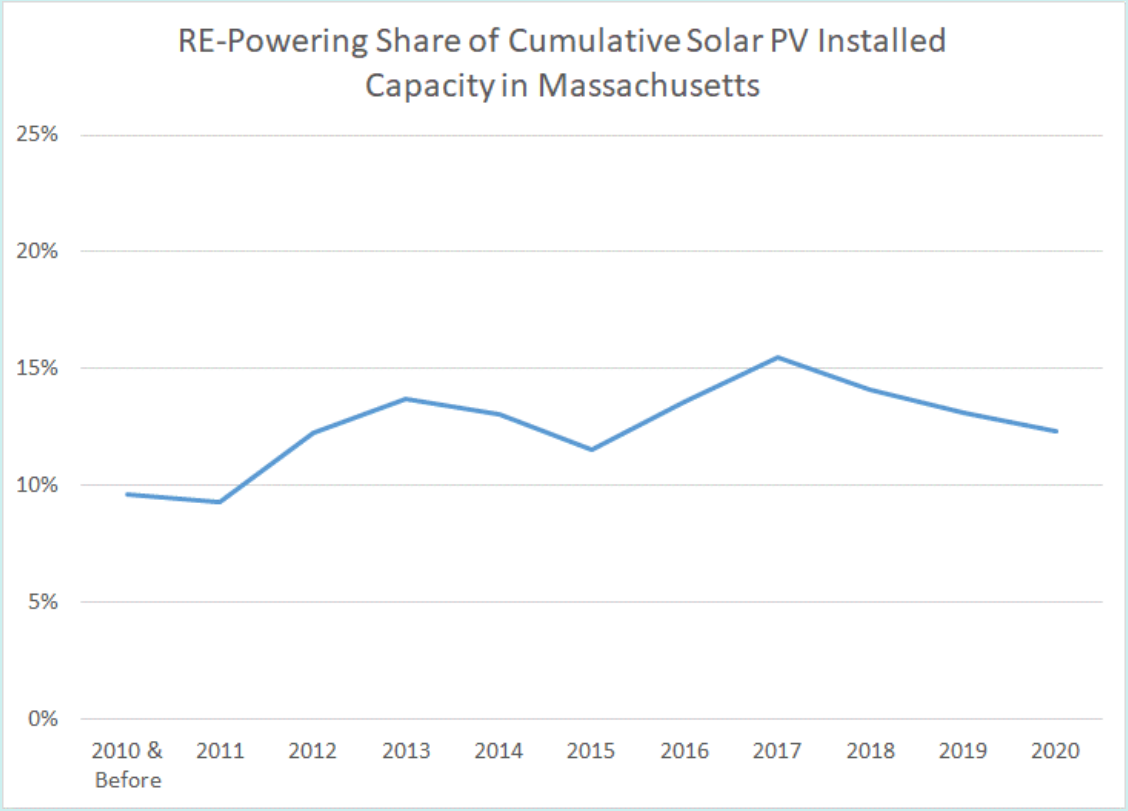
Topic	Massachusetts Data	Sources
	Of these 15 RE-Powering site projects in the SMART program, six also received the low-income community shared solar adder. • To receive the adder, a project must have "at least 50% of its energy output allocated to low income customers in the form of electricity or bill credits." • This adder varies from $0.06/kWh to approximately $0.035/kWh under the declining-block incentive program, with later projects being eligible for lower incentives.	https://www.mass.gov/doc/low-income-generation-units-guideline-october-2020/download
Comparison to Total Renewable Energy Capacity in the State	As of 2020, Massachusetts had: • 2,665 MW of solar PV capacity (1,685 MW of which is net metered). • 168 MW of wind generating capacity (62 MW of which is net metered). As of 2020, RE-Powering projects represent: • 12% of cumulative solar PV capacity statewide. • 5% of wind capacity statewide.	https://www.eia.gov/electricity/state/massachusetts/ https://www.epa.gov/re-powering/re-powering-tracking-matrix
Solar Deployment Trends in the State	Though **solar projects on RE-Powering sites** continue to be built, the pace has slowed. Likely reasons include: • Land use saturation: Many of the best and largest landfill and brownfield sites already have been developed with solar projects.	

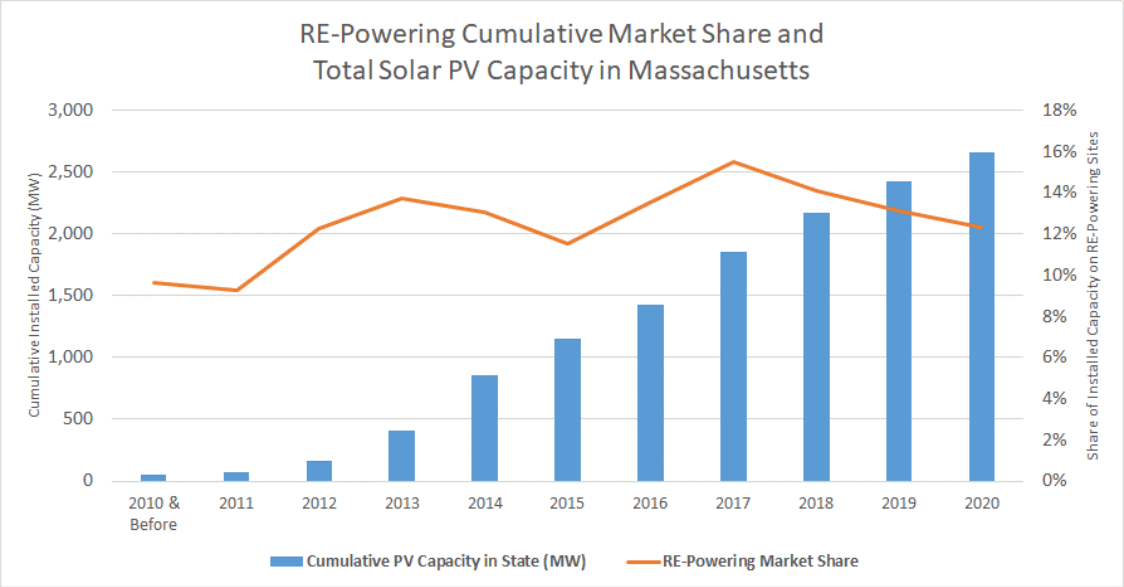
Topic	Massachusetts Data	Sources
	• Net metering saturation: Many municipalities already have all the VNM credits they can use. ○ This VNM policy, along with the 10 MW net metering project cap for public agency projects (much higher than the 2 MW cap for private entities), was particularly helpful to landfill solar development, because many towns own landfills that could host multi-MW solar projects and apply the VNM credits to municipal building electricity consumption elsewhere. • Utility interconnection challenges: It often takes more time and costs more to interconnect mid-sized to large solar projects in Massachusetts with utility grids than in past years. That has slowed overall solar market development. Due to coronavirus and other reasons, staff resources within MassDEP dedicated to renewable development on RE-Powering sites have decreased from prior peak levels. Current emphases of that agency include efficiently processing site reviews (e.g., brownfield site determination letters) and supporting resilience efforts. **Overall**, Massachusetts has the eighth-most total solar capacity of any state. As Massachusetts transitioned from the SREC-II program to the SMART program, the volume of new solar development declined from its peak. Many of the 1-6 MW solar projects built in the 2010s are classified as "nonresidential" (i.e., commercial and industrial) in Chart 1 on the next page.	https://seia.org/sites/default/files/2021-09/SEIA_Top10_Solar_States_2021-Q3.pdf

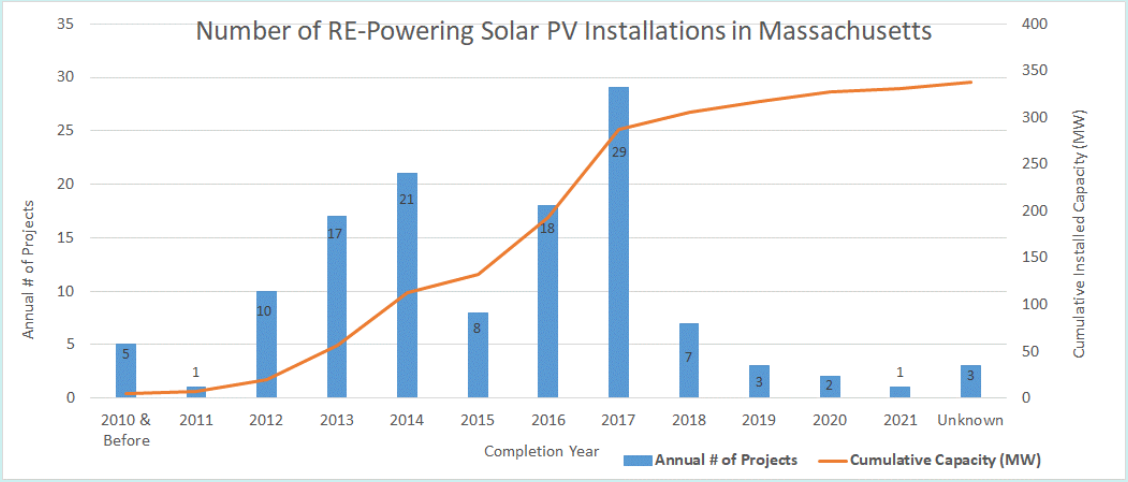
Massachusetts

Topic	Data	Sources
	The remainder of this section contains five charts on deployment trends in Massachusetts. All but the first chart were developed by EPA and its contractors based on the RE-Powering *Tracking Matrix* data and EIA overall statewide data. **Chart 1:** The pace of solar deployment remains brisk in Massachusetts, but it has slowed in the past four years after peaking in 2017. Utility-scale and community solar projects have become bigger parts of the market, while the commercial segment (as defined by the Solar Energy Industries Association in this chart) has decreased. It is important to note, however, that community solar projects serve commercial as well as residential customers as subscribers.  	Solar Energy Industries Association and Wood Mackenzie Power & Renewables *U.S. Solar Market Insight Q4 2021* https://www.seia.org/state-solar-policy/massachusetts-solar

Topic	Massachusetts Data	Sources
	Chart 2: RE-Powering projects represented about 8% to 20% of the overall Massachusetts solar market each year between 2010 and 2017, before declining to about 3% to 5% of new solar projects, likely due to land use and VNM saturation as described at the beginning of this section.  	https://www.epa.gov/re-powering/re-powering-tracking-matrix https://www.eia.gov/electricity/state/massachusetts/

Topic	Massachusetts Data	Sources
	Chart 3: This graph converts annual data into a cumulative trend. At the end of 2020, RE-Powering projects represented 12% of cumulative statewide solar capacity, after peaking at just above 15% two years earlier.  	https://www.epa.gov/re-powering/re-powering-tracking-matrix https://www.eia.gov/electricity/state/massachusetts/

Topic	Massachusetts Data	Sources
	Chart 4: This graph overlays the trend line of RE-Powering site market share (the same line seen in Chart 3) with bars showing cumulative PV capacity in the state on all types of sites.  	https://www.epa.gov/re-powering/re-powering-tracking-matrix https://www.eia.gov/electricity/state/massachusetts/

Topic	Massachusetts Data	Sources
	Chart 5: The annual path taken in Massachusetts to reach its total of 337 MW of RE-Powering solar capacity through October 2021 is displayed. Between 2012 and 2018, Massachusetts installed between seven and 29 new RE-Powering projects each year. Growth slowed beginning in 2018 due to market saturation, declining state incentives, utility interconnection challenges, and possibly coronavirus effects.  	https://www.epa.gov/re-powering/re-powering-tracking-matrix
General Electricity Market Factors		
Power Prices	Massachusetts has higher-than-average electricity prices that, other factors equal, support renewable energy development. The national average **retail** electricity price paid by end-use consumers is 10.59 cents/kWh, while Massachusetts' average price is 72% higher at 18.19 cents/kWh. Massachusetts has the fifth-highest retail electricity prices of the 50 states.	Retail electricity prices: https://www.eia.gov/electricity/state/

Massachusetts		
Topic	**Data**	**Sources**
	Wholesale electricity prices in the ISO-New England region average 8.6 cents/kWh, which is 48% above the national average of 5.8 cents/kWh.	Wholesale electricity prices (generation-only electricity prices: EIA, *Annual Energy Outlook 2021*, Reference Case Projections Tables): https://www.eia.gov/outlooks/aeo/tables_ref.php
Clean Energy Standard	Massachusetts has a Clean Energy Standard "requiring at least 80% of all electricity sold in the state to be clean or renewable by 2050."	https://www.mass.gov/info-details/ghg-emissions-and-mitigation-policies
For More Information		
Energy Agency POC	Eric Steltzer, Director, Renewable Energy Division, Massachusetts Department of Energy Resources: eric.steltzer@mass.gov	
Environmental Agency POC	Kendall (Ken) Marra, Bureau of Waste Site Cleanup, Massachusetts Department of Environmental Protection: kendall.marra@mass.gov	

New Jersey		
Topic	**Data**	**Sources**
Overview		
	New Jersey combines the highest population density of any state with significant renewable energy goals, including specific carve-outs for solar generation. This has led New Jersey to focus on RE-Powering site reuse from the outset of its solar incentive and procurement programs and to offer numerous other programs that reduce the costs, timelines, and risks of developing solar projects on landfills and brownfields. As a result, New Jersey has 66 operating RE-Powering projects, the second-highest total of any state. Moreover, the state has implemented and adapted its RE-Powering programs in ways that allow for steady growth of RE-Powering projects. RE-Powering sites have continued to represent about 6% to 8% of the overall New Jersey solar market, as the market grew five-fold over the past decade. New Jersey has accomplished this consistent growth by establishing a state-managed process in 2012 for landfill and brownfield projects to access solar renewable energy certificate (SREC) incentives; supporting an innovative procurement program by the state's largest electric utility; providing attractive incentives for RE-Powering sites in the transition program following SRECs, along with a community solar pilot that awarded approximately 45% of its Year 1 capacity and 25% of its Year 2 capacity to landfill and brownfield projects; and by continuing site reuse preferences in its successor solar incentive program taking effect in 2021 and 2022. Three state agencies—the New Jersey Board of Public Utilities (NJBPU), New Jersey Department of Environmental Protection (NJDEP), and New Jersey Economic Development Authority (NJEDA)—are actively involved in administering RE-Powering programs and have several formal coordination mechanisms to accelerate and simplify the renewable site assessment and development process as well as sophisticated database and mapping tools to aid site identification.	

