

Solar Powering Your Community

Addressing Soft Costs and Barriers



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



Leaders at the Core of Better Communities



American Planning Association

Making Great Communities Happen



NARC

Building Regional Communities

National Association of Regional Councils



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

Complimentary Services



Technical
Resources



Regional
Workshops



One to One
Assistance



Strategy
Session

Complimentary Services



Technical Resources

Helping Policymakers Understand Best Practices:

- Case Studies
- Fact Sheets
- How-to Guides
- Toolkits

www.solaroutreach.org



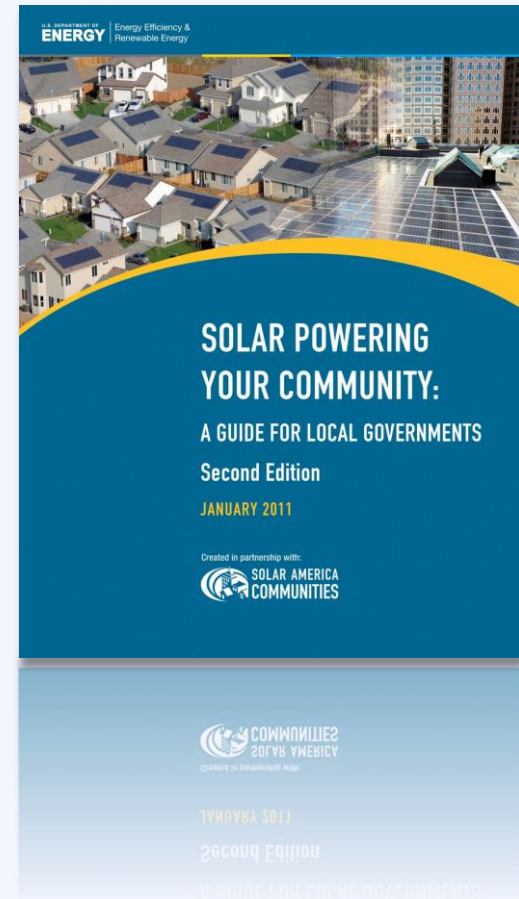
One to One Assistance

Technical Resources

Resource **Solar Powering Your Community Guide**

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

www.energy.gov



Complimentary Services

Quickly get up to speed on key solar policy issues:

- Solar 101
- Planning for Solar
- Implementing an Ordinance
- Streamlining Solar Permits
- Growing your Market



Regional Workshops



Strategy Session

Complimentary Services



Technical
Resources



Regional
Workshops

Develop an
implementation
strategy for smart
solar policy



Strategy
Session

Complimentary Services



Technical
Resources



Regional
Workshops



One to One
Assistance

Receive
customized
technical support
on implementation
of smart solar policy

After This Session

Talk to Us!

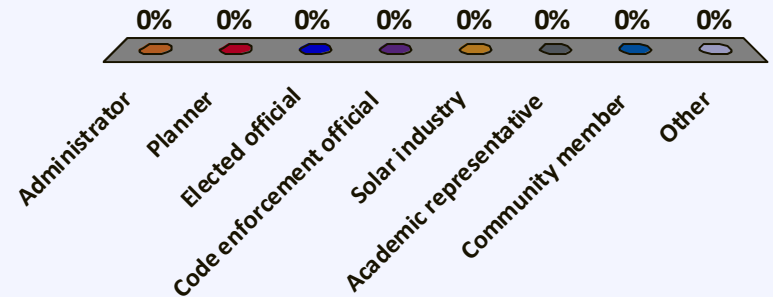
Sign up for a 20 minute consultation to learn more about our **free** services

See **Riana Ackley** to sign up.

**We want to get to know you
better...**

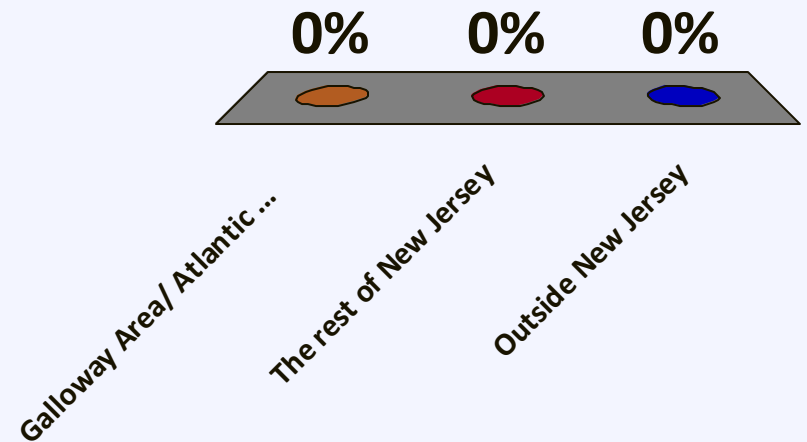
Who are you?

- A. Administrator
- B. Planner
- C. Elected official
- D. Code enforcement official
- E. Solar industry
- F. Academic representative
- G. Community member
- H. Other



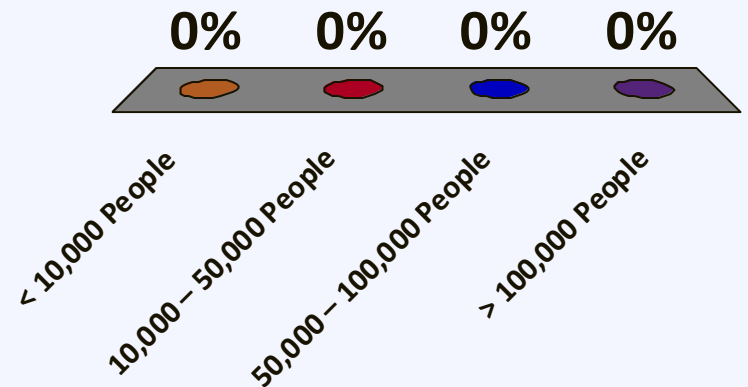
Where are you coming from?

- A. Galloway Area/ Atlantic County
- B. The rest of New Jersey
- C. Outside New Jersey



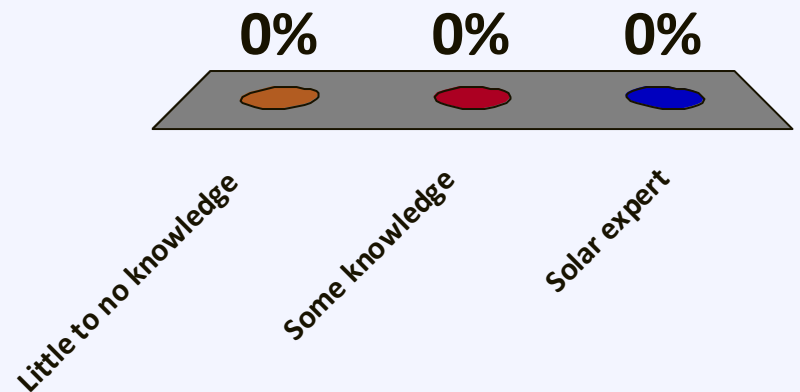
What size is your community?

- A. < 10,000 People
- B. 10,000 – 50,000 People
- C. 50,000 – 100,000 People
- D. > 100,000 People



How familiar are you with solar?

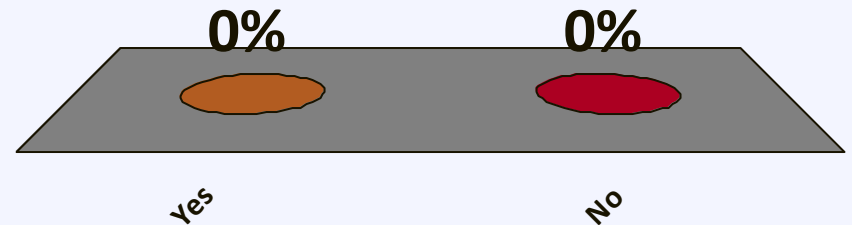
- A. Little to no knowledge
- B. Some knowledge
- C. Solar expert



Do you have solar on your home?

A. Yes

B. No



Solar Development in the US

As of Q1 2015, the US solar industry
has installed a cumulative total of

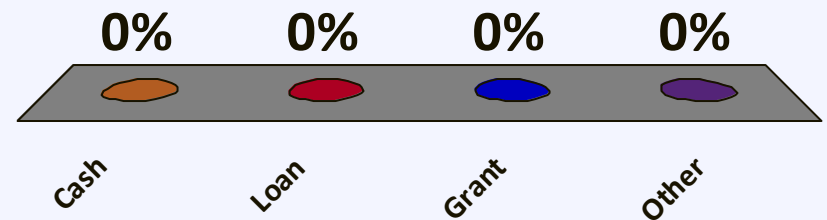
692,000 solar installations

of which

93% are residential projects

If you do have solar on your home: **How did you finance it?**

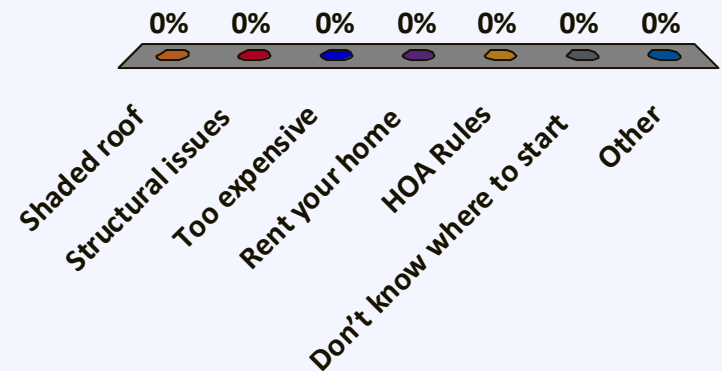
- A. Cash
- B. Loan
- C. Grant
- D. Other



If you don't have solar on your home:

Why not?

- A. Shaded roof
- B. Structural issues
- C. Too expensive
- D. Rent your home
- E. HOA Rules
- F. Don't know where to start
- G. Other

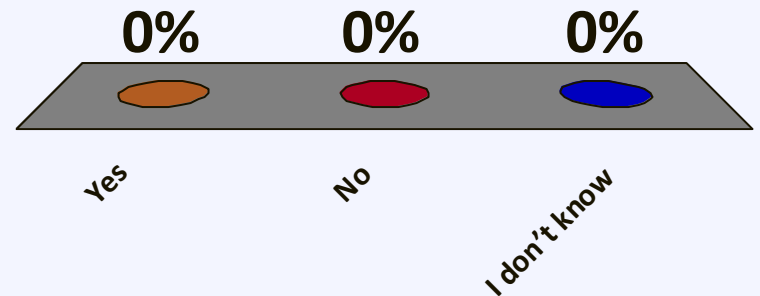


Does your local government have solar on public properties?

A. Yes

B. No

C. I don't know



Agenda

- 10:20 – 10:40 Putting Solar Energy on the Local Policy Agenda
- 10:40 – 11:00 State of the Local Solar Market
- 11:00 – 11:30 Federal, State, and Utility Policy Drivers
- 11:30 – 12:15 Local Speakers
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Solar Technologies



Solar Photovoltaic (PV)



Solar Hot Water



Concentrated Solar Power

Solar Technologies



Solar Photovoltaic (PV)

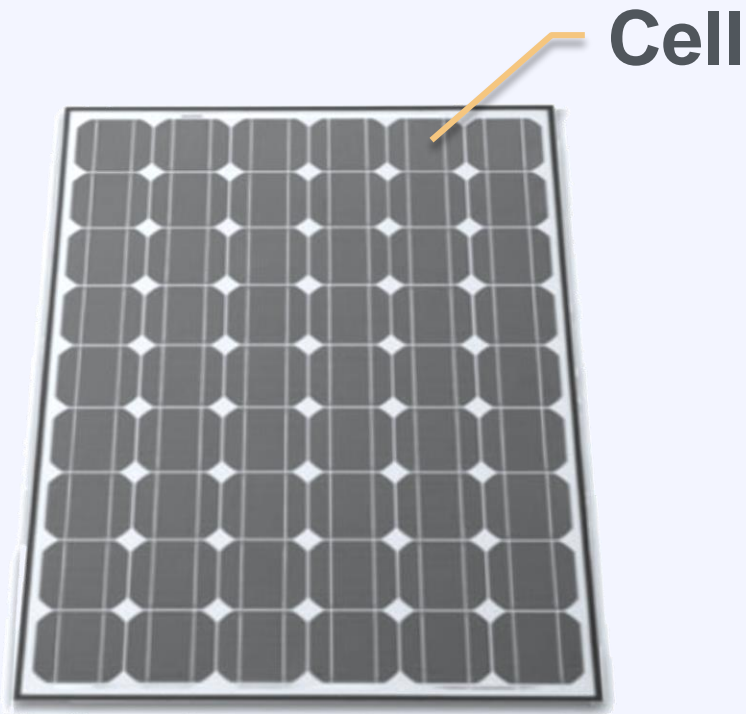


Solar Hot Water



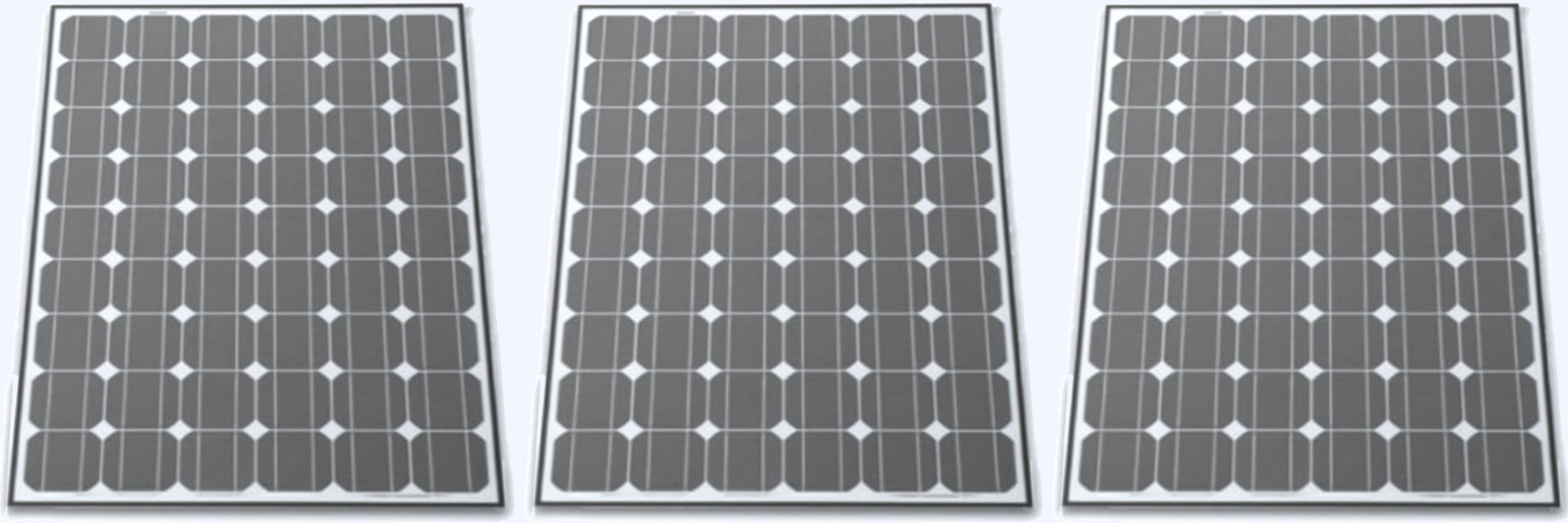
Concentrated Solar Power

Some Basic Terminology



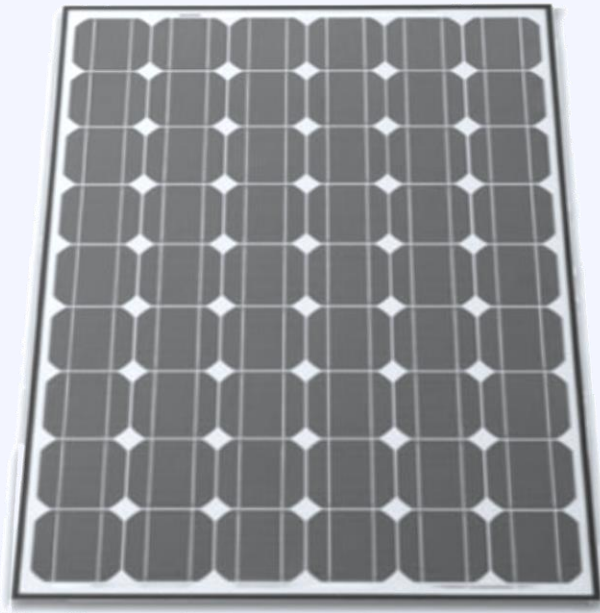
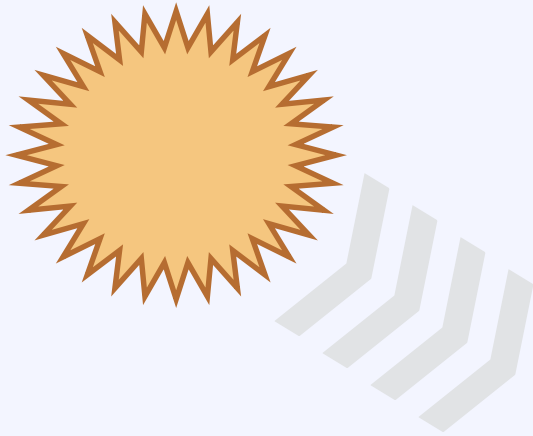
Panel / Module

Some Basic Terminology



Array

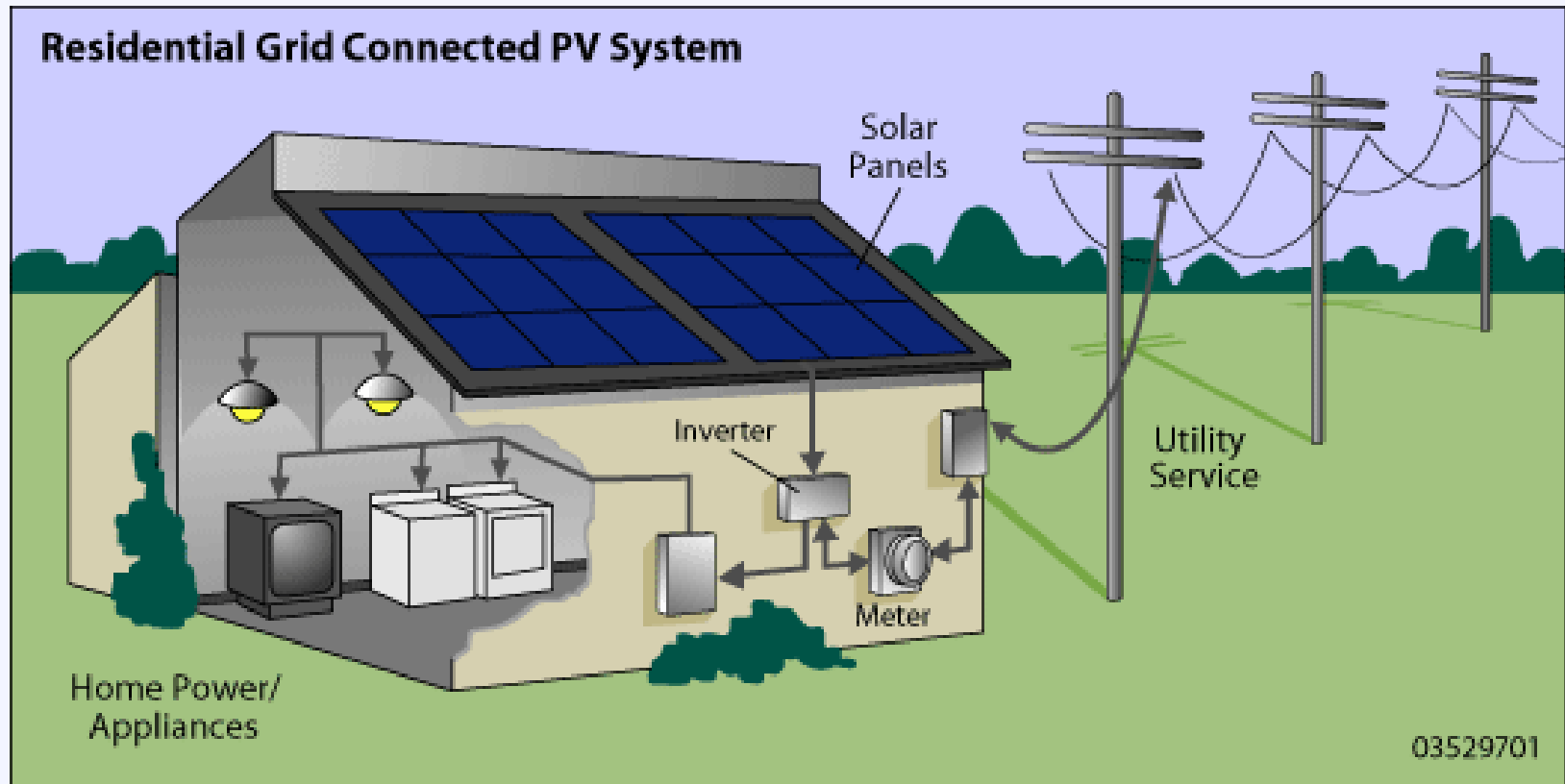
Some Basic Terminology



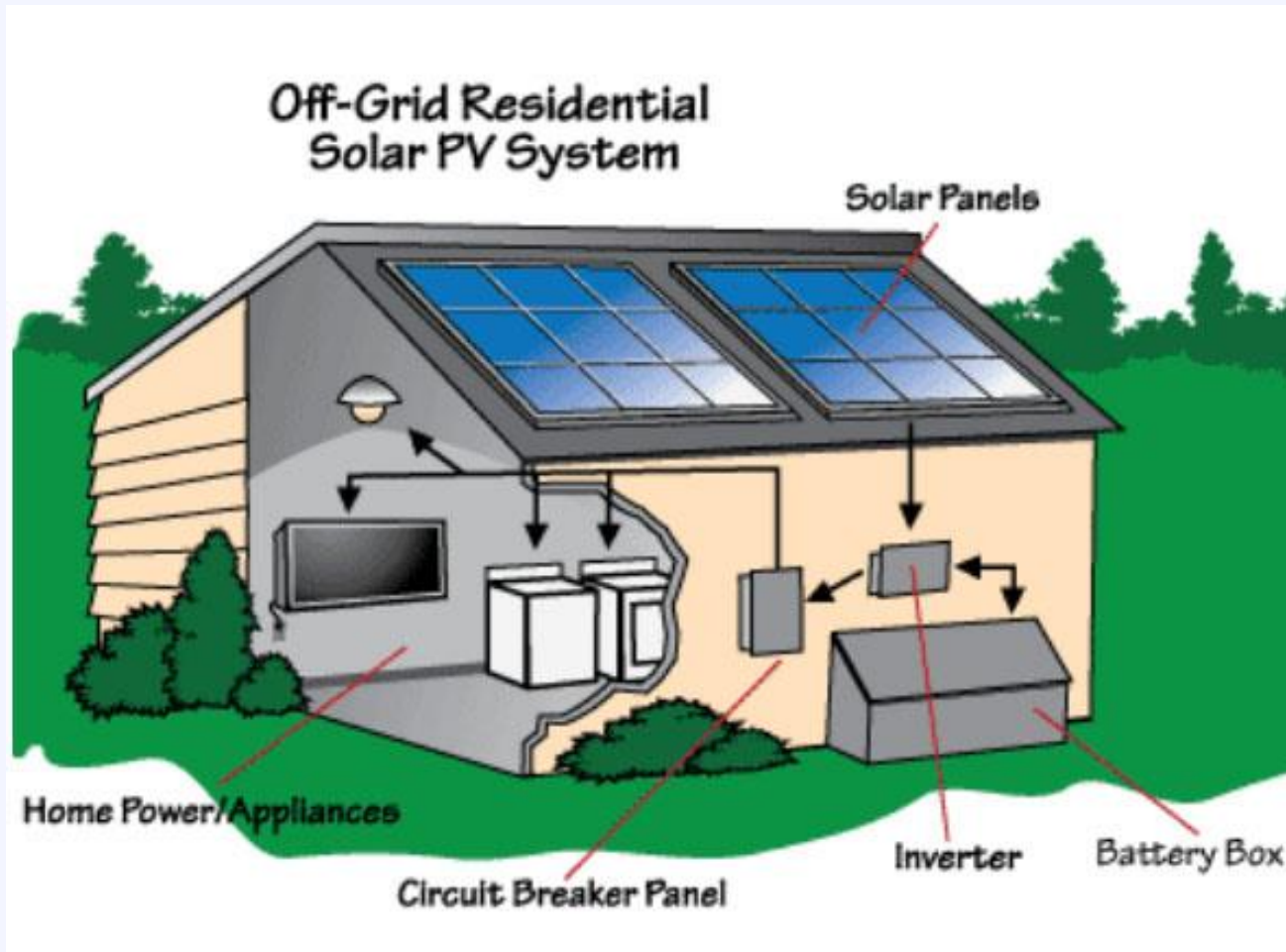
Production
Kilowatt-hour (kWh)

Capacity / Power
kilowatt (kW)

System Components



System Components – Off-Grid



Some Basic Terminology



Residence
5 kW



Factory
1 MW+




Office
50 – 500 kW



Utility
2 MW+

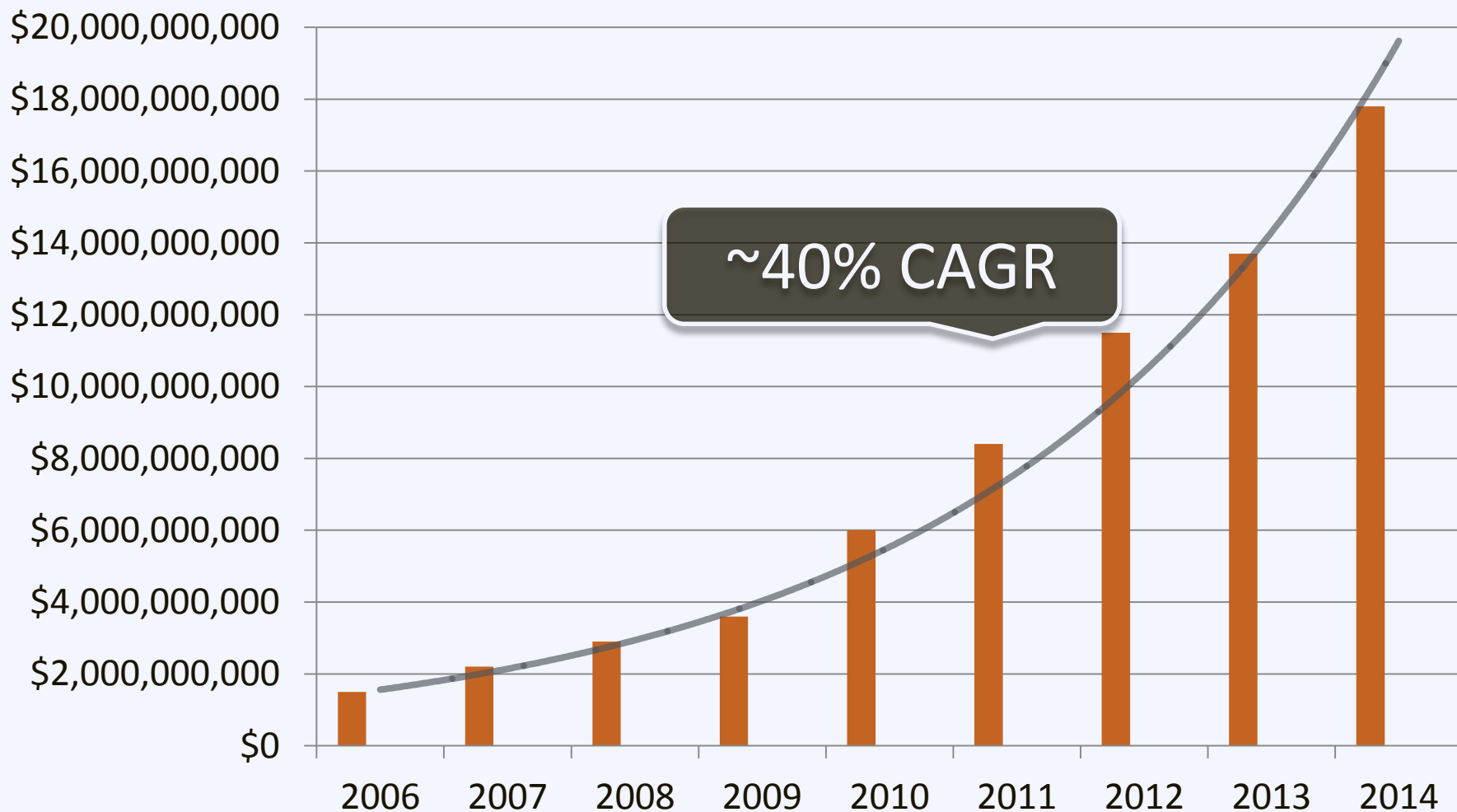
What are the top 3 benefits solar can bring to your community?

- A. Economic development & job creation
- B. Environmental & public health benefits
- C. Reduction and stabilization of energy costs
- D. Energy independence & resilience
- E. Value to the utility
- F. Community pride
- G. Other

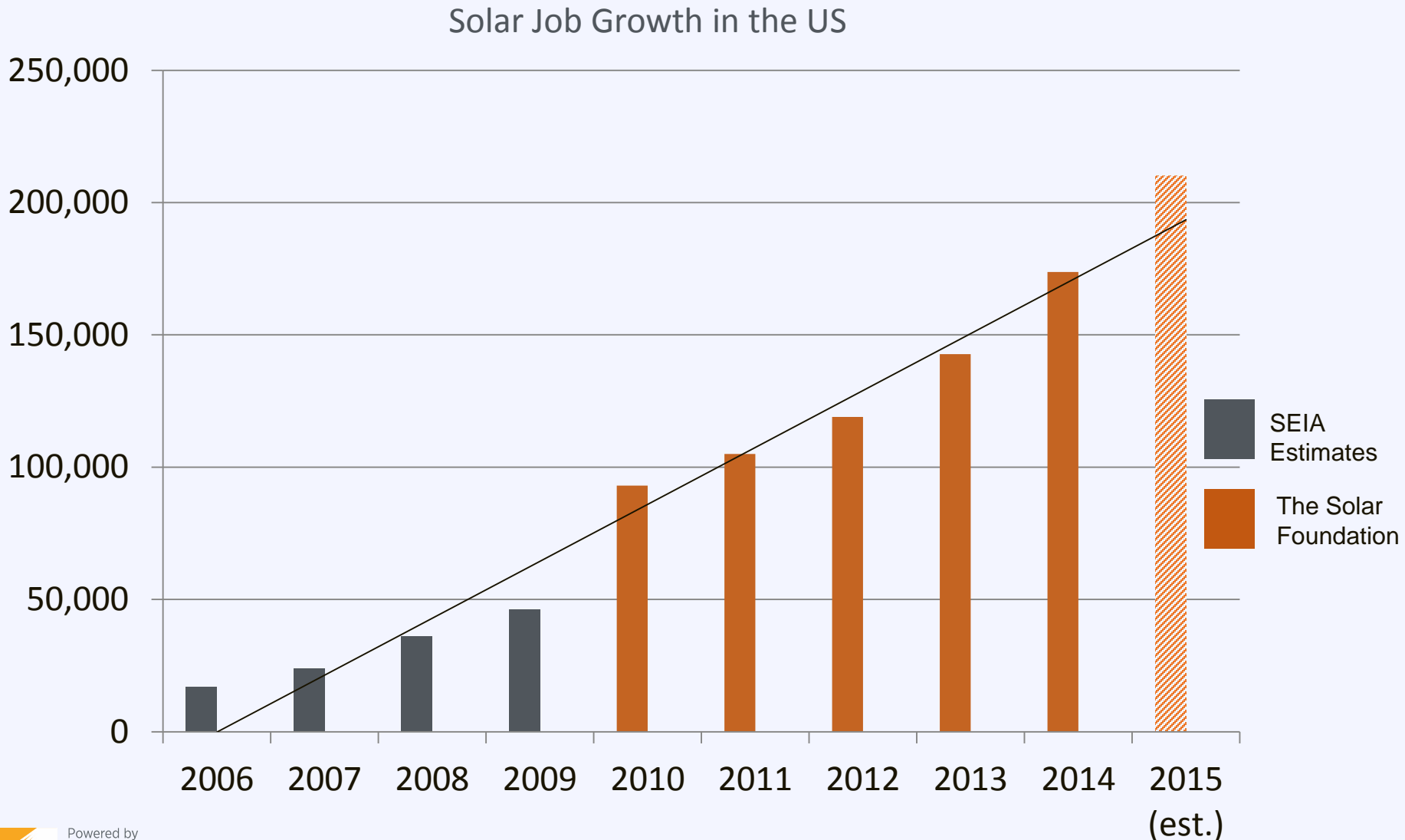


Economic development ...
Environmental & public ...
Reduction and stabilizati..
Energy independence & r...
Value to the utility
Community pride
Other

Benefits: Solar Economic Growth

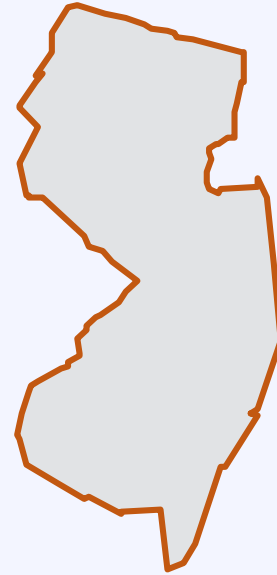


Benefits: Solar Job Growth



The Local Economic Opportunity

1 Megawatt of Residential
Solar Development in New
Jersey:



27 Jobs *and* \$4.2

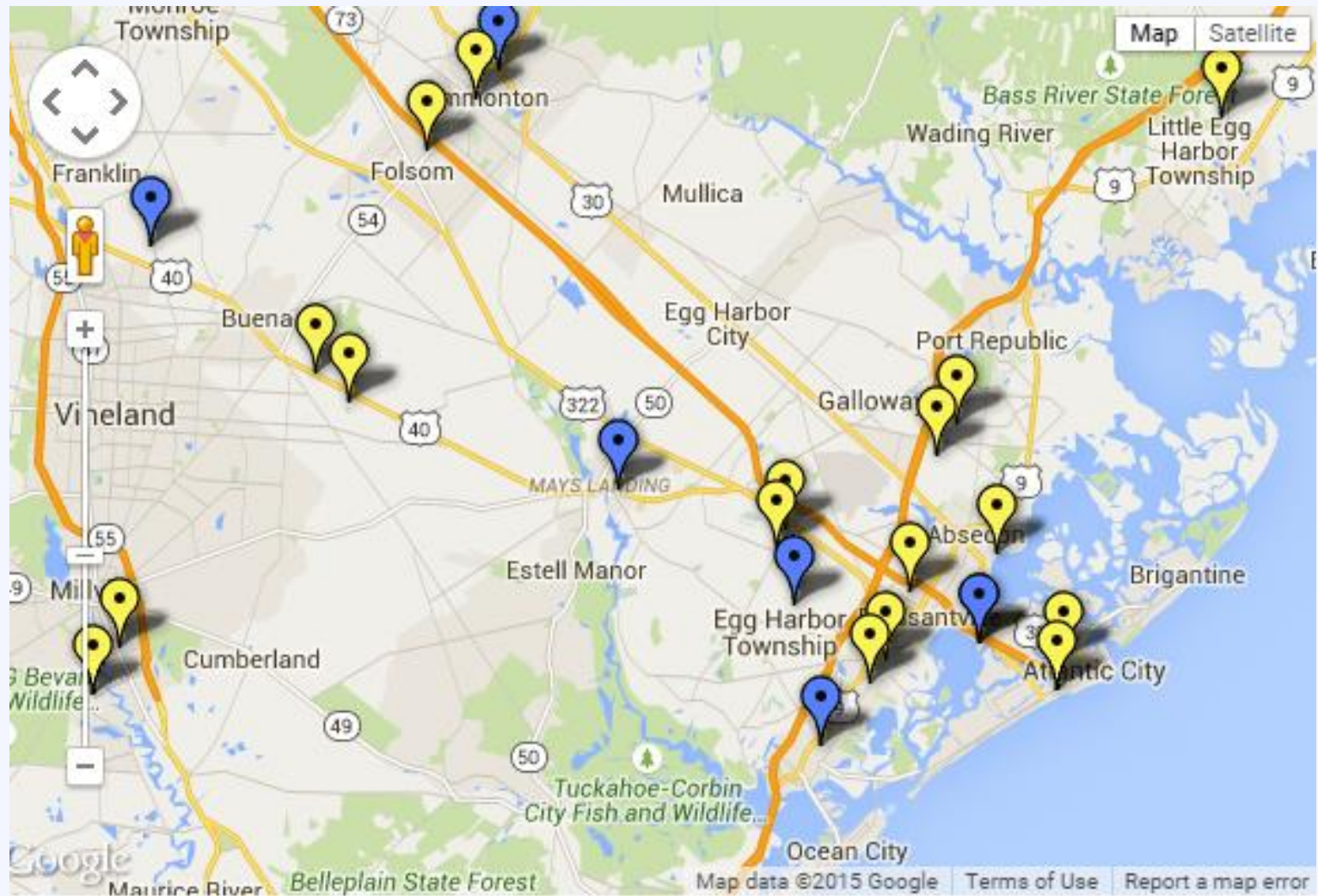
In economic output

Million

Economic Development in New Jersey

There are currently
495 solar companies
that employ
7,200 people

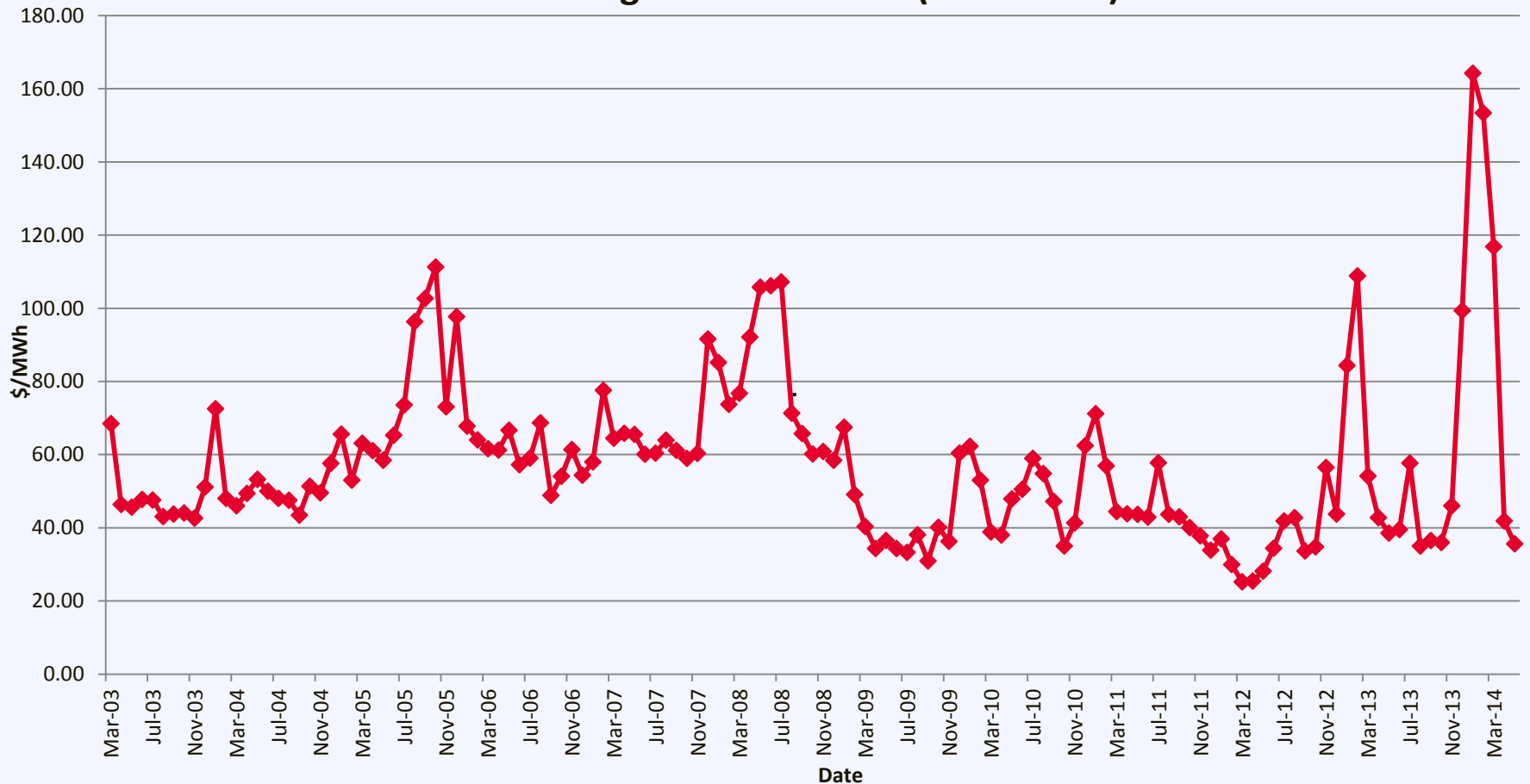
Economic Development in New Jersey



Key:  Manufacturer  Installer  Other

Benefit: Stabilize Energy Prices

Historical Avg Real-Time LMP (NEMABOS)

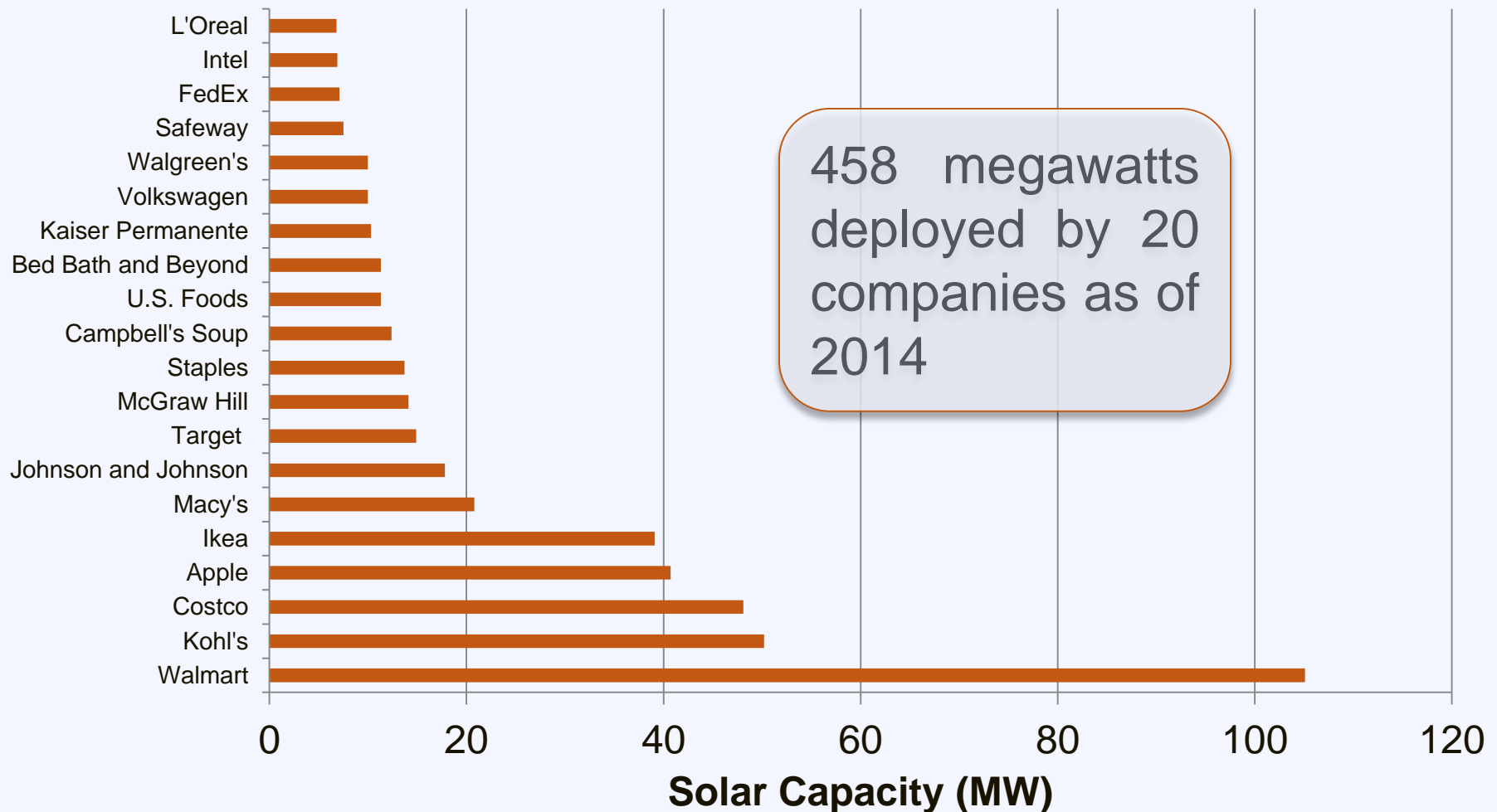


Smart Investment for Homeowners

*A typical residential solar system
increases a home's property value by
an average of \$11,000*

