Solar Powering Your Community

Addressing Soft Costs and Barriers

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U.S. Department of Energy

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About the SunShot Solar Outreach Partnership

ICMA
Leaders at the Core of Better Communities

APA
American Planning Association
Making Great Communities Happen

NARC
Building Regional Communities
National Association of Regional Councils

ICLEI
Local Governments for Sustainability USA

IREC
Interstate Renewable Energy Council

MEISTER
CONSULTANTS GROUP

NC CLEAN ENERGY
TECHNOLOGY CENTER
Formerly the NC Solar Center

The SOLAR FOUNDATION

SEPA
solar electric power association

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

Regional Workshops

Strategy Session

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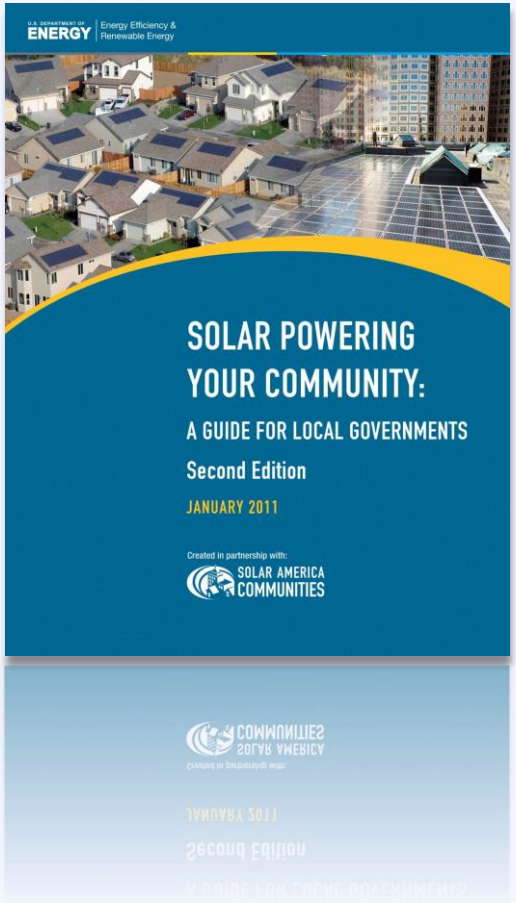
Email solar-usa@iclei.org to request a 20 minute consultation

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

Email solar-usa@iclei.org to request a 20 minute consultation

Complimentary Services

Technical Resources

Regional Workshops

Develop an implementation strategy for smart solar policy

Strategy Session

Email solar-usa@iclei.org to request a 20 minute consultation

Complimentary Services

Technical Resources

Regional Workshops

One to One Assistance

Receive customized technical support on implementation of smart solar policy

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Email solar-usa@iclei.org to request a 20 minute consultation

After This Session

Talk to Us!

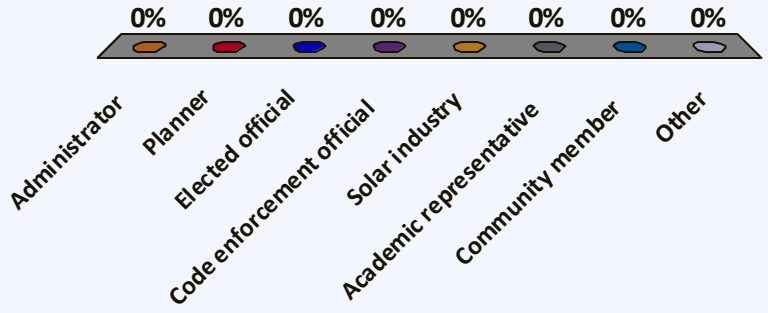
Sign up for a 20 minute consultation to learn more about our free services

See Mia Colson to sign up.

We want to get to know you better…

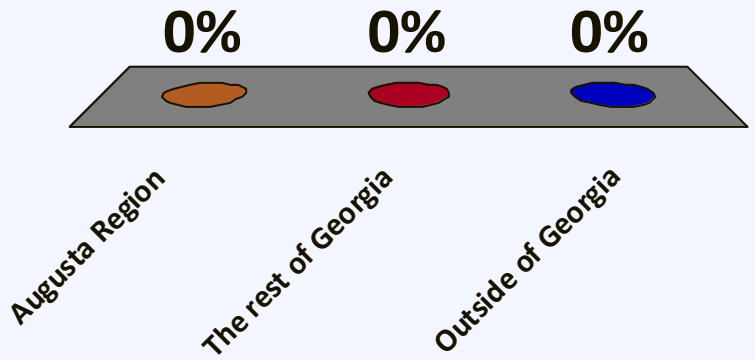
Who are you?

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



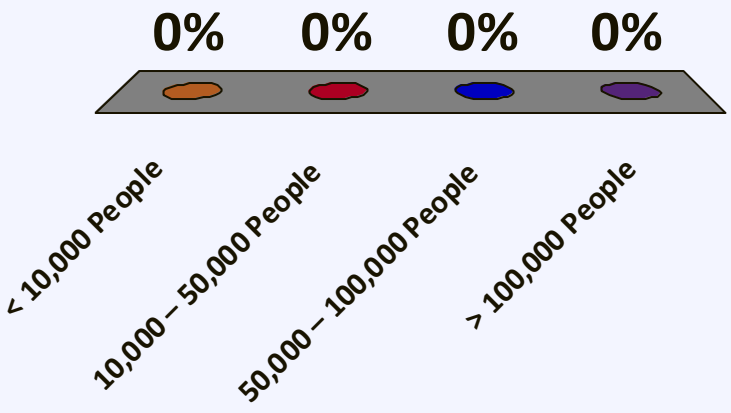
Where are you coming from?

A. Augusta Region
B. The rest of Georgia
C. Outside of Georgia



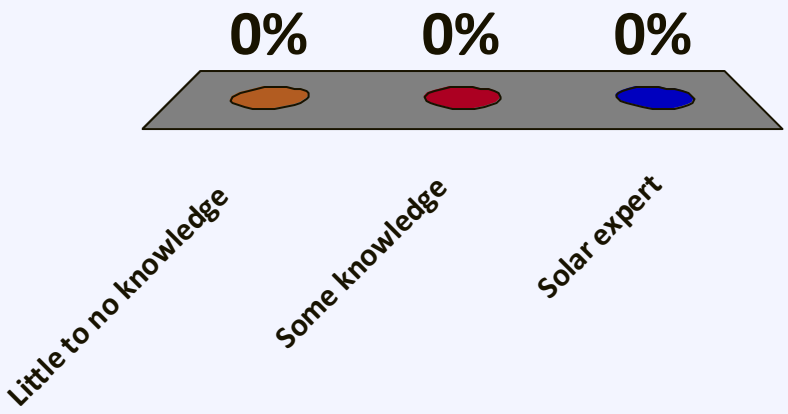
What size is your community?

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?

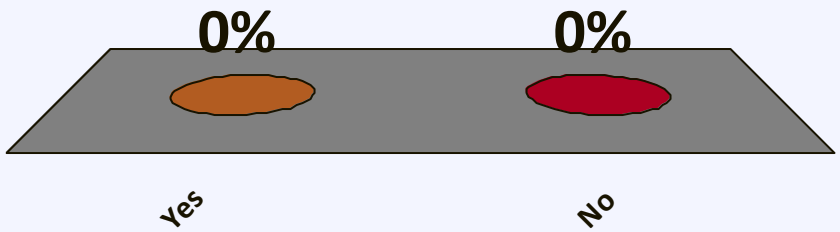
A. Little to no knowledge
B. Some knowledge
C. Solar expert



Do you have solar on your home?

A. Yes

B. No



Solar Development in the US

As of Q2 2015, the US solar industry has installed a cumulative total of

785,000 solar installations

of which

93% are residential projects

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U.S. Department of Energy

Source: SEIA/ GTM Research, *Solar Market Insight Q1 2015*

If you do have solar on your home:

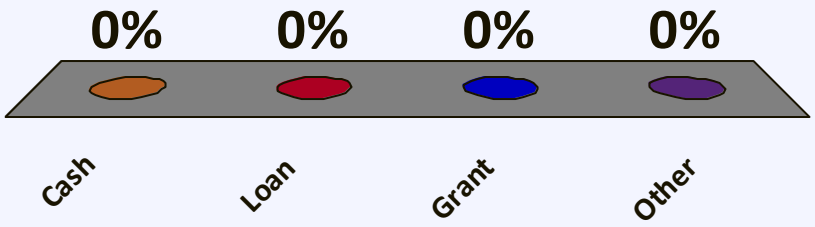
How did you finance it?

A. Cash

B. Loan

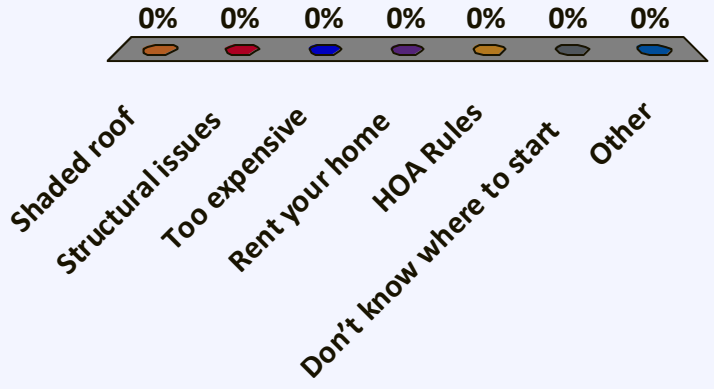
C. Grant

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

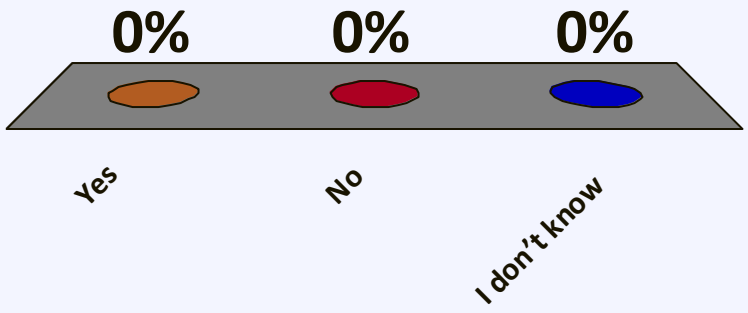


Does your local government have solar on public properties?

A. Yes

B. No

C. I don't know



Agenda

10:20 – 10:50	Putting Solar Energy on the Local Policy Agenda
10:50 – 11:20	State of the Local Solar Market
11:20 – 11:50	Federal, State, and Utility Policy Drivers
11:50 – 12:15	*Break and Grab Lunch*
12:15 – 12:45	Planning for Solar: Getting Solar Ready
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1:30 – 2:30	Local Speakers
2:30 – 3:00	Developing and Solar Policy Implementation Plan for Your Community and Next Steps

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Solar Technologies

Solar Photovoltaic (PV)

Solar Hot Water

Concentrated Solar Power

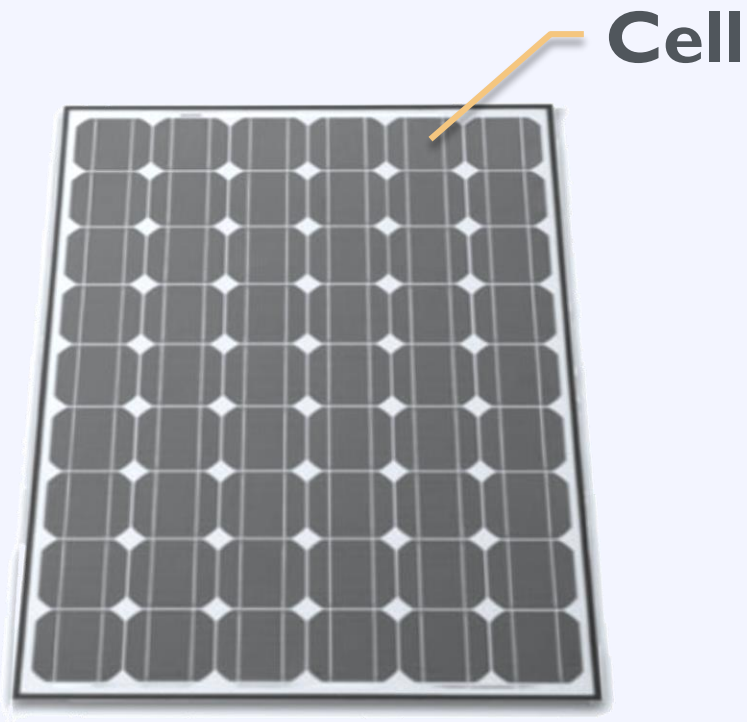
Solar Technologies

Solar Photovoltaic (PV)

Solar Hot Water

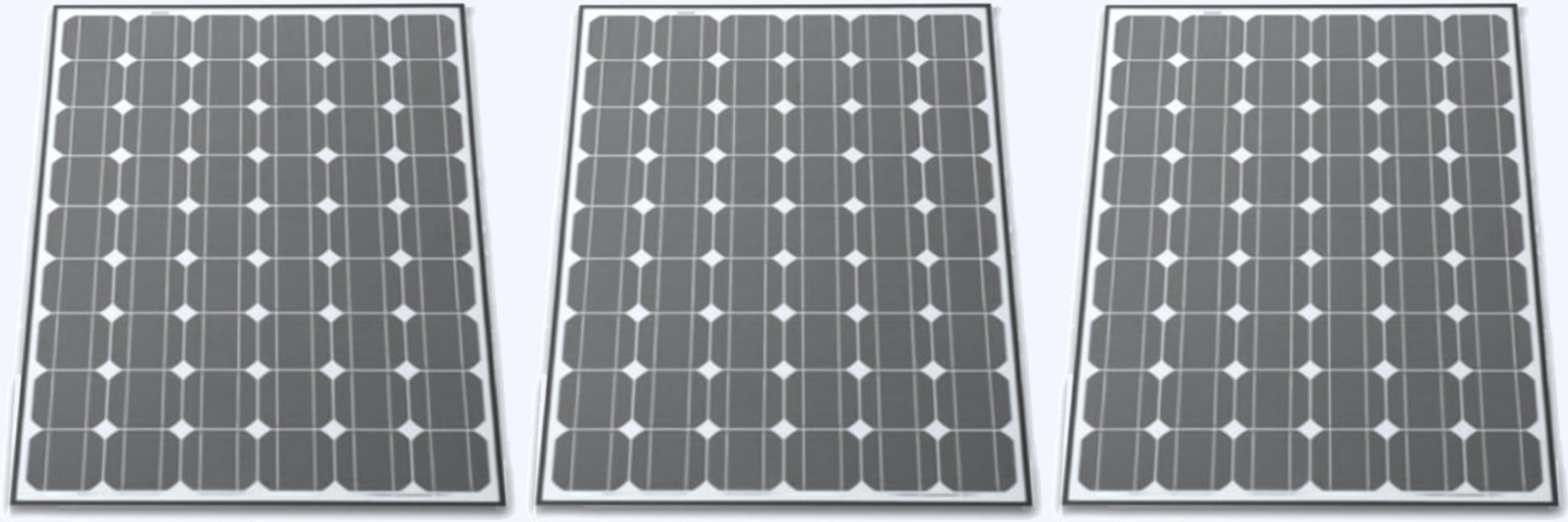
Concentrated Solar Power

Some Basic Terminology



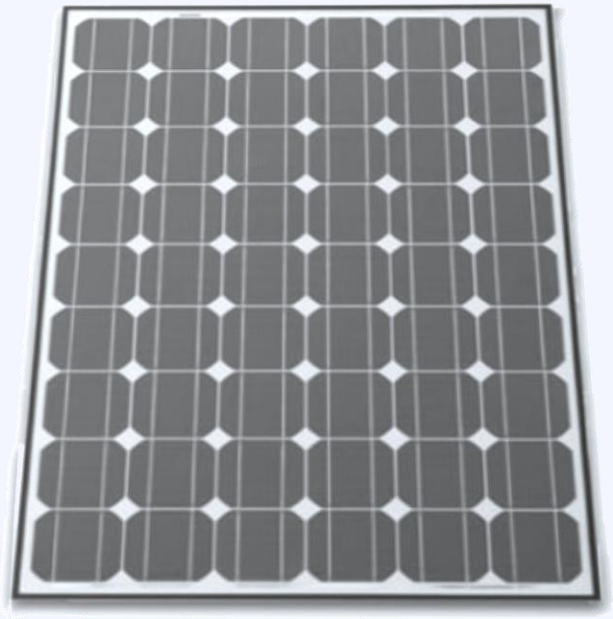
Panel / Module

Some Basic Terminology



Array

Some Basic Terminology



Capacity / Power

kilowatt (kW)

Production

Kilowatt-hour (kWh)