Topic	New Jersey Data	Sources
Program Profiles		

Direct Financial Incentives	**Subsection (t)** of New Jersey's Solar Act of 2012 established a certification process whereby grid supply (i.e., front-of-the-meter) solar projects on brownfields, closed landfills, and areas of historic fill can be eligible for the state's SREC incentives.
	
	• The NJBPU subsequently extended the Subsection (t) certification process to the transition renewable energy certificate (TREC) program and established that Subsection (t) projects would receive the full TREC factor (see below for more information about TRECs).
	
	• Subsection (t) is a mechanism to direct solar development projects away from greenfields and toward preferred sites.
	
	• Between April 2013 and April 2022, 89 solar projects applied for Subsection (t) certification, and 24 of these projects representing 232 megawatt $(MW)_{Direct\ Current\ (DC)}$ of capacity have been fully certified and completed.
	  ○ Of the fully certified projects, all but two (a 20 MW_{DC} project on historic fill and a 13 MW_{DC} of a combined historic fill/landfill project) were on landfill or brownfield sites.
	
	  ○ Some of these certified projects are part of the Solar 4 All® program run by the state's largest electric utility. See the "Procurement Preferences or Requirements" section below for more information about Solar 4 All®.
		https://www.njcleanenergy.com/renewable-energy/program-updates/solar-act/solar-act-proceedings-archive
		
		https://www.njcleanenergy.com/files/file/Solar%20Act/FY22/Subsection%20t%20Project%20Status%2004_07_2022.pdf

New Jersey		
Topic	**Data**	**Sources**
	• Subsection (t) also contains a process for conditional certification when NJDEP makes a determination that further remedial action, or additional protective measures for a closed landfill, is needed before a final certification decision can be made. ○ As of April 2022, 14 projects representing 132 MW_{DC} in total capacity are conditionally certified. Projects in this status are typically under construction. Another 19 projects representing 374 MW_{DC} in total capacity are pending review.	
	After the original production-based solar incentive program (i.e., SREC) met its goal of providing 5.1% of all electricity in the state in 2020, the **TREC program** came into effect.	https://njcleanenergy.com/renewable-energy/programs/transition-incentive-program
	• The TREC program, as its name denotes, is a transition program until New Jersey implements a successor program.	https://njcleanenergy.com/renewable-energy/program-updates-and-background-information/solar-transition-frequently-asked-questions
	• TRECs have a 15-year term and "factors" that differentiate for the type of solar installation. Installations with a full (1.0) factor receive a TREC price of $152/megawatt-hour (MWh) for their term. ○ Landfill and brownfield projects (outside of the community solar pilot program) were among those receiving full 1.0 factors; other site types have factors that are as much as 40% lower.	https://www.njcleanenergy.com/renewable-energy/programs/community-solar/FAQs#Incentives
	○ All community solar projects received TREC factors of 0.85, which is equivalent to a TREC value of $129.20/MWh.	https://njcleanenergy.com/renewable-energy/programs/susi-program

Topic	Data	Sources
	○ A key characteristic of TRECs is that their value is fixed over their 15-year term, offering revenue predictability to aid in financing and project development. The TREC program ends after the implementation of the **Successor Solar Incentive (SuSI) Program**.[4] The SuSI Program has two subprograms, both of which provide incentives via NJ SREC-IIs[5]: • Administratively Determined Incentive ○ Provides preset (through an administrative analysis process) incentive levels for several types of solar projects up to 5 MW in capacity; all community solar projects; and on an interim basis (until the other subprogram is implemented), Subsection (t) projects. ▪ The incentive is $90/MWh for community solar projects with at least 51% of their capacity dedicated to low- and moderate-income (LMI) subscribers (and $70/MWh for projects with less than 51% of capacity dedicated to LMI subscribers), with 15-year NJ SREC-II regulatory agreements providing that compensation. Community solar projects in New Jersey are commonly on RE-Powering sites (see Procurement Preferences or Requirements section below).	https://www.njcleanenergy.com/files/file/Solar%20Transition/FY22/NEW%20JERSEY%20REGISTER%20_%20Successor%20Solar%20Incentive%20Program%20Rule%20Proposal%20August%2016.pdf

[4] The TREC program closed to new registrations on August 27, 2021, with two exceptions: (i) Subsection (t) applications under review as of that date will be allowed to register for the TREC program if they are conditionally certified by the NJBPU, and (ii) projects conditionally approved under the second year of the Community Solar Energy Pilot Program will be allowed to register for the TREC program.

[5] NJ SREC-II refers to the incentive mechanism in the successor version of New Jersey's SREC program. New Jersey's production-based solar incentives began with SRECs, then utilized TRECs for a transition period until the SuSI Program with SREC-II incentives was developed. It is labeled "NJ SREC-II" in this document to distinguish the New Jersey program from "SREC-II," which is the name of Massachusetts' second SREC program.

Topic	Data	Sources
	▪ The incentive is $100/MWh for a 15-year term for Subsection (t) projects approved during the interim period. • Competitive Solar Incentive ○ Provides competitively determined incentives for grid supply projects (including Subsection [t] after the interim period) and large net metered, nonresidential projects. ○ The subprogram design is being finalized, with the first competitive solicitation targeted for 2022.	
	The **Hazardous Discharge Site Remediation Fund**, administered jointly by NJDEP and NJEDA, is a grant and loan program that supports brownfield redevelopment by funding preliminary environment assessments, remedial investigations, and portions of remedial actions.	https://www.nj.gov/dep/srp/finance/hdsrf/
	• One of the program's funding options is specific to renewable energy. ○ This option offers grants covering up to 75% of the costs of remedial actions for projects involving the redevelopment of a property for renewable energy.	https://www.njeda.com/public_information/adopted/
	• The program "is funded through a constitutionally dedicated portion of the New Jersey Corporate Business Tax," which provides up to $10 million annually for renewable energy, affordable housing, and recreation and conservation purposes.	https://1e7pr71cey5c3ol2neoaoz31-wpengine.netdna-ssl.com/wp-content/uploads/2021/11/NJEDA-Adopted-Amendments_HDSRF_110121.pdf

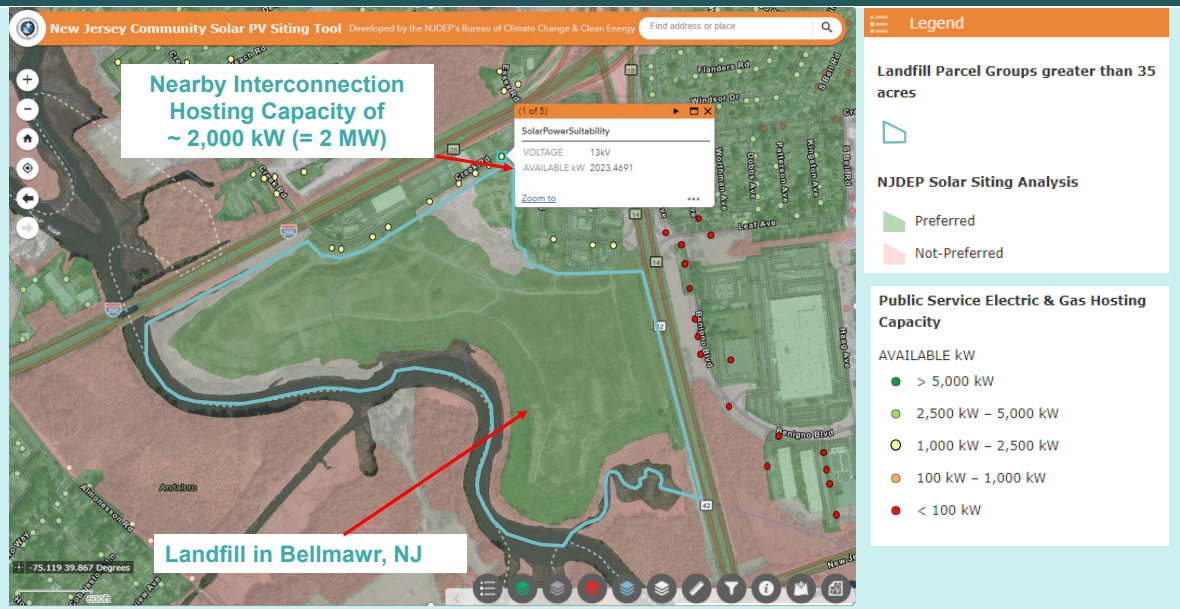
New Jersey		
Topic	**Data**	**Sources**
Procurement Preferences or Requirements	New Jersey's Clean Energy Act of 2018 established a **Community Solar Energy Pilot Program** that allows residential and business electricity customers to subscribe to output from specific solar projects. • Evaluation criteria include strong preferences for brownfields, landfills, areas of historic fill, rooftops, and parking canopies. There is a large environmental justice component to the program, with at least 51% of this capacity being dedicated to LMI communities. ○ In late 2019, the NJBPU awarded 78 MW_{DC} of capacity in the first year of the pilot program. ▪ Among Year 1 awards, nine projects (with 33 MW_{DC} of combined capacity) were on landfills, and one project with 2 MW_{DC} was on a brownfield. In total, that means that 45% of all Year 1 capacity was on RE-Powering sites. ○ Among total program Year 2 awards of 165 MW_{DC}, nine projects[6] (with 36 MW_{DC} of combined capacity) were on landfills, and one project with 5 MW_{DC} was on a brownfield. In total, that means that 25% of all Year 2 capacity was on RE-Powering sites. ○ See the Direct Financial Incentives section above for information on compensation of community solar projects. New Jersey's largest electric utility, Public Service Electric & Gas (PSEG), is nearing conclusion of its implementation of a 158 MW_{DC} program, **Solar 4 All®**, to place	https://njcleanenergy.com/renewable-energy/programs/community-solar https://www.nj.gov/bpu/pdf/boardorders/2019/20191220/12-20-19-8D.pdf https://nj.gov/bpu/pdf/boardorders/2021/20211028/8J%20ORDER%20Community%20Solar%20PY2%20Awards.pdf https://www3.epa.gov/swerrims/module5/story_content/external_files/20.%20PSEG%20solar4all_factsheet%20.pdf

[6] One of the projects in this landfill total is on a site listed as a hybrid landfill/brownfield/area of historic fill.

New Jersey		
Topic	**Data**	**Sources**
	solar projects on preferred sites in its territory. Landfills and brownfields are among the preferred site types. • Solar 4 All® projects have been certified through the Solar Act's Subsection (t) process. • Through late 2019, six of the 34 Solar 4 All® projects were on landfills, with five others on brownfields. These 11 projects on RE-Powering sites have a combined capacity of more than 80 MW_{DC}.	https://nj.pseg.com/newsroom/newsrelease104

Streamlined Permitting & Environmental Reviews	The **NJDEP Office of Permitting and Project Navigation (OPPN)** coordinates various federal and state environmental reviews as well as the overall environmental permitting process of large and complex projects across NJDEP programs. Doing so improves time efficiency, internal and external consistency, and predictability of permitting.
	• A centerpiece of OPPN is a permit coordination meeting that helps the renewable developer ascertain the timeline and necessary steps to obtain permits for its project.
	  ○ The OPPN process includes a Permit Readiness Checklist form.
	  ○ Renewable energy projects typically have a single NJDEP point of contact throughout the permitting process.
	• New Jersey also has a statute allowing solar on a closed landfill as an approved use regardless of the zoning, allowing projects to bypass variance
		https://www.nj.gov/dep/pcer/
		https://www.nj.gov/dep/dshw/swp/solarguidance.pdf

Topic	New Jersey Data	Sources
	processes and go straight to the local Planning Board for site plan review and approval.	
Site Identification & Development Support	New Jersey makes available a variety of databases, mapping tools, and a guide to aid in site identification and evaluation. • The **databases** include those for contaminated sites, landfills, and abandoned mines. • The mapping tools include the **New Jersey Community Solar PV Siting Tool** that integrates utility "hosting capacity" information (the ability of the utility grid to absorb new generation capacity at various points of interconnection) among its many data layers. ○ An example from this community solar PV tool is below.	https://www.state.nj.us/dep/srp/kcsnj/ https://www.nj.gov/dep/dshw/lrm/landinfo.htm https://gisdata-njdep.opendata.arcgis.com/datasets/abandoned-mines-in-new-jersey/explore?location=40.832500%2C-74.661350%2C10.20 https://njdep.maps.arcgis.com/home/gallery.html?view=grid&sortOrder=desc&sortField=modified https://njdep.maps.arcgis.com/apps/webappviewer/index.html?id=c3a9466eb7e54badbb41a90794bd0349

Topic	New Jersey Data	Sources
	 • As a complement to its data products, NJDEP published the ***Solar Siting Analysis Update***, describing sites where the agency "encourages and discourages solar PV development." This guide is based on detailed geographic information system analysis.	https://www.state.nj.us/dep/aqes/SSAFINAL.pdf
Education & Outreach	NJDEP's Division of Solid and Hazardous Waste publishes ***Guidance for the Permitting of Solar Energy Systems on New Jersey Landfills***. • This document includes descriptions of the step-by-step permitting process, NJDEP's "one-stop" permit coordination, elements of closure and post-closure plans, and special issues faced by solar projects.	https://www.nj.gov/dep/dshw/swp/solarguidance.pdf

New Jersey		
Topic	**Data**	**Sources**

General Brownfield Reuse	New Jersey has **several programs that encourage brownfield reuse**, without a specific emphasis on renewables. These programs include a **financial incentive, loans and grants, an assistance hub, and a unique community partnership model**.
	
