



# Renew300

Comprehensive Renewables Program  
Focusing on Affordable Housing

# President Obama's Climate Action Plan

- Prepare the U.S. for the impacts of climate change
- Lead international efforts to address climate change
- Cut carbon pollution in America



*President Obama announcing his Climate Action Plan in June 2013*

# RENEW300: FEDERAL RENEWABLE ENERGY TARGET

300 megawatts of installed solar and other renewable capacity by 2020 in federally-subsidized housing

- Expand solar and other renewables in federally-assisted housing
  - Public housing
  - Assisted multifamily
  - LIHTC
- Promote climate resilience and cost effective distributed generation in low-income housing
- Tools like power purchase agreements, virtual net metering, and other innovative financing make it possible
- 50 affordable housing service providers have committed 225 MW over the next decade

# Renewable Energy Deployment Stats: Affordable Housing

*As of May 2016*

- *225 MW Committed by Renew300 Partners*
  - *50 Renew300 Partners*
  - *Around 50 MW installed*



# Renew300 Technical Assistance (TA)

## Goals and Strategy

- Goal of TA:
  - Develop tools and resources to assist a wide range of affordable housing owners
- Strategy:
  - Website (HUD Exchange)
  - Direct technical assistance
  - Written tools and products
  - Workshops & other learning opportunities



# Renew300 on the HUD Exchange

<https://www.hudexchange.info/renewable-energy>

## Advancing Renewable Energy in Affordable Housing

The President's Climate Action Plan calls for a target of 100 megawatts (mW) of installed capacity of renewable energy on-site at federally subsidized housing by 2020. Federally assisted housing includes HUD's rental housing portfolio (Public Housing, Multifamily Assisted) and USDA's Rural Development Multifamily Programs, as well as rental housing supported through the Low Income Housing Tax Credit (LIHTC).

The 100 mW target aims to make use of millions of federally subsidized roofs with on-site generation potential. Due to the nature of the target, solar photovoltaic (PV) generation will be the primary renewable energy source utilized under this initiative. However, other types of renewable energy, including solar thermal, wind, geothermal, biomass, combined heat and power, and small-hydro projects, are also included.

In July of 2015, HUD and DOE announced an expansion of the goal, setting a new goal to install 300 MW of solar for low-and-moderate income housing by 2020, and broadening the goal to include community and shared solar installations.

## Make a Commitment and Request Technical Assistance

HUD encourages organizations to make a public commitment toward the Federal Renewable Energy Target. Organizations may establish their own goals for how much renewable energy technology to install. Optional technical assistance is available for organizations that have made a commitment toward the Federal Renewable Energy Target in order to help advance solar deployment and other on-site renewable energy installations in affordable housing.

[Make a commitment and request technical assistance.](#)

## Renewable Energy Resources

Technical resources, policy guidance, case studies, and other resources are provided to assist organizations with increasing organizational capacity and installing renewable energy on federally assisted housing.

[View renewable energy resources.](#)

## Renewable Energy News & Announcements

[Administration and California Partner to Drive Renewable Energy and Energy Efficiency in Multifamily Housing](#)

Date Posted: January 29, 2015

For more information, visit HUD's Office of Economic Resilience Web Page

For inquiries related to the Federal Renewable Energy Target, email: [energyaction@hud.gov](mailto:energyaction@hud.gov)

[List of Affordable Housing Organizations with Commitments to On-Site Renewable Energy](#)

# Renewable Energy Resources

Resources to assist organizations with increasing organizational capacity and installing renewable energy on federally-assisted housing

- Technical Resources
- Policy Guidance
- Case Studies
- Online Resources

## Renewable Energy Resources

Technical resources, policy guidance, case studies, and other resources are provided to assist organizations with increasing organizational capacity and installing renewable energy on federally assisted housing.

### Find By Resource Type

Technical Resources	▶
Policy Guidance	▶
Case Studies	▶
Online Resources	▶

## Case Studies

The following case studies are examples of the successful introduction of renewables in federally-assisted properties. Click the case study title to view the full case study.

### Denver Housing Authority: Leveraging Power Purchase Agreements for Scattered Site Solar Installations



Activity Type: Solar Photovoltaic  
Project Details: Retrofit  
Size/Rating: 2.5 mW; 10470 panels;  
Average 3.8kW per unit  
On Site Generation: 3,397,576kWh/yr;  
Average: 5,101 kWh per unit/year  
Cost: \$10 million (Avg \$4.00/ watt)

The Housing Authority of the City and County of Denver launched a public-private partnership to install solar photovoltaic systems across its portfolio of scattered-site, single family residential buildings. The installations are financed through a Power Purchase Agreement (PPA) with a solar provider that enables the PHA to achieve solar installations with no up-front capital costs. Under the PPA, the meter holders would pay for the power generated from the installed systems, initially priced at a rate roughly comparable to the current rates. Energy savings would occur in out-years as utility rates increased beyond the energy rate specified in the PPA.

