

# Sølarize Solar Programs and the Role of Local Government



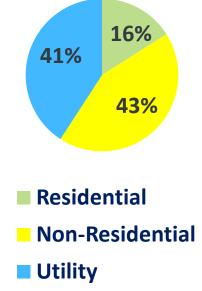
NREL is a national laboratory of the U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, operated by the Alliance for Sustainable Energy, LLC.

## **Quick Market Update**

#### **Market Snapshot**

- US is 8-10% of world market
- 1,855 MW installed in 2011
- 109% growth over 2010
- Panel prices  $\downarrow$  50%
- Avg. price: \$3.45/W (2Q12)
- Avg. residential: \$5.46/W.
- Explosion of residential leasing and PPAs
- Chinese module production

# MW Installed (2011)



## "Solarize" Group Buy

- Residential rooftop PV
- Many systems many participants

## **Community Solar**

- Single, larger system
- One system many participants.

### **Elements of a Solarize Program**

#### Group Negotiated **Limited Time** Multiple **Purchase** price discount Only finance options Solar (PV) 10-20% • 3-6 months Homeowner discount financed • Solar Hot Goal is to Rebate at end reduce sales • Third party Water cycle for solar. financed with of campaign Energy based on Leases or Efficiency Get people installed **PPAs** Off the fence Commercial capacity projects

https://www.eeremultimedia.energy.gov/solar/videos/purchasing\_solar\_collectively\_solarize

### Role of local government in Solarize campaigns

- Act as Project Leader/Program Manager
  - Sustainability coordinator
  - Energy manager
  - Solar program coordinator
- Support Project Leader
  - Be on Project Team
    - Give Solar 101 presentations
    - Assist with RFP development
    - Assist in reviewing proposals from contractors
- Allow access to employees for Solarize campaign
  - "Lunch and learn" workshops
- Partner with ICLEI and its Energy Benefits Program
  - o <u>http://www.icleiusa.org/climate\_and\_energy/renewable-energy-guidance/energy-benefits</u>

## **Solarize Portland**

#### Details

Campaigns: 6

Projects: 560

Installed: 1700 kW

Price: \$6.00/W (2011)

#### Partners:

- Neighborhood organizations
- City of Portland
- Energy Trust of Oregon.



Source: Energy Trust of Oregon and Solar Oregon

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## **Solar Benefits Colorado**

### Details

Campaign: 1 (multi - employer)

Enrollment: 1083

Contracts: 113

Installed: 630 kW

Price: \$3.90/W

**Primary Partners:** 

- City of Denver
- State of Colorado
- ICLEI/GroupEnergy





Joe Lucas's Denver home has new PV on the roof thanks to the Solar Benefits Colorado program. REC Solar employee Brian Webster. Photos by Dennis Schroeder / NREL)

### **Solar Benefits Tucson**

#### **Details**

Enrollment: 852

Contracts: 92

Installed: 621 kW

Price: \$4.50-4.75/W

#### Partners:

- City of Tucson, Pima County, UA Medical Center, TEP, Ventana Medical Systems.
- ICLEI/Group Energy



http://solaronestopaz.org/

### **Solarize Seattle**

#### Details

Campaigns: 6 (4 completed)

Projects: 134

Installed: 600 kW

Price: \$5:00-\$6.50/W

Project Lead: NWSEED (non-profit)

New partnership with City of Seattle thru the Municipal Utility



Picture Source: http://solarizewa.org/get-started/queenanne

## **The Solarize Guidebook**

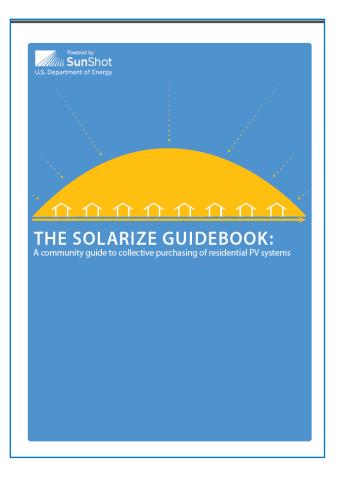
### A Community Guide to Collective Purchasing of Residential PV Systems

#### Content

- Background on the Concept
- Case Studies
- Lessons Learned and Things to Consider
- Step by Step "How To" Guidelines