	• The **Brownfield Redevelopment Incentive** is a new, competitive program currently under development that will provide tax credits for remediation of brownfields.
	  ○ Individual projects are eligible for 50% to 60% of actual or projected remediation costs up to a $4 million maximum tax credit (or up to $8 million in distressed areas).
	
	  ○ The program budget is $50 million per year, and the program will be administered by NJEDA.
	
	  ○ The Brownfields Loan Program, with similar overall goals, closed to new applications in April 2021.
	
	• The **Brownfields Impact Fund** is a new program administered by NJEDA that provides loans and subgrants for the remediation of brownfields. This program is supported by an EPA Brownfields Revolving Loan Fund Grant.
	
	• The **Brownfields Assessment Program** is also a new program administered by NJEDA, and it provides free assessments for properties with known or suspected contamination. This program is supported by an EPA Brownfields Assessment Grant.
		https://www.njeda.com/brownfield-redevelopment-incentive%e2%80%8b/
		
		https://www.njeda.com/activeprograms/
		
		https://www.nj.gov/governor/news/news/562021/approved/20210208a.shtml
		
		https://www.njeda.com/brownfieldsimpactfund/
		
		https://cfpub.epa.gov/bf_factsheets/gfs/index.cfm?event=factsheet.display&display_type=PDF&xpg_id=11814

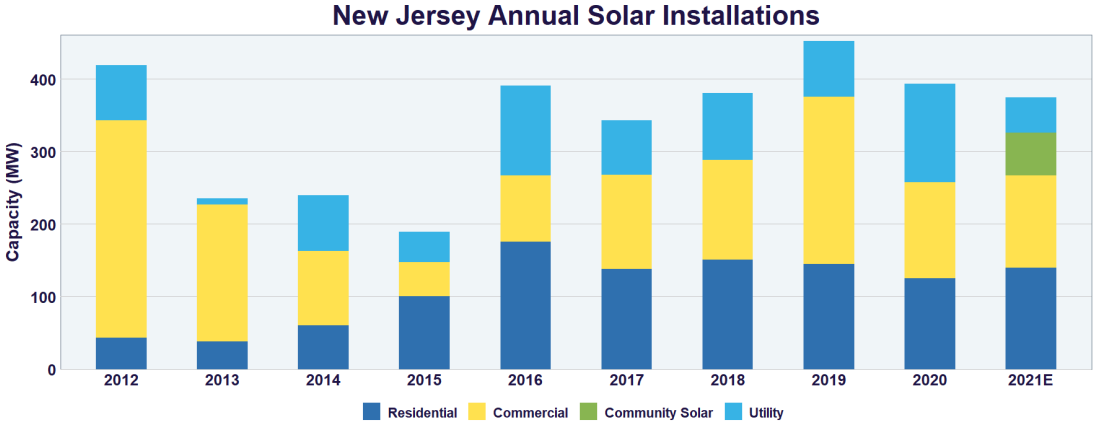
Topic	New Jersey Data	Sources
	○ Eligible activities include Phase I environmental site assessments, preliminary assessments, site investigations, and/or remedial investigations. Both privately and publicly owned properties will be eligible for this program beginning in 2022.	
	• **NJ Brownfields Assistance Center @ NJIT** is managed by the New Jersey Institute of Technology (NJIT) and offers tools and resources for reclamation and redevelopment of brownfield sites. ○ The leadership of the NJ Brownfields Assistance Center is shared with "NJIT's federally funded program called Technical Assistance to Brownfield Communities, formed in 2008."	https://www.njit.edu/njbrownfields/ https://news.njit.edu/njit-launches-nj-brownfields-assistance-center
	• The **Community Collaborative Initiative** is an innovative, hands-on program that assigns NJDEP staff to work closely with communities to design and implement creative reuse and revitalization plans for complex local environmental problems. ○ There is a single NJDEP liaison for each participating community, who "coordinate(s) efforts in (the) community that would benefit from NJDEP involvement." This program involves in-depth and consistent community engagement, which can be necessary to solve complex environmental problems. ○ While renewable energy projects do not appear to be part of the solutions to date, they may be included in future efforts.	https://www.nj.gov/dep/cci/program.html

New Jersey		
Topic	**Data**	**Sources**
Interagency Coordination	There is substantial, proactive **interagency coordination among NJBPU, NJDEP, and NJEDA for RE-Powering site renewable energy development**. • Coordination occurs between NJBPU and NJDEP in sequenced reviews of Subsection (t) applications to the main solar financial incentive program in the state. ○ NJBPU and NJDEP also meet monthly to discuss the progress of all renewable projects on RE-Powering sites that are known to be in development. • NJDEP and NJEDA perform sequential reviews of applications to the Hazardous Discharge Site Remediation Fund.	https://www.nj.gov/dep/ages/opea-solar.html https://www.nj.gov/dep/srp/finance/hdsrf/
Program Best Practices/Success Factors		
Significant Financial Incentives & Procurement Preferences	New Jersey has offered financial incentive and procurement programs for RE-Powering sites for almost a decade and has maintained and adapted its site preferences through three major evolutions of its solar incentive program, from SREC to TREC to the SuSI Program. The level and consistency of direct financial and procurement support for landfill and brownfield solar projects, along with the complementary Solar 4 All® program of the state's largest utility, are the main reasons that New Jersey has the second-most RE-Powering projects of any state.	
Establishment of Programs with Flexibility	New Jersey established and managed the Subsection (t) program in a manner that has supported steady growth of the solar market in general and the specific market for solar on preferred site types. New Jersey has also prevented crowding out of residential and commercial solar projects by larger utility-scale projects and maintained attractive and predictable levels of SREC prices.	

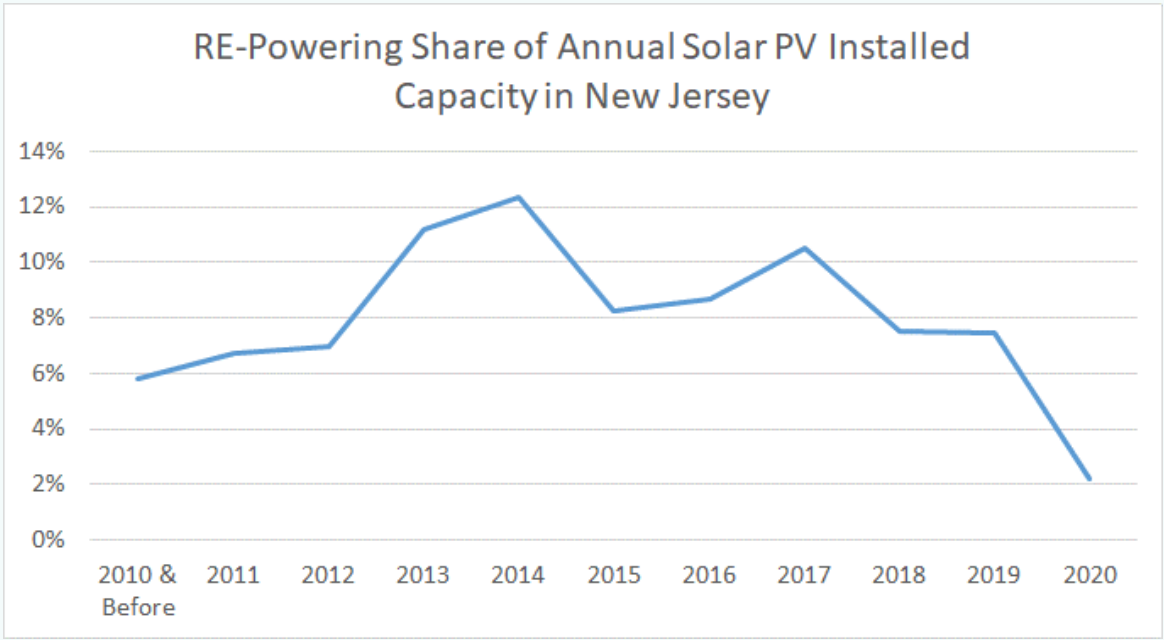
New Jersey		
Topic	**Data**	**Sources**
Consistent Emphasis on Land Reuse	New Jersey has the nation's highest population density, and there is an imperative across state agencies to encourage reuse of RE-Powering sites that can help meet state environmental and economic development goals. To facilitate reuse, New Jersey has implemented numerous programs that can benefit renewable projects on RE-Powering sites, including the Community Solar PV Siting Tool that speeds identification of promising RE-Powering sites by integrating utility data on available hosting capacity for interconnecting new projects.	
Broad Political & Stakeholder Support	Across administrations of political parties and highly involved stakeholder processes to define successor incentive programs, New Jersey has maintained a focus on a growing, stable solar market with an emphasis on site reuse.	
Extensive Intra-agency and Interagency Coordination	New Jersey has several coordination mechanisms to carefully track and advance renewable projects on landfills and brownfields. It has a central permit coordination process inside NJDEP as well as interagency processes to review program applications between NJBPU and NJDEP and between NJEDA and NJDEP.	
Achievements to Date		
RE-Powering Data on All Renewable Technologies (as of Oct. 2021)	• 66 operational projects (second-highest total in the country). • 284 MW of capacity (third-highest total in the country). ○ All of these projects are solar.	https://www.epa.gov/re-powering/re-powering-tracking-matrix
Comparison to Total Renewable	As of 2020, New Jersey had: • 3,104 MW of solar PV capacity (2,154 MW of which is net metered). • 10 MW of wind-generating capacity (2 MW of which is net metered).	https://www.eia.gov/electricity/state/newjersey/

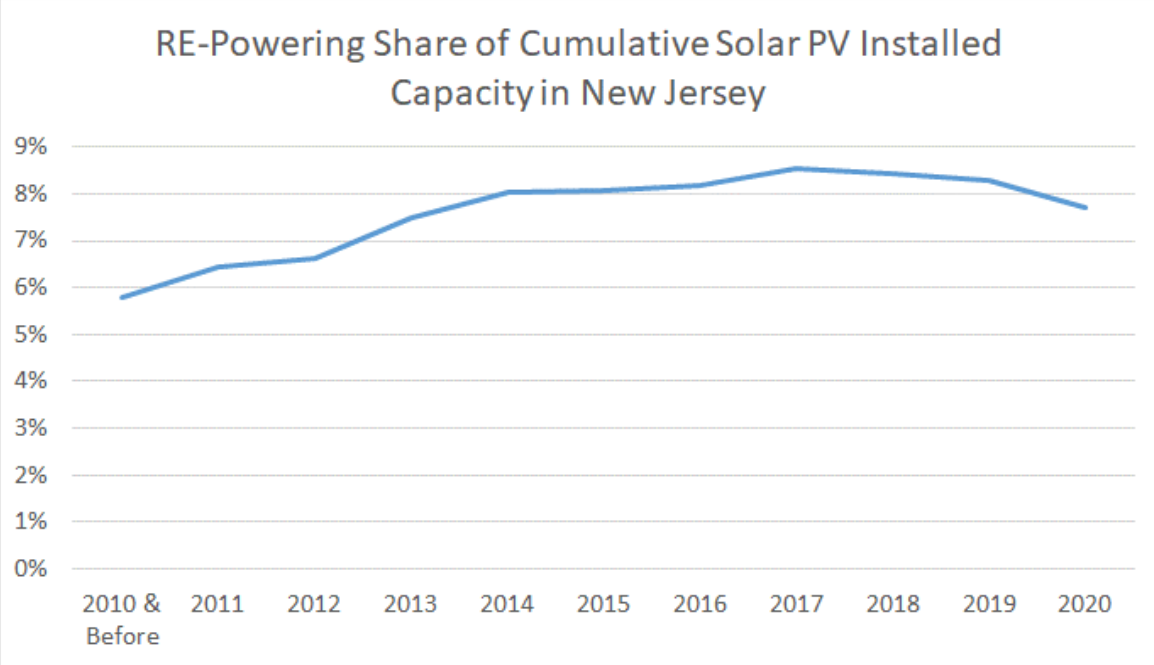
New Jersey		
Topic	**Data**	**Sources**
Energy Capacity in the State	As of 2020, RE-Powering projects represent: • 8% of cumulative solar PV capacity statewide. • 0% of wind capacity statewide (there are no RE-Powering wind projects in the state).	https://www.epa.gov/re-powering/re-powering-tracking-matrix
Solar Deployment Trends in the State	New Jersey has the seventh-most total solar capacity of any state. As the overall solar market in New Jersey has grown by approximately 200-400 MW annually over the past decade, the share of RE-Powering projects in the market stayed at or above approximately 6% each year. This stability was due to a concerted state effort to maintain the pace of renewable development on landfills and brownfields as well as the Subsection (t) and PSEG Solar 4 All® program mechanisms that allow a high degree of control over the timing of new utility-scale projects on these sites. The remainder of this section contains five charts on deployment trends in New Jersey. All but the first chart were developed by EPA and its contractors based on the RE-Powering *Tracking Matrix* data and EIA overall statewide data.	https://seia.org/sites/default/files/2021-09/SEIA_Top10_Solar_States_2021-Q3.pdf