### EAH Housing: LIHTC Program Advances Whole Project Solar Systems without Added Subsidies in Richmond, CA



Activity Type: Solar Photovoltaic  
Project Details: Rehabilitation  
Size/Rating: 900kW; 4,285 panels  
On Site Generation: 1,220,832 kWh; 60-80% of community electric demands  
Cost Savings: \$154,000 per year  
Cost: \$ 8 million

At the time of construction, the 900 kW photovoltaic system at Crescent Park, an affordable housing complex in Richmond, California, was the largest solar system installed on a multifamily affordable housing project in the nation. The renewable investments at Crescent Park were undertaken in conjunction with the acquisition and rehabilitation of the property by EAH. This was an ideal time to incorporate renewable investments in the project's capital plan because a variety of funding resources in play, and in many states preferences or added resources can be secured for energy investments. Through LIHTC, federal renewable investment tax credits and additional financing through the California Solar Initiative program, EAH was able to include an ambitious solar retrofit plans for the property.

# Direct Technical Assistance

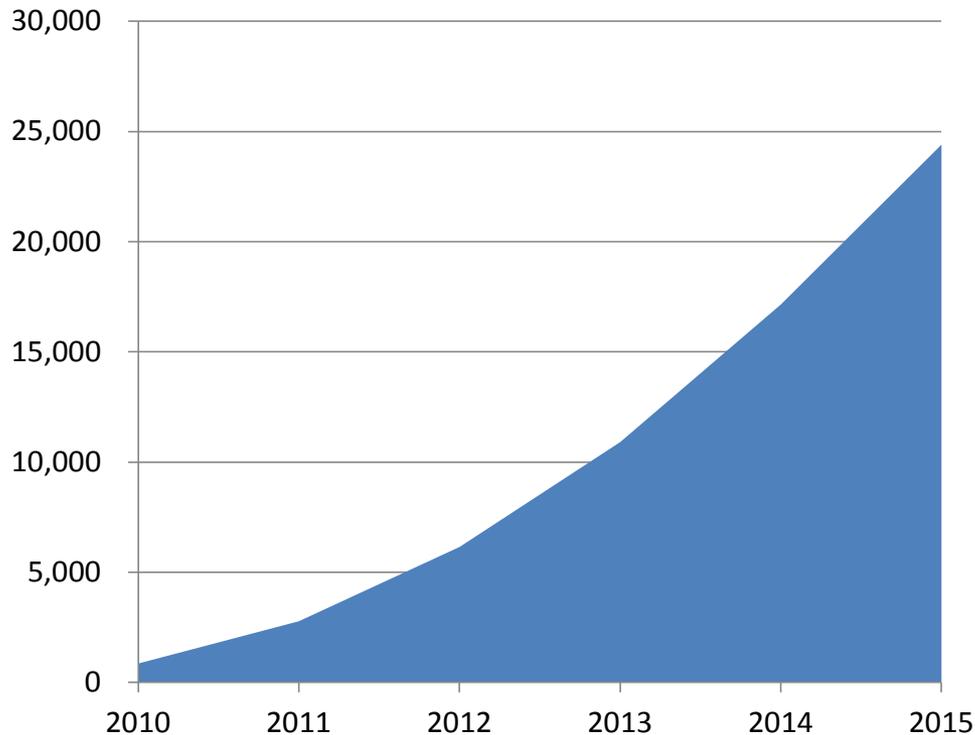
- Goals:
  - Assist those in the affordable housing market in determining a path to pursue renewables
  - Use the TA experiences and work to inform policy, tool creation, future trainings, etc.
- Examples of Types of Work:
  - Solar Assessments
  - Design Work
  - RFQ Development
  - Site Selection
  - Public Program Creation
  - Financing/incentive Reviews
- To apply for Technical Assistance:  
<https://www.hudexchange.info/programs/renewable-energy/>

# Workshops & Other Learning Opportunities

- Renew300: Advancing Renewable Energy at HUD-Assisted Housing
  - Atlanta - May 23, 2016
  - Boston – June 10, 2016
  - Minneapolis – June 23-24, 2016
- Other possible learning opportunities
  - Webinars
  - Joint workshops or conferences with Better Buildings Challenge or other agencies/programs

