

# Solar Powering Your Community

## Local Solar Programs



Powered by

**SunShot**

U.S. Department of Energy



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**SunShot**

U.S. Department of Energy

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# About the SunShot Solar Outreach Partnership

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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

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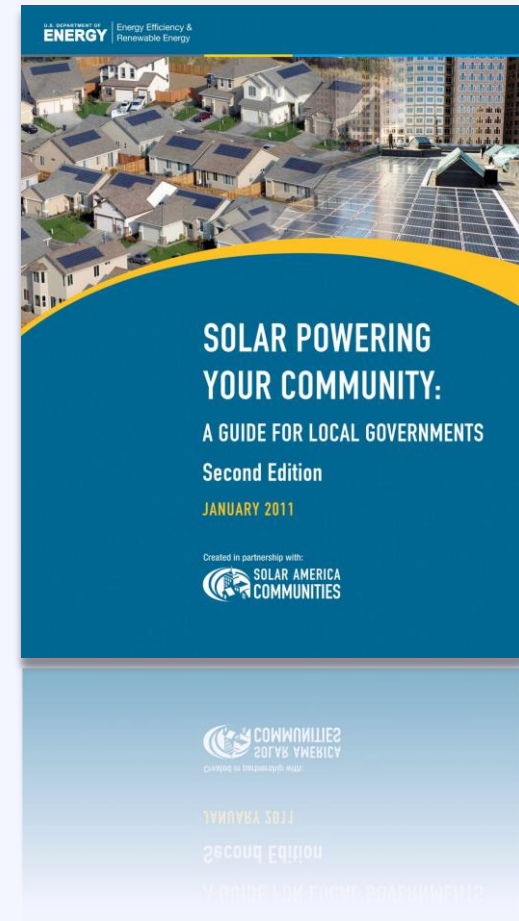
- Increase installed capacity of solar electricity in U.S. communities
- Streamline and standardize **permitting and interconnection processes**
- Improve **planning and zoning codes/regulations** for solar electric technologies
- Increase access to **solar financing options**

# About 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](http://www.energy.gov)



# About the SunShot Solar Outreach Partnership

## Resource Sunshot Resource Center

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

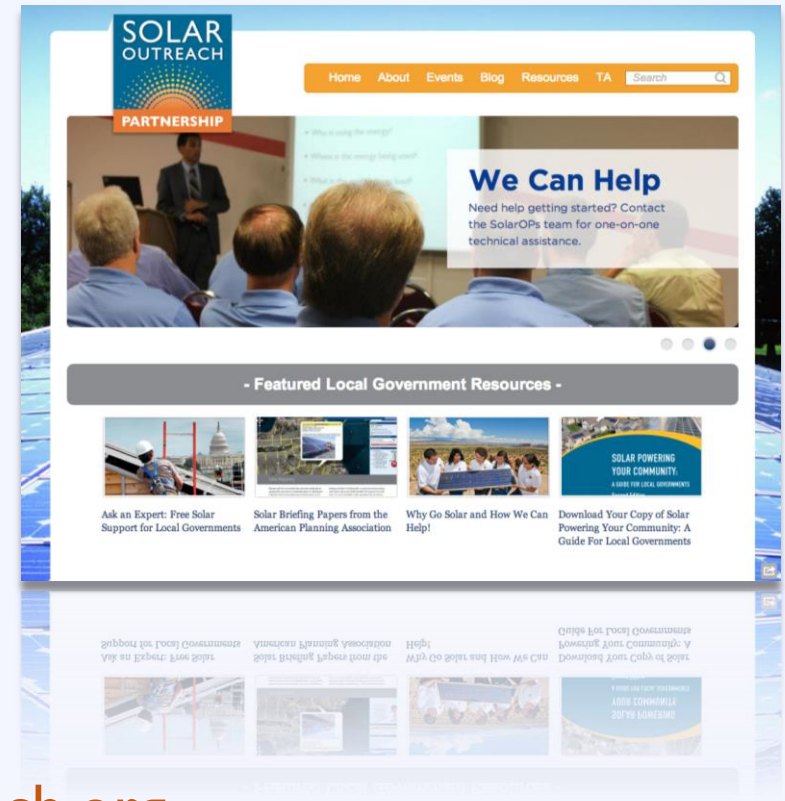
[www4.eere.energy.gov/solar/sunshot/resource\\_center](http://www4.eere.energy.gov/solar/sunshot/resource_center)

The screenshot shows the SunShot Resource Center website. The page has a dark blue header with the U.S. Department of Energy logo and the SunShot Initiative name. Below the header is a navigation menu with links for HOME, ABOUT, SOLAR PROGRAM, FINANCIAL OPPORTUNITIES, and INFORMATION RESOURCES. The main content area is titled 'Solar Energy Resource Center' and includes a search bar, a map of the United States, and a list of filters for Topic, Audience, Resource Type, and State. The filters are currently set to 'Any' for all categories. The page also includes a 'Share' button and a 'Print' button.

# 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



[www.solaroutreach.org](http://www.solaroutreach.org)

For more information, email: [solar-usa@iclei.org](mailto:solar-usa@iclei.org)

# Solar Technologies



**Solar Photovoltaic (PV)**



**Solar Hot Water**



**Concentrated Solar Power**



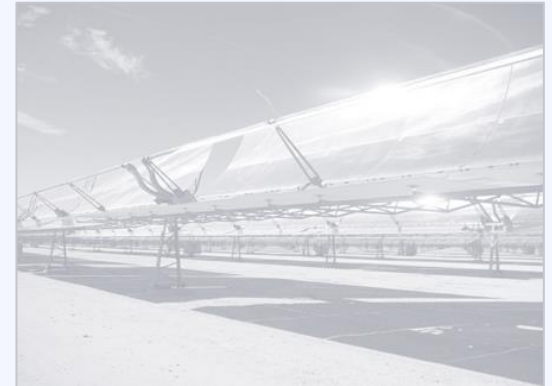
# Solar Technologies



**Solar Photovoltaic (PV)**



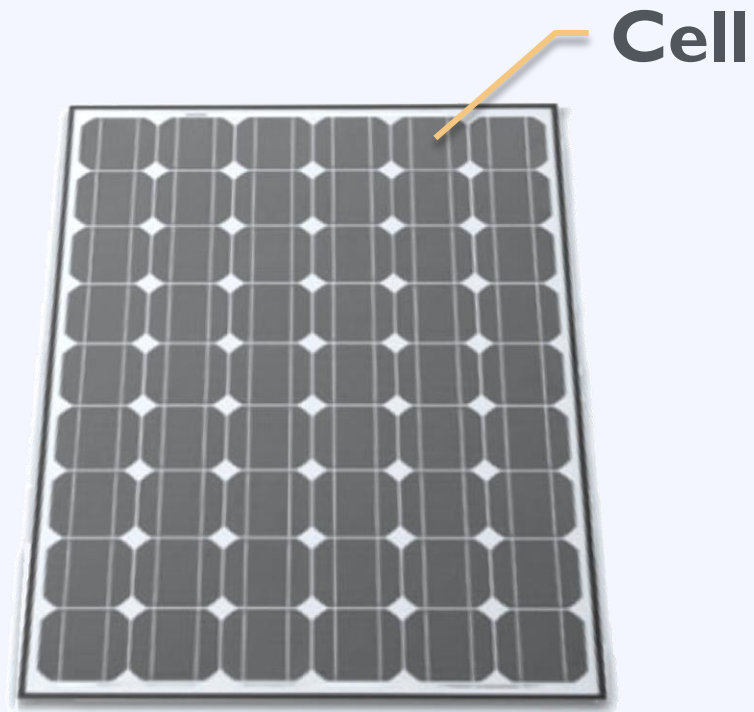
Solar Hot Water



Concentrated Solar Power

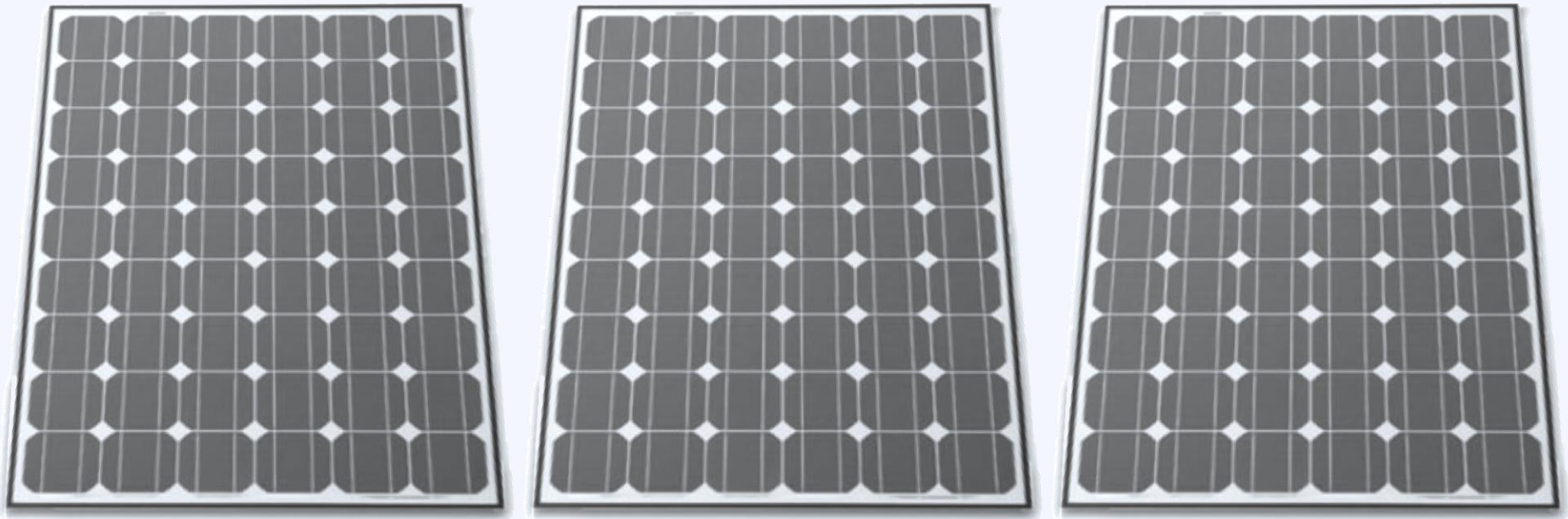
# Some Basic Terminology

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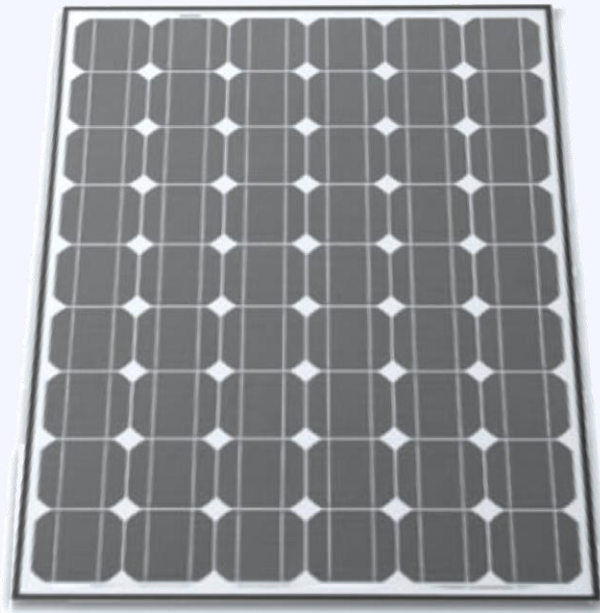
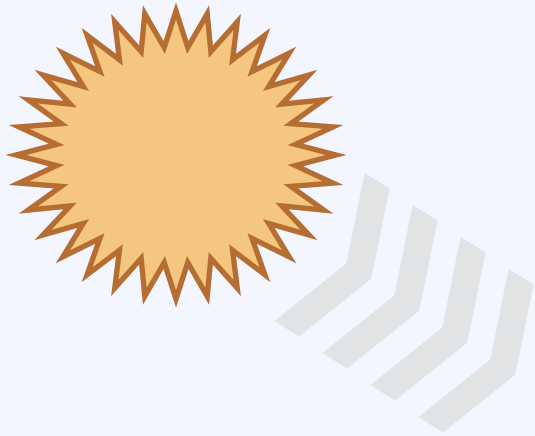
**Panel / Module**

