

State of Community Solar in Cook County

June 2015



SunShot
U.S. Department of Energy



The U.S. Department of Energy SunShot Initiative is a collaborative national effort that aggressively drives innovation to make solar energy fully cost-competitive with traditional energy sources before the end of the decade. Through SunShot, the Energy Department supports efforts by private companies, universities, and national laboratories to drive down the cost of solar electricity to \$0.06 per kilowatt-hour. Learn more at energy.gov/sunshot.

About the SunShot Initiative



“Cook County should be a world-class model of sustainability. We are working not only to boost sustainability practices throughout County government, but also to join forces with local governments, nonprofits and business, to accomplish more than we could separately in making each of Cook County’s communities sustainable.” – Toni Preckwinkle, President, Cook County Board of Commissioners

This project to advance community solar in Cook County is undertaken cooperatively by Cook County, the City of Chicago, ComEd, Elevate Energy, Environmental Law and Policy Center, and West Monroe Partners.



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Overview

- Cook County Community Solar Project Background
- Introduction to Solar Electric Energy
- State of Community Solar in Cook County, and Conclusions

Cook County Community Solar Project Background



Project Team

Cook County – Grant Recipient; Project Oversight and Direction

City of Chicago – Steering Committee Member, Advisory Support

Commonwealth Edison – Implementation Feasibility and Energy Market Expertise

Elevate Energy – Program Management, Stakeholder Engagement, and Solar Market Analysis

Environmental Law & Policy Center – Regulatory Expertise

West Monroe Partners – Technical Expertise and Economic Modeling



Community Solar Expands Access to Solar Energy

Community (shared) solar is a photovoltaic electric system that provides power and/or financial benefit to multiple community members

- According to the National Renewable Energy Laboratory (NREL), **only about one-quarter of residential rooftop area** is suitable for solar photovoltaic systems
- Community solar expands access to solar power to renters, condominium owners, those with shaded roofs, and those with financial barriers to installation



SunShot Initiative Seeks to Make Solar Energy Cost-Competitive

- U.S. Department of Energy SunShot Initiative is a national collaborative effort to make solar energy cost-competitive with other forms of electricity by the end of the decade
- The SunShot Initiative's Solar Market Pathways Program will support 15 projects, including the Cook County Community Solar Project, over the next two years that are advancing solar deployment across the United States

The Cook County Community Solar Project will identify and establish models for community solar and ways to eliminate barriers to implementation



Our Project Goals

- Inventory existing community solar market
- Identify the potential market for community solar
- Analyze the economics of different ownership structures
- Identify structural and policy barriers to community solar and propose approaches to address them
- Select 5-7 pilot sites and conduct technical and economic feasibility analysis
- Disseminate lessons learned so other projects can succeed