# History: Five Years of Substantial Solar Growth

U.S. Cumulative PV Capacity (MWdc):  
2010 - 2015



Annual Solar PV National Growth Rates

2011: 126%

2012: 76%

2013: 41%

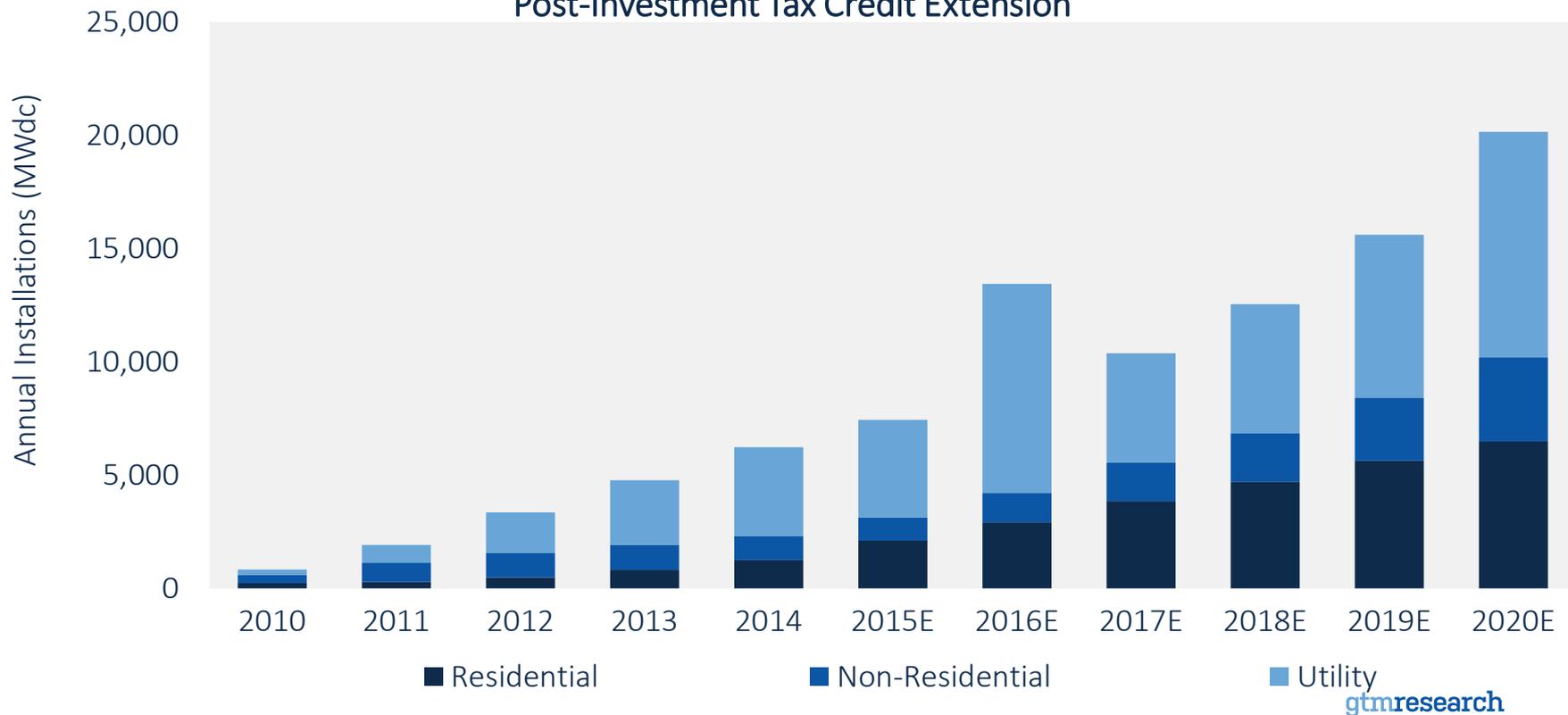
2014: 31%

2015: 16%

Source: Derived from GTM Research/SEIA: *U.S. Solar Market Insight, 2015 Year in Review, Executive Summary*.