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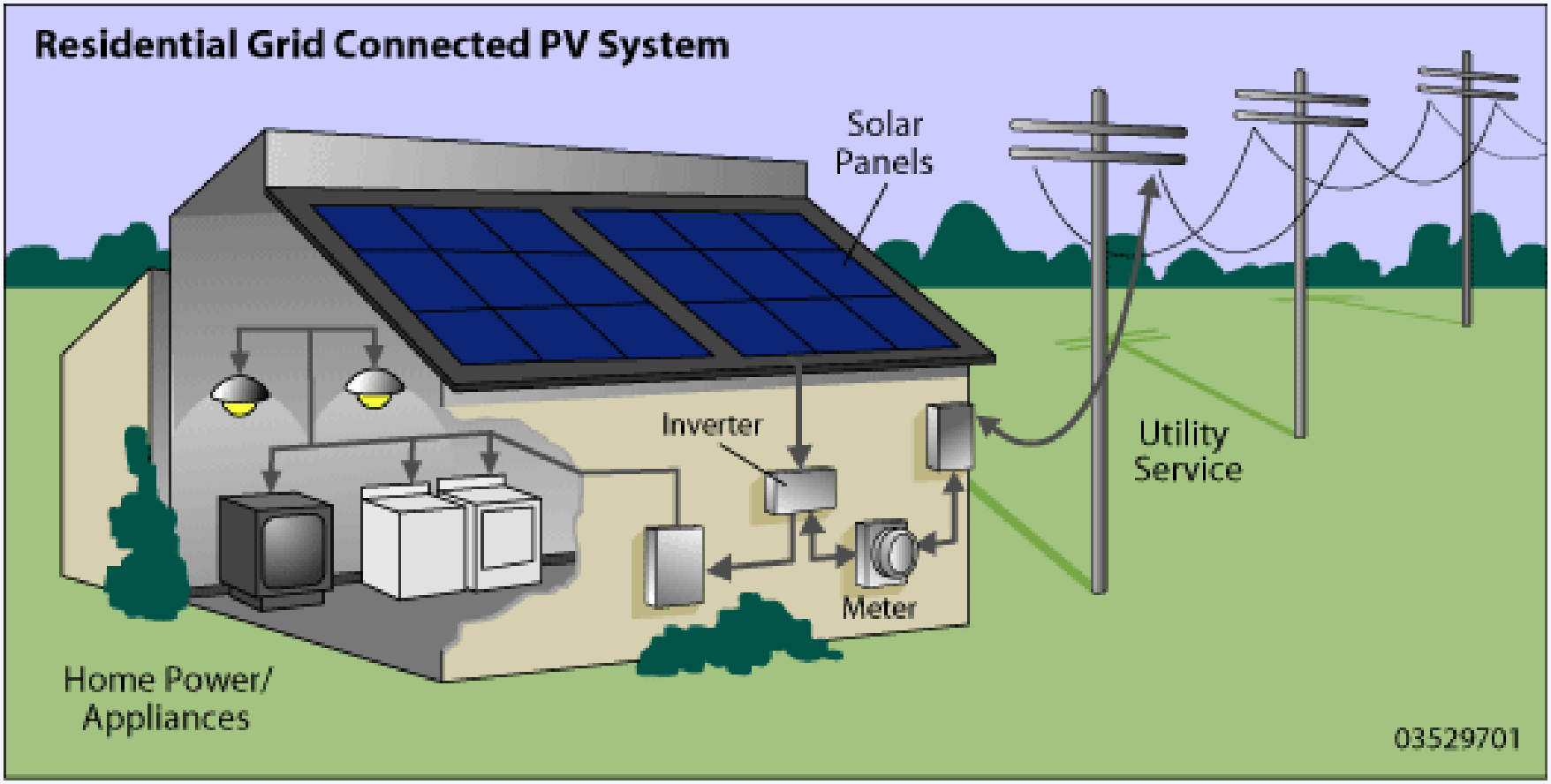
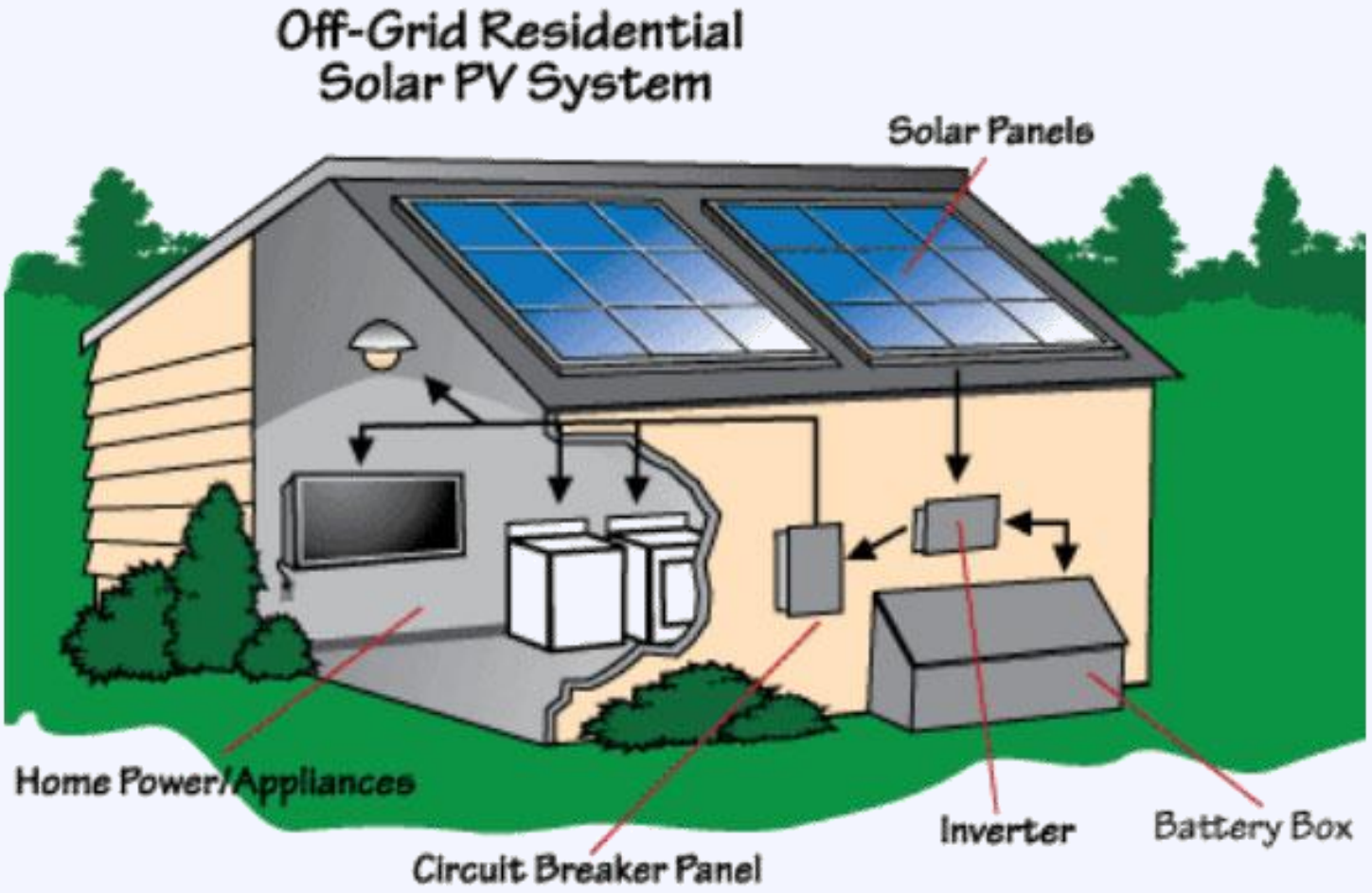
System Components



System Components – Off-Grid



Some Basic Terminology

Residence
5 kW

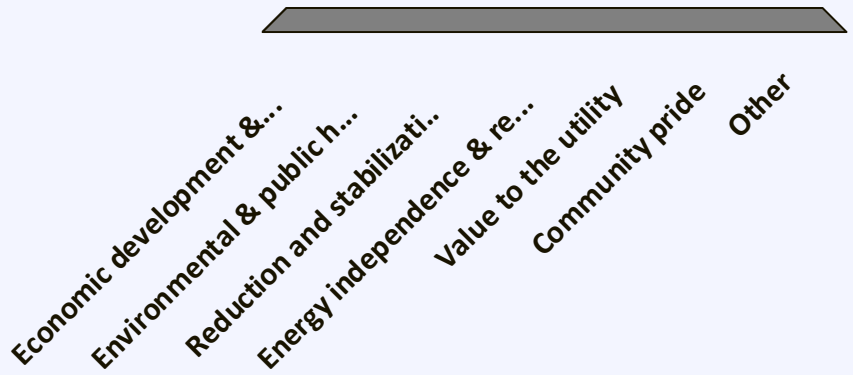
Factory
1 MW+

Office
50 – 500 kW

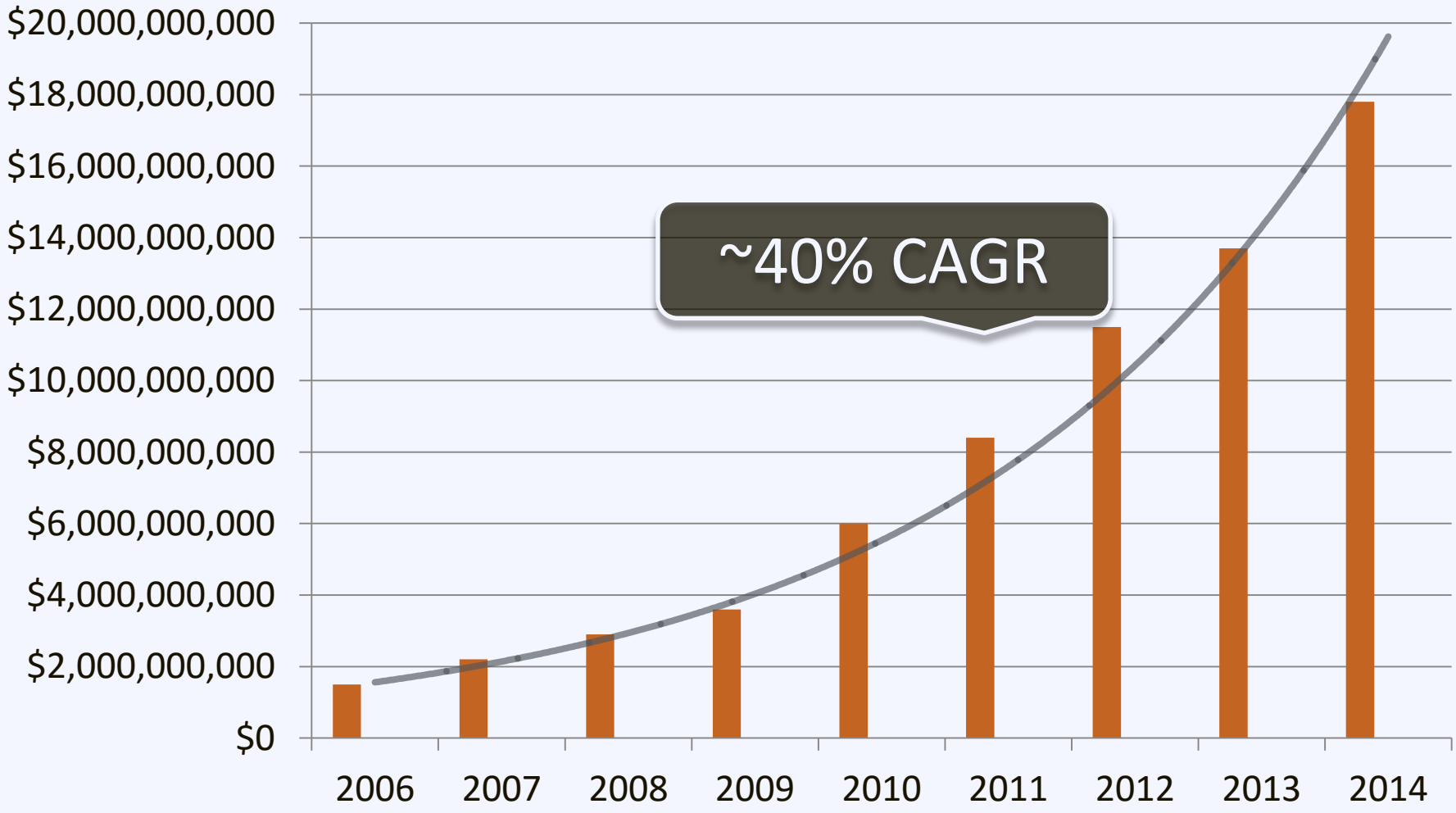
Utility
2 MW+

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



Benefits: Solar Economic Growth



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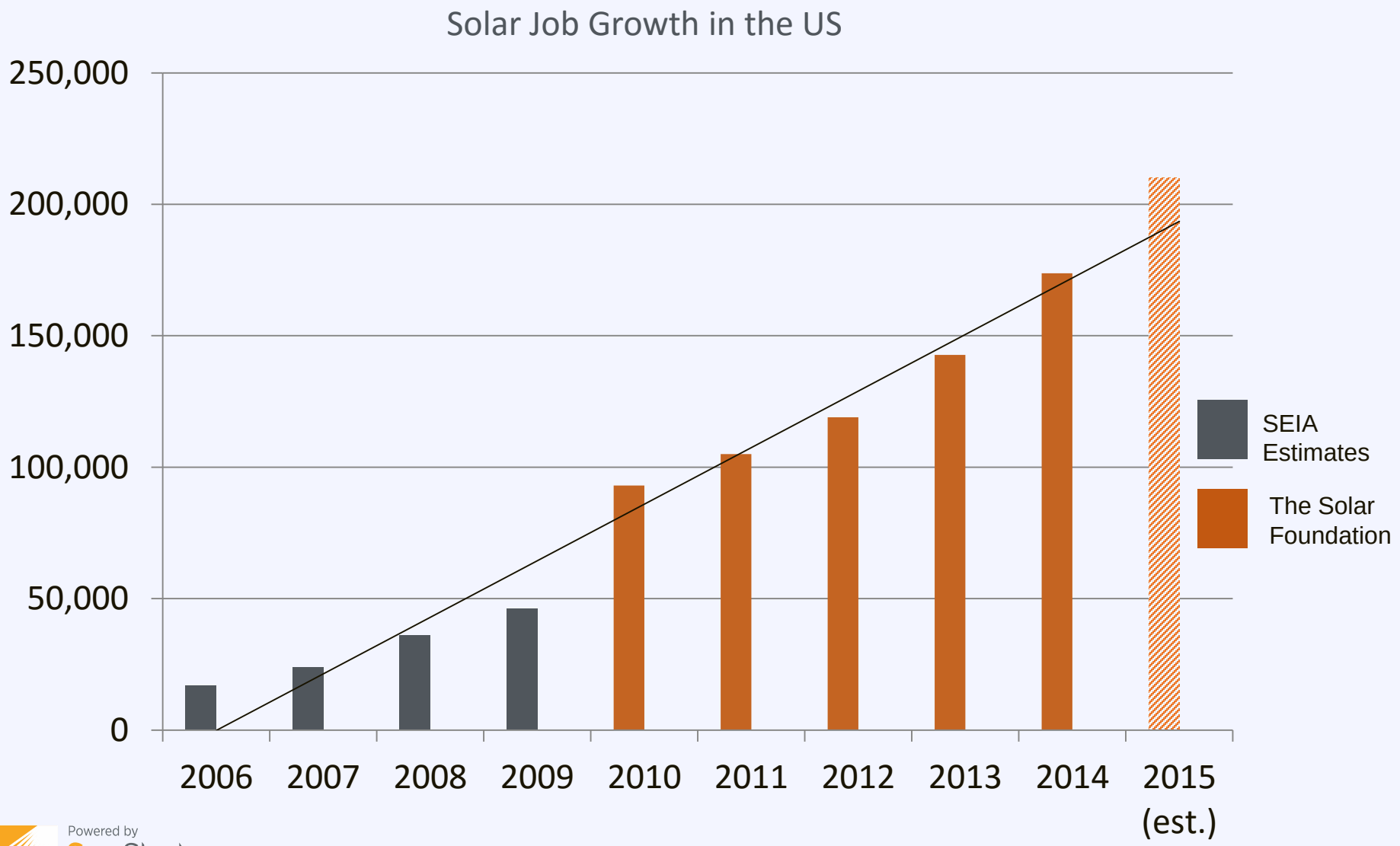
Source: SEIA/GTM Research – 2009/2010/2011/2012 Year in Review Report
http://www.seia.org/research-resources/us-solar-market-insight

Benefits: Solar Job Growth



Source: SEIA Estimates (2006-2009), The Solar Foundation's *National Solar Jobs Census* report series

The Local Economic Opportunity

1 Megawatt of Residential Solar Development in Georgia can support up to:

35 Jobs *and* **$6.8 Million**

In economic output

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Source: JEDI Model, NREL

Economic Development in Georgia

There are currently

197 solar companies

that employ

2,900 people

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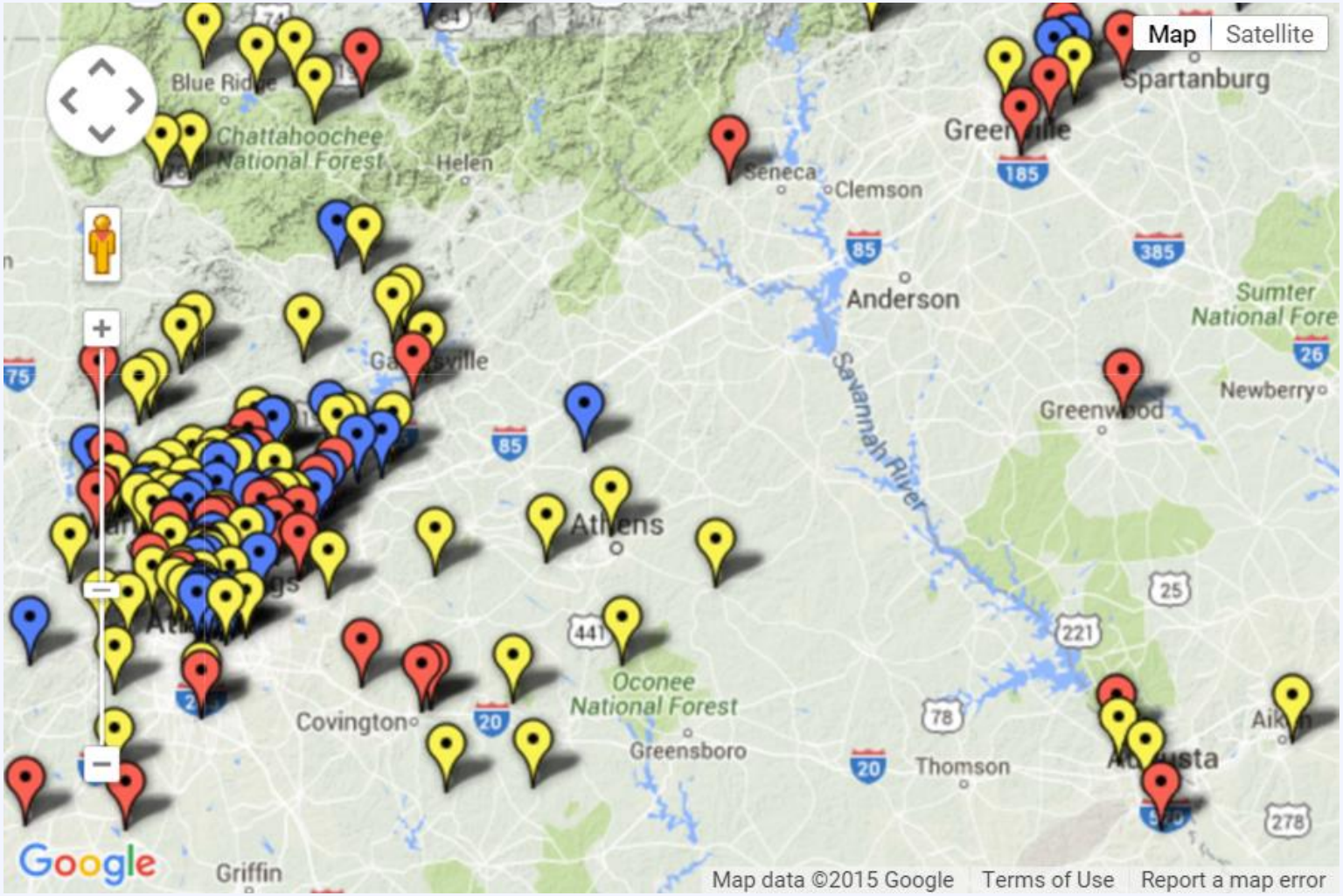
Source: SEIA, The Solar Foundation

