Shared Solar Programs: Opportunities and Challenges

Powered by SunShot
U.S. Department of Energy

Interstate Renewable Energy Council (IREC)

- Goal = enable greater use of clean energy in a sustainable way
  - Introduce regulatory policies that empower consumers and support a transition to a sustainable energy future
  - Remove technical constraints to distributed energy resource integration
  - Develop national policy guidance based on best practices and solid research to encourage consistency
- Current projects include shared renewable energy policies and programs
- Represented by Keyes, Fox & Wiedman, LLP
- www.irecusa.org

What is Shared Solar?

- **Shared solar**—
  expands consumer access to solar energy
  - Participants own or lease panels, or purchase kWh blocks of generation
  - Participants directly receive a tangible economic benefit on their electricity bills
  - New solar generation is built ("steel in the ground")

- **Solar project investment models**—
  also expand consumer access to solar energy
  - Participants receive any economic benefits of their investments via payment
  - Example: Mosaic (www.mosaic.org)

Why Shared Solar?

I want to benefit from renewable energy generation, but I…

- Rent my apartment
- Live in a multitenant building (e.g., a condo)
- Have insufficient or problematic roof space (e.g., too shady)
- Am just not interested in on-site generation (maintenance responsibility, aesthetic issues, etc.)

Only 25% of residential roofs permit on-site generation

Paul Denholm & Robert Margolis, NREL, *Curves for Rooftop Solar PV-Generated Electricity for the United States* 4 (Nov. 2008), http://www.nrel.gov/docs/fy09osti/44073.pdf

Serving More Energy Consumers

Net Metering

Shared Solar

The Vote Solar Initiative

If just 5% of U.S. households invested in a 5-kW interest in a shared solar system…

… we'd see over 28 GW of additional solar capacity!

http://quickfacts.census.gov/qfd/states/00000.html

Other Bill Credit Mechanisms

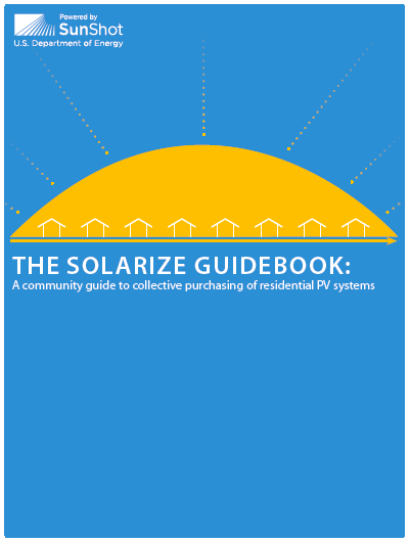
- **Net metering**—one customer, one meter
- **Aggregated net metering (ANM)**—one customer, multiple meters
- **Virtual net metering (VNM)**—multiple customers, multiple meters
  - Similar to shared solar but embedded in the existing net metering framework

Shared solar relies on a bill credit mechanism, but it's not net metering

Other Programs Expanding Access to Solar

- **Group purchasing** individuals purchase solar PV together, get volume discount