# Forecast: Strong Solar PV Growth for Next 5 Years

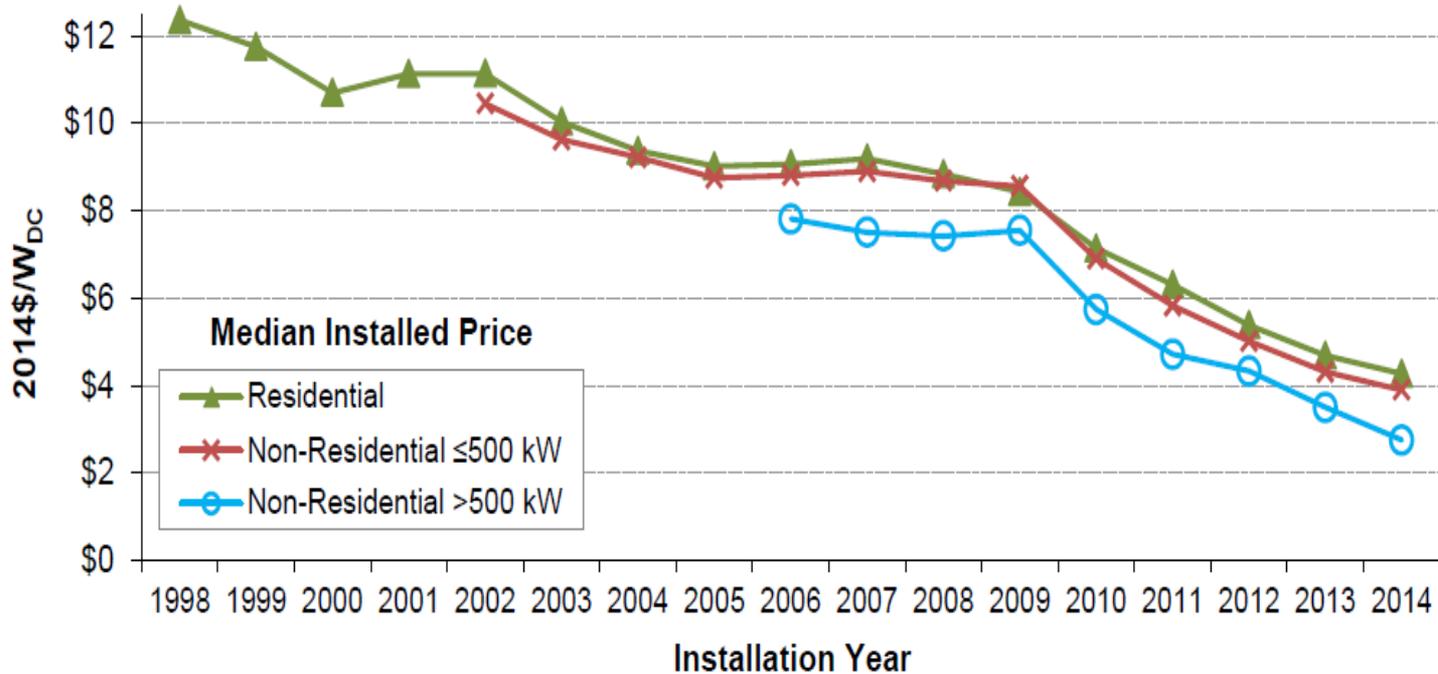
U.S. Solar PV Installed Capacity by Market Segment (MWdc)  
Post-Investment Tax Credit Extension



Source: Derived from GTM Research: *Investment Tax Credit Extension Will Increase Solar Installations 54% Through 2020*, Dec. 16, 2015.