Economic Development in Georgia



Key: Manufacturer Installer Other

Source: SEIA's National Solar Database

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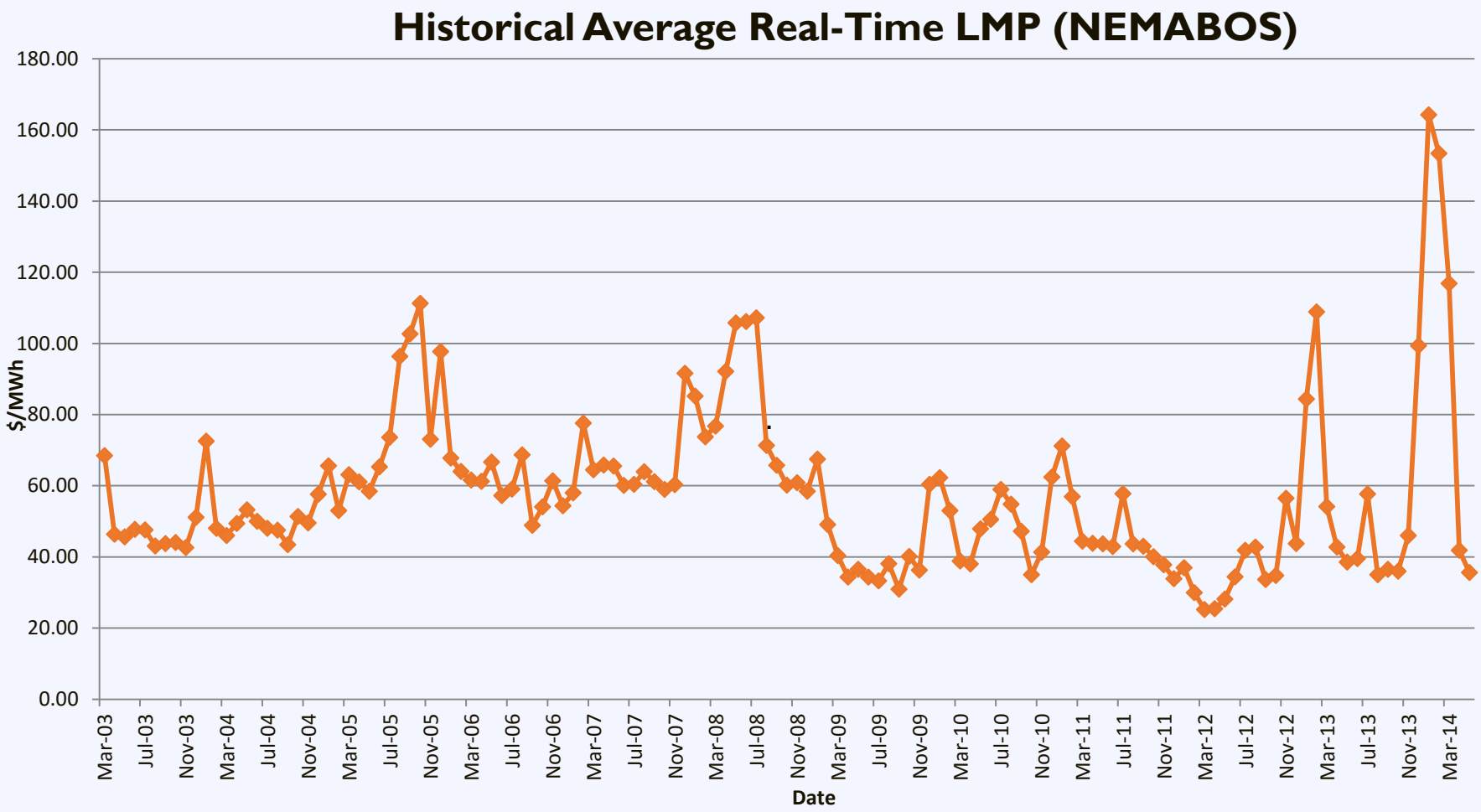
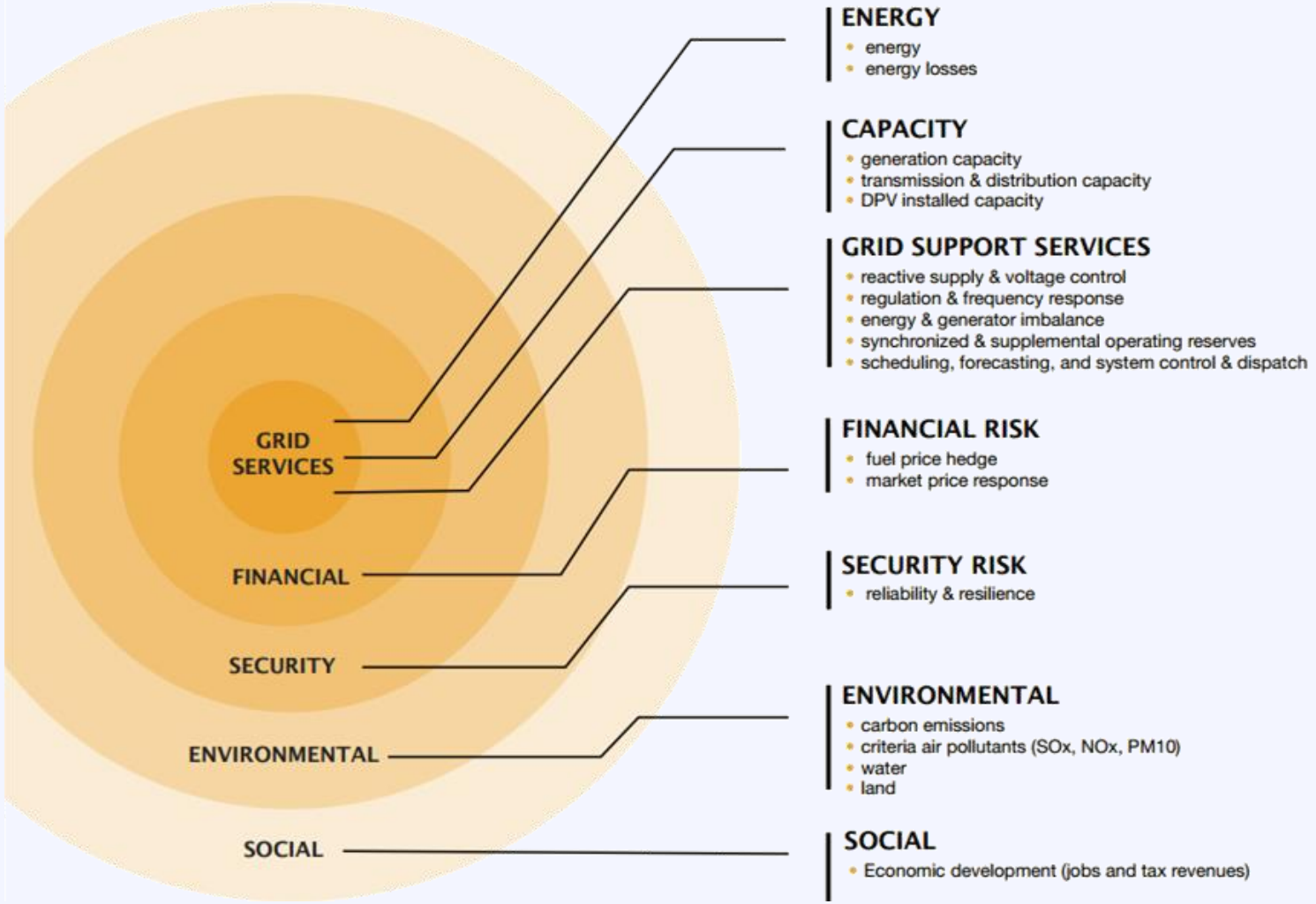
Benefit: Stabilize Energy Prices



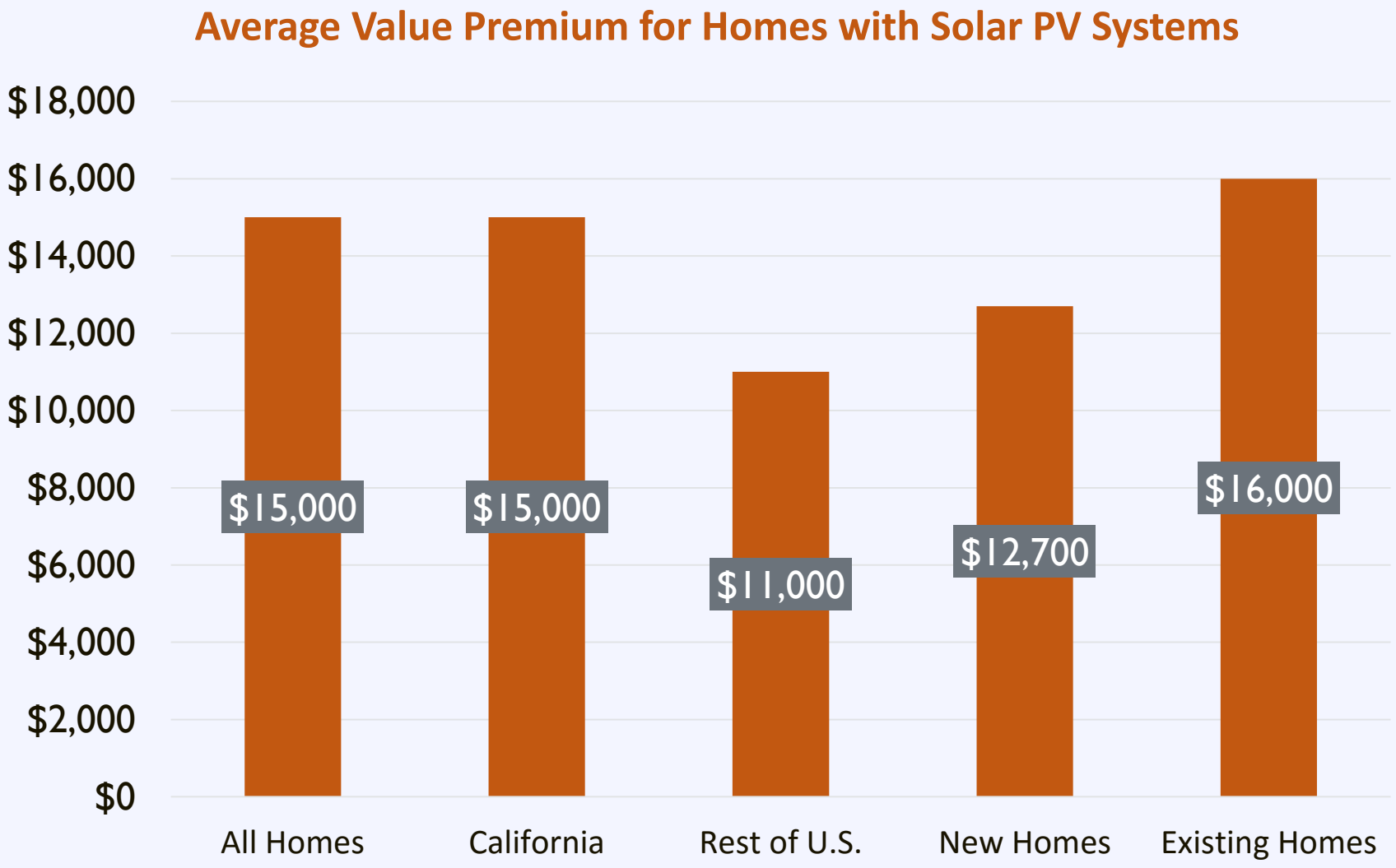
Source: NEPOOL

Valuable to Community & Utilities



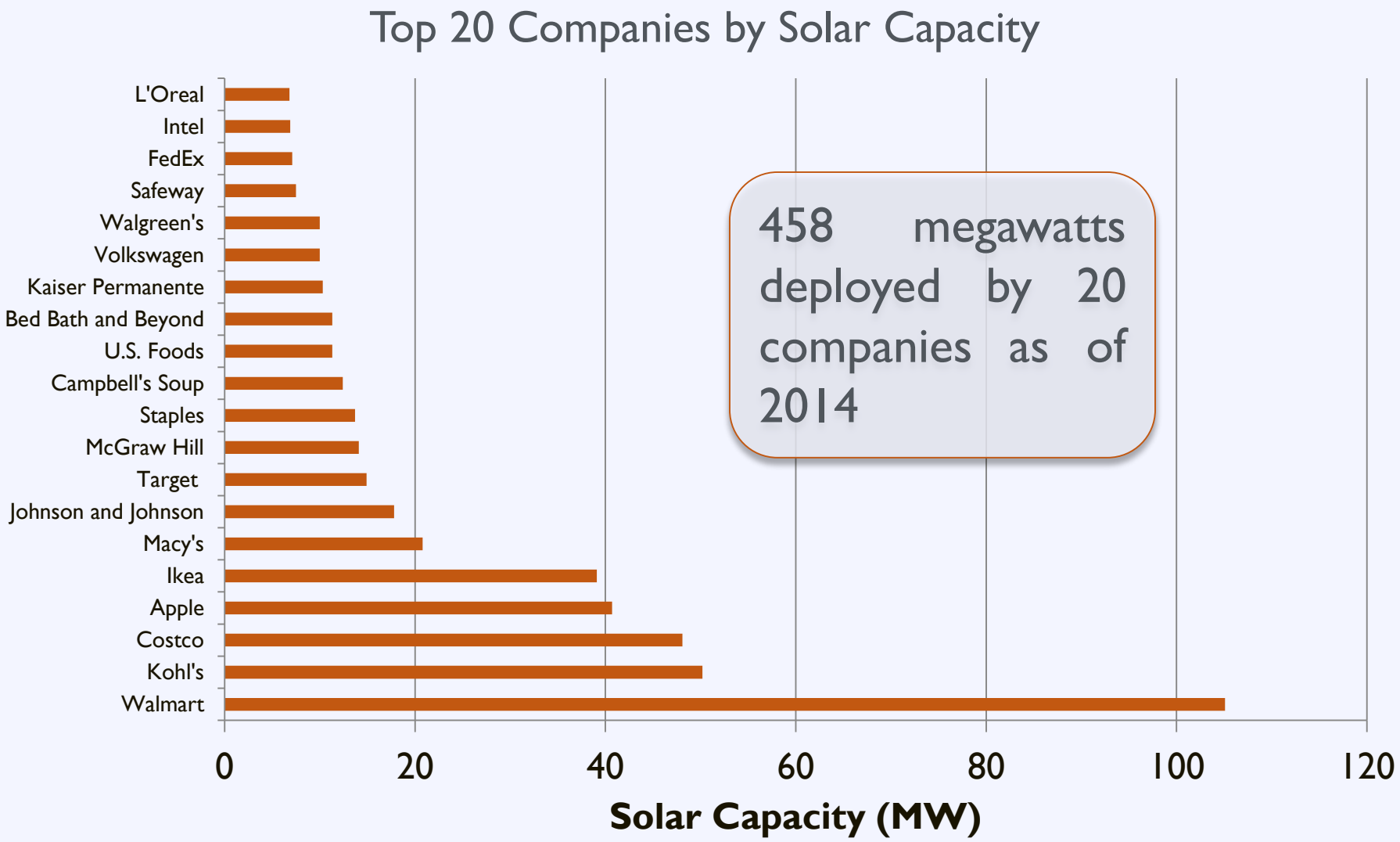
Source: Rocky Mountain Institute
(http://www.rmi.org/Content/Files/eLab-DER_cost_value_Deck_130722.pdf)

Smart Investment for Homeowners



Source: LBNL, *Selling Into the Sun* (2015)

Smart Investment for Businesses



Source: Solar Energy Industries Association

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Smart Investment for Governments

Source: Borrego Solar

Smart Investment for Schools

Current:

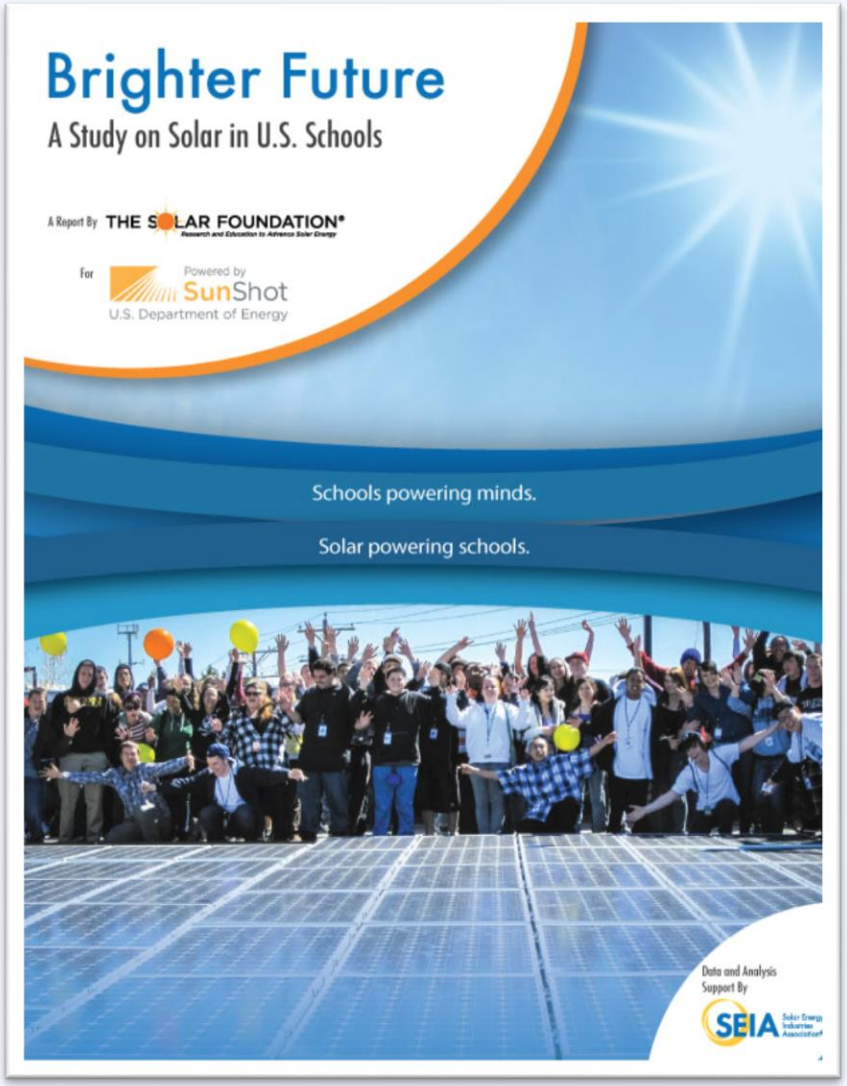
× 3,752

$ = $77.8m

Potential:

× 40,000 – 72,000

$ = $800m



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Source: The Solar Foundation (http://schools.tsfcensus.org)

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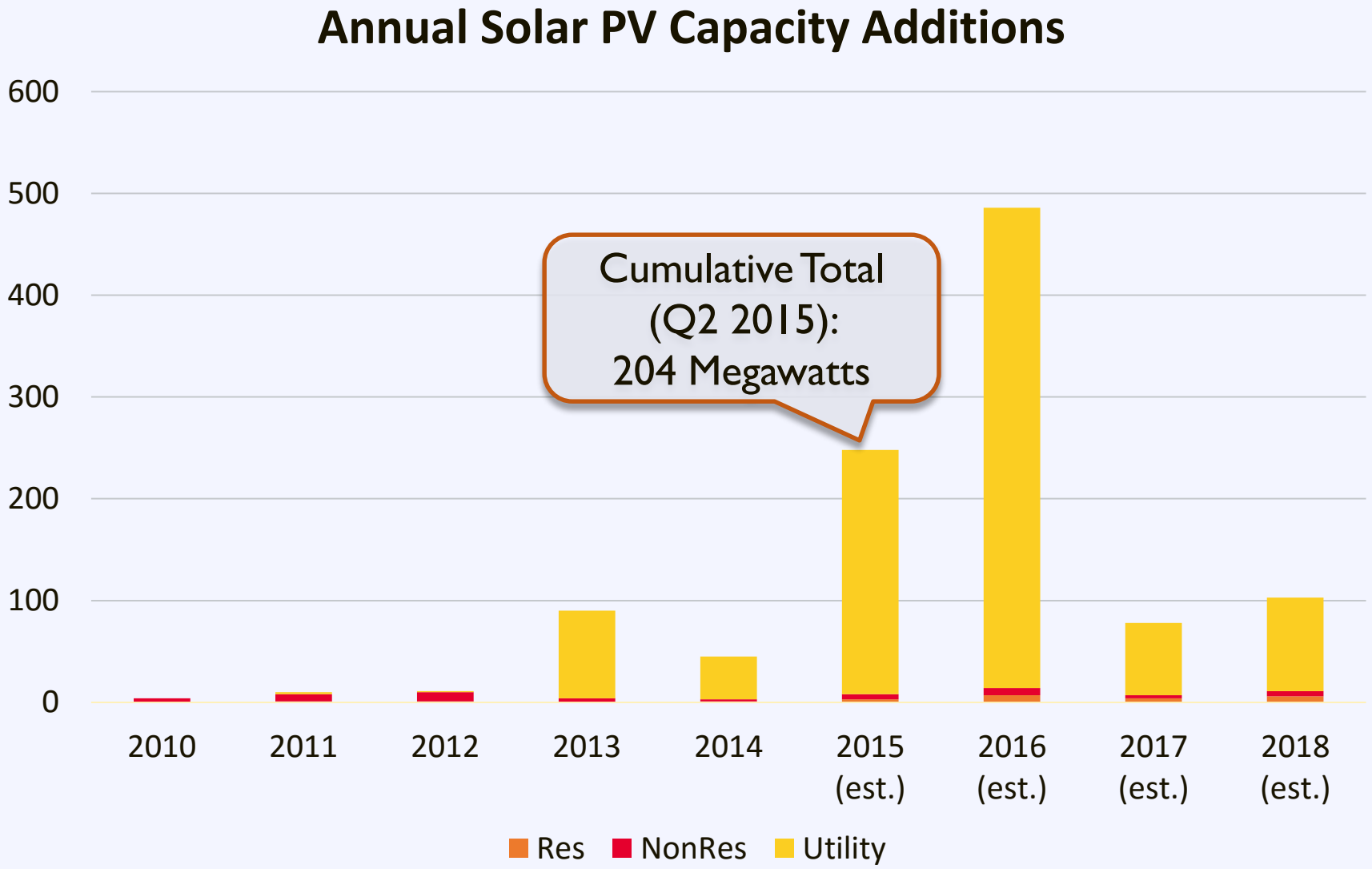
Georgia Solar Market