Community Solar Is Primed for Significant Growth

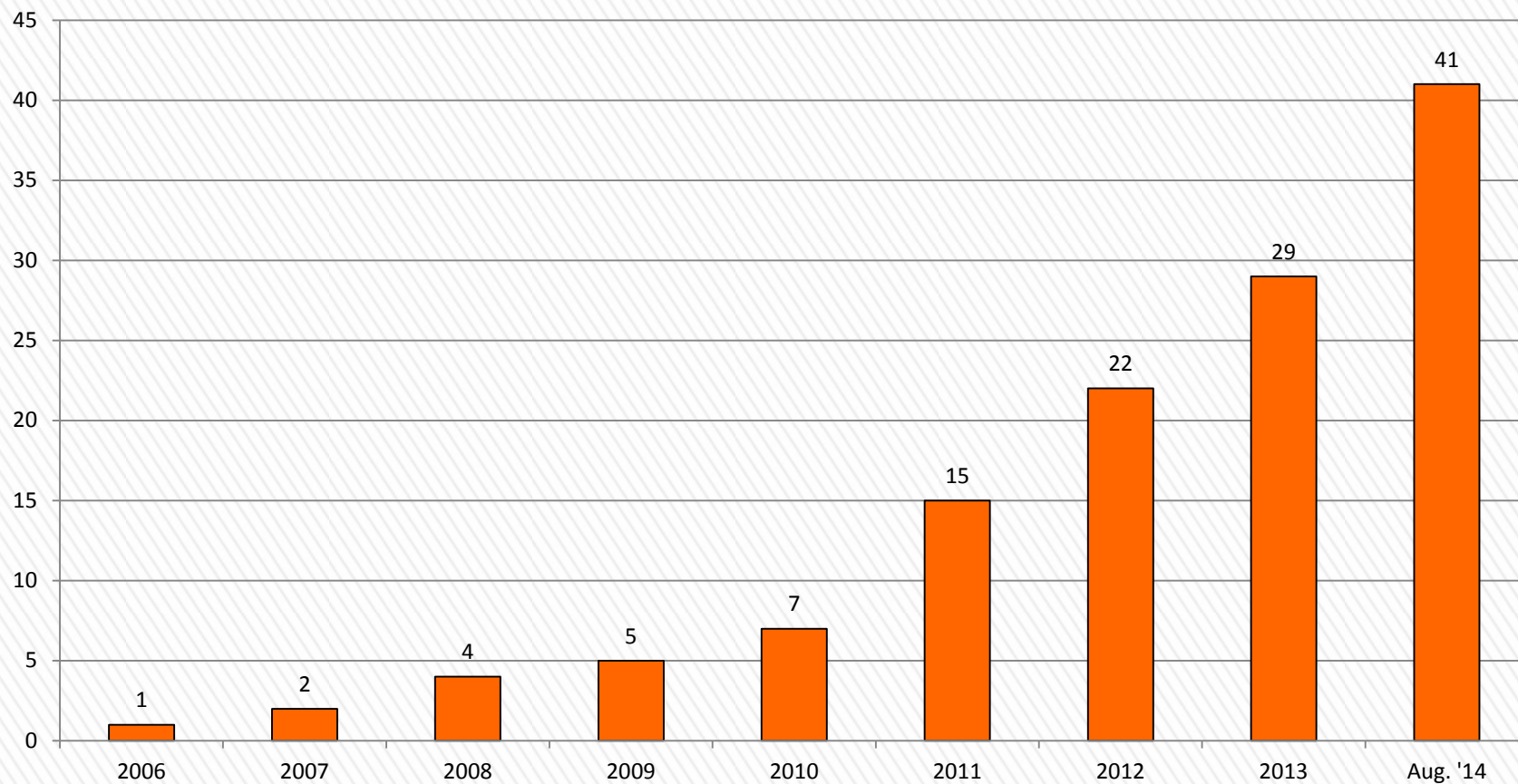
A recent study by The National Renewable Energy Laboratory estimated that “shared solar could represent 32% to 49% of the distributed solar photovoltaic market in 2020”*

- Colorado – first state to pass community solar legislation in 2012
- Minnesota – passed community solar legislation in 2013
- 40+ states, municipalities, and utilities developing community solar legislation and programs
- Municipal utilities are developing community solar projects in Illinois, Wisconsin, Michigan, Indiana, and other Midwestern states
- While community solar is growing rapidly in the country, challenges and opportunities vary greatly by region



Community Solar Programs Are Expanding Rapidly

Cumulative Number of U.S. Community Solar Programs



Source: Campbell, B.; Passera, L. (2014). SEPA/IREC Resource: SEPA/IREC Community Solar Program Catalog. Washington, DC: Solar Electric Power Association, as reported in NREL "Shared Solar: Current Landscape, Market Potential, and the Impact of Federal Securities Regulation." April 2015. Available at: <http://www.nrel.gov/docs/fy15osti/63892.pdf>.

Introduction to Solar Electric Energy



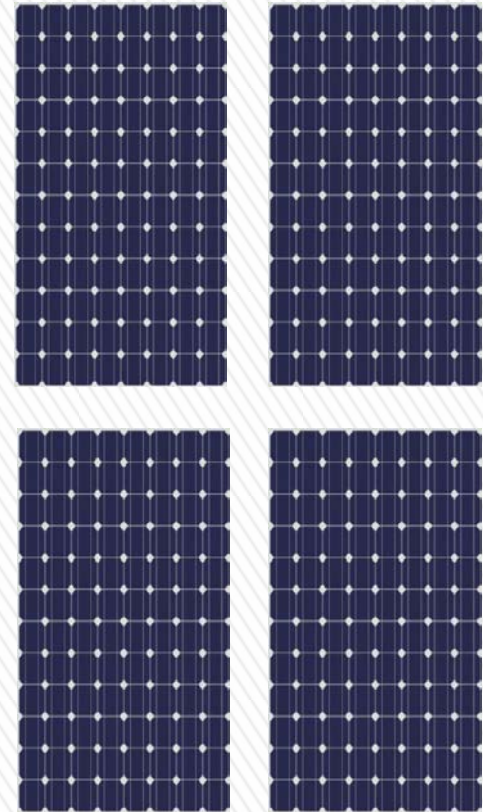
Community Solar Can Power Thousands of Homes