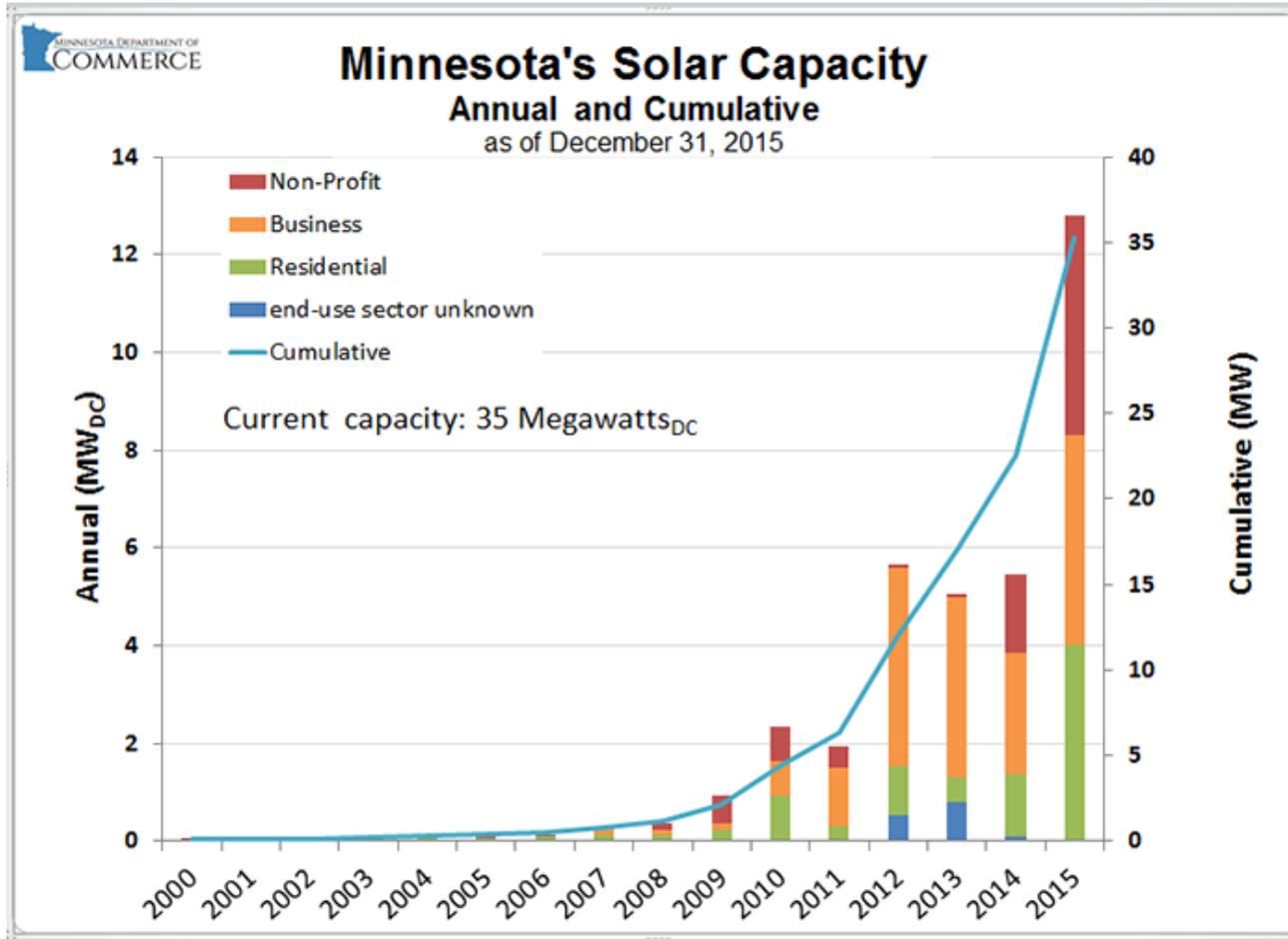


# Solar Growth Supported by Rapidly Declining Project Costs



Source: Lawrence Berkeley National Laboratory, *Tracking the Sun VIII*, 2015.

# Recent Growth of Minnesota Solar Market



*The Solar Energy Industries Association reports that 1,164 MW of solar is expected in Minnesota over the next 5 years.*

Source:  
<http://www.seia.org/state-solar-policy/minnesota-solar>.

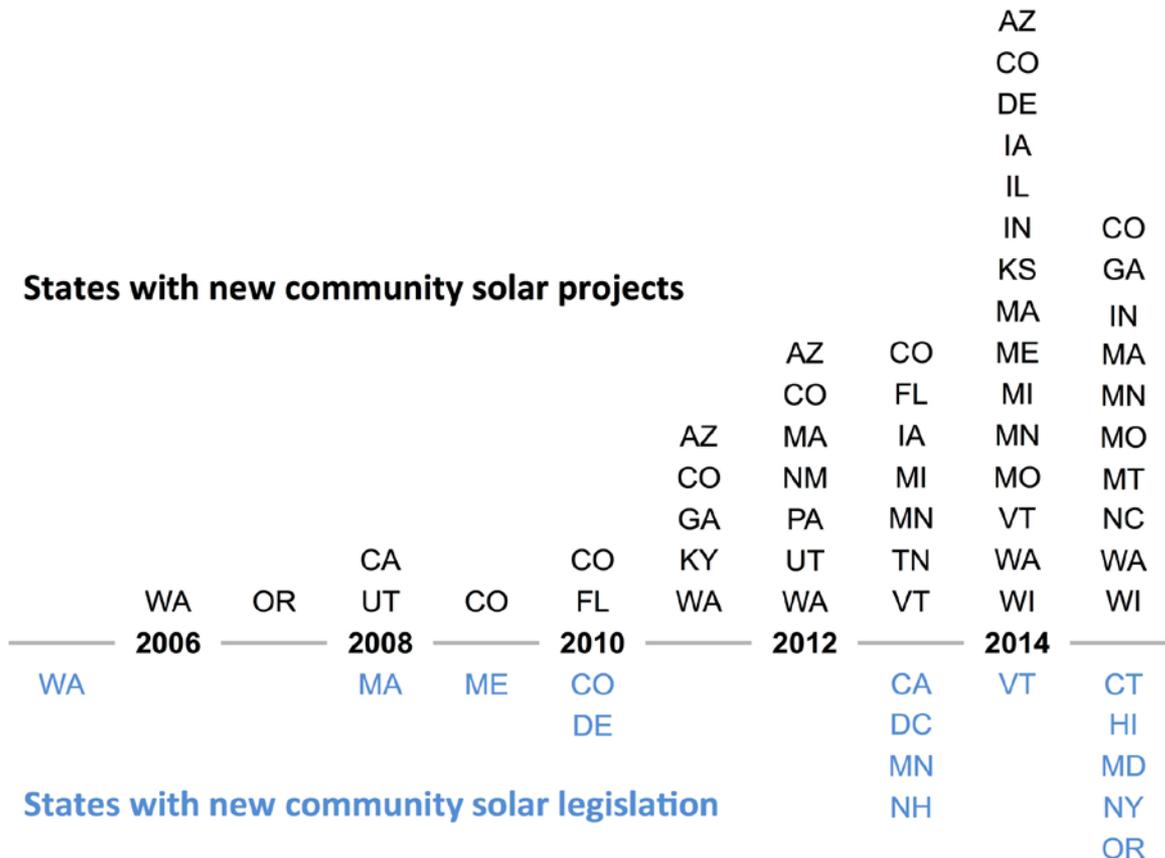
Source: [http://mn.gov/commerce/assets/MinnesotaElectricityRenewable\\_tcm17-156466.pdf](http://mn.gov/commerce/assets/MinnesotaElectricityRenewable_tcm17-156466.pdf).