Example: Solarize Guidebook

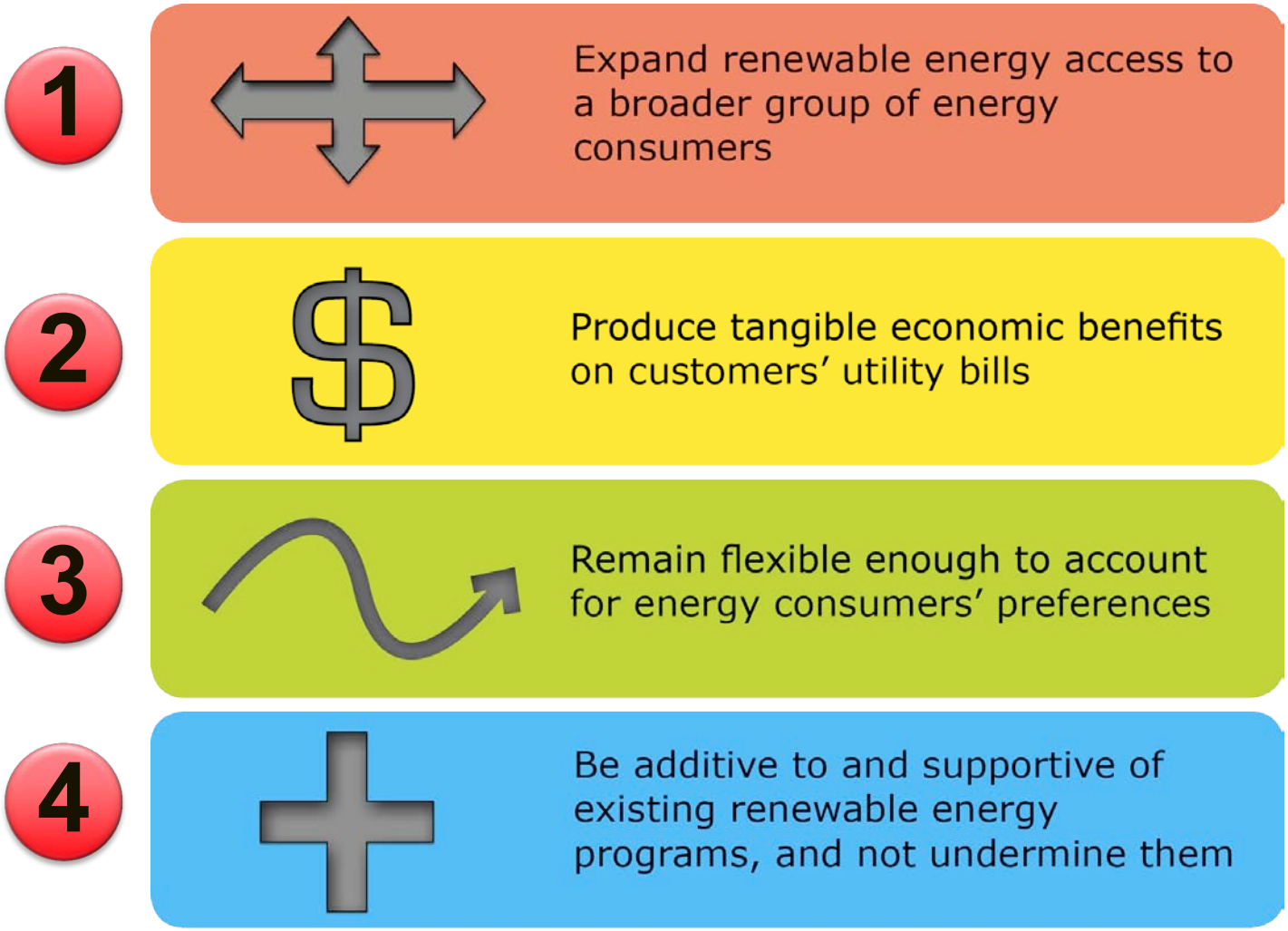


- **Green pricing or green tariff** electricity supplier offers optional tariff relying on up to 100% renewable generation, at a premium
  - DOE Green Pricing Web Page, http://apps3.eere.energy.gov/greenpower/markets/pricing.shtml?page=0