New Jersey

Topic	Data	Sources
	Chart 1: By policy design, New Jersey has had consistent levels of solar deployment from a blend of residential, commercial, and utility-scale projects during the past decade. With the recent launch of a community solar pilot program and its expansion in the SuSI Program, the share of community solar may grow in future years.  	Solar Energy Industries Association and Wood Mackenzie Power & Renewables *U.S. Solar Market Insight Q4 2021* https://www.seia.org/state-solar-policy/new-jersey-solar

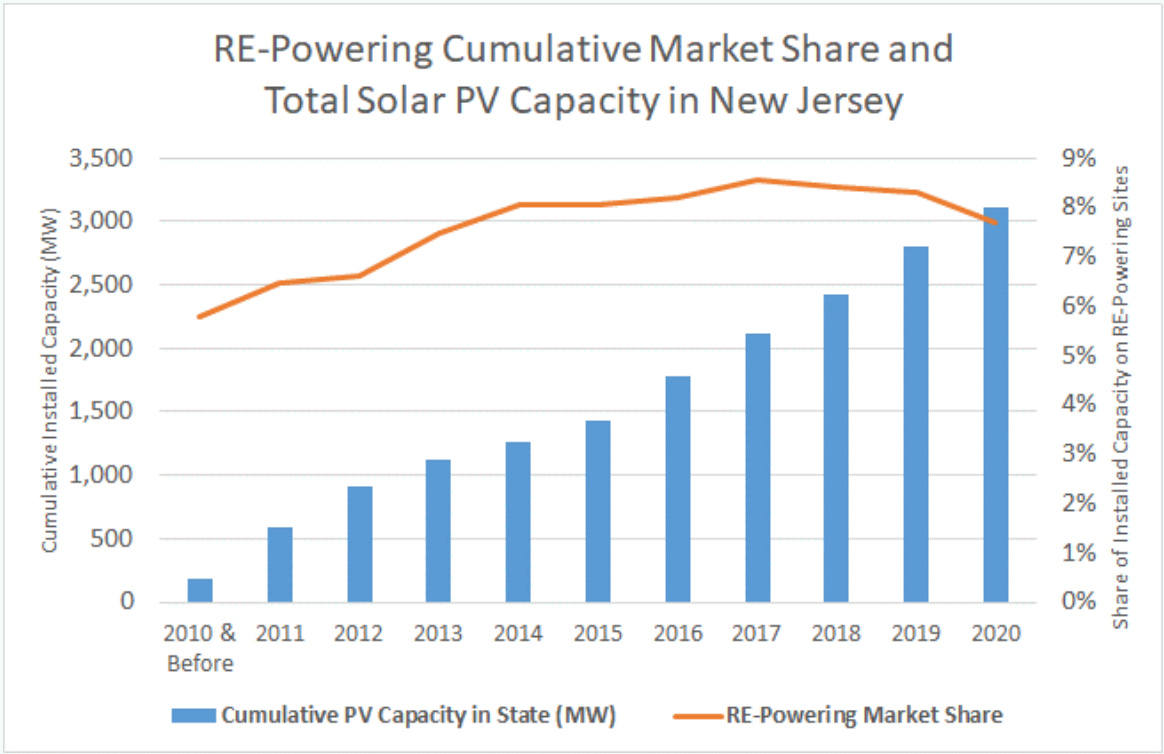
New Jersey

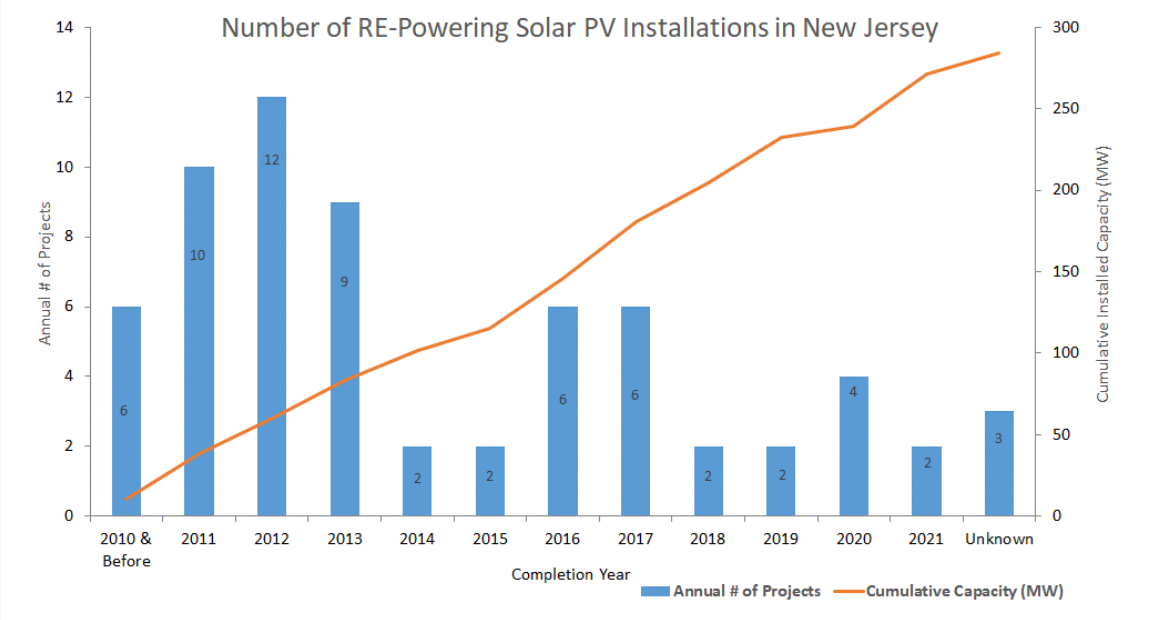
Topic	Data	Sources
	Chart 2: RE-Powering solar projects have represented between 6% and 12% of New Jersey's overall solar market each year from 2011 through 2019, before declining to 2% in 2020.  	https://www.epa.gov/re-powering/re-powering-tracking-matrix https://www.eia.gov/electricity/state/newjersey/

Topic	New Jersey Data	Sources
	Chart 3: This graph converts annual data into a cumulative trend, ending with RE-Powering projects representing almost 8% of cumulative statewide solar capacity in 2020.  	https://www.epa.gov/re-powering/re-powering-tracking-matrix https://www.eia.gov/electricity/state/newjersey/

New Jersey

Topic	Data	Sources
	Chart 4: This graph overlays the trend line of RE-Powering site market share (the same line seen in Chart 3) with bars showing cumulative PV capacity in the state on all types of sites. RE-Powering sites continue to represent about 6% to 8% of the overall New Jersey solar market, even as the market grew five-fold from 2011 to 2020.	https://www.epa.gov/re-powering/re-powering-tracking-matrix https://www.eia.gov/electricity/state/newjersey/



Topic	New Jersey Data	Sources
	Chart 5: The annual path taken in New Jersey to reach its total of 284 MW of RE-Powering solar capacity through October 2021 is displayed. 	https://www.epa.gov/re-powering/re-powering-tracking-matrix
General Electricity Market Factors		
Power Prices	New Jersey has higher-than-average electricity prices that, other factors equal, support renewable energy development. The national average **retail** electricity price paid by end-use consumers is 10.59 cents/kWh, while New Jersey's average price is 29% higher at 13.63 cents/kWh. New Jersey's retail electricity prices are the tenth-highest of the 50 states.	https://www.eia.gov/electricity/state/

New Jersey		
Topic	**Data**	**Sources**
	Wholesale electricity prices in the PJM East Region containing New Jersey average 4.9 cents/kWh, below the national average of 5.8 cents/kWh.	Wholesale electricity prices (generation-only electricity prices: EIA, *Annual Energy Outlook 2021*, Reference Case Projections Tables): https://www.eia.gov/outlooks/aeo/tables_ref.php
Clean Energy Standard	New Jersey's Clean Energy Act contains a standard that 50% of the state's electricity must come from renewable sources by 2030.	https://nj.gov/dep/aqes/opea-clean-energy.html
For More Information		
Energy Agency POC	B. Scott Hunter, Manager, Division of Clean Energy, New Jersey Board of Public Utilities: Benjamin.Hunter@bpu.nj.gov	
Environmental Agency POCs	David Pepe, Director, Office of Permitting and Project Navigation, New Jersey Department of Environmental Protection: David.Pepe@dep.nj.gov Bill Lindner, Manager, Office of Brownfield & Community Revitalization, New Jersey Department of Environmental Protection: William.Lindner@dep.nj.gov Steve Myers, Supervisor, Clean Energy Section, Climate Change, Clean Energy & Sustainability Element, New Jersey Department of Environmental Protection: Stephen.Myers@dep.nj.gov	
Economic Development Agency POC	Elizabeth Limbrick, Director of Brownfields & Sustainable Systems, New Jersey Economic Development Authority: brownfields@njeda.com	

New York State		
Topic	**Data**	**Sources**
Overview		
	New York has the third-highest number and sixth-highest capacity of renewable projects on RE-Powering sites of any state. This development has been supported by easily accessible direct financial incentives, streamlined permitting and environmental reviews, and a playbook with templates to help municipalities advance solar projects on RE-Powering sites. The financial incentives were recently increased. In April 2020, New York passed the Accelerated Renewable Energy Growth and Community Benefit Act (the Benefit Act) that aims to help New York reach its 70% renewable electricity by 2030 requirement by accelerating deployment of large-scale renewable energy projects (greater than 20 megawatt [MW] capacity) and ensuring benefits to project host communities. The legislation has an emphasis on siting new projects on underutilized lands (including, but not limited to, landfills and brownfields). As part of the Benefit Act, the Build-Ready Program was established to deliver benefits to communities by advancing large-scale renewable energy projects on underutilized lands including, but not limited to, landfills and brownfields. The Benefit Act puts the New York State Energy Research and Development Authority (NYSERDA) in charge of developing and implementing the program, including identifying, vetting, and advancing underutilized sites until they can be competitively auctioned as low-risk renewable energy projects for construction and operation by the private market. This poses an opportunity and a challenge for landfills and brownfields; the opportunity is major development assistance from a well-funded and experienced state agency, and the challenge is identifying RE-Powering sites greater than approximately 50 acres that are good candidates for Build-Ready. Potential Build-Ready sites started being identified in mid-2020, with the first completed auctions of development projects expected in 2022 or 2023.	

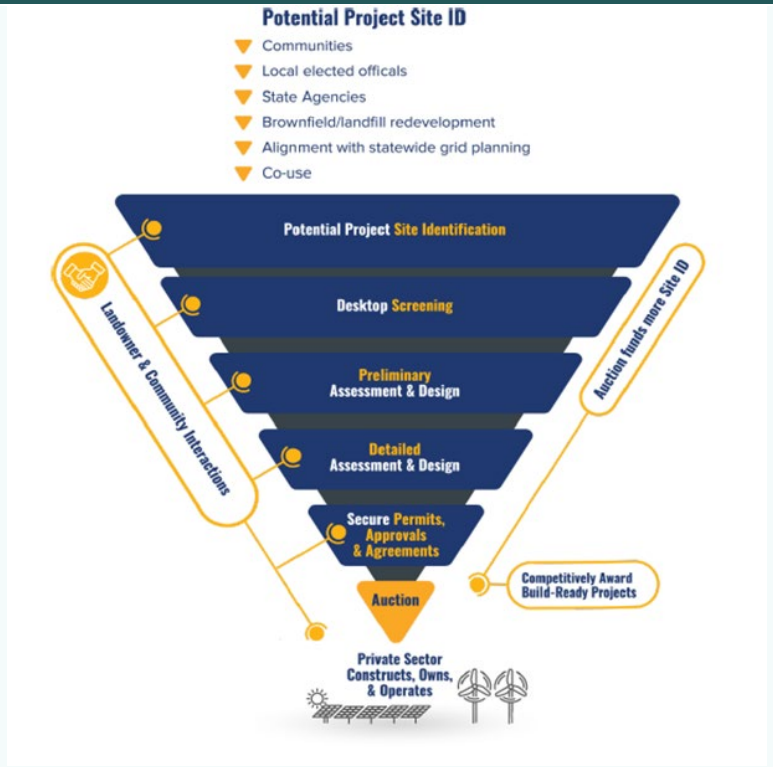
Topic	New York State Data	Sources
Program Profiles		
Direct Financial Incentives	NYSERDA's **NY-Sun Program offers the MW Block incentive** (an upfront, capacity-based incentive) that is available to approved solar contractors and developers for projects up to 7.5 $MW_{Direct\ Current\ (DC)}$ in capacity. In addition to the base incentives in that program, brownfield and landfill projects in much of the state are eligible for an additional incentive—the brownfield/landfill adder. The adder is 0.15/$watt_{DC}$ (equal to \$150/kilowatt $[kW]_{DC}$). The **Build-Ready Program**, launched in 2020 and described in more detail in the Site Identification & Development Support section below, can bundle **renewable energy credit offtake agreements** with renewable projects that it develops for competitive auction to private buyers. Those offtake agreements are a form of incentive that create valuable revenue certainty for potential project buyers.	Click on "Available Incentives" at: https://www.nyserda.ny.gov/All-Programs/Programs/NY-Sun/Contractors/Doing-Solar-Business
Streamlined Permitting & Environmental Reviews	Landfill and brownfield solar projects of 25 acres or fewer can qualify as Type II actions, not requiring further evaluation under the **State Environmental Quality Review Act (SEQRA)**. SEQRA is also known as "mini-NEPA" due to its similarities to the National Environmental Policy Act (NEPA). • A brownfield site must have a Brownfield Cleanup Program certificate of completion (or be an Environmental Restoration Project site that receives a certificate of completion) to qualify for this expedited process. • SEQRA applies to projects under 20 MW in capacity and those between 20 MW and 25 MW that do not opt into the Office of Renewable Energy Siting permitting process.	https://www.nyserda.ny.gov/All-Programs/Programs/Clean-Energy-Siting/Solar-Guidebook