# Some Basic Terminology



**Array**

# Some Basic Terminology



**Production**  
*Kilowatt-hour (kWh)*

**Capacity / Power**  
*kilowatt (kW)*

# Some Basic Terminology



**Residence**  
5 kW



**Factory**  
1 MW+



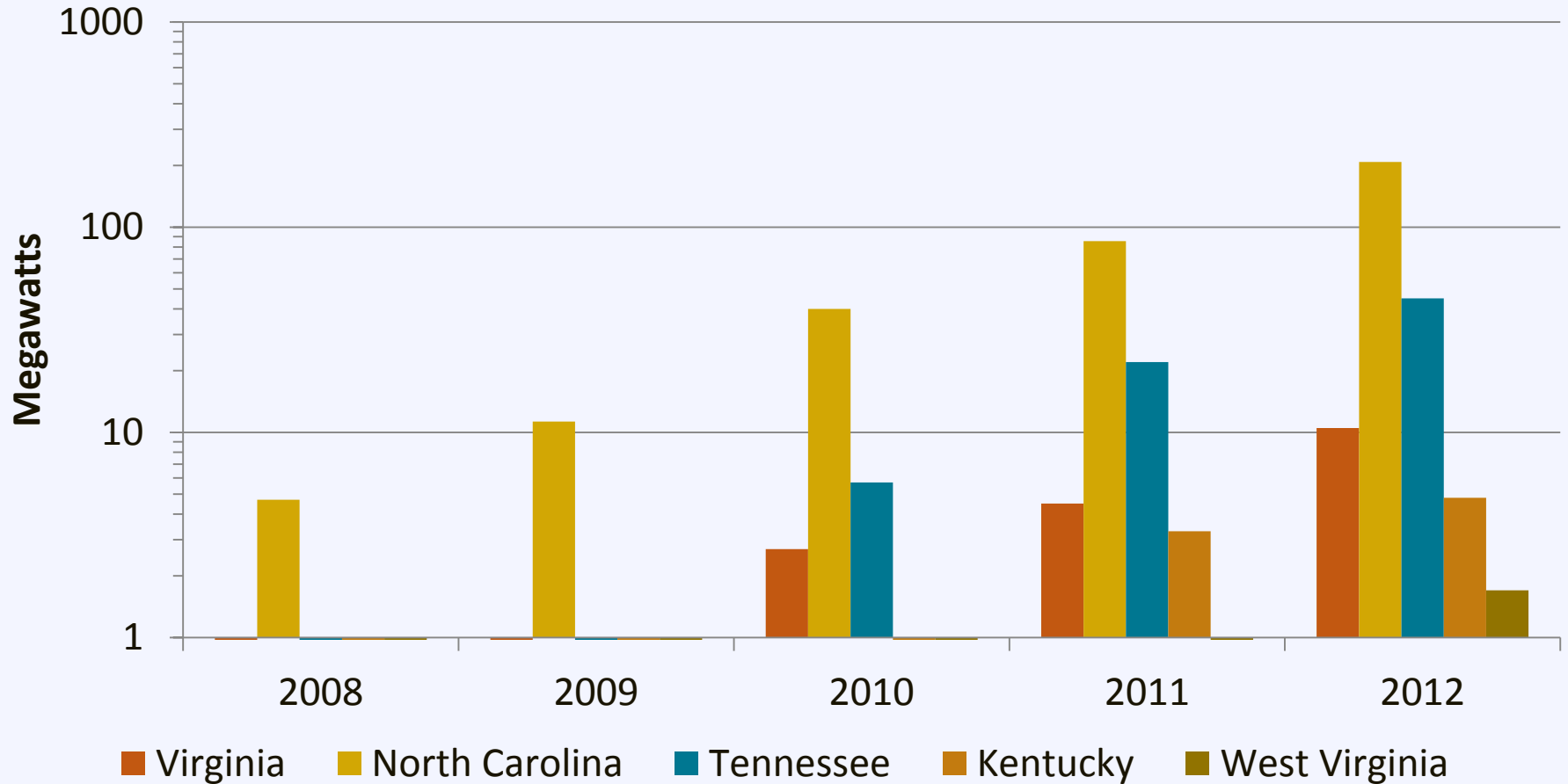
**Office**  
50 – 500 kW



**Utility**  
2 MW+

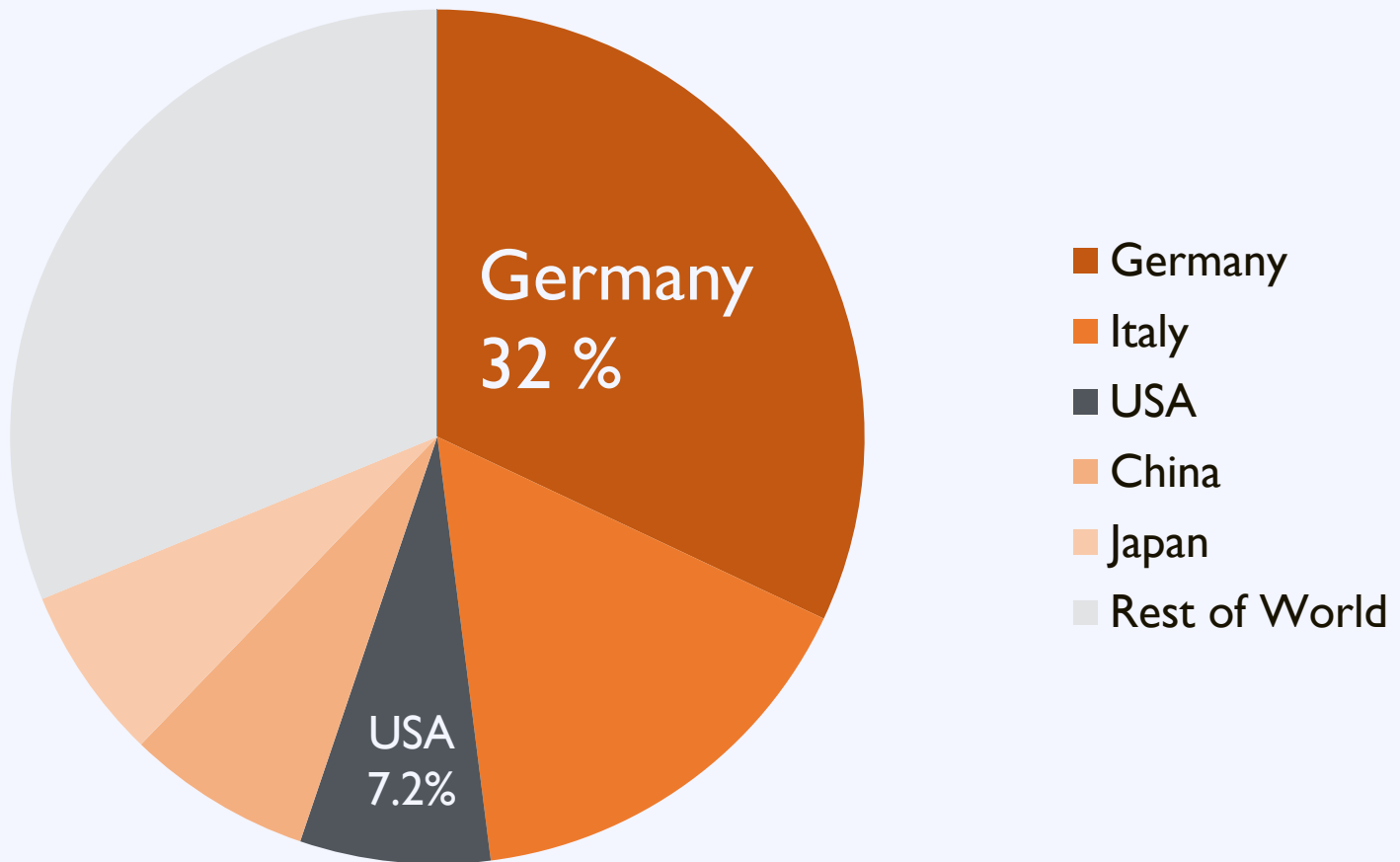
# Virginia Solar Market

## Installed Capacity of Solar PV



# Installed Capacity

## Top 5 Countries Solar Operating Capacity (2012)



# Installed Capacity

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Total installed solar capacity in the US by end of 2012

7.7 GW

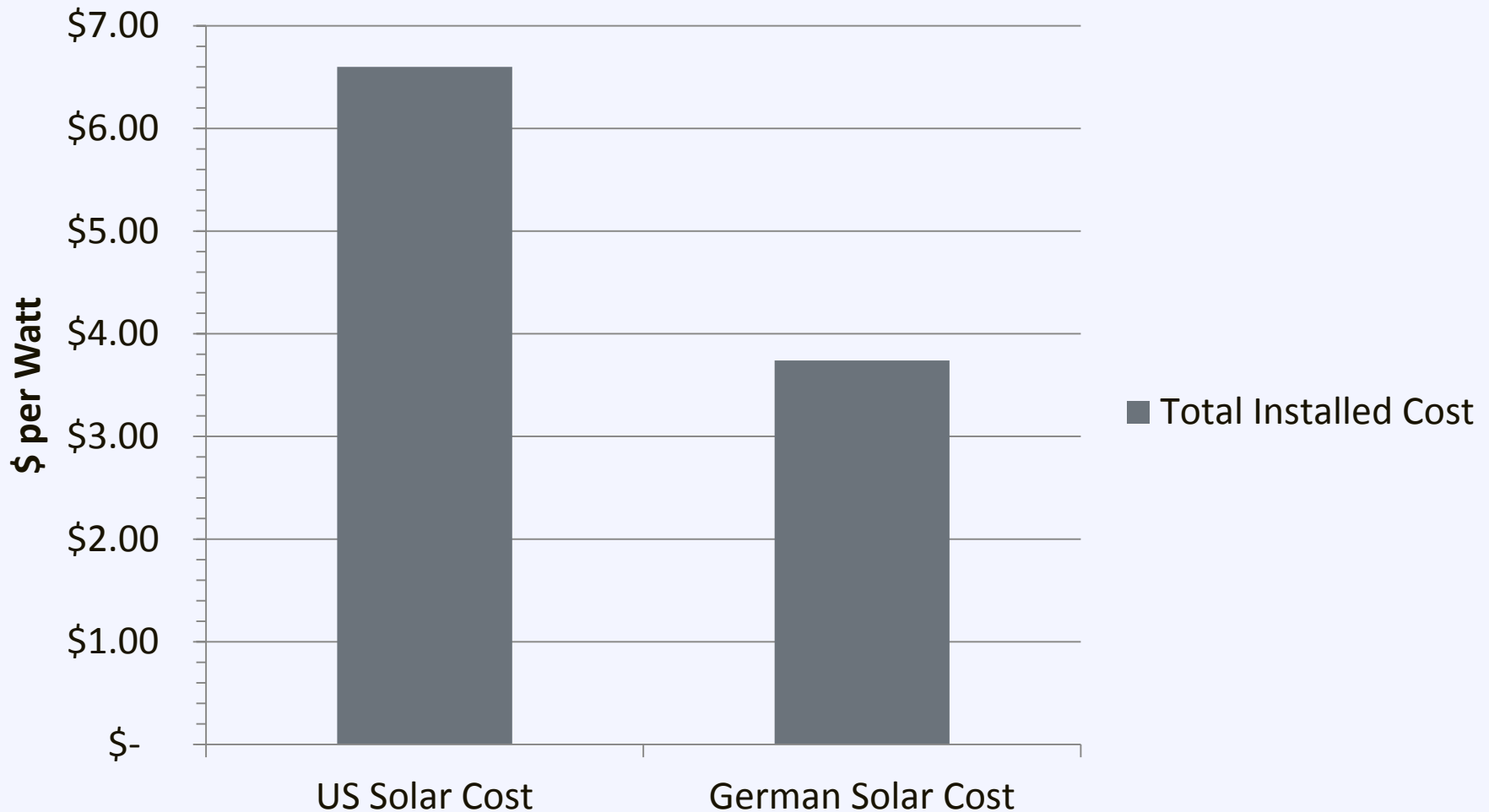
Capacity installed in Germany in 2012 alone