Smart Investment for Businesses

Top 20 Companies by Solar Capacity



Smart Investment for Governments



Smart Investment for Schools

Current:



×

3,752



=

\$77.8m

Potential:



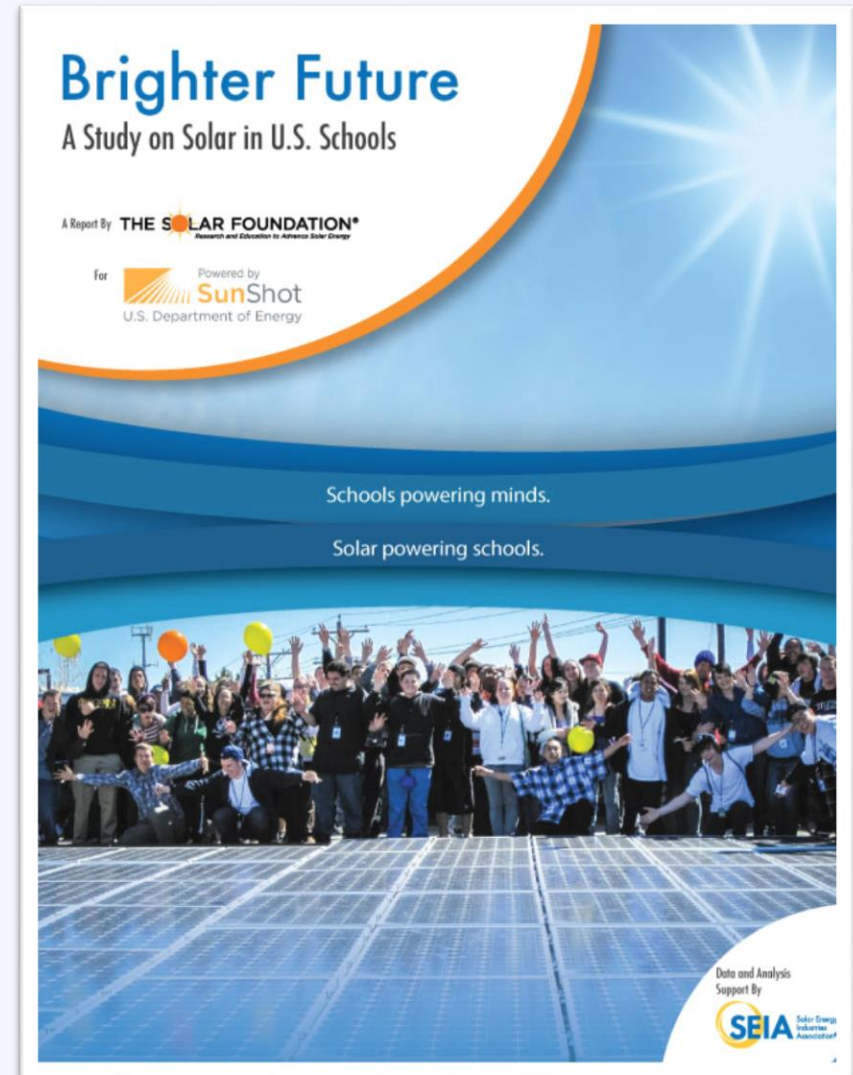
×

40,000 –
72,000



=

\$800m

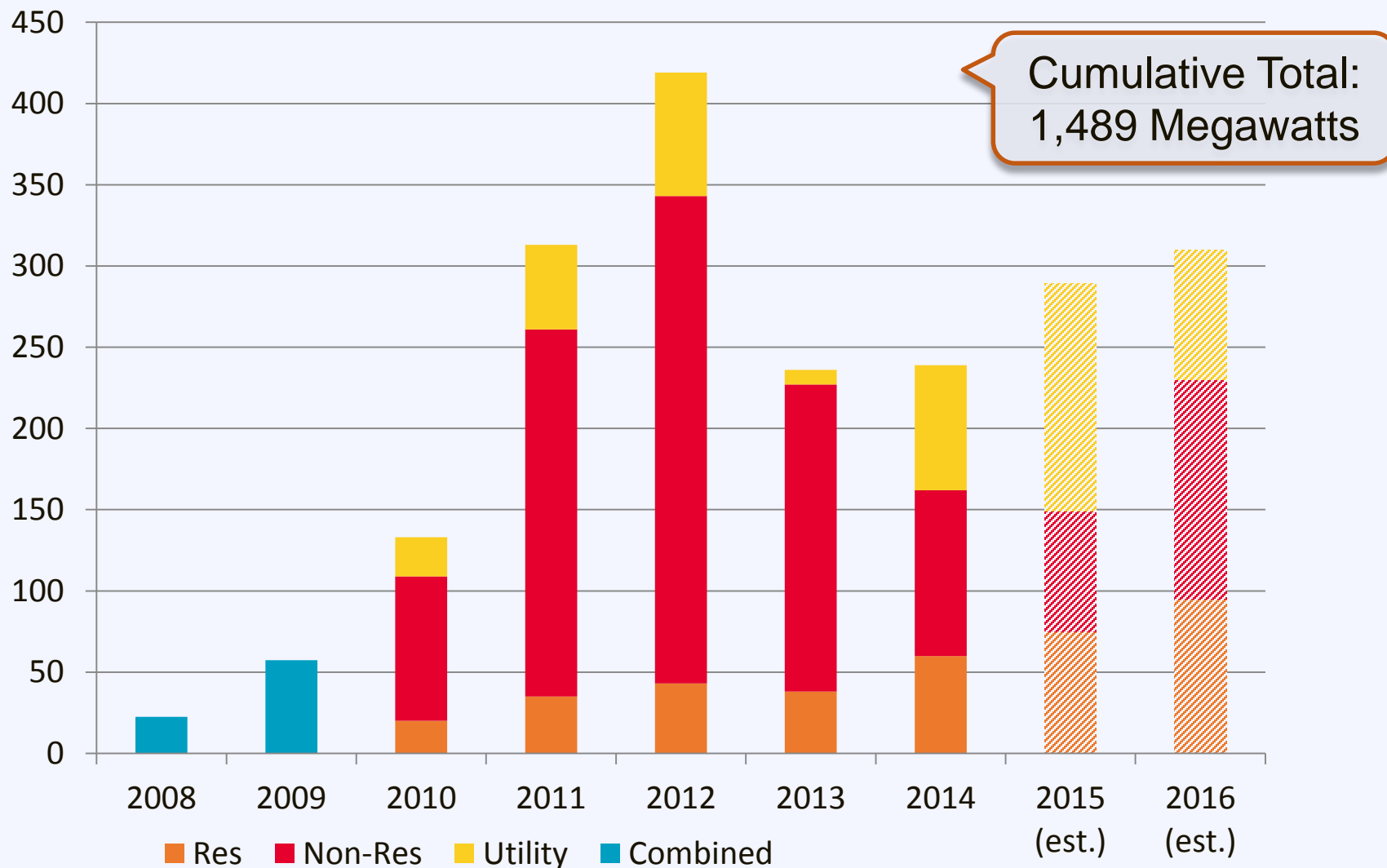


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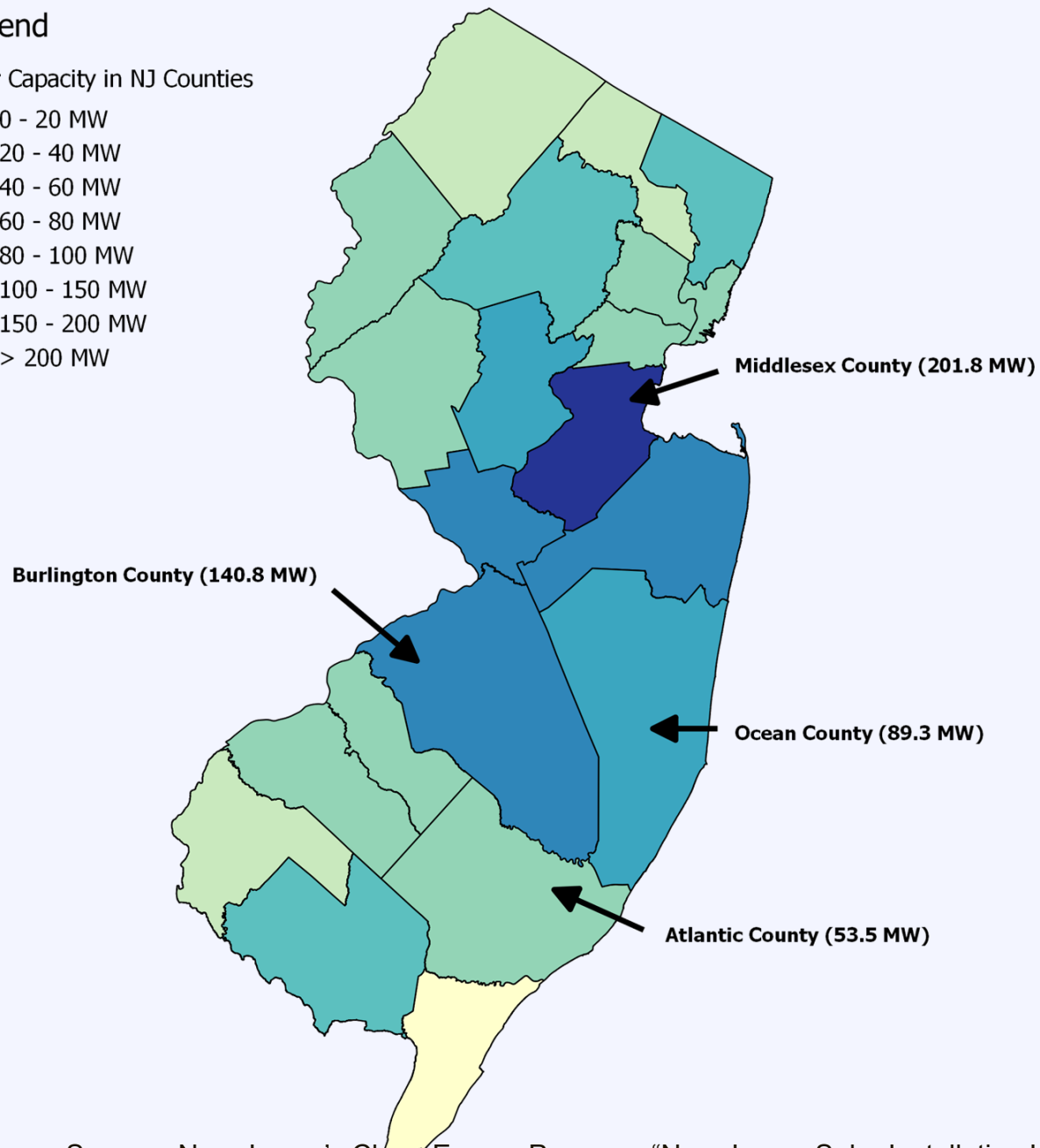
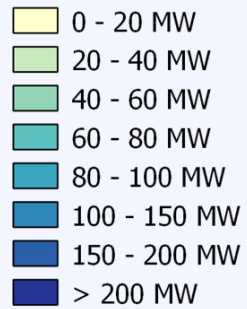
New Jersey Solar Market

Annual Solar PV Capacity Additions



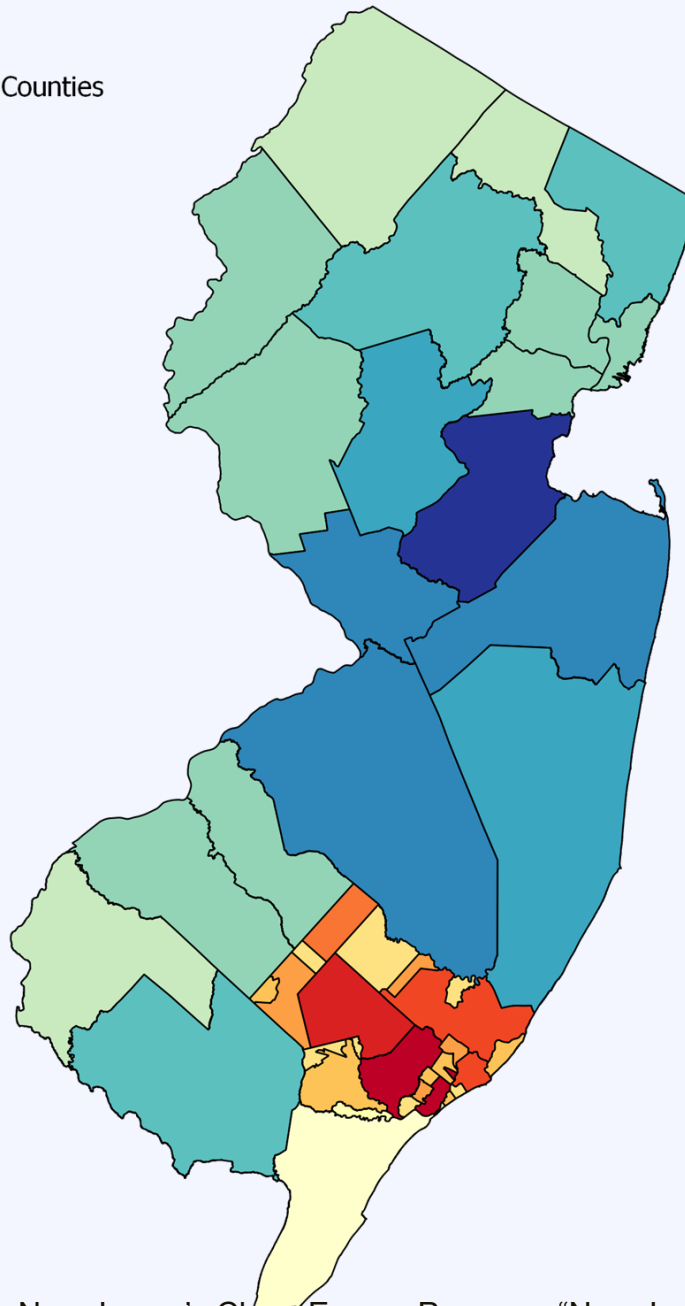
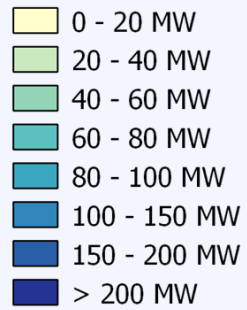
Legend

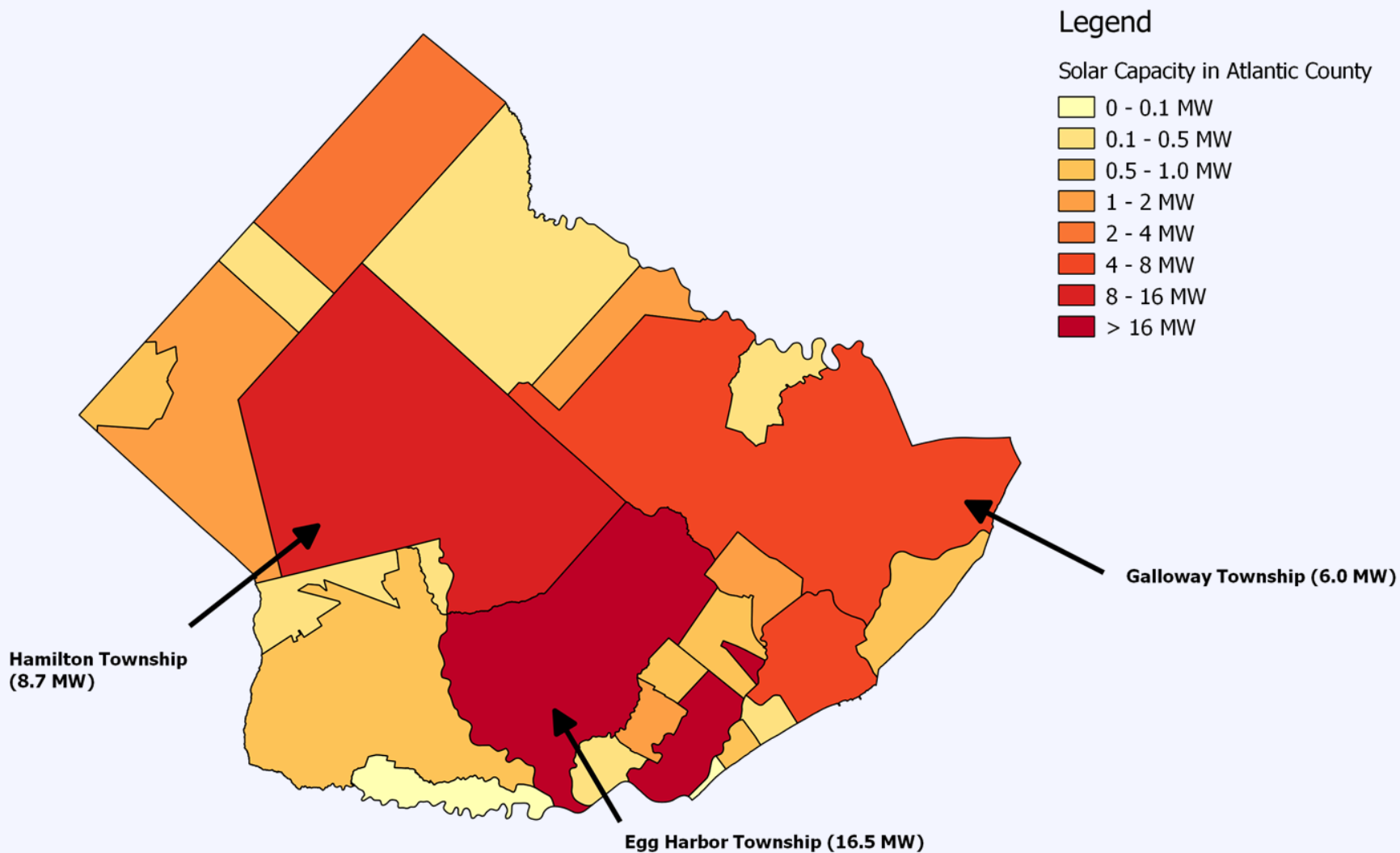
Solar Capacity in NJ Counties



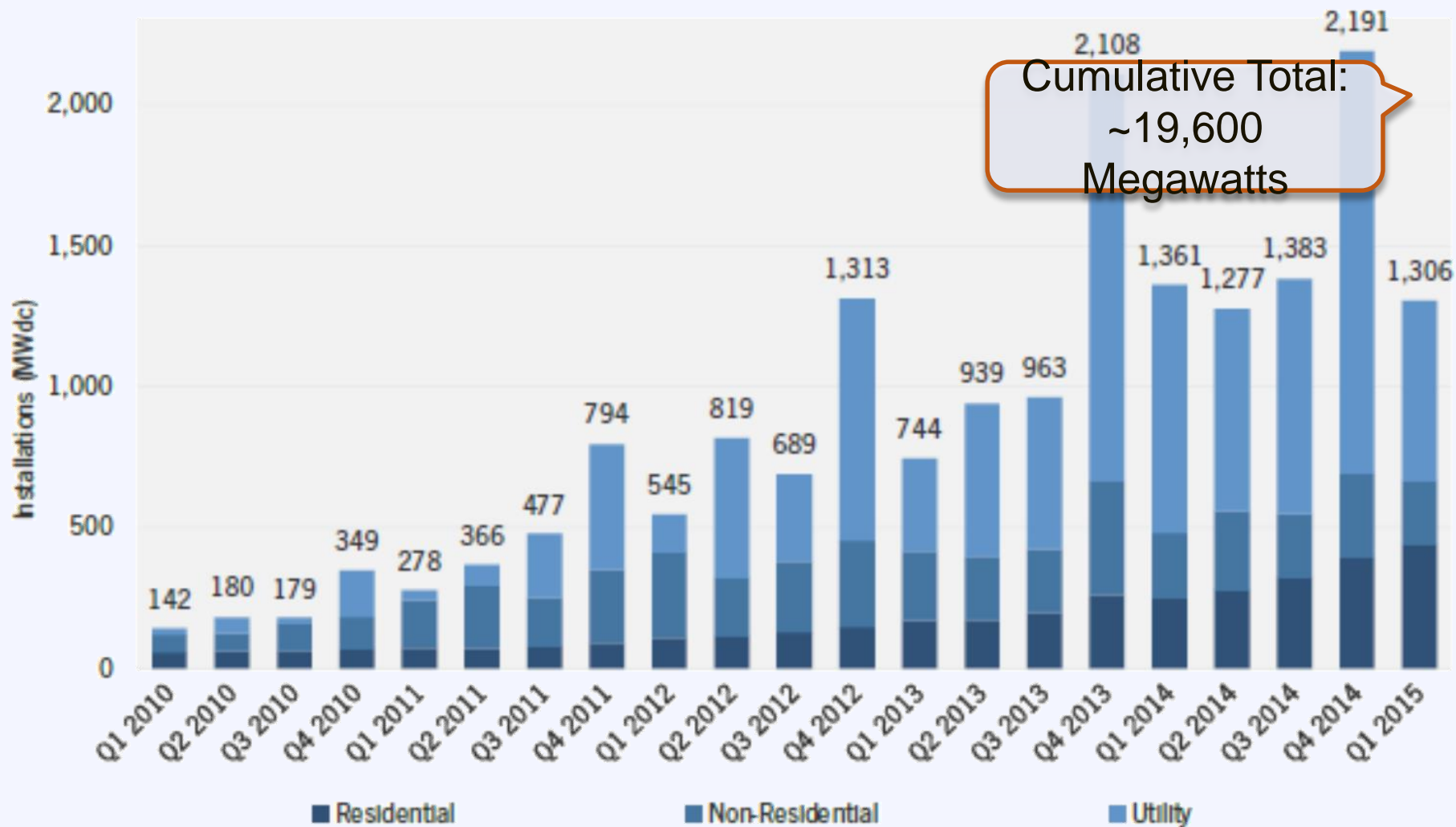
Legend

Solar Capacity in NJ Counties



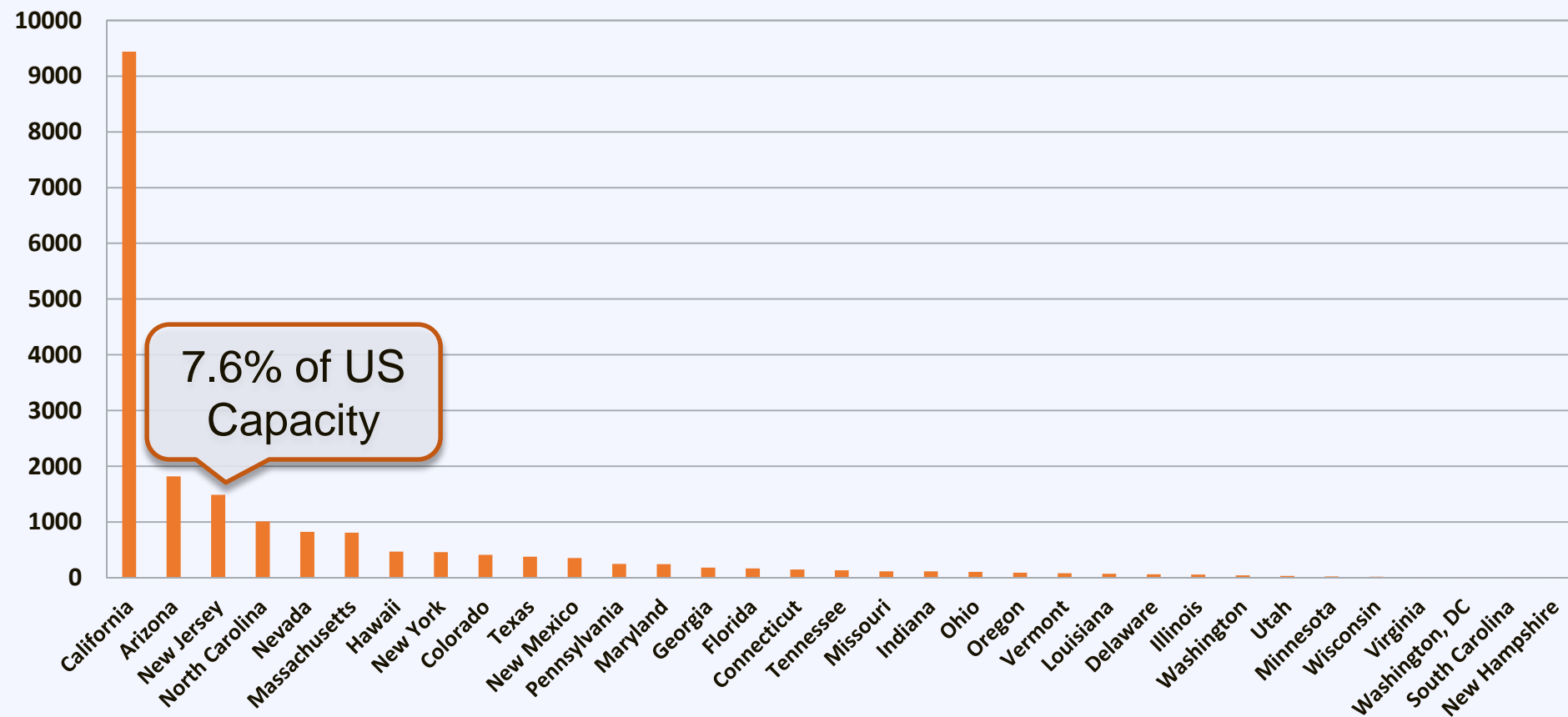


US Solar Market



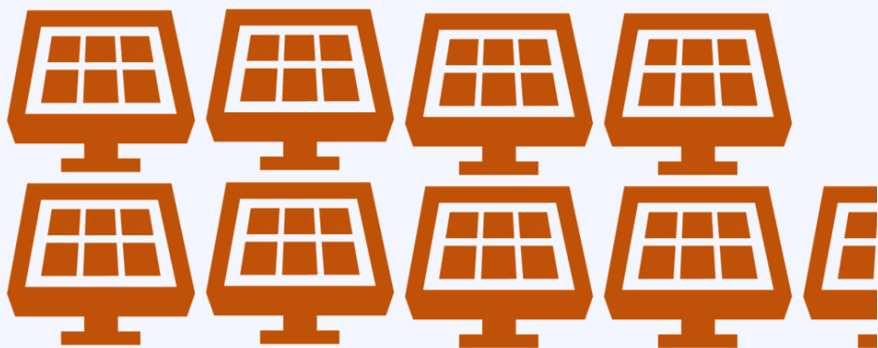
US Solar Market

Cumulative Installed PV Capacity for Select Solar States (MW) Q1 2015



New Jersey Solar Market

New Jersey



167

*watts per
person*

US

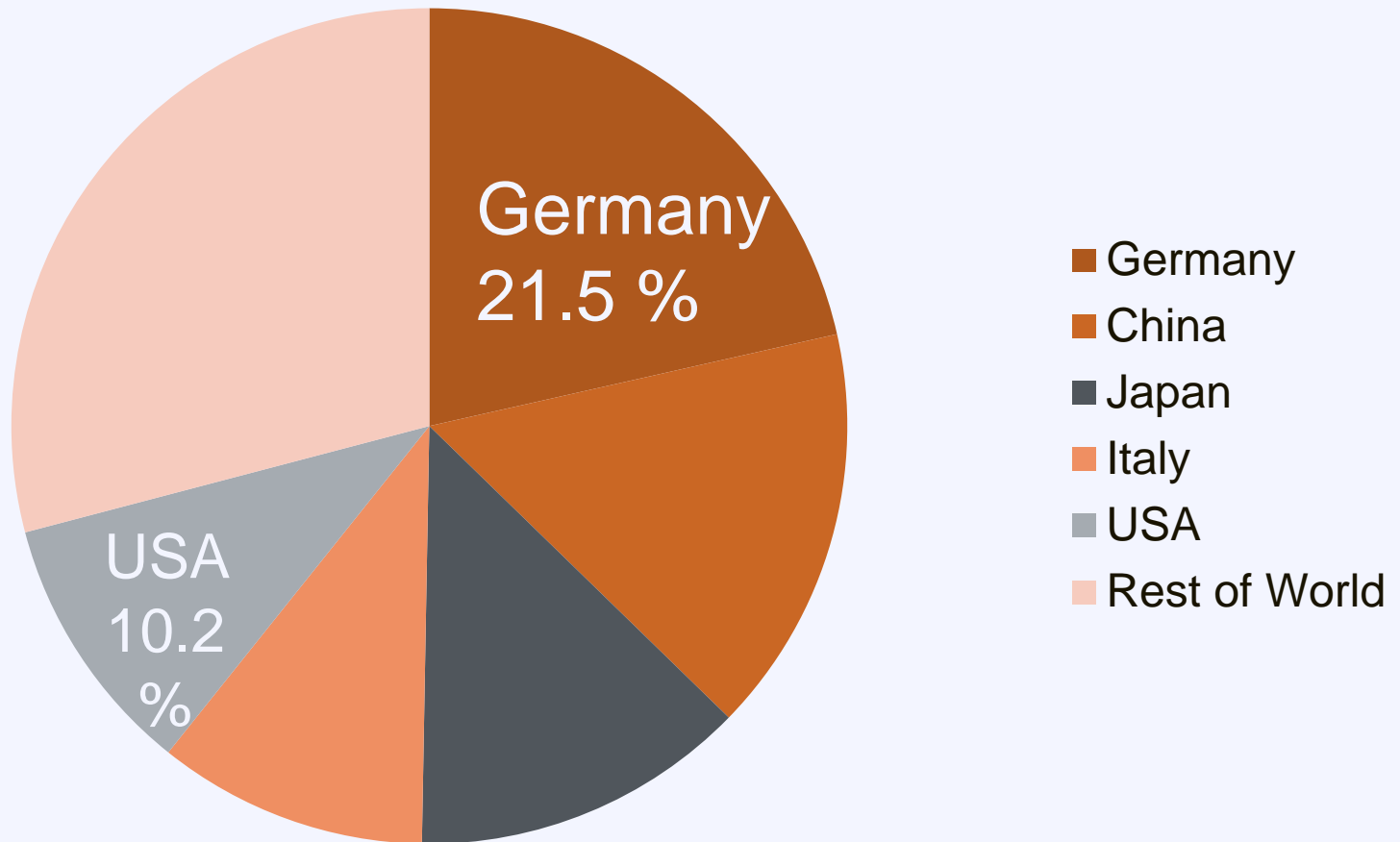


61

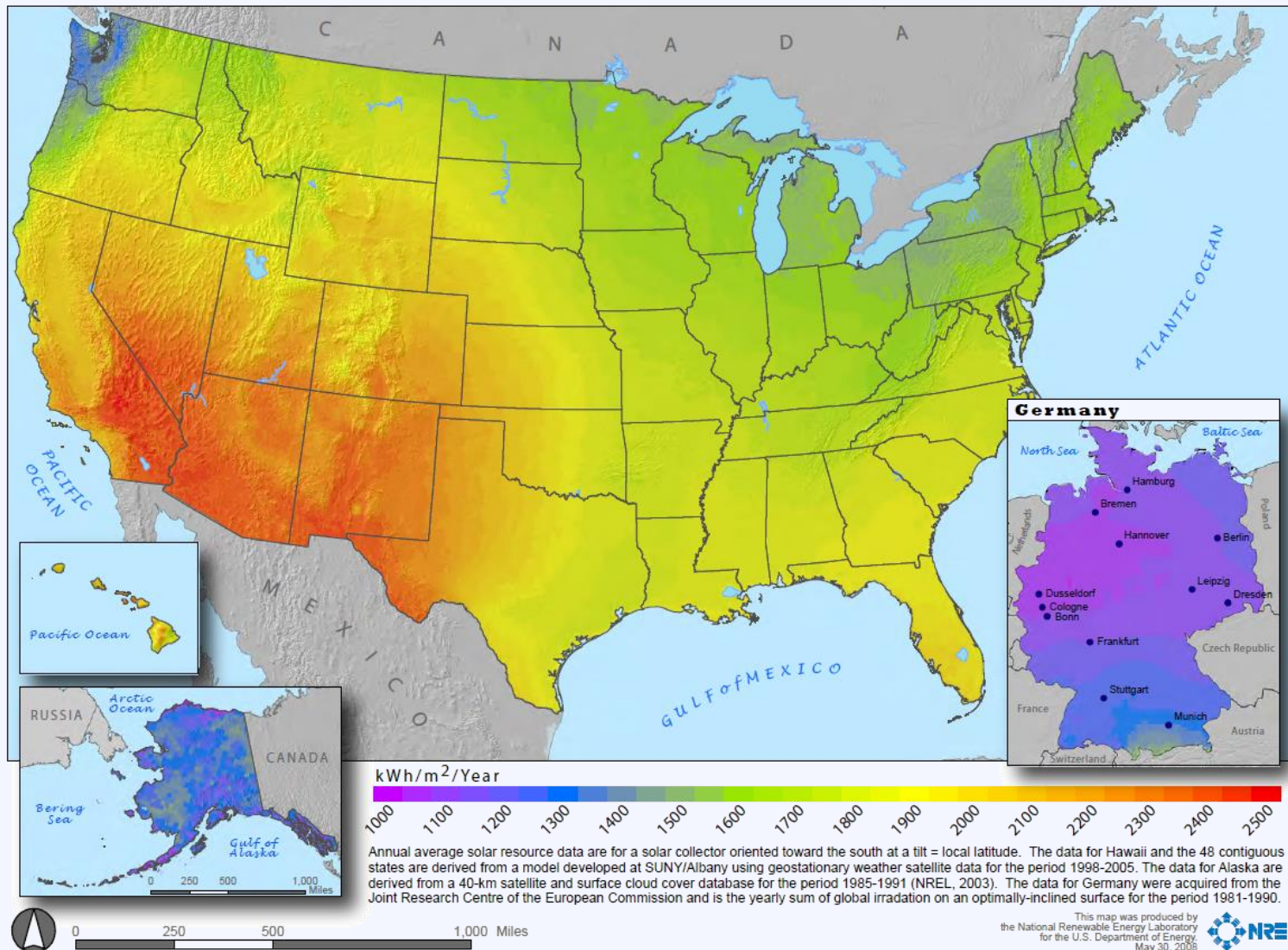
watts per person

World Solar Market

Top 5 Countries Solar Operating Capacity (2014)

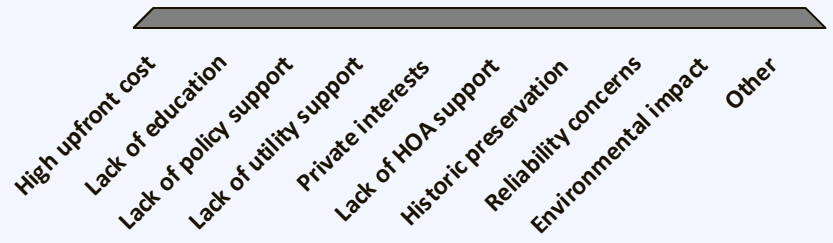


US Solar Resource



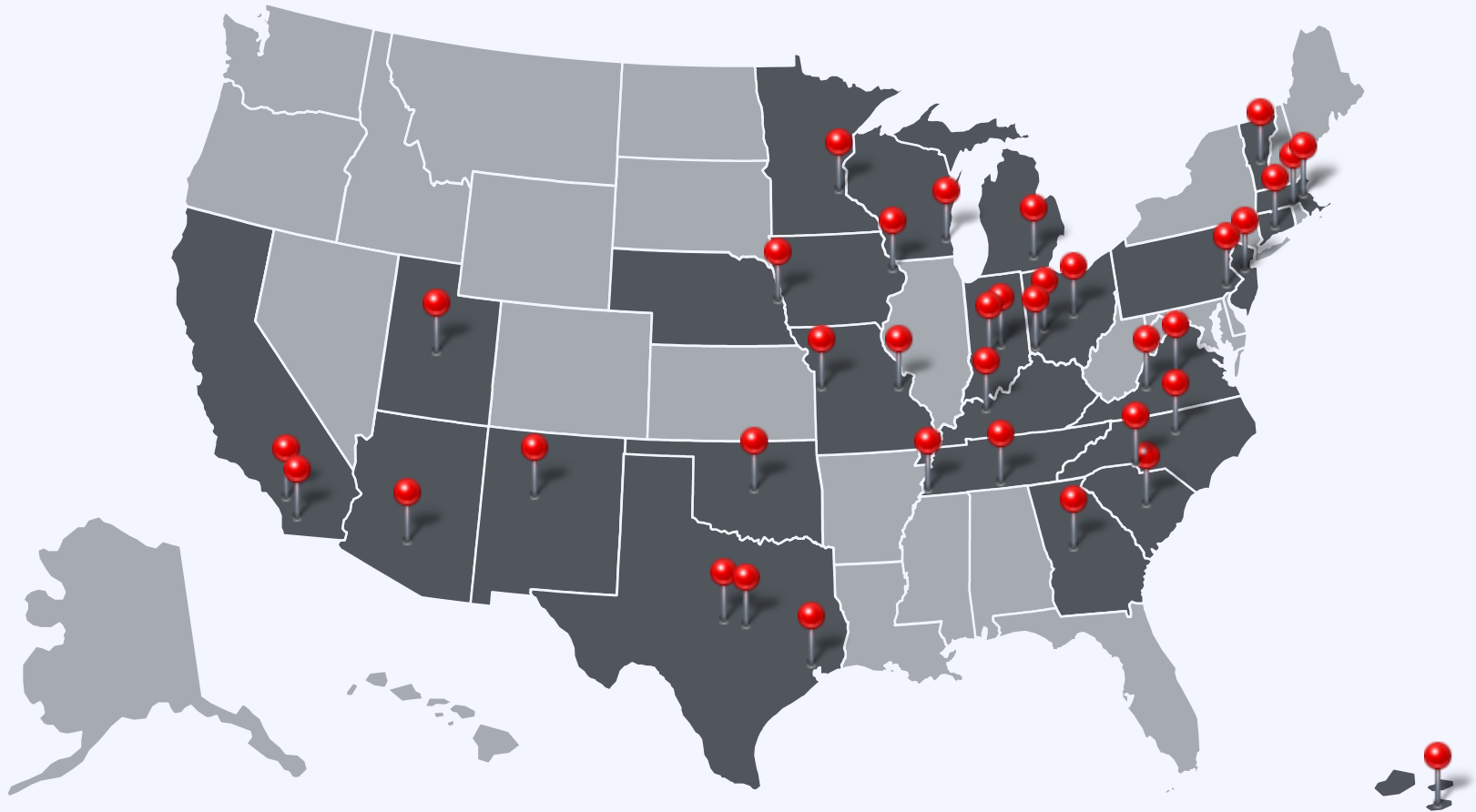
What are the top 3 barriers to solar adoption in your community?

- A. High upfront cost
- B. Lack of education
- C. Lack of policy support
- D. Lack of utility support
- E. Private interests
- F. Lack of HOA support
- G. Historic preservation
- H. Reliability concerns
- I. Environmental impact
- J. Other

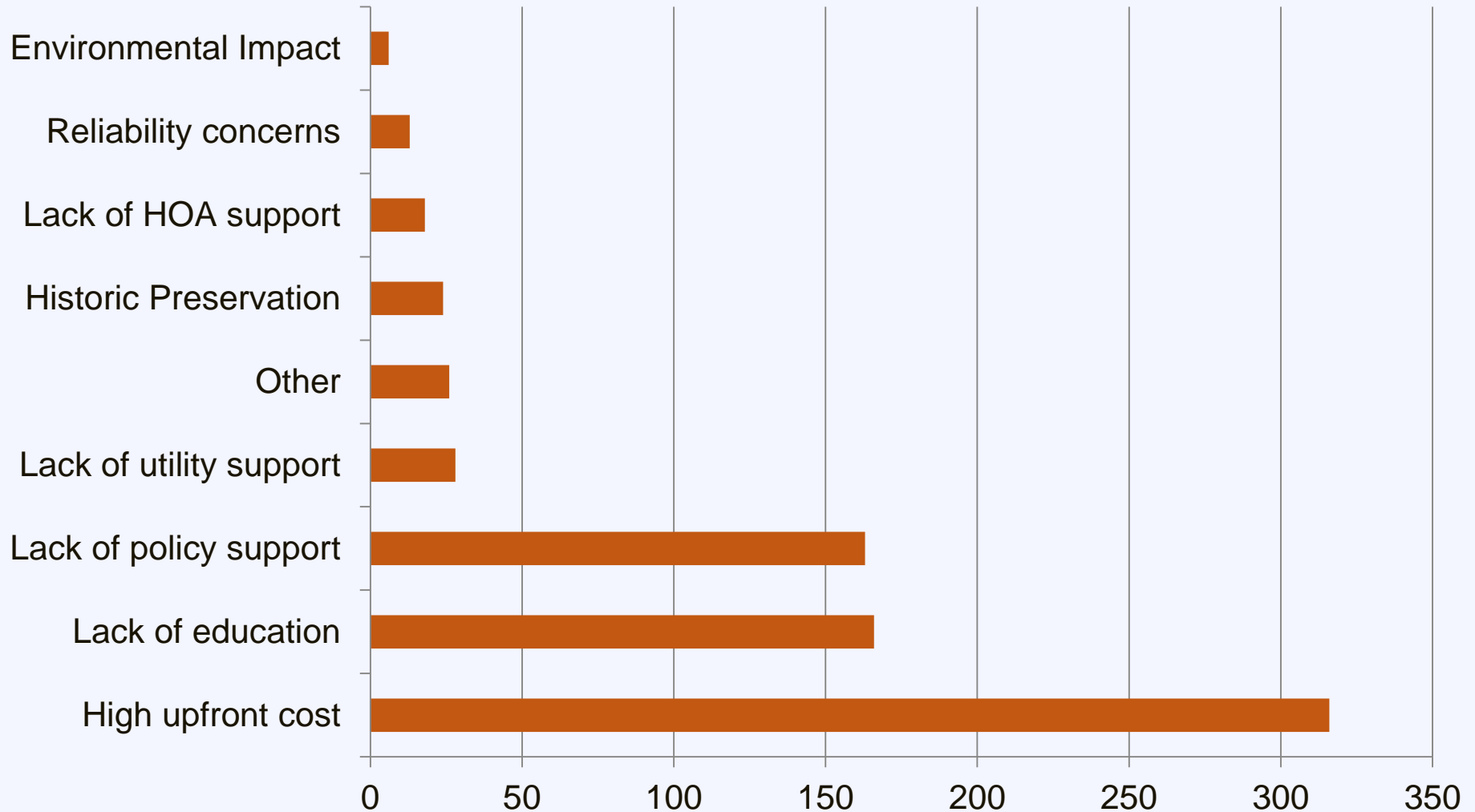


Regional Workshop Surveys

Q: What is the greatest barrier to solar adoption in your community?