# Minnesota: Increased Solar Activity on the Horizon

- Xcel Energy Solar\*Rewards<sup>®</sup> Community program has 922 MW<sub>AC</sub> of pending applications as of mid-April 2016
  - Extremely large program with considerable solar deployment expected in 2016 and 2017
- Additional activity in other Minnesota utility and electric cooperative markets. Selected examples below.
  - Rural Renewable Energy Alliance recently awarded a grant for shared solar in an Indian tribal community, with solar output designated for Low-Income Home Energy Assistance Program recipients
  - In its recent Resource Plan, Otter Tail Power Company included 30 MW of solar capacity by 2020 to comply with Minnesota's Solar Energy Standard

# Increasing Solar Access: Community Solar is One Way

## States with new community solar projects



## States with new community solar legislation



People Without  
Access to Solar:

**49%**

# of States with a  
Community Solar  
Project

**26,**

up from only 2  
States in 2007

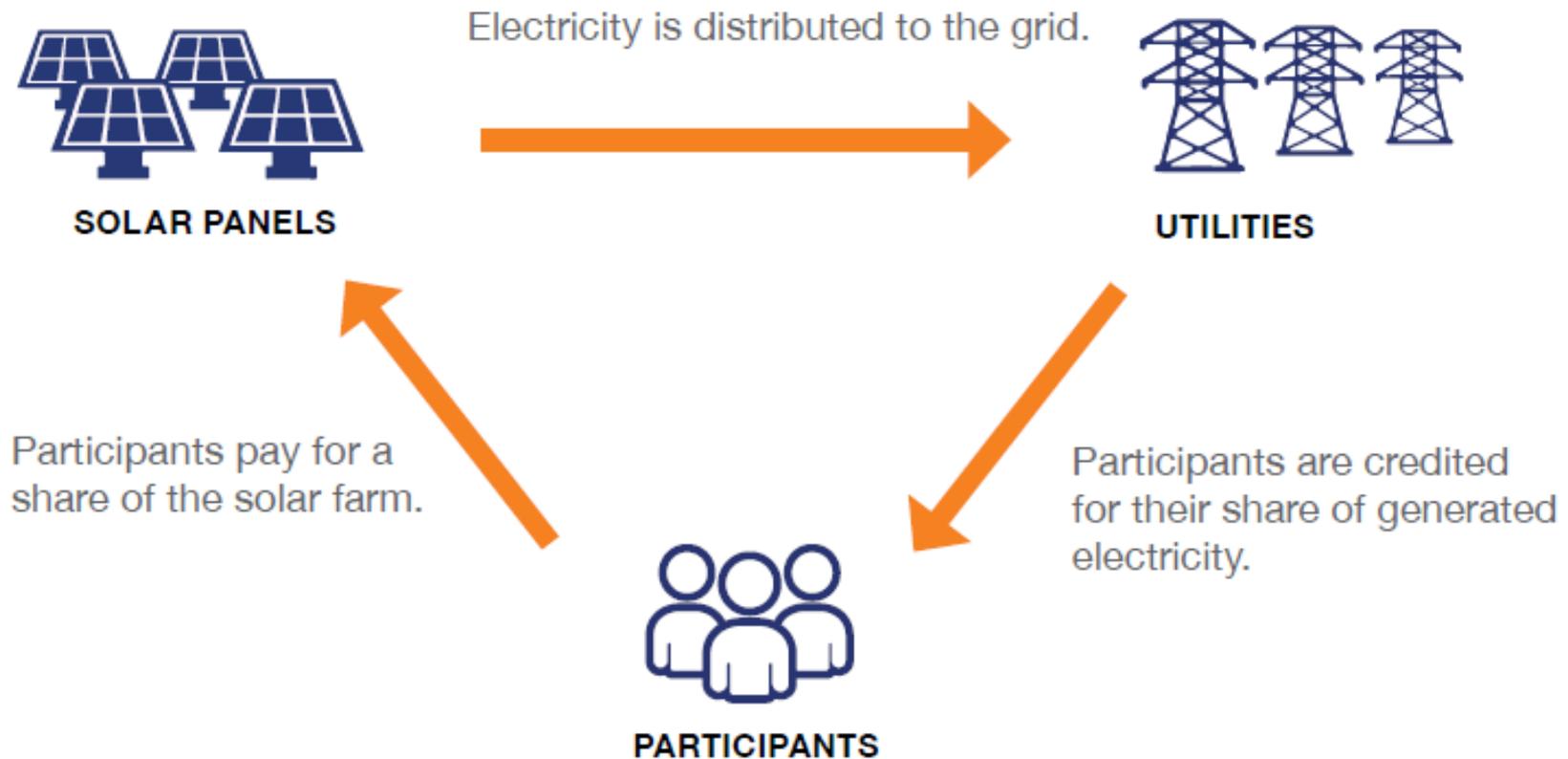
Source: O'Shaughnessy, Eric, National Renewable Energy Laboratory, *Community Solar: Status, Trends, Legal, and Financial Issues*, March 9, 2016.