Powered by SunShot U.S. Department of Energy

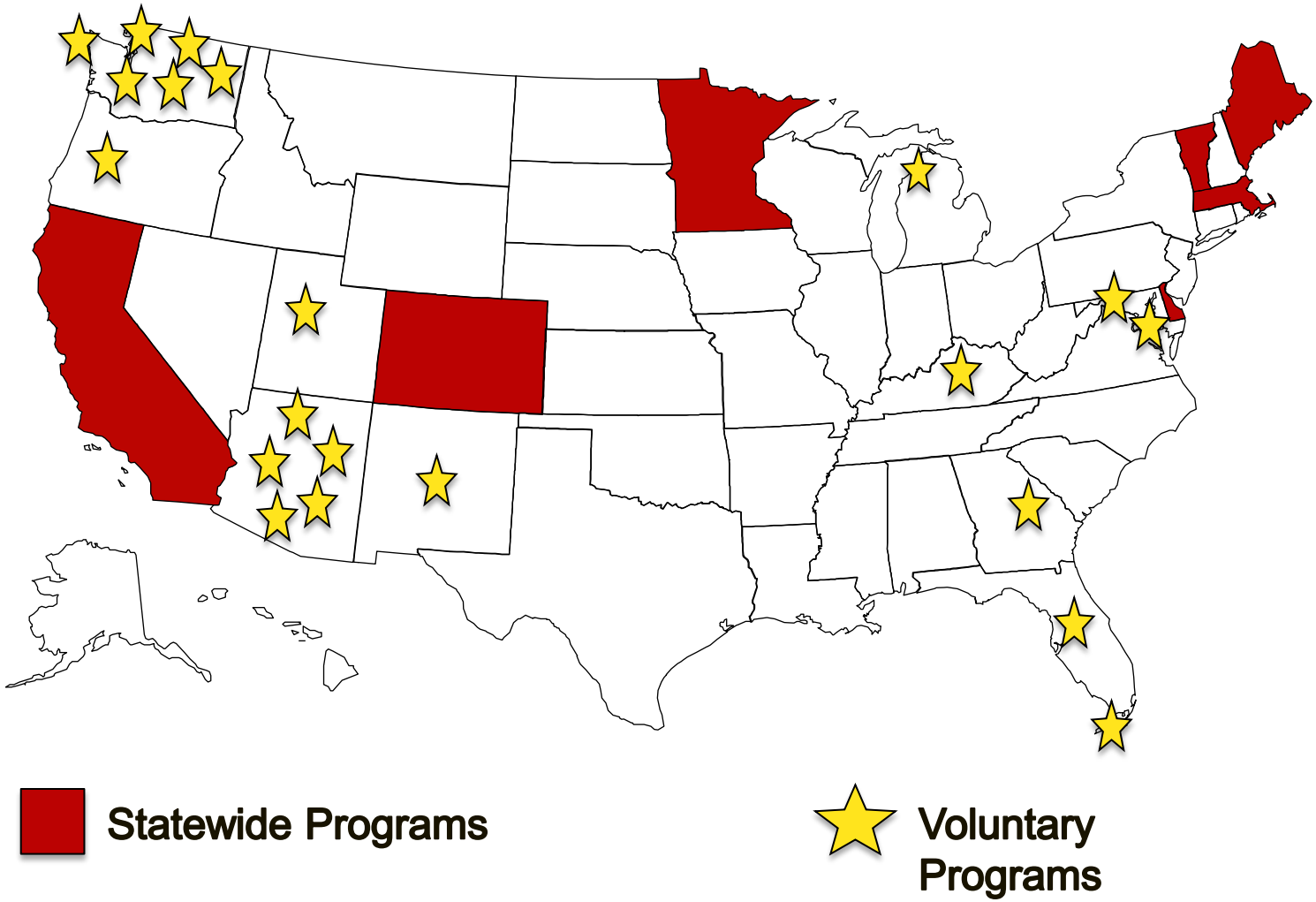
Solarize Guidebook: http://www1.eere.energy.gov/solar/pdfs/54738.pdf