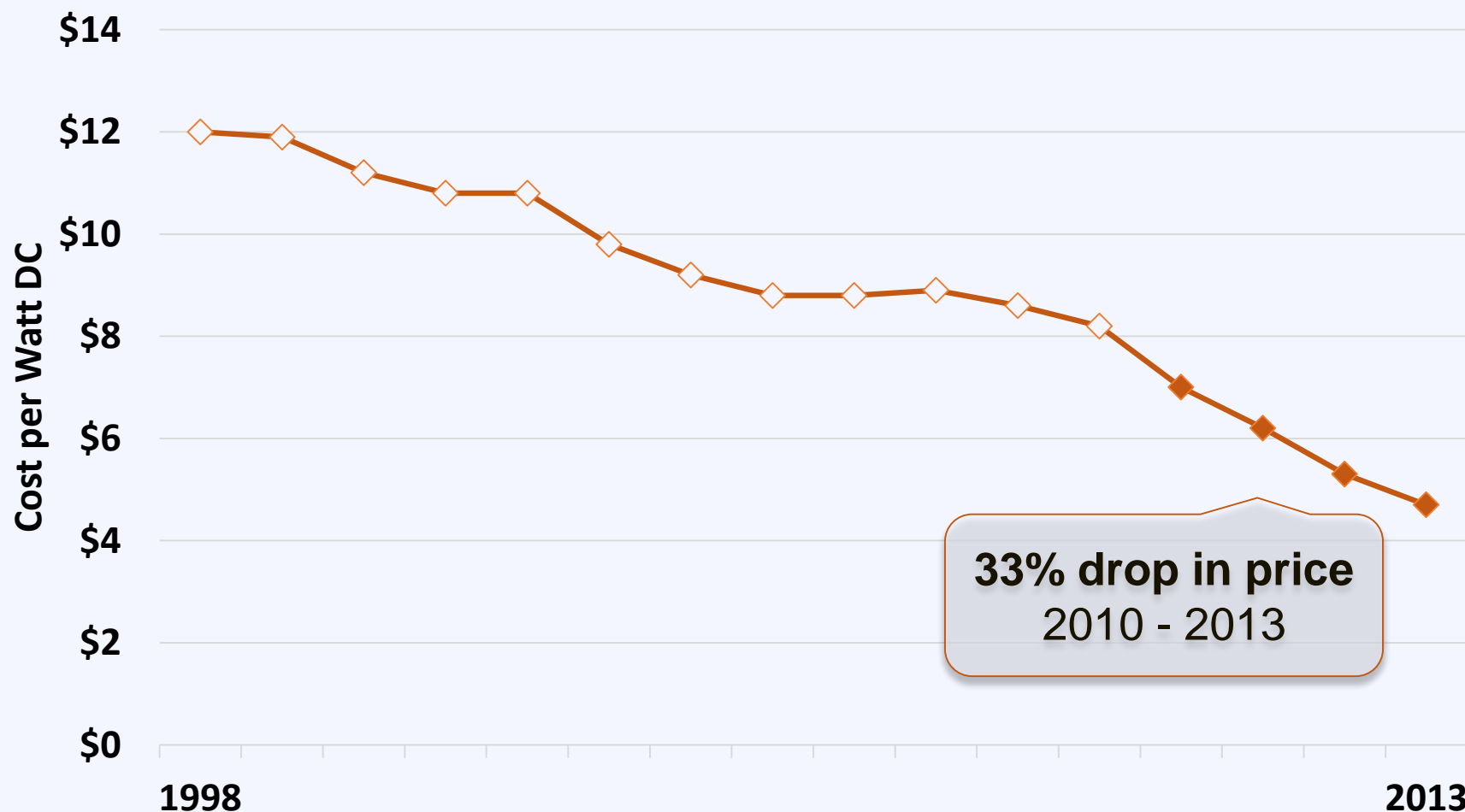


Activity: Addressing Barriers



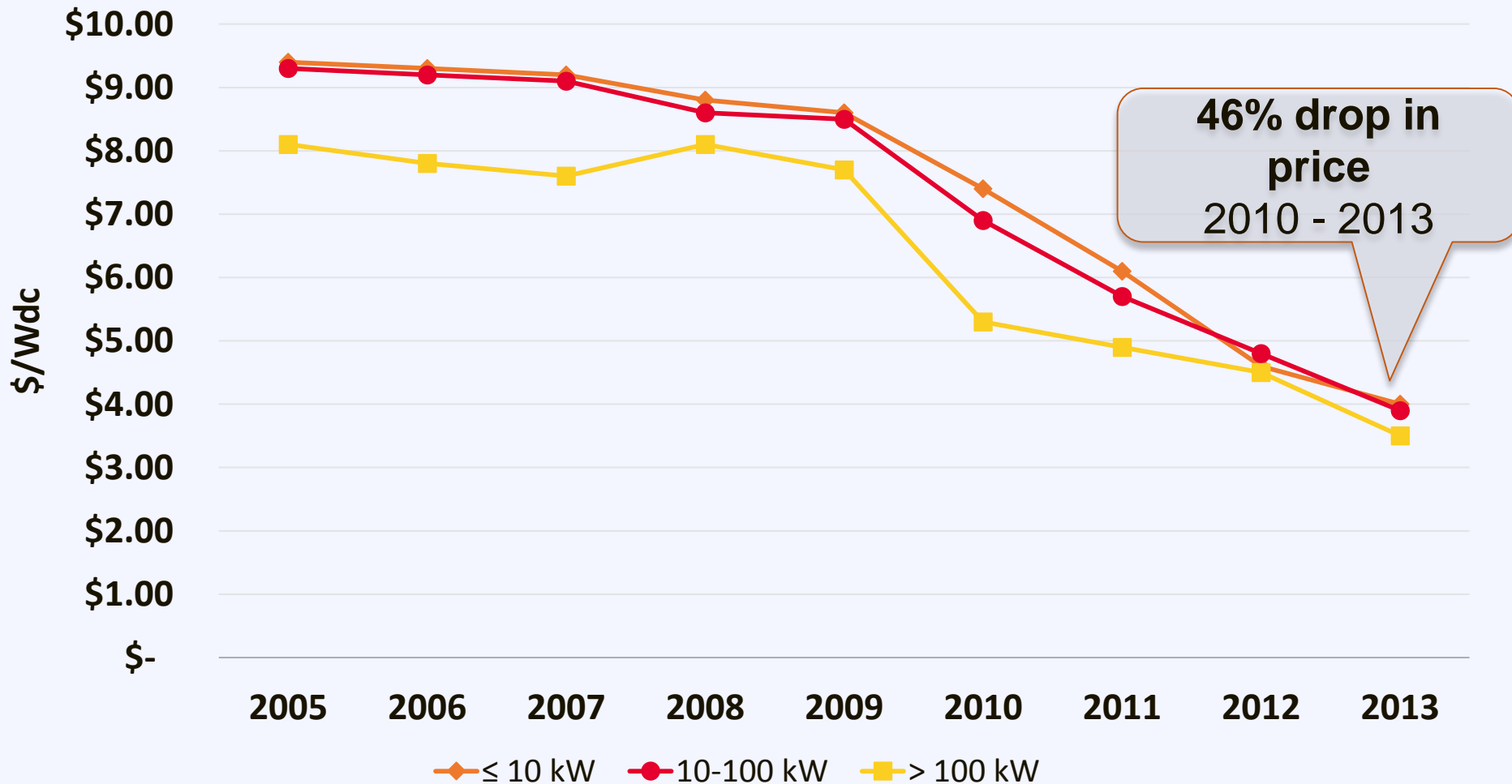
The Cost of Solar PV

US Average Installed Cost for Behind-the-Meter PV

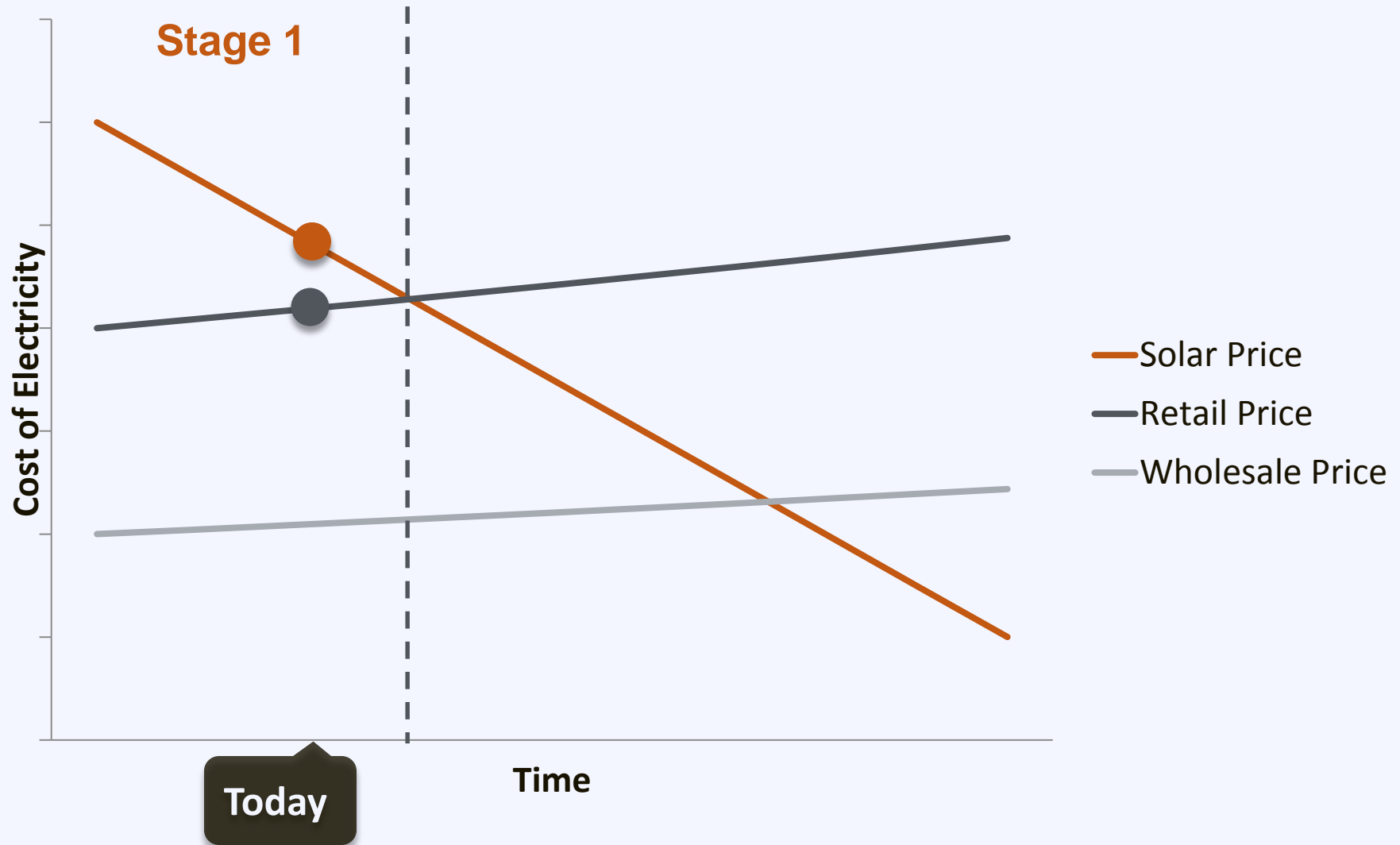


The Cost of Solar PV

New Jersey Median PV System Prices (2005-2013)

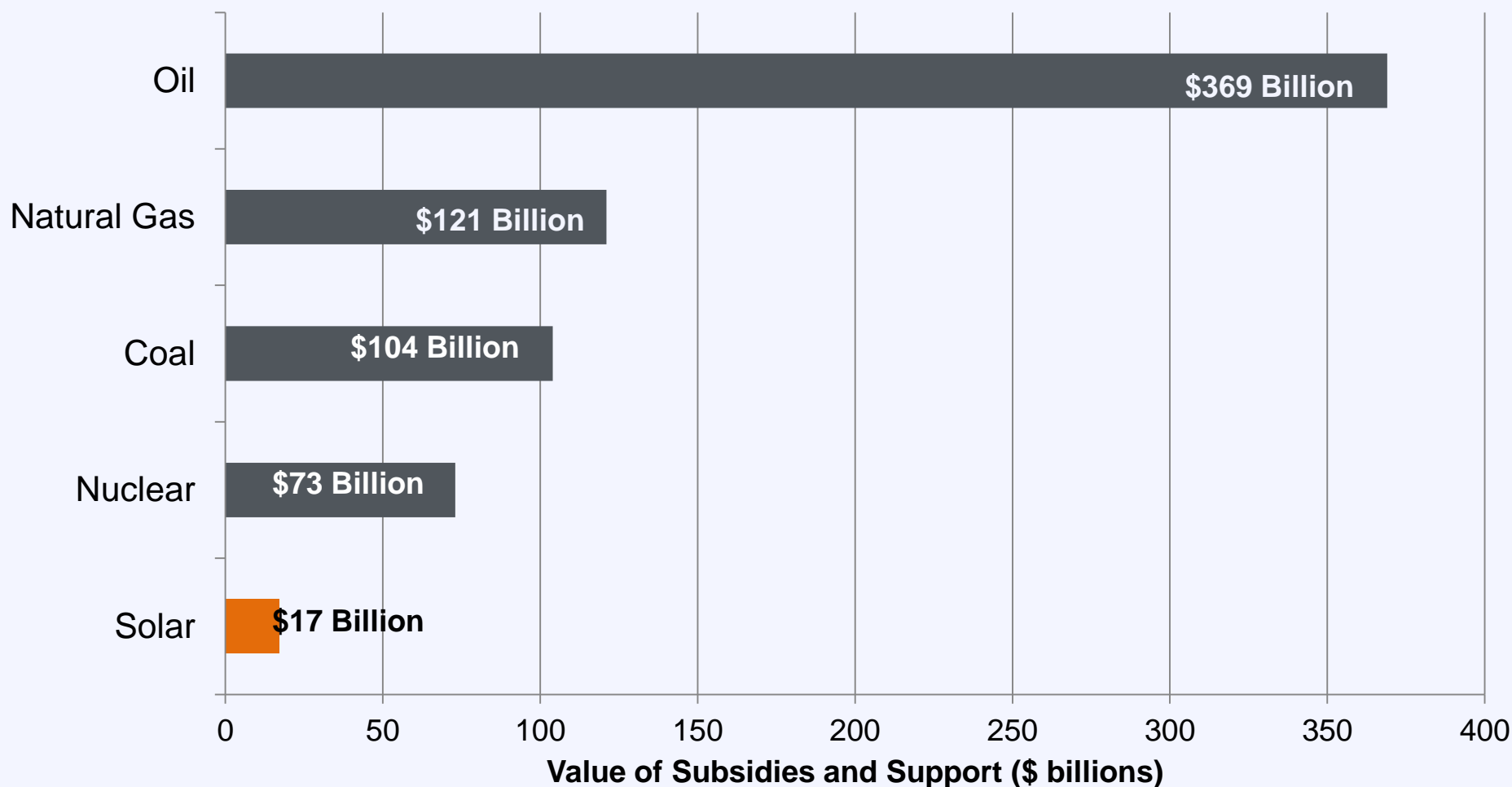


The Cost of Solar PV

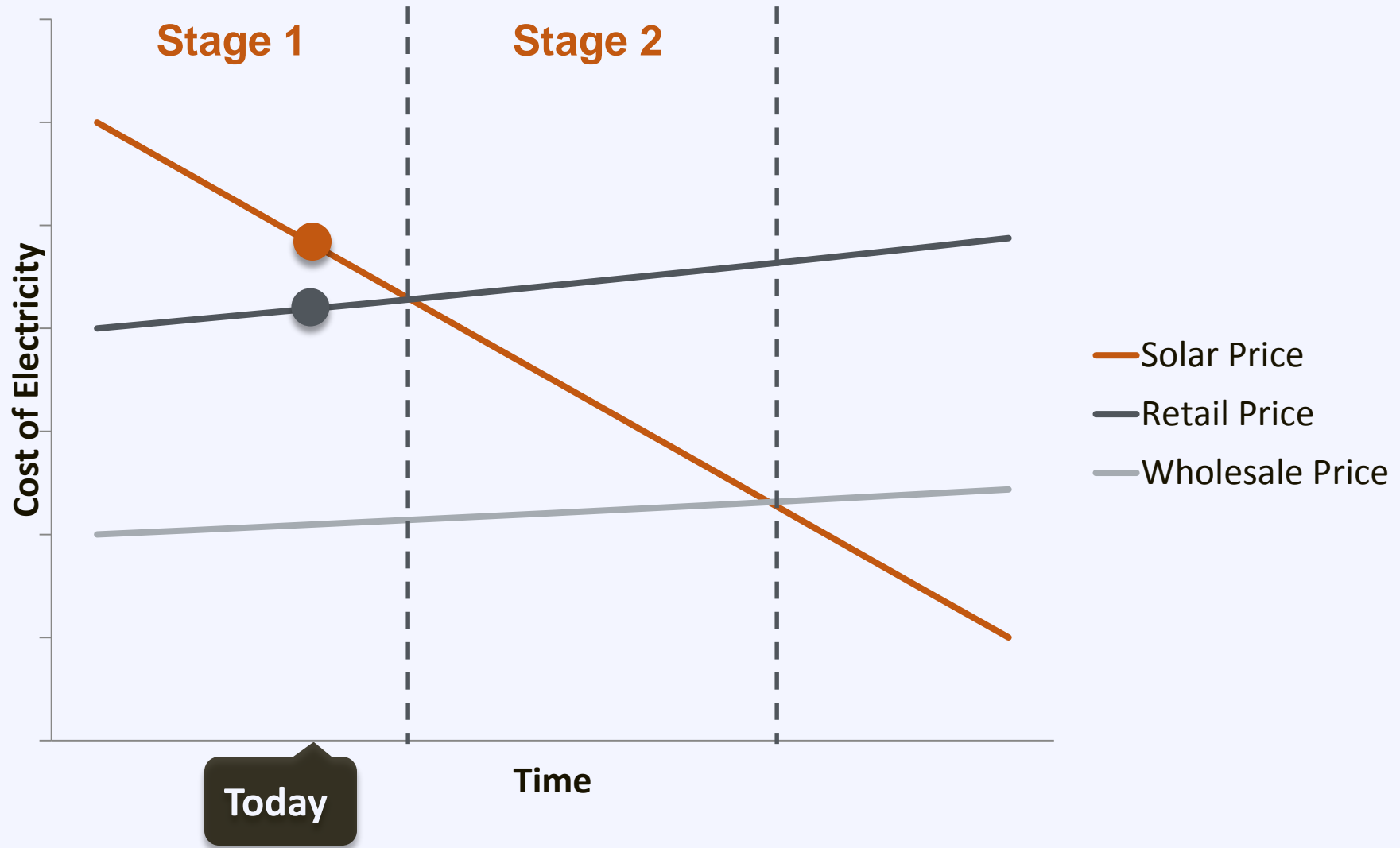


Subsidies and Support

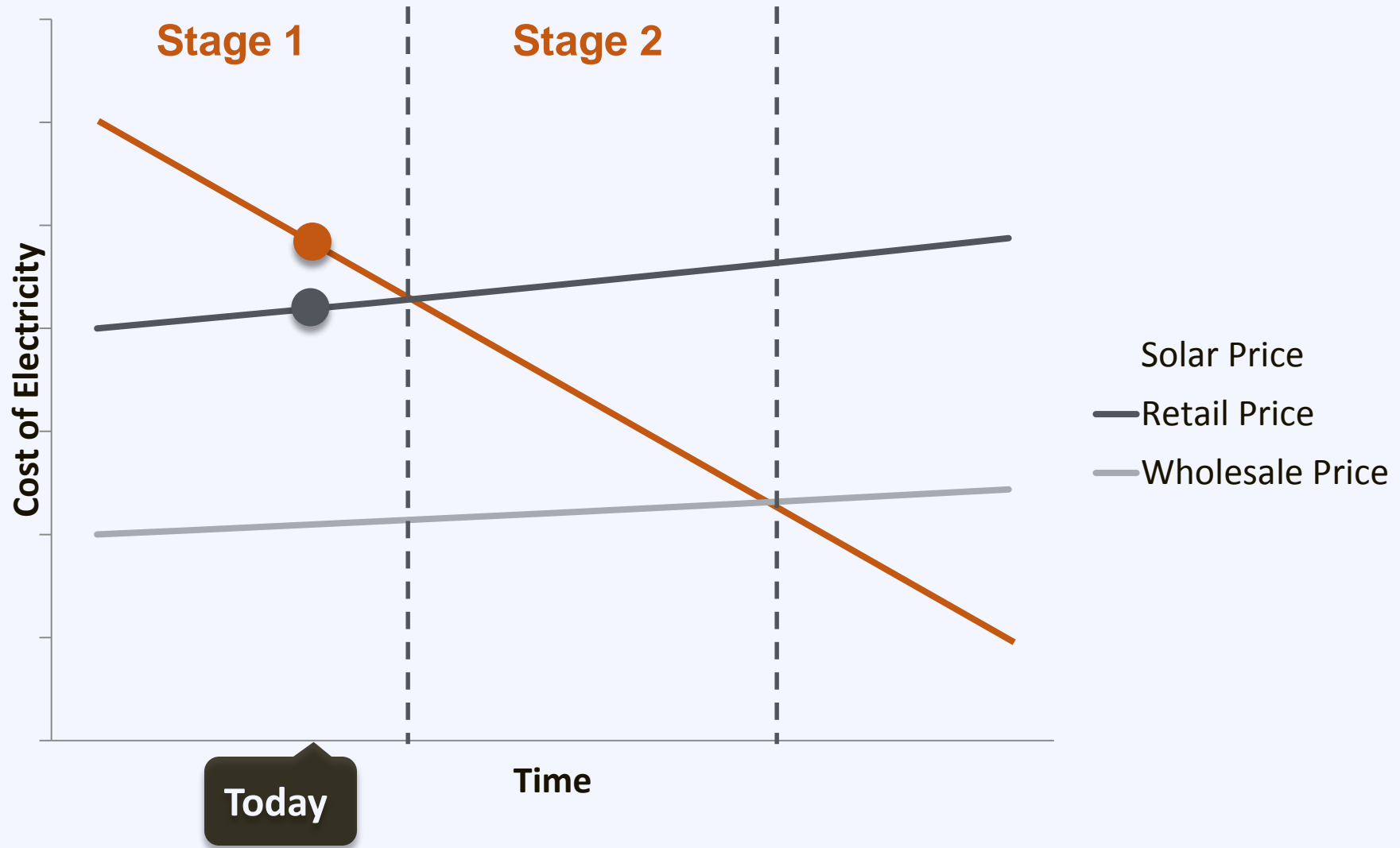
Subsidies for Conventional and Solar Energy, 1950-2010



The Cost of Solar PV

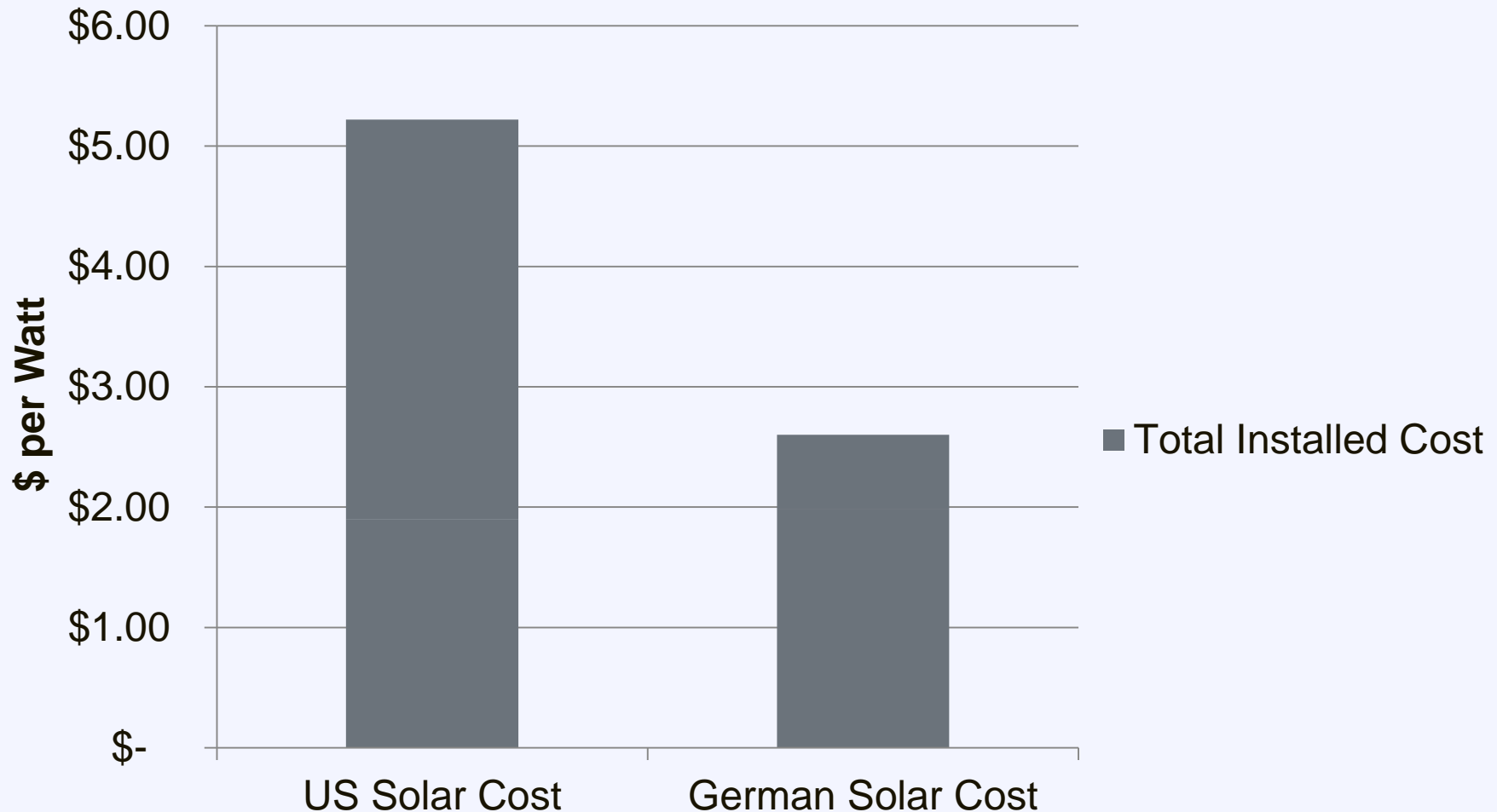


The Cost of Solar PV



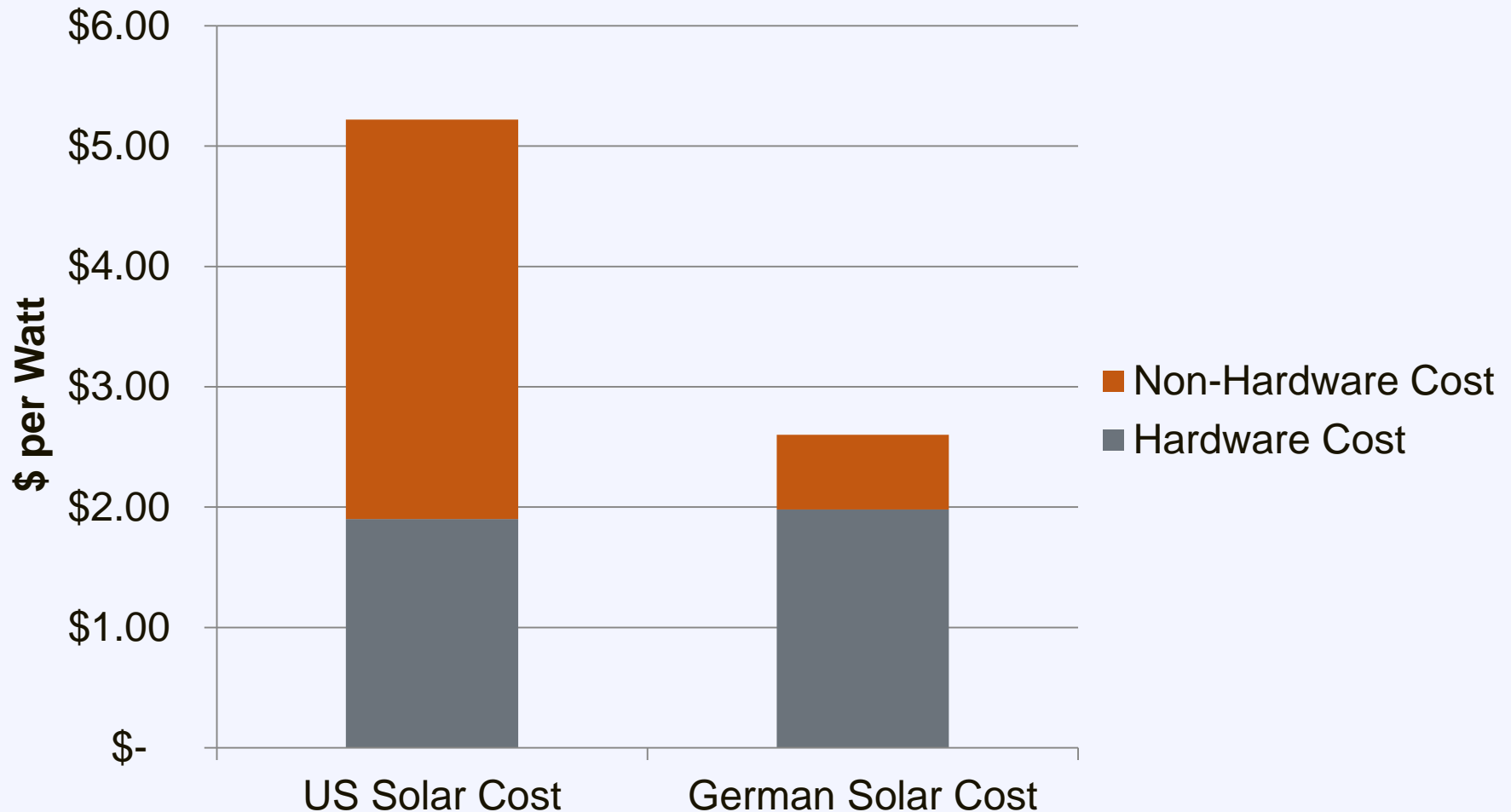
The Cost of Solar in the US

Comparison of US and German Solar Costs



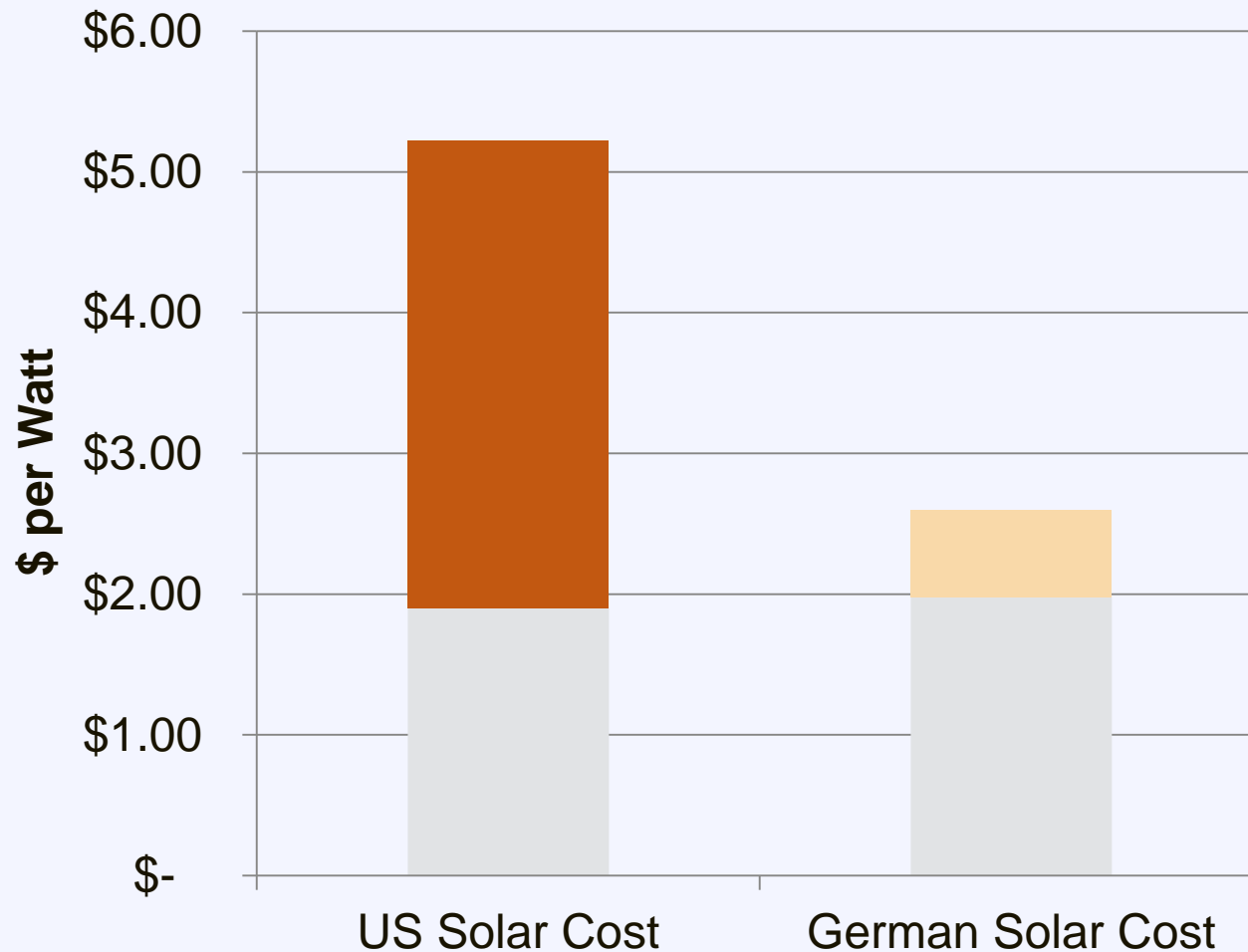
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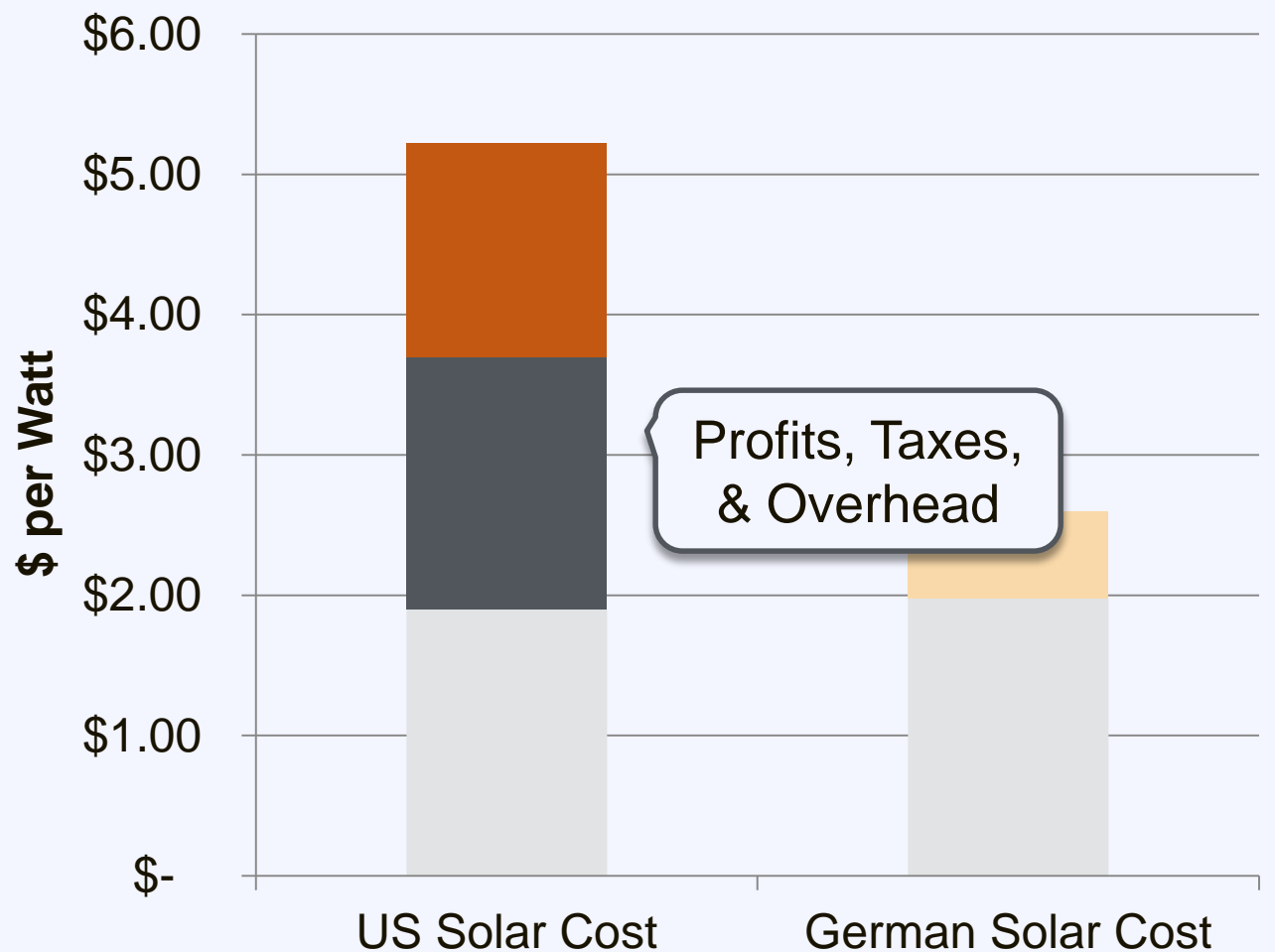
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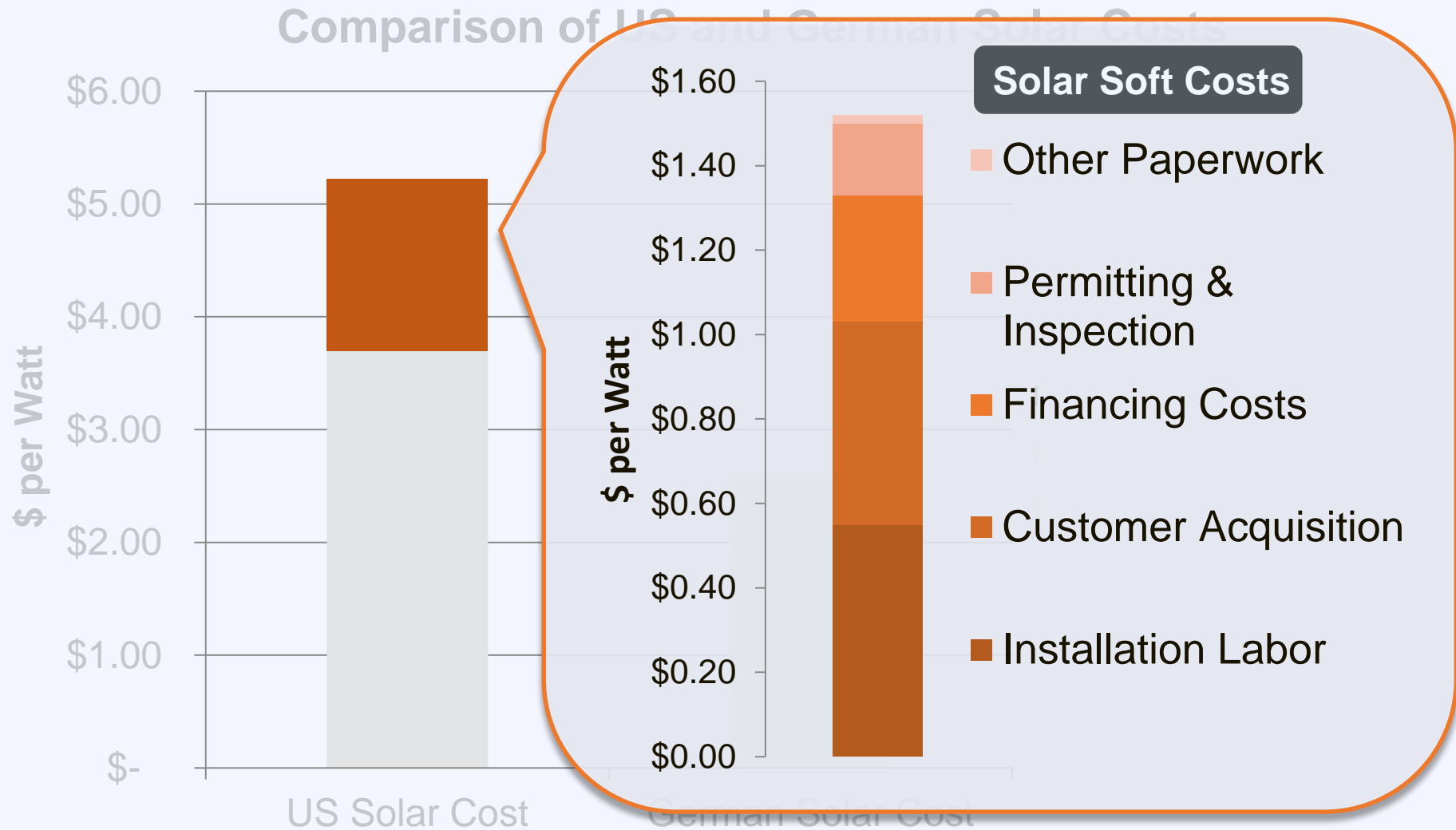