Source: SEIA/GTM Research, *Solar Market Insight*; IREC, *Solar Market Trends*

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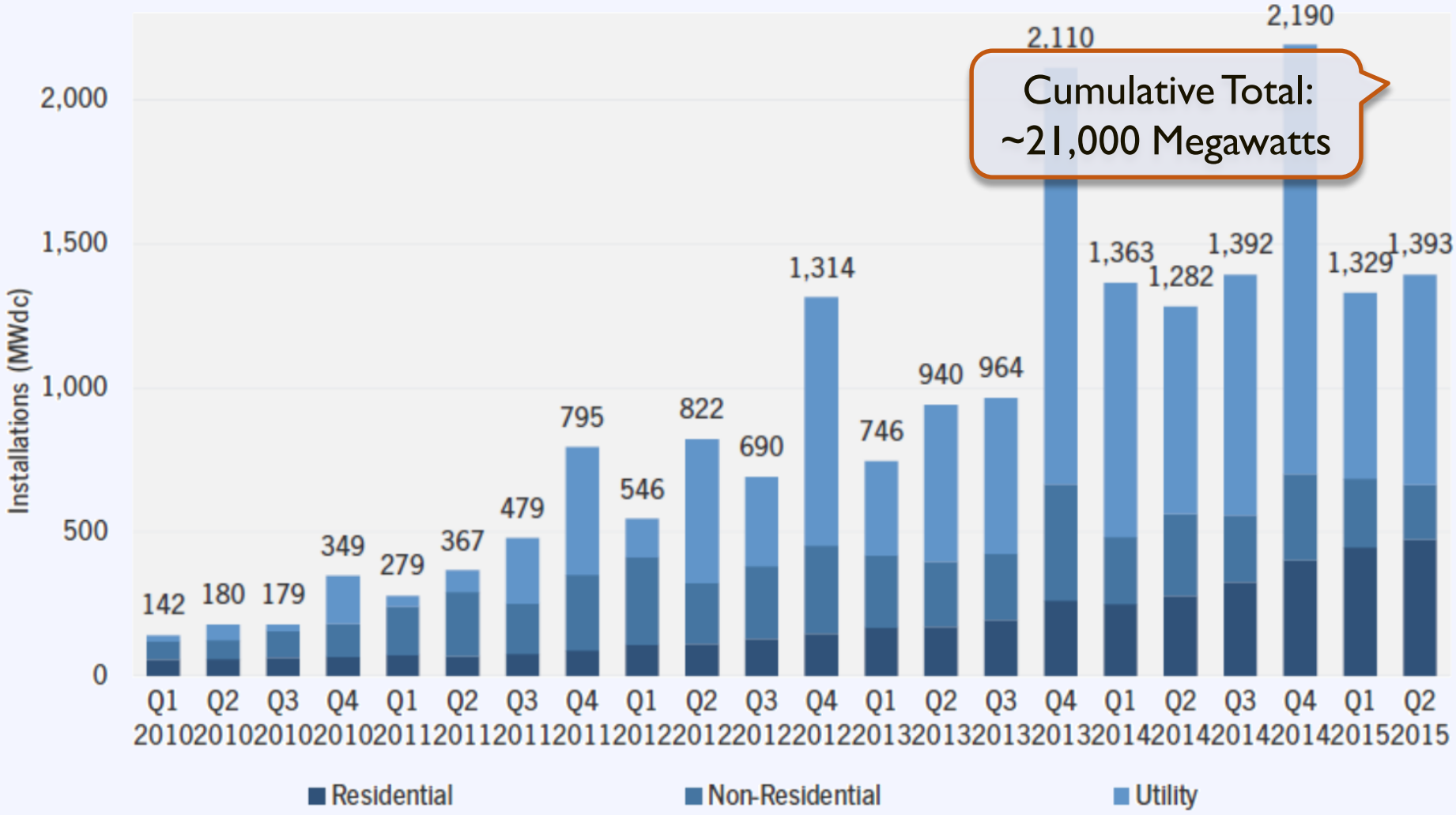
US Solar Market



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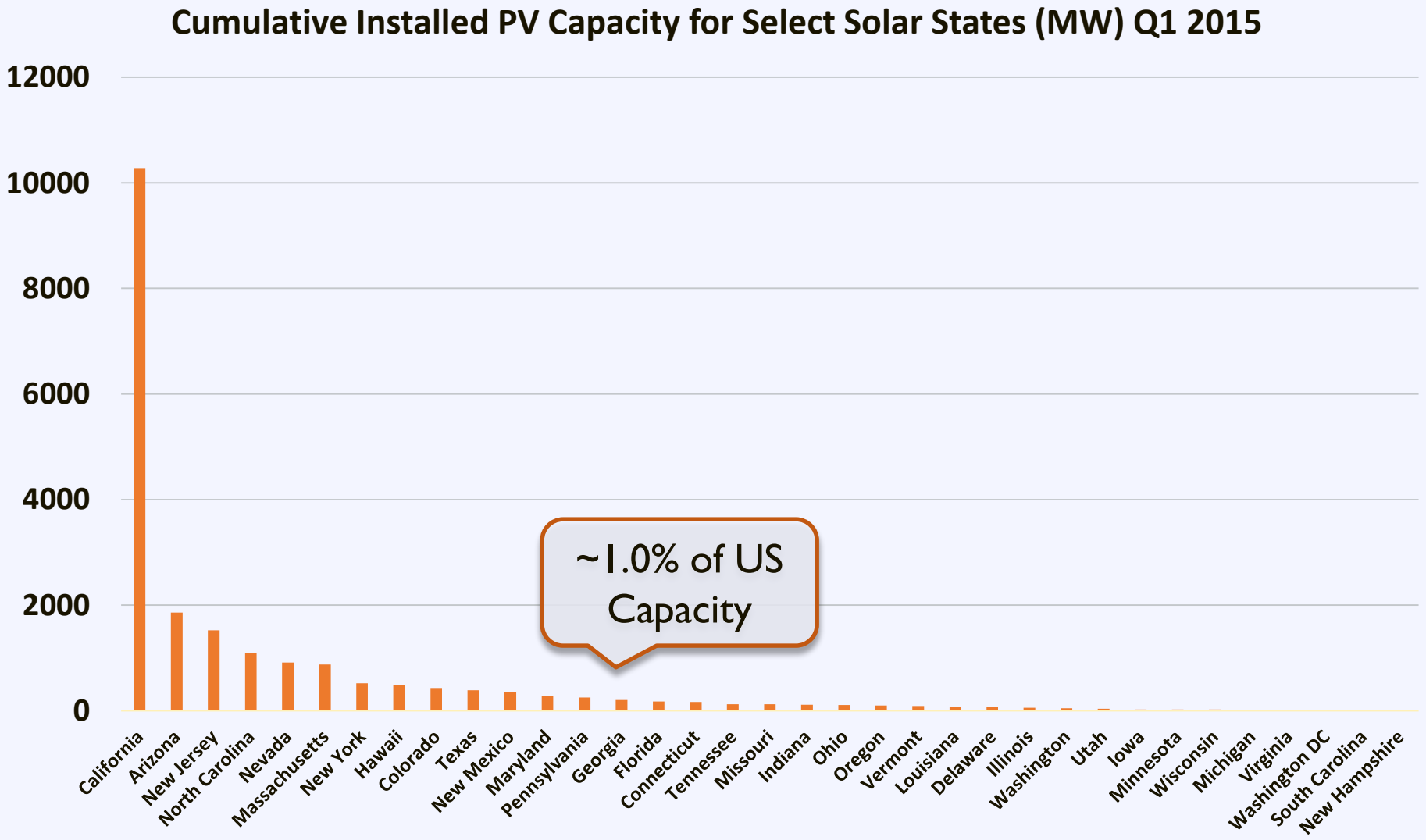
Source: Solar Energy Industries Association/ GTM Research, *Solar Market Insight: 2014 Year-in-Review*

US Solar Market



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Source: SEIA, *Solar Market Insight Q2 2015*

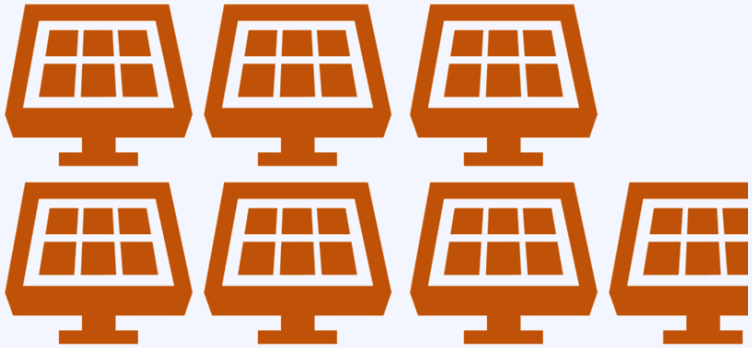
Georgia Solar Market

Georgia

20

watts per person

US



68

watts per person

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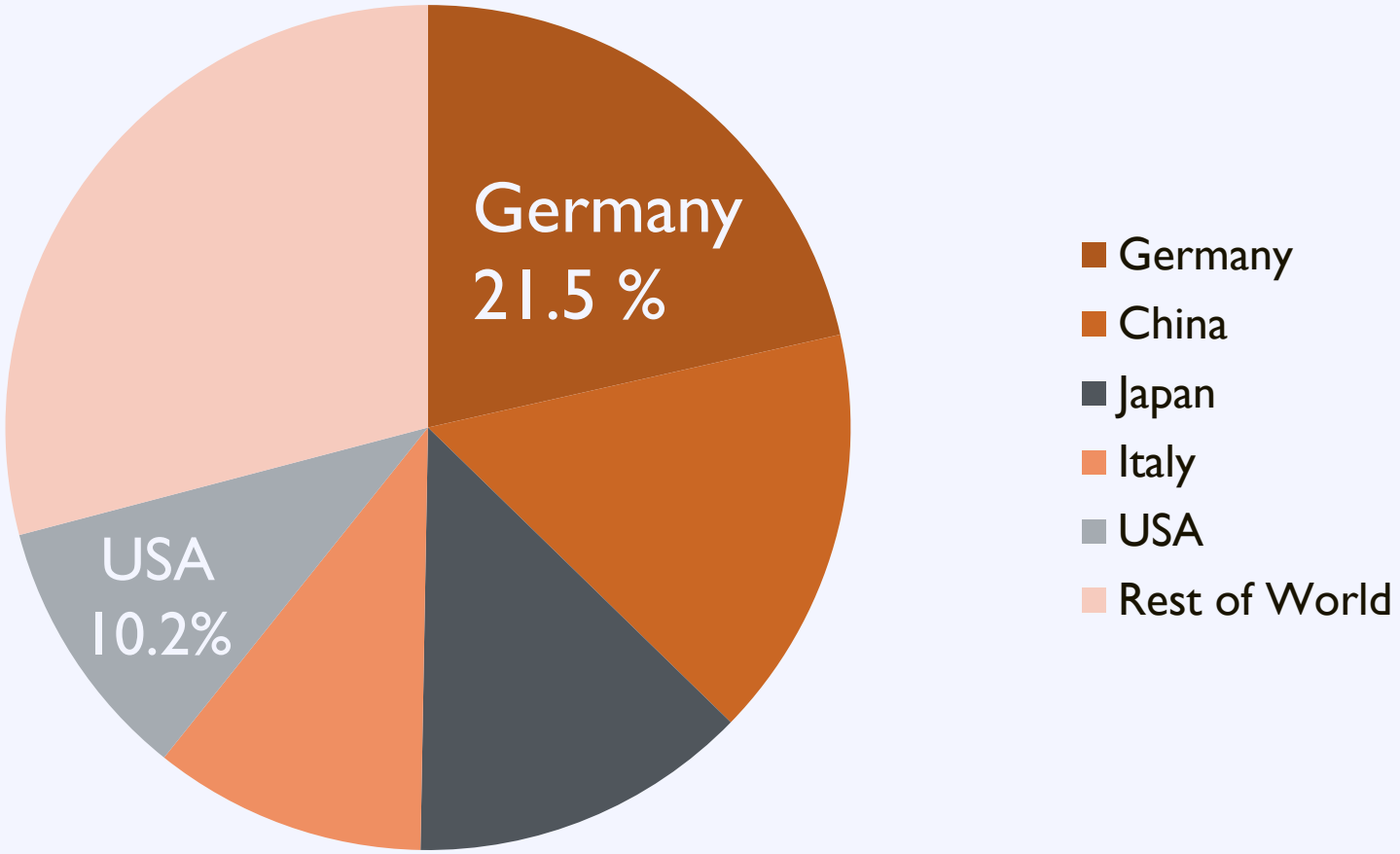
Source: SEIA, *Solar Market Insight Q2 2015*

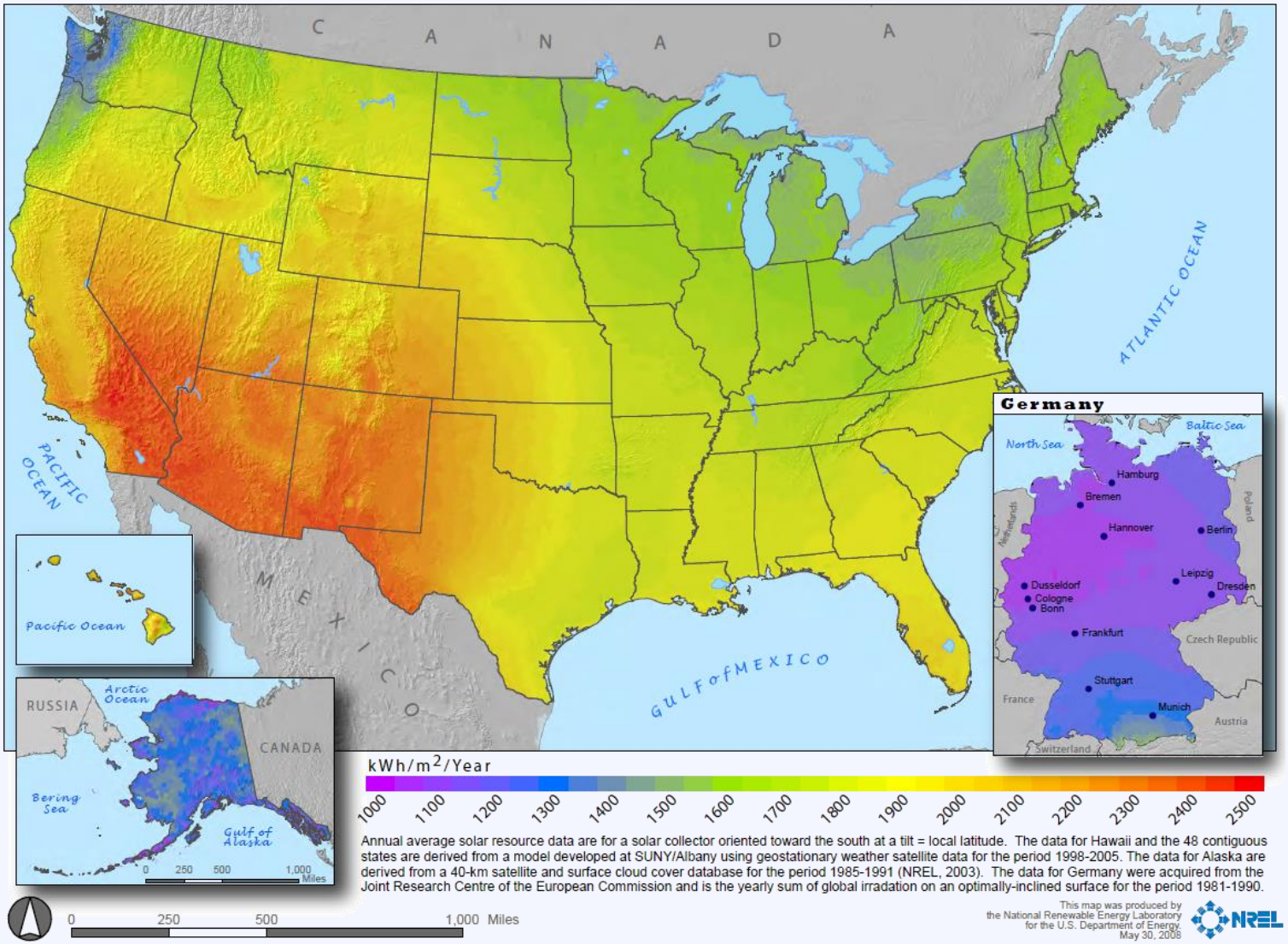
World Solar Market

Top 5 Countries Solar Operating Capacity (2014)



Source: REN 21, *Renewables 2015 Global Status Report*

US Solar Resource



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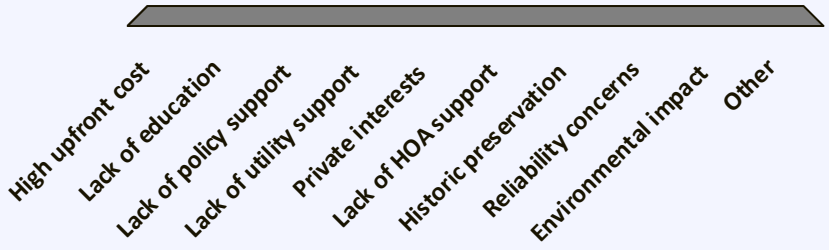
Source: National Renewable Energy Laboratory

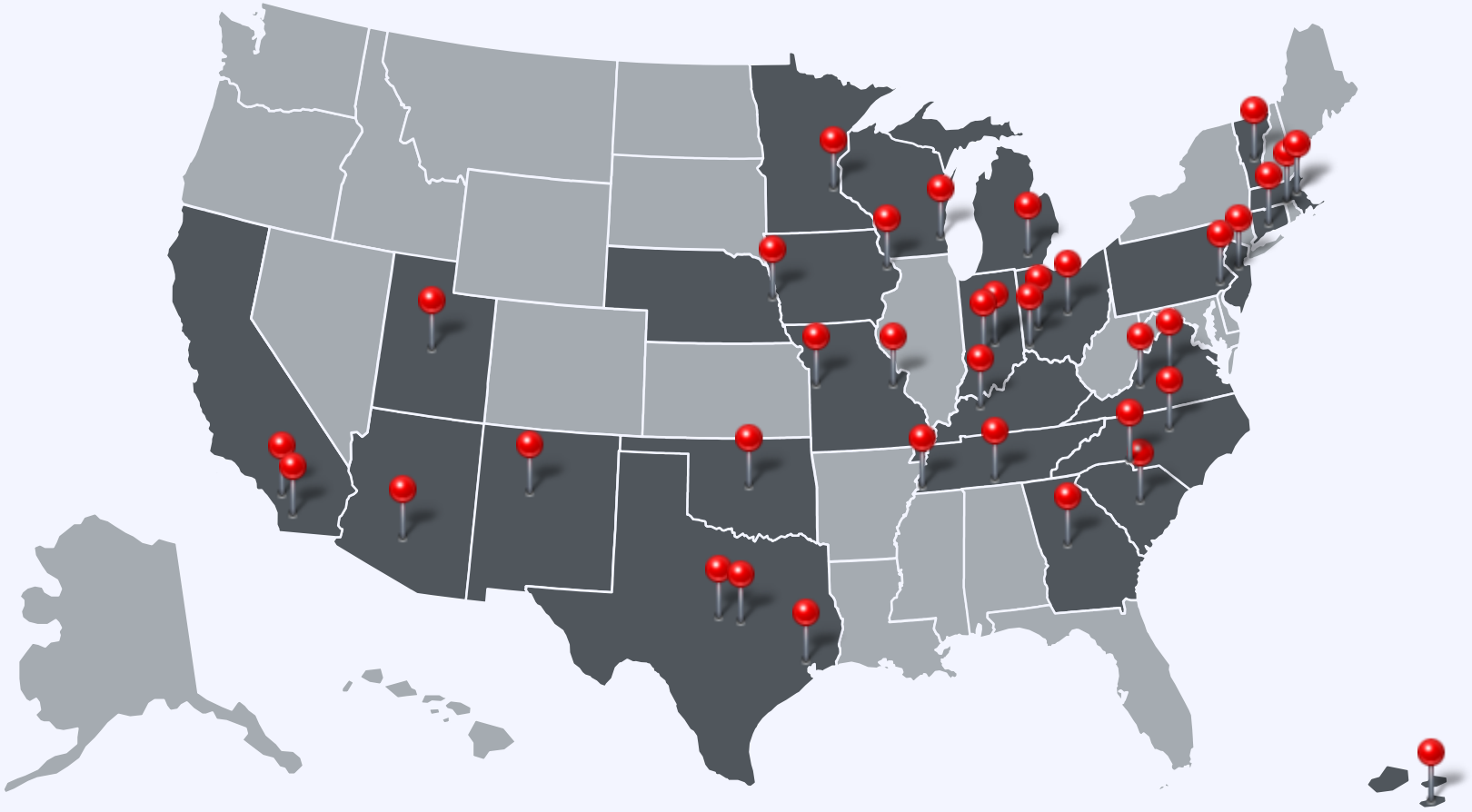
What are the top 3 barriers to solar adoption in your community?

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?



