Stakeholder Advisory Group

Third Meeting

April 1, 2016

Cook County Community Solar Project

SunShot U.S. Department of Energy

Introduction

Deborah Stone
Chief Sustainability Officer and Director
Cook County Department of Environmental Control

Agenda

- Introduction
- Current Deliverables
- Next Steps
- Q&A
- Break
- Community Solar Basics for Site Owners
- Panel Discussion: Hosting a Community Solar Project
- President Preckwinkle
- Q&A
- Close & Networking Opportunity

U.S. Department of Energy SunShot Initiative

- SunShot Initiative is a national collaborative effort to make solar energy cost-competitive with other forms of electricity by the end of the decade
- Solar Market Pathways Program supports 15 projects that are advancing solar deployment across the United States
- We are working collaboratively with other awardees across the nation and will share lessons learned

Introduction: Cook County Community Solar Project (Dec. 2015 to June 2017)

- Goal: identify and establish **models** for community solar in Cook County.
- Address **barriers** to implementing community solar in Cook County and provide options for resolution.
- Engage a diverse group of **stakeholders** to inform the analysis and deliverables.
- Conduct analysis on the **opportunity, best practices, policies and impact** of community solar.
- http://www.cookcountyil.gov/environmental-control-2/solar-energy/

Steering Committee

- **Cook County** – Overall 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 Local Solar Market Analysis
- **West Monroe Partners** – Technical Expertise and Economic Modeling
- **Environmental Law & Policy Center** – Regulatory Expertise

Progress to Date

Task 1 – Opportunity Assessment

Quantify shared solar market potential:
- ✓ Site characteristics
- ✓ Subscriber type
- ✓ Ownership model
- ✓ Capacity

Task 2 – Stakeholder Engagement

Facilitate stakeholder collaboration:
- ✓ Stakeholder Advisory Group
- ✓ Working groups
- ✓ Analytical work-sessions

Task 3 – Policy Research

Address policy and market barriers:
- ✓ Best practices
- ✓ Bill crediting
- ✓ Economic & Policy Barriers Resolutions

Task 4 – Pilot Development

Pilots:
- ✓ Benefit assessment
- ✓ REI launch
- ✓ Site screening
- ✓ Site selection

Task 5 – Impact Analysis

Impact Analysis:
- ✓ Value Proposition
- ✓ Financial Models
- ✓ Impact Analysis

Current Deliverables

Bill Crediting Analysis

David South
Senior Principal, Sustainability, Energy & Utilities Practice
West Monroe Partners, LLC

Bill Crediting Analysis: Scope

- The Solar Market Pathways Cook County Community Solar project team was tasked with determining the mechanisms that would support group billing for community solar participants for various business models.
- Working with ComEd, the project team defined the current process used for net energy metering (NEM) and what options were available for the proposed community solar pilot program.
- Modifying the current manual process was deemed to be the only solution available for the pilot program. ComEd is planning an IT upgrade in the coming years, which will permit the inclusion of an automated process when the system requirements are built. Until this upgrade occurs, implementation of an automated bill crediting system is expected to be cost prohibitive.

Bill Crediting Analysis: Findings

- For the purposes of the analysis, it was assumed that:
  - Each project has 1 host with 1 revenue-grade meter and up to 300 separate subscribers
  - Third-party solar array owner/manager would provides a spreadsheet on a monthly basis to ComEd Billing Operations, which would include the bill credit amounts for the individual subscriber shares of the generation that the host site sends to the grid as well as individual subscriber account numbers
  - Subscribers are ComEd supply customers with fixed energy charges that are credited at the same fixed rate

Bill Crediting Analysis: Findings

- The resource requirements to manually perform the on-bill crediting for a pilot community solar project are:
  - 3 ComEd FTEs per month, spending an estimated monthly total of ~83 hours
  - Costs per FTE ranged from $75 to $100 per hour
  - Total estimated cost per project per year is ~ $80,400

Bill Crediting Analysis: Next Steps

- Results and presentation are currently undergoing final review by the Solar Market Pathways Cook County Steering Committee
- The results will be posted on the Cook County website and will feed into other work stream analyses

Economic & Policy Barriers Resolutions

Bradley Klein
Senior Attorney
Environmental Law & Policy Center

ENVIRONMENTAL LAW & POLICY CENTER
Protecting the Midwest's Environment and Natural Heritage

Economic & Policy Barriers Resolutions

- Identify economic and policy barriers in Cook County/Illinois, including a review of the IL RPS, net energy metering rules, and work with the utility and other stakeholders in the policy and finance communities to identify existing barriers and proposed resolutions for each CSS model that adequately reflects value of the distribution utility provider. One or more partners will pursue all regulatory avenues to maximize utility-enabled solar opportunities.