Topic	New York State Data	Sources
	Landfills, brownfields, and other repurposed commercial or industrial sites receive expedited review from the new **Office of Renewable Energy Siting** that was established to provide faster, more predictable permit reviews. • Complete permit applications for landfills, brownfields, and other repurposed sites are acted on within six months, while permit applications for other (not repurposed) sites receive final decisions within 12 months. • All new renewable energy projects above 25 MW in capacity must go through the Office of Renewable Energy Siting permitting process, and new projects between 20 MW and 25 MW and certain existing projects can opt into this office's permitting process.	https://www.nyserda.ny.gov/All-Programs/Programs/Clean-Energy-Siting/Siting-for-Large-Scale-Renewables/Office-of-Renewable-Energy-Siting https://ores.ny.gov/system/files/documents/2021/03/chapter-xviii-title-19-of-nycrr-part-900-subparts-900-1-through-900-15.pdf
Site Identification & Development Support	**Build-Ready** is a program launched in mid-2020 wherein the state (through NYSERDA) directly advances underutilized sites for large-scale renewable development. • The program seeks to avoid competing with the private sector; instead, it is pursuing sites that would otherwise not be developed. ○ The official name of the program is the Clean Energy Resources Development and Incentive Program, but it is known as the Build-Ready Program.	https://www.nyserda.ny.gov/All%20Programs/Programs/Clean%20Energy%20Standard/Landowners%20and%20Local%20Governments/Build%20Ready%20Program

Topic	New York State Data	Sources

	• **Landfills and brownfields are among the underutilized site categories that are eligible for the Build-Ready Program.**
	  ○ It is a technology-agnostic program, as long as the renewable technology counts toward the state renewable goal.
	  ○ There is no official minimum site size, but due to the Build-Ready Program's emphasis on large-scale renewable energy projects, sites will likely be a minimum of 50 acres.
	• The **Build-Ready Program takes a multi-tiered diligence approach to identifying, screening, and assessing sites** (see graphic on the next page). Sites that appear the most viable undergo more detailed assessment and project development activities.
	  ○ There is a program goal of competitively auctioning six large (approximately 20+ MW in capacity) projects per year "bundled with contracts for renewable energy payments, for a fully de-risked package for private developers to construct and operate the projects."
	  ○ These activities include not only technical and economic matters, but also close collaboration with the host community to ensure that the municipality and its stakeholders are in support of and benefit from the project under consideration.
	  ○ Auctions can occur for early-, mid-, or late-stage development projects.
		http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7BB0F6CC45-490C-48A7-B0FB-6D3C7924993C%7D

Topic	New York State Data	Sources



- Through its first partial year of operation in December 2020, **Build-Ready had screened 507 sites**, more than 100 of which were landfills or brownfields, as shown in the table below.
    - In the table, “active screening” sites passed preliminary suitability screening, and “on-deck” sites passed desktop screening and are considered potentially feasible for renewable energy development.

New York State

Topic	Data	Sources

Site Type	Total Number of Sites	Active Screening	On-Deck Sites	Priority Sites	Closed
Brownfield	75	71	1	0	3
Landfill	28	23	3	0	2
Current and former electric generating sites	4	0	0	0	4
Current and former commercial or industrial sites	218	201	0	1	16
State/municipal owned sites	62	55	2	4	1
Greenfield/Agricultural[18]	59	0	0	0	59
Other[19]	61	61	0	0	0
Total	507	411	6	5	85

For more information: NYSERDA, *Clean Energy Resources Development and Incentives: The Build-Ready Program Annual Progress Report, 2020, Final Report, April 2021.*

- *The Build-Ready Program Annual Progress Report 2021* shows that 102 contaminated sites (including landfills and brownfields) and 49 mines are advancing through the program's pipeline. The report also describes specific projects that are being advanced, including the BR Benson Mines solar project.

https://www.nyserda.ny.gov/-/media/Board-jan/LSR-BRP-2021-annual.pdf

- Pre-construction development activities led by NYSERDA can include: site control via a lease option agreement, preliminary project design, project permitting, progressing interconnection, and developing a **Host Community Benefits** package to provide local benefits.
    - The Host Community Benefits package for each project will be determined in close consultation with the community and could include payment in lieu of taxes (PILOTs), financial support for local improvement projects, workforce development and training, utility

Topic	New York State Data	Sources
	bill discounts to local residents, or other needs identified by the community. • **Build-Ready estimates $71.8 million in total expenditures in its first five years** and has obtained approval for an allocation of $50 million from the state's Clean Energy Fund to initiate the program. ○ It is anticipated that the difference between estimated expenditures and initial state funding should be covered by the project auction fees that are expected to start arriving in 2022 or 2023. • **Build-Ready auction proceeds will be used to reimburse the initial funding** from the Clean Energy Fund and, once repaid, will be reinvested into the program. • **Six new full-time-equivalent positions in Build-Ready** will cover specialties including: "project management, prospecting, project development, permitting, and legal support." The program will also access a much larger group of contractor staff. This significant in-house and contractor personnel commitment reflects the importance of accelerating large-scale renewable development to meeting New York's renewable energy goal, and the state's strong desire to encourage renewables beyond greenfield sites to achieve land use and community development objectives. In addition to Build-Ready, the **New York State Department of Environmental Conservation (NYSDEC) maintains databases** to aid in identification of	https://www.dec.ny.gov/chemical/8437.html https://www.dec.ny.gov/pubs/109457.html

Topic	New York State Data	Sources
	RE-Powering sites for reuse and the DECinfo Locator site **mapping tool** with numerous data layers.	
Education & Outreach	The ***Municipal Solar Procurement Toolkit*** is dedicated to "local governments looking to lease existing underutilized land for solar development." • This step-by-step guide includes a Request for Proposals template, model local laws for solar development, and information on PILOT agreements. • PILOT agreements are particularly relevant because New York Real Property Tax Law § 487 "provides a 15-year real property tax exemption for properties located in New York State with renewable energy systems," applicable to renewable system added value. A local government not opting out of the property tax exemption can still benefit financially from renewable systems through PILOT agreements.	https://www.nyserda.ny.gov/All-Programs/Programs/NY-Sun/Communities-and-Local-Governments/Solar-Guidebook-for-Local-Governments
General Brownfield Reuse	The **Brownfield Cleanup Program** administered by NYSDEC removes "some of the barriers to and provides tax incentives for the redevelopment of urban brownfields." • The program connects to an expedited SEQRA environmental review process (see Streamlined Permitting & Environmental Review section above). • Though this program has not frequently been used for renewable energy reuse to date, it can complement the funding available from direct renewable energy incentives for brownfield sites (e.g., NY-Sun MW Block	https://www.dec.ny.gov/chemical/8450.html https://www.dec.ny.gov/chemical/101350.html

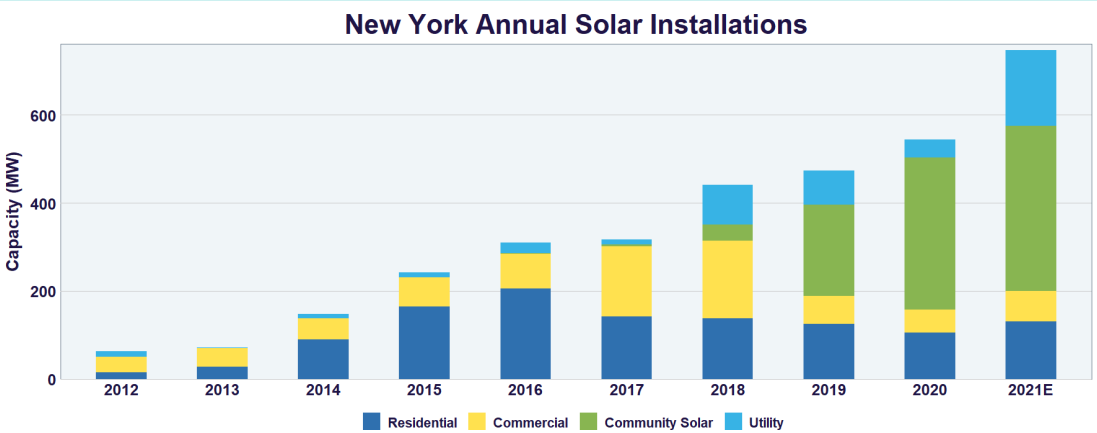
New York State		
Topic	**Data**	**Sources**
	incentive and adder for landfill/brownfield solar projects) to improve net economics for qualifying renewable projects. The **Brownfield Opportunity Area Program,** administered by the New York Department of State, provides grants that can cover a variety of assessment, planning, and local law change activities. • Designated Brownfield Opportunity Areas allow developers in the Brownfield Cleanup Program to (i) receive a tax credit increase if the redevelopment plan is consistent with state and community goals, and (ii) receive "priority and preference for some state grant programs."	https://dos.ny.gov/system/files/documents/2020/03/dos-boa-fact-sheet_2020.pdf
Program Best Practices/Success Factors		
Focus on Barriers to Project Development	Build-Ready (as well as the fast-track reviews for landfills and brownfields in the new Office of Renewable Energy Siting) addresses the development costs and risks of large-scale projects on underutilized sites by using state resources to identify and advance the best of these sites until they are de-risked and then auctioning them to the private market for construction and operation. • This program takes advantage of the considerable scale of NYSERDA, which goes beyond energy agencies in many states. The *Municipal Solar Procurement Toolkit* (with document templates and model laws) is an actionable toolkit for developing underutilized lands for solar. Along with providing information about expedited SEQRA reviews for landfills and brownfields, it supports development of solar projects of various sizes by providing templates and resources that can help reduce contractual and permitting time, cost, and complexity barriers.	

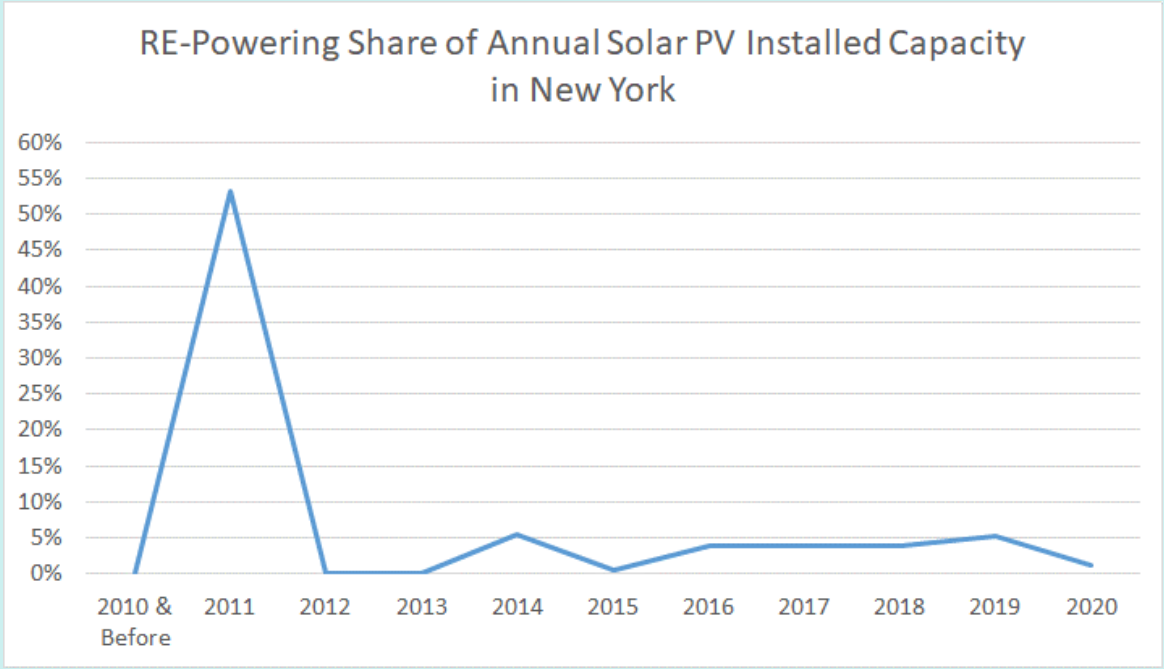
New York State		
Topic	**Data**	**Sources**
Significant Financial Incentives	For solar projects on brownfield and landfill sites (especially those with relatively large capacity), the MW Block incentive adder of $0.15/watt$_{DC}$ is an important contributor to economic returns. The Build-Ready Program's ability to include a Renewable Energy Credit Agreement as part of a project's auction package provides a significant financial incentive to the private market.	
Broad Political & Stakeholder Support	Build-Ready was enabled by a combination of support from the governor, legislature, renewable developers, and environmental organizations (especially those emphasizing land use issues). It was developed in the context of the state's 70% renewable electricity by 2030 requirement.	
Achievements to Date		
RE-Powering Data on All Renewable Technologies (as of Oct. 2021)	• 45 operational projects (third-highest total in the country) • 150 MW of capacity (sixth-highest total in the country) • Two Steel Winds projects (at a former steel mill) have combined capacity of 35 MW; the other projects with capacity listed are solar PV and one small geothermal project.[7] ○ As is the case in many other states, individual RE-Powering wind projects in New York tend to be much larger than RE-Powering solar projects, with the two Steel Winds projects having 30% as much capacity as the 41 RE-Powering solar projects in the state combined.	https://www.epa.gov/re-powering/re-powering-tracking-matrix