Guiding Principles for Shared Solar



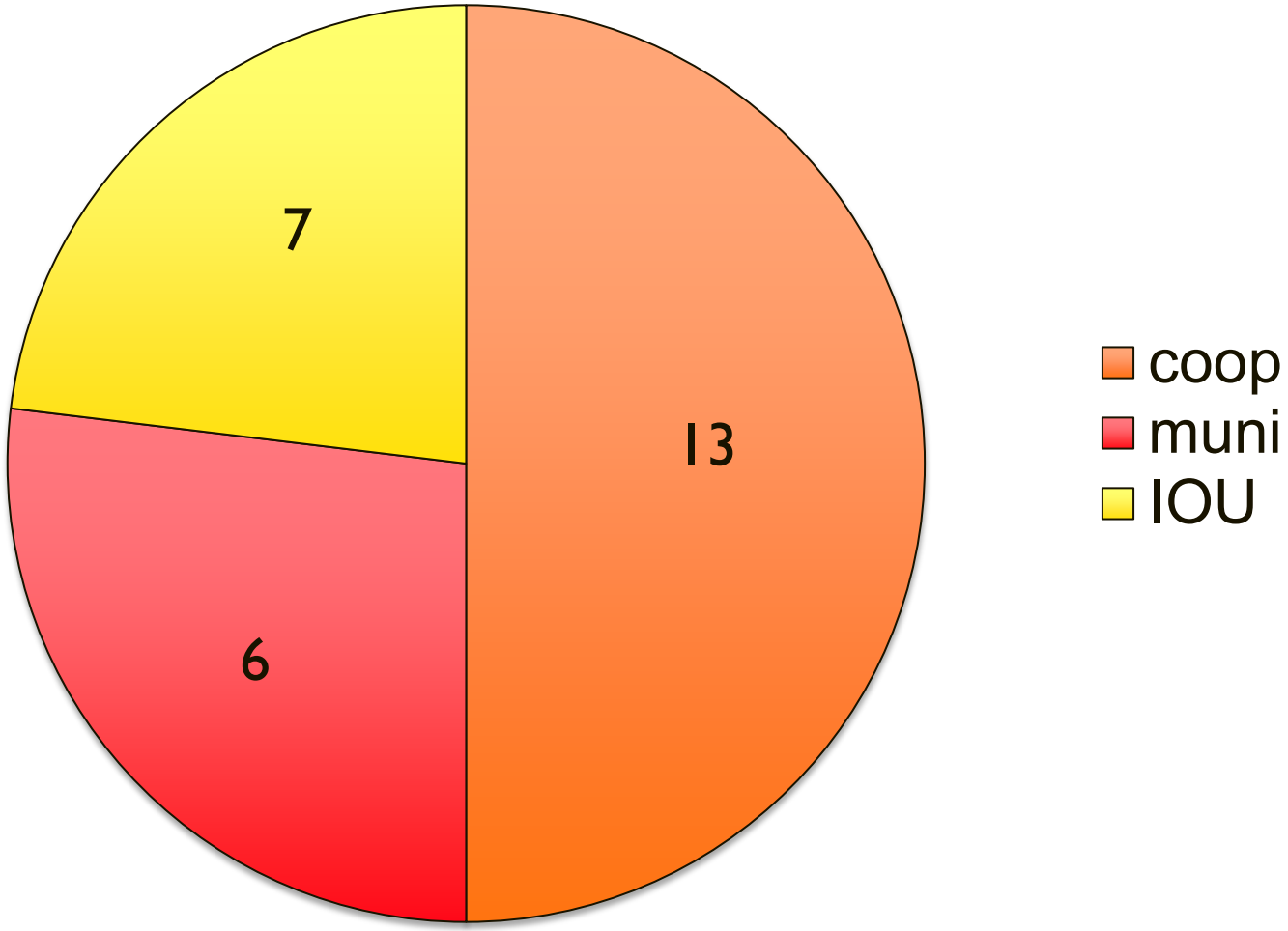
IREC, Model Rules for Shared Renewable Energy Programs, http://www.irecusa.org/wp-content/uploads/2013/06/IREC-Model-Rules-for-Shared-Renewable-Energy-Programs-2013.pdf

Shared Solar Activity in the U.S.