Economic & Policy Barriers Resolutions

- Barrier: Challenges with Bill Crediting
- Barrier: Lack of Transparent and Predictable Incentive Structure
- Barrier: Lack of Defined Subscriber/System Characteristics
- Barrier: Lack of Definition around Transferability and Portability of Community Solar Shares for Participants
- Barrier: Lack of Defined Consumer Protections
- Barrier: Complexity around Tax Incentives, SEC Regulations and Legal Structures
- Barrier: Difficulty of Financing Complex Projects

Site Selection & Pilot Development

Vito Greco
Manager, Solar Program
Elevate Energy

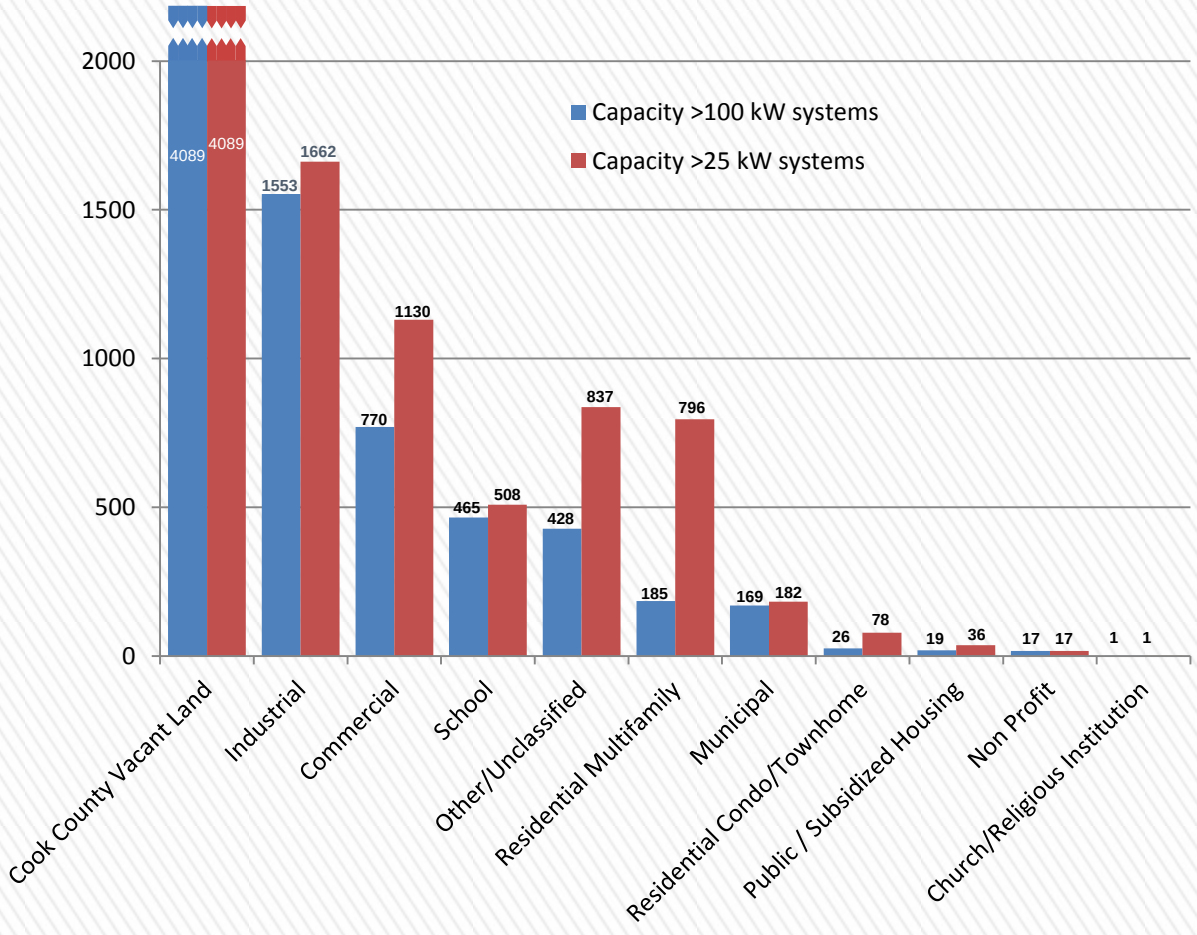
ELEVATE ENERGY
Smarter energy use for all

Site Screening Process

Request Launch	The public submits sites for consideration to host community solar.	**Q4 2015**
Suitability Screen	Initial screening for 100 kW + solar capacity, roof life remaining 10+ years.	**Q1 2016**
Grid Analysis	ComEd analyzes sites for impact to grid; seeking initial screen for proposed capacity.	**Q2 2016**
Engineering Study	Independent engineering study on properties to determine feasibility and cost.	**Q3 2016**

Cook County Opportunity Assessment

- Comparison of 100 kW to 25 kW potential sites.