Source: The White House, *Fact Sheet: Administration Announces New Initiative to Increase Solar Access for All Americans*, July 7, 2015.



# What is Community (or Shared) Solar?

FIGURE 1. COMMUNITY SOLAR PROGRAM SCHEMATIC



Source: Solar Electric Power Association (SEPA) and Solar Market Pathways,  
*Community Solar: Program Design Models.*

# Hurdles to More Widespread Renewables on Affordable Housing

1. Overall Transaction Size is Small to Medium
2. Need to Optimize Utility Metering
3. Property Ownership & Contracting Complexity
4. Challenging Site Characteristics
5. Lack of Time and Renewable Energy Background
6. Not Currently Economically Viable in Some Markets



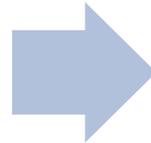
# Overcoming Hurdles => Success Factors

1. Overall Transaction Size is Small to Medium



Explore portfolio approaches & community solar

2. Need to Optimize Utility Metering



Solve before installing solar via utility tariff/rate analysis

3. Property Ownership & Contracting Complexity



Use standard tools/resources; identify PPA & lease options

4. Challenging Site Characteristics



Upfront screening, portfolio approach, construction planning, & community solar

5. Lack of Time and Renewable Energy Background



Use affordable housing-specific tools/resources early on; learn from other housing orgs.

6. Not Currently Economically Viable in Some Markets



Early screening to emphasize viable markets & technologies, identify all incentives

# Mercy Housing



- Team:
  - ICF experts: affordable housing; renewable energy
- Technical Assistance:
  - Prioritization of sites: physical & economic perspective
  - RFQ
    - Technical and procedural assistance
    - Site evaluation
    - Webinar for interested bidders
    - Technical assistance in solar development agreement negotiation
    - Technical assistance in PPA template negotiation
- Results: Pursuing 3 MW+ of solar PV across the national Mercy portfolio with selected development partner

# Vistula Management Company



- **Team:**
  - ICF experts: affordable housing; historic preservation; renewable energy
- **Technical Assistance:**
  - Technical & economic solar review for 7 properties
  - Design
  - Metering: optimizing consolidation (common area) vs. individual meters
- **Results:** Identified system sizing, metering, and contracting arrangements for 7 properties that are representative of larger historic district, potentially serving as the basis for wider solar development plan

# Arizona Housing



- Team:
  - ICF experts: affordable housing; homelessness; renewable energy
- Technical Assistance:
  - Technical and economic evaluation of solar PV potential
    - Rooftop and parking mounted solar opportunities
    - Contracting and financial incentive options
  - Engage local solar firms for additional information-gathering and to generate interest in future procurement
  - Draft RFQ
- Results: Passed fatal flaw analysis. Laying the ground work for solar PV projects on up to 4 properties, including educating the recipient how to high-grade sites within its portfolio and move forward from initial sites to potential additional sites in the future

# City of Charlotte, NC



- Team:
  - ICF Experts: community development; local government; renewable energy
- Technical Assistance:
  - Solar economic viability assessment for single-family and multi-family properties
  - Exploring program design options
  - Tie to larger programmatic focus on sustainable communities and energy use reduction strategies
- Results: TBD

# Codman Square Neighborhood Development Corp (NDC), MA



- Team:
  - ICF Experts: community development; historic preservation; renewable energy
- Technical Assistance:
  - Technical (solar design, engineering, construction), financial, incentive, historic preservation/section 106, and power purchase agreement (PPA) assessments
  - Linkage to meter aggregation/virtual net metering strategies to improve economics
- Results: TBD