The Cost of Solar in the US

Comparison of US and German Solar Costs



The Cost of Solar in the US



Challenge: Installation Time



New York City's
Goal

100 days

from inception to completion

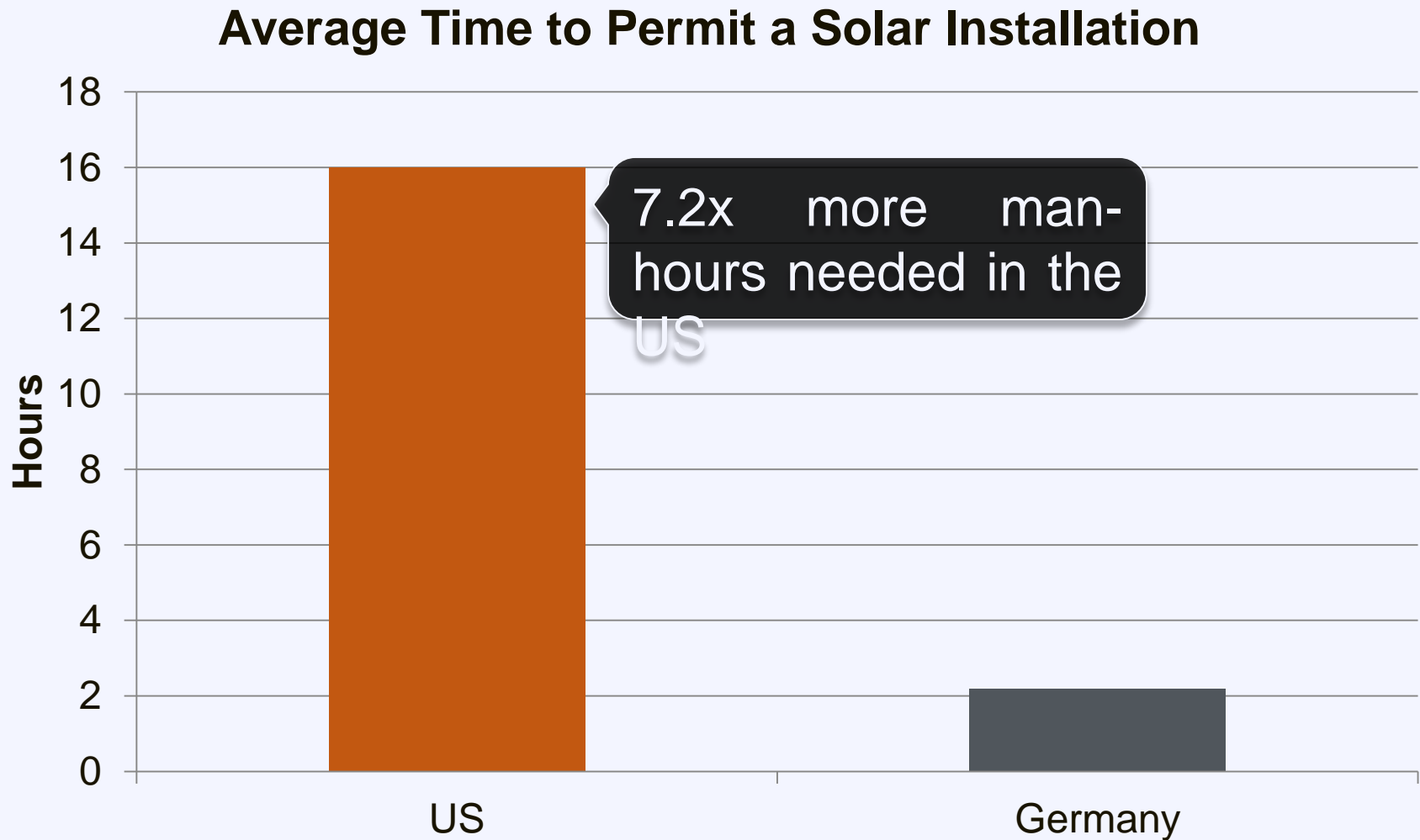


Germany
Today

8 days

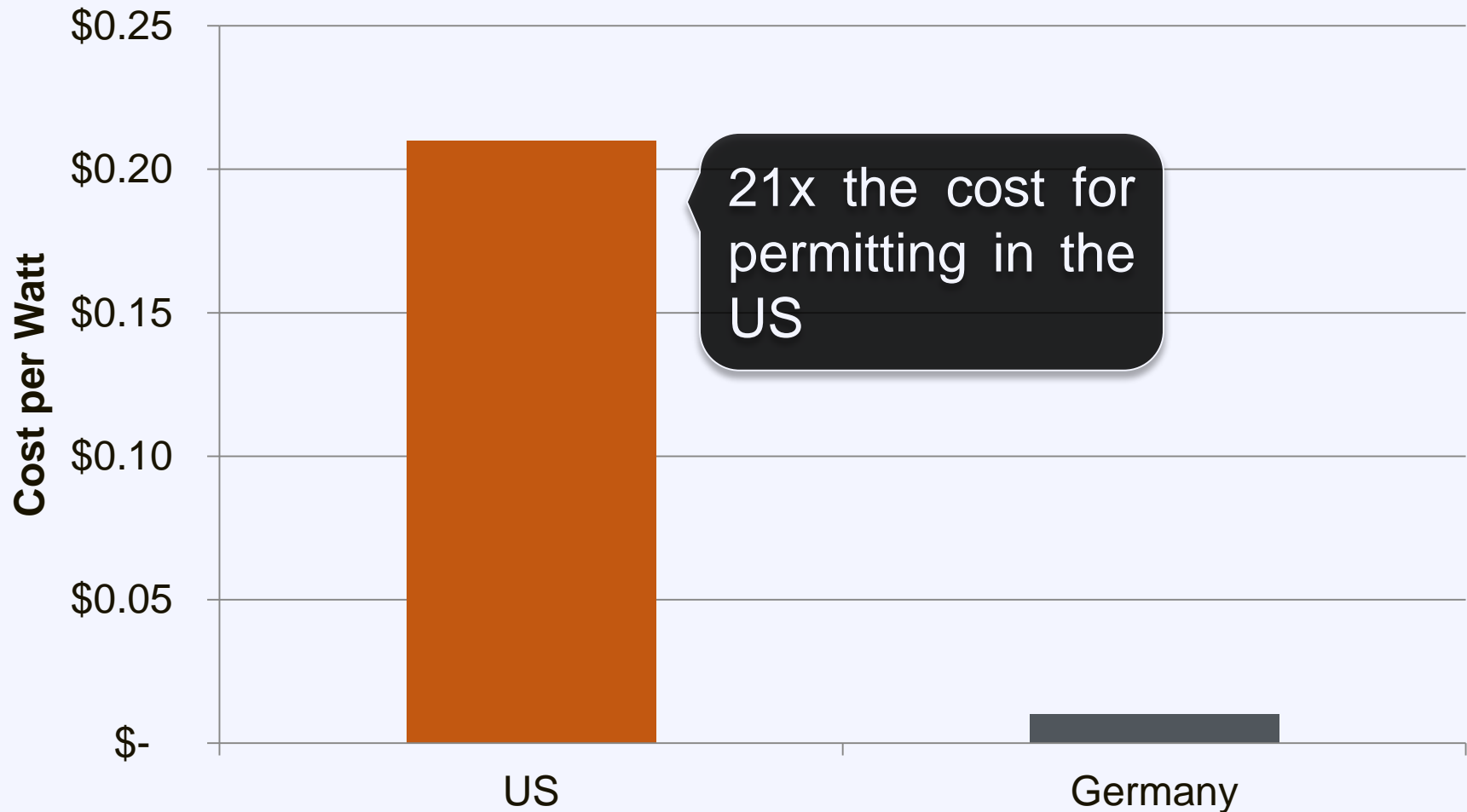
from inception to completion

Time to Installation



Permitting Costs

Average Cost of Permitting in the US and Germany



Germany's Success

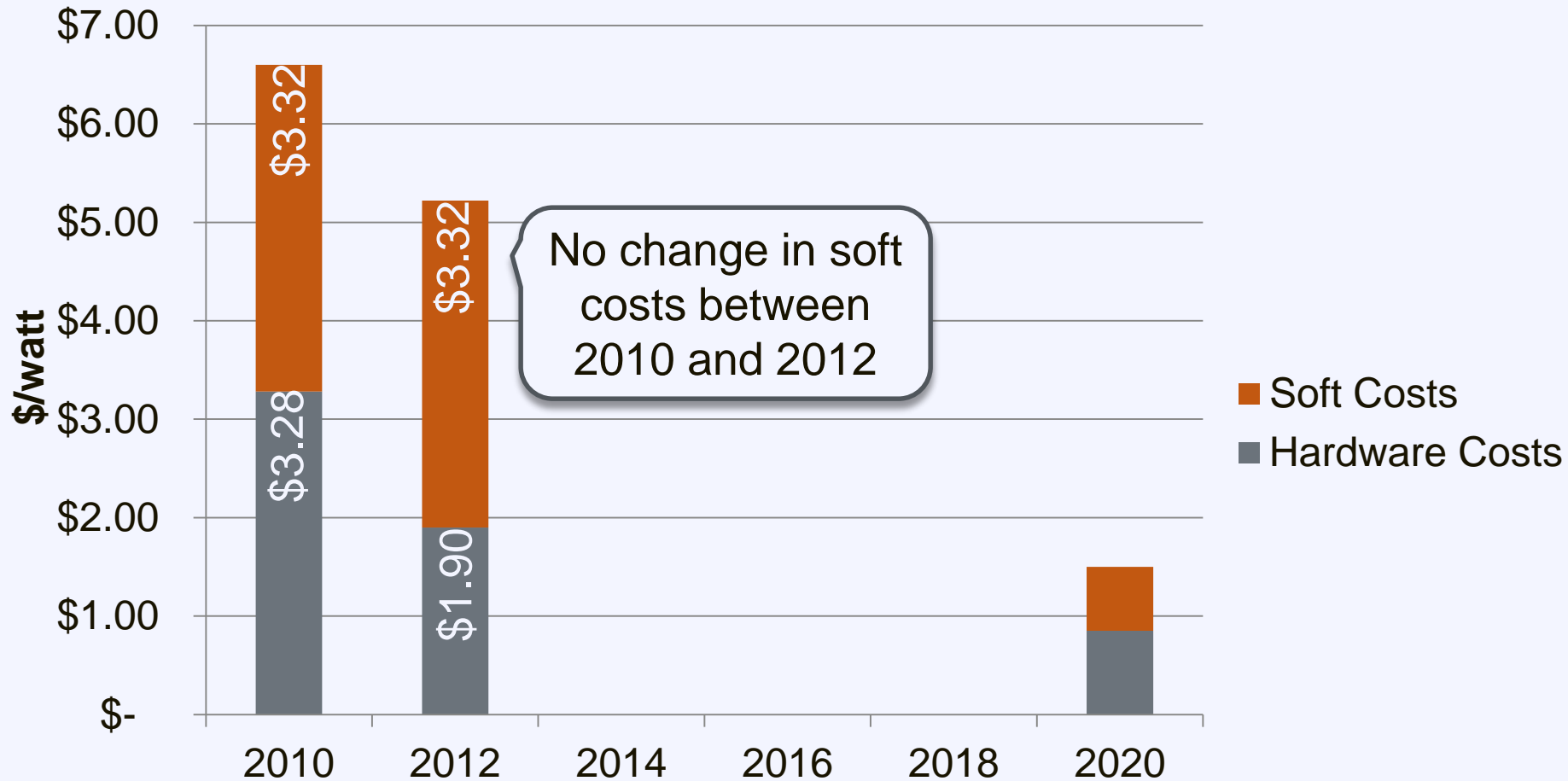
Consistency and Transparency

through

Standardized Processes

The Cost of Solar in the US

Change in Soft Costs and Hardware Costs Over Time



Local Government Impact

What would be the impact of a 25% reduction in local government-addressable soft costs on the value of a 5 kW solar

2013 NJ Avg. Residential Installed Cost:		\$4.00/W
Net Present Value:		\$7,712
Payback Period:		7.8 years
After 25% Reduction in addressable soft costs:		\$3.75/W
Net Present Value:		\$8,533
Payback Period:		7.3 years
Difference:		\$0.25/W
Net Present Value:		+ 10.6%
Payback Period:		- 6.4%

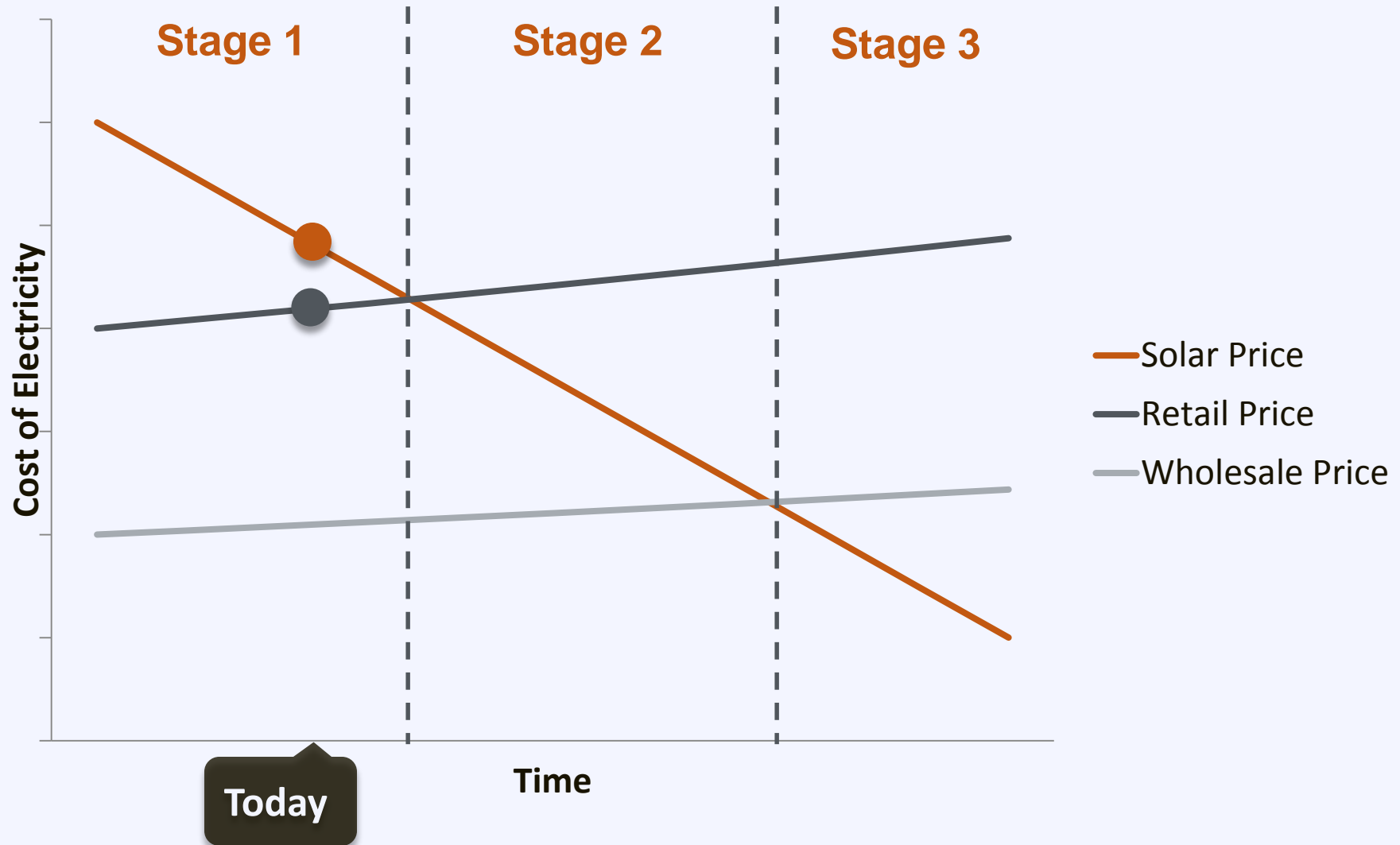
Workshop Goal

Enable local governments to replicate successful solar practices to **reduce soft costs** and **expand local adoption of solar energy**

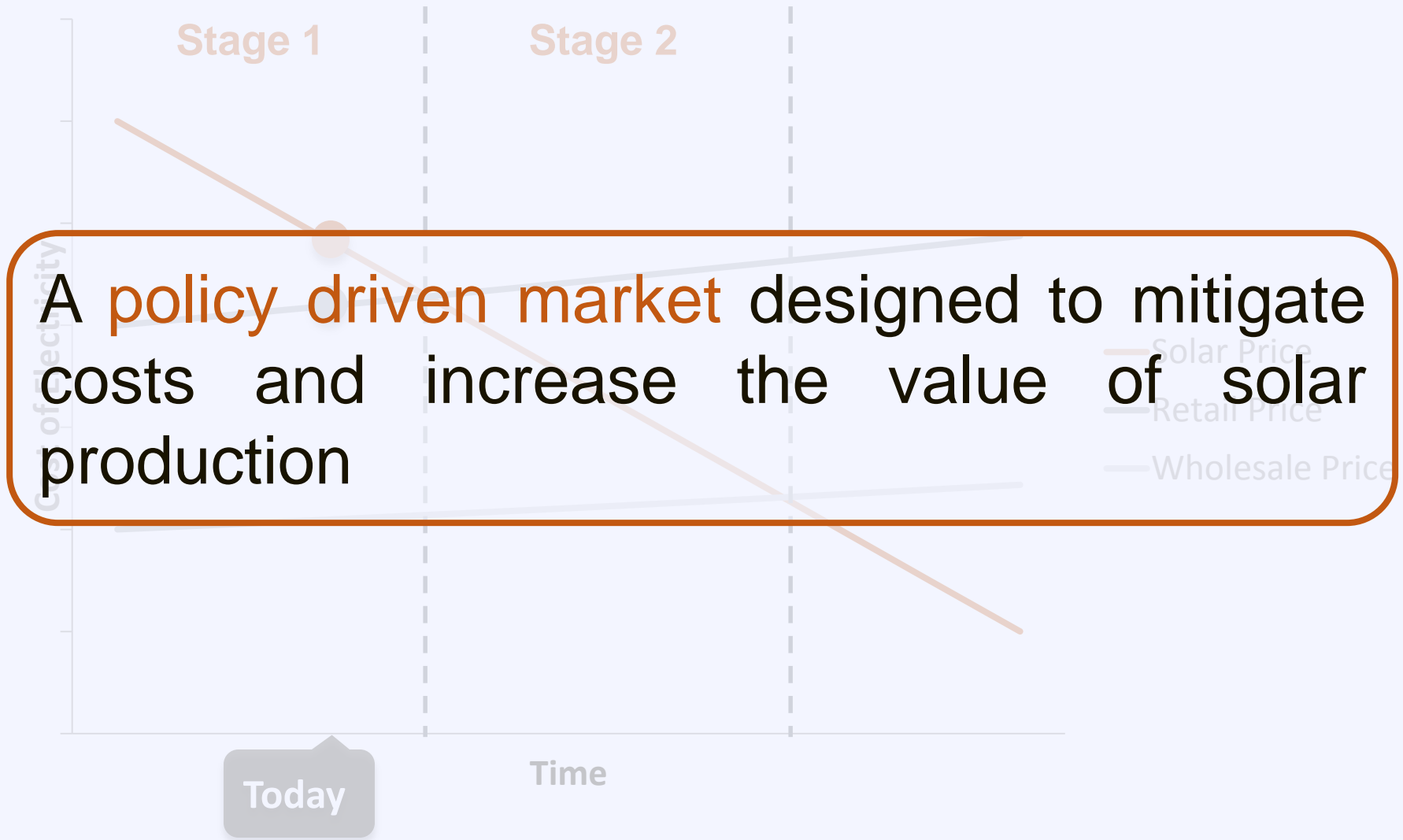
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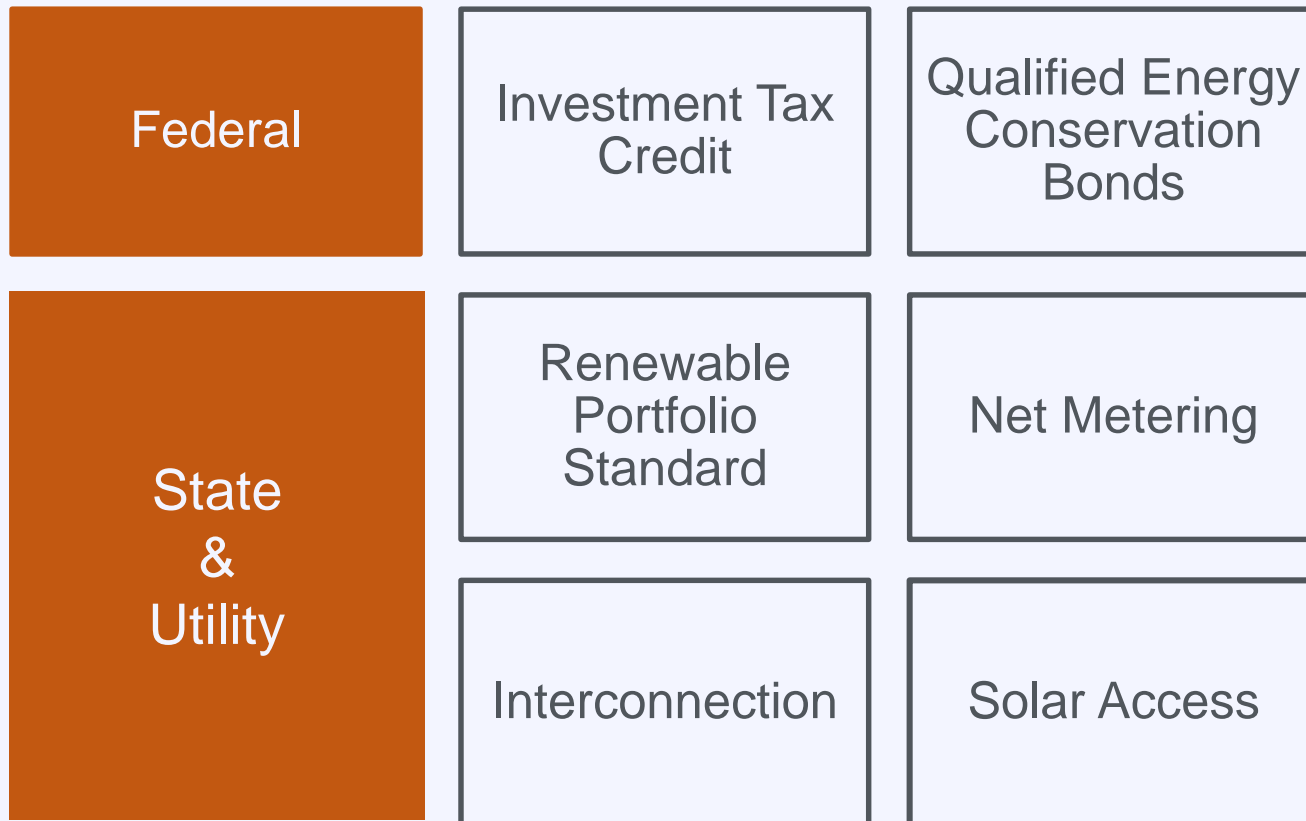
Solar Market: Trends



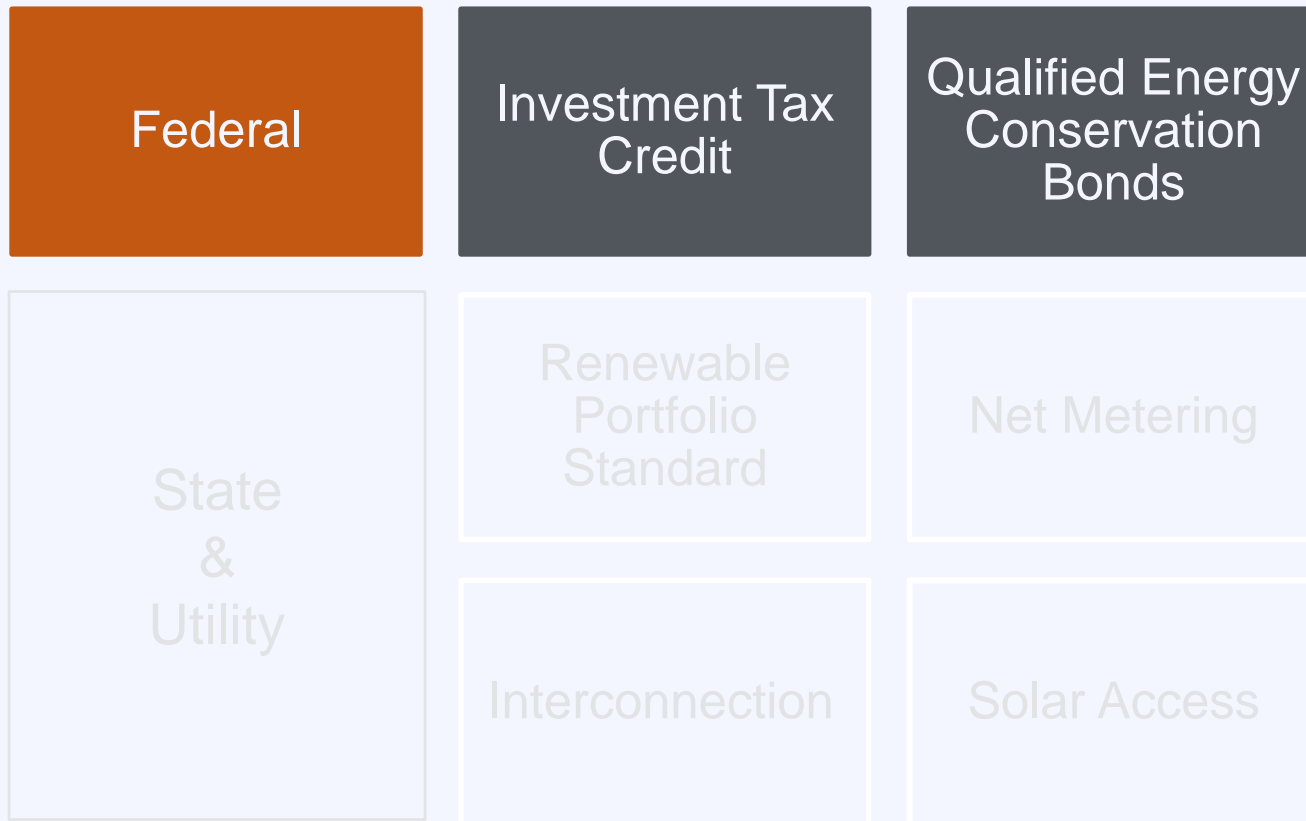
Solar Market: Trends



A Policy Driven Market



A Policy Driven Market



Investment Tax Credit

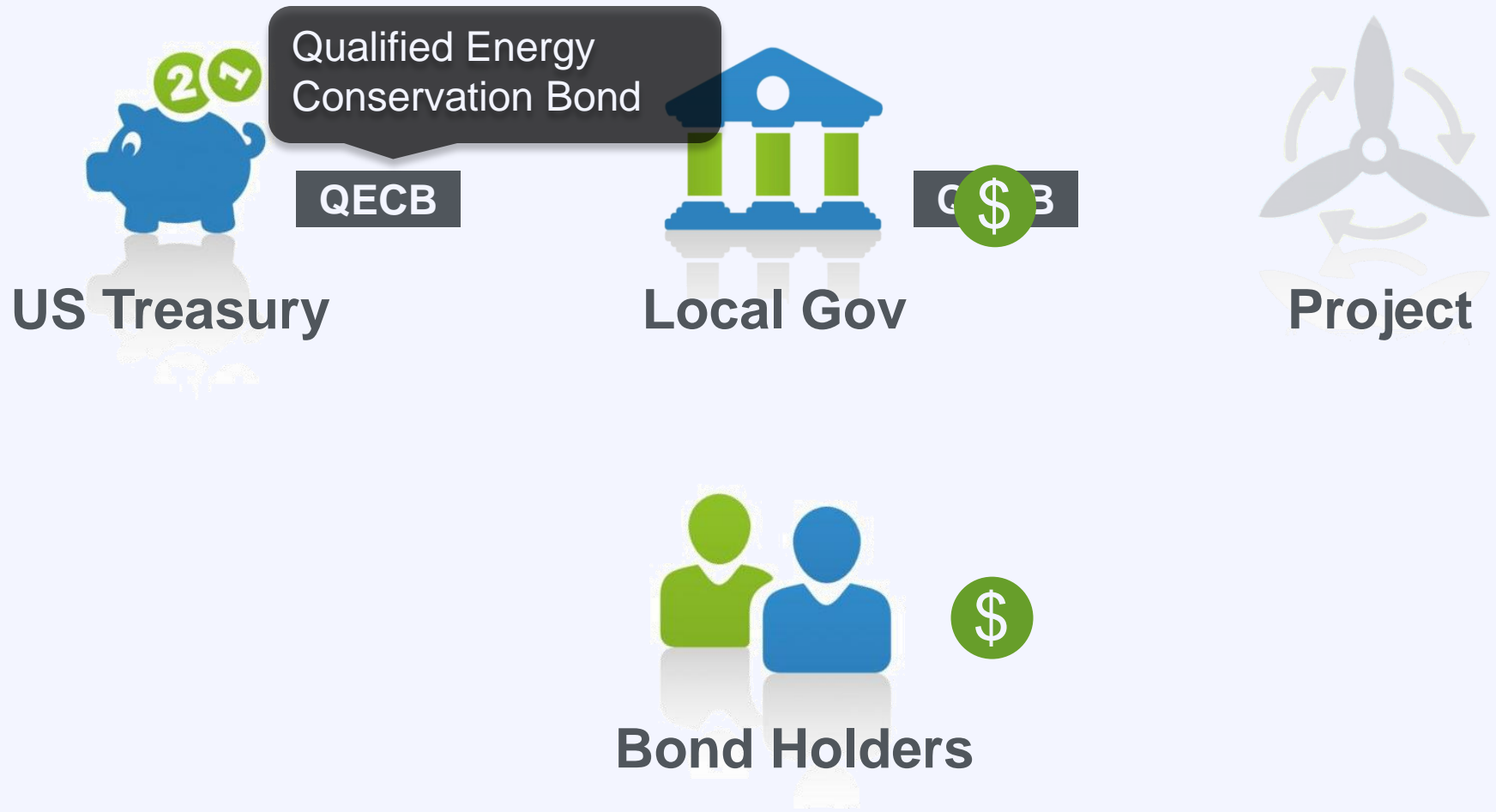
Type: Tax Credit

Eligibility: For-Profit Organization

Value: 30% of the installation cost

Availability: Through 2016

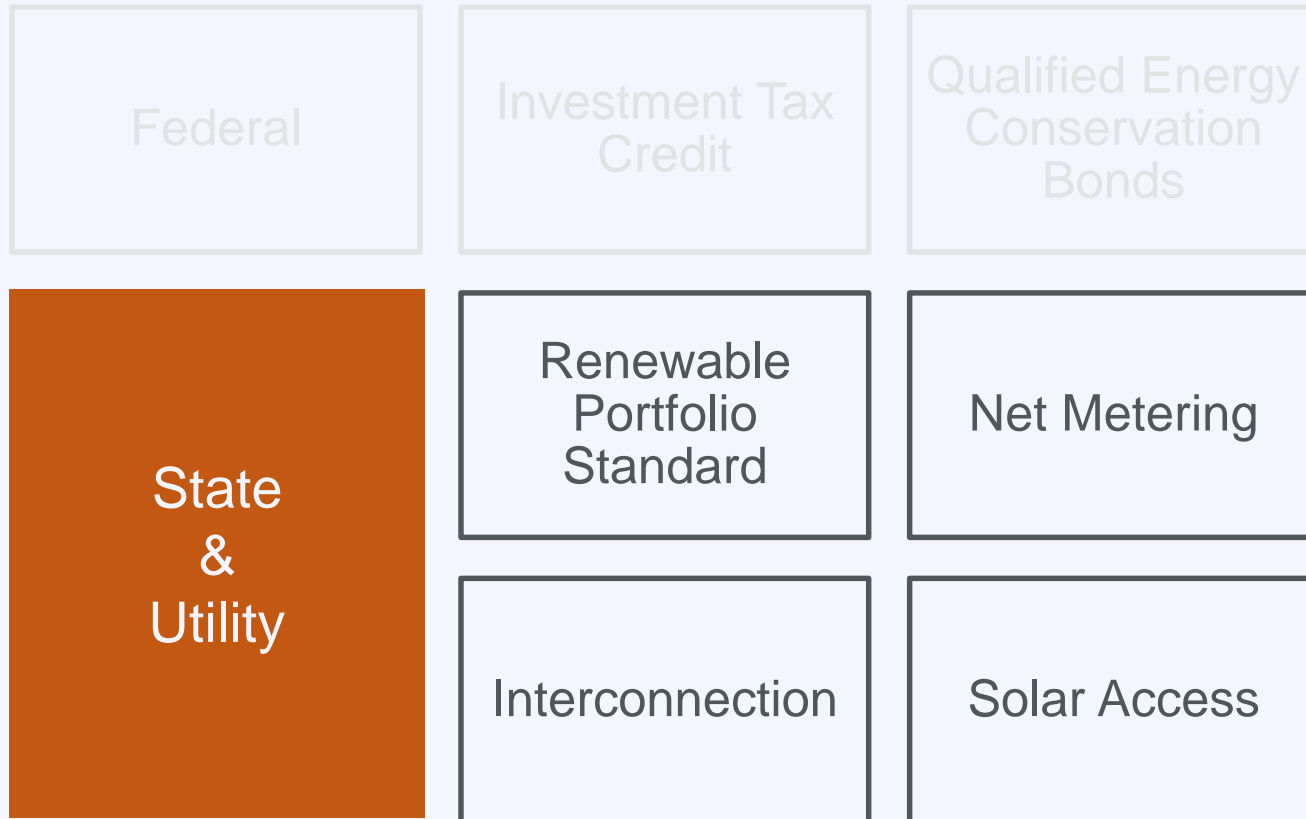
Qualified Energy Conservation Bond



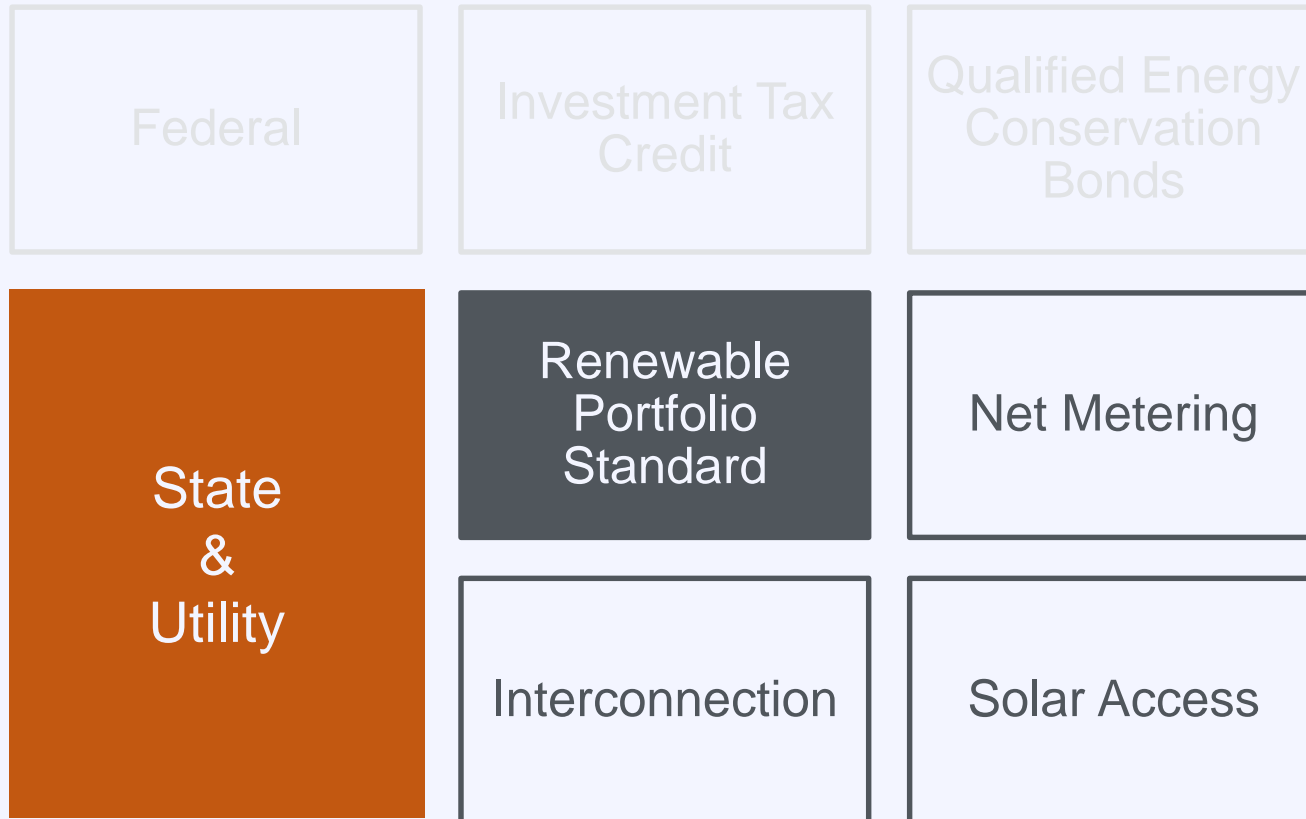
Qualified Energy Conservation Bond



A Policy Driven Market

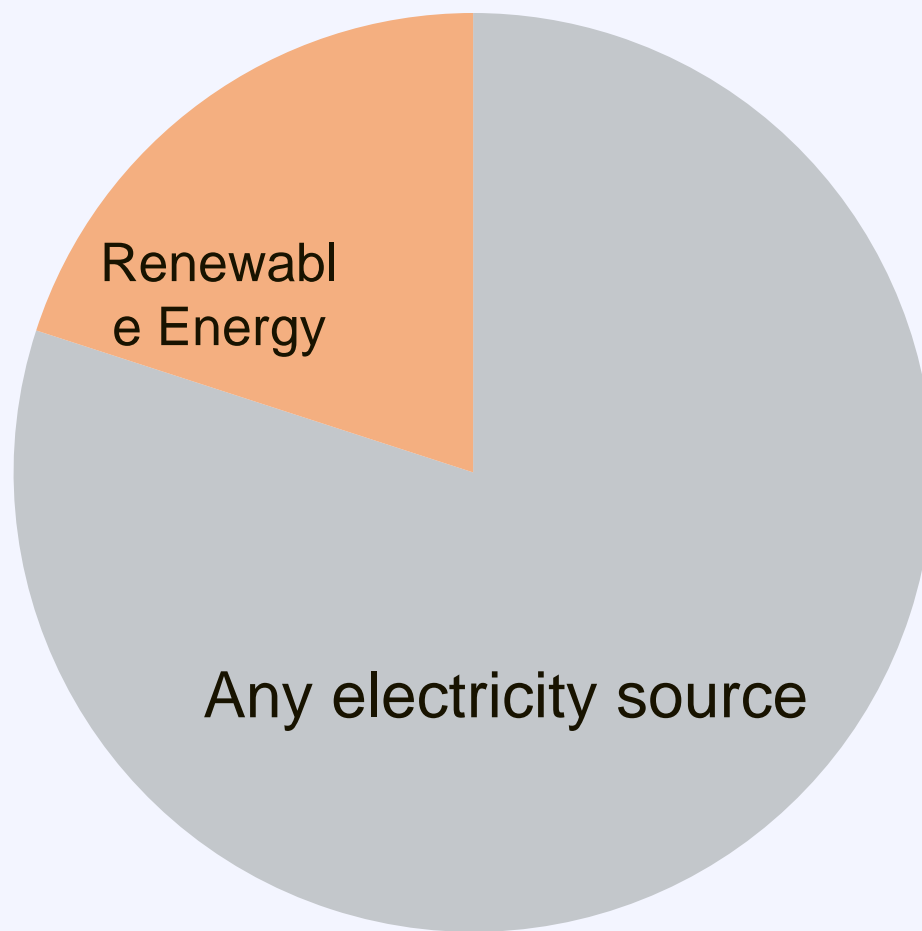


A Policy Driven Market



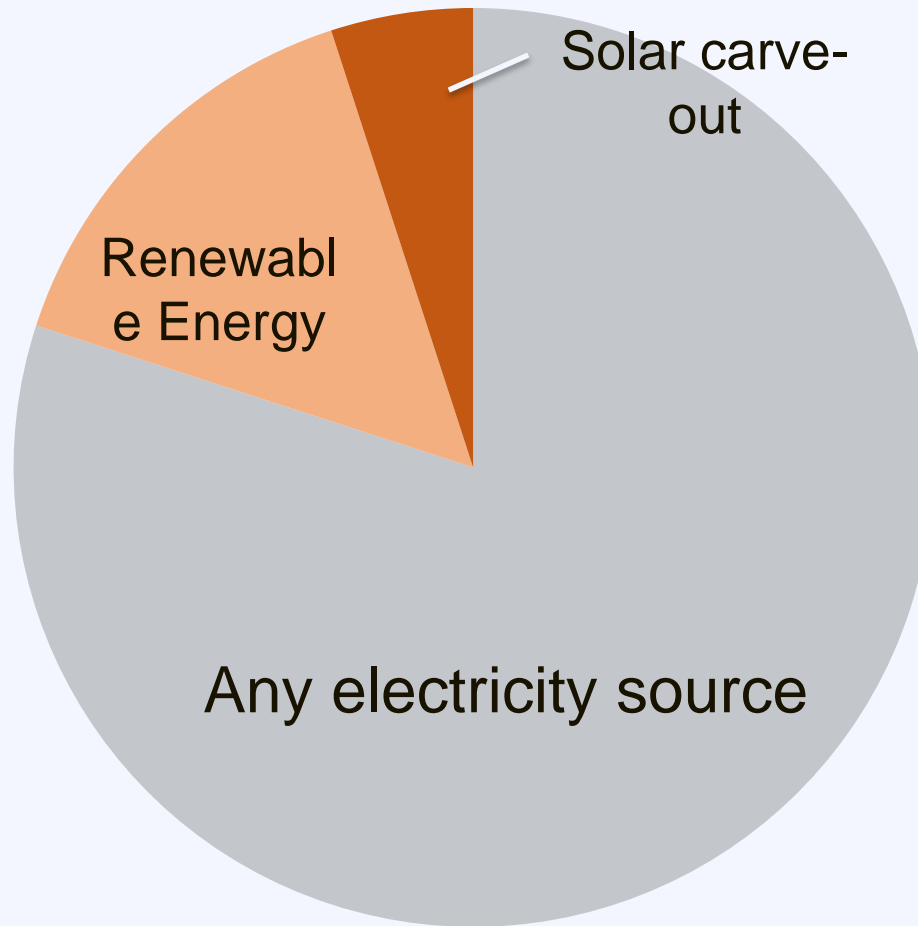
Renewable Portfolio Standard

Retail Electricity Sales



Renewable Portfolio Standard

Retail Electricity Sales



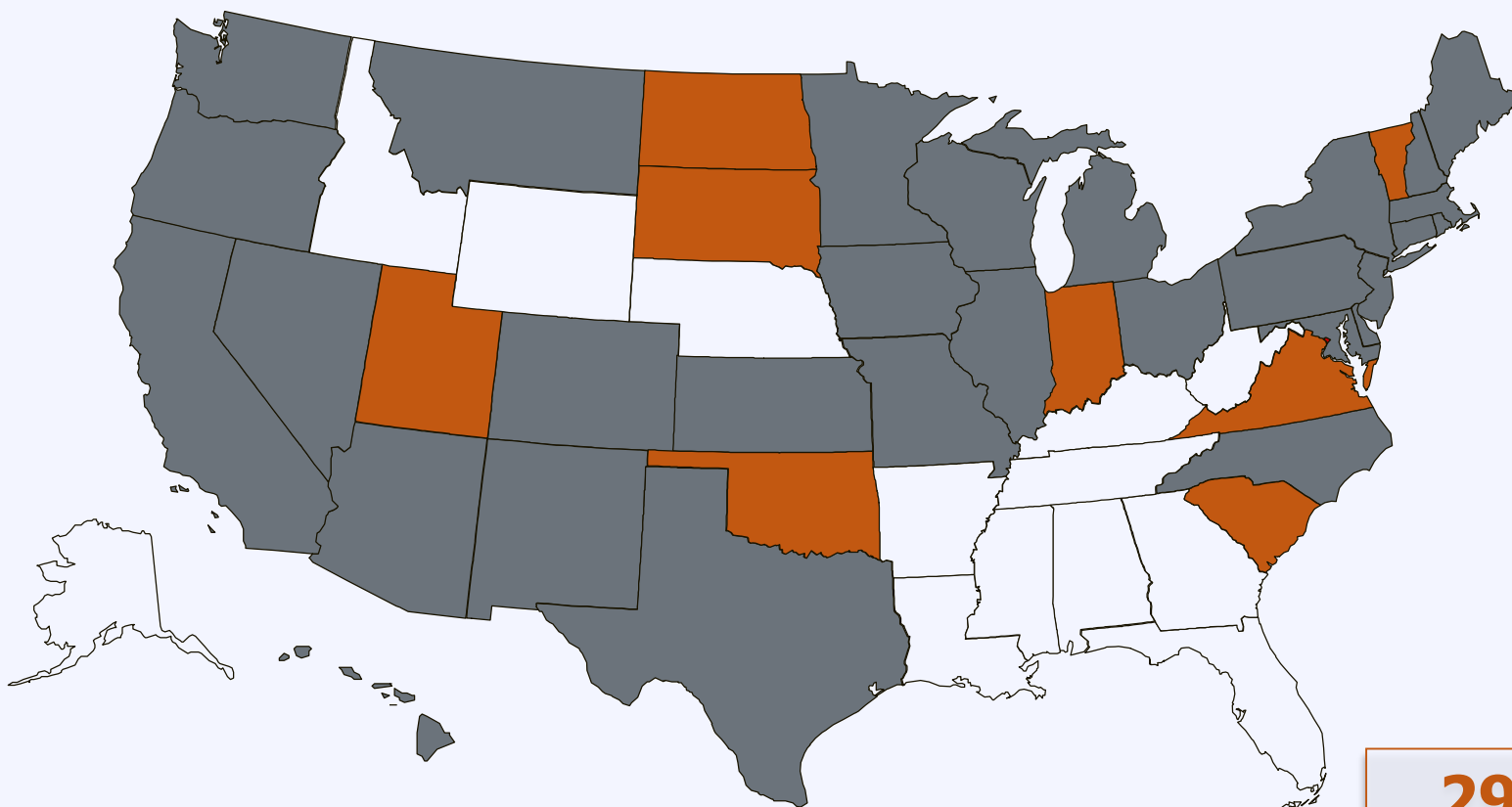
RPS Impacts: Solar Deployment

RPS and Solar/DG Status of Top Ten Solar States by Cumulative Installed Capacity (as of Q4 2013)