9.3 GW of capacity

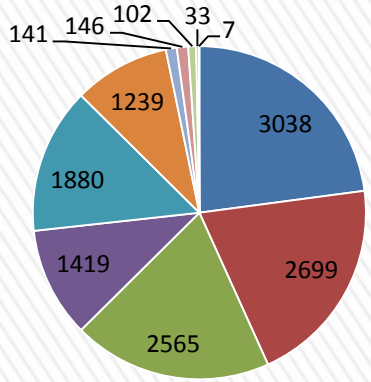
7.2 GW of capacity

Excludes Cook County rooftop properties

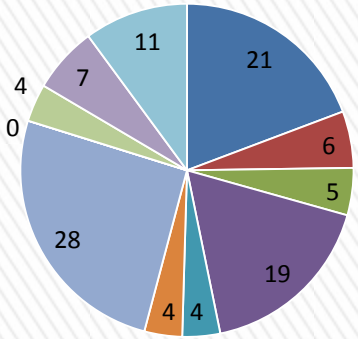
Cook County Opportunity Assessment

- Solar Capacity by opportunity category

Opportunity Assessment
(13,269 properties)



Sites Submitted
(109 properties)



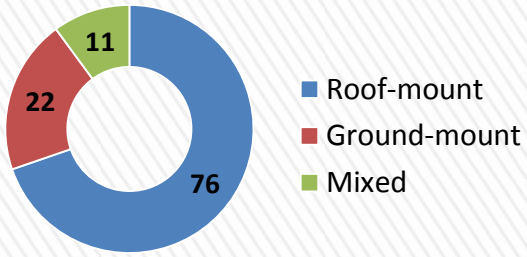
- Cook County Vacant Land
- Industrial
- Commercial
- School
- Other/Unclassified
- Residential Multifamily
- Municipal
- Residential Condo/Townhome
- Public / Subsidized Housing
- Non Profit
- Church/Religious Institution

Assumes properties suitable to host 100 kW capacity or greater.

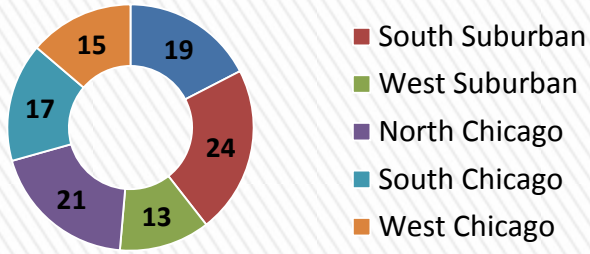
Site Selection: Properties Submitted

- Request for host sites launched in Q4
- 109 sites submitted

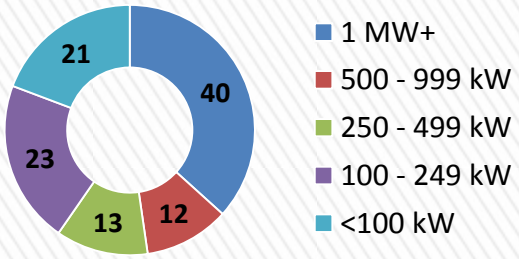
Installation Type by Site
(109 sites)



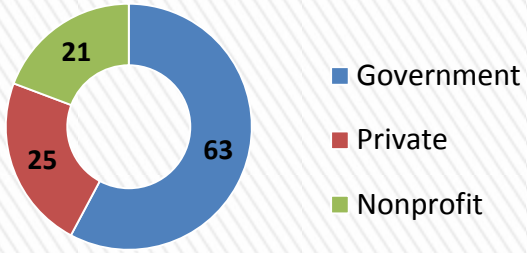
Geography by Site
(109 sites)



Solar Capacity by Site
(109 sites)

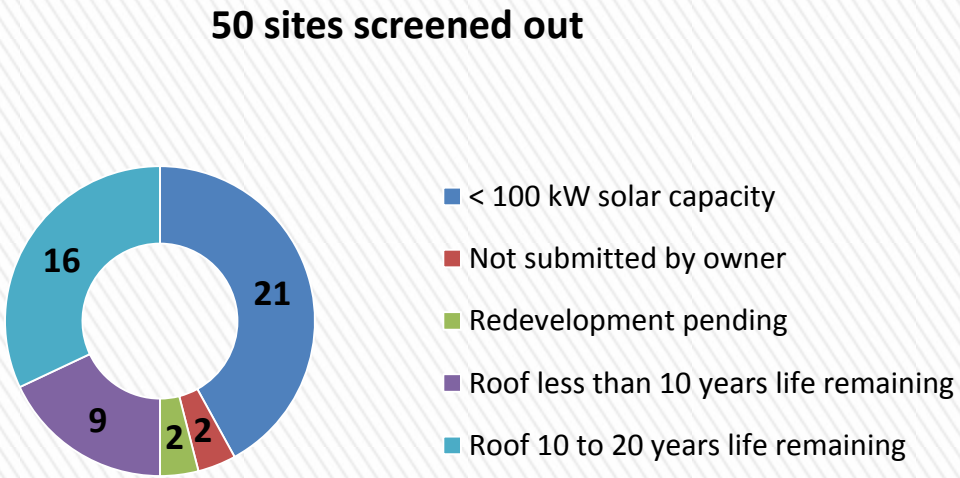


Ownership Type-All Submissions
(109 sites)