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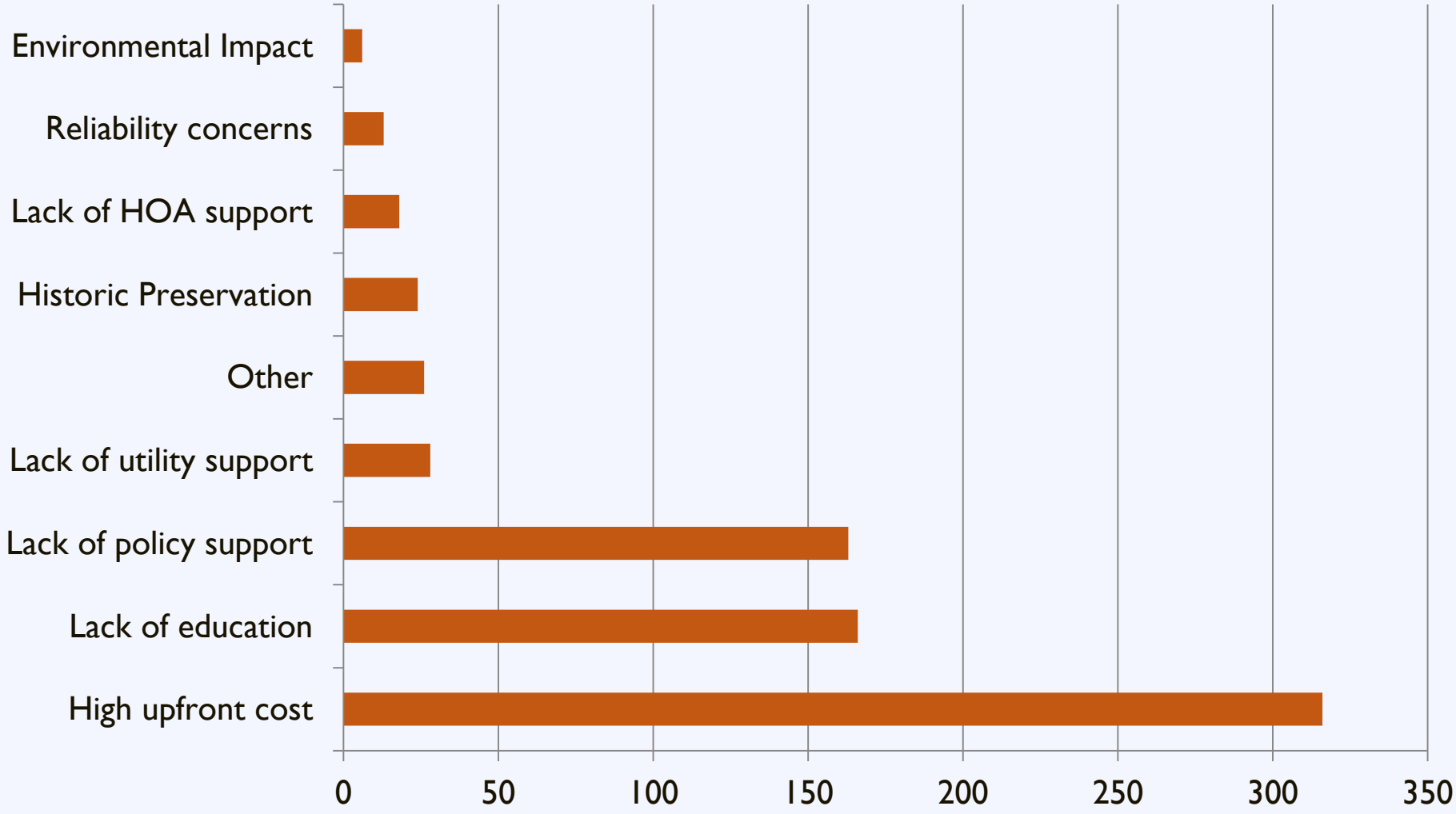
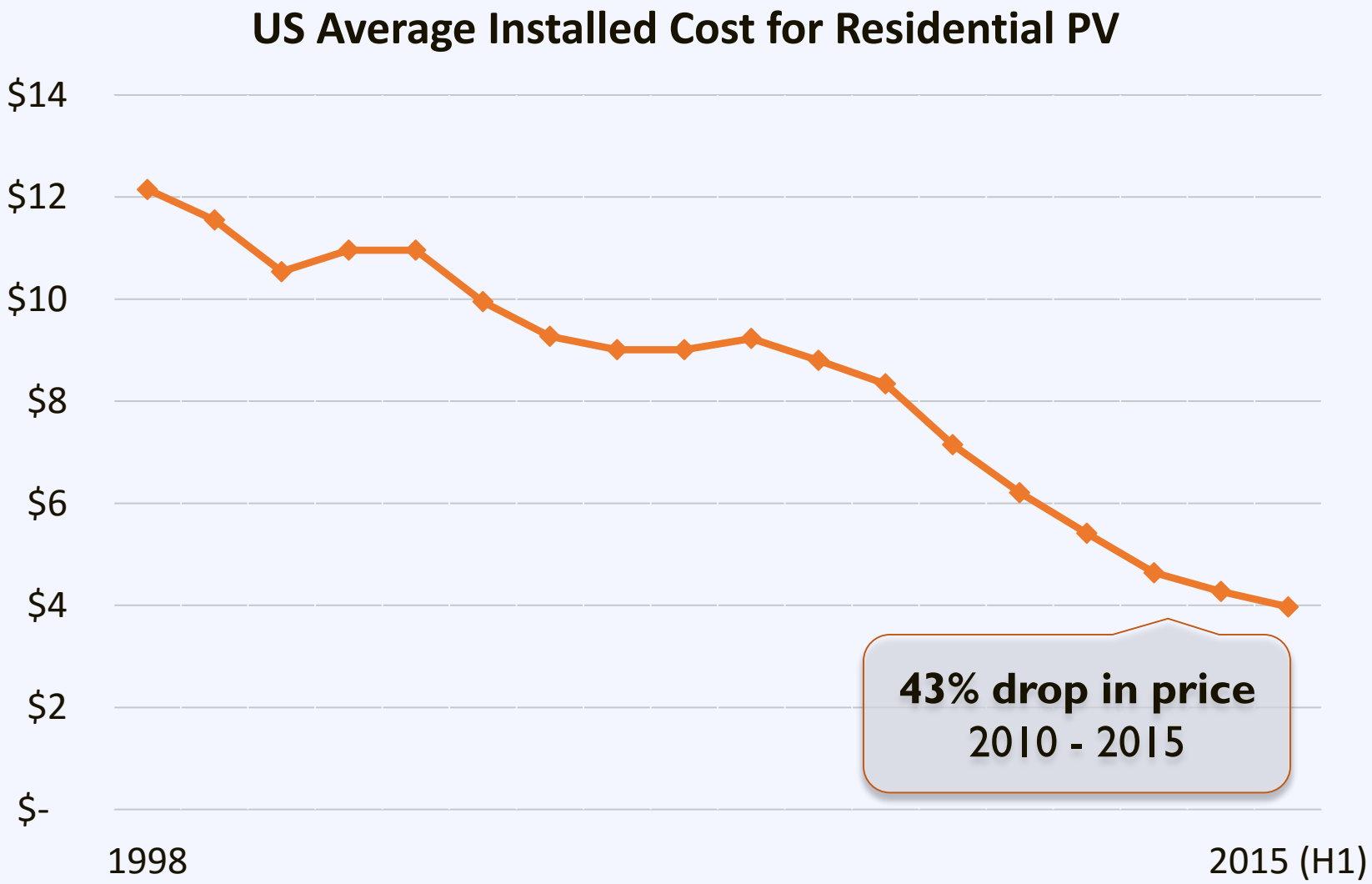
Activity: Addressing Barriers



The Cost of Solar PV



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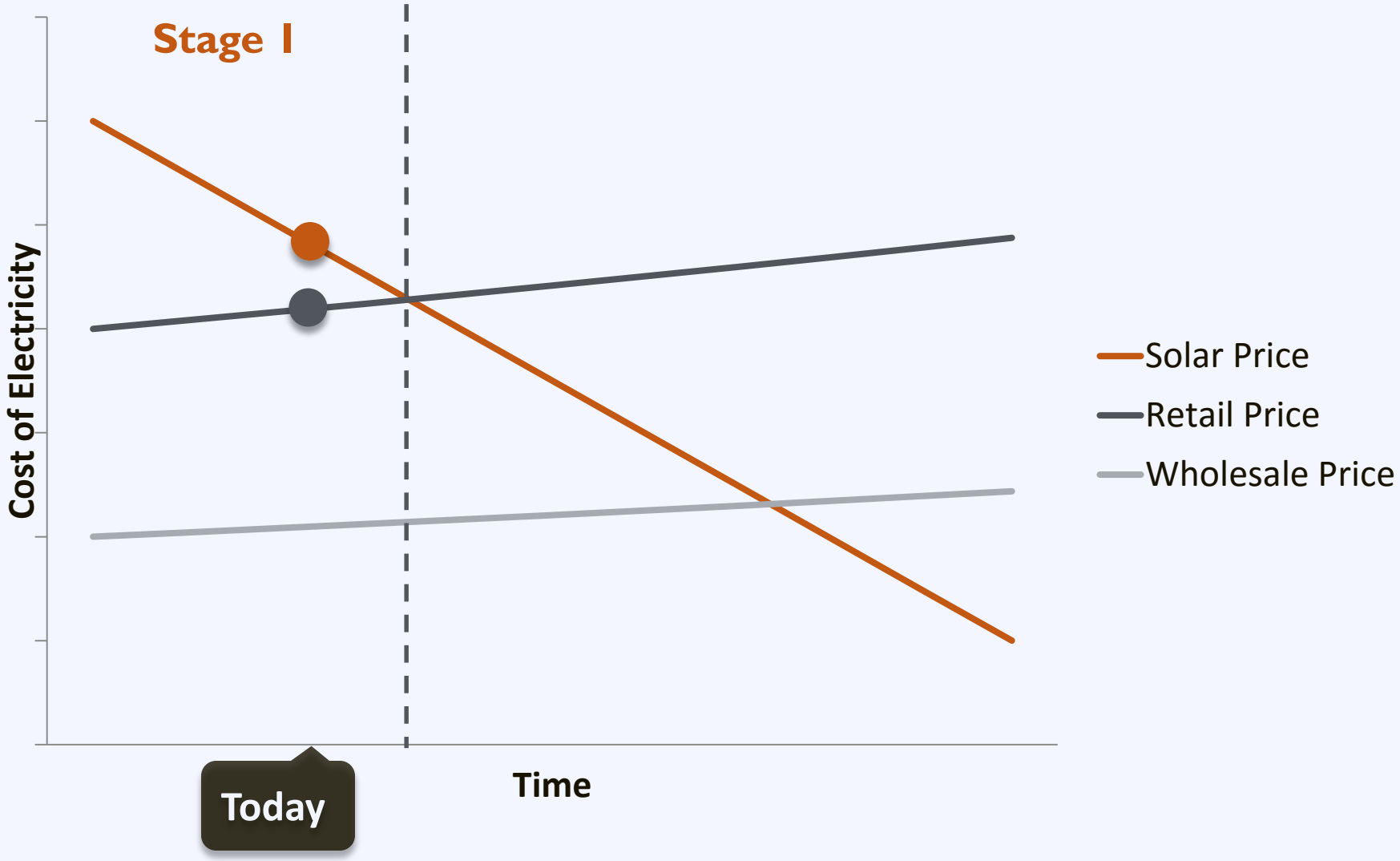
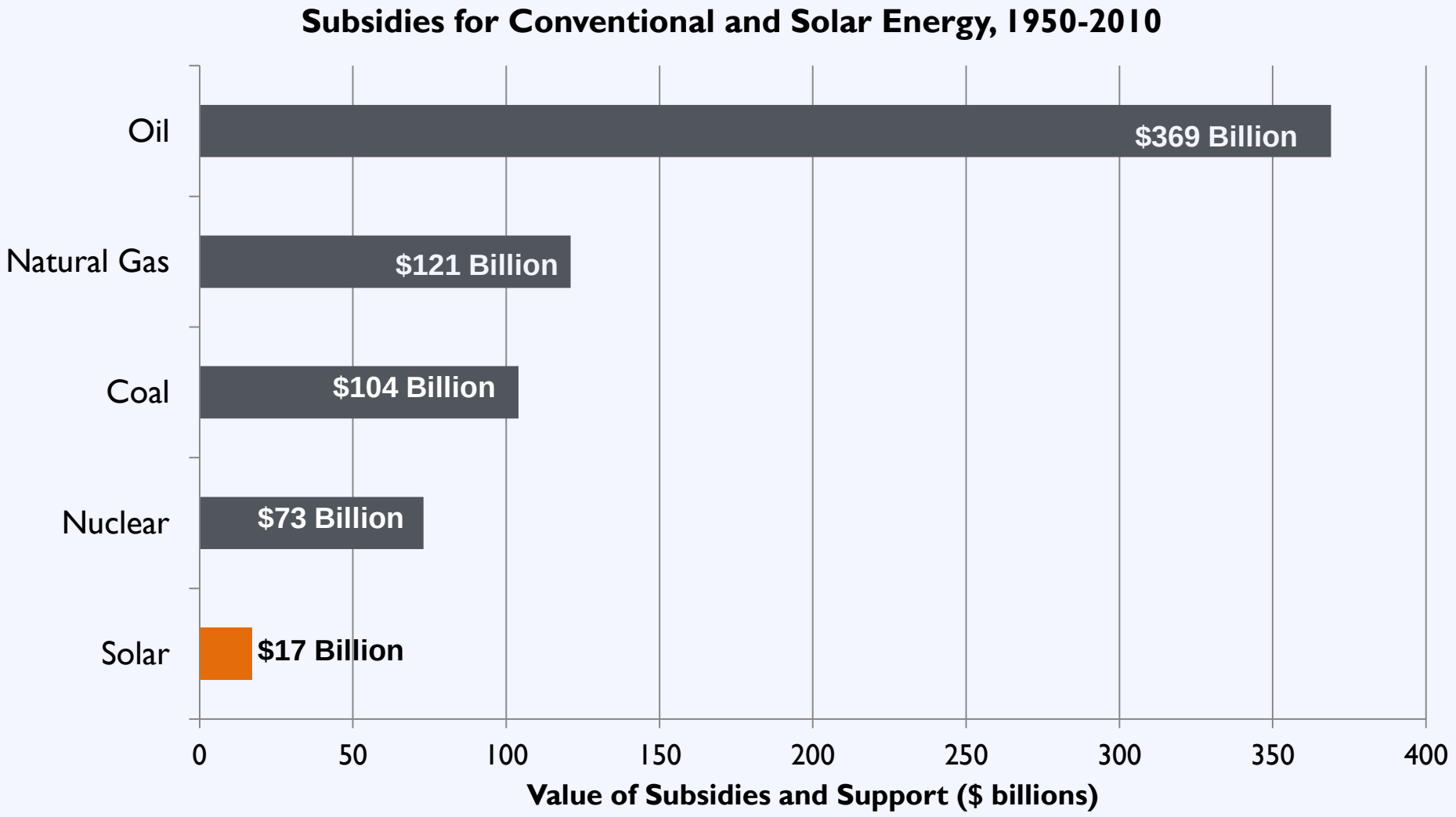
Tracking the Sun VII: The Installed Cost of Photovoltaics in the US from 1998-2013 (LBNL)

The Cost of Solar PV



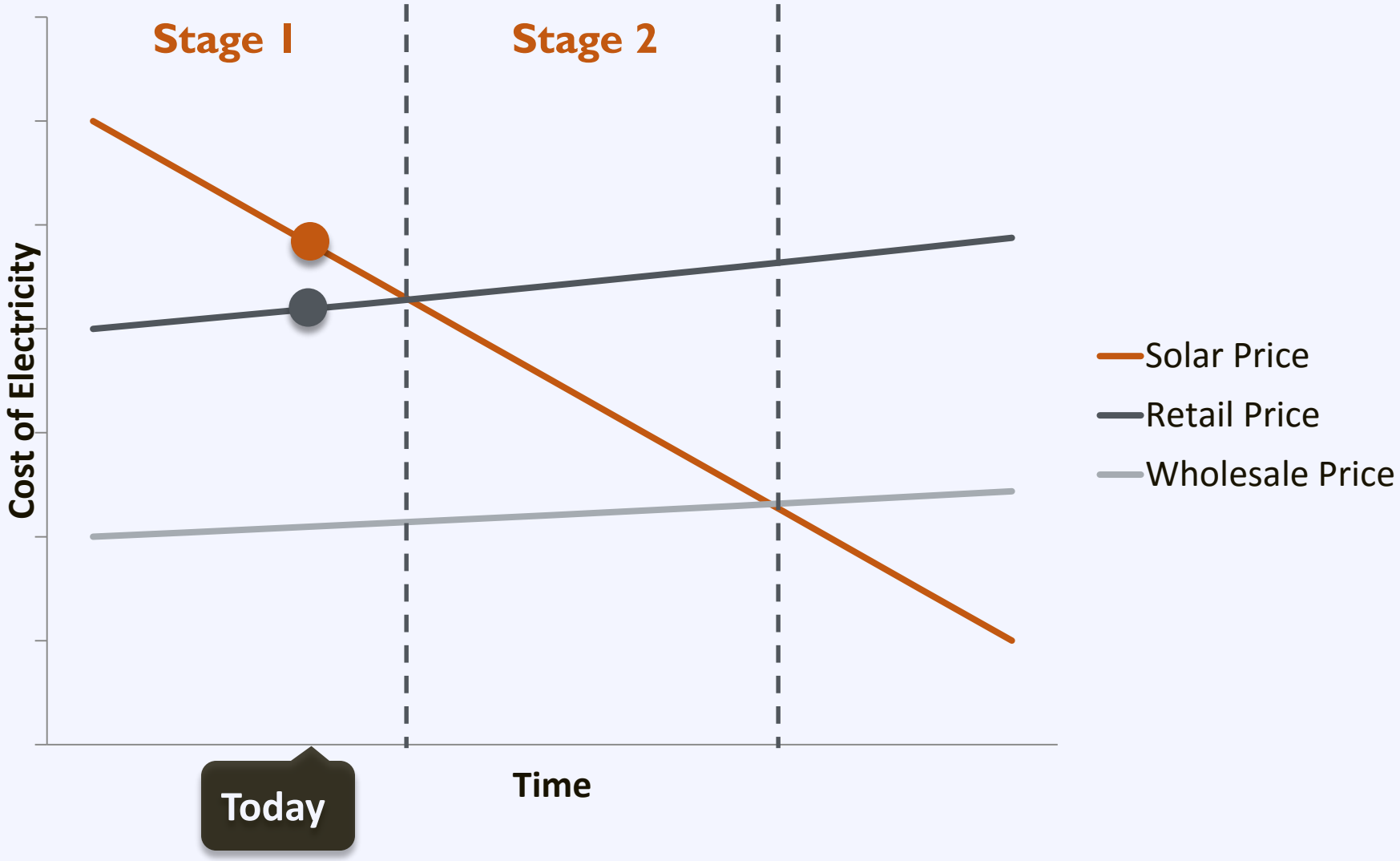
Source: Solar Electric Power Association

Subsidies and Support



Source: Management Information Services, Inc. October 2011. *60 Years of Energy Incentives: Analysis of Federal Expenditures for Energy Development*; SEIA, May 1, 2012. *Federal Energy Incentives Report.*