Based on IREC research as of May 2013, www.irecusa.org

Type of Energy Service Provider



Based on IREC research as of April 2013, www.irecusa.org

Average Program Size by Type of Energy Service Provider

Coop – 250 kW

Muni – 432 kW*

* Excluding SRP 20-MW program

IOU – 3300 kW

Based on IREC research as of April 2013, www.irecusa.org

Shared Solar: Lots of Issues to Consider

Ownership

Risk

Distribution of benefits

Size

Interconnection

Local/state/federal incentives

Valuation of bill credits

Goals of program

Securities issues

Participation

Critical Program Elements

1. Allocating the benefits of participation
2. Valuation of the energy produced by the system
3. Program administration
4. Shared solar facility ownership
5. Shared solar facility size and location

There are several ways to design a program…

… choose what works for your community

Allocating the Benefits of Participation

- **By payment**
  - Simplicity is initially appealing
  - However, raises security and tax considerations that can complicate things (a lot)
- **By bill credit**
  - kWh credit vs. dollar credit
  - Relatively easy to administer
  - Can avoid security and tax concerns
  - Familiar to participants and utilities
  - **But what about valuation?**

Valuation of Generation

Embedded Cost-Based Approach

- Credit based on participants' retail rates—generation, transmission and/or distribution rate components
- Can get more complicated with TOU rates and non-kWh rate components, e.g., demand charges
- **Example**: Xcel Solar*Rewards Community program—SRC credit for residential customer ≈ $0.074/kWh
  - Total Aggregate Retail Rate (TARR), including energy charges, demand charges, and all riders— ~ $0.101/kWh (residential)
  - Less delivery costs (T&D + TCA) and RES adjustment— ~ $0.025/kWh (delivery costs) + ~ $0.002 (RESA)

Based on Xcel 2012 RES Plan, http://www.xcelenergy.com/staticfiles/xe/Regulatory/Regulatory%20PDFs/CO_11A-XXXE_2012RES_Vol.1.pdf, and testimony in CO PSC docket 11A-418E

Valuation of Generation

Value-Based Approach

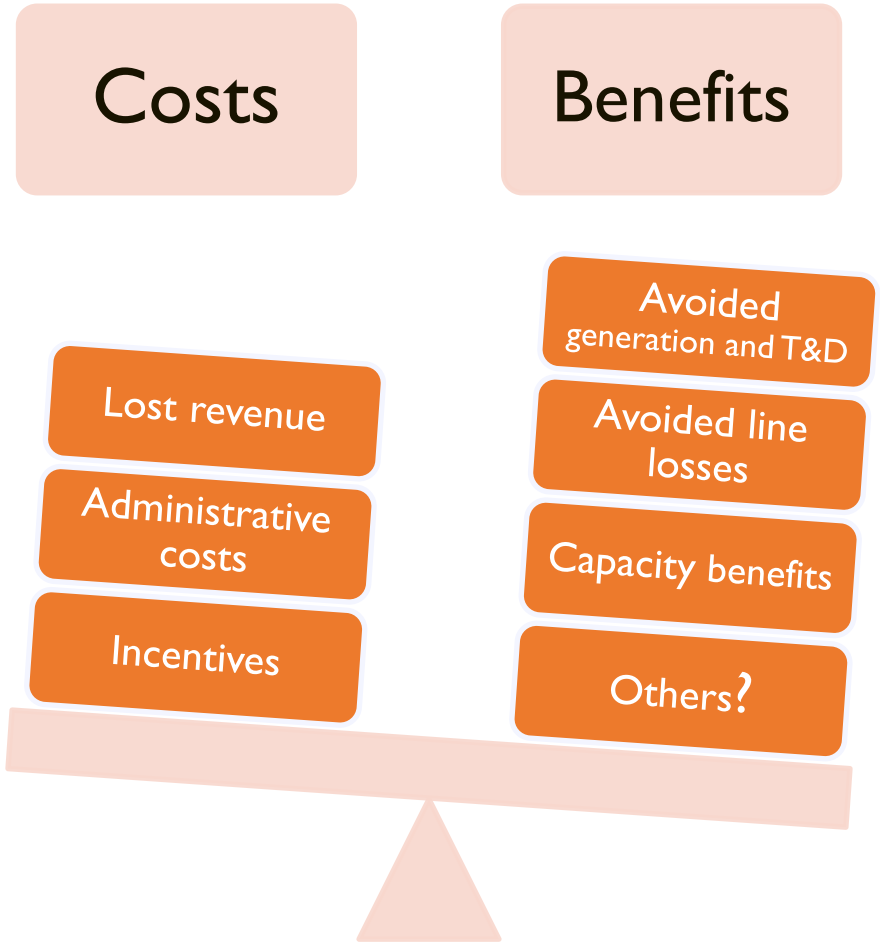
- Based on the value of the generation to the utility, weighing costs and benefits
- Similar to Austin Energy value of solar tariff (VOST) for on-site residential solar—$0.128/kWh
- **Example**: Holy Cross Energy community solar—$0.11/kWh