7.6 GW



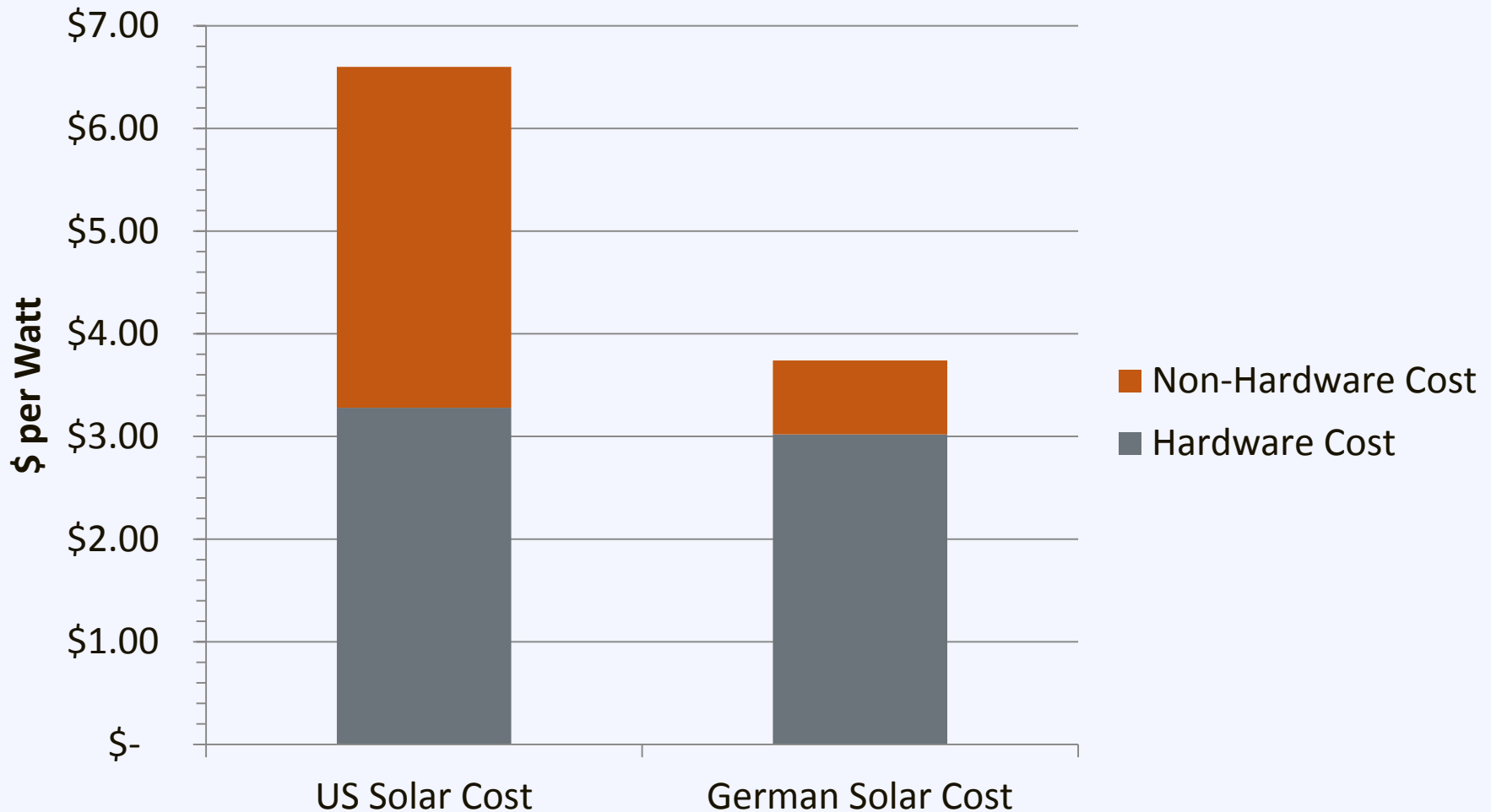
# The Cost of Solar in the US

## Comparison of US and German Residential Solar Costs



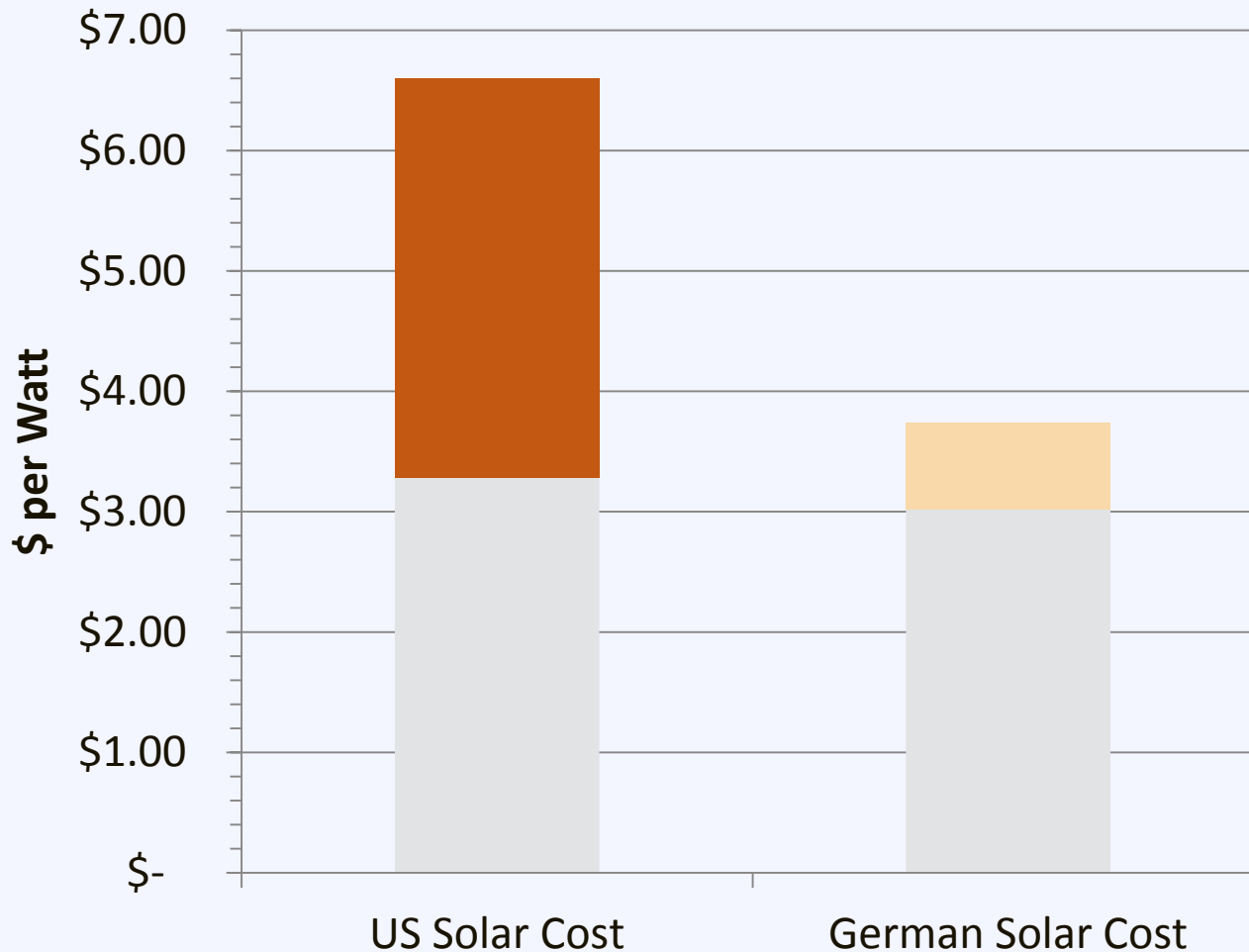
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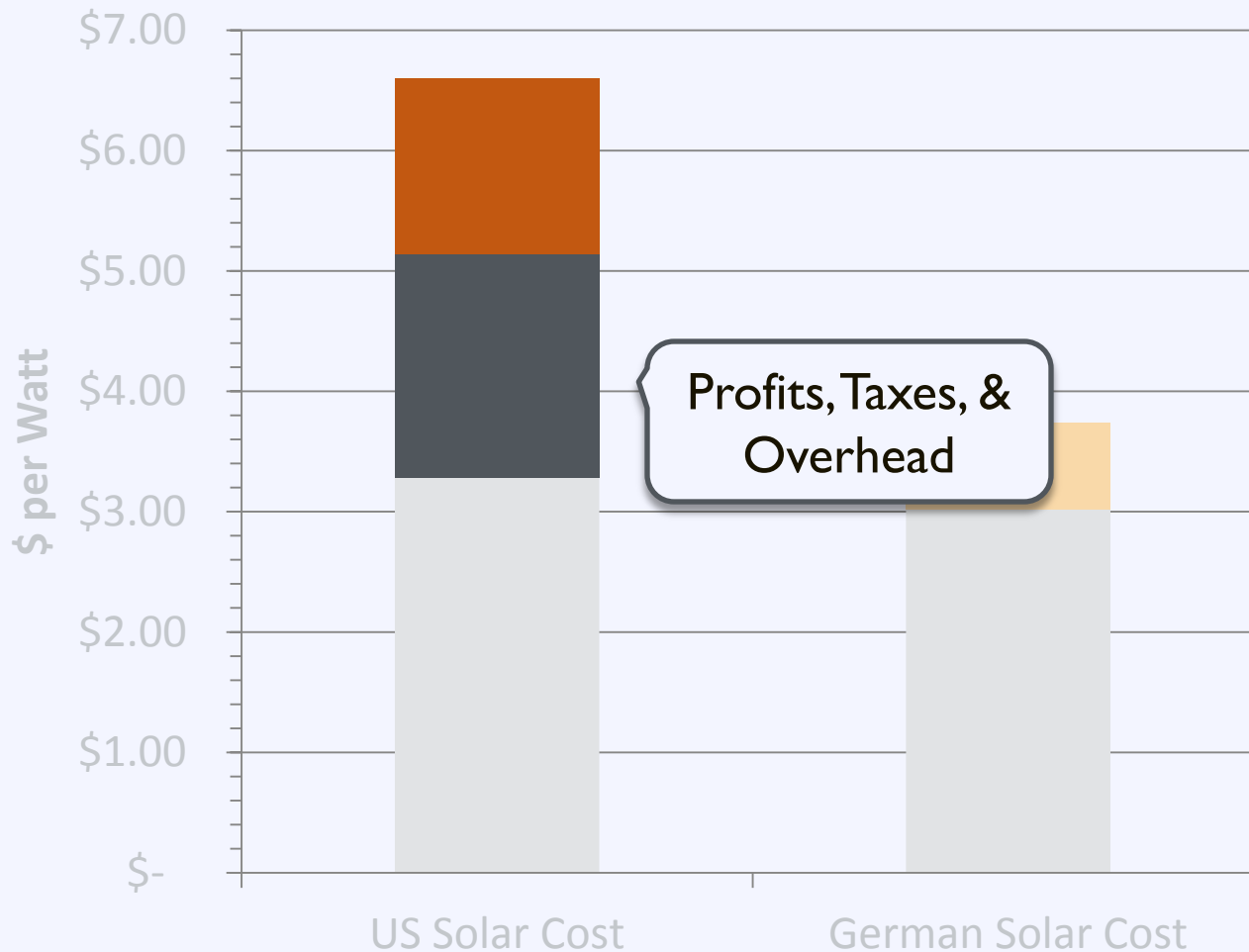
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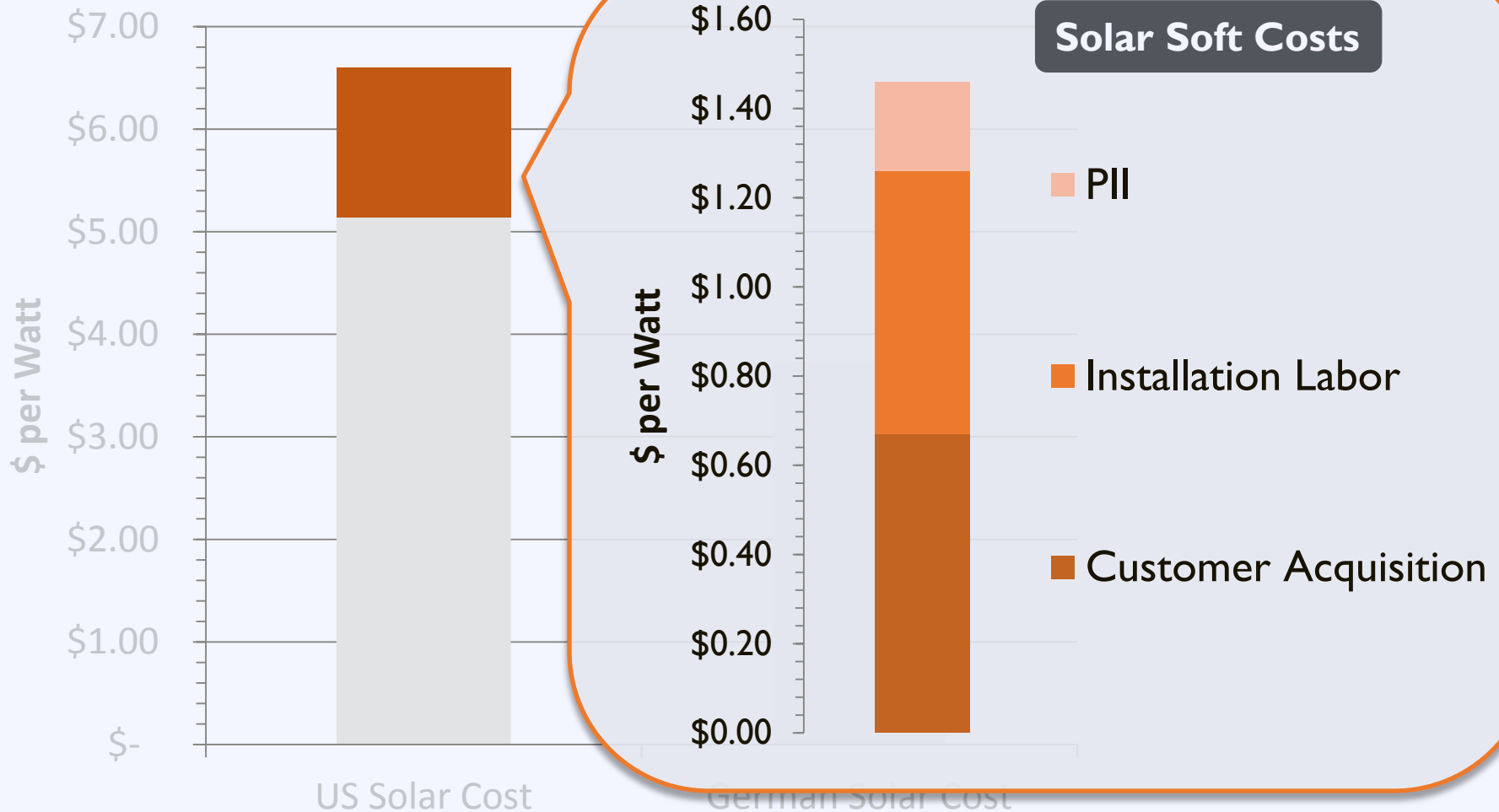
# The Cost of Solar in the US