Where to find it:

http://www.nrel.gov/docs/fy12osti/54738.pdf



## **Guide to Community Shared Solar**

#### **Collaborative effort**

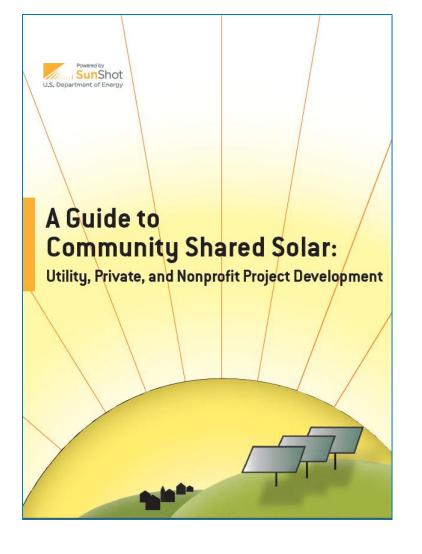
- U.S. Department of Energy SunShot Initiative
- NREL
- NWSEED
- IREC
- Stoel Rives, LLP.
- Bonneville Environmental Foundation

#### Focus

- Community Solar Project Structures
- Tax and Legal Implications
- Case Studies
- Worksheets
- IREC Model Community Energy Rules

#### Where to find it:

http://www.nrel.gov/docs/fy12osti/54570.pdf



## State Technical Assistance Team (STAT)

- Solar-focused technical assistance provided by NREL to state and local governments.
- Recent topics have included interconnection, third party finance and community solar.

### More information:

- Send email to <u>stat@nrel.gov</u> in order to be contacted when information is available.
- October 10<sup>th</sup> tentative date to open next round of solicitations.





**Contact Information** jason.coughlin@nrel.gov 303-384-7434

# **Overcoming Utility Challenges** with Community Solar Programs





### **About the SunShot Solar Outreach Partnership**



The SunShot Solar Outreach Partnership (SolarOPs) is a U.S. Department of Energy (DOE) program designed to increase the use and integration of solar energy in communities across the US.



### About the SunShot Solar Outreach Partnership

- Increase installed capacity of solar electricity in U.S. communities
- Streamline and standardize permitting and interconnection processes
- Improve planning and zoning codes/regulations for solar electric technologies
- Increase access to solar financing options



## **About SEPA**

- Formed in 1992 as the Utility Photovoltaic Group
- Educational non-profit organization
- Provides unbiased solar information, services and events with a utility focus







# **A Utility Perspective on Solar**

## Benefits

- Potential for REC Benefits/Meet RPS Goals
- Peak Correlation Benefits
- Satisfy Customer Interests
- Rapidly Falling Prices

## Concerns

- Reduced Customer
   Sales/Revenue
- Billing or Metering Issues
- New Staff Resources/Expertise
- Technical Concerns





Net metering allows customers to export power to the grid during times of excess generation, and receive credits that can be applied to later electricity usage