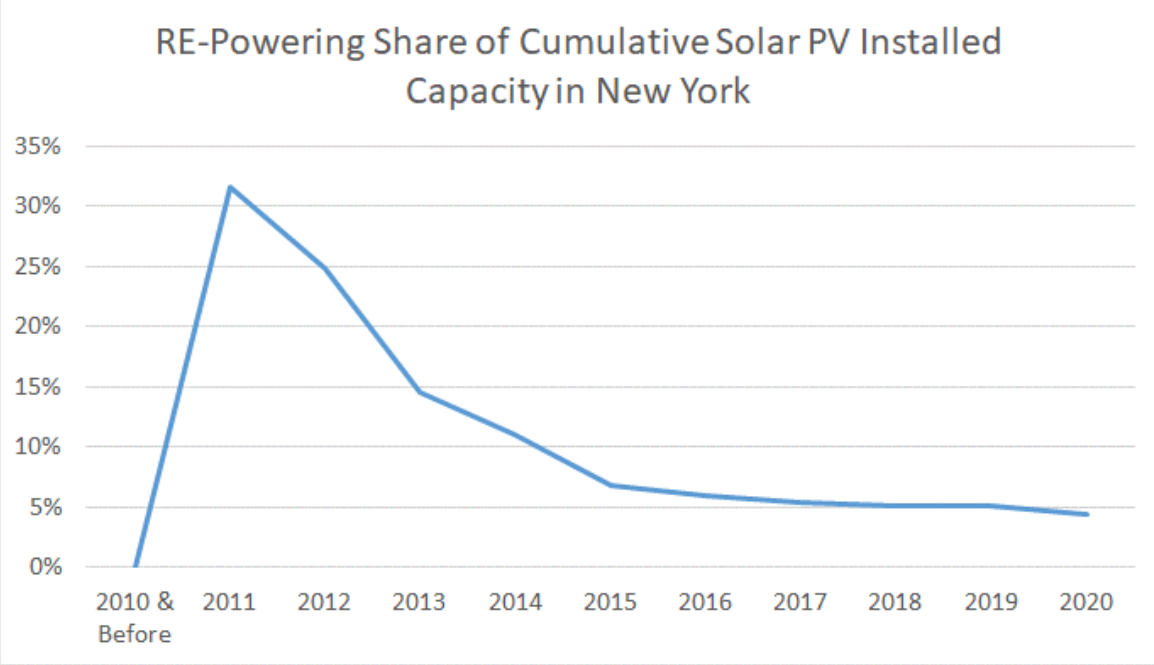
[7] There is one additional wind project without capacity listed in the RE-Powering *Tracking Matrix*.

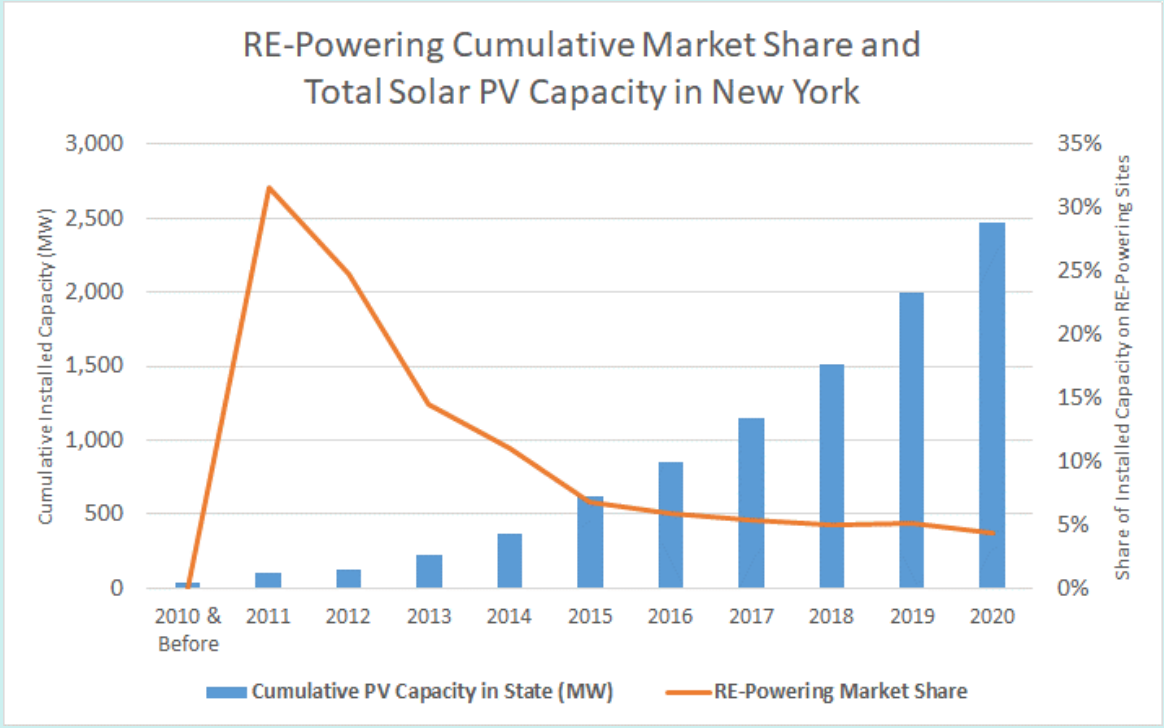
New York State		
Topic	**Data**	**Sources**
Comparison to Total Renewable Energy Capacity in the State	As of 2020, New York had: • 2,471 MW of solar PV capacity (1,801 MW of which is net metered). • 1,995 MW of wind-generating capacity (9 MW of which is net metered). As of 2020, RE-Powering projects comprise: • 4% of cumulative solar PV capacity statewide. • 2% of wind capacity statewide.	https://www.eia.gov/electricity/state/newyork/ https://www.epa.gov/re-powering/re-powering-tracking-matrix
Solar Deployment Trends in the State	New York has seen steady deployment of RE-Powering solar projects over the past decade, with three to five new projects most years. That has led to New York consistently being one of the top states in RE-Powering activity. However, the overall solar market in New York greatly accelerated between 2015 and 2020 (New York now has the tenth-most solar capacity of any state), decreasing the relative share of RE-Powering projects in the market. The remainder of this section contains five charts on deployment trends in New York. All but the first chart were developed by EPA and its contractors based on the RE-Powering *Tracking Matrix* data and EIA overall statewide data.	https://seia.org/sites/default/files/2021-09/SEIA_Top10_Solar_States_2021-Q3.pdf

New York State

Topic	Data	Sources
	Chart 1: Historically, the overall pace of utility-scale solar development has lagged behind other types of solar projects in New York. However, utility-scale deployment accelerated starting in 2018. Community solar projects reflect a rapidly growing market segment in the state.  	Solar Energy Industries Association and Wood Mackenzie Power & Renewables *U.S. Solar Market Insight Q4 2021* https://www.seia.org/state-solar-policy/new-york-solar

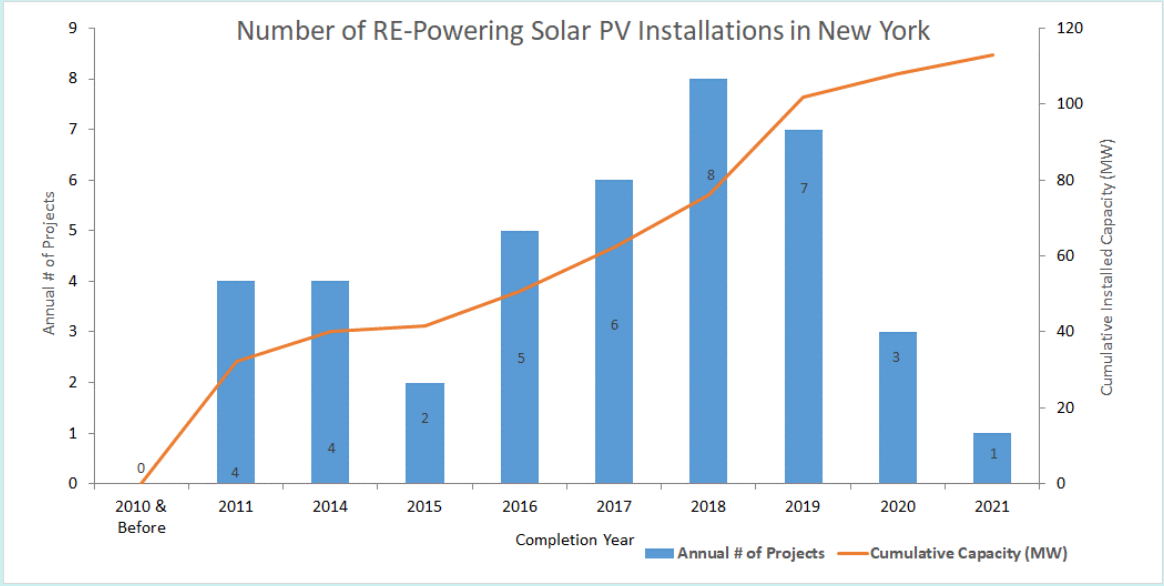
Topic	New York State Data	Sources
	Chart 2: RE-Powering solar projects represented a large share of the New York solar market when it was emerging 10 years ago. In recent years, RE-Powering projects have represented about 3% of new solar installations in the state. 	https://www.epa.gov/re-powering/re-powering-tracking-matrix https://www.eia.gov/electricity/state/newyork/

Topic	New York State Data	Sources
	Chart 3: This graph converts annual data into a cumulative trend, ending with RE-Powering projects representing just over 4% of cumulative statewide solar capacity by 2020.  	https://www.epa.gov/re-powering/re-powering-tracking-matrix https://www.eia.gov/electricity/state/newyork/

Topic	New York State Data	Sources
	Chart 4: This graph overlays the trend line of RE-Powering site market share (the same line seen in Chart 3) with bars showing cumulative PV capacity in the state on all types of sites.  	https://www.epa.gov/re-powering/re-powering-tracking-matrix https://www.eia.gov/electricity/state/newyork/

New York State

Topic	Data	Sources
	Chart 5: The annual path taken in New York to reach its total of 115 MW of RE-Powering solar capacity through October 2021 is displayed. With one exception, between four and eight new RE-Powering solar projects were installed each year between 2014 and 2019. No RE-Powering solar projects were installed in New York in 2012 or 2013, which is why no bars are displayed for those years.	https://www.epa.gov/re-powering/re-powering-tracking-matrix



New York State		
Topic	**Data**	**Sources**
General Electricity Market Factors		
Power Prices	New York has higher-than-average electricity prices that, other factors equal, support renewable energy development. The national average **retail** electricity price paid by end-use consumers is 10.59 cents/kWh, while New York's average price is 40% higher at 14.87 cents/kWh. New York's retail electricity prices are the ninth highest of the 50 states. **Wholesale** electricity prices in Upstate New York average 4.2 cents/kWh and 5.2 cents in the New York City/Long Island area. Both of those levels in New York are below the national average of 5.8 cents/kWh.	https://www.eia.gov/electricity/state/ Wholesale electricity prices (generation-only electricity prices: EIA, *Annual Energy Outlook 2021*, Reference Case Projections Tables): https://www.eia.gov/outlooks/aeo/tables_ref.php
Clean Energy Standard	New York has a 70% renewable electricity by 2030 mandate under its Clean Energy Standard.	https://www3.dps.ny.gov/pscweb/WebFileRoom.nsf/ArticlesByCategory/1D4A997027D37A668525860200639 7B6/$File/gov%20announces%20psc%20approval%20expanded%20clean%20energy%20standard%20decarbonize%20ny%20power%20sector-combat%20climate%20change_101520%20.pdf?OpenElement
For More Information		
Energy Agency POC	Emily Chessin, Senior Development Associate, Build-Ready Program, New York State Energy Research and Development Authority: Emily.Chessin@nyserda.ny.gov	

Topic	Illinois Data	Sources
Overview		
	Illinois is representative of several states that have existing projects on RE-Powering sites and have recently created or enlarged programs geared specifically toward increasing renewable energy capacity on RE-Powering sites. It is also representative in that its RE-Powering programs have been complementary pieces of broader legislation raising the state's overall renewable energy goals. Illinois has new, large solar projects on landfills and brownfields being developed that arose from the Future Energy Jobs Act (FEJA) of 2017, legislation that requires at least 2% of all new utility-scale solar output to come from brownfields. This legislation's definition of brownfields also includes solid waste landfills. The first successful auction for these sites occurred in 2019. In September 2021, Illinois passed the Climate and Equitable Jobs Acts (CEJA), which increased the minimum proportion of utility-scale solar on RE-Powering sites from 2% to 3%, expanded the definition of eligible sites to also include closed coal mines, and included other provisions encouraging reuse of RE-Powering sites for renewables. These other provisions of FEJA and CEJA have supported development of community solar on brownfields, beyond the utility-scale percentages noted above. Beyond the solar procurement requirements noted above, Illinois has databases, technical assistance, a brownfields loan program, and a climate-focused interagency collaboration mechanism that support the development of RE-Powering sites.	
Program Profiles		
Procurement Requirements	**FEJA** substantially updated the state's Renewable Portfolio Standards (RPS) to include new procurement requirements for renewable energy certificates (RECs) specific to solar and wind projects as well as other programs (e.g., the Adjustable	https://www.ilga.gov/legislation/publicacts/99/PDF/099-0906.pdf