Site Selection: Screened Properties

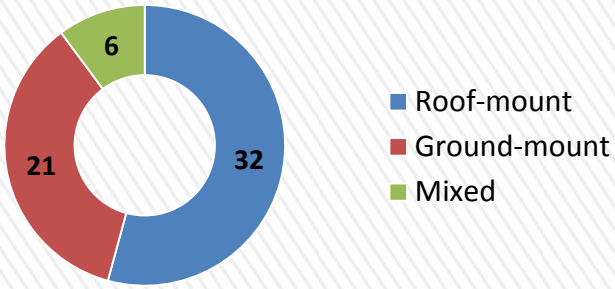
- 34 sites submitted did not qualify based on initial requirements
- 16 sites were screened w/ <20 years roof life remaining



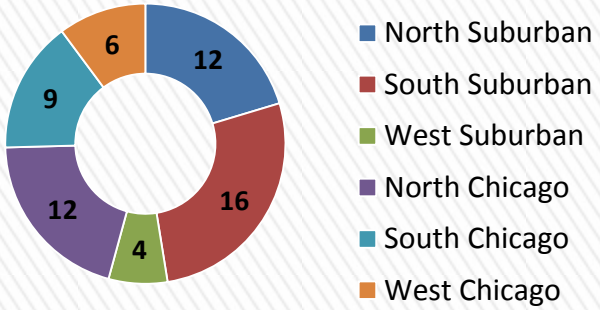
Site Selection: Current Sites

- 59 Sites Currently being analyzed and screened

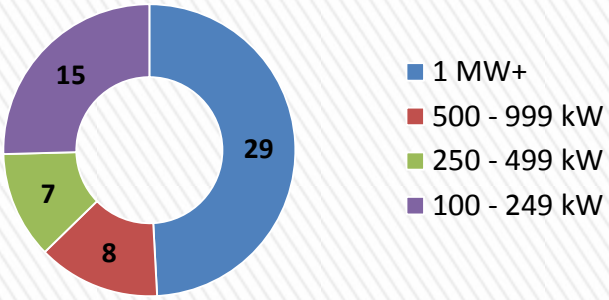
Installation Type in Size
(59 suitable sites)



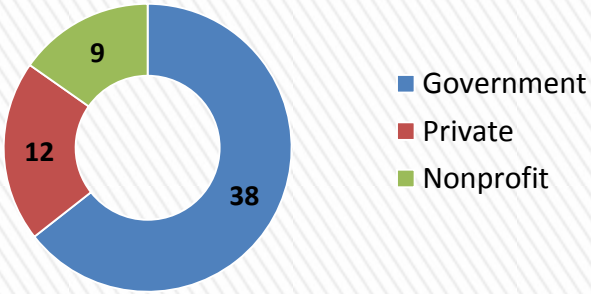
Geography by Site
(59 suitable sites)



Solar Capacity by Site
(59 suitable sites)



Ownership Type by Site
(59 suitable sites)



Next Steps

Site Selection Process

Grid Analysis	ComEd analyzes sites for impact to grid; seeking initial screen for proposed capacity.	**Q2 2016**
Engineering Study	Independent engineering study on properties to determine feasibility and cost.	**Q3 2016**
Pilot Site Selection	Final sites will be selected for pilot business cases based on remaining, eligible sites.	**Q3 2016**

Pilot Development Process

Financial Model	Build the financial model and pro forma that analyzes costs and benefits for stakeholders.	**Q3 2016**
Site Assessment	Engineering study and site assessment inform the financial and business models.	**Q1 2016**
Business Model	Build a business model that includes stakeholder roles, financials, paybacks.	**Q2 2016**
Case Study	Develop a final case study that includes site specific lessons, models and replicability.	**Q3 2016**

Value Proposition Analysis

David South
Senior Principal, Sustainability, Energy & Utilities Practice
West Monroe Partners, LLC