Powered by SunShot U.S. Department of Energy

Austin Energy: http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=TX139F
Holy Cross Energy: http://www.easycleanenergy.com/faq.aspx

Valuation of Generation

Value-Based Approach



Valuation of Generation

Other Valuation Approaches

- TEP Bright Tucson Community Solar
  - Rate: $3 per 150 kWh per month
  - Similar to green tariff, but participants receive tangible economic benefit—price hedge
  - Also: new solar generation located in Tucson
- PG&E Green Option Tariff (proposed)
- SDG&E SunRate and Share the Sun (proposed)

Program Administration

- Shared solar involves: program design, marketing, participant sign-up, benefit allocation, changes in participation, and more
  - Administrator should recover costs
- Who could administer a program?
  - Utility—most shared solar programs are administered by utilities
  - Third party—for example, Clean Energy Collective (www.easycleanenergy.com)
  - Participants—for example, Vermont's group billing

Solar Facility Ownership

Ownership directly affects financing—who can take advantage of local, state and federal funding and incentives?

- Direct ownership
- Third-party ownership—for example, Colorado Springs Utilities (participants buy or lease)
  - Can be critical to tapping into available tax credits
- Utility ownership—for example, Florida Keys Electric Cooperative (participants lease)

Be flexible and allow people to figure out what works best

Solar Facility Size and Location

Size and location depend on community goals and priorities

- Smaller systems can usually take advantage of faster interconnection (e.g., < 2 MW)
- Program could encourage locations that maximize grid benefits and/or environmental benefits
  - Less congested areas of the grid
  - Rooftops or brownfields
- Participants typically want the facility in or near their community

Additional Considerations

- Number of program participants
- Minimum and maximum subscription sizes
- Portability and transferability of participation
- REC ownership
- Consumer protection
- Low-income consumer participation
- Others?

Ultimately, the community's goals, priorities and constraints determine what the program looks like

FKEC Simple Solar Program

- **Service provider**: Cooperative utility
- **Program location**: Upper & Middle Florida Keys
- **Program size**: 117.6 kW (2 arrays)
- **Generation ownership**: Utility
- **Eligible participants**: All members
- **Participant buy-in**: Lease panels, $999/panel
- **Bill Credit**: Participant's retail rate
- **Participant term**: 25 years
- **Web Site**: http://www.fkec.com/Green/simplesolar.cfm

As of October 2012, http://www.irecusa.org/wp-content/uploads/Community-Shared-Solar-Handout-final-010913.pdf

Colorado Springs Utilities Community Solar Gardens Program

- **Service provider**: Municipal utility
- **Program location**: Colorado Springs, CO
- **Program size**: 2 MW (for pilot)
- **Participation**: 289 participants
- **Generation ownership**: Third-party developers
- **Eligible participants**: All residential and educational facility customers
- **Participant buy-in**: Panels may be leased or purchased at varying rates, depending on facility
- **Bill Credit**: $0.09/kWh (fixed)
- **Participation term**: 20 years
- **Web Site**: www.csu.org/residential/customer/Pages/Community-Solar-Gardens.aspx