Topic	Illinois Data	Sources
	Block Program [for distributed photovoltaic (PV) generation and community solar] and the Illinois Solar for All Program [for low-income residential distributed generation and community solar]).	https://www2.illinois.gov/sites/ipa/pages/renewable_resources.aspx
	• One FEJA procurement requirement is that **at least 2% of new solar RECs must be obtained from brownfield sites** (that are not part of FEJA's community renewables projects). These RECs are obtained from utility-scale projects.	https://illinoisabp.com/ https://www.illinoissfa.com/
	• **Eligible brownfields** under FEJA were those at federally regulated Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or Resource Conservation and Recovery Act (RCRA) sites, or Illinois Environmental Protection Agency (Illinois EPA)-regulated Site Remediation Program or Solid Waste Program sites. Therefore, **sites typically thought of as "landfills" are included in FEJA's definition of brownfields.**	https://www.ipa-energyrfp.com/wordpress/wp-content/uploads/2022/03/Indexed-REC-RFP_Process-and-Rules_18-MAR-2022-posted.pdf
	• The initial FEJA brownfield solar procurements were not successful, so the Illinois Power Agency (IPA) made certain adjustments to the procurement guidelines and conducted another procurement event in July 2019. The 2019 procurement was approved by the Illinois Commerce Commission and successfully obtained RECs from two selected projects at a price of $58.10/REC.	https://www2.illinois.gov/sites/ipa/Documents/Draft%20Revised%20Plan%20-%20Summer%202019/Revised%20LTRRPP%20updated%20from%20ICC%20Order%20%2820%20April%202020%29.pdf
	• FEJA's specific procurement requirement is leading to construction of large RE-Powering projects (for example, a 27 megawatt [MW] brownfield solar project in DePue, Illinois).	https://www.ameresco.com/depue-solar/

Topic	Illinois Data	Sources
	CEJA, passed on September 15, 2021, increased the share of new solar RECs that must come from brownfields from 2% to 3% and expanded the definition of eligible sites to include closed coal mines.[8] • CEJA contains numerous provisions aimed at expanding the overall size of the renewable energy market in Illinois. • IPA is hosting a spring 2022 procurement, including brownfield projects.	https://www.ilga.gov/legislation/102/SB/PDF/10200SB2408lv.pdf https://www.illinois.gov/news/press-release.23893.html https://www.ipa-energyrfp.com/wordpress/wp-content/uploads/2022/03/Indexed-REC-RFP_Process-and-Rules_18-MAR-2022-posted.pdf

Site Identification & Development Support	The Illinois EPA maintains **three databases of RE-Powering sites**:
	
	• Site Remediation Program
	  ○ "Identifies the status of all voluntary remediation projects administered through the Pre-Notice Site Cleanup Program (1989 to 1995) and the Site Remediation Program (1996 to the present)." This database has 6,167 entries.
	
	• Leaking Underground Storage Tanks
	  ○ "Identifies the status of all Illinois (Leaking Underground Storage Tanks) incidents reported to the Illinois Emergency Management Agency and to the Illinois EPA." This database has 29,709 entries.
		https://www2.illinois.gov/epa/topics/cleanup-programs/bol-database/Pages/default.aspx

[8] CEJA defines eligible parcels as "located at the site of a coal mine that has permanently ceased coal production, permanently halted any re-mining operations, and is no longer accepting any coal combustion residues; has both completed all clean-up and remediation obligations under the federal Surface Mining and Reclamation Act of 1977 and all applicable Illinois rules." See CEJA, https://www.ilga.gov/legislation/102/SB/PDF/10200SB2408lv.pdf.

Topic	Illinois Data	Sources

	• State Response Action Program
	  ○ "Identifies the status of all sites under the responsibility of the Illinois EPA's State Sites Unit." This database has 531 entries.
	
	While Illinois does not have renewable energy-specific databases or maps of its RE-Powering sites, these overall RE-Powering site databases can help renewable developers identify locations and owners for reuse.
	
	Technical assistance: While the Illinois EPA does not have a technical assistance program specifically for renewable energy reuse, agency brownfields representatives do meet with city leaders to review cleanup options, help cities secure financial assistance, and guide potential loan recipients through redevelopment. Agency staff will also meet with renewable project developers to explain requirements (e.g., how a proposed renewable system design might interact with ongoing maintenance and remediation processes).
	
	• Meetings with renewable developers often pertain to the process for obtaining "No Further Remediation (NFR)" letters. An "NFR letter acknowledges that a site owner or operator has satisfied the respective Bureau of Land laws and regulations."
	
	• In 2018, the Illinois EPA issued its first permit for a solar landfill project. This was a 2.4 MW project in Zion.
	  ○ The agency has issued permits for additional solar development projects atop nonhazardous solid waste landfills since that time.
		https://www2.illinois.gov/epa/topics/cleanup-programs/brownfields/Pages/default.aspx
		
		https://www2.illinois.gov/epa/topics/cleanup-programs/taco/fact-sheets/Pages/no-further-remediation-letters.aspx
		
		https://www.chicagotribune.com/suburbs/lake-county-news-sun/ct-lns-zion-solar-project-st-0905-20200904-o45k4wfstbh2fpf4mxisobslye-story.html

Topic	Illinois Data	Sources
	The permits were for the Freeport Municipal Landfill and Belvidere Municipal Landfill in 2019 and the Belleville Landfill in 2020.	
Education & Outreach	Illinois EPA maintains a **Renewable Energy Development on Former Landfills and Cleanup Sites webpage** with links to numerous federal and state government and trade association information sources. • Beyond this webpage dedicated to renewable energy reuse, there are numerous Illinois EPA webpages for general landfill, brownfield, and mine site programs and activities that can be applicable to renewable reuse as well as other types of reuse.	https://www2.illinois.gov/epa/topics/energy/renewable-energy-development-landfills-cleanup/Pages/default.aspx
General Brownfield Reuse	"The **Illinois Brownfields Redevelopment Loan Program** offers low interest loans to support efforts by local governments and private parties to clean up brownfields sites that have already been assessed for contamination. These cleanups take place under the Illinois EPA's voluntary Site Remediation Program." • "The loans will pay for limited investigation, remediation, and demolition costs at brownfields sites." • "The maximum loan amount for any single application is $500,000" and $1 million per project. • This program is not designed specifically for renewable energy development, but that is one type of reuse it can support.	https://www2.illinois.gov/epa/topics/cleanup-programs/brownfields/Pages/default.aspx https://www2.illinois.gov/epa/Documents/epa-forms/land/brownfields/brownfield-loan-app.pdf

Illinois		
Topic	**Data**	**Sources**
Interagency Coordination	In association with Illinois joining the U.S. Climate Alliance in 2019, the **Illinois Climate Working Group** was created to increase data and programmatic coordination among state partners to reduce greenhouse gas emissions and to advance Illinois' attainment of its U.S. Climate Alliance commitments. • The Illinois EPA is the organizing agency of 17 agencies that are members of the Illinois Climate Working Group. • This working group meets monthly and is not a public body under the Illinois Open Meetings Act. • The working group's broad participation and goals, as well as the role of the Illinois EPA in the group, are consistent with expanding RE-Powering site reuse for renewables.	https://www2.illinois.gov/epa/topics/climate/Pages/default.aspx
Program Best Practices/Success Factors		
Need for Flexibility in Implementing Procurement Requirements	The initial FEJA brownfield solar procurements were not successful, so the IPA made modifications and successfully obtained RECs from two large projects in 2019. The State of Illinois also expanded the definition of brownfields to include closed mines under the CEJA legislation, and IPA is hosting a May 2022 procurement to seek additional brownfield RECs. Especially in markets where RE-Powering projects are less common, there is a need to adapt program implementation as renewable developers, program administrators, site owners, and other stakeholders become more knowledgeable about local costs, permitting processes, and timelines.	

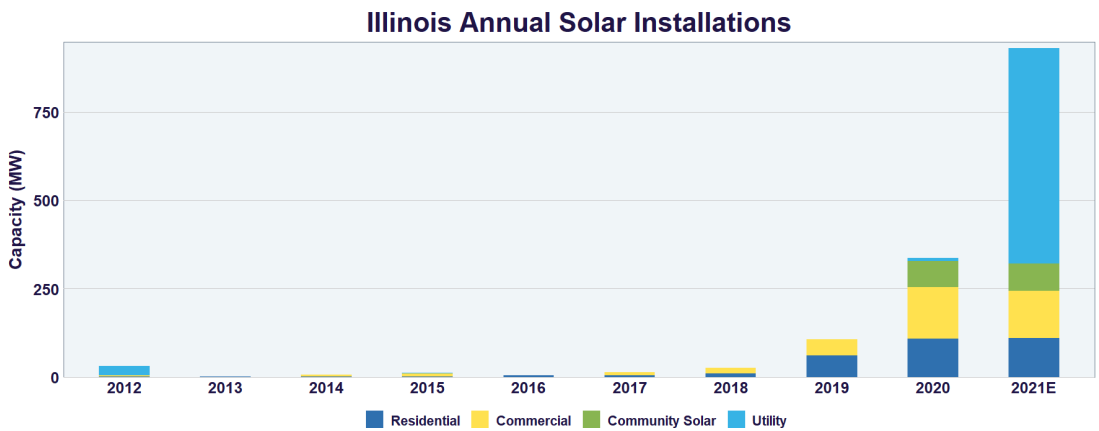
Illinois		
Topic	**Data**	**Sources**
Broad Political & Stakeholder Support	Illinois passed two significant legislative bills in the past four years updating the state's long-run clean energy plans. The provisions in the bills that explicitly addressed RE-Powering sites warranted attention from many stakeholders as cost, land use, environmental justice, and decarbonization objectives were balanced.	
Existence of Complementary Programs	Though Illinois does not appear to have programs that focus exclusively on placing renewables on RE-Powering sites, apart from its solar procurement requirements and an educational webpage, it does have several programs addressing brownfield and landfill reuse more broadly that can be readily utilized by developers and communities interested in renewables. The existence of these complementary programs is a hallmark of states that have grown their RE-Powering capacity.	
Achievements to Date		
RE-Powering Data on All Renewable Technologies (as of Oct. 2021)	• Three operational projects. ○ 10 MW solar project, 2 MW solar project, and 1 MW wind project. • 13 MW of capacity (20th-highest total in the country).	https://www.epa.gov/re-powering/re-powering-tracking-matrix
Comparison to Total Renewable Energy Capacity in the State	As of 2020, Illinois had[9]: • 473 MW of solar PV capacity (353 MW of which is net metered). • 6,304 MW of wind generating capacity (4 MW of which is net metered). As of 2020, RE-Powering projects represent: • 3% of cumulative solar PV capacity statewide. • Less than 0.1% of wind capacity statewide.	https://www.eia.gov/electricity/state/illinois/ https://www.epa.gov/re-powering/re-powering-tracking-matrix

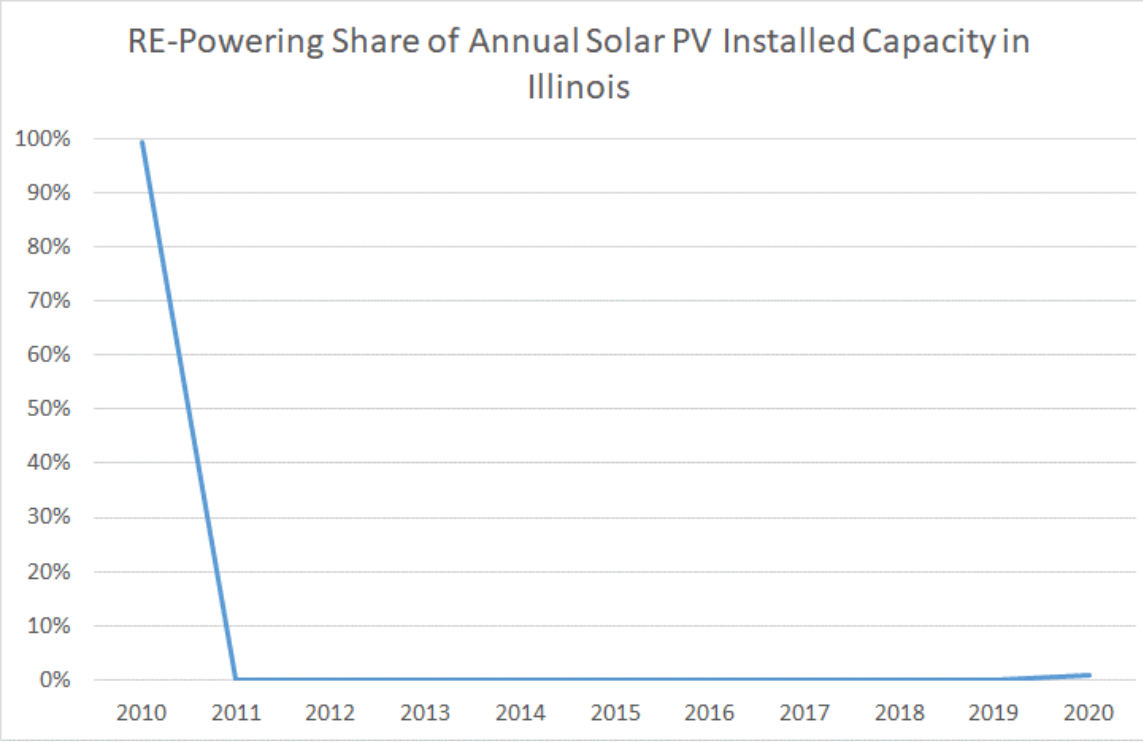
[9] Significant amounts of additional solar capacity were installed in Illinois in 2021; data in this section for Illinois and the other profiled states are from 2020 for consistency with the most recent EIA *State Electricity Profiles* (https://www.eia.gov/electricity/state/).