Value Proposition for Community Solar

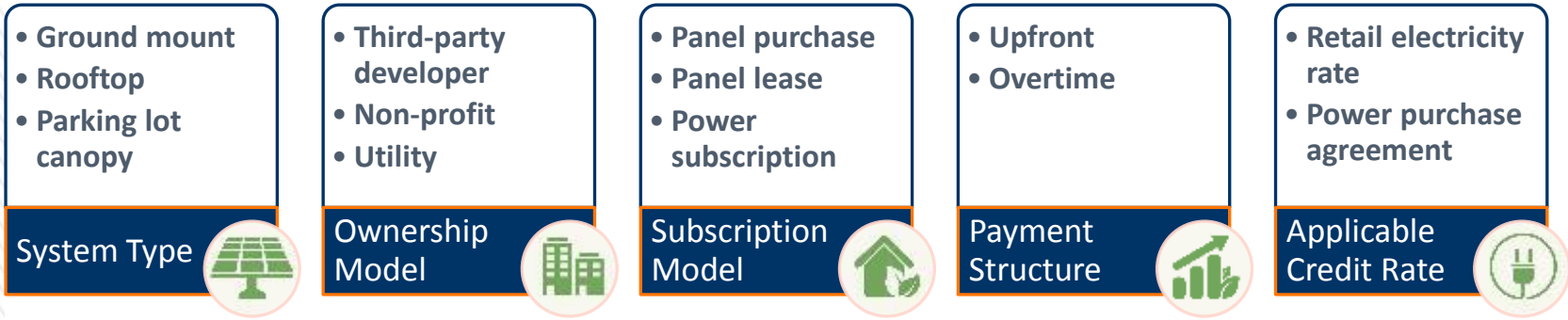
- The expansion of community shared solar in Cook County has the potential to touch many stakeholder groups. A key goal of this workstream is to quantify the costs and benefits to impacted parties and identify the factors that influence overall financial metrics
- No community solar projects currently exist in Cook County. To meet this objective, a financial model is being built to evaluate the costs and benefits of a hypothetical community solar project in Cook County to different stakeholders, including:
  - Subscribers
  - System Owner
  - Local Utility

Value Proposition for Community Solar

- Much of the cost and benefit data used in the model has been pulled from published reports and studies. Model inputs have been reviewed with multiple groups, including NREL, GTM Research, the National Community Solar Partnership, as well as a working group of local solar developers and additional stakeholders to confirm assumptions and collect regionally specific data
- Financial metrics being analyzed as part of the model include:
  - Net Present Value
  - Internal Rate of Return
  - Return on Investment
  - Simple Payback Period

Value Proposition for Community Solar

- While some model inputs are assumed to be fixed, others were designed to be flexible, including: system type, ownership type, subscription model, payment structure, applicable credit rate
- Different scenarios will be analyzed using the model to determine how these inputs impact the financial metrics for each stakeholder group
- The value proposition is planned for completion in April 2016



Impact Analysis

David South
Senior Principal, Sustainability, Energy & Utilities Practice
West Monroe Partners, LLC

Impact Analysis

- Once this financial model has been developed to determine the value proposition, it will feed into additional project areas:
- Pilot Site Analysis- conduct feasibility studies for the selected pilot sites and disseminate lessons learned
- Local Impact Analysis – use model to aggregate costs and benefits on a regional level to derive total local net benefits of increased shared solar systems
- Regional Directives - apply anticipated solar deployment levels against city, county and state renewable energy goals and the expected contributions from this initiative
- Projected timeline:

Q&A

Break

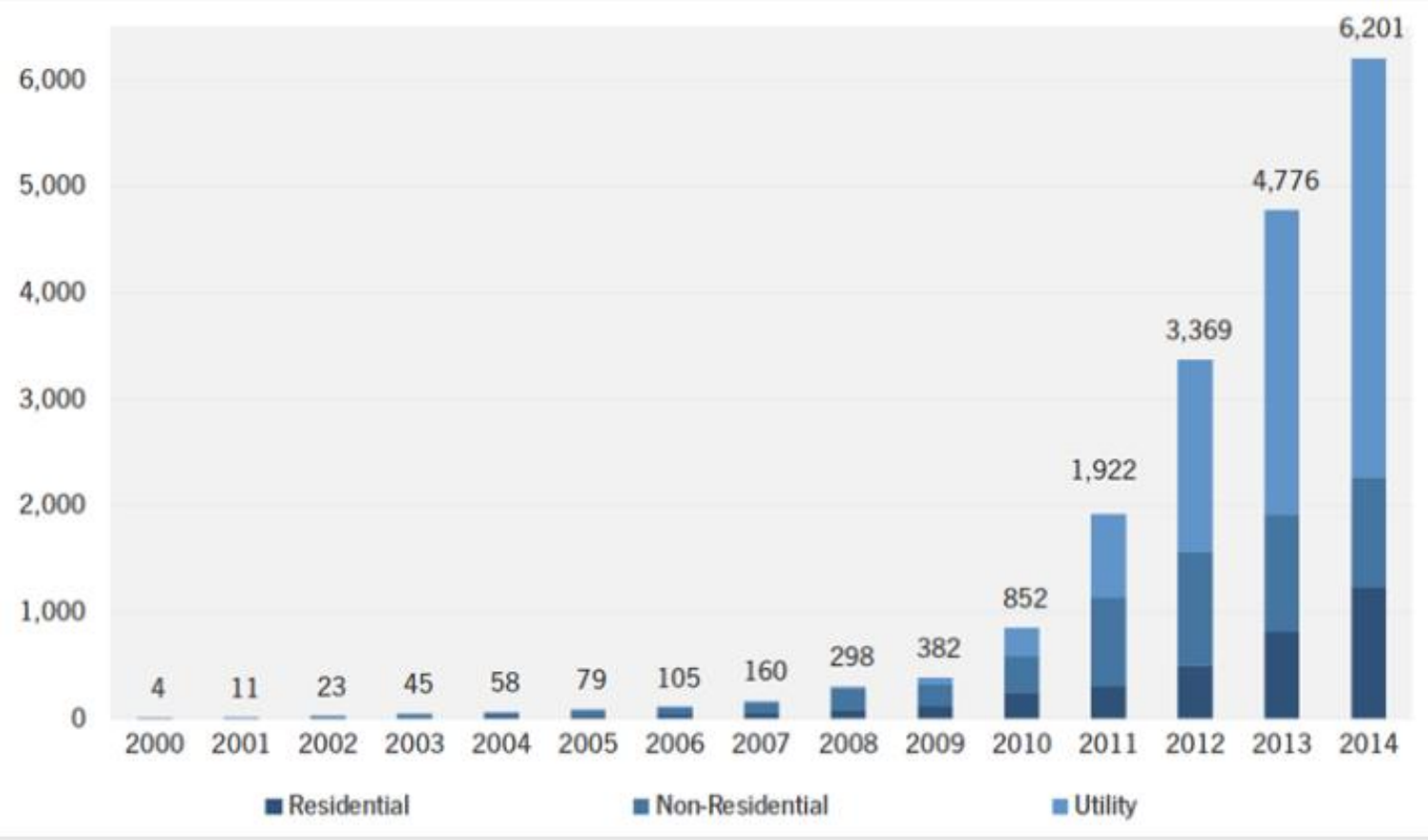
Community Solar

Vito Greco
Manager, Solar Program
Elevate Energy

ELEVATE ENERGY
Smarter energy use for all

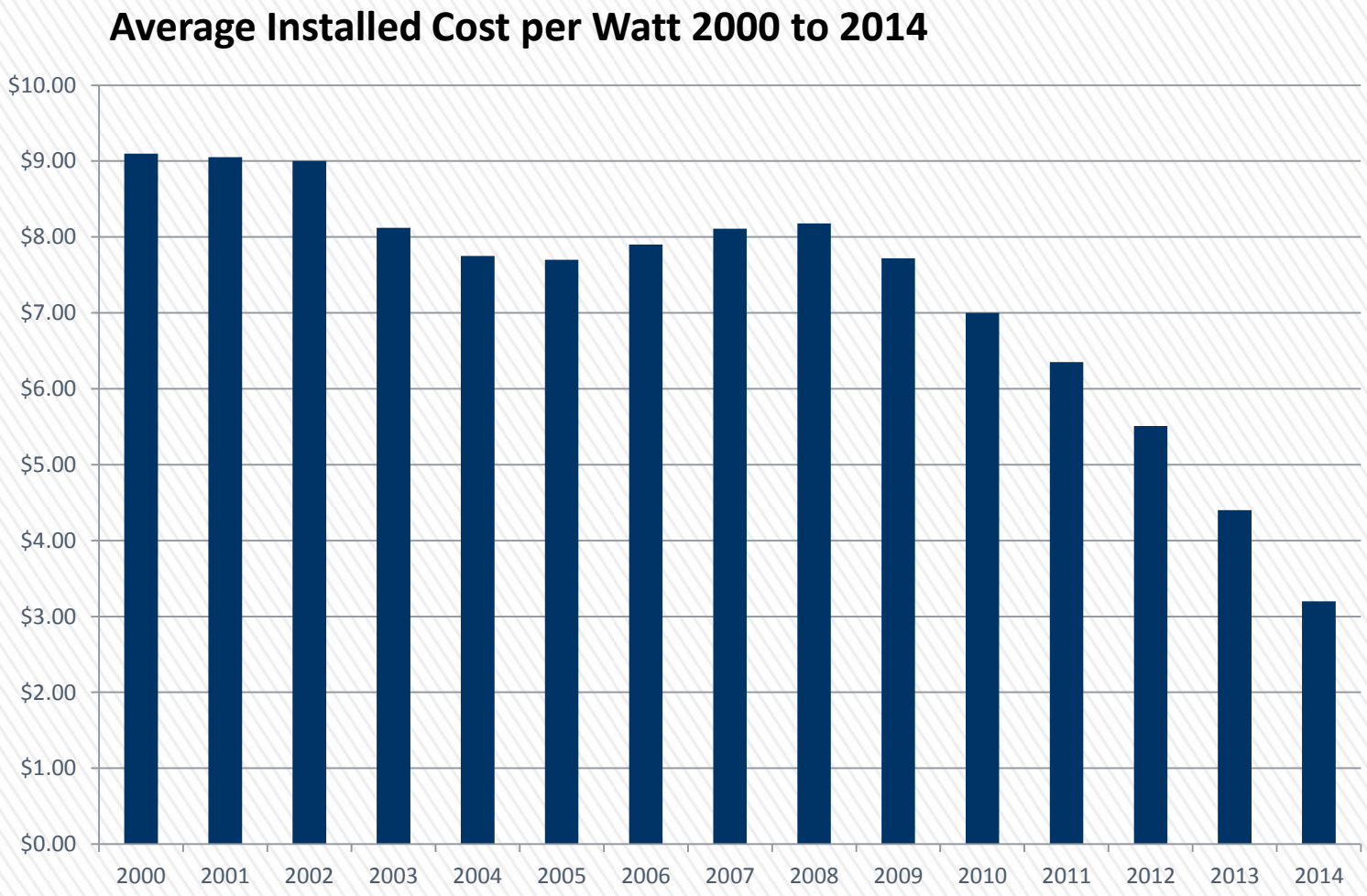
The Growth of Solar

Annual U.S. PV Installations 2000 to 2014



GTM Research/SEIA: U.S. Solar Market Insight®