## Comparison of US and German Residential Solar Costs



# The Cost of Solar in the US

## Comparison of US and German Residential Solar Costs



# Programs to Grow your Solar Market

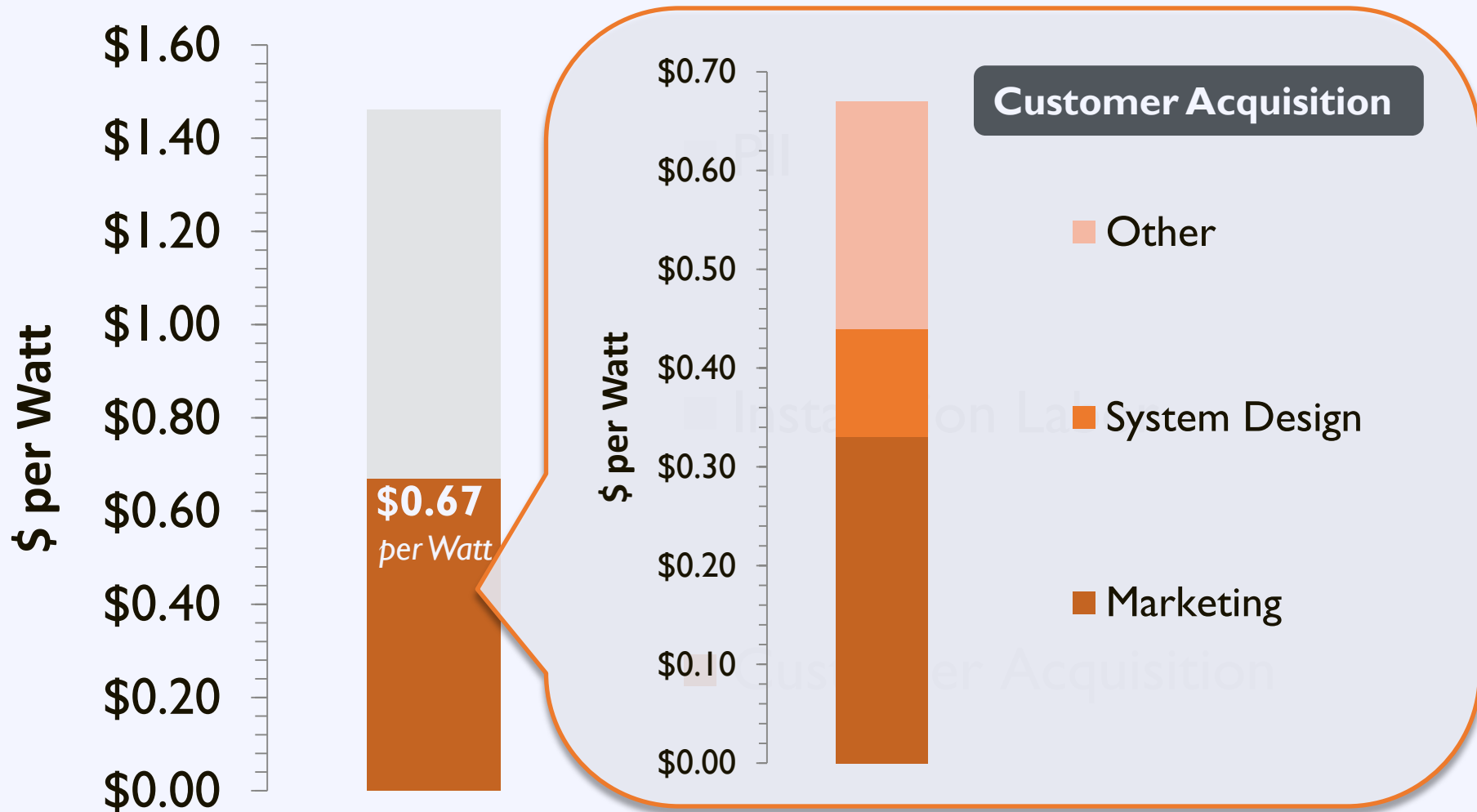


Solarize



Community  
Shared Solar

# Solarize: Mitigate Soft Costs



# Solarize

## Solarize Group Purchasing



solarize portland





# Solarize: Advantages

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## Barriers

High upfront cost



## Solutions

Group purchase

Complexity



Community outreach

Customer inertia



Limited-time offer

# Solarize: Advantages

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## Benefits to Local Government:

Low implementation cost: \$5,000 - \$10,000

Quick turn-around: 9 Months

Long-term impact: Sustainable ecosystem

# Solarize: Program Partners

## Trusted Nonprofit

- credibility and institutional support

## Technical Advisor

- advise on RFP development
- help evaluate proposals
- help develop outreach and education materials

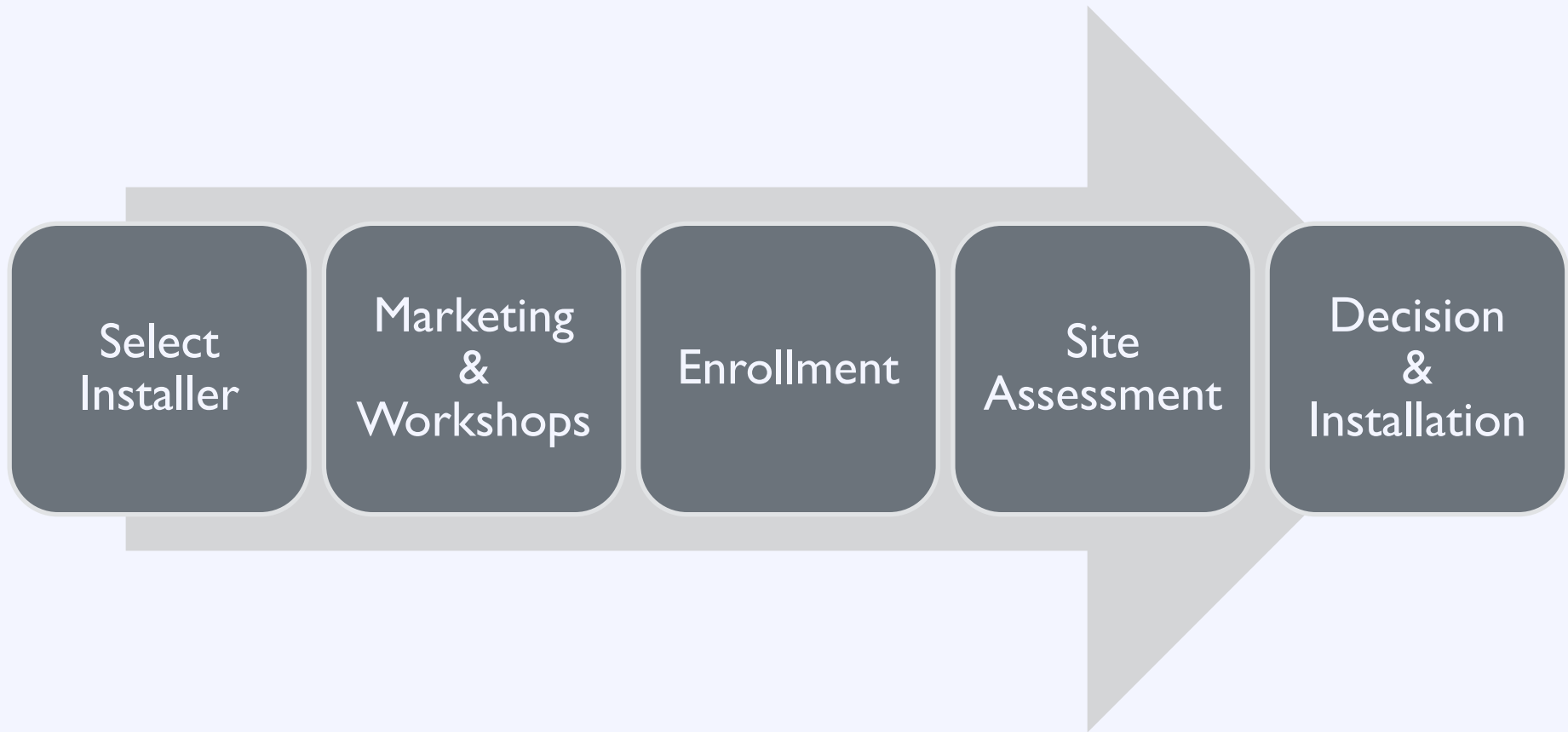
## Project Organizer

- help coordinate outreach and education
- single point of contact for program
- manage project timeline

## Solar Industry

- advise on RFP development
- assist with lead tracking
- help develop outreach and education materials

# Solarize: Process



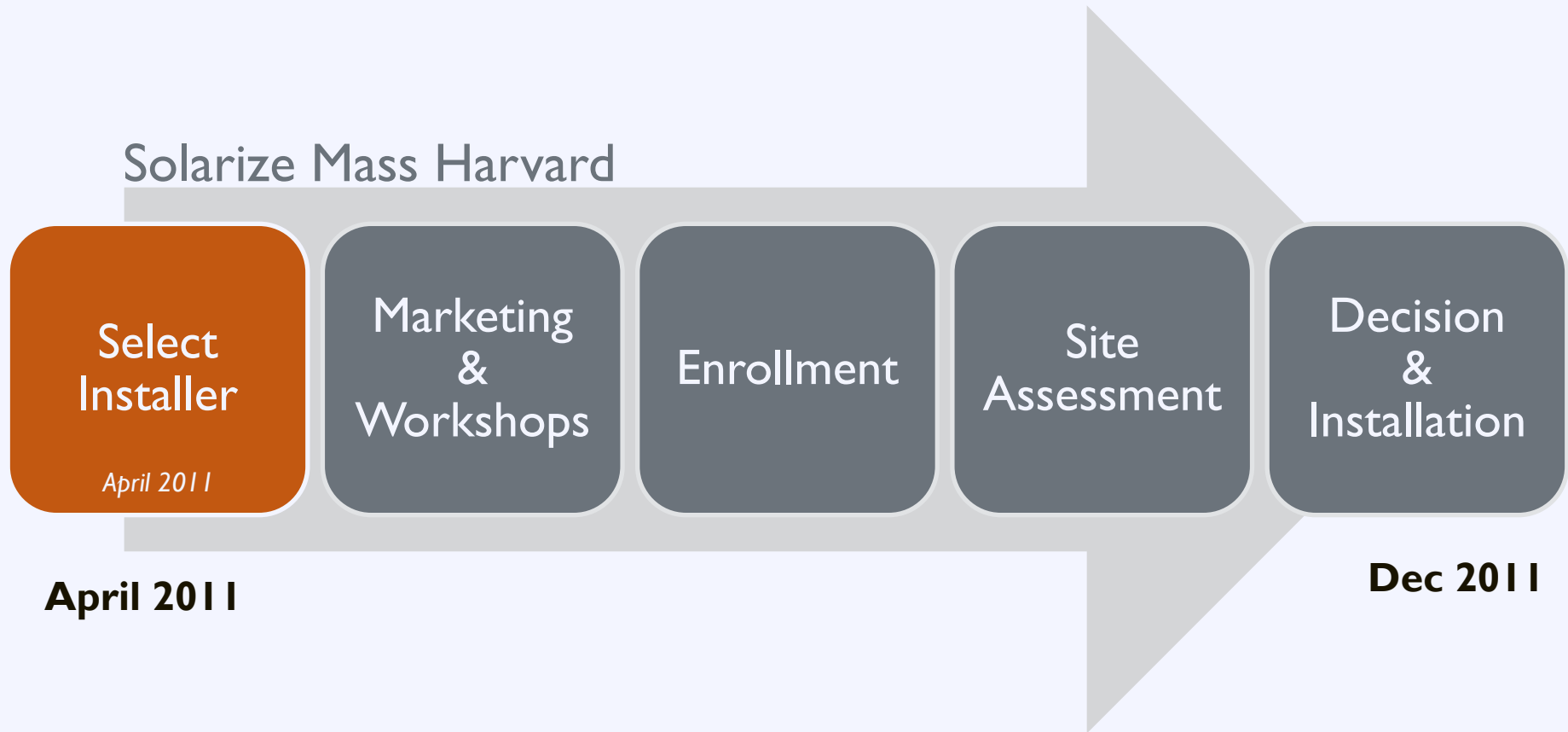
# Solarize: Case Study

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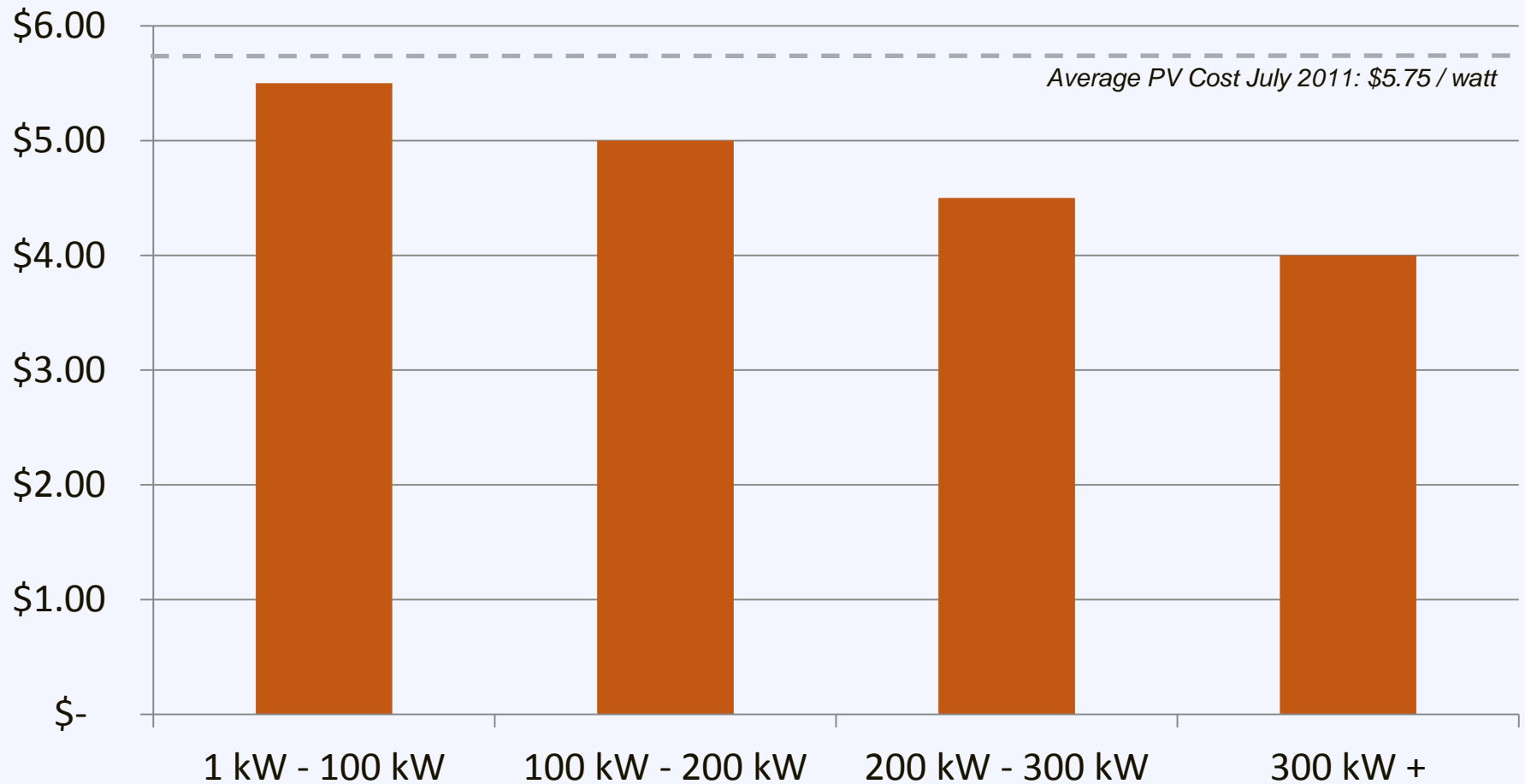
**Harvard, Massachusetts**  
Population: 6,520