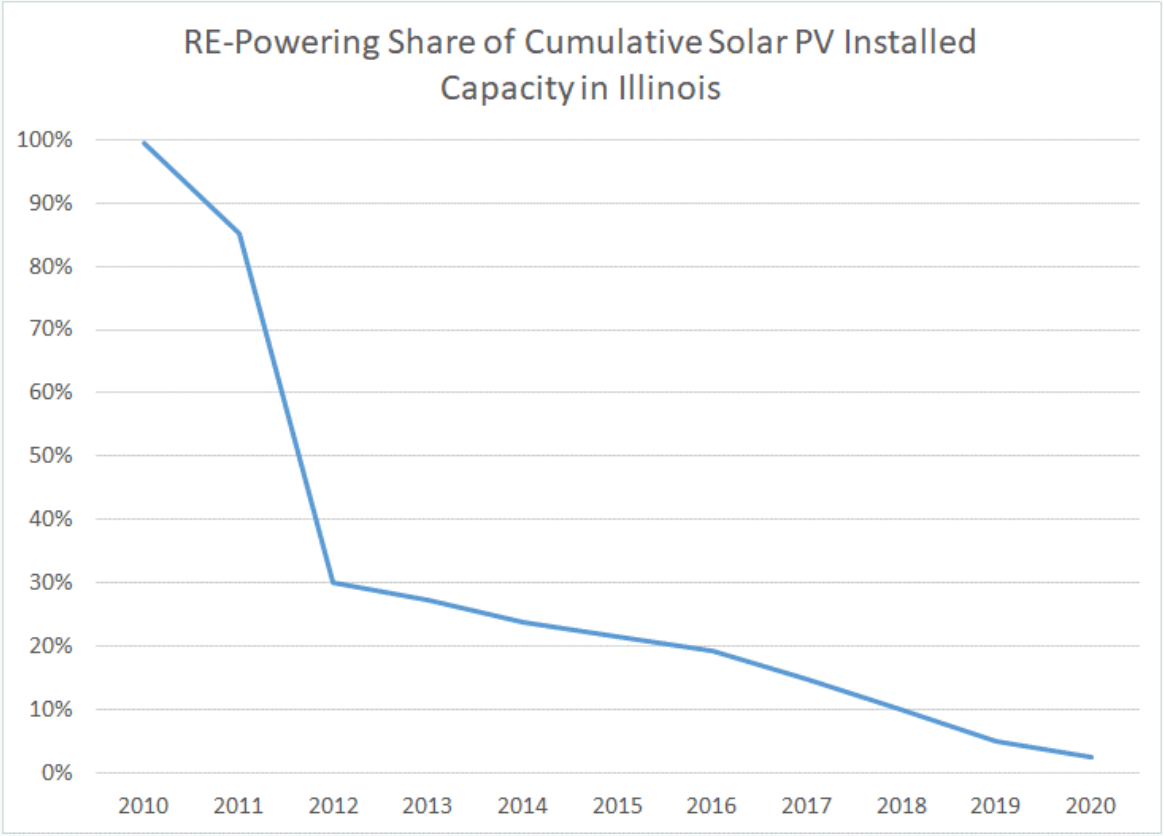
Topic	Illinois Data	Sources
Solar Deployment Trends in the State	Illinois' solar market began growing rapidly in 2019 as the policies enacted in FEJA, passed in 2017, resulted in new, installed solar projects. Almost as much new solar capacity was installed in Illinois in 2019 as in all prior years combined.[10] FEJA has already incentivized the development of more than 25,000 renewable energy projects between all associated programs and procurements. FEJA also contains a requirement that at least 2% of new utility-scale solar output be from brownfields (including landfills in its definition of brownfields). Additional solar projects on RE-Powering sites are being developed in the state's new community solar program, without a specific requirement that such sites be used. CEJA, passed in September 2021, expands the FEJA brownfields solar requirement from 2% to 3%, makes former coal mine sites eligible within that requirement, and includes several provisions to grow the overall Illinois clean energy market, including a significant increase in the RPS from 25% in 2025 to 50% by 2040. CEJA advances equity goals for brownfield solar projects by requiring these projects to participate in the Equity Accountability System. The remainder of this section contains four charts on deployment trends in Illinois. All but the first chart were developed by EPA and its contractors based on the RE-Powering *Tracking Matrix* data and EIA overall statewide data.	https://www.eia.gov/electricity/state/illinois/ https://www2.illinois.gov/sites/ipa/Documents/Draft%20Revised%20Plan%20-%20Summer%202019/Revised%20LTRRPP%20updated%20from%20ICC%20Order%20%2820%20April%202020%29.pdf https://www2.illinois.gov/sites/ipa/Documents/IPAFactSheet_PublicAct102-0662_12122.pdf

[10] FEJA also contributed to strong growth of Illinois' utility-scale wind market.

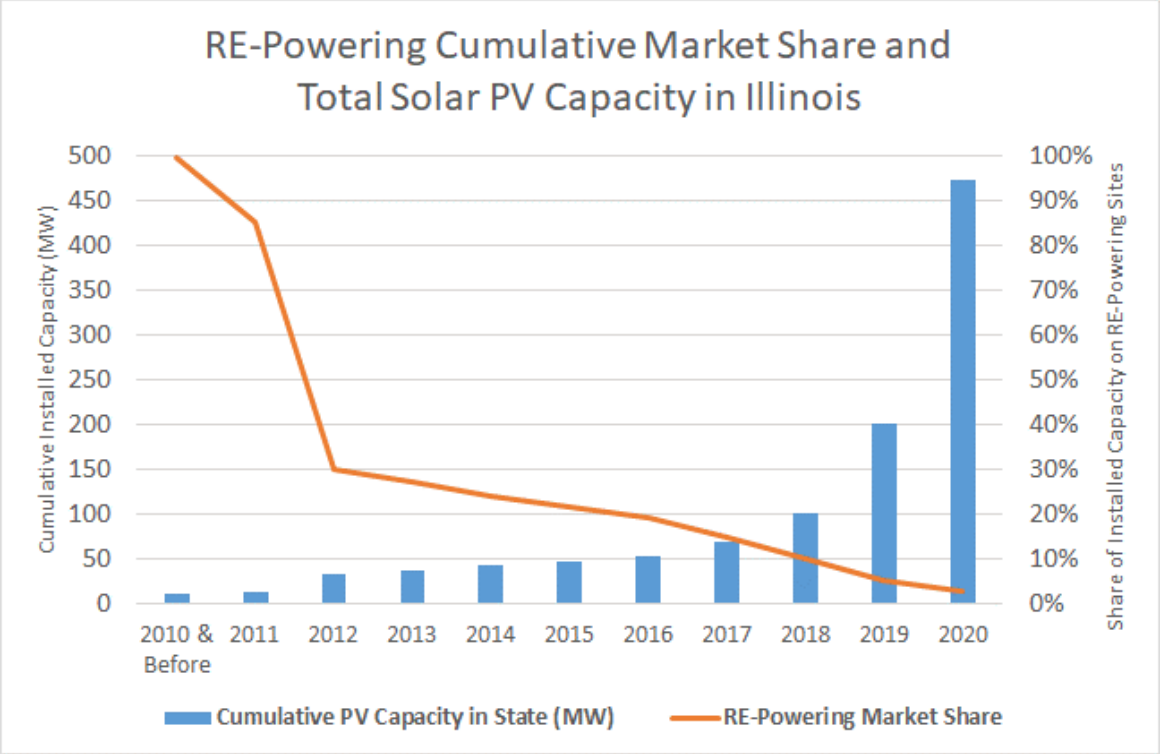
Illinois

Topic	Data	Sources
	Chart 1: Solar deployment was at relatively low levels in Illinois until FEJA, passed in 2017, began to impact solar installations shortly thereafter. Utility-scale projects often have three-year or longer lead times, so the utility-scale segment is expected to continue growing in the near future.  	Solar Energy Industries Association and Wood Mackenzie Power & Renewables *U.S. Solar Market Insight Q4 2021* https://www.seia.org/state-solar-policy/illinois-solar

Illinois		
Topic	**Data**	**Sources**
	Chart 2: The first large-scale solar project in Illinois was installed by the utility Exelon in 2010 on a brownfield site in the Chicago area, leading to 100% market share for RE-Powering sites at that time. No additional RE-Powering solar projects were installed between 2011 and 2019 in the state, and one new solar project on a RE-Powering site was installed in 2020, based on EPA's records.  	https://www.epa.gov/re-powering/re-powering-tracking-matrix https://www.eia.gov/electricity/state/illinois/

Topic	Illinois Data	Sources
	Chart 3: This graph converts annual data into a cumulative trend, ending with RE-Powering projects representing approximately 3% of cumulative statewide solar capacity in 2020. The trendline declined between 2011 and 2019 because no new RE-Powering projects were recorded during those years when the state's overall solar market grew.  	https://www.epa.gov/re-powering/re-powering-tracking-matrix https://www.eia.gov/electricity/state/illinois/

Topic	Illinois Data	Sources
	Chart 4: This graph overlays the trend line of RE-Powering site market share (the same line seen in Chart 3) with bars showing cumulative PV capacity in the state on all types of sites. By 2020, 473 MW of solar had been installed in Illinois on all types of sites.	https://www.epa.gov/re-powering/re-powering-tracking-matrix https://www.eia.gov/electricity/state/illinois/



Topic	Illinois Data	Sources
General Electricity Market Factors		
Power Prices	Illinois has lower-than-average retail electricity prices. The national average **retail** electricity price paid by end-use consumers is 10.59 cents/kWh, while Illinois' average price is 8% lower at 9.75 cents/kWh. Illinois' retail electricity prices are the 27th highest of the 50 states. **Wholesale** electricity prices in the PJM/ComEd area around Chicago average 5.5 cents/kWh, and they average 6.2 cents in the MISO Central Region. Those levels straddle the national average of 5.8 cents/kWh.	https://www.eia.gov/electricity/state/ Wholesale electricity prices (generation-only electricity prices: EIA, *Annual Energy Outlook 2021*, Reference Case Projections Tables): https://www.eia.gov/outlooks/aeo/tables_ref.php
Clean Energy Standard	Under CEJA signed in September 2021, Illinois has a 40% by 2030 and 50% by 2040 renewable energy standard.	https://www.illinois.gov/news/press-release.23893.html
For More Information		
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Environmental Agency POC	Heather Nifong, Associate Director, Illinois Environmental Protection Agency: heather.nifong@illinois.gov	

[11] The Illinois Power Agency is an independent state agency created in 2007 to prepare annual electricity procurement plans and manage power purchases on behalf of residential and small commercial customers of Illinois electric utilities, implement the state's RPS, drive the development of renewable energy, and develop and implement other procurement plans to support at-risk nuclear plants.

List of Acronyms and Abbreviations

AC	Alternating Current
CEJA	Climate and Equitable Jobs Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERP	Clean Energy Results Program
DC	Direct Current
DOER	Massachusetts Department of Energy Resources
EIA	U.S. Energy Information Administration
EPA	U.S. Environmental Protection Agency
FEJA	Future Energy Jobs Act
Illinois EPA	Illinois Environmental Protection Agency
IPA	Illinois Power Agency
kWh	Kilowatt-hour
LMI	Low- and moderate-income
MassDEP	Massachusetts Department of Environmental Protection
MW	Megawatt
MWh	Megawatt-hour
NEPA	National Environmental Policy Act
NFR	No Further Remediation
NIMBY	Not-in-my-backyard
NJBPU	New Jersey Board of Public Utilities
NJDEP	New Jersey Department of Environmental Protection
NJEDA	New Jersey Economic Development Authority
NJIT	New Jersey Institute of Technology
NJ SREC-II	Solar Renewable Energy Certificate generated by New Jersey's SuSI Program
NYSDEC	New York State Department of Environmental Conservation
NYSERDA	New York State Energy Research and Development Authority
OPPN	Office of Permitting and Project Navigation in the New Jersey Department of Environmental Protection

PILOT	Payment in lieu of taxes
PSEG	Public Service Electric & Gas
PV	Photovoltaic
RCRA	Resource Conservation and Recovery Act
REC	Renewable Energy Certificate
RE-Powering	RE-Powering America's Land Initiative
RPS	Renewable Portfolio Standards
SEQRA	State Environmental Quality Review Act
SMART	Solar Massachusetts Renewable Target
SREC	Solar Renewable Energy Certificate
SREC-I	Solar Renewable Energy Certificate generated by the first solar RPS carve-out program in Massachusetts and an abbreviated name for the program itself
SREC-II	Solar Renewable Energy Certificate generated by the second solar RPS carve-out program in Massachusetts and an abbreviated name for the program itself
SuSI	Successor Solar Incentive (Program) in New Jersey
VNM	Virtual Net Metering