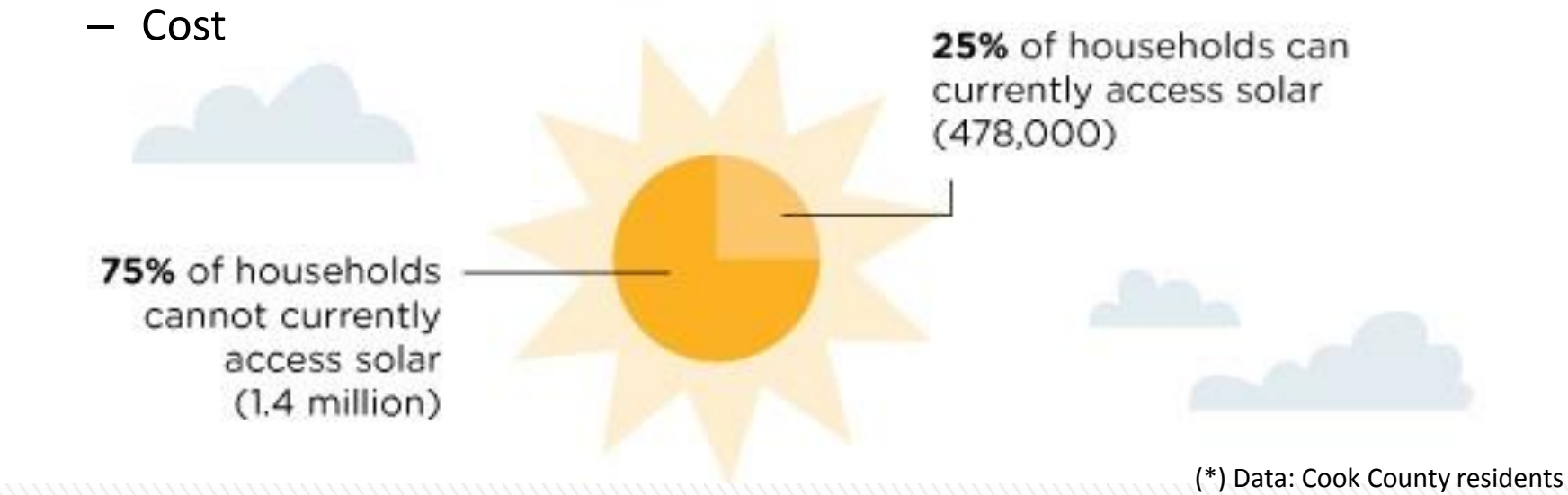
The Cost of Solar



GTM Research/SEIA: U.S. Solar Market Insight®

Making Solar More Accessible

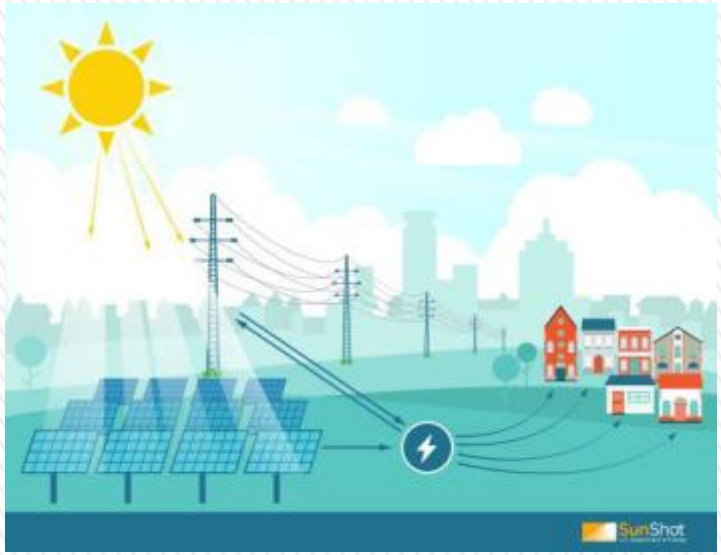
- Limitations
  - Renters
  - Condo owners
  - Shaded roofs
  - Structural limitations
  - Cost