# Solarize: Case Study

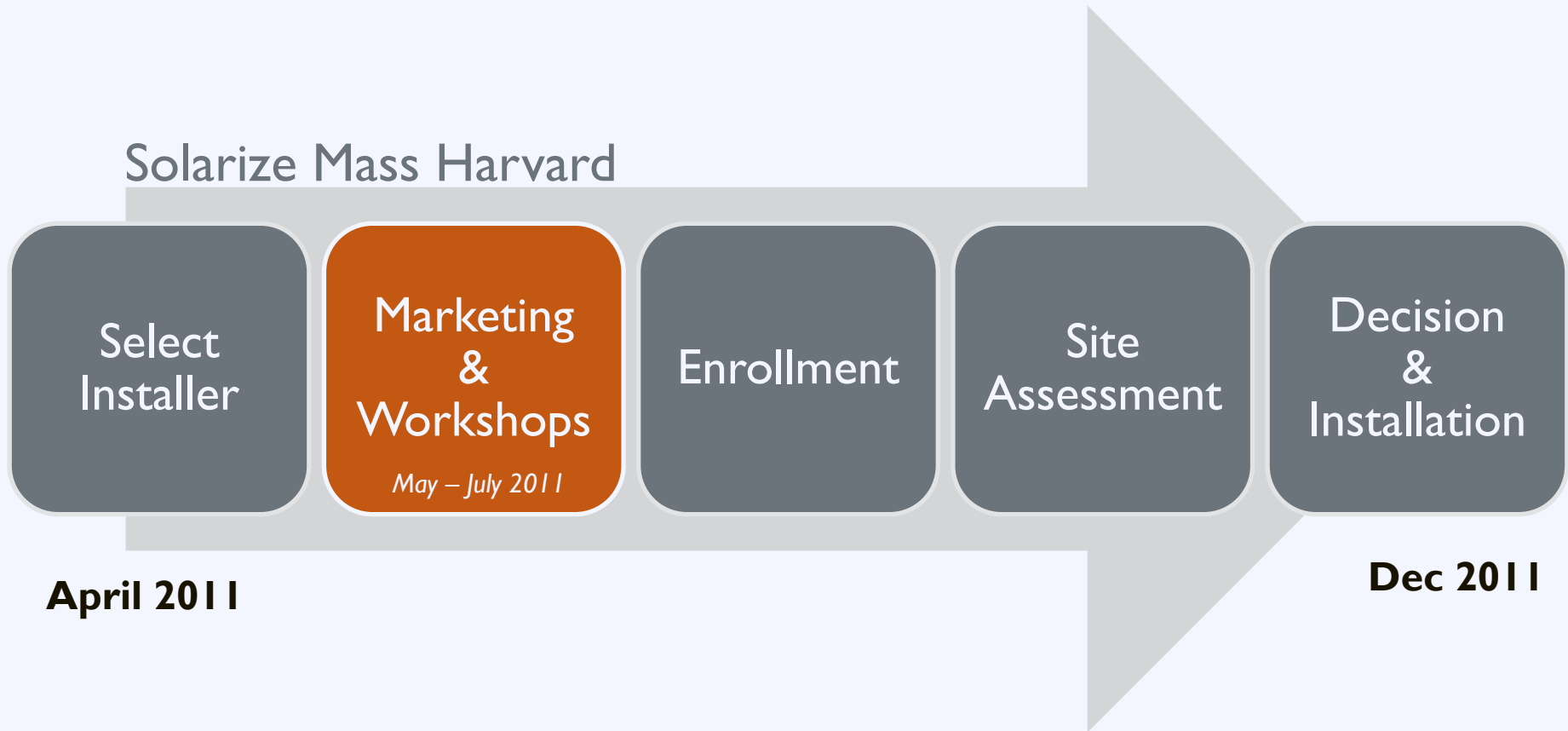


# Group Purchasing

## Harvard Mass Group Purchasing Tiers



# Solarize: Case Study





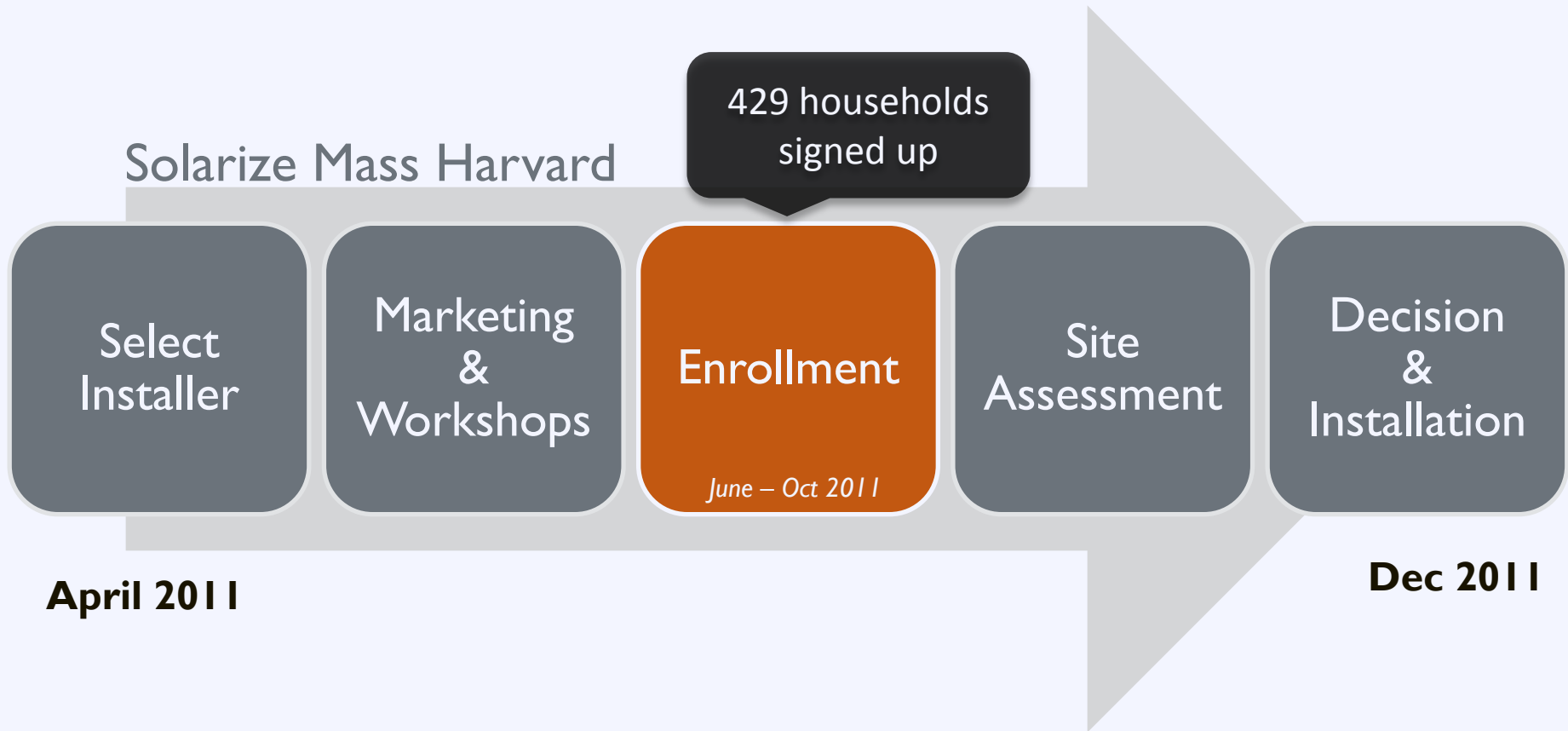
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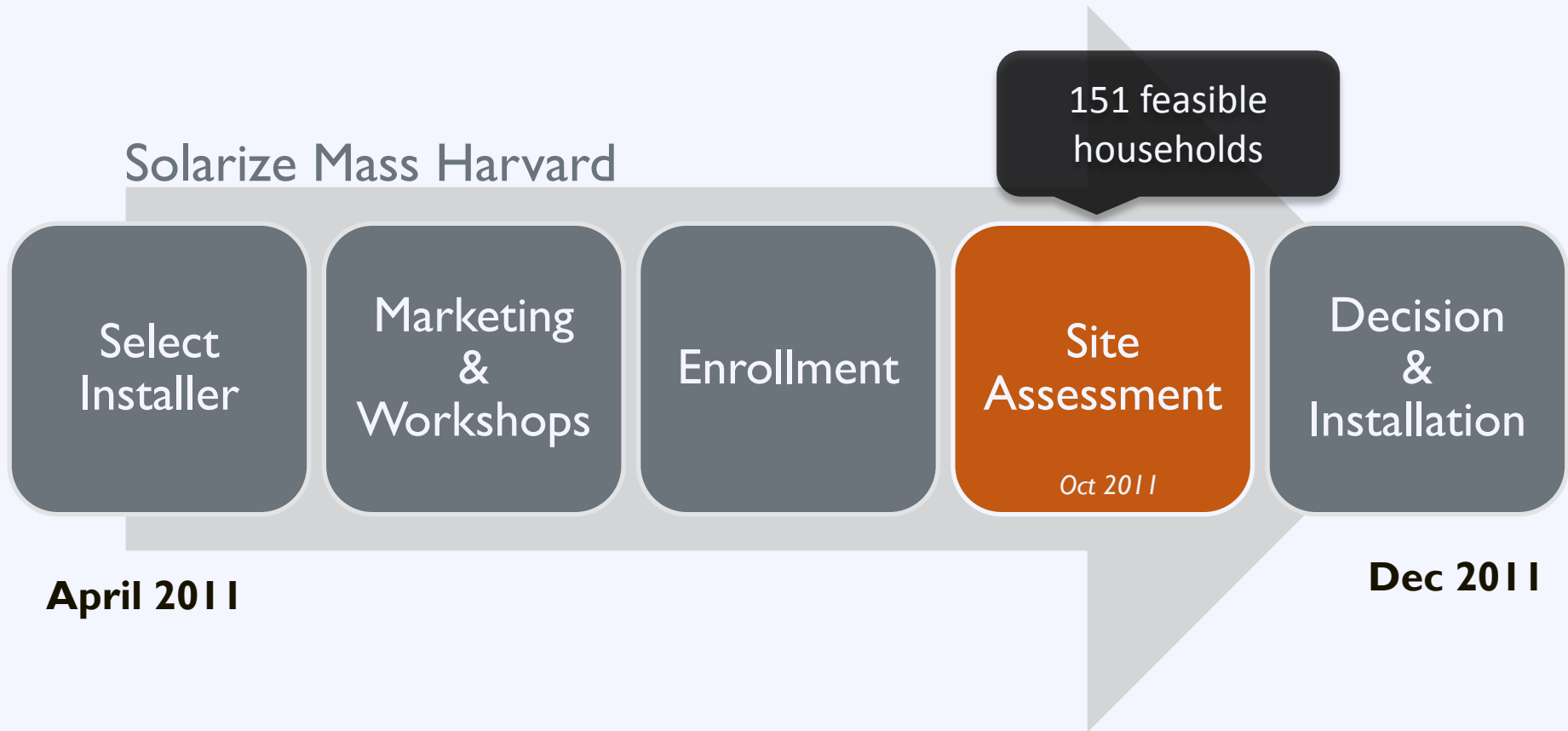
## Marketing Strategy:

- Electronic survey of 1,100 households
- Email newsletters and direct mailings
- Float in July 4 parade
- Articles and advertisements in local newspaper
- Facebook page and online discussion board