- Average Cook County apartment uses about 4,000 kilowatt-hours per year
- Average Cook County single-family household uses about 8,600 kilowatt-hours per year



How Much Power Do Solar Panels Produce?

- 12 solar panels* would offset 100% of the average annual apartment's electricity consumption in Cook County
- 25 solar panels would offset 100% of the average annual single-family electricity consumption in Cook County



* A typical solar photovoltaic panel size is 3.5 ft. x 5 ft. and generates approximately 350 kWh each year.

How Much Electricity Would a 1 MW Solar Project Supply?

- Community solar projects vary in size but a common system size is 1 megawatt (1,000 kilowatts) and is composed of approximately 3,500 solar panels
- A 1 megawatt system would offset:
 - Single-Family
 - 100% of electricity demand of about 140 households each year
 - 10% of electricity demand of about 1,400 households each year
 - Multi-Family Apartments
 - 100% of electricity demand of about 300 apartments each year
 - 10% of electricity demand of about 3,000 apartments each year

Current State of Community Solar in Cook County



Overview of Local Community Solar Projects

To date no community solar projects have been successfully installed in Cook County

- Successful community solar projects have been built in other Illinois counties and in bordering states
 - Community solar projects in neighboring states are mostly owned by cooperative utilities not restricted by the same regulatory framework as Illinois' Investor-Owned Utilities
- Other solar arrays exist in Cook County, but they are not community solar project
- There is growing excitement and interest about solar energy in Cook County but few if any options to channel potential investment

Institute of Cultural Affairs GreenRise Solar Project

- **Location:** Chicago, IL (Uptown)
- **Owner:** Institute of Cultural Affairs (non-profit)
- **Size:** 150 kW (483 solar panels)
- **Details:** Cost \$600,000; funded by individual donors/investors; grant from Illinois Clean Energy Community Foundation. Second largest solar panel installation on commercial building in Chicago. Roof installation completed in 2014. Not community solar but community members were given the opportunity to donate. This installation shows the excitement and interest in solar photovoltaic installations in Chicago. will lead to 23% reduction in electricity use and savings of up to \$16,000 per year



Located in Cook County; Not Community Solar

Exelon City Solar

- **Location:** Chicago, IL (West Pullman neighborhood on a 41-acre brownfield)
- **Owner:** Exelon (with SunPower)
- **Size:** 10,000 kW (32,292 panels)
- **Details:** Largest urban solar installation in the United States. Cost of roughly \$60 million.



Developed on a 41-acre brownfield in the West Pullman neighborhood of Chicago. Land is leased from the City of Chicago. Construction began in 2009 and completed in 2010. Generates enough electricity to power approximately 1,500 homes per year.

Large Utility-Scale Solar Project in Cook County;
Not Community Solar

Jo-Carroll Energy South View Solar Farm

- **Location:** Elizabeth, IL; $\frac{3}{4}$ -acre
- **Owner:** Jo-Carroll Energy (Energy Cooperative)
- **Size:** 126.5 kW (456 solar panels)
- **Details:** Co-op members can purchase capacity credits for 20 years at \$890/panel, with an estimated annual return of \$48-50/year; as of end late March 2015, there were 25 subscribers. Was the first community solar project in Illinois in which individual subscribers are able to lease panels and receive a capacity credit on their utility bills. This utility constructed the project and program voluntarily due to customer demand. Cooperative utilities, such as Jo-Carroll Energy, are not restricted by the same regulatory framework as ComEd, an Invested-Owned Utility.



Vernon Electric Cooperative Community Solar Farm

- **Location:** Westby, WI (2 acres)
- **Owner:** Vernon Electric Cooperative
- **Size:** 305 kW (1,001 panels)
- **Details:** Any co-op member can purchase panels. One-time up-front cost. Credit is provided directly on monthly utility bills (projected at \$35/panel per year). Cost of the panels was \$600/panel. Completed in 2014.