# HUD Solar Knowledge Base

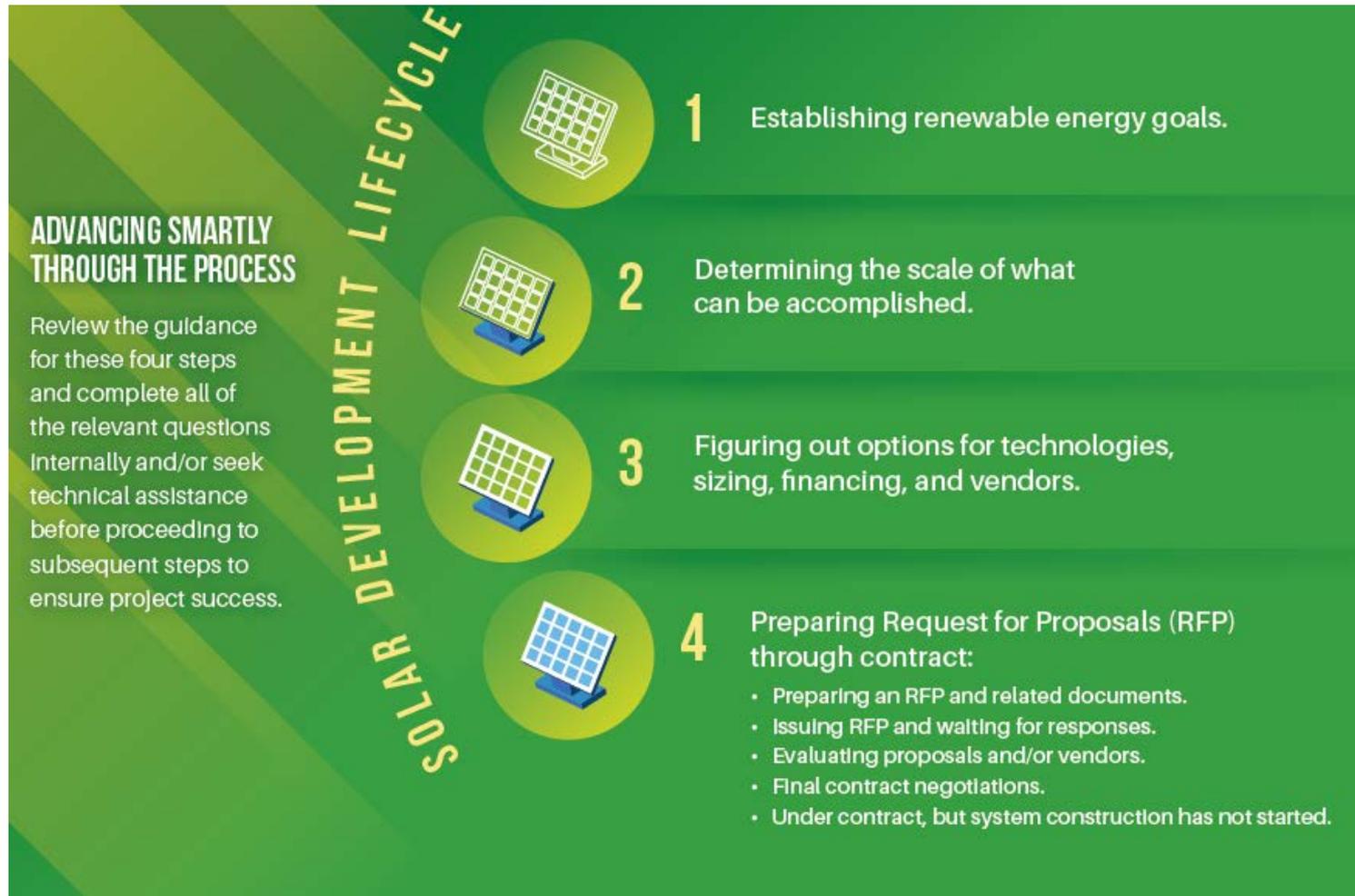
- Goals:
  - Provide the affordable housing sector with essential tools to create efficiency and opportunity for renewables. These will be available via templates, reference documents, and an interactive web site.
- Products being developed in 2016:
  1. Solar Readiness Assessment Tool
  2. Solar Project RFQ Template and Accompanying Guidance
  3. Solar Project Development FAQs
  4. Solar Site Selection Guidance
  5. Common Area vs. Tenant Allocations of Solar Projects
  6. Solar Data Gathering Recommendations
  7. Solar Project Economics and Financing Guide

# Product 1:

## Solar Readiness Assessment

- Self-assessment template to help affordable housing property owners/managers:
  - Determine current state of organizational knowledge
  - Identify needs and challenges in developing solar projects
  - Select most viable options for development
  - Understand how to move across the steps in the solar development lifecycle and achieve economic and environmental results

# Solar Readiness Assessment Follows Project Development Lifecycle



# Product 2: Solar Project RFQ Template

- Proposal request templates (RFQ/RFP) for typical solar PV project development in affordable housing including:
  - Core RFQ/RFP in MS Word that can be tailored and directly used by housing organizations for single-site or portfolio procurements
  - Recommended categories for proposal evaluation criteria
  - Formats for collecting proposal submissions including:
    - Pricing and system performance
    - System configuration specifications
    - Insurance requirements
    - Site/property physical and electricity characteristics
  - Accompanying guide that describes purpose and typical uses of each RFQ component

*Affordable housing organizations retain responsibility for determining applicability and use of template for their specific situations*

# Resources

Renew300 Website:

<https://www.hudexchange.info/programs/renewable-energy/>

[Crystal.A.Bergemann@hud.gov](mailto:Crystal.A.Bergemann@hud.gov)