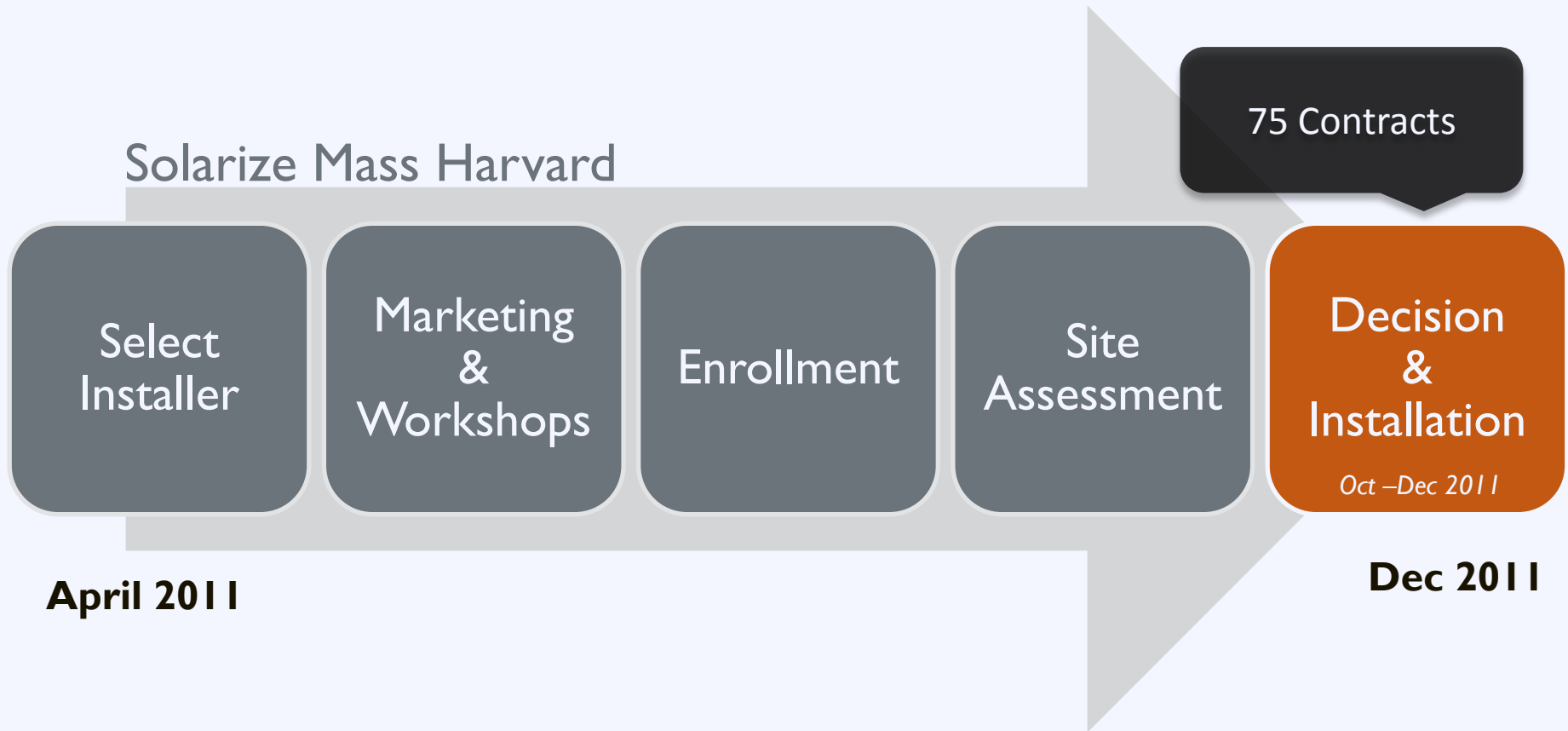
# Solarize: Case Study



# Solarize: Case Study

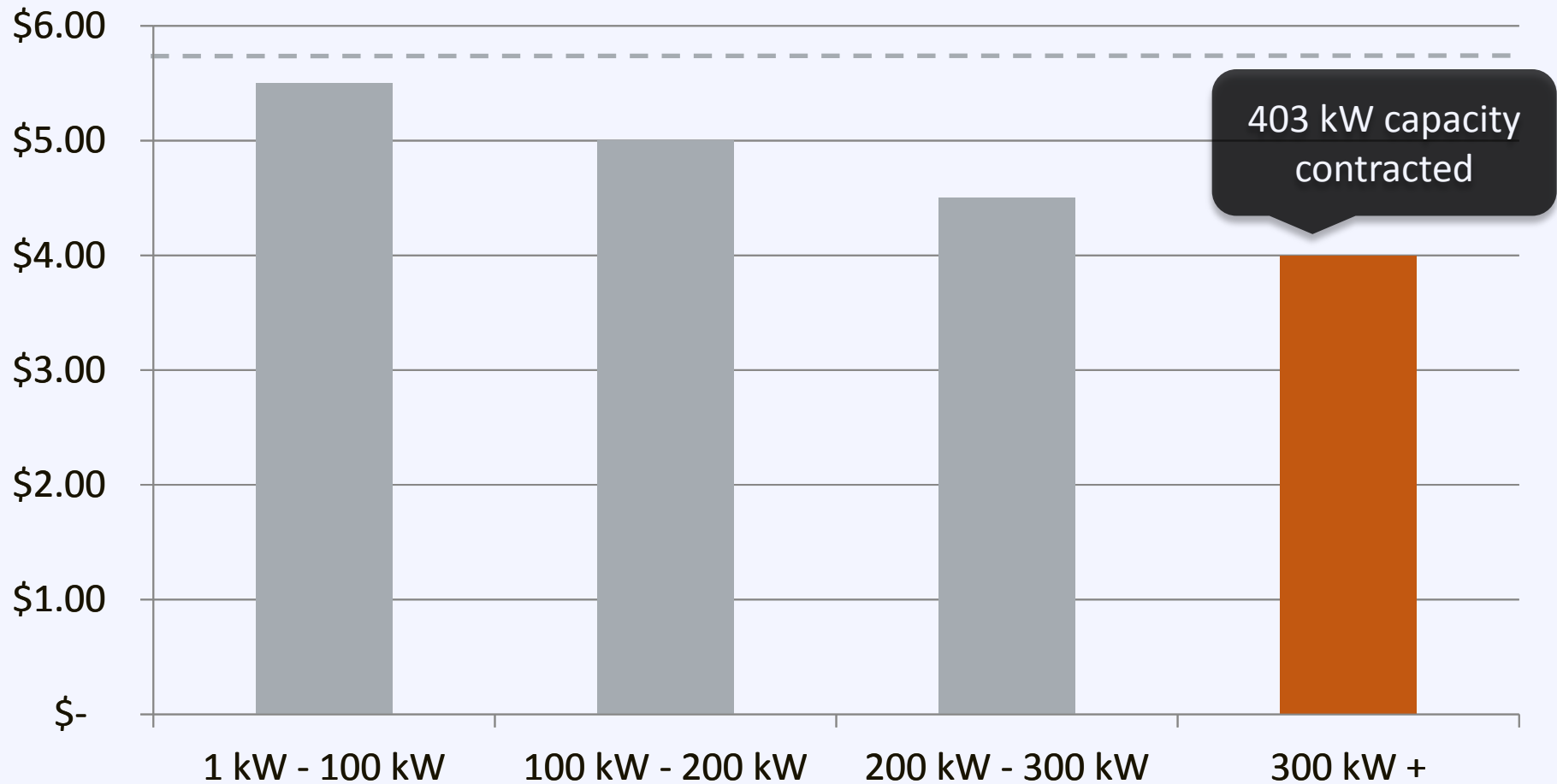


# Solarize: Case Study



# Group Purchasing

## Harvard Mass Group Purchasing Tiers



# Solarize: Case Study

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**75** new installations totaling 403 kW

**30% reduction** in installation costs

**575% increase** in residential installations

# Solarize: Lasting Impact

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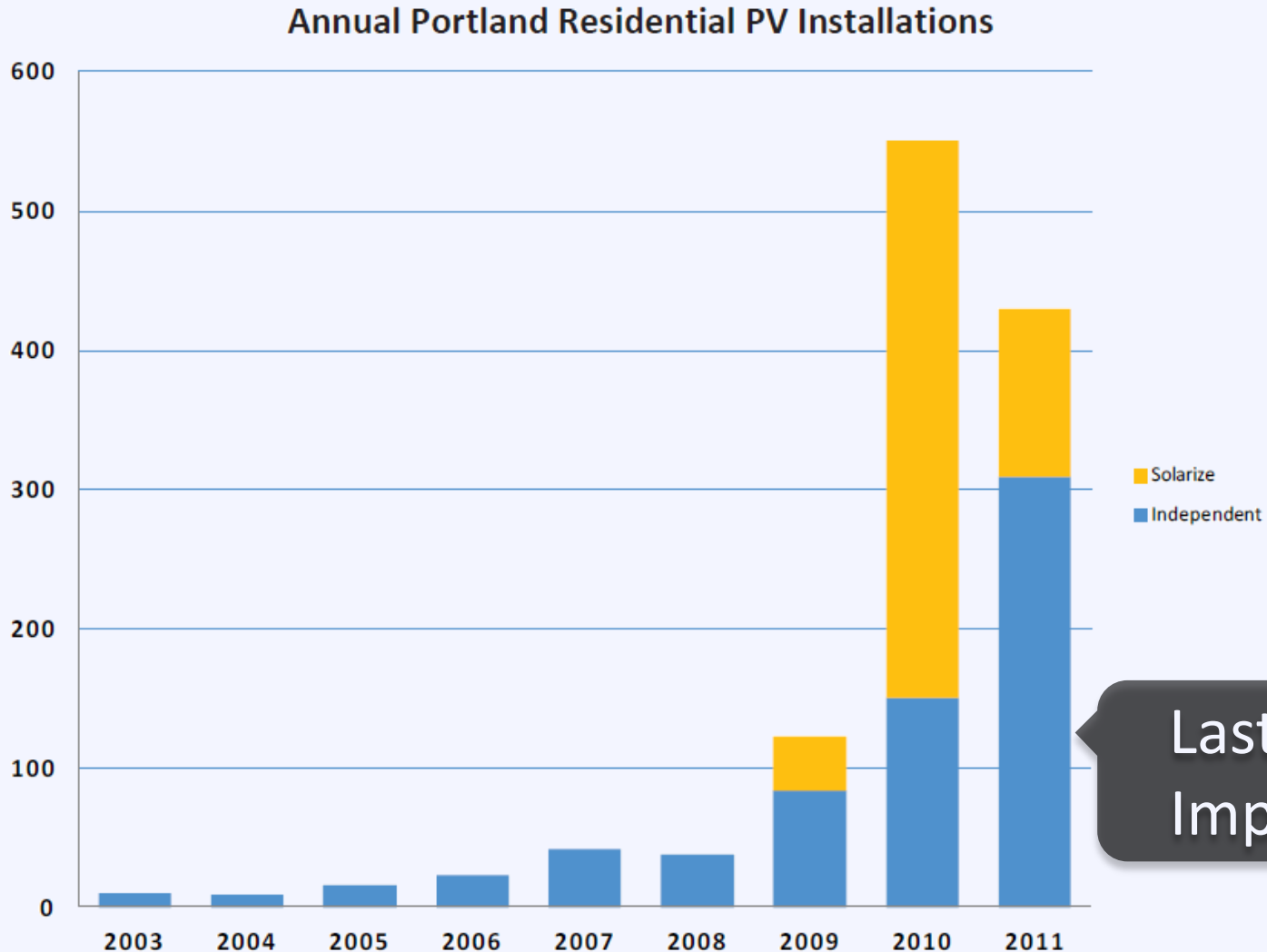
A household is

**0.78%** more likely to adopt solar

*for*

each additional installation in their zip code

# Solarize: Lasting Impact



Lasting Impact



# Other Program Features

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## Participant Financing

- Municipal Loans (Solarize Pendleton)
- Installer Financing Product (Solar Beaverton)
- Bank or Credit Union Loans (Solarize Portland)

## Program Funding

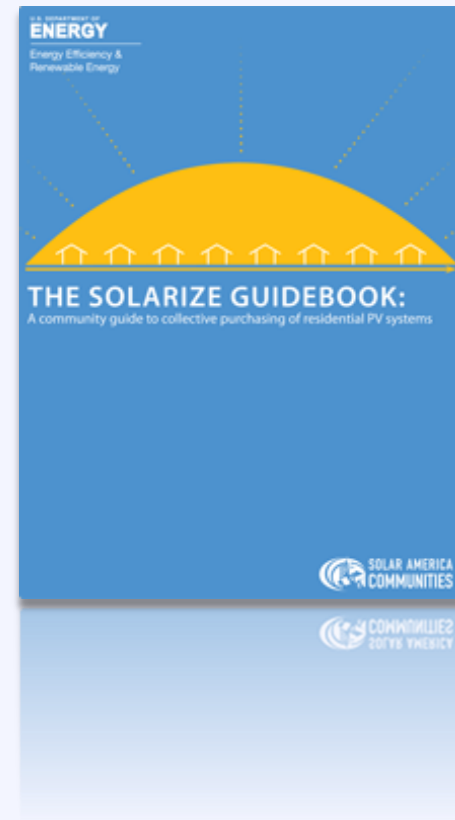
- Per-Watt Fees (e.g., \$0.25/watt)
- Leverage Contractor Marketing
- Grants/ Volunteers

# Solarize: Resources

## Resource The Solarize Guidebook

A roadmap for project planners and solar advocates who want to create their own successful Solarize campaigns.