Rank s	State	RPS?	Solar/DG Provision?
1	California	Y	N
2	Arizona	Y	Y
3	New Jersey	Y	Y
4	North Carolina	Y	Y
5	Nevada	Y	Y
6	Massachusetts	Y	Y
7	Hawaii	Y	N
8	Colorado	Y	Y
9	New York	Y	Y
10	New Mexico	Y	Y

Renewable Portfolio Standard

www.dsireusa.org / March 2015



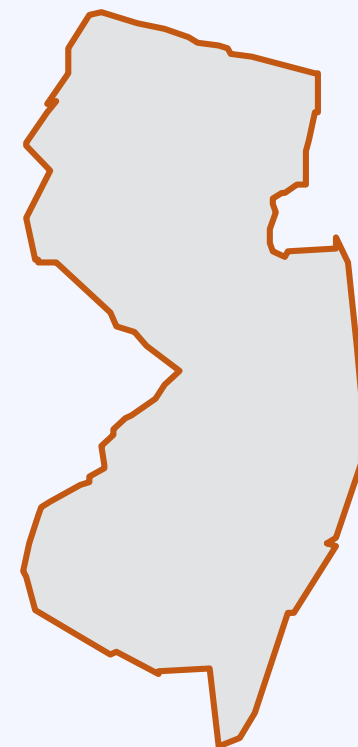
Gray box: Renewable portfolio standard
Orange box: Renewable portfolio goal

29 states +
Washington DC and 2
territories have
renewable portfolio
standards
(8 states and 2 territories have
renewable portfolio goals)

RPS: New Jersey Overview

New Jersey utilities required to:

- Provide **22.5% renewable energy** by 2021
 - 11.3% in 2015
- Provide **4.1% solar** by 2028
 - 2.45% in 2015



Utilities may either develop their own renewable resources or purchase **Renewable Energy Certificates (RECs)**

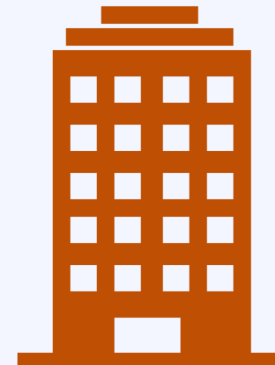
Renewable Energy Certificates



REC



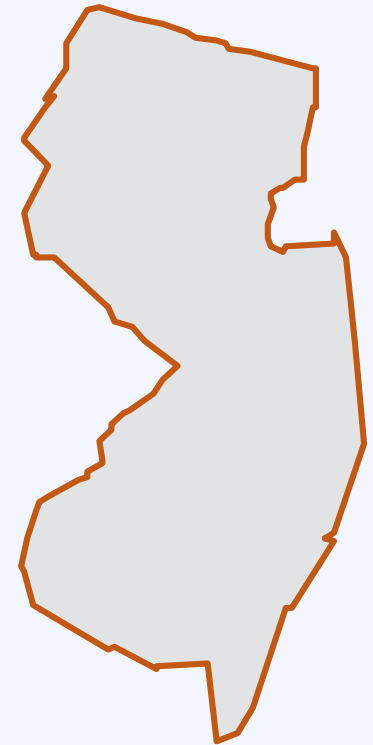
Home



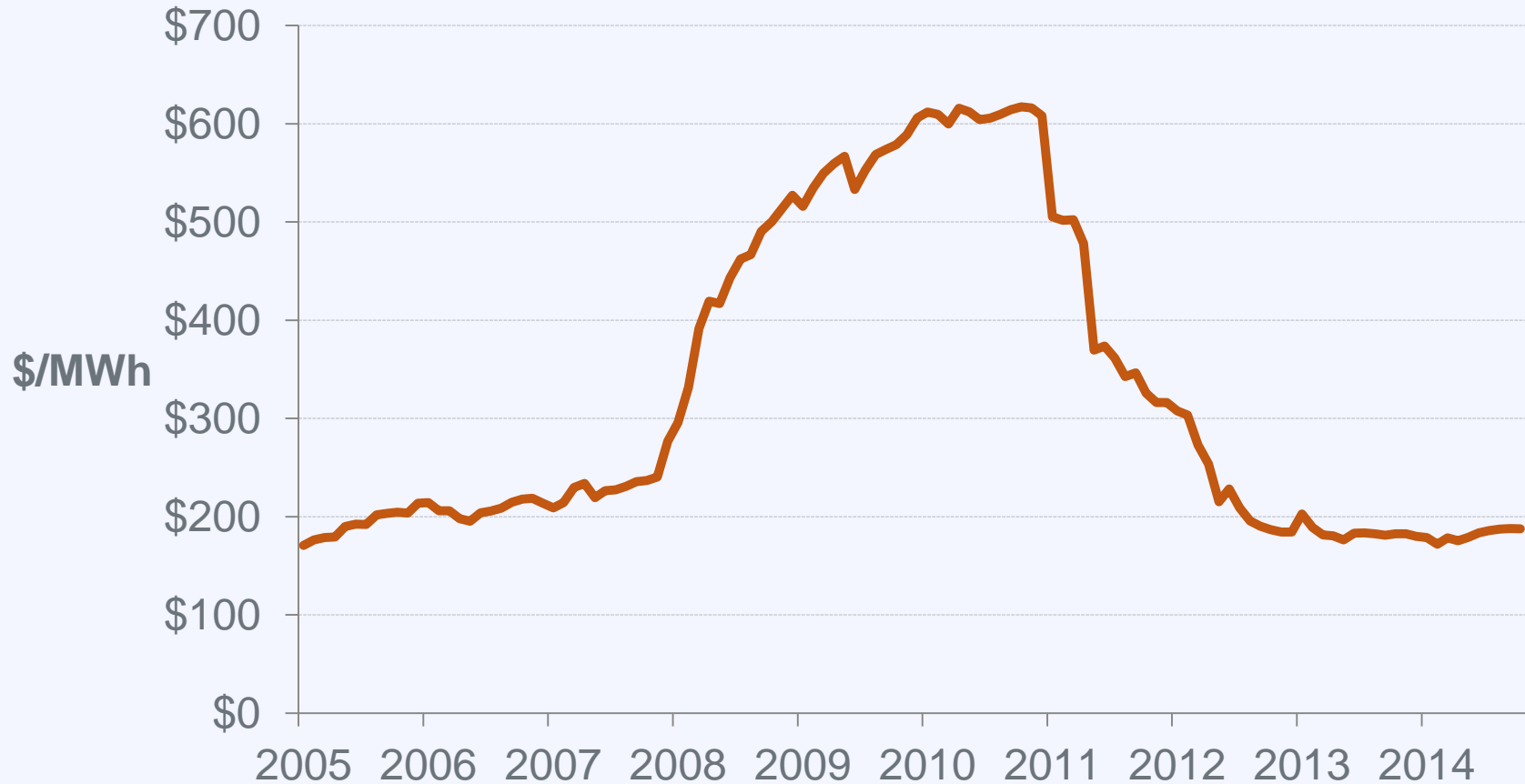
Utility

The New Jersey SREC Market

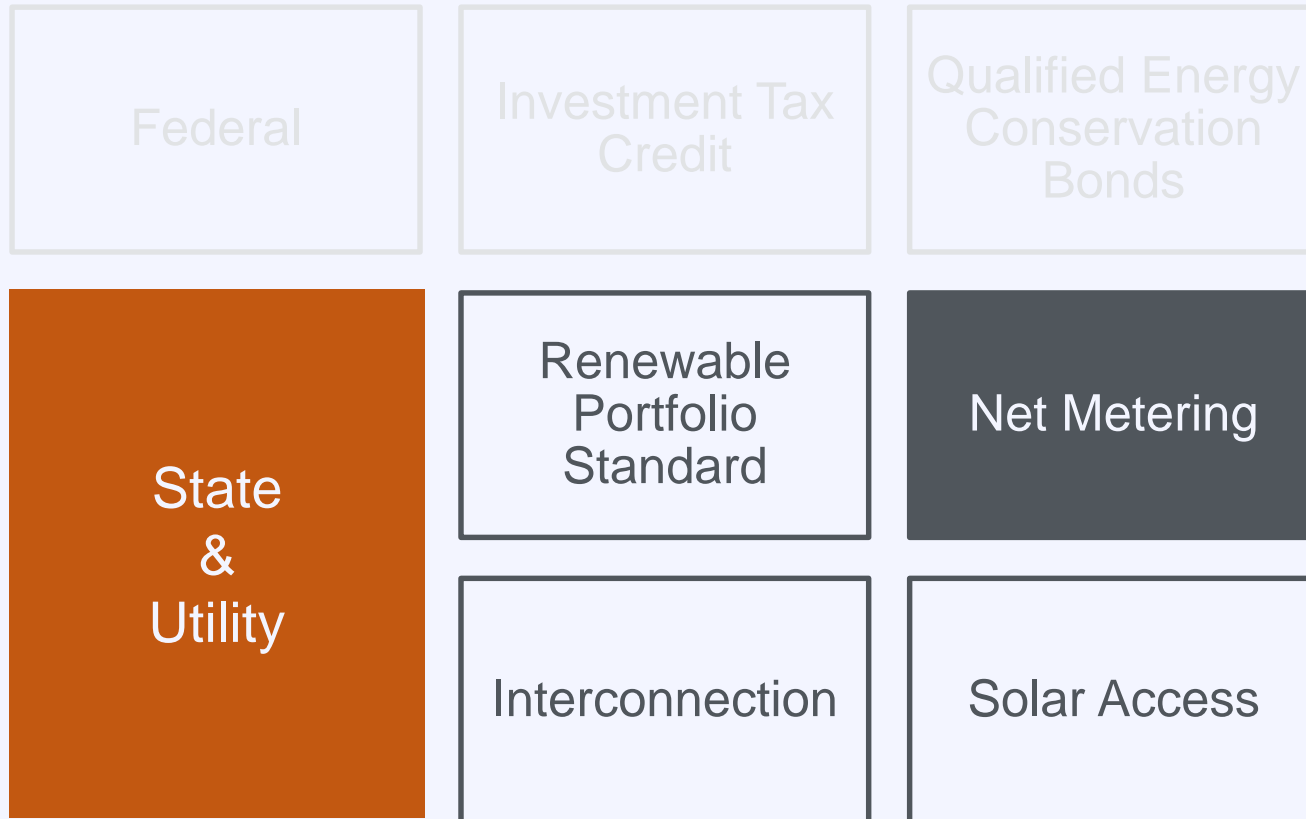
- Systems can sell RECs for first 15 years of operation
- Prices determined by market (currently just above \$200/MWh)
- Past high prices have driven the New Jersey solar boom



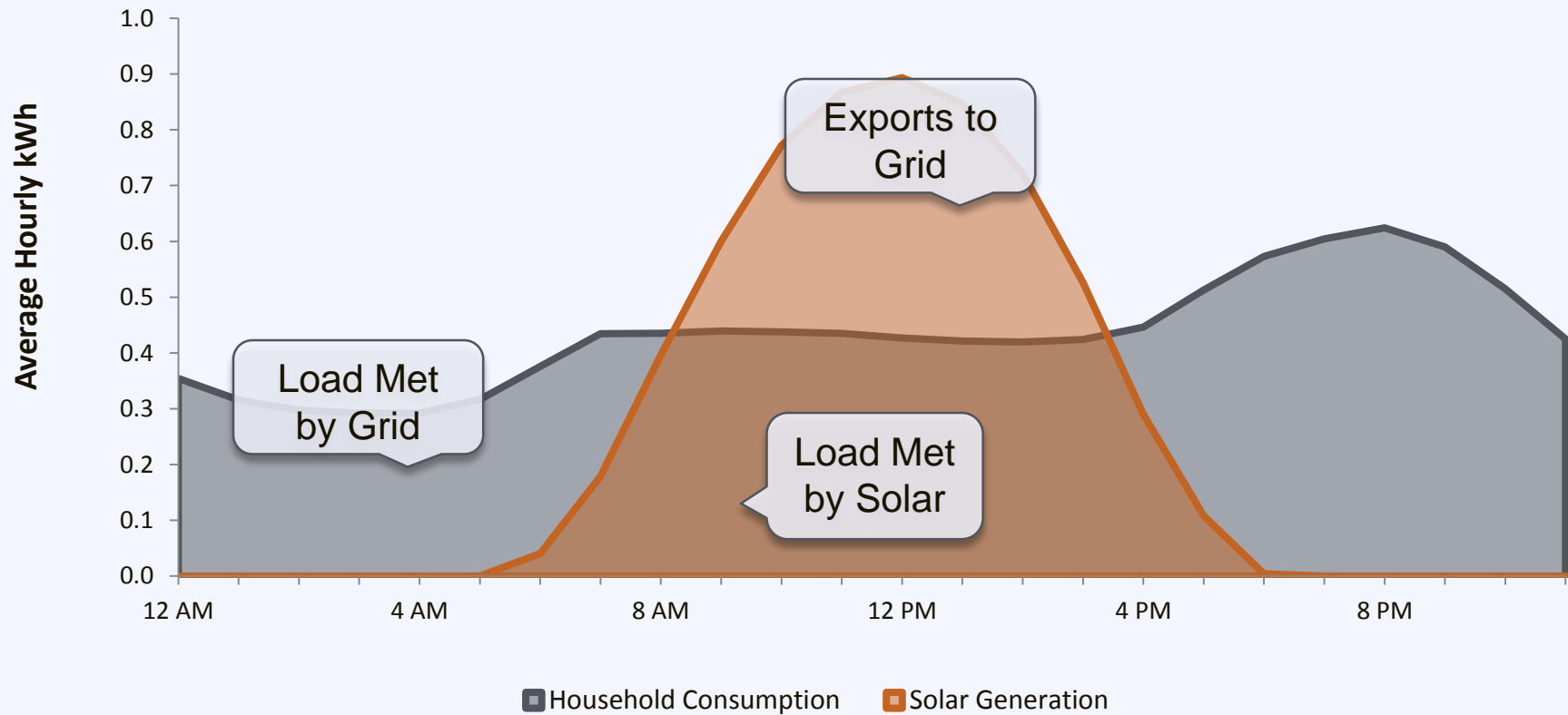
NJ SREC Price History



A Policy Driven Market



Net Metering



Net Metering

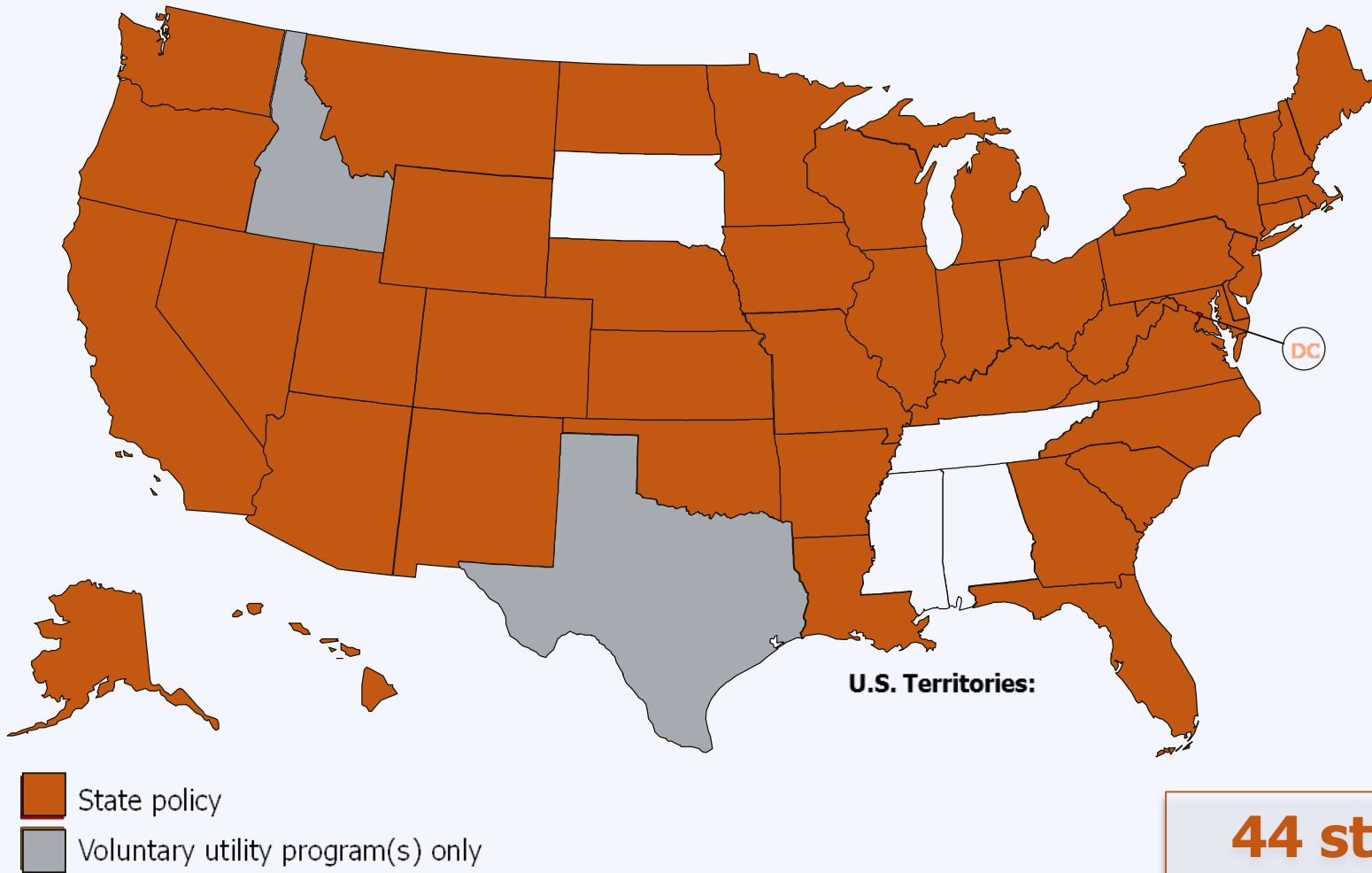
Net metering allows customers to export power to the grid during times of excess generation, and receive credits that can be applied to later electricity usage.

Net Metering: Market Share

More than **93%** of distributed
PV Installations are net-metered

Net Metering

www.dsireusa.org / March 2015



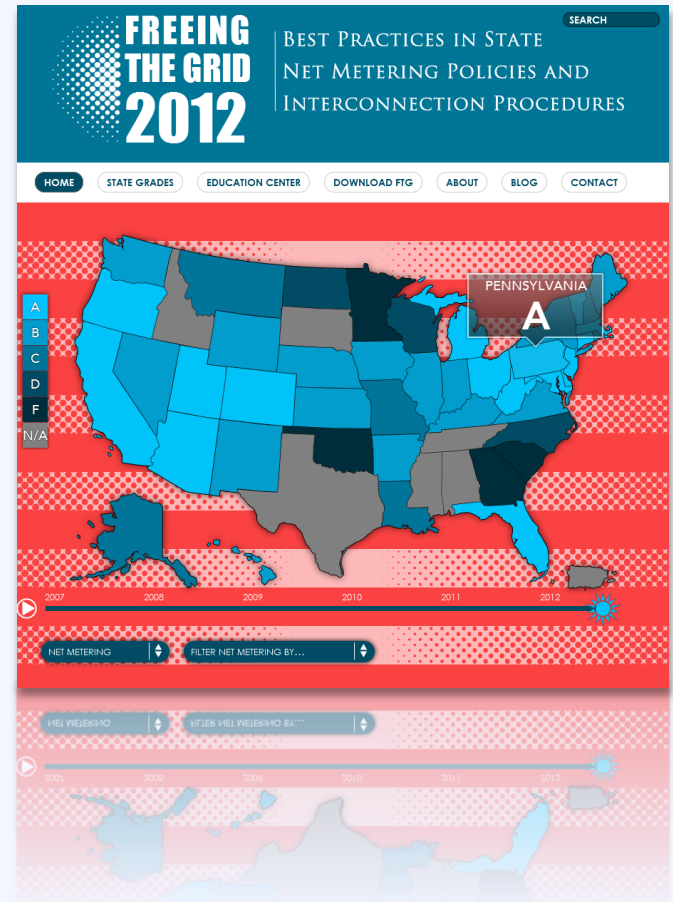
44 states + Washington DC and 4 territories have net metering policies

Net Metering: Resources

Resource Freeing the Grid

Provides a “report card” for state policy on net metering and interconnection

<http://freeingthegrid.org/>



Net Metering: New Jersey



Applicable Utilities
Investor-owned utilities



System Capacity Limit
Sized not to exceed consumption

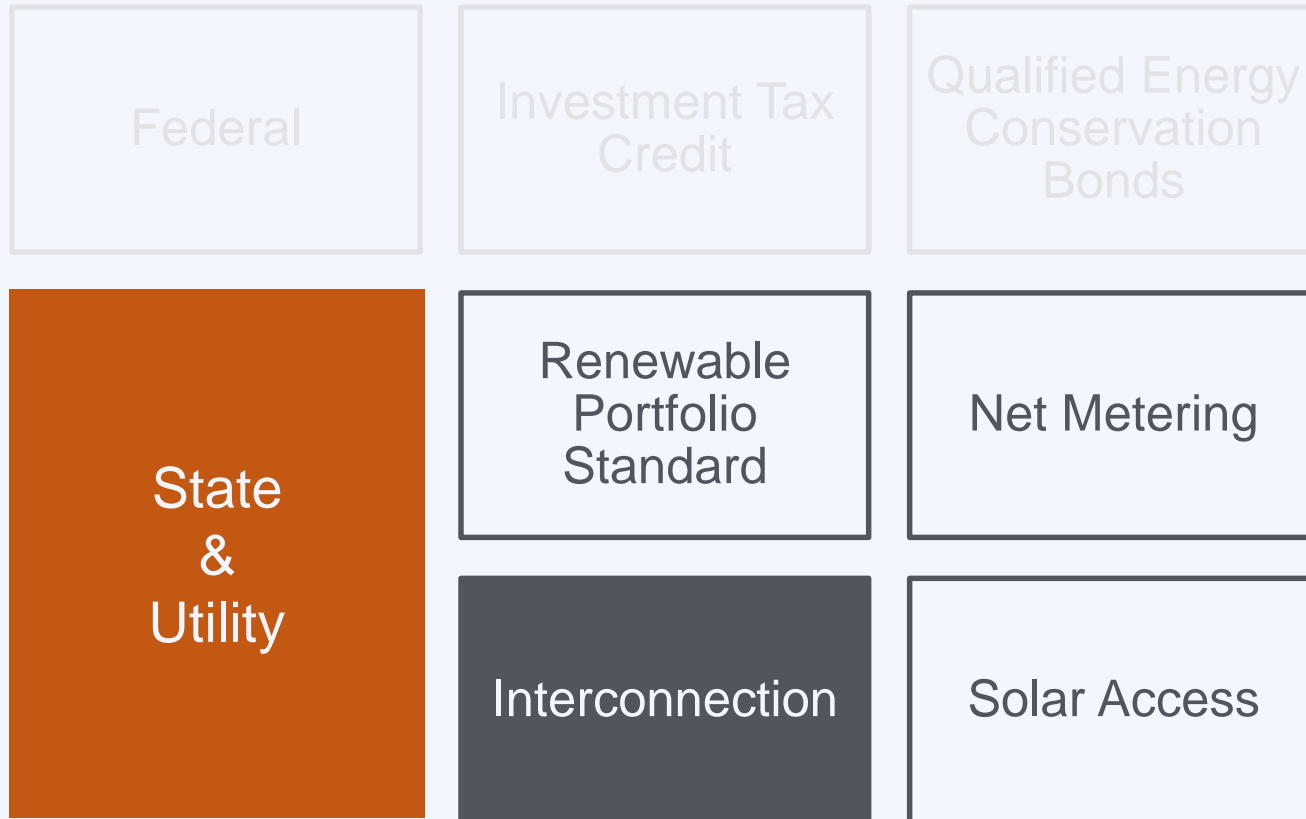


Credit Rollover
Monthly excess valued at retail rate, annual excess at avoided cost



Program Capacity
Option for BPU to limit to 2.5% of peak demand
(could be increased to 2.9%)

A Policy Driven Market

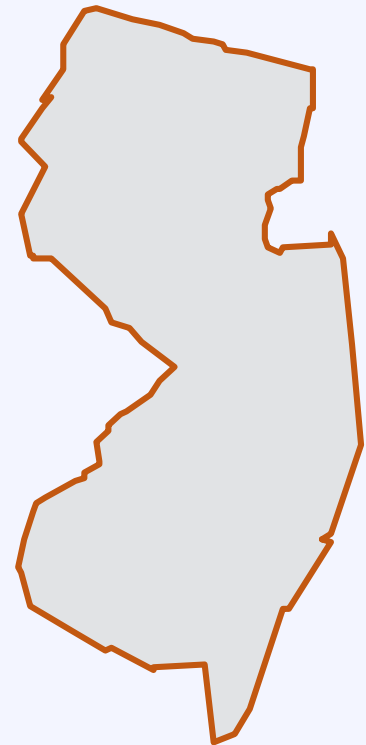


Interconnection

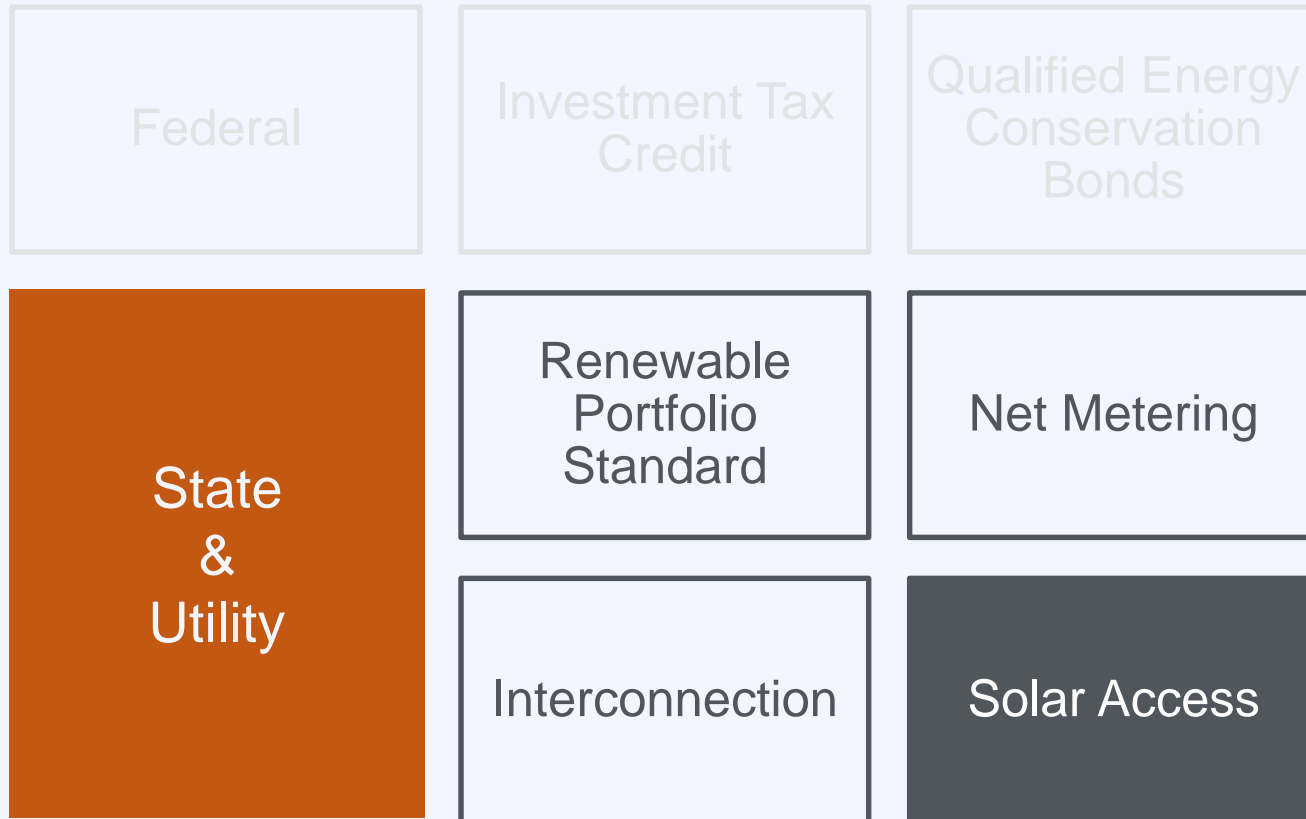
Standardized interconnection rules require utilities to provide a fair and transparent pathway for customer-generators and other developers of distributed energy resources to interconnect with the utility's grid.

Interconnection: New Jersey

- Similar interconnection processes for NJ utilities
- Simplified interconnection application for systems smaller than 10 kW
- External disconnect switch not required for systems smaller than 10 kW



A Policy Driven Market



Solar Access



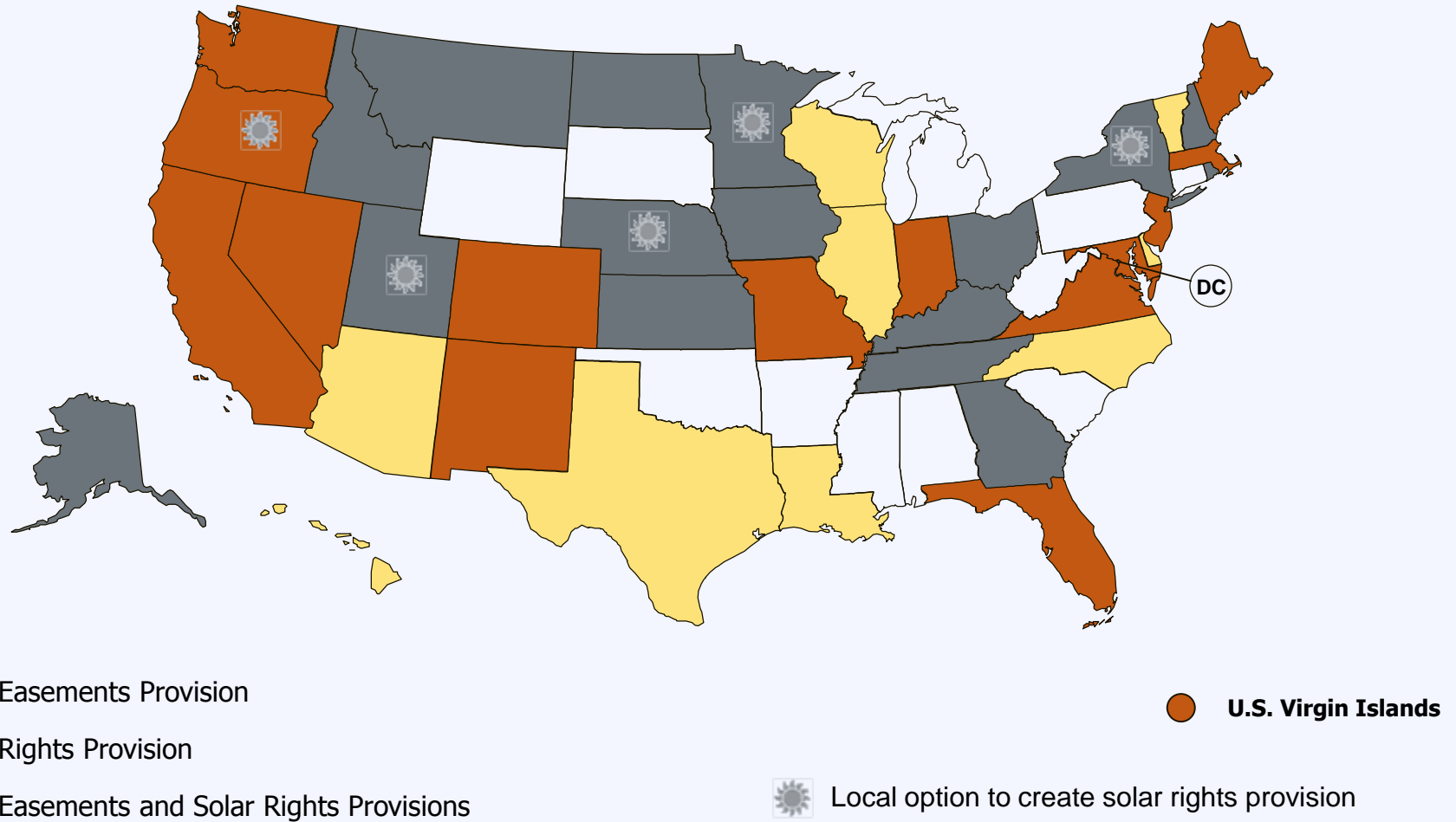
A landowner does not have any legal right to the free flow of light and air across the adjoining land of his

Solar Access

Solar Access Laws:

1. Increase the likelihood that properties will receive sunlight
2. Protect the rights of property owners to install solar
3. Reduce the risk that systems will be shaded after installation

Solar Access



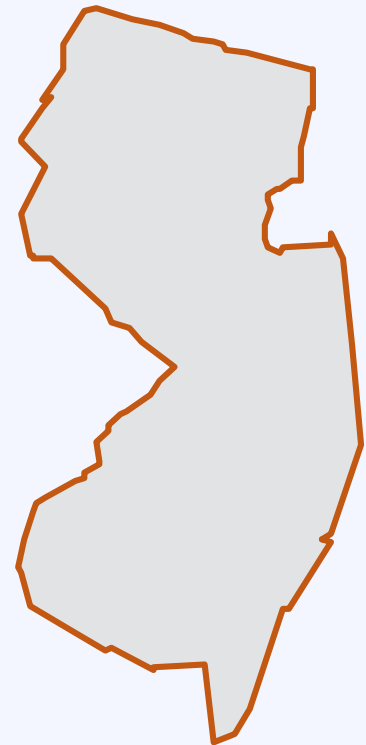
Solar Access: New Jersey

Solar Rights

- Limits on Homeowners Associations ability to restrict solar
- 10% cost adder limit

Solar Easements

- Solar owners allowed to enter into easements with neighbors
- Statute provides minimum information required in easement

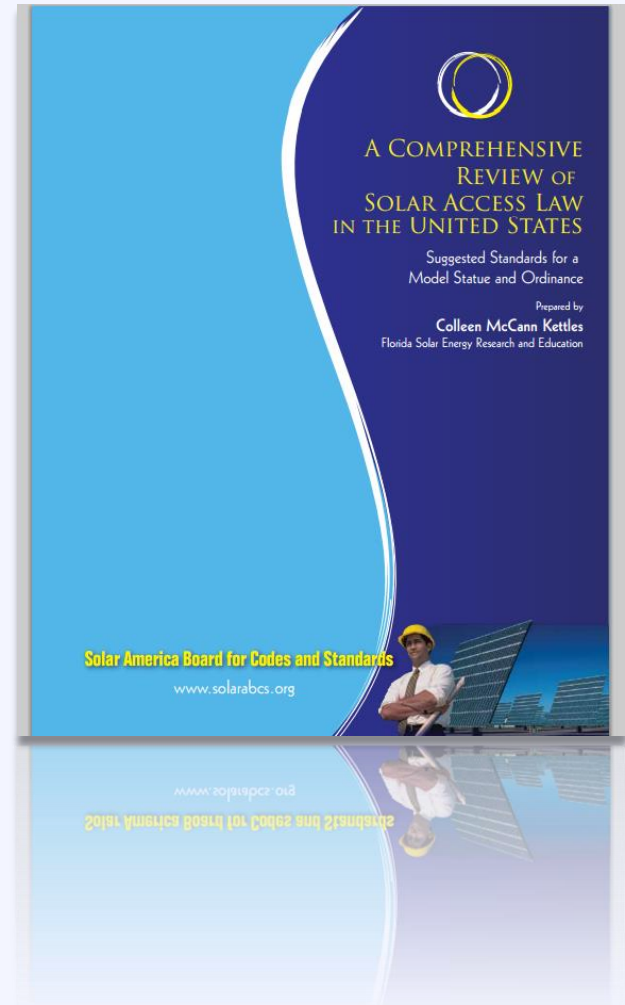


Solar Access

Resource Solar America Board for Codes & Standards

A comprehensive review of solar access law in the US – Suggested standards for a model ordinance

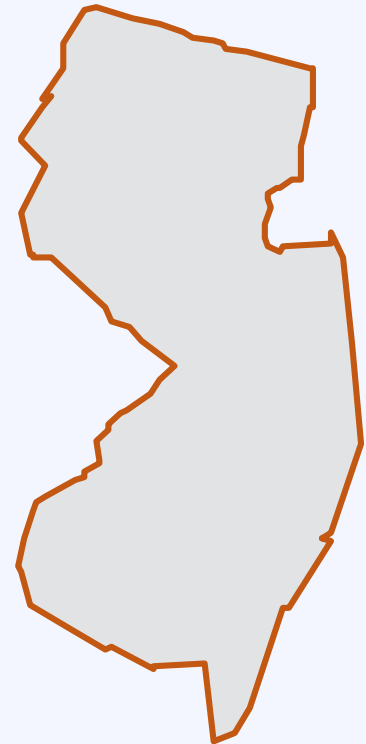
www.solarabcs.org



A Policy Driven Market

To summarize...

- RPS and SREC prices have enabled state solar market growth
- Supporting state policies in New Jersey are strong
- Main federal incentive expires at end of 2016



Agenda

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for Your Community and Next Steps

Sustainable Jersey

Solar Powering Opportunities: Sustainable Jersey Energy Program Actions

July 15, 2015

**Presenter: Tony O'Donnell, Economist,
Sustainable Jersey**



What is Sustainable Jersey® ?

- Certification program for municipalities in New Jersey:
- Identifies **actions** to help towns become sustainable
- Provides **tools, resources, and guidance** for progress
- Provides access to **grants and funding**



Actions: Prosperity, Planet, People

PROSPERITY

ENERGY EFFICIENCY

POINTS

Energy Tracking & Management* 10

Inventory & Upgrade All Buildings* 50

Energy Audits for One Building 20

Outreach Campaign to Local Business Community 10

Achieving Target Increase in Local Business Participation 10

High Performance Building 10

High Performance Building Portfolio 20

Home Performance with Energy Star Municipal Program 20

Home Performance with Energy Star Outreach 10

FOOD

Farmland Preservation Plans 10

Community or School Gardens 10

Buy Fresh Buy Local® Programs 10

Farmers Markets 10

Making Farmers Markets Accessible 5

LOCAL ECONOMIES

Green Business Recognition Program* 10

Green Jobs/Economic Development 10

Buy Local Campaign 10

Support Local Businesses 10

OPERATIONS AND MAINTENANCE

Fleet Inventory* 10

PLANET

CLIMATE MITIGATION & ADAPTATION

POINTS

Climate Adaptation: Flooding Risk* 20

Municipal Carbon Footprint* 10

Climate Action Plan 10

Community Carbon Footprint 10

Wind Ordinance 10

GREEN DESIGN

Green Building Policy/Resolution 5

Green Building Training 5

Create Green Development Checklist 10

Green Building Education 5

Site Plan Green Design Standards 20

Construction Waste Recycling 10

New Construction 20

Upgrade/Retrofit-Light Pollution 10

Upgrade/Retrofit-Water Conservation 10

INNOVATION & DEMONSTRATION PROJECTS

Renewable Government Energy Aggregation 5-45

Make Your Town Electric Vehicle Friendly 15

Public Electric Vehicle Charging Infrastructure 15

Geothermal Energy 10

Green Roofs 10

Raingardens 10



Certification Steps

- Pass a resolution; register municipality online
- Form Green Team
- Implement actions to score 150/350 points
- Submit documentary evidence for each action
- Certification awarded after review and verification



Program Growth



- Program start: February 2009
- 427 (76%) NJ municipalities participating
- 84% of NJ's population lives in these communities
- 176 municipalities certified:
 - 148 towns at bronze level
 - 28 towns at silver level
- SJ for Schools program launched Oct. 2014
 - 92 districts and 245 schools signed up



Municipal Program Energy Actions

Program offerings for 2013 certification cycle

	Climate, Planning & Efficiency	Renewable Energy & Adv-Infra	Alternative Vehicles
Energy Impact Of Municipal Operations	<ul style="list-style-type: none">• Municipal Carbon Footprint• Energy Tracking & Management• Energy Audit for One Building• Inventory & Upgrade All Buildings• Hi Performance Buildings	<ul style="list-style-type: none">• On-Site Solar Energy• On-Site Geothermal• On-Site Wind Energy	<ul style="list-style-type: none">• Fleet Actions• Procurement Actions
Municipal Impact On Community Energy Use	<ul style="list-style-type: none">• Community Carbon Footprint• Climate Action Plan• HPwES Program• HPwES Outreach• Direct Install Program• Direct Install Outreach	<ul style="list-style-type: none">• Wind Ordinance	



Energy Actions in SJ for Schools program - 2014

Energy Efficiency actions

- Energy Tracking & Management
- Energy Audit
- Implement Building Efficiency Measures
- Sustainable Energy Transition Plan

Climate Mitigation & Renewable Energy actions

- School Carbon Footprint
- Buy Renewable Energy
- Collaborate with Municipality on Government Energy Aggregation Program
- Onsite Renewable Generation System – Solar
- Onsite Renewable Generation System – Geothermal

- Program structure purposefully defines a sequence of events for EE actions that allow districts to choose most appropriate path; it also expands the renewable options through two new procurement actions
- Recognizes the variability between school districts
- Multi-point structure: varies by impact and degree of difficulty



Realignment of Municipal Program Energy – 2014/2015

5 newly redesigned Energy actions:

- Energy Tracking & Management
- Complete an Energy Audit
- Implement Efficiency Measures
- Sustainable Energy Transition Plan
- On-Site Solar Energy

6 New Energy actions:

- Renewable Government Energy Aggregation
- Make Your Town Electric Vehicle Friendly
- Public Vehicle Charging Infrastructure
- Buy Electricity From a Renewable Source
- Make Your Town Solar Friendly
- Community Procurement of On-Site Solar



Current Municipal Program Energy Actions

Recently introduced or updated actions (3Q14 or 1Q15).

Actions planned for 3Q15.

Energy Impact Of Municipal Operations	Climate, Planning & Efficiency	Renewable Energy & Adv-Infra	Alternative Vehicles
	<ul style="list-style-type: none"> • Municipal Carbon Footprint • Energy Tracking & Management • Complete Energy Audit • Energy Transition Plan • Implement EE Measures • Hi Performance Buildings 	<ul style="list-style-type: none"> • On-Site Solar Energy • On-Site Geothermal • On-Site Wind Energy • Buy Electricity From a Renewable Source 	<ul style="list-style-type: none"> • Fleet Actions • Procurement Actions
Municipal Impact On Community Energy Use	<ul style="list-style-type: none"> • Community Carbon Footprint • Climate Action Plan • HPwES Program • HPwES Outreach • Direct Install Program • Direct Install Outreach 	<ul style="list-style-type: none"> • Wind Ordinance • Renewable GEA Program • Make Your Town Solar Friendly • Community Procurement of On-Site Solar 	<ul style="list-style-type: none"> • Make Your Town EV Friendly • Public EV Chargers



3Q14 New Action: Renewable Government Energy Aggregation (R-GEA)

Concept: Towns earn points for this action if they implement a Government Energy Aggregation program for their community that includes renewable energy content (R-GEA). With this approach, the municipality is making a “group purchase” of electricity for the entire community that makes consumer access to renewable energy safe, convenient, and affordable.