## Net Metering: Overview

Morning









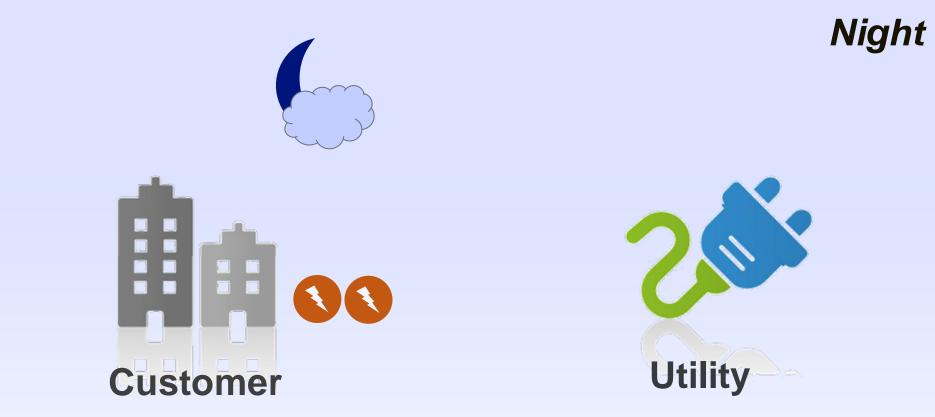
## Net Metering: Overview







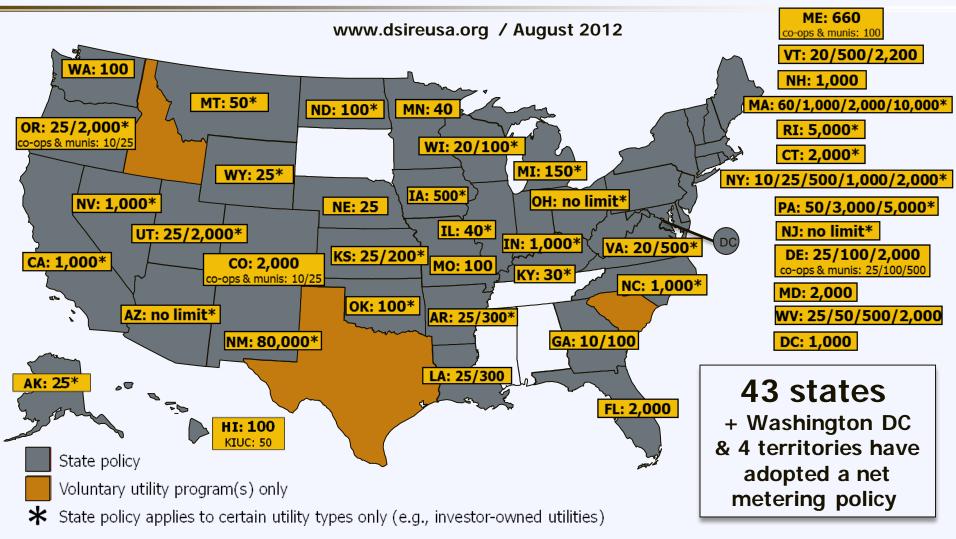
## Net Metering: Overview







## Net Metering: State Policies

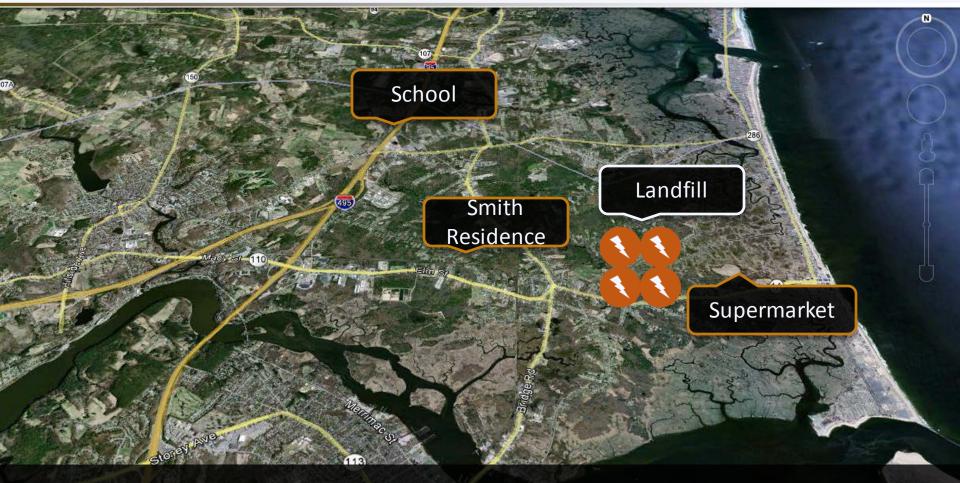


Note: Numbers indicate individual system capacity limit in kilowatts. Some limits vary by customer type, technology and/or application. Other limits might also apply. This map generally does not address statutory changes until administrative rules have been adopted to implement such changes.





## Net Metering: Virtual



### No direct connection necessary





Goog

solar electric power association

# **Community Solar Programs**

"Community Solar is defined as a solarelectric system that, through a voluntary program, provides power and/or financial benefit to, or is owned by, multiple community members."--NREL

> A Guide to Community Solar Programs: <u>http://www.nrel.gov/docs/fy11osti/49930.pdf</u>





# **Community Solar Programs**

3 programs models:
-Utility-managed
-Special Purpose Entity
-Non-profit





## **Lower Risk for Participants**



No high up-front costs and no responsibility for operations and maintenance.





## **Lower Risk for Participants**



Community Solar is portable within the utility's service territory.





## **Benefits to the Customer**



Customers can economically benefit, either through virtual net metering, or a fixed-tariff solar rate that acts as a hedge against future rate increases.





## **Benefits to the Customer**



# More customers can participate.





## **Utility Benefits**



Community Solar is a way to mitigate the costs and operational difficulties with mandates and netmetering.