[www.nrel.gov](http://www.nrel.gov)



# Community Power Network/VA SUN

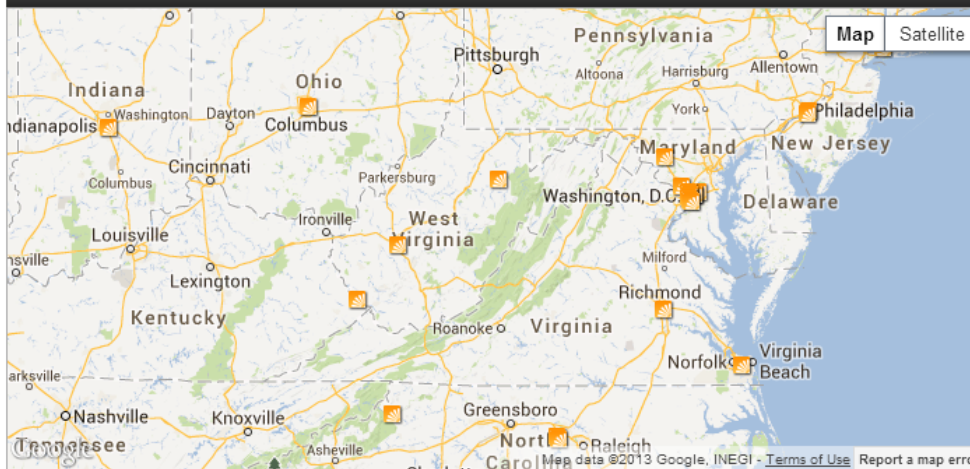


SIGN UP FOR OUR E-NEWSLETTER

CONNECT PLAN A PROJECT LEARN MORE TAKE ACTION BLOG NEWS ABOUT

LOGIN

## Working Together for Local, Renewable Energy



**+ JOIN**

ADD YOUR GROUP TO THE NETWORK

**CONNECT**

GET TO KNOW OTHER GROUPS

**START A GROUP**

LEARN HOW TO START YOUR OWN

**WIKI**  
Learn & Share

**FACEBOOK**  
Connect with us

Follow Us

Follow Us!

## GROUPS IN ACTION



Search

## Latest News

- ➔ Giving preference to offshore wind projects with direct community benefits: A new model for encouraging utility-scale community-based renewable energy projects

# SolarOPs Technical Assistance

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- SolarOPs offers complimentary technical assistance for local governments to help them overcome soft cost barriers and deploy solar in their city/county/municipality

# SolarOPs Technical Assistance

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## ▪ One on One Technical Assistance

- If a community has identified a specific need or soft cost barrier and is looking for guidance, SolarOPs may be able to provide assistance.
- This assistance may take the form of program or policy analysis, research support, a technical review of an RFP, market analysis, or assistance in designing a new solar incentive program.
- Examples of technical assistance:
  - Currently working with Asheville on a Solarize program

# Community Shared Solar



Community solar projects provides renters and homeowners without a feasible project the opportunity to invest in solar

# Community Shared Solar

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## Benefits

- Accessible for everyone
- Economies of scale

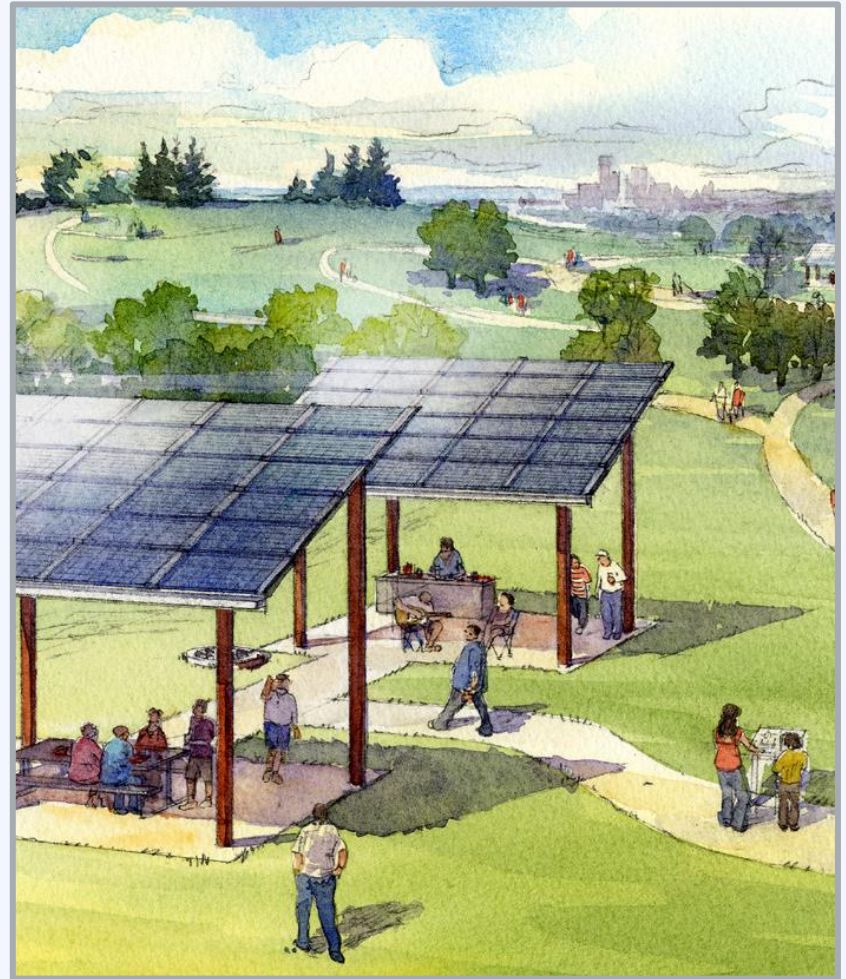
## Drawbacks

- Administrative challenge
- Tax credit issues
- Securities compliance

# Community Shared Solar

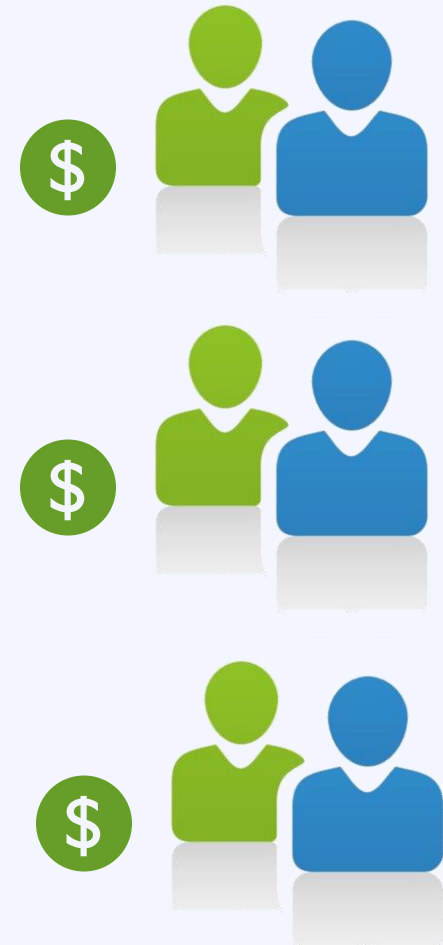
## Program Models:

- Utility Model
- SPE Model
- Nonprofit Model





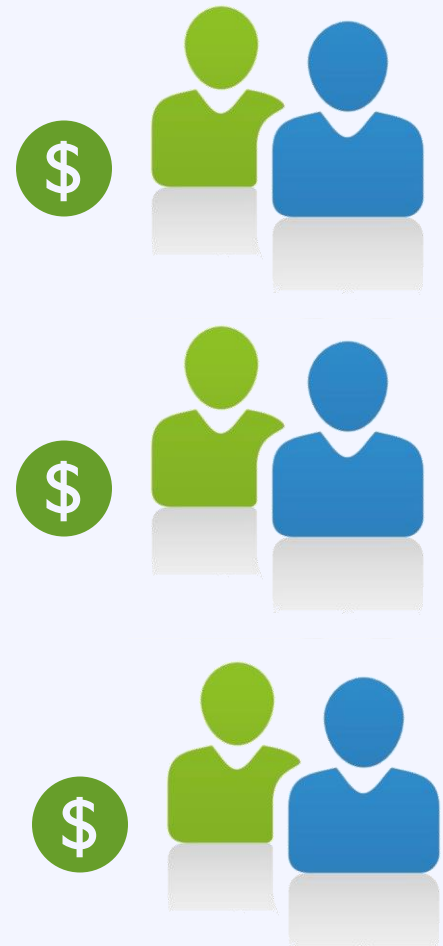
# Community: Utility Model



# Community: SPE Model



Solar Installation



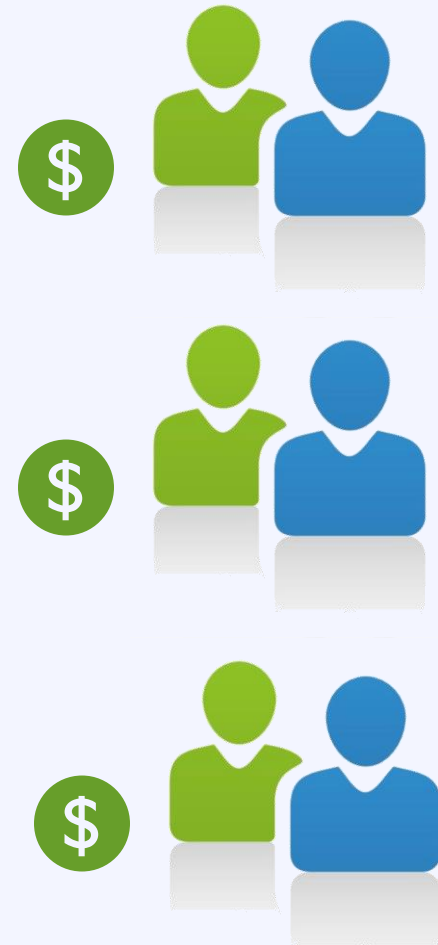
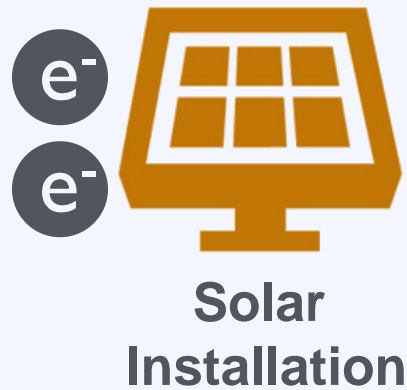
# Community: SPE Model



Solar Installation



# Community: Nonprofit Model



# Community: Nonprofit Model



Solar  
Installation

Tax  
Tax  
Tax



# Net Metering

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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