The Cost of Solar PV



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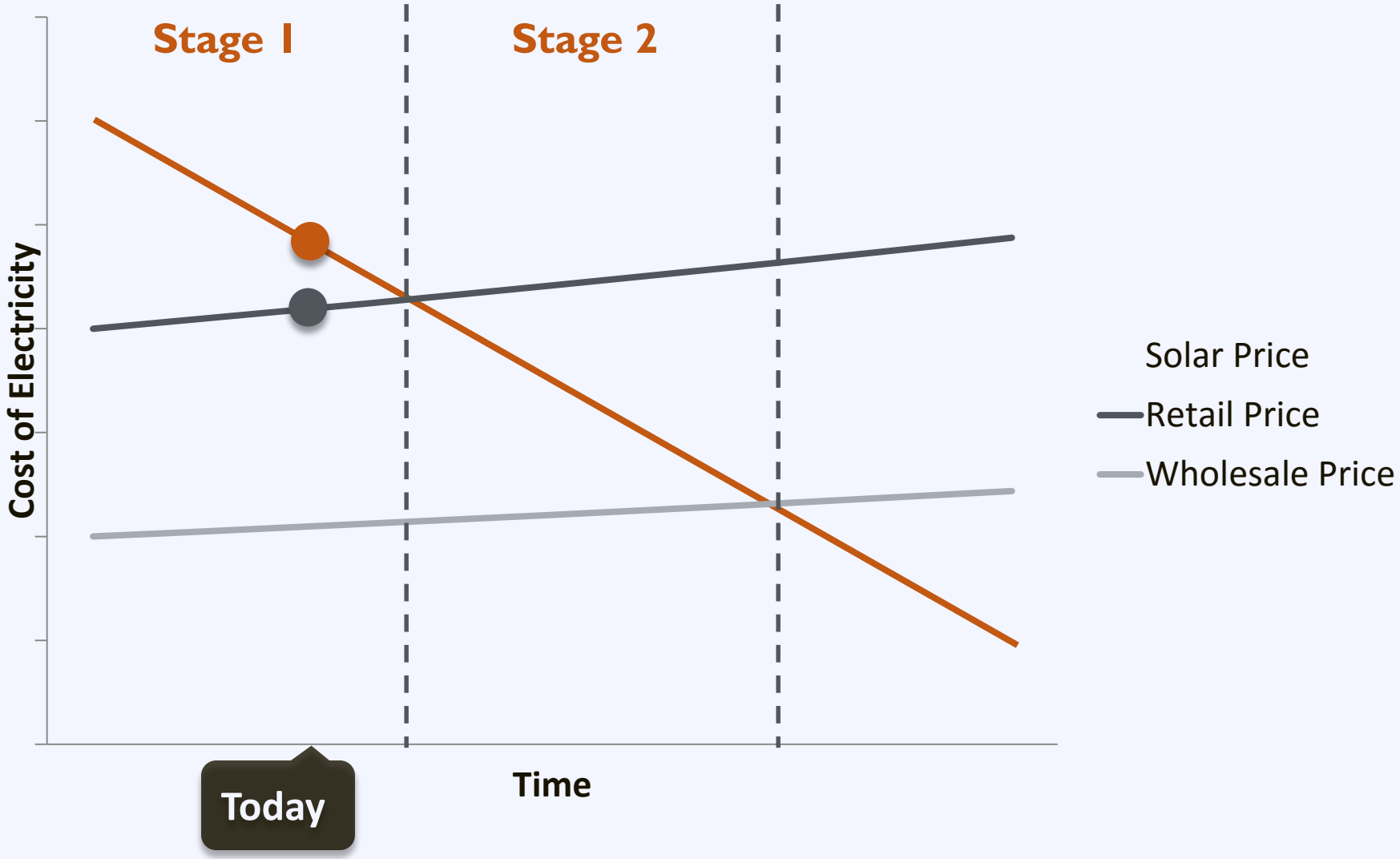
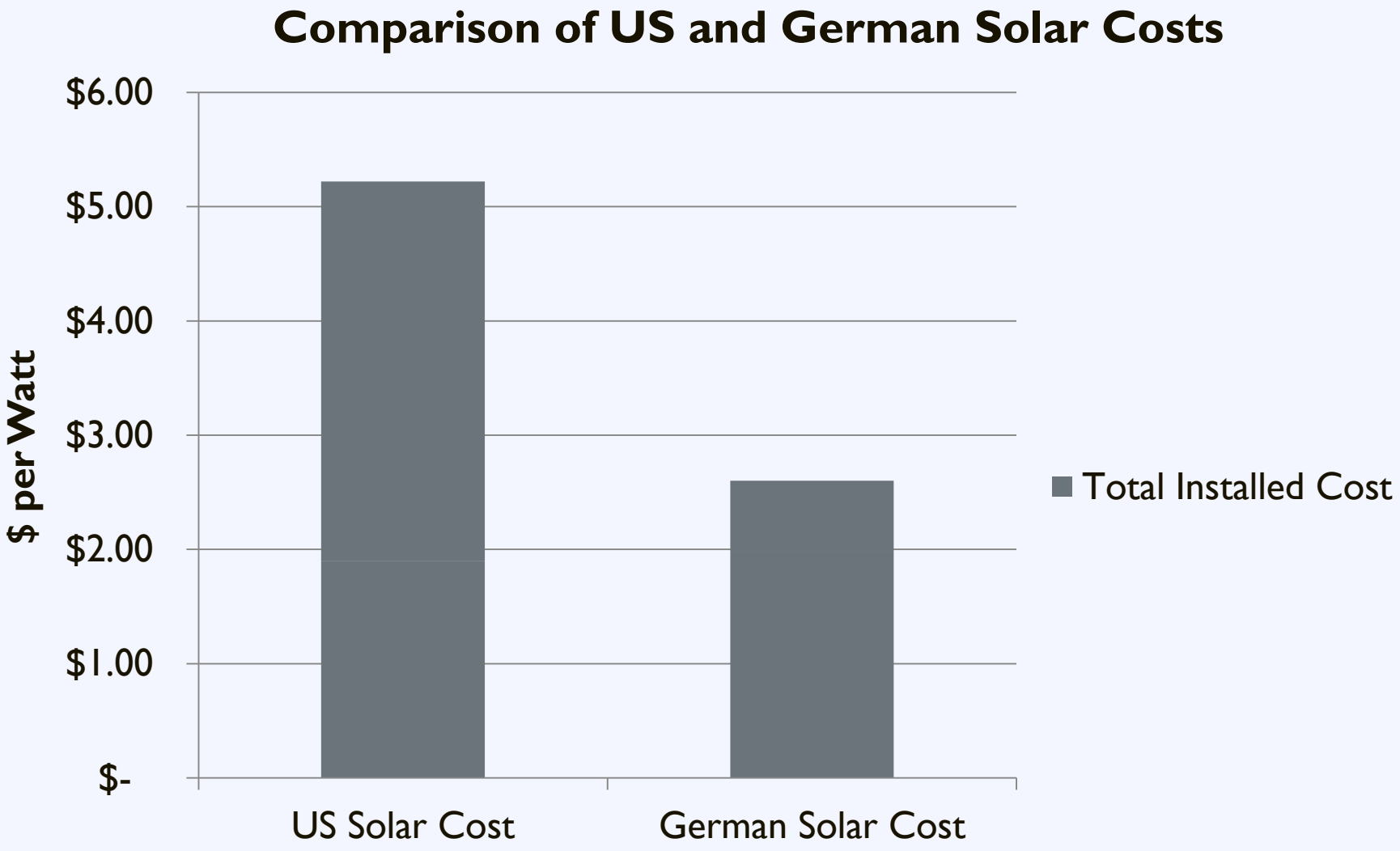
The Cost of Solar PV



Source: Solar Electric Power Association

The Cost of Solar in the US



Source: NREL (http://www.nrel.gov/docs/fy14osti/60412.pdf)
LBNL (http://emp.lbl.gov/sites/all/files/lbnl-6350e.pdf)(http://www1.eere.energy.gov/solar/pdfs/sunshot_webinar_20130226.pdf)

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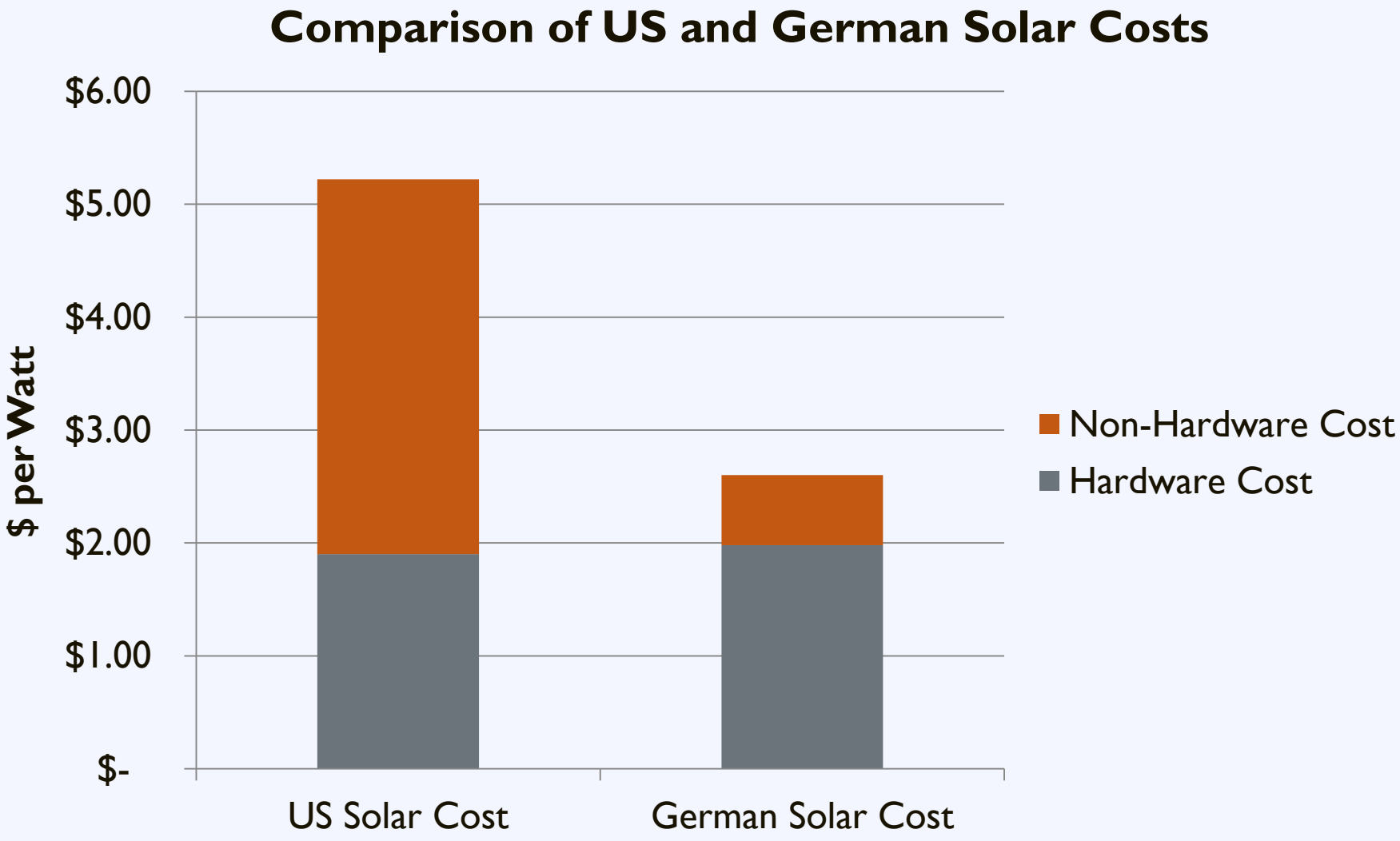
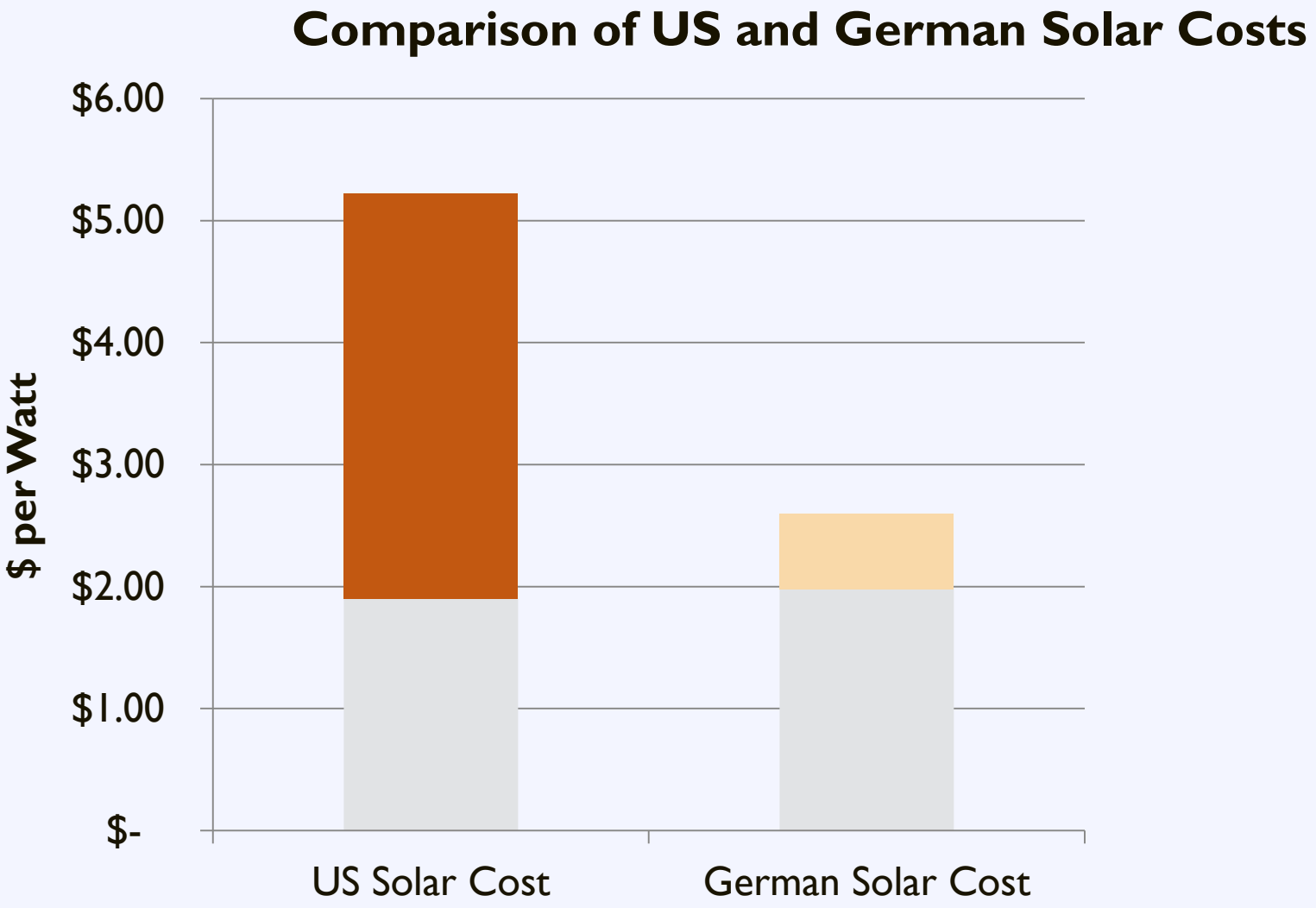
The Cost of Solar in the US



Source: NREL (http://www.nrel.gov/docs/fy14osti/60412.pdf)
LBNL (http://emp.lbl.gov/sites/all/files/lbnl-6350e.pdf)(http://www1.eere.energy.gov/solar/pdfs/sunshot_webinar_20130226.pdf)

Powered by SunShot U.S. Department of Energy

The Cost of Solar in the US



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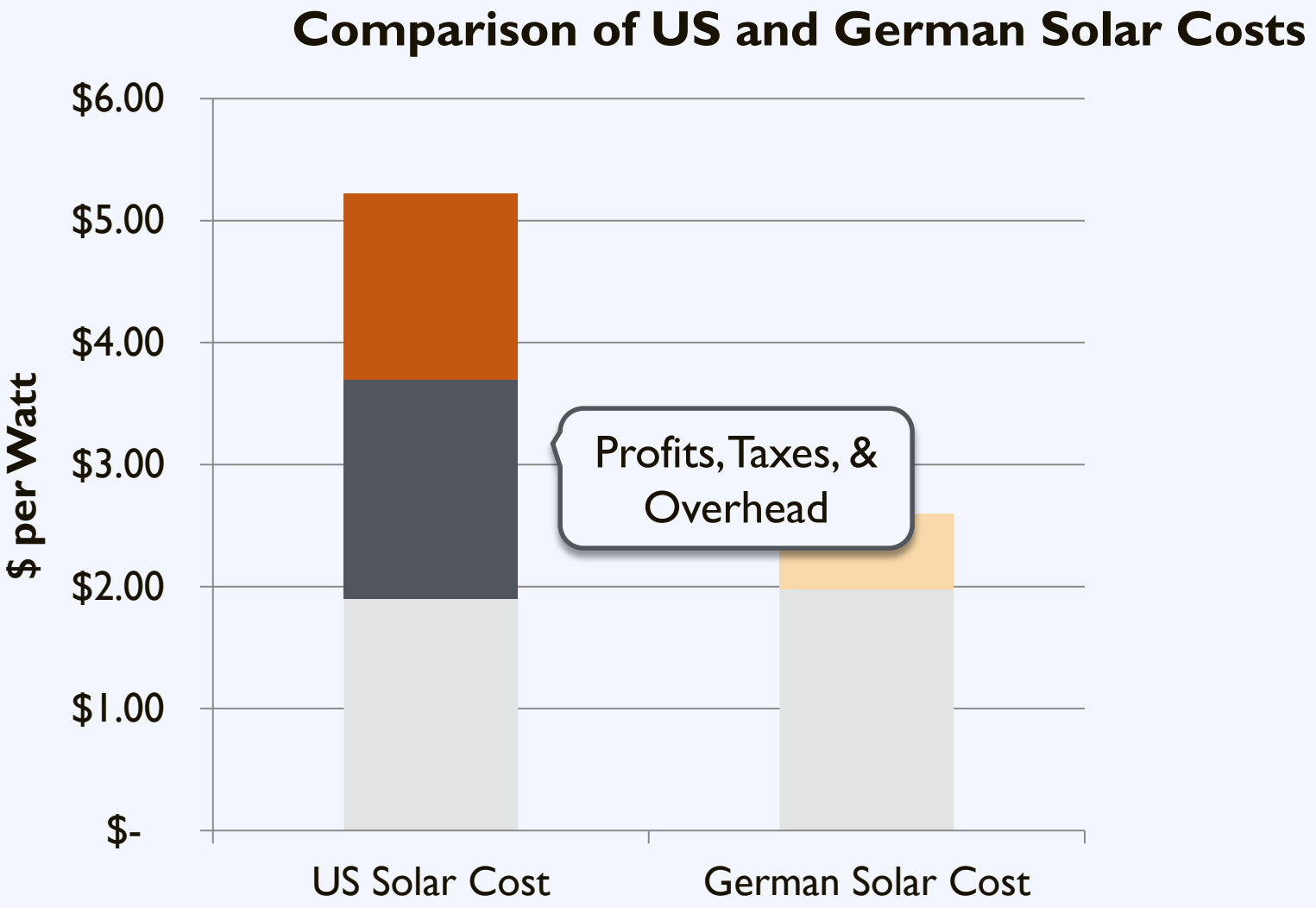

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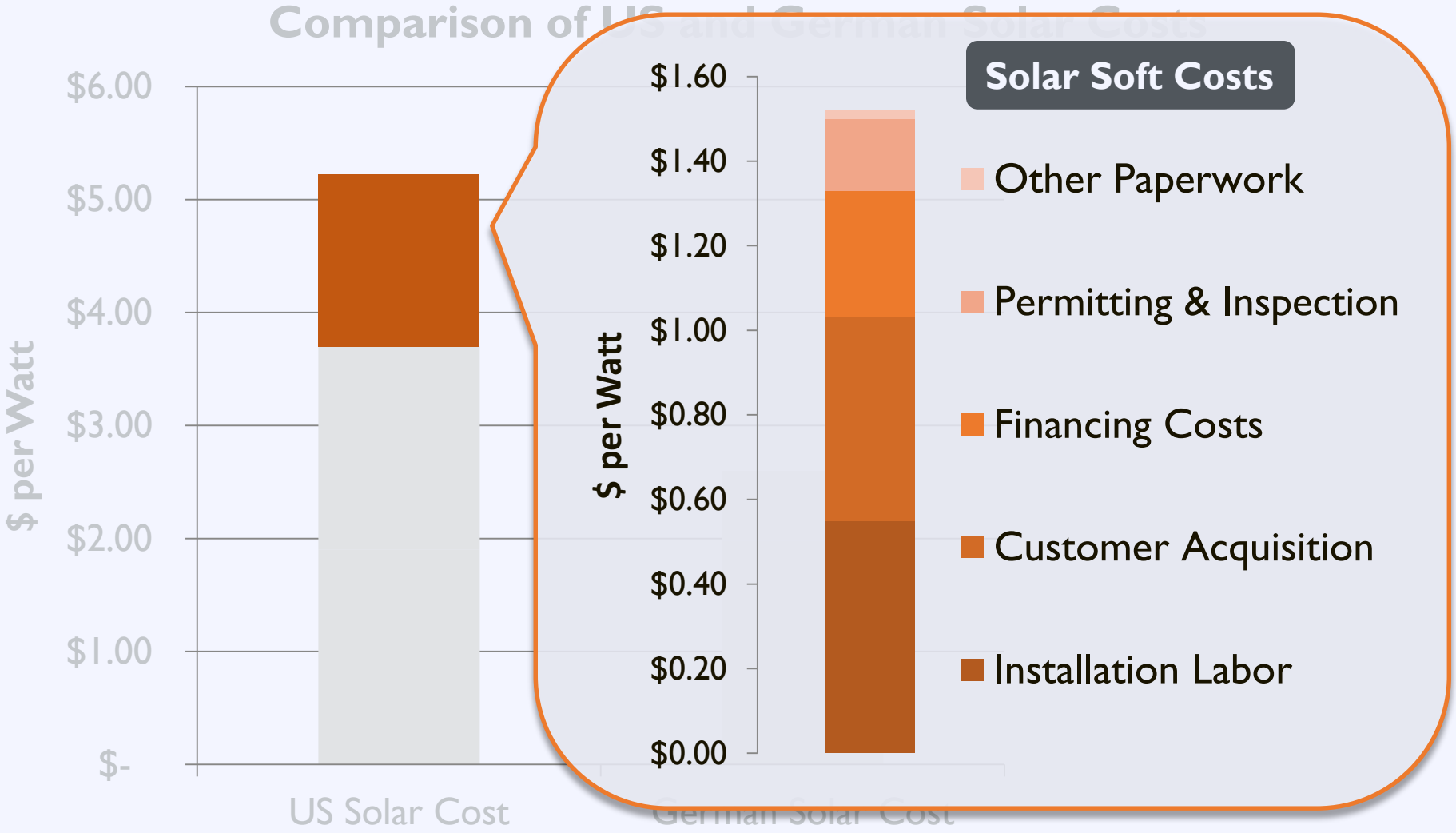
The Cost of Solar in the US