Points: Four tier structure:

- 5 points: passing an ordinance and engaging an energy consultant.
- 10 points: Any R-GEA program with 100% renewable energy based on Green-E certified content.
- 30 points: Any R-GEA program with at least 20% renewable energy, with all the renewable content coming from resources located within PJM.
- 45 points: Any R-GEA program with at least 40% renewable energy, some content required to come from renewable generation assets that are in NJ, and the balance coming from sources within PJM.



1Q15 Action CHANGE: On-Site Solar Energy

- **Concept:** An update of the existing On-Site Solar Energy action to make use of the multi-point structure, and award different points depending on project impact. Also introduces the potential to upgrade solar as a resiliency asset.
- **Points:** Multi-tier structure depending on displacement of utility purchase:
 - ✓ 10 points: for displacement <20%
 - ✓ OR 20 points for displacement >20% and <30%
 - ✓ OR 30 points: for displacement > 30%
- ✓ Additional 10 points: if the solar system is upgraded to include islanding and energy storage to enable on-site operation during a grid outage.



3Q15 Action: Make Your Town Solar Friendly

Concept: Take municipal action to simplify the process by which residential and commercial customers build on-site solar energy systems, with a focus on ordinance, permitting, and related process improvements. Collectively, these improvements by the town will make it easier and more cost effective for community residents to install solar generation systems on their properties.

Points: 15 points, based on meeting following two requirements

- **MUST DO:** Pass a supportive solar ordinance. Criteria will be specified as to what constitutes a “supportive ordinance”, and ordinances that are not supportive will not be eligible for this action.
- Select at three tasks from the following list in support of solar development:
 1. Permit process optimization
 2. Permit cost standardization
 3. Preparing municipal staff (including first responders) through solar-specific training
 4. Incentives or regulations related to solar-based resiliency
 5. Holding general awareness events
 6. Other ideas still under development by SJ Energy Task Force



3Q15 Action: Buy Electricity From a Renewable Source

Concept: This action recognizes a municipality that buys electricity from a renewable source through a third party supply contract. The municipalities can contract directly for their electricity with inclusion of at least 20% renewable content, or (more commonly) join an aggregation buying pool that offers renewable energy as an option.

Points: 10 points

- Execute an energy purchase agreement, for at least one year's worth of supply, providing at least 20% of the energy purchased through the contract from class one renewable sources, inclusive of the requirements of the NJ RPS then in effect.
- This action is very similar in structure to one of the 9 original actions in the SJ for Schools program.



3Q15 Action: Community Procurement of On-site Solar

Concept: The town provides a “community buying program” for solar installations on private properties, for either commercial or residential (or both) customers. Primary examples of these programs are Property Assessed Clean Energy (PACE) programs, which are enabled by NJ legislation for commercial properties, or the DOE Solarize program, in which towns arrange for standardized, discounted purchase of solar generation systems in bulk and promote them through the municipality.

Points: 20 points

- Municipality must select the program that they want to implement;
- Pass resolutions as needed to authorize implementation and procure related services;
- Implement the program and promote it;
- Report on associated results.

The action will be flexible on exactly what kind of program qualifies, since a wide variety of variations are possible. Several known “best practice” examples will be provided.



Follow Up Questions

If you have any questions, feel free to reach out to me:

Tony O'Donnell, Economist

(odonnela@tcnj.edu or 609-771-2921)





NEW JERSEY PACE

Property Assessed Clean Energy



*ECONOMIC DEVELOPMENT & JOBS BY FUNDING ENERGY EFFICIENCY,
RENEWABLES & RESILIENCY FOR LOCAL PRIVATE PROPERTY OWNERS*

PRESENTATION TO THE

SOLAR OUTREACH PARTNERSHIP

STOCKTON, NEW JERSEY

JULY 16, 2015

GUS ESCHER

DIRECTOR OF FINANCE

609-683-1666

NJPACE

NewJerseyPACE.org
A NJ Nonprofit

New Jersey PACE, a 501c3 NJ Nonprofit
Basking Ridge & Princeton, NJ

WHAT IS PACE?

❖ Financing Program

- ❖ Provides Funds to Private Property Owners
- ❖ Commercial, Industrial & Institutional Properties

❖ Uses the *Special Assessment* vehicle

- ❖ Town passes an Ordinance to set up Program
- ❖ Town appoints Program Administrator
- ❖ Town places a Special Assessment on the Property
- ❖ Town collects payments along with Taxes
- ❖ Program pays the Investor back

❖ Special Assessment mechanism not new just its application for PACE improvements

WHAT CAN BE FINANCED?

❖ Energy Conservation Projects

- ❖ More efficient HVAC & other equipment
- ❖ LED lighting, insulation, green roofs, etc.
- ❖ New Boilers, etc.

❖ Renewable Energy Systems

- ❖ Solar PV and Solar Thermal systems
- ❖ CHP / Cogeneration systems
- ❖ Methane recovery, Wind & other renewables

❖ Resiliency / Sustainability Improvements

- ❖ Storm-proof building features
- ❖ Improved water and utility service protection
- ❖ Safe rooms, enhanced resistance to natural forces

WHAT ARE THE KEY ADVANTAGES?

❖ For the Property Owner

- ❖ Lower energy costs
- ❖ 100% Financing
- ❖ Off-balance sheet Financing
- ❖ Obligation to pay stays with property, not owner

❖ For the Town

- ❖ upgraded, more resilient building stock
- ❖ economic development & local jobs
- ❖ No Cost business attraction and retention

❖ For the Green Community

- ❖ The Program sets criteria and reviews results
- ❖ Reduction of Carbon Footprint
- ❖ Increases green awareness and demonstrates technologies

WHAT NJ PACE PROVIDES

- ❖ **Administers local PACE Programs**
- ❖ **Collaborates with other PACE programs**
- ❖ **Educates relevant Constituents**
 - ❖ Municipalities
 - ❖ Property owners
 - ❖ Contractors / Installer
 - ❖ Investors / Lenders
 - ❖ Community groups
- ❖ **Collects Data on Project Outcomes**



PLEASE CONTACT

Gus Escher
Director of Finance
(609) 683-1666

gescher@newjerseypace.org

NewJerseyPACE.org

WHAT MAKES IT WORK?

❖ Property Owners save money

- ✧ Energy savings are greater than assessment payments, creating a positive cash flow

❖ Lenders and investors are protected

- ✧ Special Assessment mechanism is relatively secure, providing long-term stable returns to the lenders and investors

❖ Upgrades add asset value to properties

❖ Municipalities are reimbursed for all costs

❖ Program increases awareness and practical action to create jobs and reduce carbon pollution

WHY USE PACE?

- ❖ No liability on business balance sheet since obligation stays with the property
- ❖ Financing is relatively secure (payments collected by municipality, along with taxes)
- ❖ The Special Assessment transfers with the property when it's sold
- ❖ Cashflow positive from Day 1
- ❖ Increases NOI and enhances property value

WHY BUILDING OWNERS DON'T UPGRADE

- ❖ Don't have the money to invest / other priorities
- ❖ Don't want an added liability on balance sheet
- ❖ Not sure how long they will keep the building
- ❖ Don't want to wait for the usual multi-year payback
- ❖ Are not energy experts and therefore don't know what's possible / available
- ❖ The potential savings are not seen as certain or significant enough to warrant the investment



WHO WE ARE

New Jersey PACE — DBA for Center for Regenerative Community Solutions (CRCS)

- Follows DOE “best practices” guidelines
- Mission is to promote and educate about sustainability solutions for NJ communities, including NJ PACE
- Develops and administers non-exclusive municipal PACE programs
- Has 501(c)(3) status to assist in advocacy and funding key Initiatives

CRCS, a NJ 501(c)(3) Nonprofit

- Provides innovative solutions to help communities prepare for extreme weather events and mitigate climate change

NewJerseyPACE.org

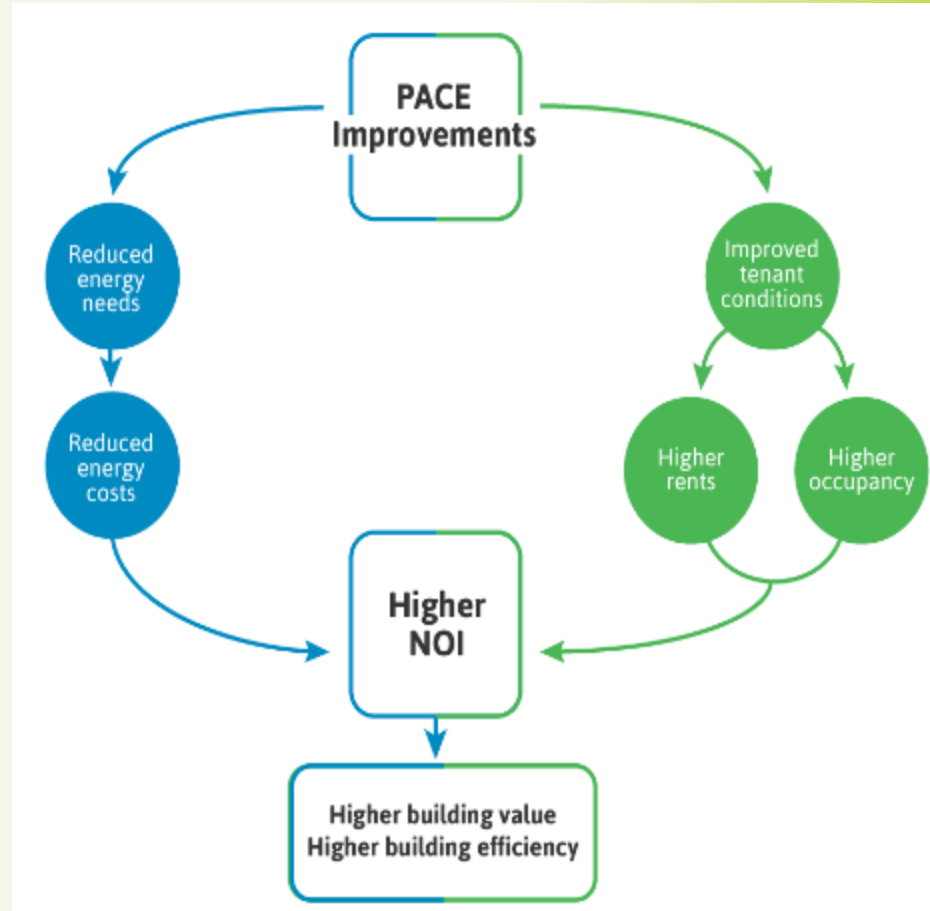
Jonathan Cloud, Executive Director

Gus Escher, Director of Finance

Victoria Zelin, Director of Development

ENERGY EFFICIENCY MAKES BUSINESS SENSE

- ❖ Reduced Energy Costs =
- ❖ Improved Tenant Conditions* =
- ❖ Higher Occupancy & Rents =
- ❖ Higher Net Operating Income =
- ❖ Higher Building Value



*In addition to cost reduction from saving energy, research shows that occupants are more comfortable, more productive and healthier.

PACE PROJECT EXAMPLE

30 Year Old,
200,000 ft²
office building

**Estimated Project
cost \$540,000**



**\$845,000 Increase
in Building Value
(5%)**

One Main Street	Before PACE	After PACE
Revenue		
Rental Income/yr.	2,735,000	2,735,000
Total Revenue	2,735,000	2,735,000
Expenses		
Property Taxes/yr.	515,000	515,000
PACE Assessment/yr. (1)		49,658
Energy Costs/yr.	330,000	221, 100
Other Expenses/yr.	705,000	705,000
Total Expense	1,550,000	1,490,758
Net Operating Income (NOI)	1,185,000	1,244,242
Energy-Related Savings		108,900
Property Value@7% Cap Rate (2)	16,930,000	17,774,892
Increase in Property Value		844,892

NOTES:

(1) Annual assessment cost is based on a 20-year amortization at 6.85%

(2) "Cap rate" is the ratio between the net operating income produced by an asset and its market value

WHAT'S NEEDED TO ESTABLISH PACE IN NJ

- ❖ **Informed municipal governments**
 - ✧ Need to pass Resolution, obtain DLGS Approval, & Ordinance
- ❖ **Professional program administrator (NJPACE)**
- ❖ **Commercial/Industrial/Nonprofit Property owners interested in upgrading/lowering energy costs**
- ❖ **Support from industry, government, finance, and the community**
- ❖ **Support from mortgage lenders and NJBA**

HISTORY & EXPERIENCE IN OTHER STATES

- ❖ **NJ Legislation approved 2012 after conditional veto strips out state's role in financing**
 - ❖ **Now left up to the municipalities, along with county improvement authorities**
- ❖ **31 States plus Washington, DC now have PACE legislation**
- ❖ **California, Florida, Michigan, Connecticut, and several other states have active Commercial PACE programs**
 - ❖ **State agency model (CT)**
 - ❖ **Municipal programs (Ann Arbor, San Francisco)**
 - ❖ **Public-private-nonprofit models (e.g., Michigan, NJ)**
- ❖ **Over \$150 million in projects completed, over \$450 million on drawing boards and in pipeline**

WHAT NJPACE PROVIDES AS ADMINISTRATOR

- ❖ Open-market platform for property owners, energy contractors and lenders
- ❖ Uniform documentation and procedures
- ❖ Coordination of all aspects of the Program on behalf of municipalities
- ❖ Assists municipalities in gaining approval and handling assessments
- ❖ Public education and outreach

PUBLIC-PRIVATE PARTNERSHIP MODEL

PROGRAM ADMINISTRATOR

- ❖ Establish Standards & Procedures with Municipality
- ❖ Conduct Marketing/Seminars
- ❖ Process and Verify Project Applications
- ❖ Coordinate Owners, Lenders, Contractors & Municipality
- ❖ Finalize and Make Assessment request to the Municipality
- ❖ Monitor Project Completion & Repayment Stream

MUNICIPALITY

- ❖ Approve Program Administrator (NJPACE) & Program Specifics
- ❖ Process Building Permits as Usual
- ❖ Set Up Assessments on Tax Rolls
- ❖ Levy Assessments with Taxes, Collect Assessments and forward them to Trustee
- ❖ May Issue Bonds or Use County Improvement Authority Bonds (or Private Finance)
- ❖ Receive Occasional Reports from Program Administrator

Key Program Features

- ❖ Focus is on commercial and institutional properties, which account for 70% of building energy use
- ❖ Supplements and eventually replaces existing incentives and programs
- ❖ Offers third-party verification of projected savings
- ❖ Requires Mortgage Lender consent
- ❖ Provides off-balance-sheet credit
- ❖ Serves municipalities, lenders, and property owners
- ❖ We do not get paid by energy contractors
- ❖ PACE does not increase government regulation or control

NJ PACE Management

- ❖ **Jonathan Cloud—Executive Director.** Social entrepreneur and nonprofit executive, designer/builder, conservation and renewable energy expert
- ❖ **Gus Escher—Director of Finance.** Investment banker, land use planner & former NJ local elected official
- ❖ **Victoria Zelin—Director of Development.** Business development consultant, former Deloitte Sustainability Practice Business Development leader

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Effective Local Solar Policy

Local Solar Policy

Planning for
Solar

Solar in
Development
Regulation

Effective Solar
Permitting
Process

Solar Market
Development
Tools

Effective Local Solar Policy

Local Solar
Policy

Planning for
Solar

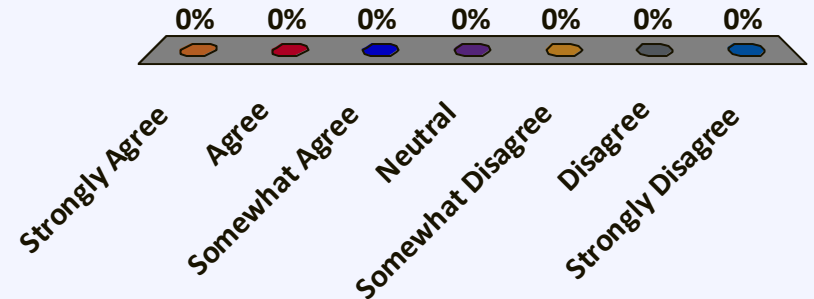
Visioning &
goal setting

Effective Solar
Permitting
Process

Solar Market
Development
Tools

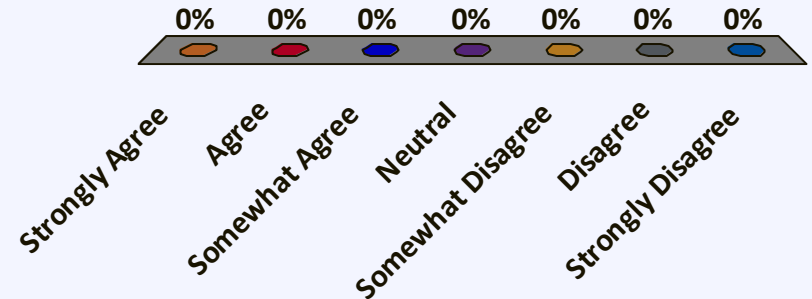
Solar advances your energy goals

- A. Strongly Agree
- B. Agree
- C. Somewhat Agree
- D. Neutral
- E. Somewhat Disagree
- F. Disagree
- G. Strongly Disagree



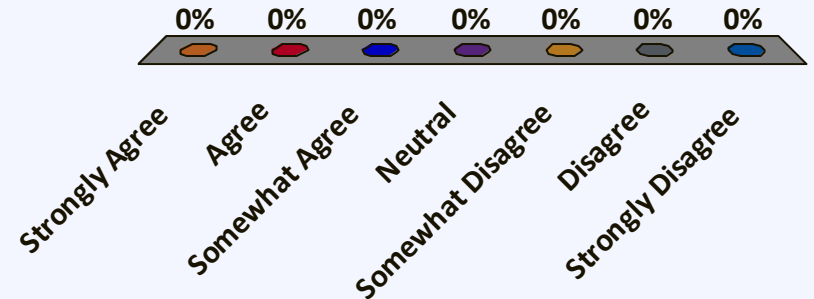
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- B. Agree
- C. Somewhat Agree
- D. Neutral
- E. Somewhat Disagree
- F. Disagree
- G. Strongly Disagree



Solar advances your environmental & health goals

- A. Strongly Agree
- B. Agree
- C. Somewhat Agree
- D. Neutral
- E. Somewhat Disagree
- F. Disagree
- G. Strongly Disagree



Visioning: Scales & Contexts

Is solar on
residential
rooftops
appropriate for
your community?



Visioning: Scales & Contexts

Is solar on
commercial
rooftops
appropriate for
your community?



Visioning: Scales & Contexts

Is solar on historic structures appropriate for your community?



Visioning: Scales & Contexts

Is solar on
brownfields
appropriate for
your community?



Visioning: Scales & Contexts

Is solar on
greenfields
appropriate for
your community?



Visioning: Scales & Contexts

Is solar on parking lots appropriate for your community?



Visioning: Scales & Contexts

Is building-integrated solar appropriate for your community?



Planning for Solar Development

Communitywide Comprehensive Plan

Nighborhood
Plans

Corridor Plans

Special
District Plans

Green
Infrastructure
Plans

Energy Plan

Climate Action
Plan

Planning for Solar Development

Lawrence Township (Mercer County)

Green Buildings and Environmental Sustainability Element of the Master Plan

- *Energy Conservation and Renewable Energy Production*
 - *Goal A: Conserve energy through building and site design.*
 - *Objective #1: New residential and nonresidential developments should be designed such that buildings are able to utilize passive solar strategies.*
 - *Objective #2: Municipal facilities and infrastructure should incorporate energy conservation measures*

Planning for Solar Development

- *Goal B: Promote local production of renewable energy*
 - *Objective #1: Revise the Land Use Ordinance to make it easy for property owners in all zone districts to produce renewable energy on their property as accessory uses.*
 - *Objective #2: Municipal facilities and infrastructure should incorporate renewable energy production.*
 - *Objective #3: Revise the Land Use Ordinance to encourage new developments to harness solar/photovoltaic power either at the time of development or in the future.*
 - *Objective #4: Promote renewable energy production as principal uses.*

Technical Resources

Resource Planning for Solar Energy

A guide for planners on determining and implementing local solar goals, objectives, policies, and actions

www.planning.org



Effective Local Solar Policy

Local Solar
Policy

Planning for
Solar

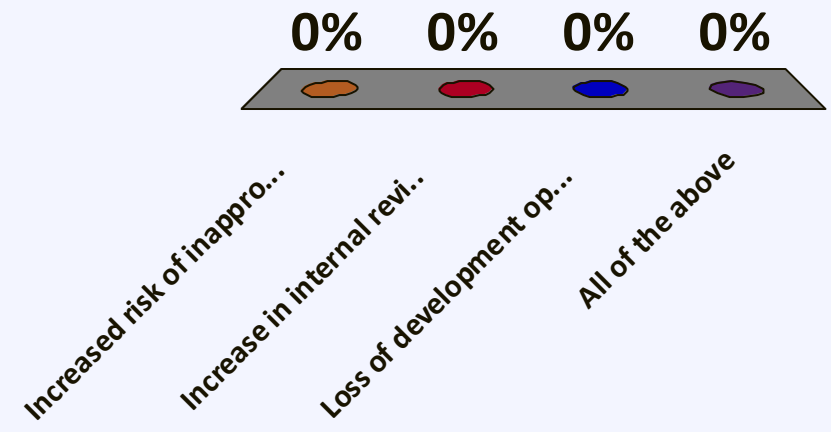
Solar in
Development
Regulation

Effective Solar
Permitting
Process

Solar Market
Development
Tools

What is the cost of convoluted regulations or “regulatory silence”?

- A. Increased risk of inappropriate development
- B. Increase in internal review costs
- C. Loss of development opportunities
- D. All of the above



Zoning Standards

Section	Topics to Address
Definitions	Define technologies & terms
Applicability	Primary vs. accessory use
Dimensional Standards	<ul style="list-style-type: none">• Height• Size• Setbacks• Lot coverage
Design Standards	<ul style="list-style-type: none">• Signage• Disconnect• Screening• Fencing

Zoning Standards: Small Solar

Typical Requirements:

- Permitted as accessory use
- Minimize visibility if feasible
- Requirements:
 - District height
 - Lot coverage
 - Setback



Zoning Standards: Example

Galloway Township

Town Code Chapter 233: Land Management

§ 233-8: Accessory structures and uses

H. Small wind energy and solar energy systems

(2) Wind and solar energy systems shall only be permitted as an accessory use on the same lot as the principal use.

Zoning Standards: Example

(5) Solar Energy Systems

- (a) Solar panels shall be permitted as a rooftop installation in any zoning district. The solar panels shall not exceed a height of eight inches from the rooftop. In no event shall the placement of the solar panels result in a total height including building and panels than what is permitted in the zoning district which they are located for the principal building.
- (b) Solar panels shall be permitted as ground arrays in accordance with the following:
- [1] All ground arrays shall be set back a distance of 20 feet from all property lines in a residential zoning district or in conformance with the bulk standards for accessory structures in commercial districts as provided herein.
 - [2] Ground arrays shall not be permitted in a front yard.
 - [3] Ground arrays shall be located so that any glare is directed away from an adjoining property.
 - [4] Ground arrays shall not exceed a height of 15 feet.

Zoning Standards: Large Solar

Typical Requirements:

- Allowed for primary use in limited locations
- Requirements:
 - Height limits
 - Lot coverage
 - Setback
 - Fencing and Enclosure



Zoning Standards: Example

Resource Delaware Township

Allows large-scale solar as a permitted conditional use in selected zones. Includes standards for:

- lot coverage
- setback
- height
- screening
- fencing
- signage
- buffers
- noise
- stormwater
- access

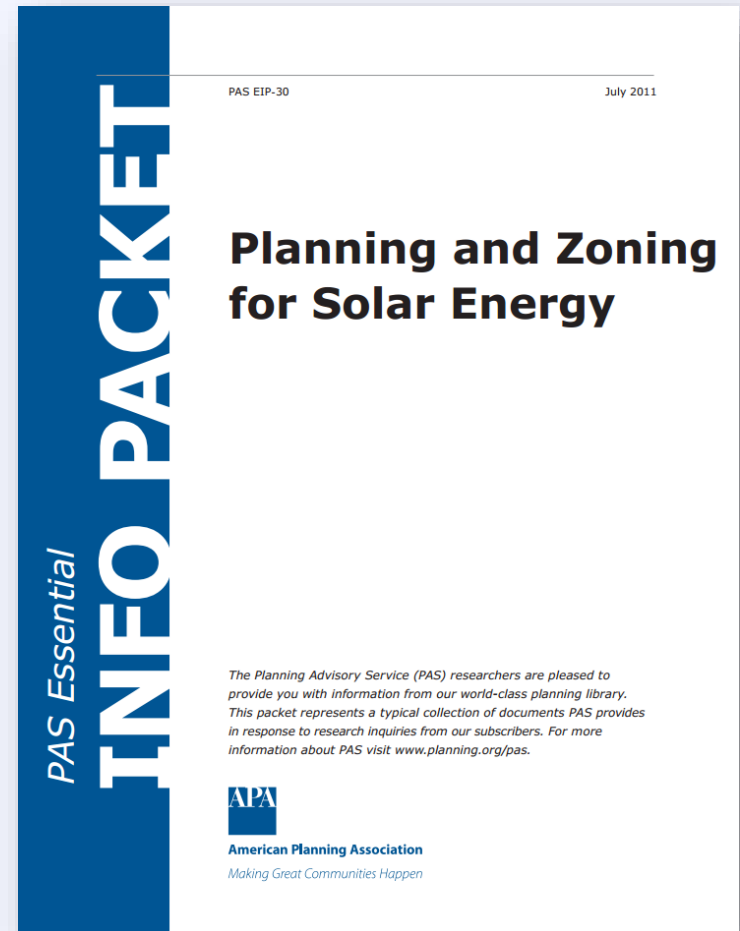
DELAWARE TOWNSHIP ORDINANCE #2011-06LU

AN ORDINANCE SUPPLEMENTING AND
AMENDING THE LAND USE ORDINANCE OF THE
TOWNSHIP OF DELAWARE BY PERMITTING
SOLAR ENERGY SYSTEMS. #2011-06LU

Zoning Standards: Model Ordinances

Resource American Planning Association

This Essential Info Packet provides example development regulations for solar.



Zoning Standards: Historic

Typical Requirements:

- Prevent permanent loss of “character defining” features
- Possible design requirements
 - Ground mounted
 - Flat roof with setback
 - Panels flush with roof
 - Blend color



Source: SolarCentury

Zoning Standards: Historic

Resource

North Carolina Clean Energy Technology Center

Provides sample design principles and example regulations incorporating historic preservation into sustainability and energy projects.

Installing Solar Panels on Historic Buildings

A Survey of the Regulatory Environment

August 2012

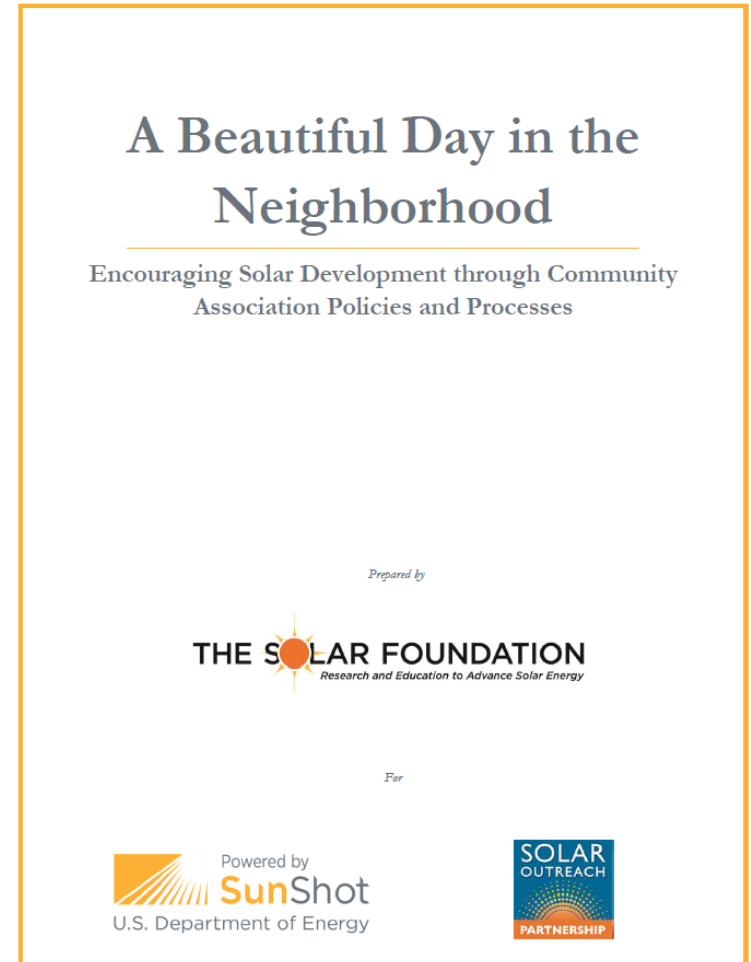
Prepared by



Private Rules on Residential Solar

Resource The Solar Foundation

Guide for HOAs on solar access law and simple recommendations for reducing barriers to solar in association-governed communities.



Solar in HOAs: Best Practices

- ✓ Provide clear, unambiguous design guidelines
- ✓ Post rules and requirements online
- ✓ Provide a list of all required documents
- ✓ Waive design rules that significantly increase cost or decrease performance
- ✓ Allow exceptions from tree removal rules

Update Building Code

Solar Ready Construction:

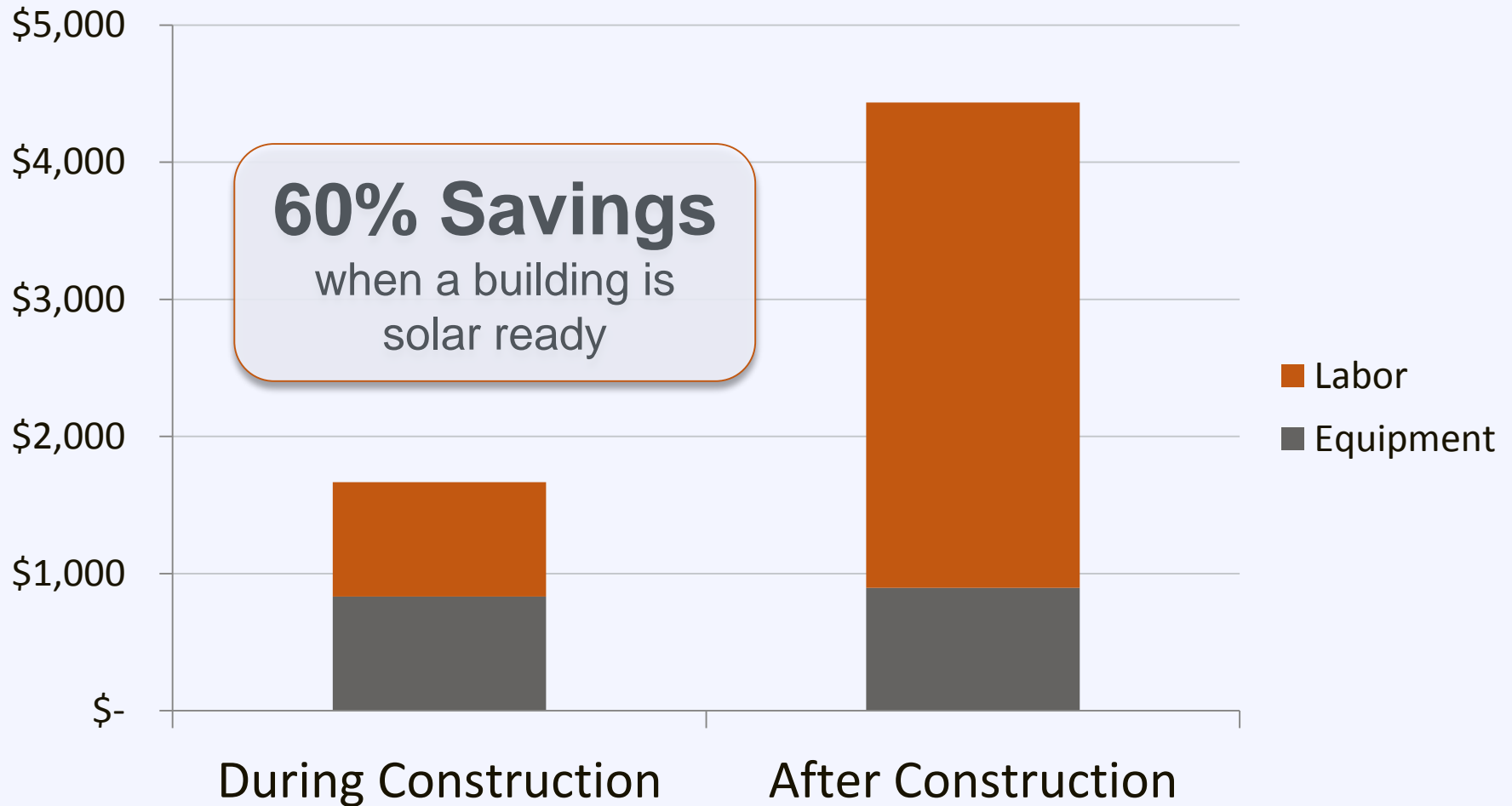
Preparing a building for solar at the outset can help make future solar installations easier and more cost effective.

Update Building Code

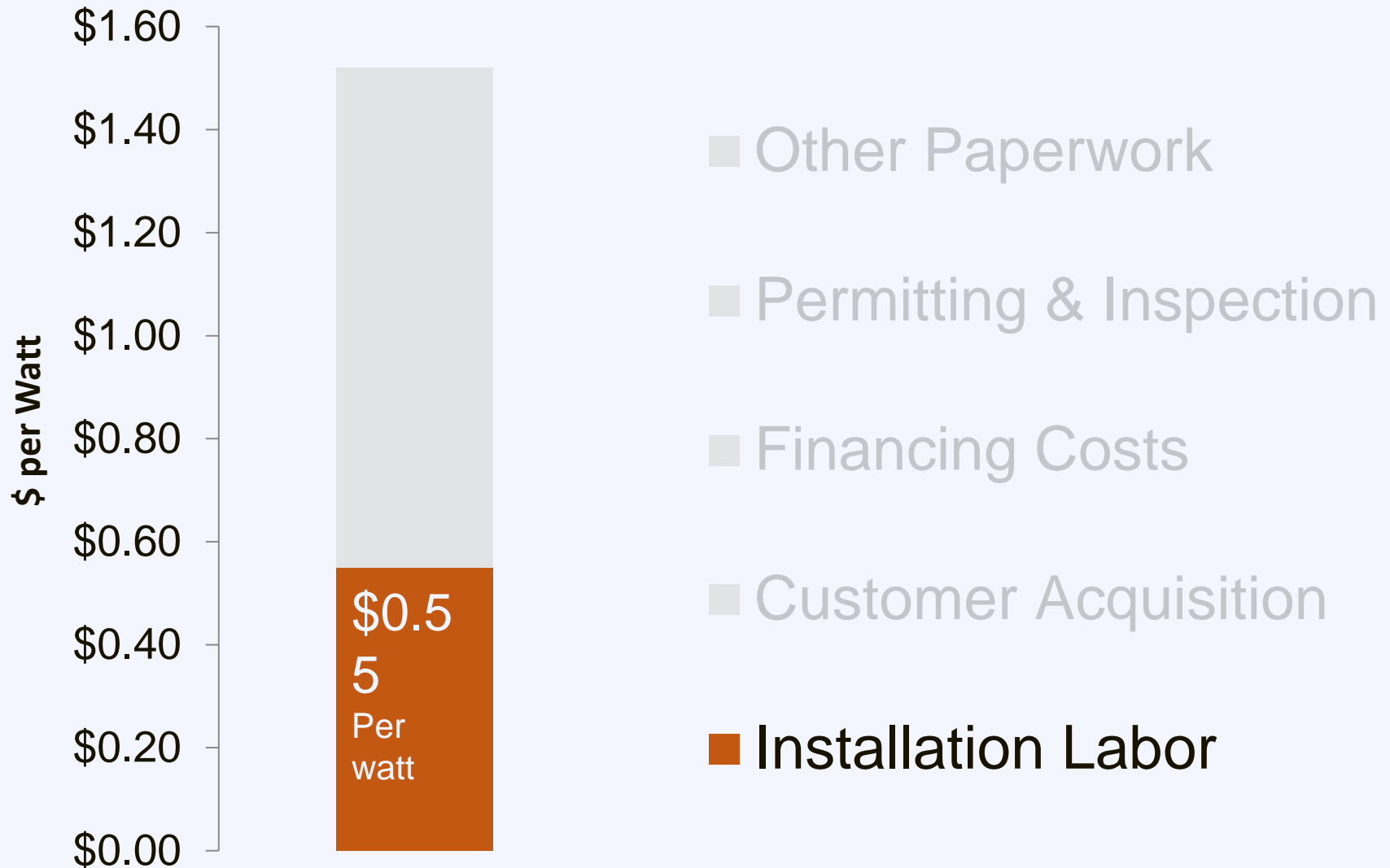
Require builders to:

- ✓ Minimize rooftop equipment
- ✓ Plan for structure orientation to avoid shading
- ✓ Install a roof that will support the load of a solar array
- ✓ Record roof specifications on drawings
- ✓ Plan for wiring and inverter placement

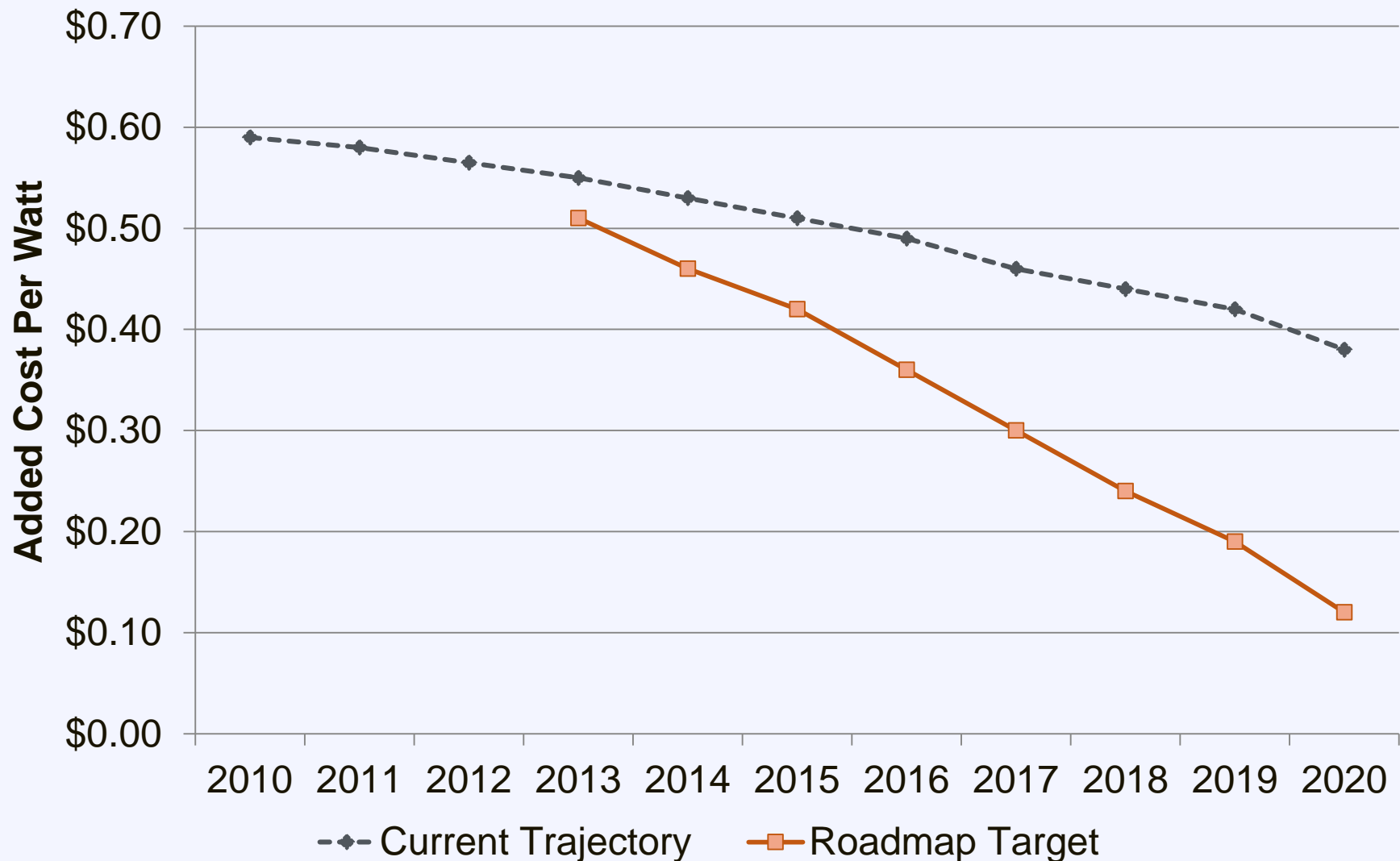
Update Building Code



Installation Soft Costs



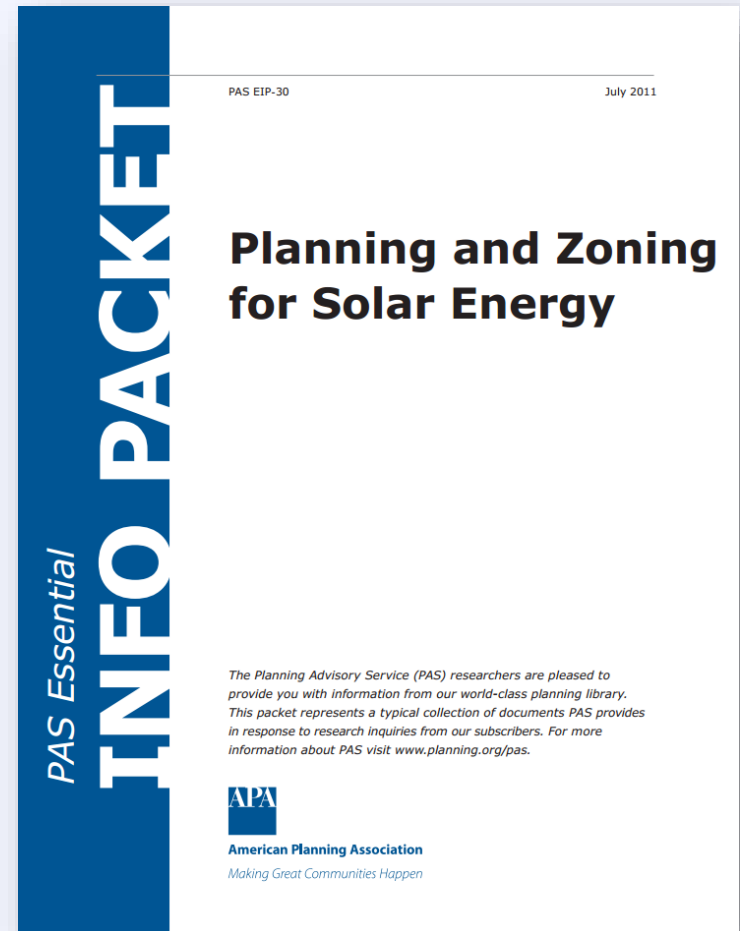
Installation Labor Roadmap



Zoning Standards: Model Ordinances

Resource American Planning Association

This Essential Info Packet provides example development regulations for solar.