First community solar project in Wisconsin. Cost per panel for subscribers is lower than many other community solar projects at cooperative utilities.

Vernon Electric Cooperative partnered with Clean Energy Collective, one of the largest developers of community solar in Illinois.

Early Midwestern Community Solar Project; Located in Wisconsin

Tipmont REMC Community Solar Farm

- **Location:** Linden, IN (Tipmont REMC Headquarters)
- **Owner:** Tipmont REMC
- **Size:** 100 kW (240 panels)
- **Details:** Customers may purchase panels at \$1,250/panel and get credit for the energy generated for 25 years.
- The first community solar project in Indiana and, similarly to the South View Solar Farm in Illinois owned by Jo-Carroll Energy and the Vernon Electric Cooperative Solar Farm in Wisconsin, is owned by an electrical cooperative.



Community Solar Project Located in Indiana

City of Galena Wastewater Treatment Facility

- **Location:** Galena, IL
- **Owner:** City of Galena
- **Size:** 368 kW
(1,440 panels)
- **Details:** The City of Galena installed this solar array to offset electricity use at its wastewater treatment facility. Provides roughly half of the onsite energy requirement. One of the largest publicly-owned and operated solar arrays in Illinois. It was funded by a \$900,000+ grant from the Illinois Clean Energy Community Foundation.



Not Located in Cook County; Not Community Solar

Other Regional Initiatives to Increase Solar Deployment

■ Solar Market Transformation Project

- Project team included the City of Chicago, Environmental Law and Policy Center, Illinois Institute of Technology, and West Monroe Partners
- Focused on streamlining the solar permitting process, reducing soft costs, and encouraging new solar development in City of Chicago
- Effort resulted in revised requirements and streamlined workflow, resulting in cost and time savings to both the City and applicants
- Project was funded under the U.S. Department of Energy's SunShot Rooftop Solar Challenge (Phase I)

■ Midwest Grow Solar Partnership

- Led by the Midwest Renewable Energy Association (MREA)
 - Team includes the Environmental Law & Policy Center and West Monroe Partners
- Focused on developing best practice distributed generation enrollment practices for regulated and unregulated utilities to drive down costs to both the applicant and utilities in a multi-state region (Illinois, Minnesota, and Wisconsin)
- Project is ongoing and is funded under the U.S. Department of Energy's SunShot Rooftop Solar Challenge (Phase II)

Other Regional Initiatives to Increase Solar Deployment

- **Solar Chicago Bulk Purchase Program**
 - Community-wide residential group solar discount program offered by the City of Chicago, Cook County, Environmental Law & Policy Center, Vote Solar, and World Wildlife Fund
 - Help owners of single-family homes and 2-flats pool their buying power to secure significant discounts that make installing solar more affordable
 - As of June 2015, more than 100 solar photovoltaic installations were completed representing over 460 kilowatts of new capacity
 - Renters and homeowners whose households were not suitable for solar electric systems through this program will likely be good candidates for community solar programs

While not targeted toward community solar, these 3 efforts help create greater awareness about solar energy in Cook County

Conclusions

- Community shared solar expands access to solar power
- Community Solar is primed for significant growth
- Cook County Community Solar Project, which is supported by the U.S. Department of Energy SunShot Initiative's Solar Market Pathways Program, will identify and establish models for community solar and address barriers to implementation
- There is growing excitement and interest about solar energy in Cook County but few if any options to channel potential investment
- To date no community solar projects have been successfully installed in Cook County
- Successful community solar projects have been built in other Illinois counties and in bordering states; many are owned by cooperative utilities not restricted by the same regulatory framework as Illinois' Investor-Owned Utilities
- Solar arrays exist in Cook County but they are not community solar
- These projects provide a useful foundation to help build a true community solar model that will work in Cook County

For Further Information

See: <http://www.cookcountyil.gov/environmental-control-2/solar-energy/>

Contact:

Deborah Stone

Cook County Chief Sustainability Officer

Director, Cook County Dept. of Environmental Control

69 W. Washington St., Room 1900

Chicago, Illinois 60602

(312) 603-8200

Deborah.Stone@cookcountyil.gov

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