Powered by SunShot U.S. Department of Energy

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LBNL (http://emp.lbl.gov/sites/all/files/lbnl-6350e.pdf)(http://www1.eere.energy.gov/solar/pdfs/sunshot_webinar_20130226.pdf)

Challenge: Installation Time

New York City's Goal

100 days

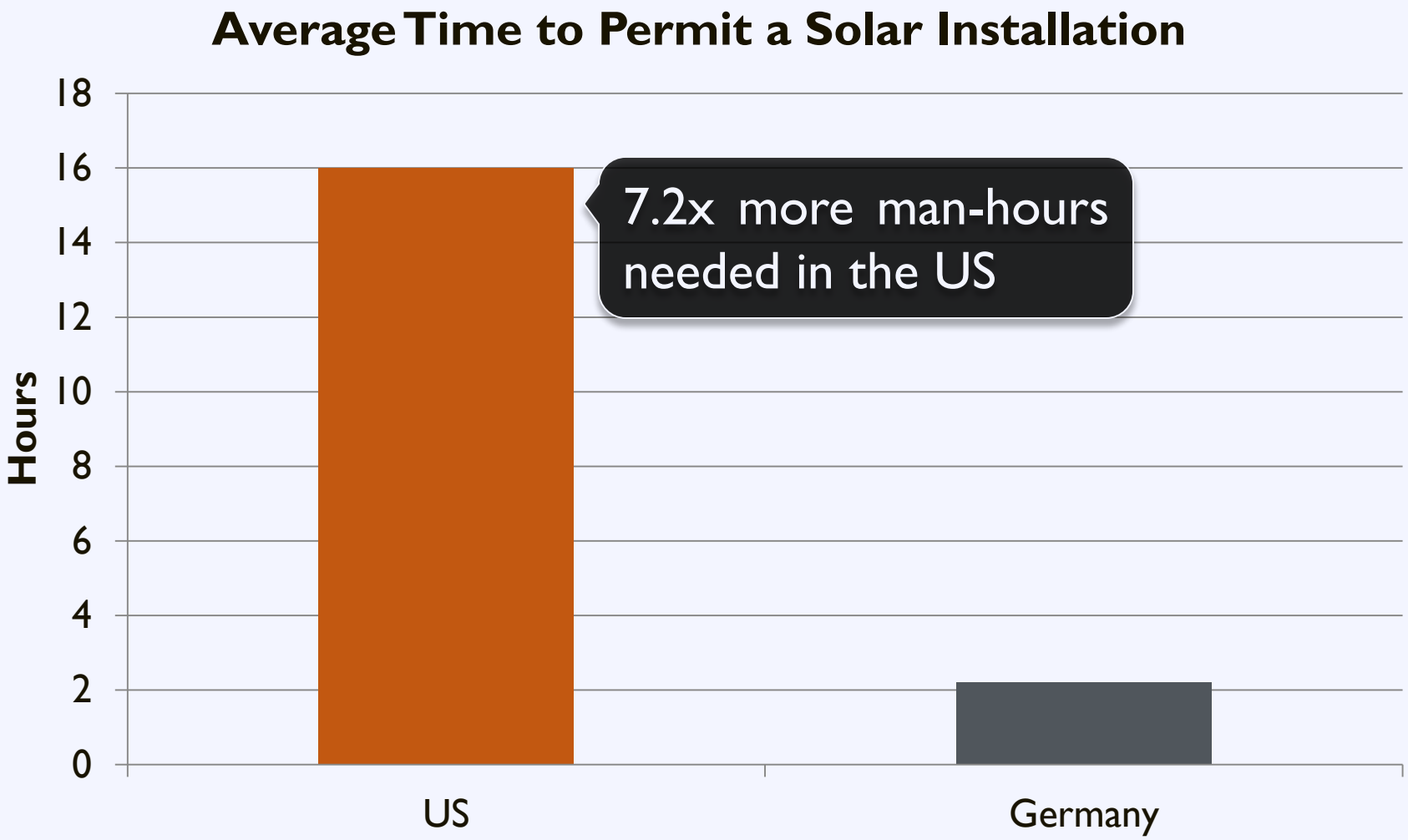
from inception to completion

Germany Today

8 days

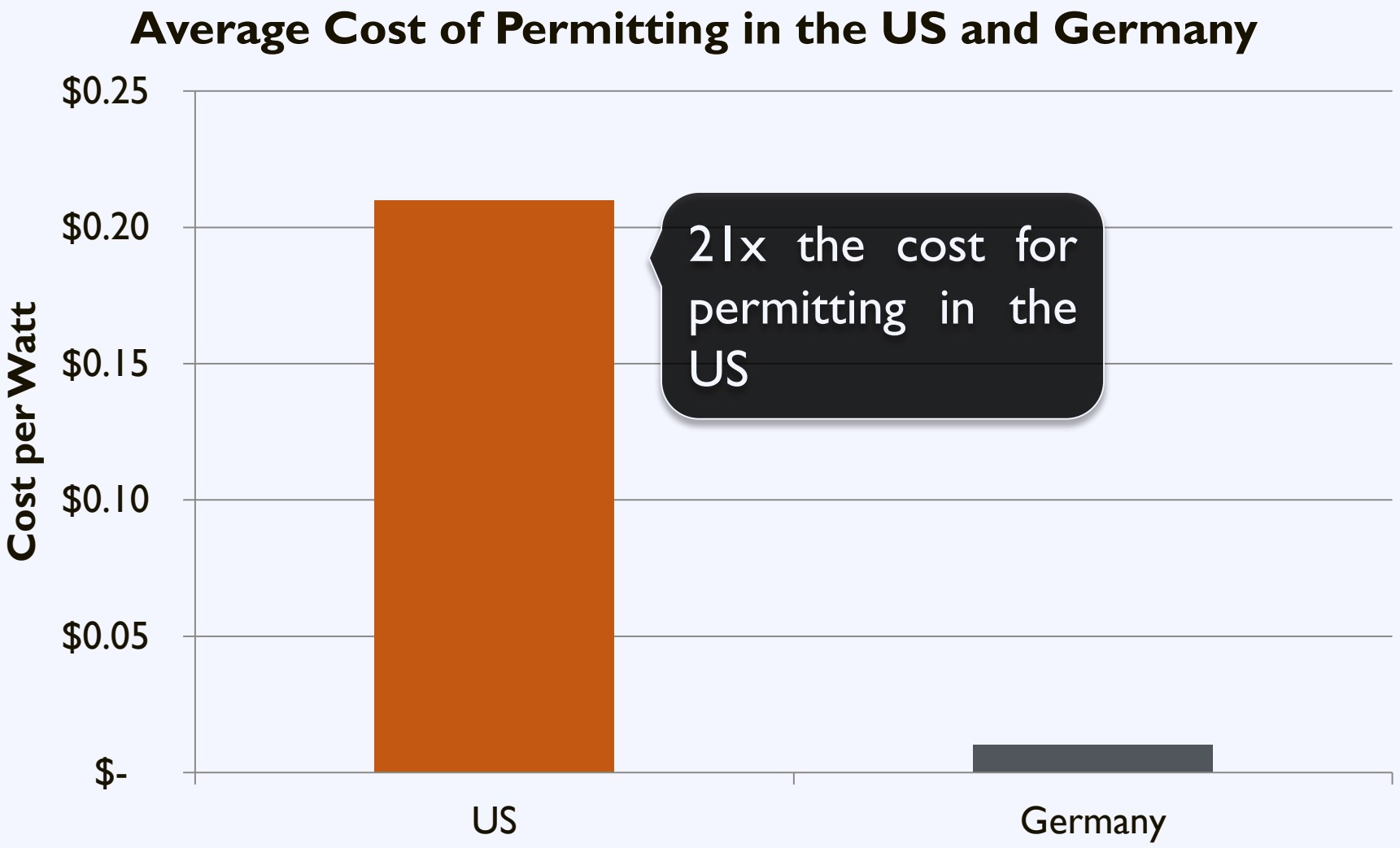
from inception to completion

Time to Installation



Source: NREL, LBNL

Permitting Costs



Source: NREL, LBNL

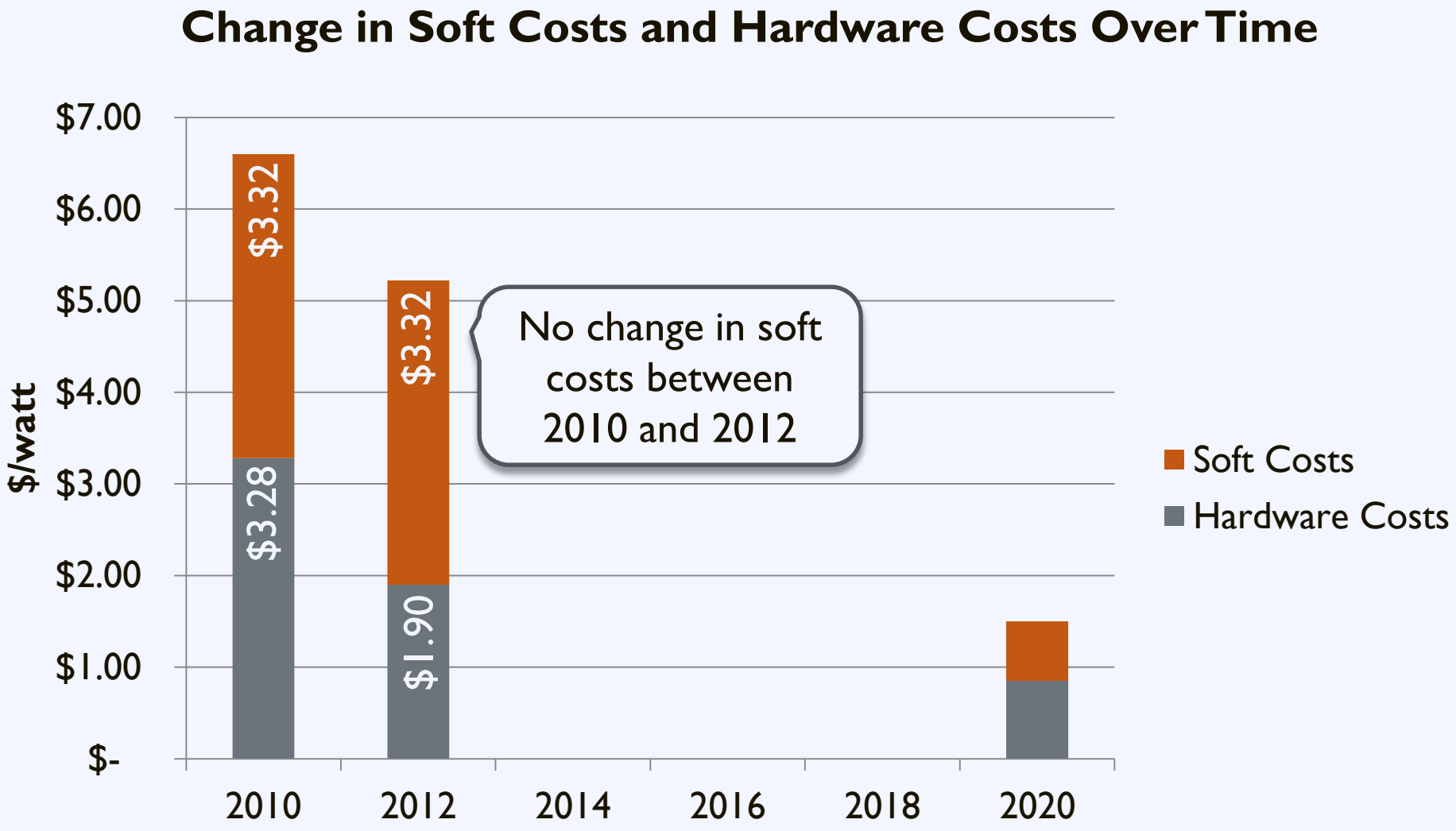
Germany's Success

Consistency and Transparency

through

Standardized Processes

The Cost of Solar in the US



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U.S. Department of Energy

Workshop Goal

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

Agenda

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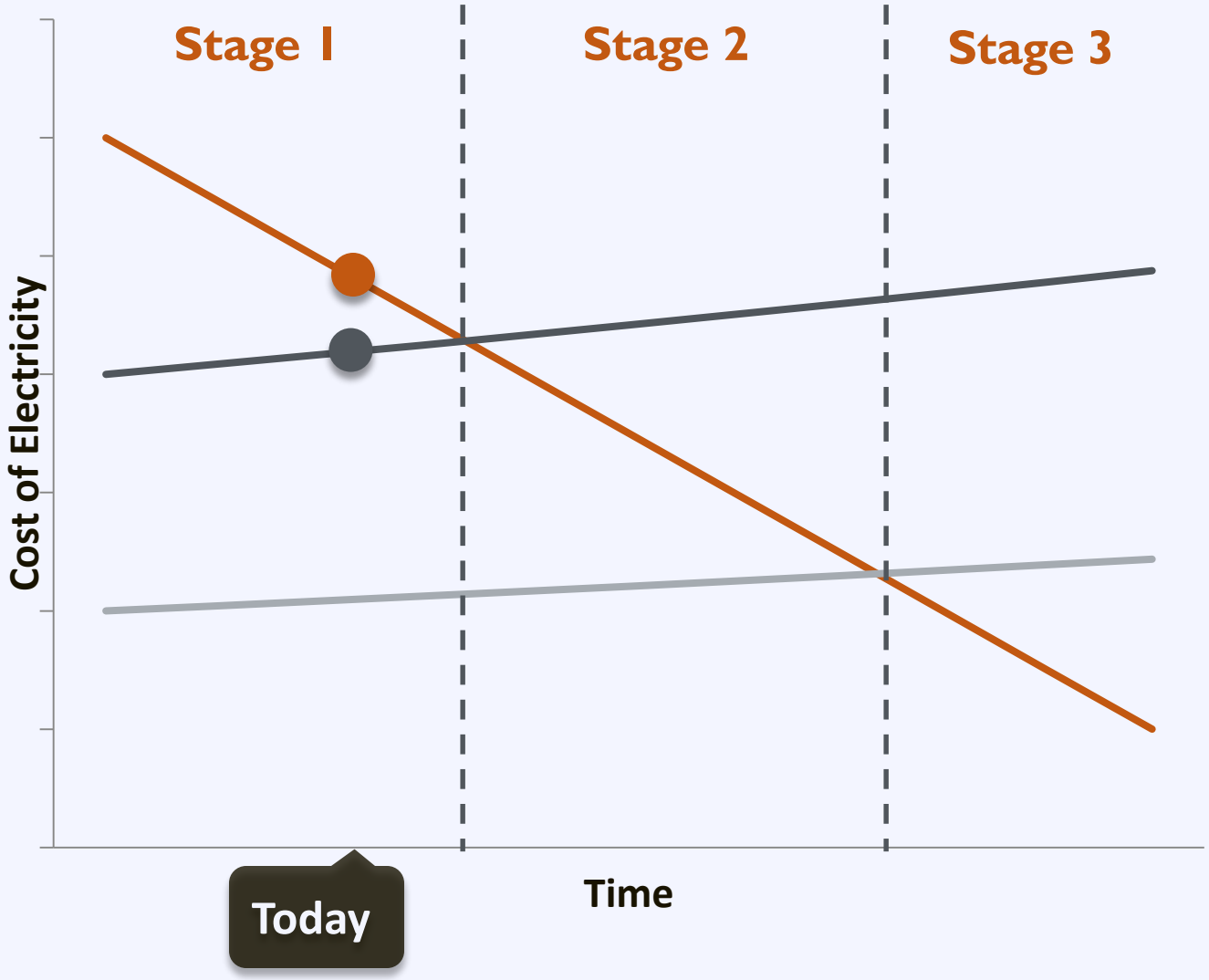
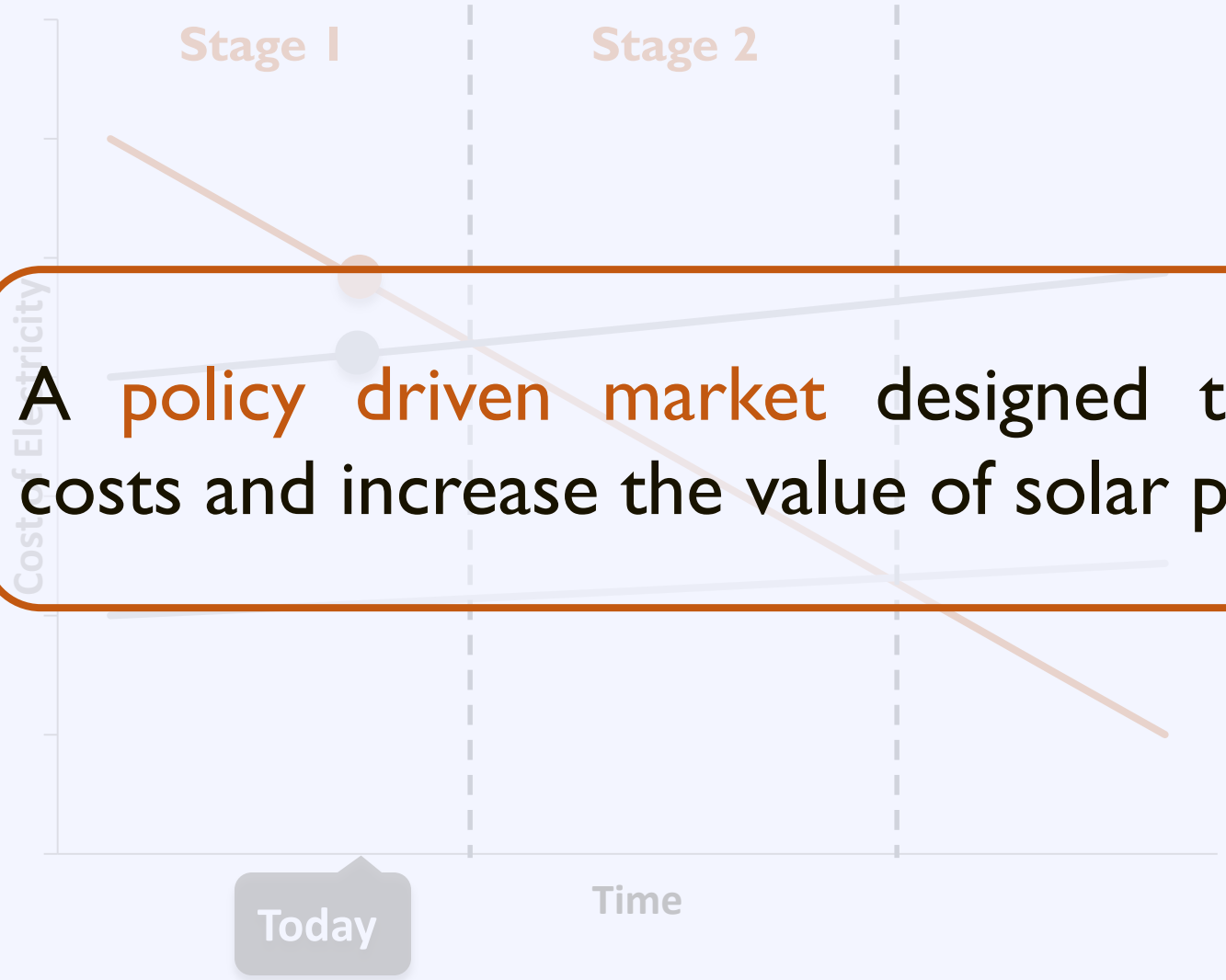
Solar Market: Trends