Effective Local Solar Policy

Local Solar
Policy

Planning for
Solar

Solar in
Development
Regulation

Effective Solar
Permitting
Process

Solar Market
Development
Tools

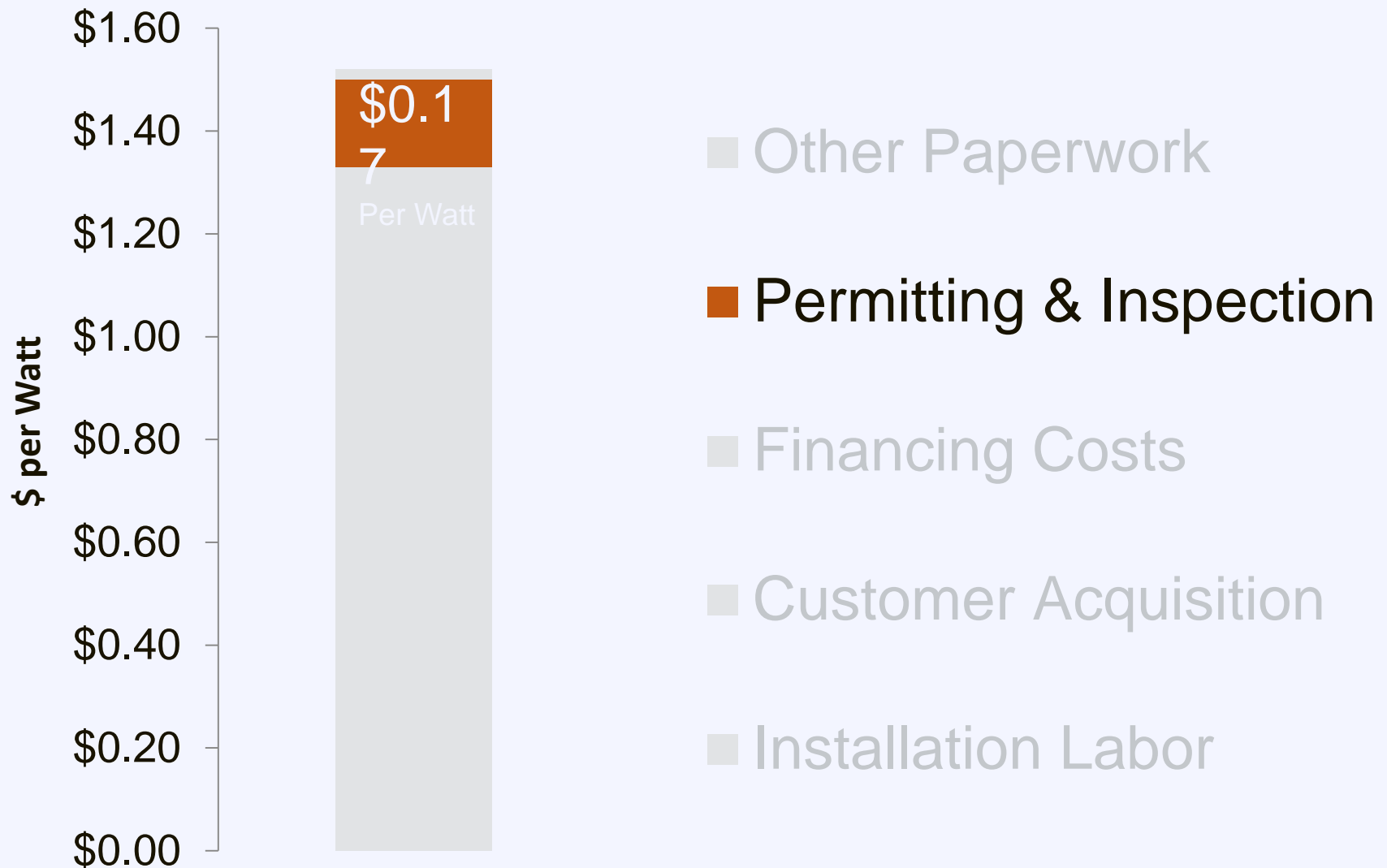
Challenge: Inconsistency

18,000+ local jurisdictions
with unique zoning and permitting
requirements

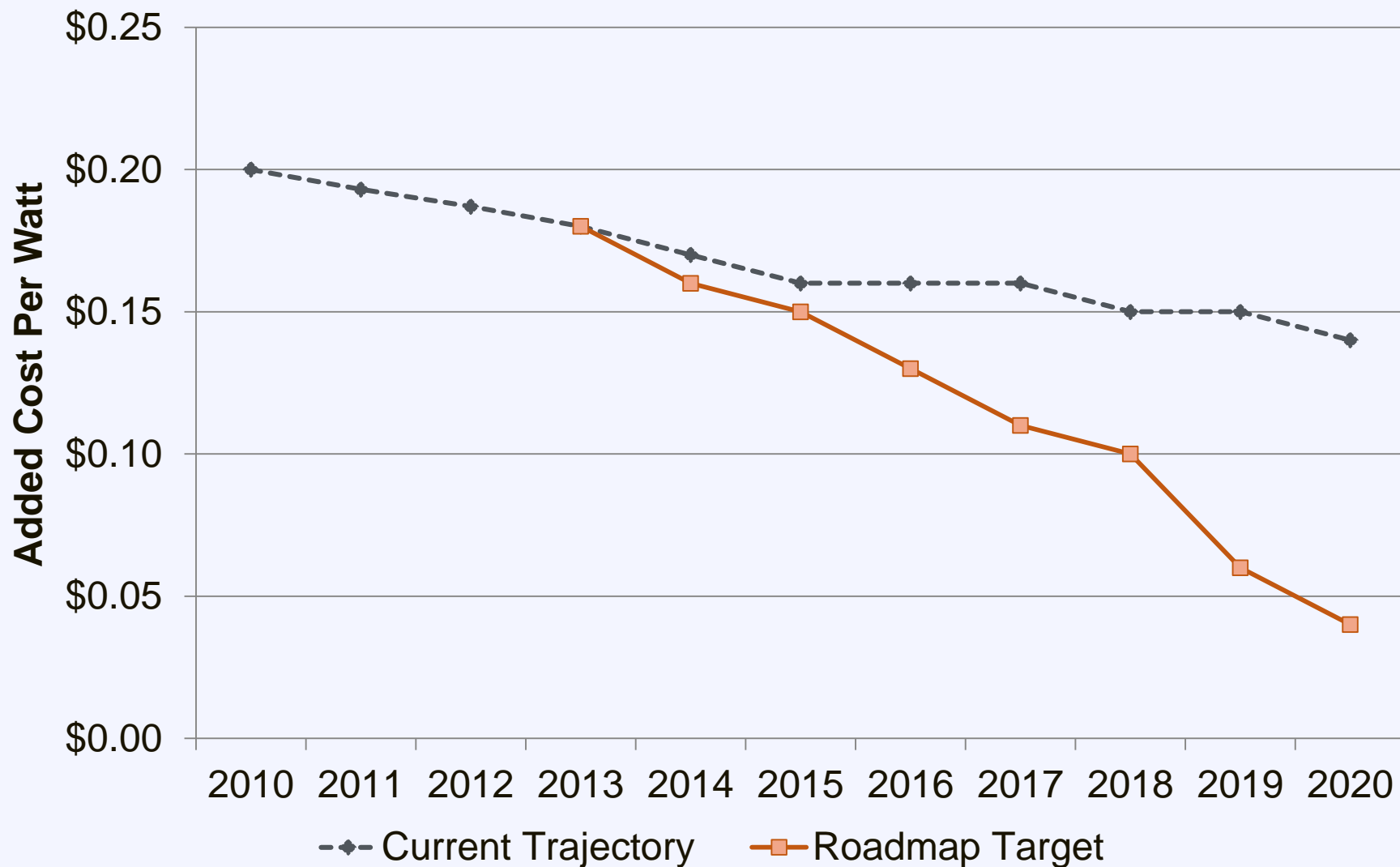
Consumer Challenges



Regulatory Barriers



Planning & Permitting Roadmap



Expedited Permitting

Solar Permitting Best Practices:

- ✓ Post Requirements Online
- ✓ Implement an Expedited Permit Process
- ✓ Enable Online Permit Processing
- ✓ Ensure a Fast Turn Around Time

Expedited Permitting

Solar Permitting Best Practices:

- ✓ Collect Reasonable Permitting Fees
- ✓ No Community-Specific Licenses
- ✓ Narrow Inspection Appointment Windows
- ✓ Eliminate Excessive Inspections
- ✓ Train Permitting Staff in Solar

Permitting: Best Practices

Resource

Interstate Renewable Energy Council

Outlines leading best practices in residential solar permitting and provides examples of implementation.

Simplifying the Solar Permitting Process Residential Solar Permitting Best Practices Explained

To aid communities in designing effective and efficient solar permitting processes, the Interstate Renewable Energy Council, Inc. (IREC) and The Vote Solar Initiative have identified nine [Residential Solar Permitting Best Practices](#). This document provides additional context for these Best Practices and relevant resources to help communities implement them. For more detail on the examples of where the Best Practices listed below have been implemented as well as additional resources see [Sharing Success: Emerging Approaches to Efficient Rooftop Solar Permitting](#).

1. Post Requirements Online

What does this mean? The municipality should have a website that offers a one-stop location for residents, businesses and installers to get all necessary information on obtaining a solar permit in that municipality or region. In particular, the website should include a clear description of the requirements and process for getting a solar permit, including any necessary forms, and information on fees and inspections. The website could also contain checklists for the application and inspection requirements for solar.

Who is already doing it?

Solar One Stop (Pima County and City of Tucson, Arizona), solaronestopaz.org

San Jose, CA, www.sanjoseca.gov/index.aspx?nid=1505

Berkeley, CA, www.cityofberkeley.info/solarpypermitguide

Why do it? Making these resources easily accessible to solar installers can reduce the number of questions that municipal staff have to answer and can improve the efficiency of the permitting process for all involved. In addition, it can help to increase the quality of applications submitted, which in turn decreases the time required for review. It also decreases the frustrating back-and-forth that installers and municipal staff may otherwise experience. Providing these resources can be particularly helpful for new installers or those that are new to that specific municipality. If a municipality has unique or unusual requirements, or has recently modified their process or requirements, the website is a good way for the municipality to identify these differences clearly to installers and residents.

Additional Resources

IREC Solar Permitting Checklists and Guidance Documents, www.irecusa.org/wp-content/uploads/permitting-hand-out6-1.pdf

IREC Inspection Checklist (coming soon)

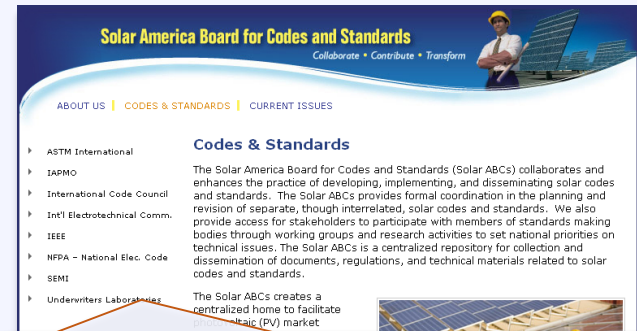


Model Permitting Process

Resource Solar America Board for Codes & Standards

Expedited Permitting:

- Simplifies requirements for PV applications
- Facilitates efficient review of content
- Minimize need for detailed studies and unnecessary delays



1-1. Example Design Criteria:

- Size < 10-15 kW
- Code compliant
- Weight < 5 lb / sqft
- 4 strings or less

Agenda

- | | |
|--------------------|--|
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for Your Community and Next Steps |

Effective Local Solar Policy

Local Solar Policy

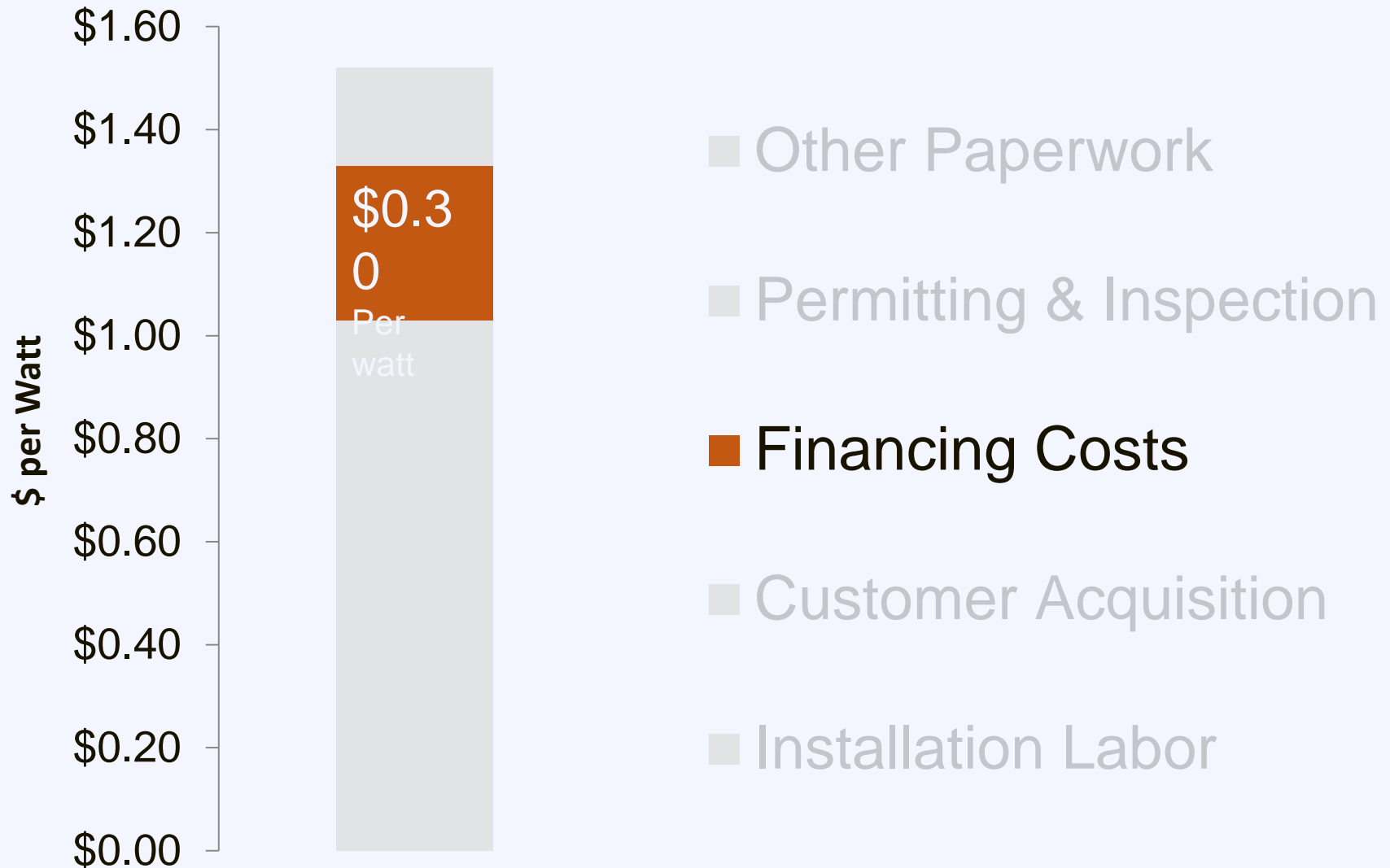
Planning
Solar

Understanding solar financing
Expanding financing options
Addressing customer acquisition

Effective Solar
Permitting
Process

Solar Market
Development
Tools

Third Party Ownership



The Solar Equation

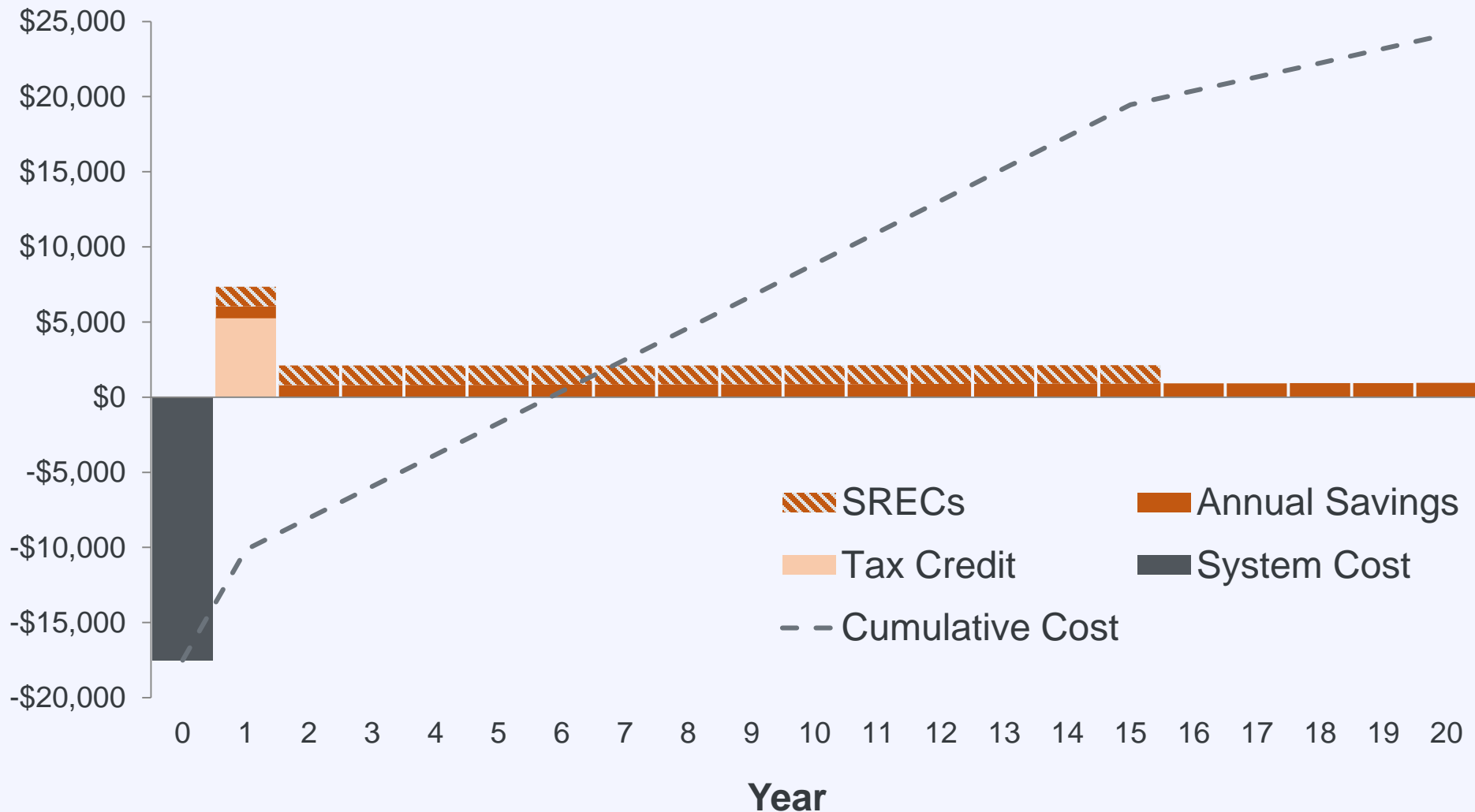
Cost

- + Installed Cost
- + Maintenance

Benefit

- + Energy Savings
- + Incentives

The Solar Finance Problem



Solar Financing Options

Third Party
Ownership

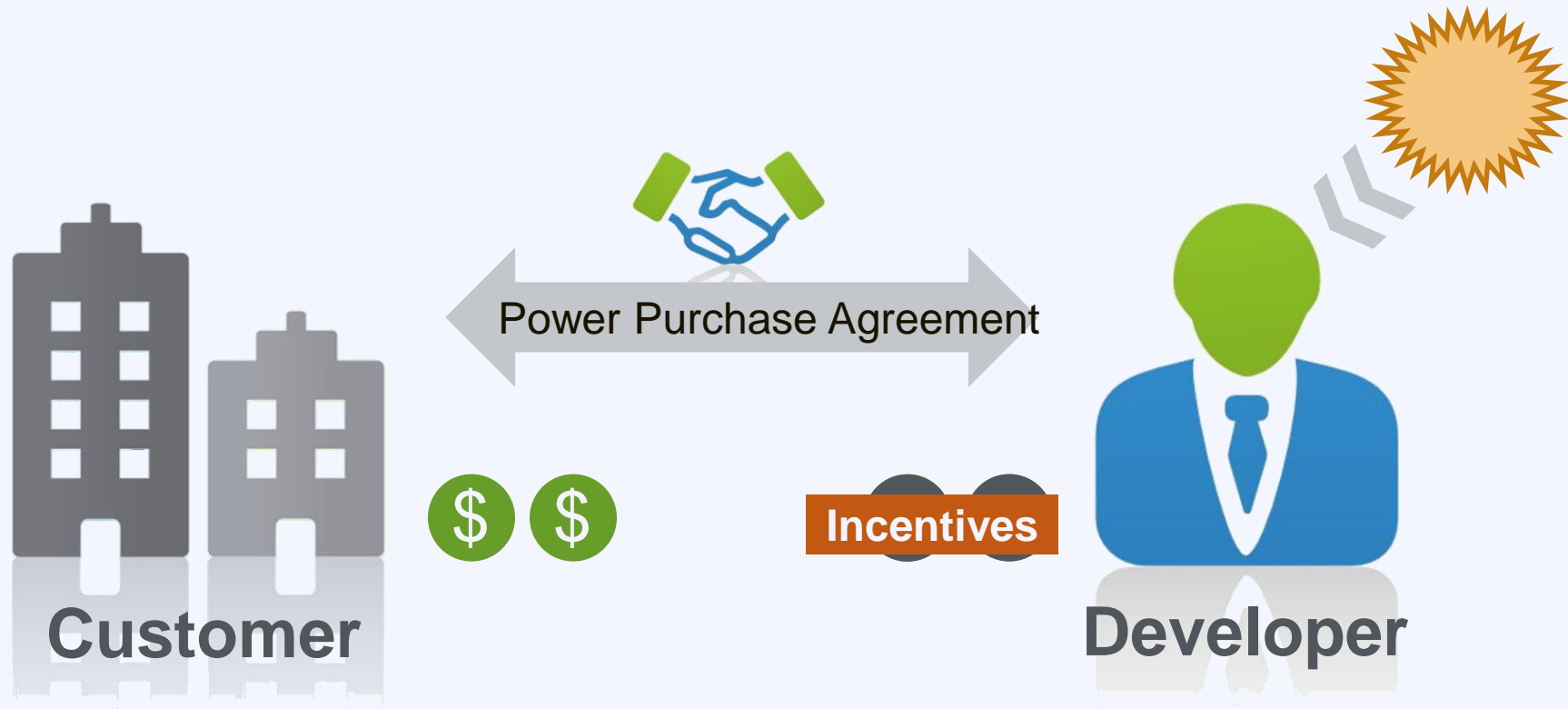
Traditional
Lending

Solar Financing Options

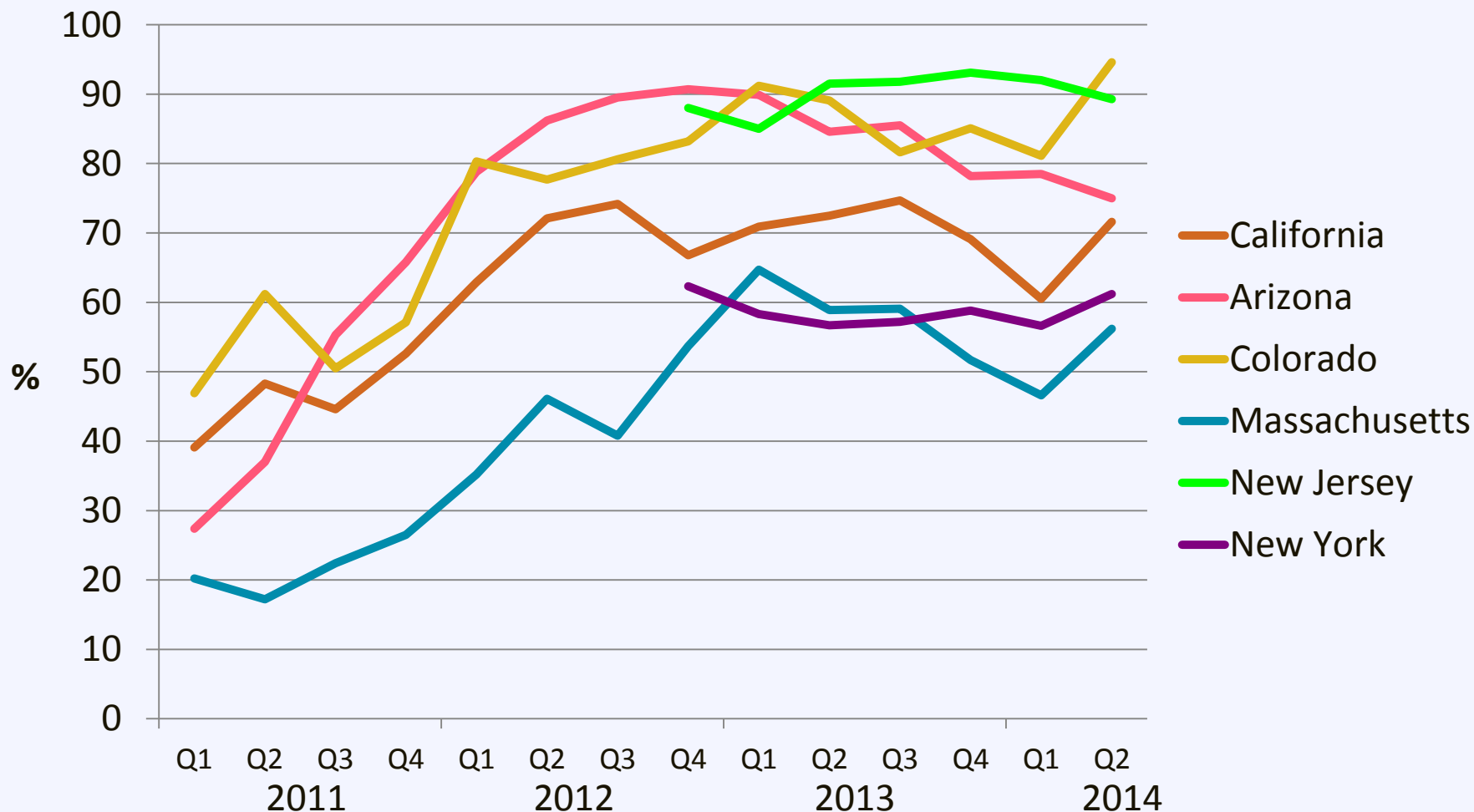
Third Party
Ownership

Traditional
Lending

Third Party Ownership

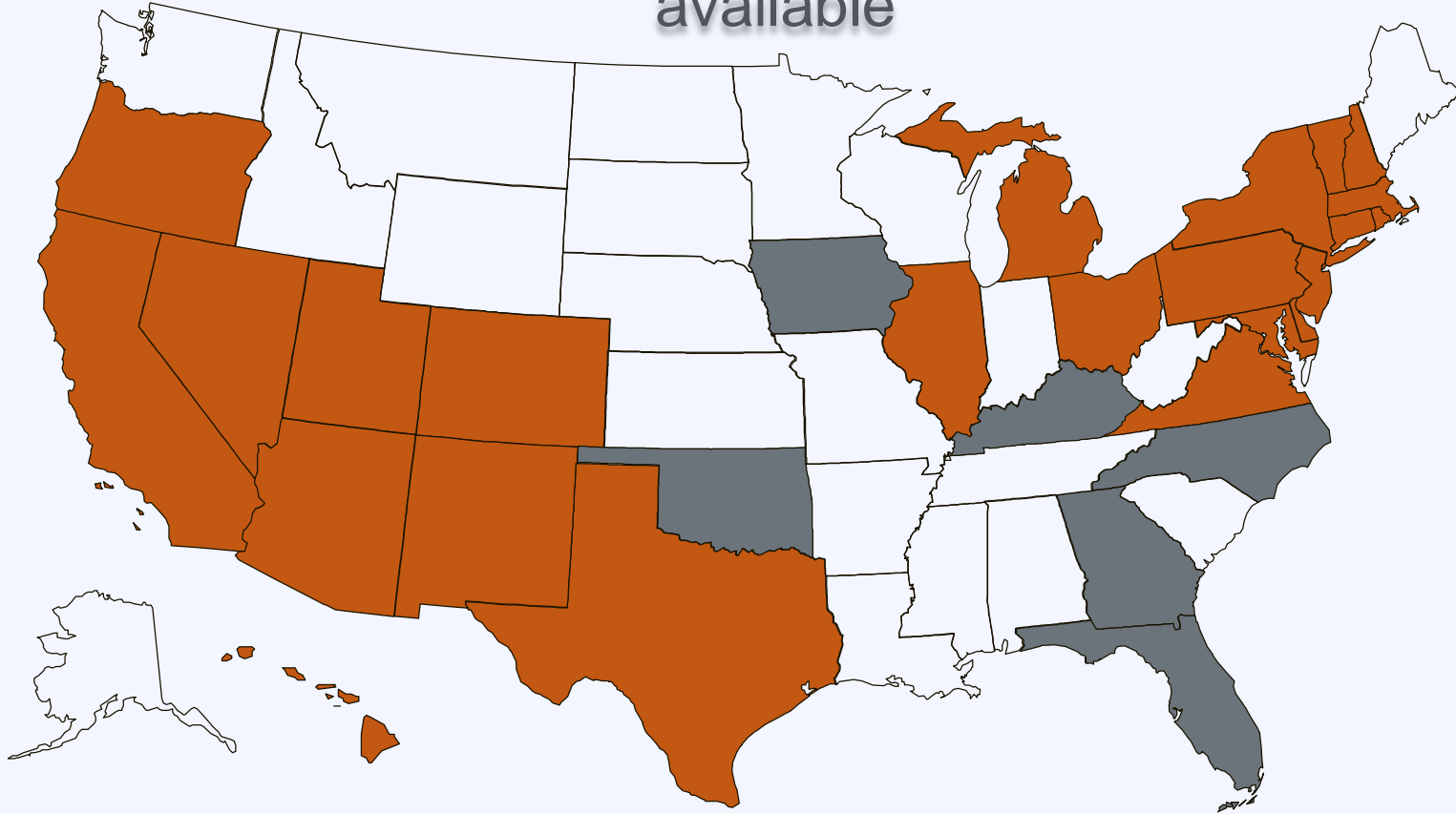


Third Party Ownership



Third Party Ownership: State Policy

Third Party Ownership is not always available



Authorized by state or otherwise currently in use, at least in certain jurisdictions within in the state

Apparently disallowed by state or otherwise restricted by legal barriers

Status unclear or unknown

 Puerto Rico

Solar Financing Options

Third Party
Ownership

Traditional
Lending

Why is Lending Needed?

Increasing evidence that:

1. Power Purchase Agreements are priced only to beat retail energy rates, so system owners leave money on the table.
2. Traditional lending options can provide more value to customer than PPAs while providing same services.

Engage Local Lenders

Fewer than **5%**

of the

6,500 banks in the US

are

actively financing solar PV

projects

Financing Options

- Secured loan
 - Admirals Bank: 4.95% - 9.95%
- Unsecured loan
 - Admirals Bank: 9.99% - 11.99%
- Federal loan
 - HUD PowerSavers: 7.98%
- RUS loans



Municipal – Lender Partnership

Milwaukee SHINES

- Partnership with Summit Credit Union
- 4.5% (5-year) and 5.25% (15-year) options

Austin Energy Power Saver Loans

- Partnership with Velocity Credit Union
- Market-variable rate

Municipal partnerships can beat existing options

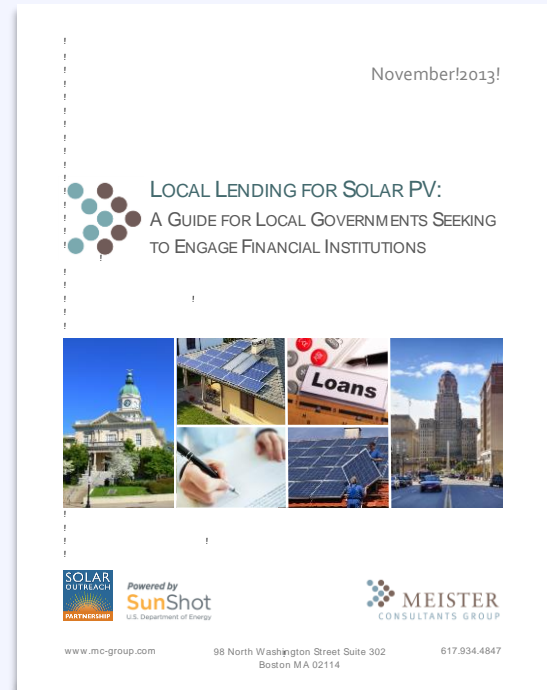
Opportunities to improve lending options by offering loan loss reserves or credit enhancements

Engage Local Lenders: Resources

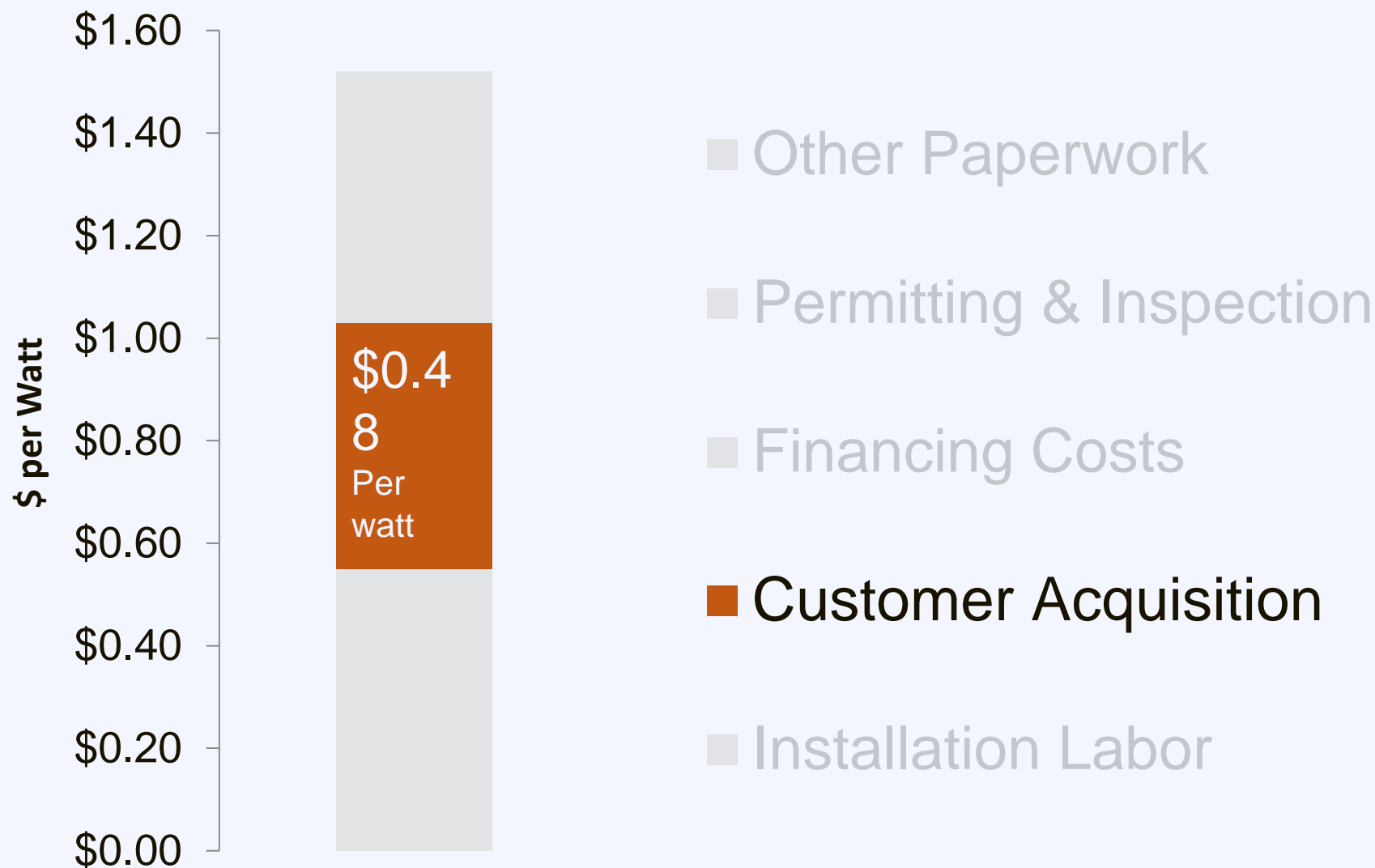
Resource Local Lending for Solar PV

A guide for local governments seeking to engage financial institutions

www.solaroutreach.org



Customer Acquisition



Customer Acquisition

5 % of homeowners that request a quote choose to install solar.

Customer Acquisition

Barriers

High upfront cost

Complexity

Customer inertia



The Solarize Program

Group purchasing for residential solar
PV



The Solarize Program

Barriers

High upfront cost →

Complexity →

Customer inertia →

Solutions

Group purchase

Vetted offer

Limited-time offer

Solarize: Partnership

Program
Sponsor

Community ties
Technical knowledge

Solar
Contractor

Solar installations
Volume discounts

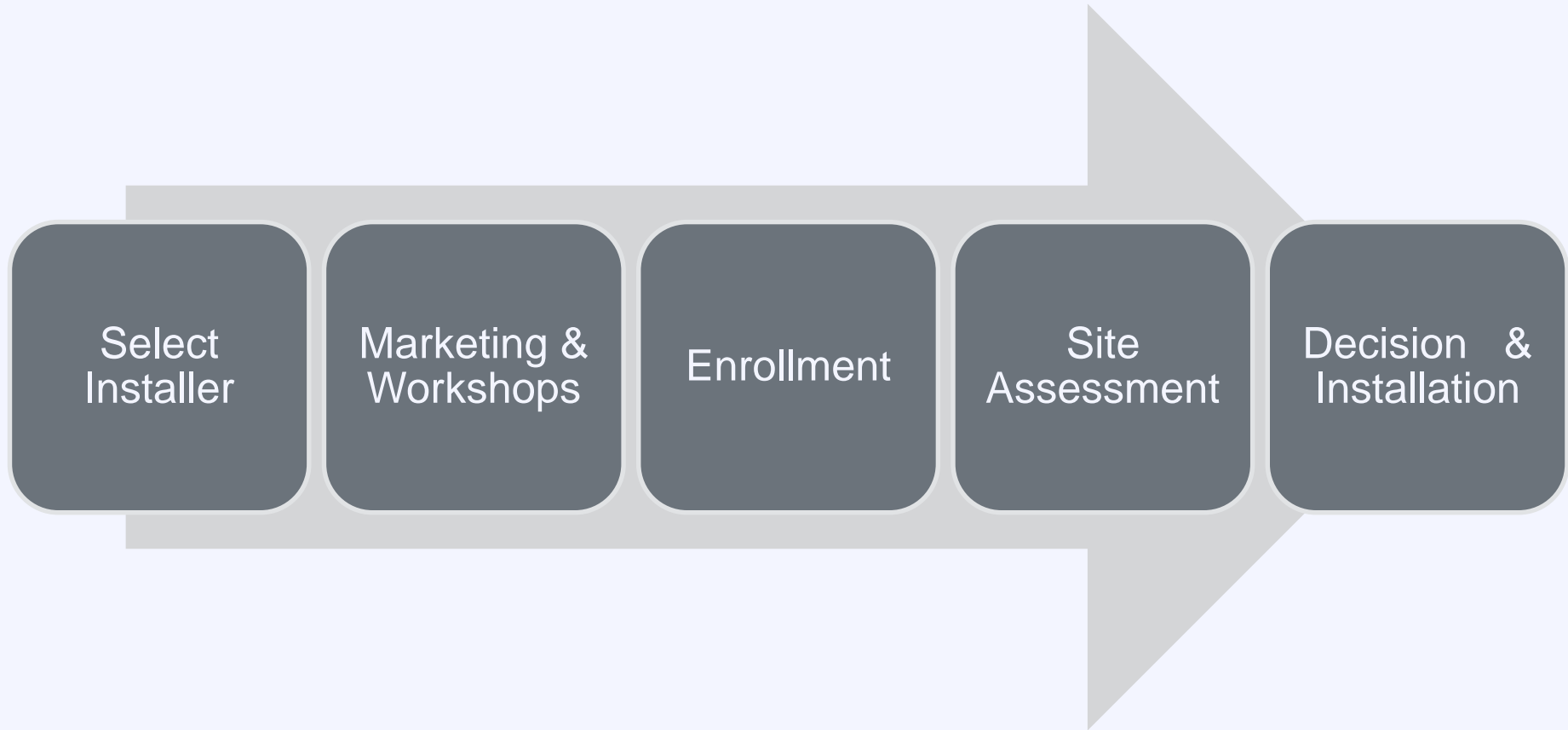
Citizen
Volunteers

Campaign support
Neighborhood outreach

Communit
y
Residents

Program participation
Word of mouth

Solarize: Process

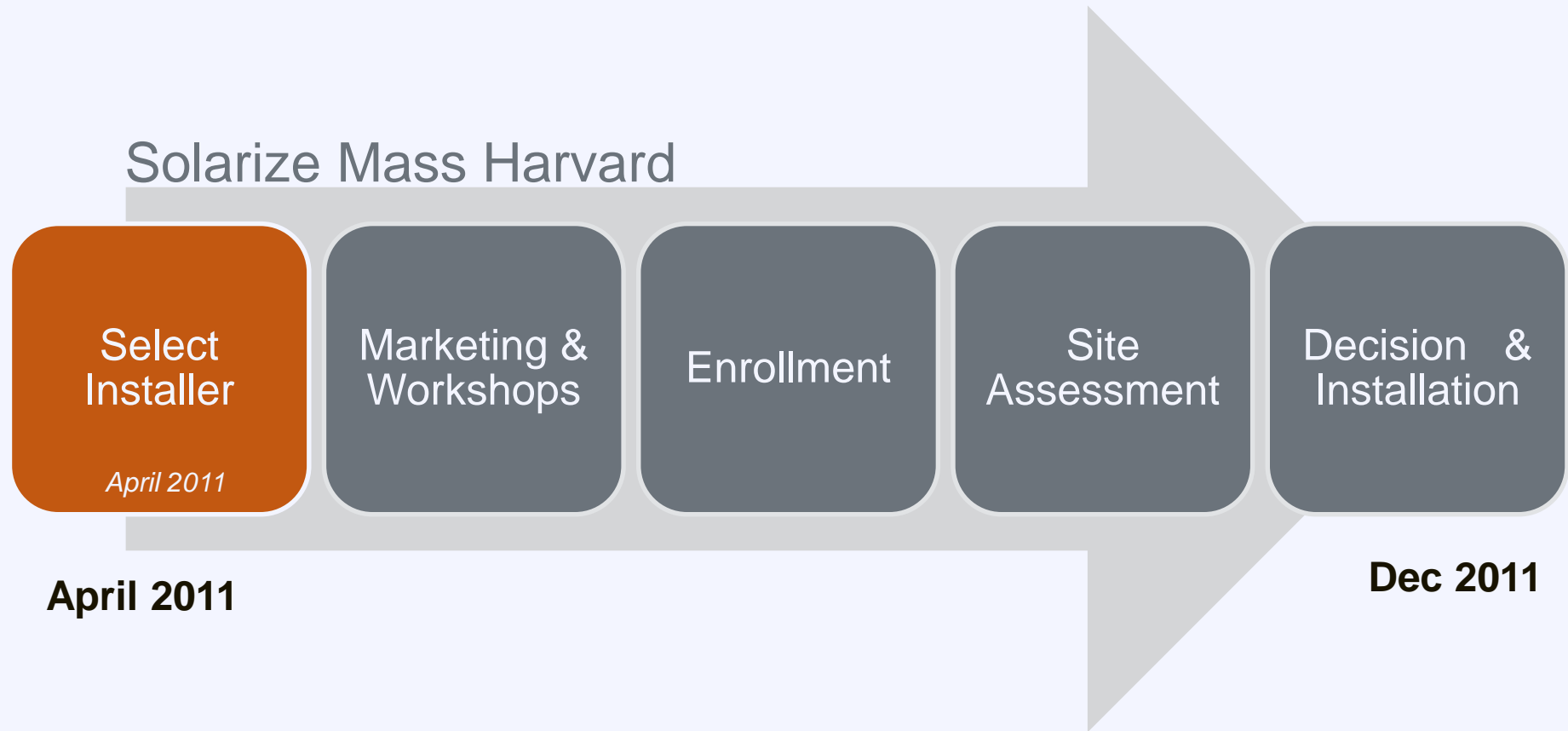


Solarize: Case Study



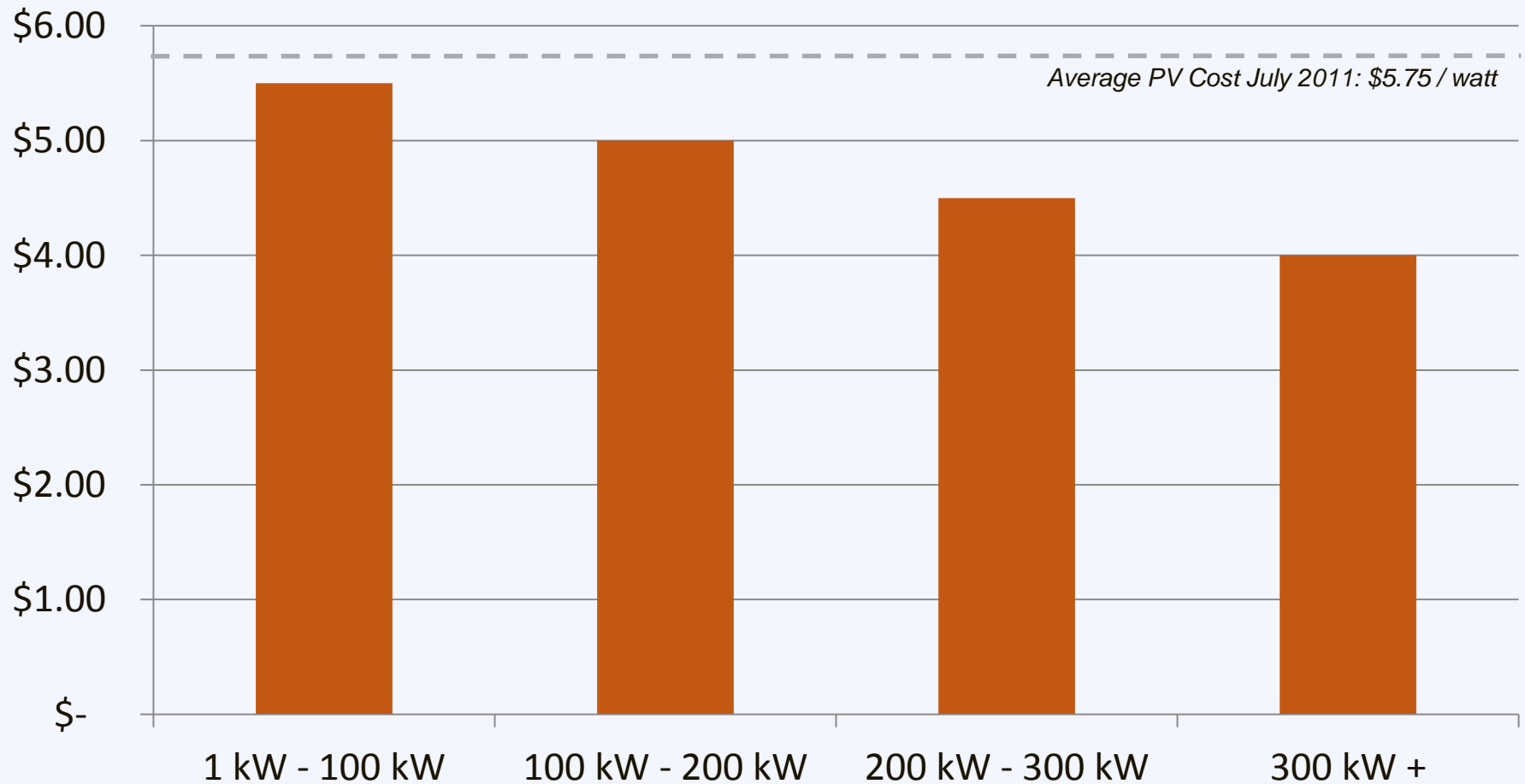
Harvard, Massachusetts
Population: 6,520