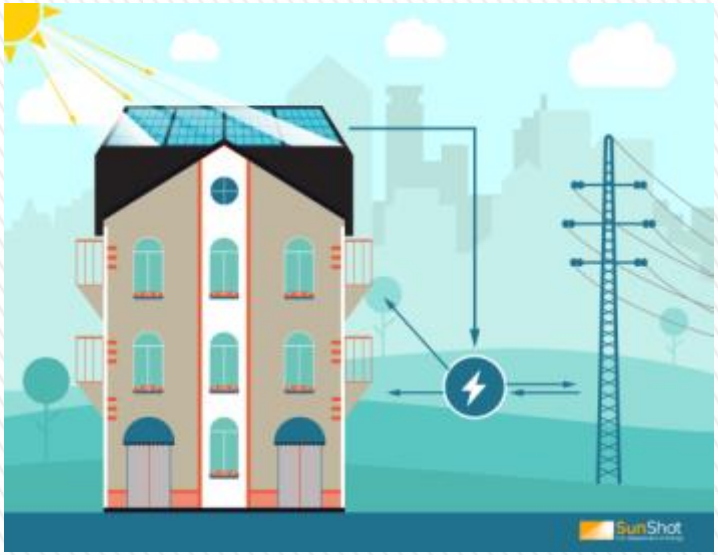


(*) Data: Cook County residents

Community Solar

- Anyone with an electric bill can benefit directly from the energy produced by one solar array.
- Participants own or lease a portion of the system or buy (kWh) blocks of renewable energy generation.
- Subscribers receive a credit on their electric bill



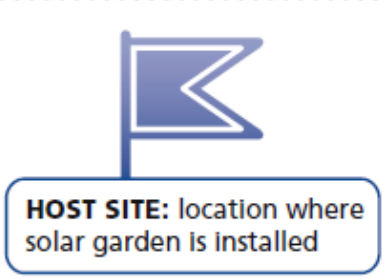


Community Solar

- Expands access to solar
- Lowers cost of entry
- Provides economies of scale to communities
- Can strengthen the grid and mitigate peak demand
- Supports Renewable Portfolio Standards for utilities
- Provides a return on investment
- Builds community

Community Solar Stakeholders

- Business models vary, but there are common stakeholders

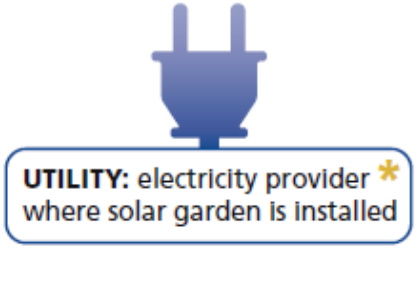


HOST SITE: location where solar garden is installed

DEVELOPER: primary group organizing the solar garden

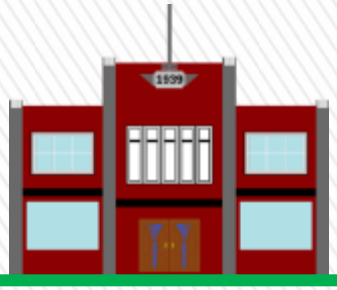
SUBSCRIBERS: individual entities who get solar power

OUTREACH PARTNERS: groups that find subscribers



UTILITY: electricity provider * where solar garden is installed

Typical Community Solar Business Model



1

Find a Host Site

2

Developer builds the array

3

Subscribers purchase panels

4

Utility credits subscriber's bill

5

Developer owns and maintains the array

6

Host site receives lease payments or energy discounts

Panel Discussion:
Hosting a Community Solar

Panelists

The Interconnection Process	**Dan Gabel** Manager, Interconnection & System Studies ComEd	ComEd
Zoning & Permitting	**Michael Berkshire** Sustainable Development Division Department of Planning and Development City of Chicago	
Host Site Management	**Damien Blanchard** Facilities Manager Institute of Cultural Affairs	ICA The Institute of Cultural Affairs in the U.S.A.
Business Models	**Vito Greco** Manager, Solar Program Elevate Energy	ELEVATE ENERGY Smarter energy use for all

Keynote

Toni Preckwinkle
President
Cook County Board

Q&A

Close