## **More Customers at Lower Cost**







## **Utility Benefits**



Utilities can meet consumer solar interest -- potentially at lower costs than traditional incentive programs.





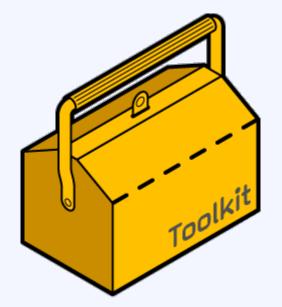
# Challenges...

- Utilities have to define who is eligible for program participation and what the rate structure will look like.
- There needs to be a clear economic value to the customer.
- How does the utility decide how big the system will be?
- We are still in a pilot phase.





# **Moving Forward**



- No standard design toolkit has yet been established.
- However, with the greater emergence of these programs, a toolkit could be developed to help pave the way for wider adoption.

Coming in early 2013!





### **About the SunShot Solar Outreach Partnership**

### **Technical Support**

- "Ask an Expert' Live Web Forums"
- 'Ask an Expert' Web Portal
- Peer Exchange Facilitation
- In-Depth Consultations
- Customized Trainings

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k an Expert' Live Web Forums	SunShot Initiative	SunShot Initiative SEARCH Search Help +
k an Expert' Web Portal	HOME         ABOUT         SOLAR PROGRAM         FINANCIAL OPPORTUNITIES         INFORMATION R           ELSE + SunShot Initiative + Information Resources + Solar Energy Resource Center         Home         Ask an Expert	ESOURCES NEWS EVENTS I Site Maa 🕀 Pintaatie Vinnision 💽 Shawe
er Exchange Facilitation	July 30, 2012 Q. Our community just added a dozen 240 watt panels to our courthouse annex. I was planning on 240 watt max from the panels, but the inverters are of a lower wattage, 200. Is this common across all applications?	QUESTIONS BY TOPIC All Topics Completing Installations on Government Facilities (1) Educating Customers (0)
Depth Consultations	A. First, we recommend using a professional PV system designer and installer. If I understand the question correctly, the answer is yes, inverters are typically sized at 10-20% below the maximum capacity of the PV panel array. This is because a PV system merky, if ever, operates at its maximum capacity because of clouds, temperature, dust, inverter efficiency losses, etc. Real-world performance should be taken into account when designing a PV system and so a smaller interfer capacity is usually used to match catual PV system coupt, and because larger inverters are more	Executing Casaviers (c) Financing & incentives (5) Installer Training & Certification (1) Manufacturing & Economic Development (0) Market Analysis (1)
stomized Trainings	expensive. In some climates, however, it might make sense to spend the extra money on a larger capacity inventer. A larger capacity inventor will not cooler and last longer and leaves the PV system owner the potential apportunity to expand the isse of the PV array without having to replace the inventer with one of a larger capacity. I have also read about sizing inventers larger in order to be able to take advantage of edge of cloud" effects—which is really cool and really geeky. See this from <u>Bill Breates</u> .	Organizing Solar Initiatives (0) Performance of Solar Technologies (2) Permitting & Inspection Processes (0) Planning & Zoning (8)
www4.eere.energy.gov/solar/su	unshot/resource_cen	Rocket Analysis (2) CECLever instations (2) Performance of Spin Technologies (2) Permitting & Equipochais Processes (3) Permit & Econorg (3)

For more information email: solar-usa@iclei.org





## **Becky Campbell**

Solar Electric Power Association

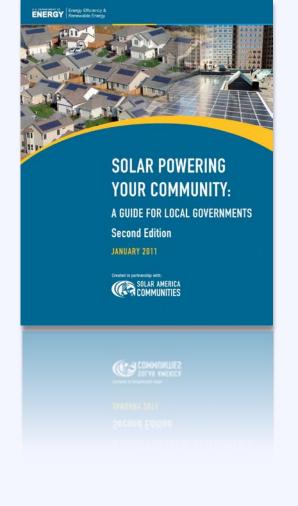
bcampbell@solarelectricpower.org (202) 559 - 2030

### **About the SunShot Solar Outreach Partnership**

### **Resource Solar Powering Your Community Guide**

A comprehensive resource to assist local governments and stakeholders in building local solar markets.

www.energy.gov





### **About the SunShot Solar Outreach Partnership**

#### **Sunshot Resource Center** Resource

- Case Studies
- Eact Sheets
- How-To Guides
- Model Ordinances
- Technical Reports
- Sample Government Docs