Solarize: Case Study

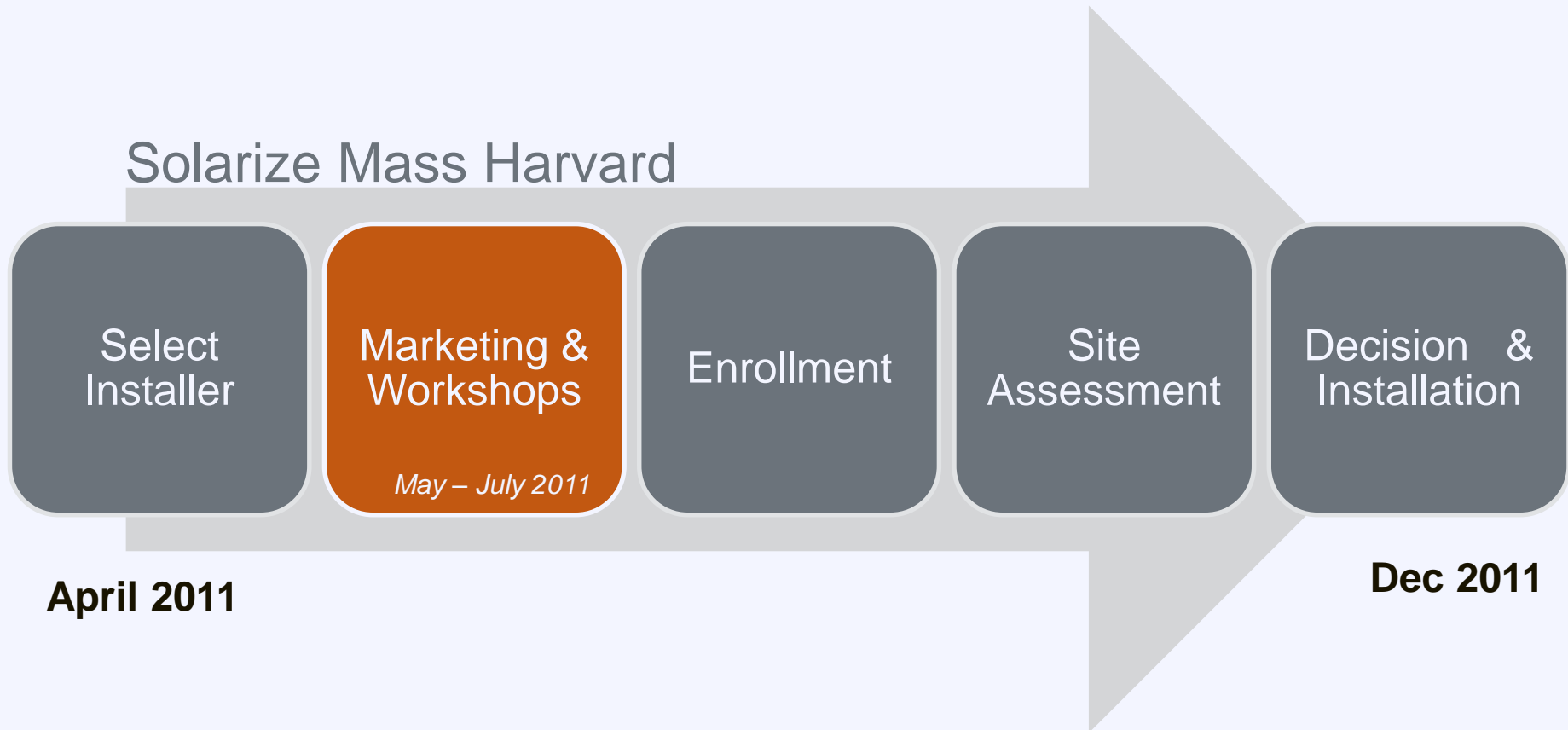


Group Purchasing

Harvard Mass Group Purchasing Tiers



Solarize: Case Study

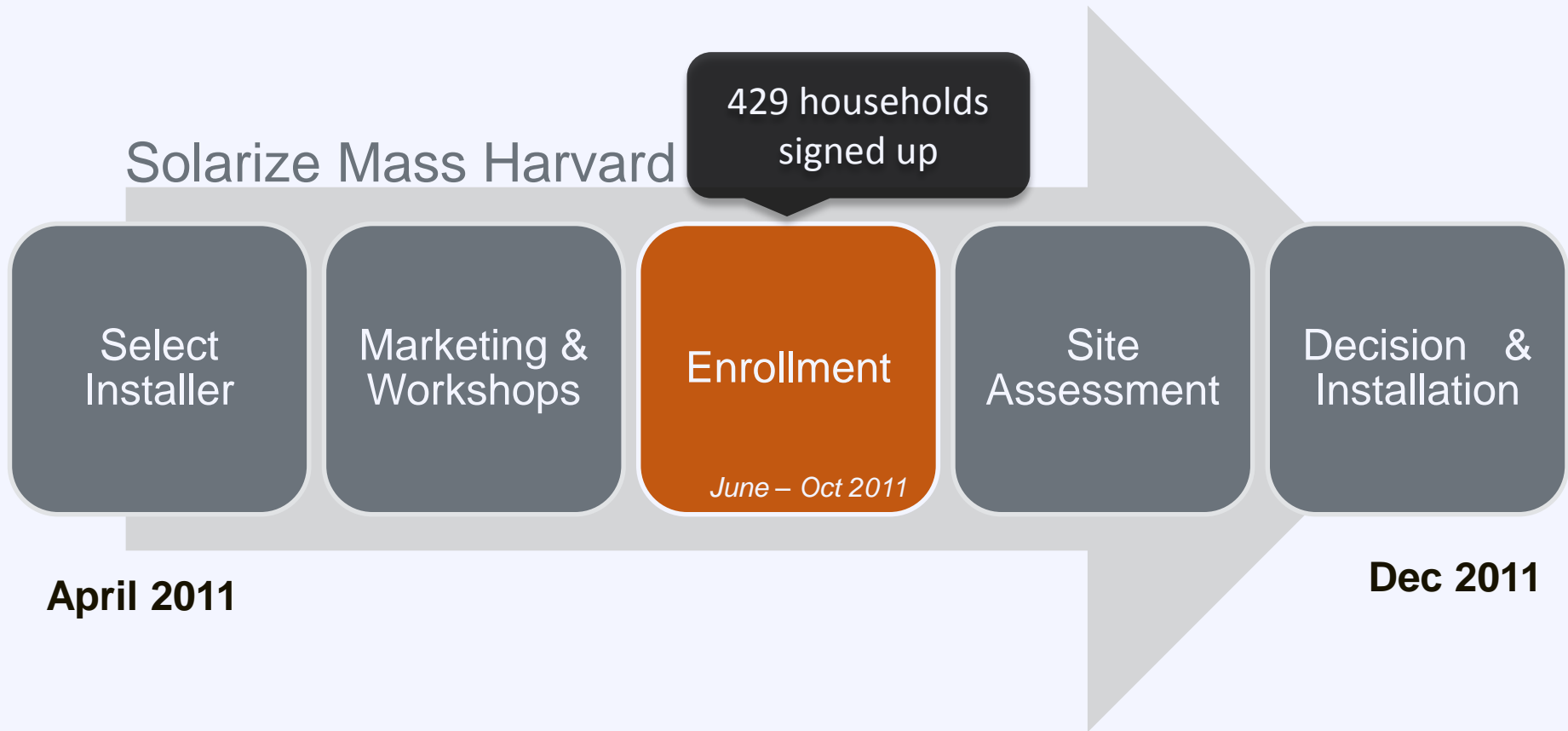


Solarize: Case Study

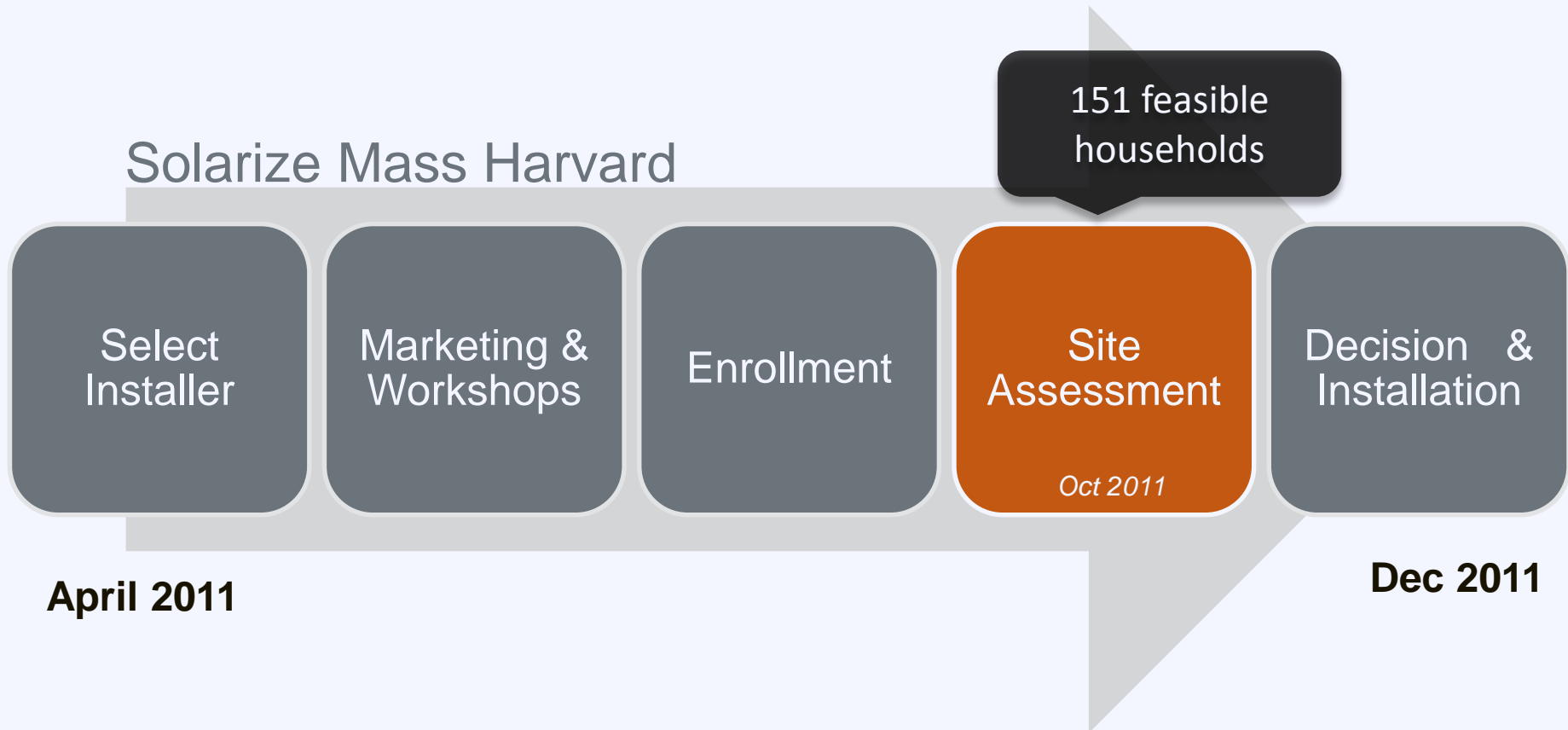
Marketing Strategy:

- 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

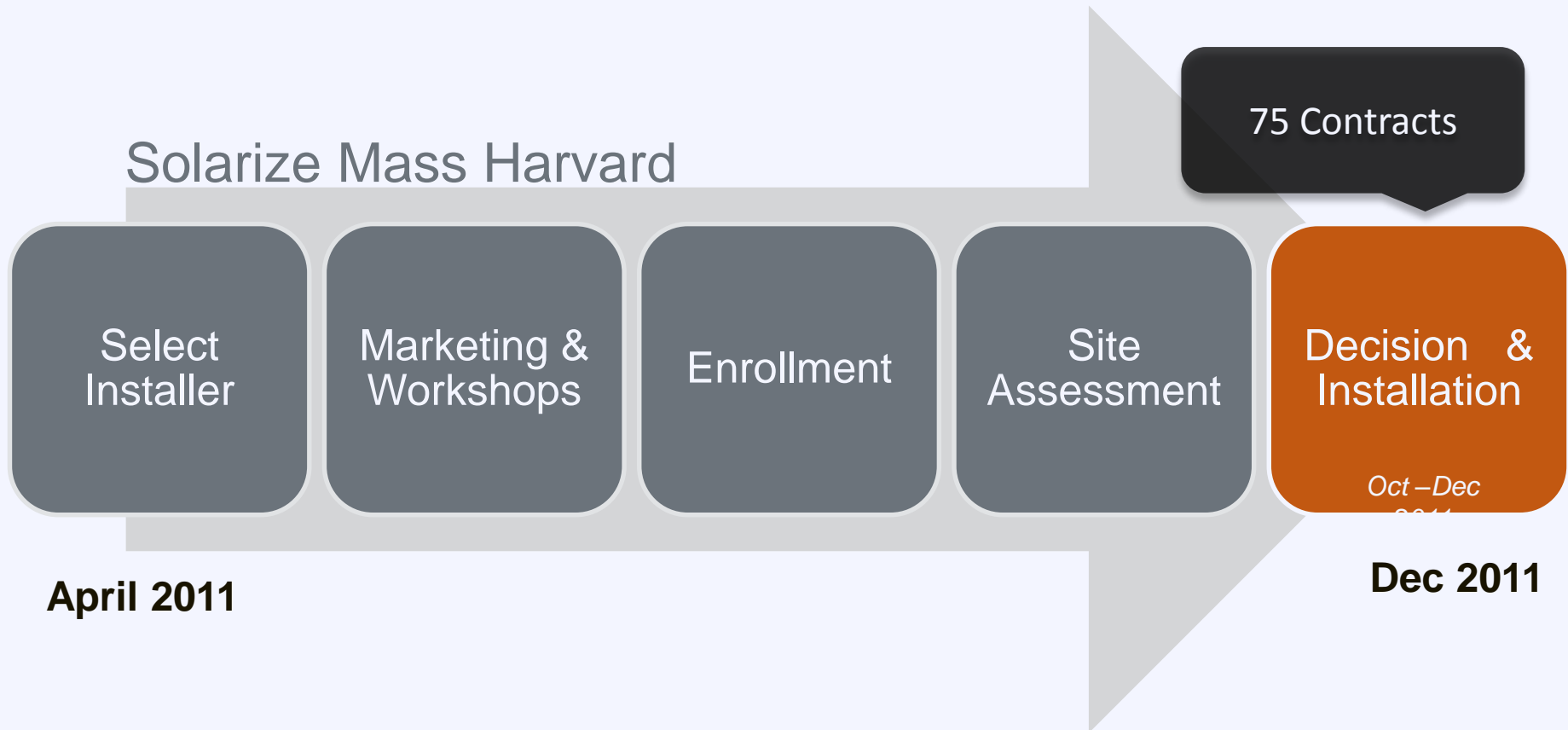
Solarize: Case Study



Solarize: Case Study

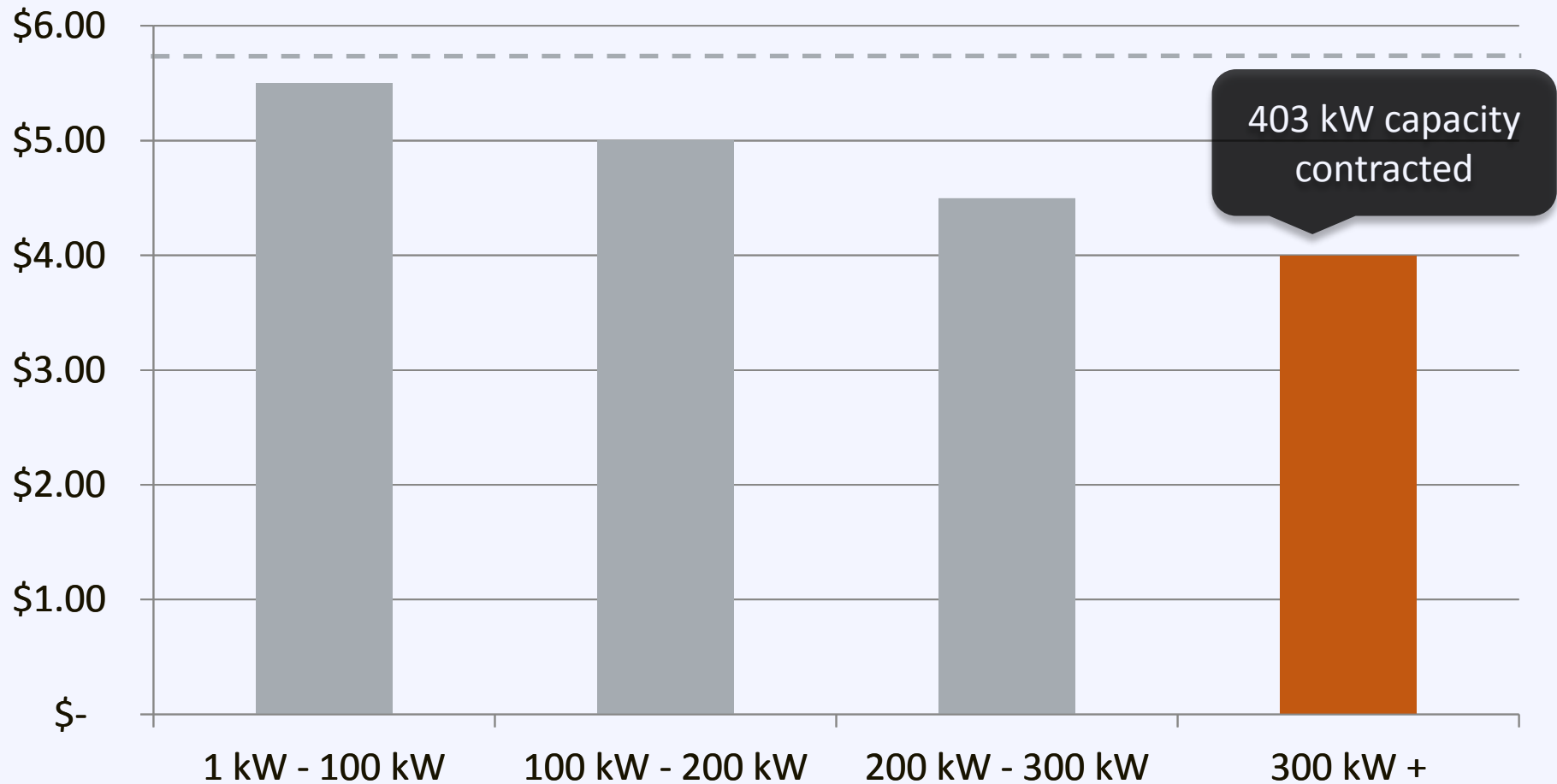


Solarize: Case Study



Group Purchasing

Harvard Mass Group Purchasing Tiers



Solarize: Case Study

75 new installations totaling **403 kW**

30% reduction in price of solar

17% of sign-ups converted to sales (**50%** of site visits)

Over 5x increase in residential installations

Success convinced state agencies to scale program

Solarize: Lasting Impact

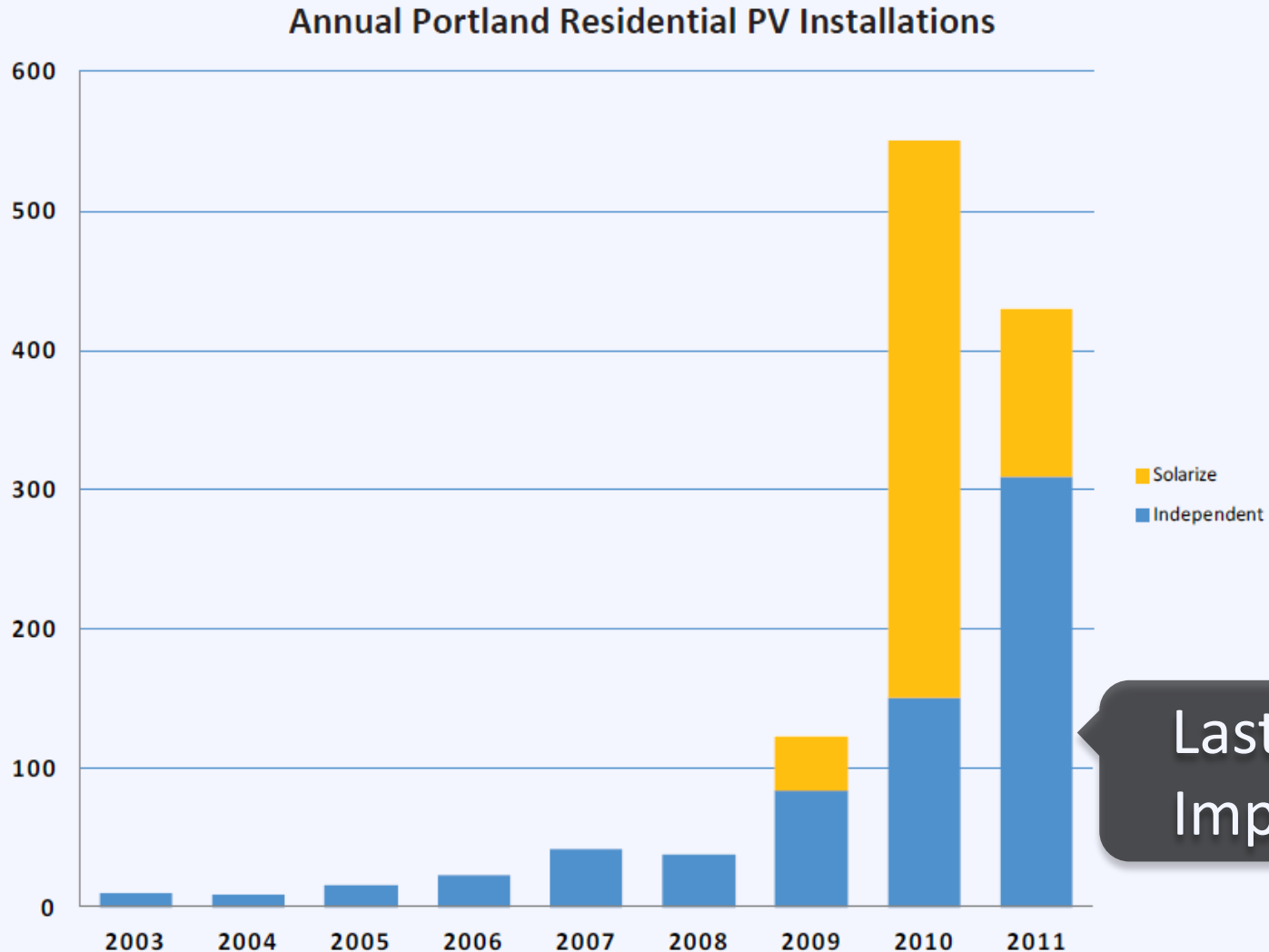
A household is

0.78% more likely to adopt solar

for

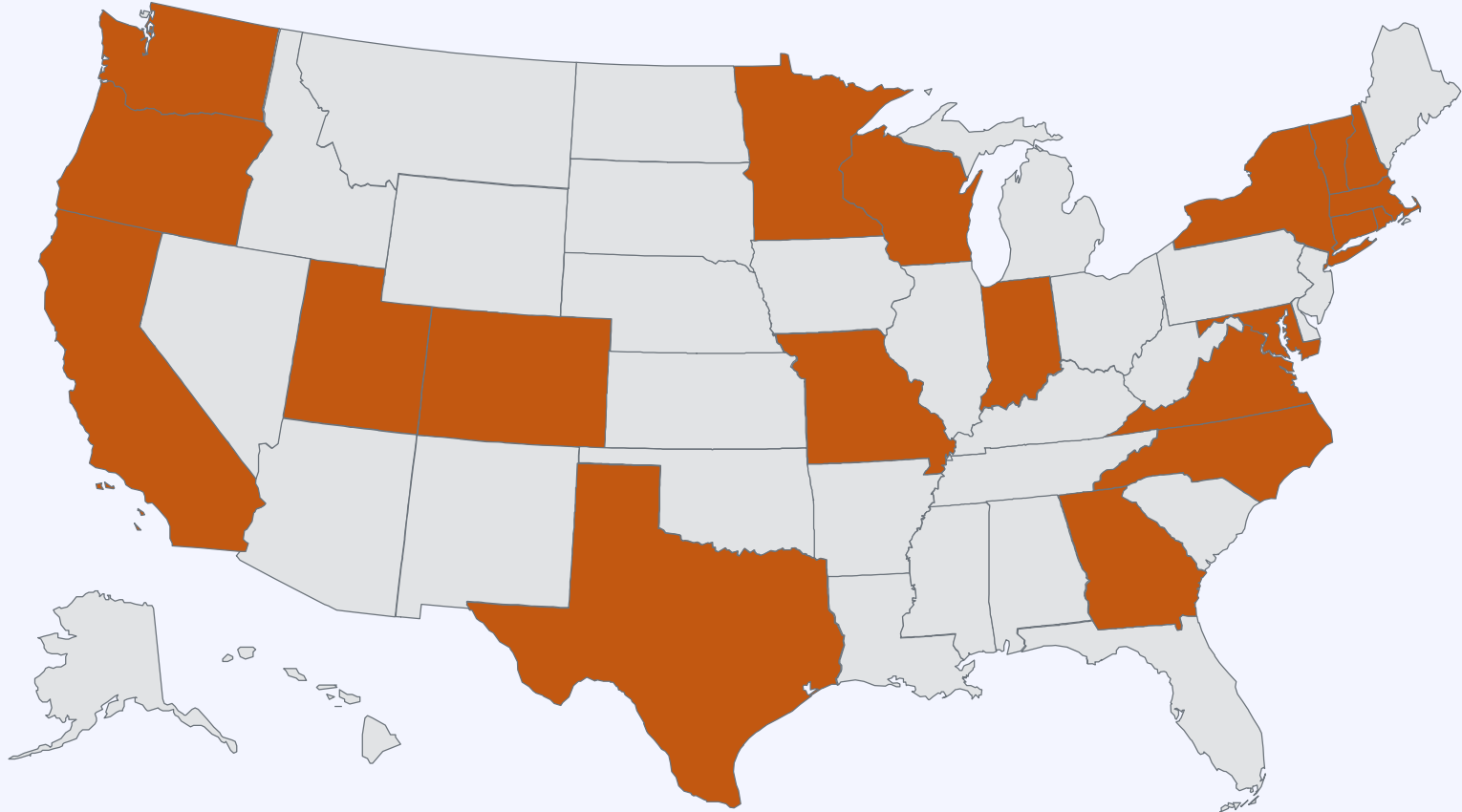
each additional installation in their zip
code

Solarize: Lasting Impact



Solarize: National Growth

Over 200 Campaigns in 20 States



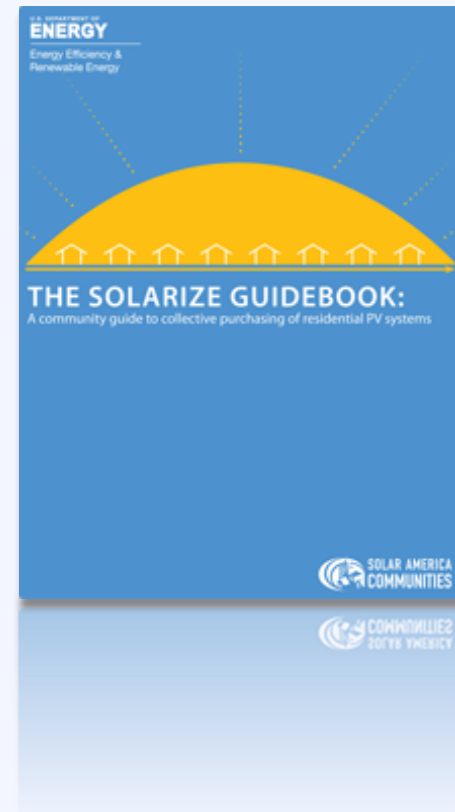
Thousands of homes Solarized!

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



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Procurement Process

1

Stakeholder Engagement & Goal Setting

2

Data Collection & Site Identification

3

Develop and Publish RFP

4

Review Bids and Select Developer

5

Negotiate Contract

Procurement Process

1

Stakeholder Engagement & Goal Setting

2

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Project Goals

Does your municipality want a project that...

... maximizes solar production?

... starts small on a pilot basis?

... demonstrates leadership to the private sector?

... puts landfills or brownfields to use?

Processes of Concern

Process	Municipal Action
Utility	Discuss interconnection Deeper partnership needed for large projects
Stakeholder Engagement	Engage with community members & local government officials early on
Zoning	Review zoning code for solar-related concerns
Environmental Review	Establish if environmental approvals are needed

How to Finance the System?

Direct
Ownership

Third Party
Ownership

How to Finance the System?

Direct
Ownership

Third Party
Ownership

Benefit: Low Cost of Capital

How to Finance the System?

Direct
Ownership

Third Party
Ownership

Benefit: 30% Tax Credit

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How Big to Build?

Determine Annual Energy Use

- Average last three years of utility bills

Calculate Maximum System Size

- 1 kW in southeast NJ produces ~1375 kWh/ yr.

Identify Possible Sites

- 1 kW \approx 100 SqFt
- 1 MW \approx 6 acres

Consider Your Goals

What Makes a Good Solar Site?

1. **Ground-mounted sites** are flat and accessible
2. **Flat roofs** are unobstructed by rooftop equipment
3. **Pitched roofs** are roughly south-facing
4. Sites should be unshaded by trees or buildings
5. Roofs should be in good condition



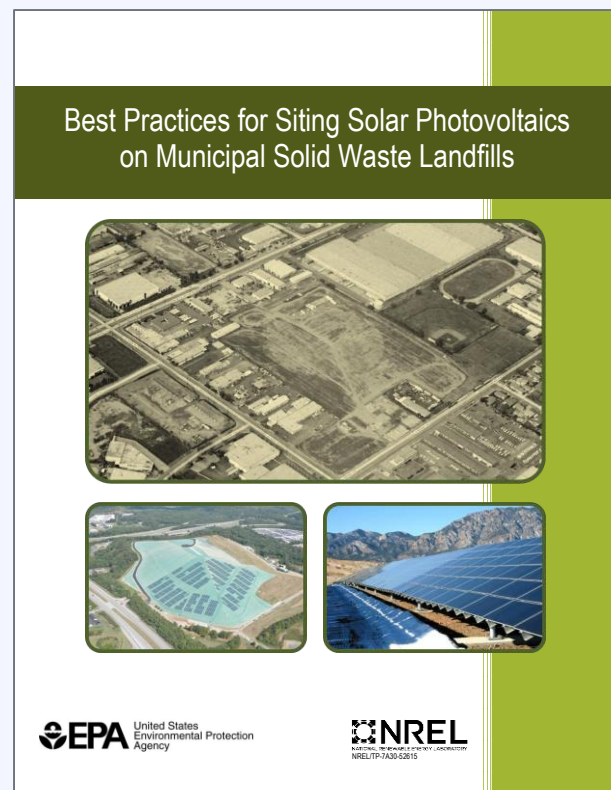
Landfill-Sited Solar

Additional Requirements for Landfill Projects

- Ensure construction does not compromise landfill cap
- Provide additional information to developers
- Likely need additional approvals

EPA Repowering America Initiative

- Landfill Solar Best Practices
- <http://www.epa.gov/renewableenergyland>



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Information to Provide

1. Summary of goals and desired project
2. Detailed description of site
 - Including maps and aerial photography
3. Detailed energy consumption information
 - Both for project site and general municipal load
4. Evaluation Criteria
5. Price proposal template
6. Draft PPA/contract (*suggested*)

Information to Request

1. Qualifications

- Company experience
- Five references
- Team member qualifications

2. Project Details

- Price proposal
- Project timeline
- Equipment to use
- System size and expected generation

3. Comments on Draft PPA/Contract

4. Detailed Plans for:

- Construction
- Financing
- Measurement and verification
- Operations and maintenance
- Decommissioning
- Environmental Permitting

Procurement Process

1

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Evaluation of Bids

Provide clear evaluation criteria and weights in RFP

Should consider:

- Developer experience and project team
- Price
- Approach to project
- Financial resources
- Optional adders (local labor or materials, curriculum tie-in, etc.)

Procurement Process

1

Stakeholder Engagement & Goal Setting

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4

Review Bids and Select Developer

5

Negotiate Contract

Potential Project Timeline (Large Projects)

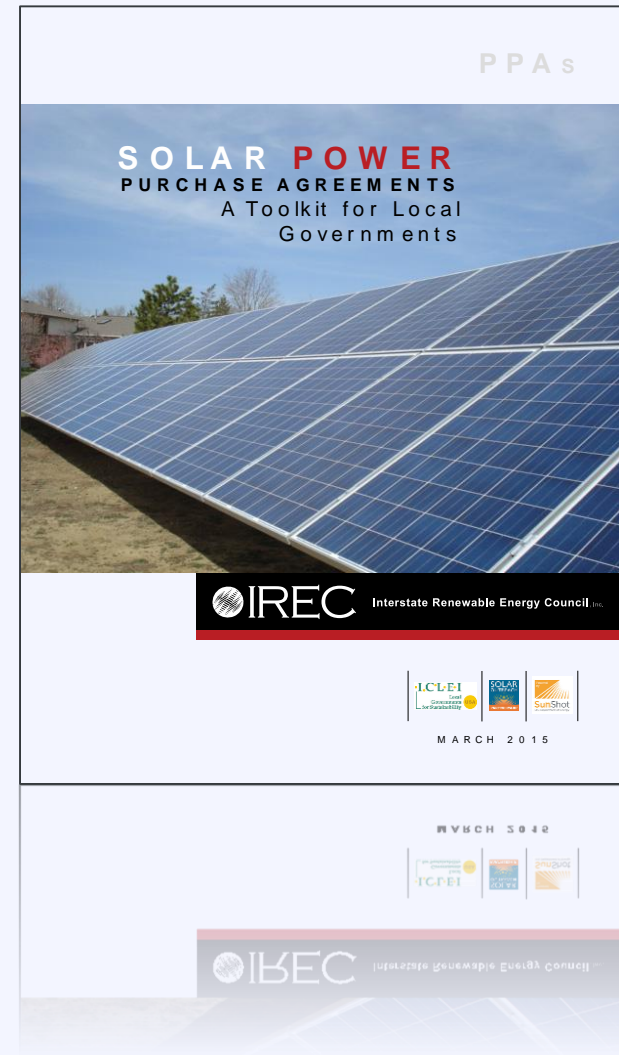
Step	Days From RFP Issuance
Stakeholder Discussions and Data Collection	Pre-RFP
Release RFP	0
RFP Submission Deadline	1-2 months after release
Announcement of Selected Bidder	1-2 weeks after deadline
Contractual Documents Signed	1-6 months after announcement
System Design Completed	2-6 months after contract
Project Construction Completed	6-12 months after design

Municipal Solar Procurement

Resource IREC Solar PPA Toolkit

Guidance document covering issues related to procurement, including a model PPA

www.irecusa.org



Clarkstown Landfill Solar Project

Clarkstown, NY

Population: 84,000



- 2.3 MW System
- First proposed in 2009
- Completed October 2014
- Provides 10% of municipality's energy

Clarkstown Landfill Solar Project

Key Steps	Challenges	Takeaways
Prepared feasibility study with consulting firm	Ensuring that landfill cap stayed intact	Bring utility on board early and manage stakeholders
Prepared RFP – 4 responses received	Coordinating multiple stakeholders and approvals	Obtain outside help where needed <i>(outside counsel for PPA negotiation, utility specialist for interconnection and development)</i>
Negotiated PPA at \$0.083/kWh, 3% escalator	Developing and negotiating PPA	

Agenda

- | | |
|--------------------|--|
| 10:20 – 10:40 | Putting Solar Energy on the Local Policy Agenda |
| 10:40 – 11:00 | State of the Local Solar Market |
| 11:00 – 11:30 | Federal, State, and Utility Policy Drivers |
| 11:30 – 12:15 | Local Speakers |
| 12:15 – 12:45 | <i>Break and Grab Lunch</i> |
| 12:45 – 1:15 | Planning for Solar: Getting Solar Ready |
| 1:15 – 1:45 | Solar Market Development Tools |
| 1:45 – 1:55 | <i>Break</i> |
| 1:55 – 2:15 | Installing Solar on Municipal Facilities |
| 2:15 – 3:00 | Developing and Solar Policy Implementation Plan
for Your Community and Next Steps |

Activity: Solar in Your Community

1. Recognize successes
2. Identify opportunities
3. Select strategies & best practices
4. Outline implementation plan
5. Discuss barriers to implementation

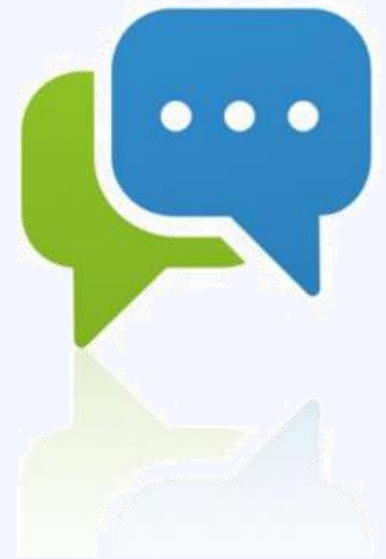
Activity: Solar in Your Community

Part 1: Take 5 minutes to complete the questions in the *Developing Effective Solar Policies in Your Community* handout.



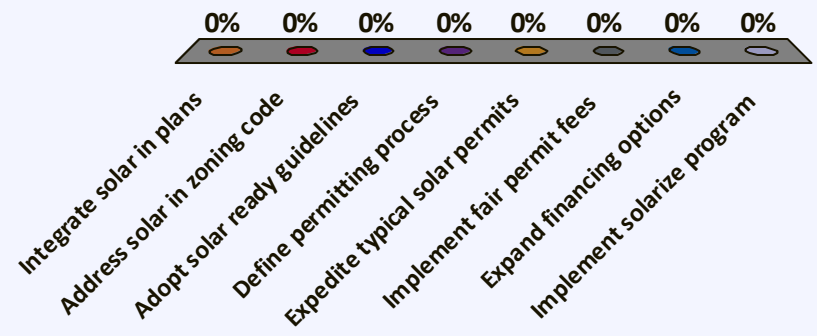
Activity: Solar in Your Community

Part 2: Spend the next 10 minutes discussing your responses to **Questions 8 – 12** with the others at your table. Discuss strategies for overcoming potential obstacles to implementation.



Which “best practice” did you select to pursue first?

- A. Integrate solar in plans
- B. Address solar in zoning code
- C. Adopt solar ready guidelines
- D. Define permitting process
- E. Expedite typical solar permits
- F. Implement fair permit fees
- G. Expand financing options
- H. Implement solarize program



How difficult will it be to implement this policy/program?

1. Very easy
2. Somewhat easy
3. Moderate
4. Somewhat difficult
5. Very difficult

0%

Very easy	Somewhat easy	Moderate
Somewhat difficult	Very difficult	

Discussion

What obstacles stand in the way of implementation?

Discussion

What are possible strategies to overcome those obstacles?

Activity: Next Steps

What do you pledge to do when you leave today's workshop? [Orange Card]



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