Colorado Springs Utilities
It's how we're all connected

As of October 2012, http://www.irecusa.org/wp-content/uploads/Community-Shared-Solar-Handout-final-010913.pdf

TEP Bright Tucson Community Solar Program

- **Service provider**: Investor-owned utility
- **Program location**: Tucson, AZ
- **Program size**: 4.13 MW
- **Participation**: 777 enrolled customers
- **Generation ownership**: Utility and third-party
- **Eligible participants**: All customers except those enrolled in net metering
- **Participant buy-in**: Purchase 150-kWh monthly blocks for $3/block/month (fixed)
- **Participation term**: 20 years
- **Web site**: https://www.tep.com/Renewable/Home/Bright

As of October 2012, http://www.irecusa.org/wp-content/uploads/Community-Shared-Solar-Handout-final-010913.pdf

Moving Forward: What Can I Do?

At the state level

- Enact a shared solar program
  - Via legislation or at the regulatory commission
- Permit third-party ownership
  - Probably requires legislation
- Institute good interconnection procedures
  - At the regulatory commission
- Develop solar-friendly property tax policies
  - Probably requires legislation
- Offer other tax and financial incentives
  - Via legislation (tax incentives), or via regulatory or other bodies

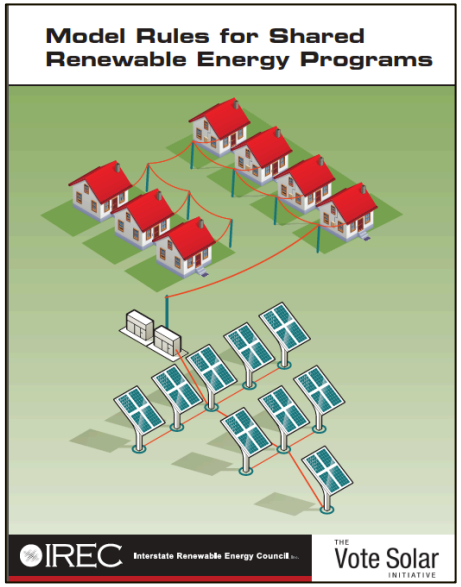
Moving Forward: What Can I Do?

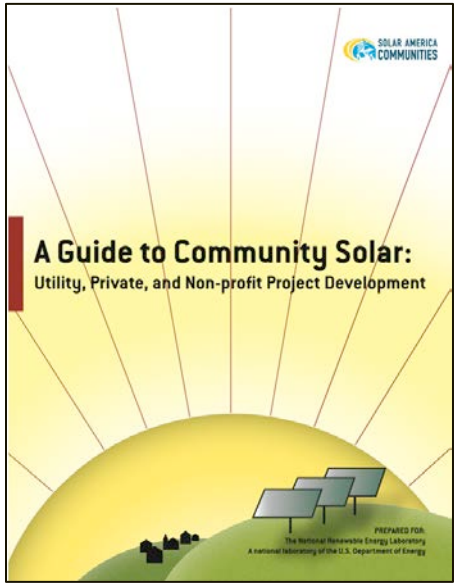
At the local level

- Propose a shared solar program to your utility
- Develop solar-friendly property tax policies
- Offer other tax and financial incentives
- Streamline local permitting processes for solar
- Eliminate or refine other local policies that discourage solar
  - Restrictive siting rules
  - HOA rules based on aesthetics

Further Resources

- Shared Renewables HQ: www.sharedrenewables.org
- IREC Shared Renewables Program Catalog: www.irecusa.org/regulatory-reform/shared-renewables/





www.nrel.gov/docs/fy11osti/49930.pdf

Erica M. Schroeder

Interstate Renewable Energy Council, Inc.

510-314-8206

eschroeder@kfwlaw.com