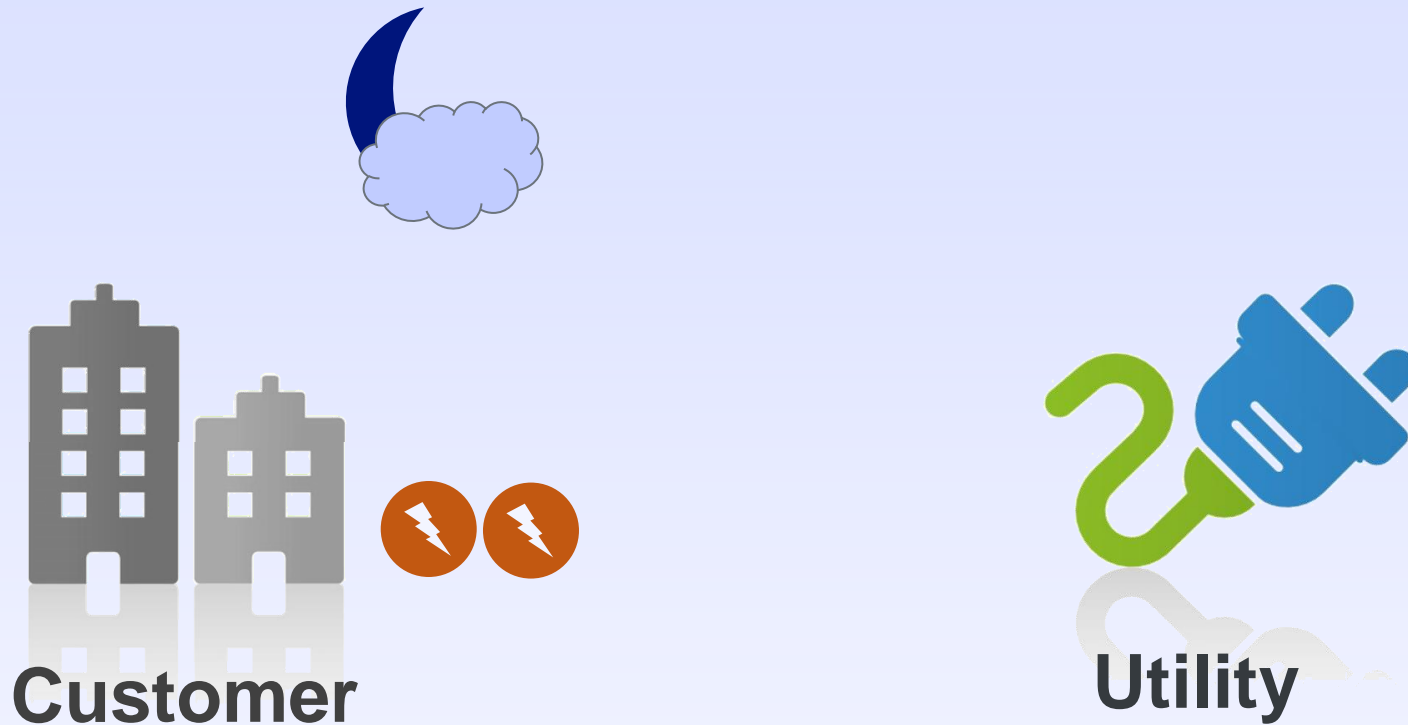
*Afternoon*





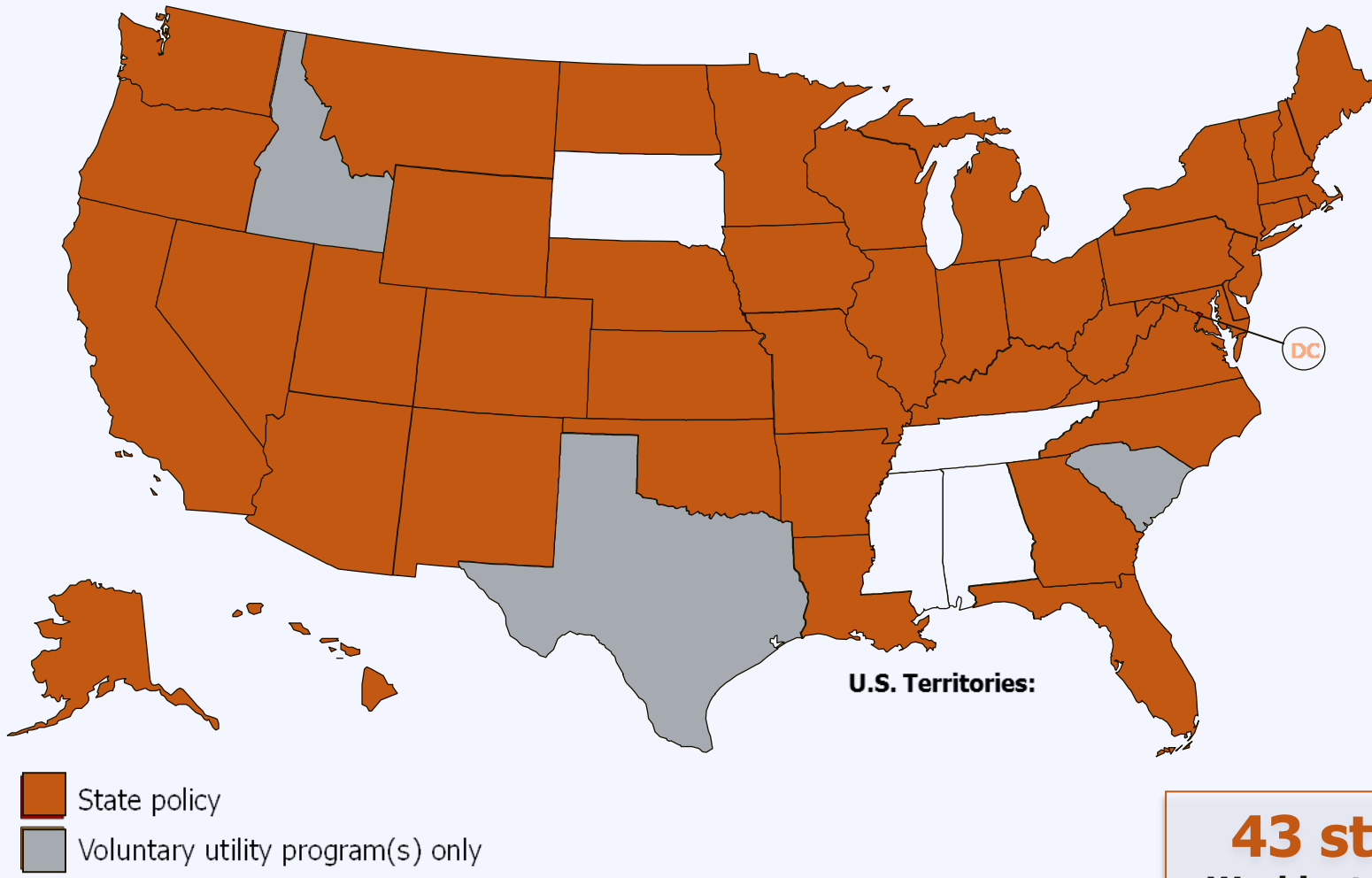
# Net Metering: Overview

*Night*



Solar covers 100% of the customer's load, even at night!

# Net Metering



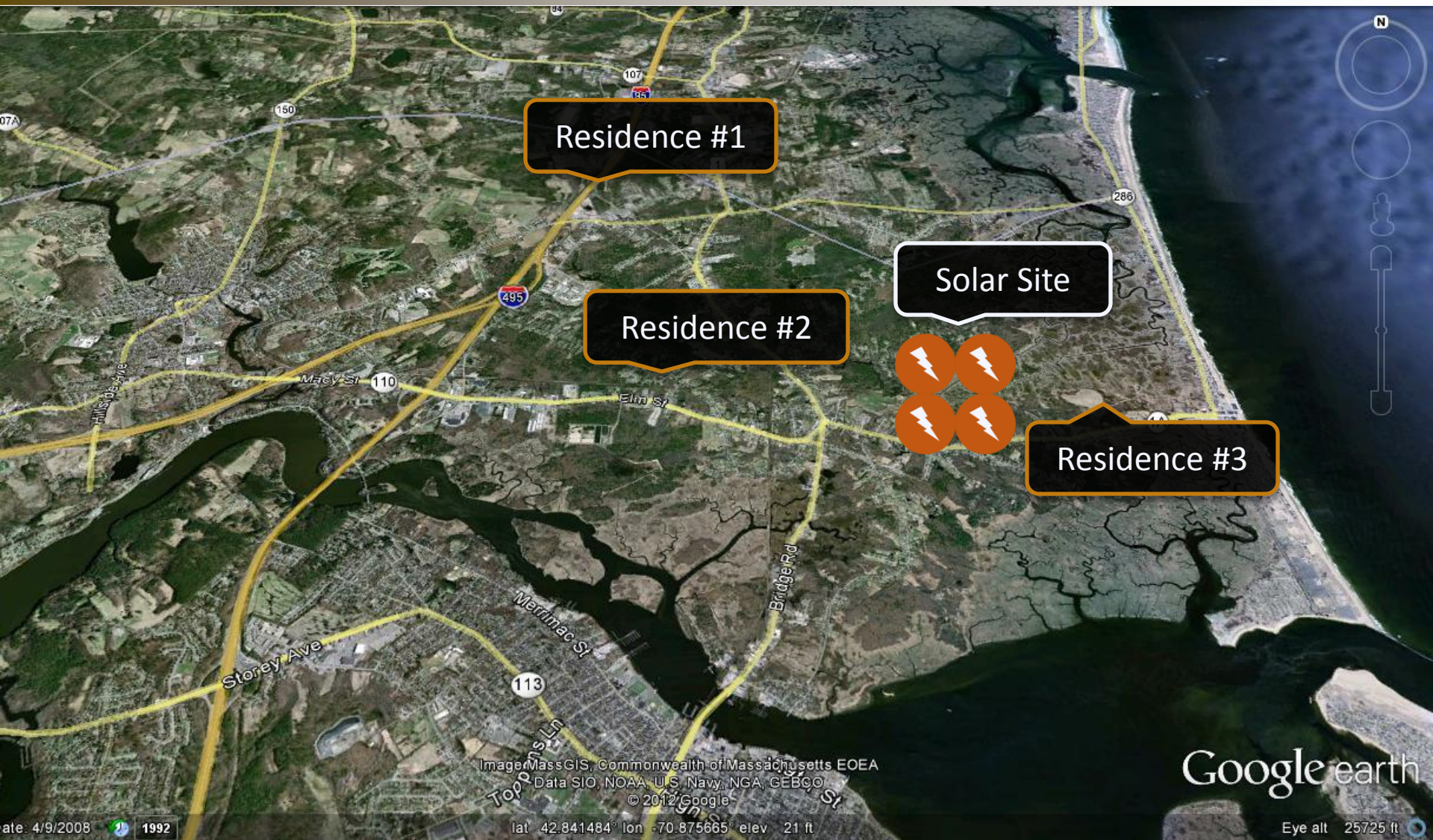
**43 states** +  
Washington DC and 4  
territories have Net  
Metering Policies

# Net Metering: Meter Aggregation

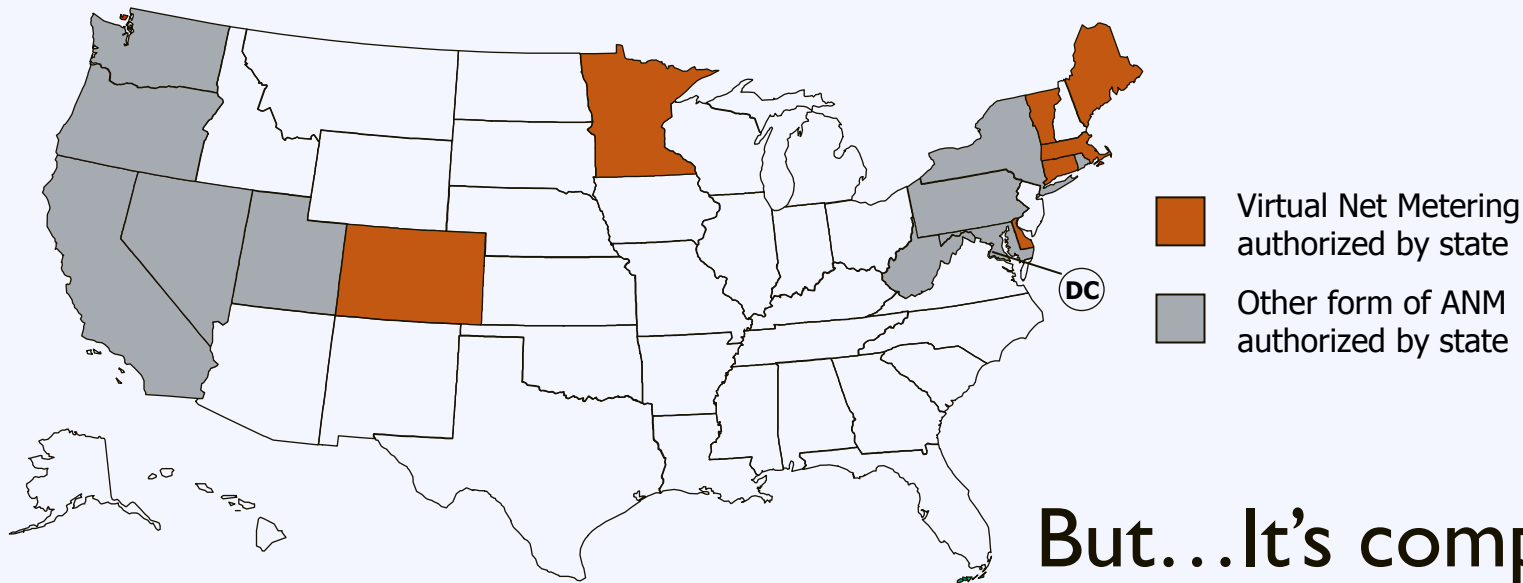
Allows for a *single generating system* to be used to offset electricity on *multiple meters*

		<i>Customer</i>	
		Single	Multiple
<i>Site</i>	Single	Basic	Tenant
	Multiple	Multi-Site	Virtual

# Net Metering: Virtual



# Net Metering: Virtual



But...It's complicated

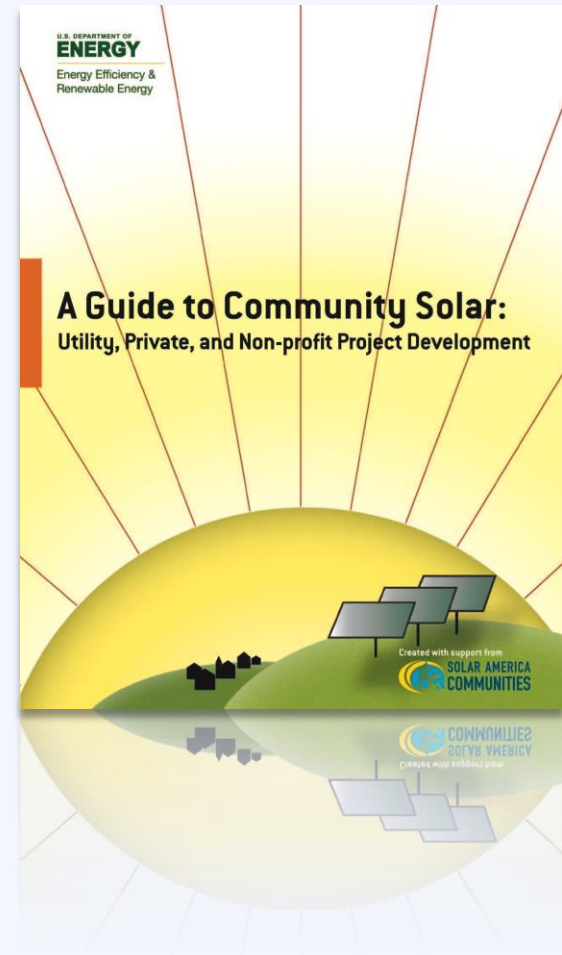
- System Eligibility
- Customer Eligibility
- Rate Class Requirements
- Customer Quantity/ Participation Limitations
- Geographic Proximity of Meters to System
- Load Requirements
- Credit Calculation/ Allocation

# Community: Resources

## Resource **A Guide to Community Solar**

A resource for community organizers and local government leaders who want to develop community solar projects.

[www.nrel.gov](http://www.nrel.gov)



# Aggregate Net Metering: Resources

## Resource

## Model Rules

Designed to assist stakeholders in developing local or statewide shared renewable energy programs that expand renewable energy access to more consumers

### Model Rules for Shared Renewable Energy Programs



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

# SolarOPs Technical Assistance

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- Design a community solar program for the City of Newark which can potentially be replicated within other DEMEC communities
- Design a community solar program for members of Plumas-Sierra Rural Electric Cooperative