Source: Solar Electric Power Association

Solar Market: Trends



A policy driven market designed to mitigate costs and increase the value of solar production

Source: Solar Electric Power Association

A Policy Driven Market

Federal	Investment Tax Credit	Accelerated Depreciation	Qualified Energy Conservation Bond
State & Utility	Renewable Portfolio Standard	Net Metering	Interconnection
	Solar Access		

A Policy Driven Market

Federal	Investment Tax Credit	Accelerated Depreciation	Qualified Energy Conservation Bond
State & Utility	Renewable Portfolio Standard	Net Metering	Interconnection
	Solar Access		

Investment Tax Credit

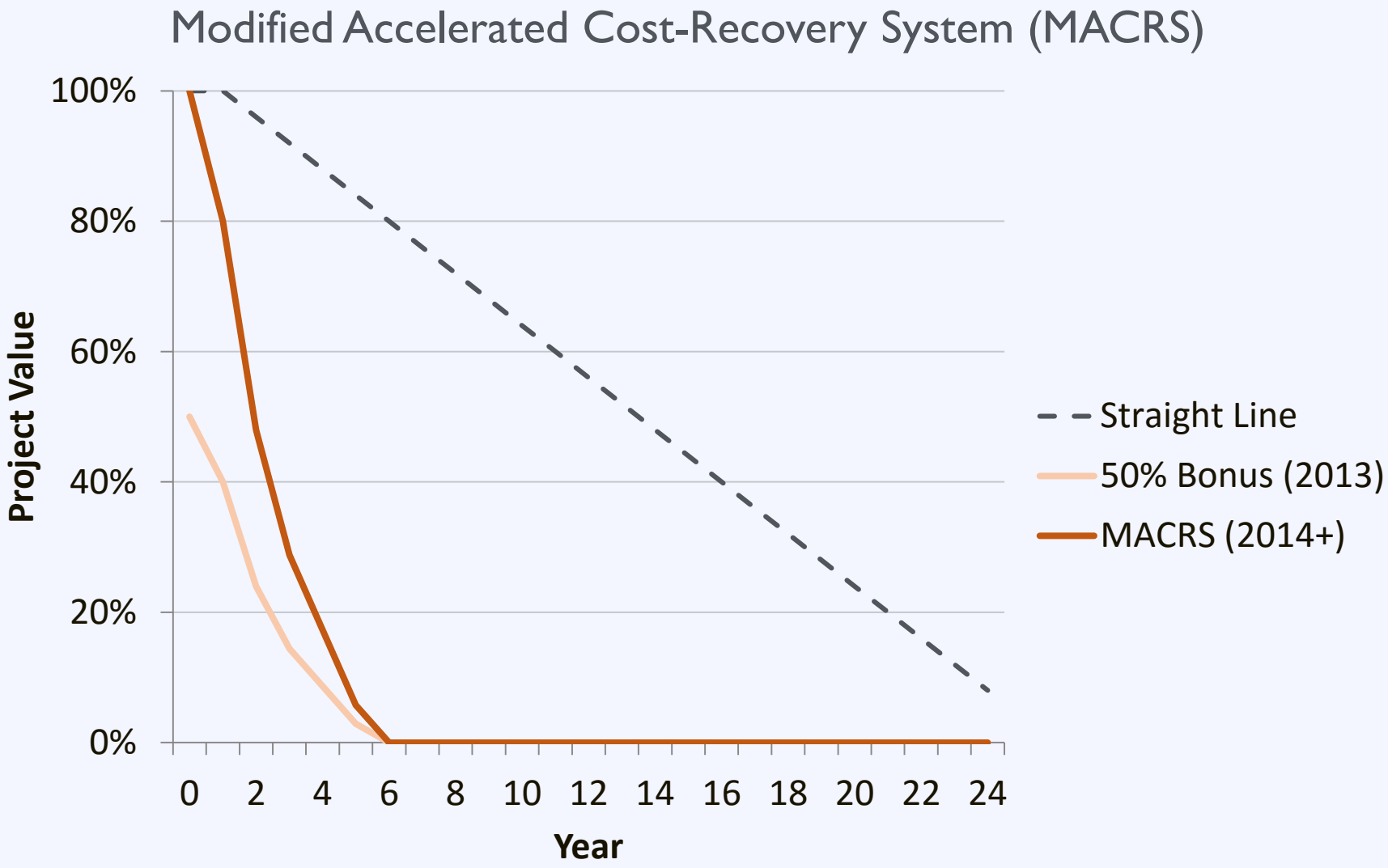
Type: Tax Credit

Eligibility: For-Profit Organization

Value: 30% of the installation cost

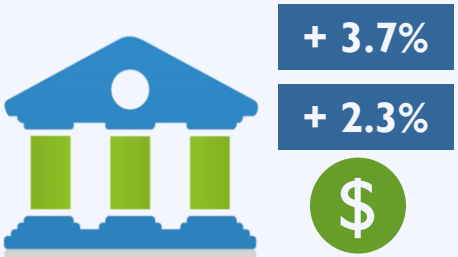
Availability: Through 2016

Accelerated Depreciation

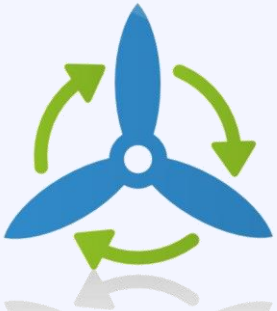


Qualified Energy Conservation Bond

US Treasury



Local Gov



Project

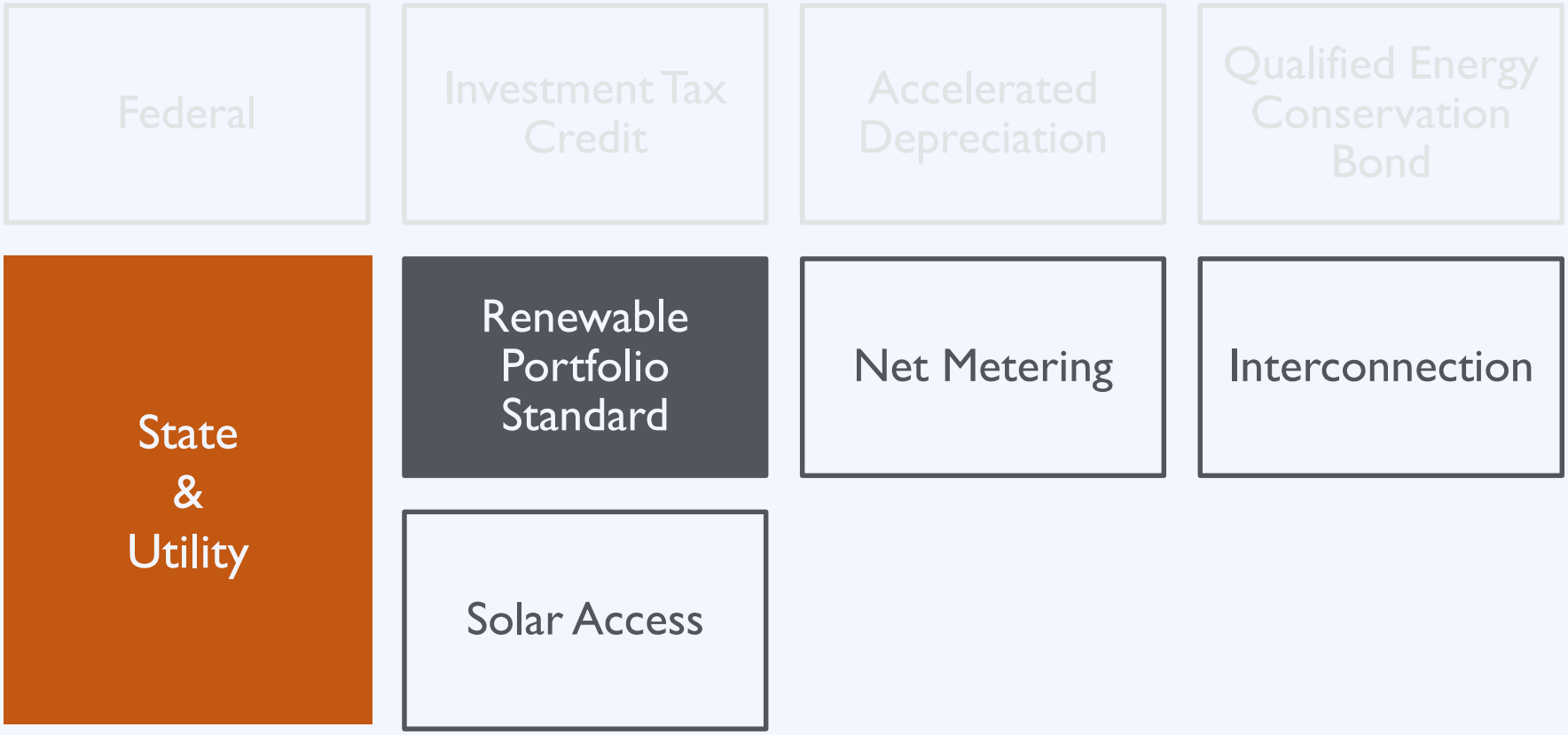
Bond Holders

USDA REAP

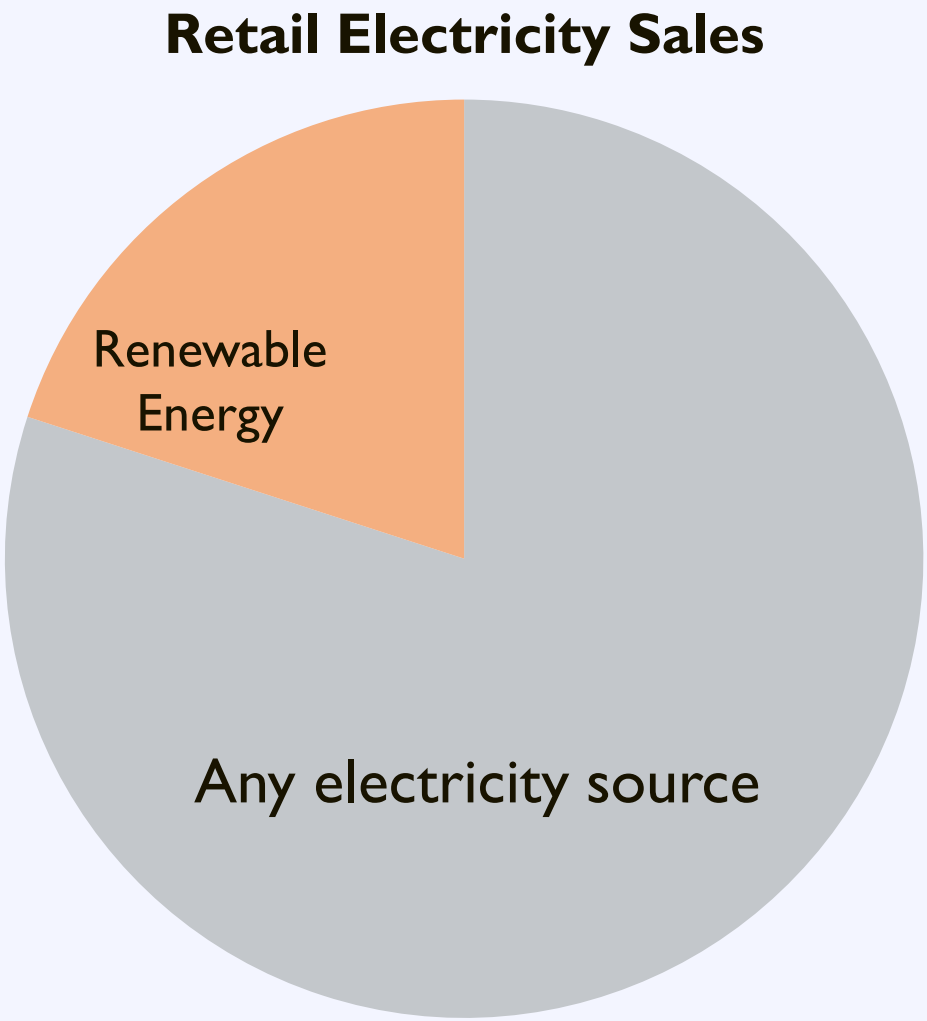
Rural Energy for America Program:

- Provides a grant or a loan guarantee to help agricultural producers and rural small businesses reduce energy costs and consumption
  - Support for projects $5,000 to $25 million
  - Support cannot exceed 25% (grant) / 75% (grant + loan guarantee) of project cost
- Notice of funding availability: Oct 2015
- Deadline: Nov 2015: Feb 2016: May 2016

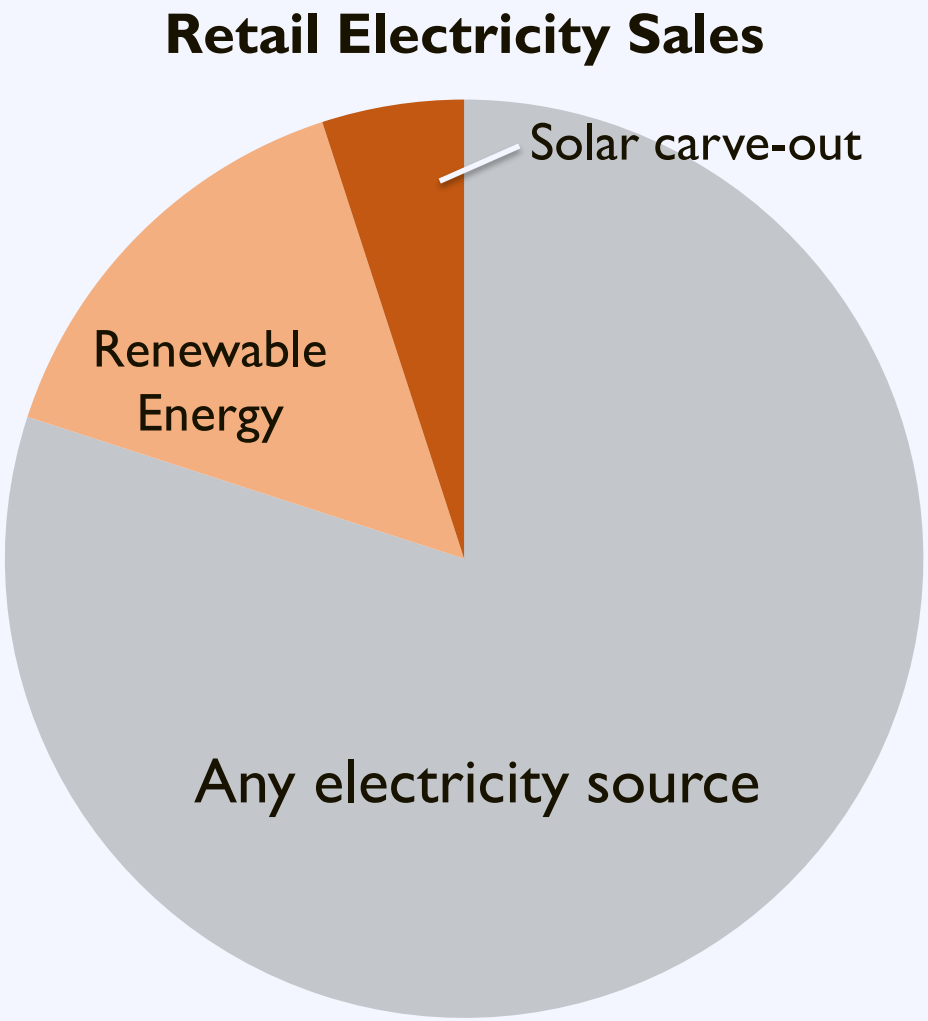
A Policy Driven Market



Renewable Portfolio Standard

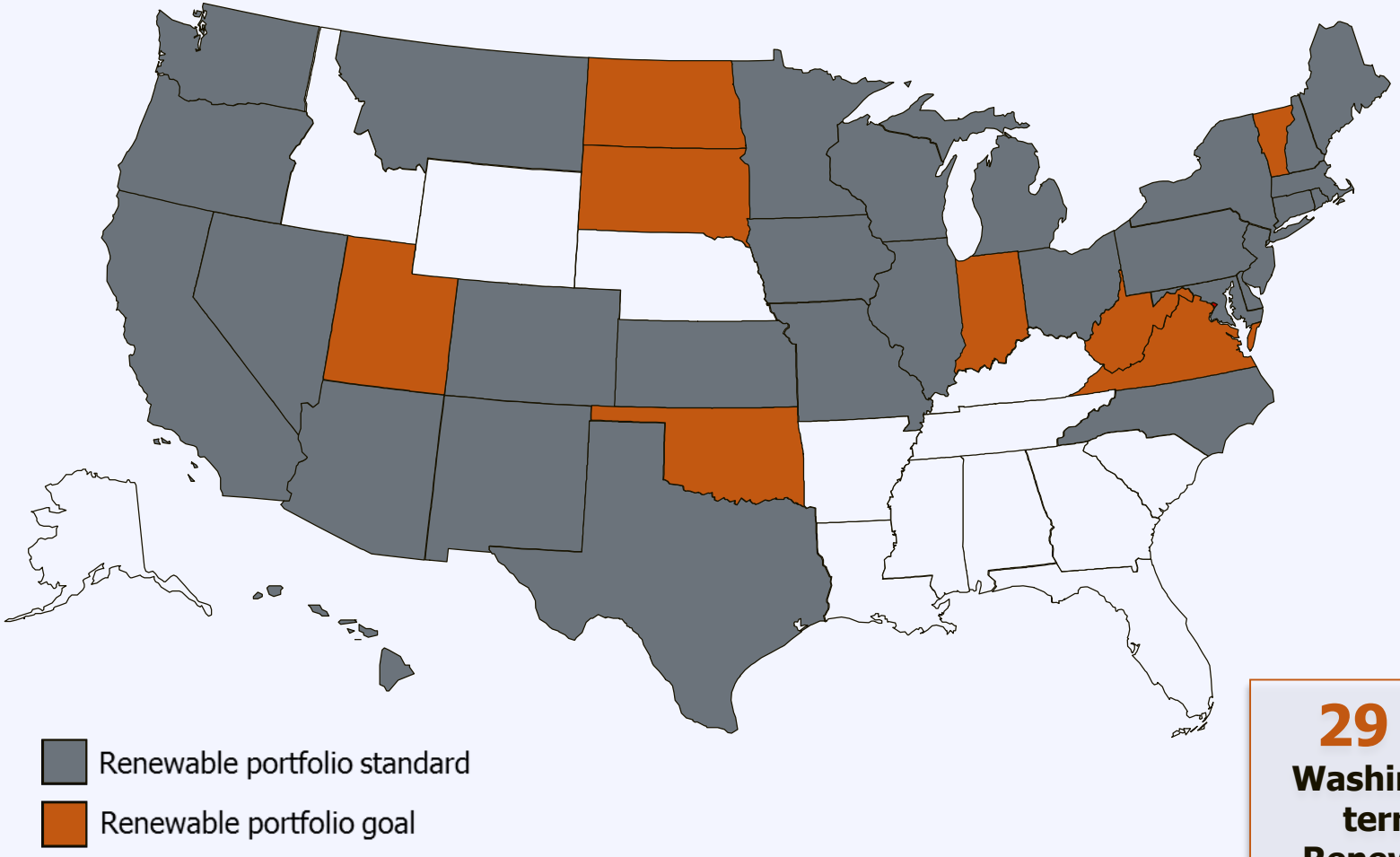


Renewable Portfolio Standard



Renewable Portfolio Standard

www.dsireusa.org / August 2012



29 states, +
Washington DC and 2 territories have Renewable Portfolio Standards
(8 states and 2 territories have renewable portfolio goals)

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U.S. Department of Energy

RPS Impacts: Solar Deployment

RPS and Solar/DG Status of Top Ten Solar States

Ranks	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

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Source: DSIRE Solar (http://dsireusa.org/documents/summarymaps/Solar_DG_RPS_map.pdf); Solar Energy Industries Association/ GTM Research *Solar Market Insight 2013 Year-in-Review*

A Policy Driven Market

Federal	Investment Tax Credit	Accelerated Depreciation	Qualified Energy Conservation Bond
State & Utility	Renewable Portfolio Standard	Net Metering	Interconnection
	Solar Access		

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

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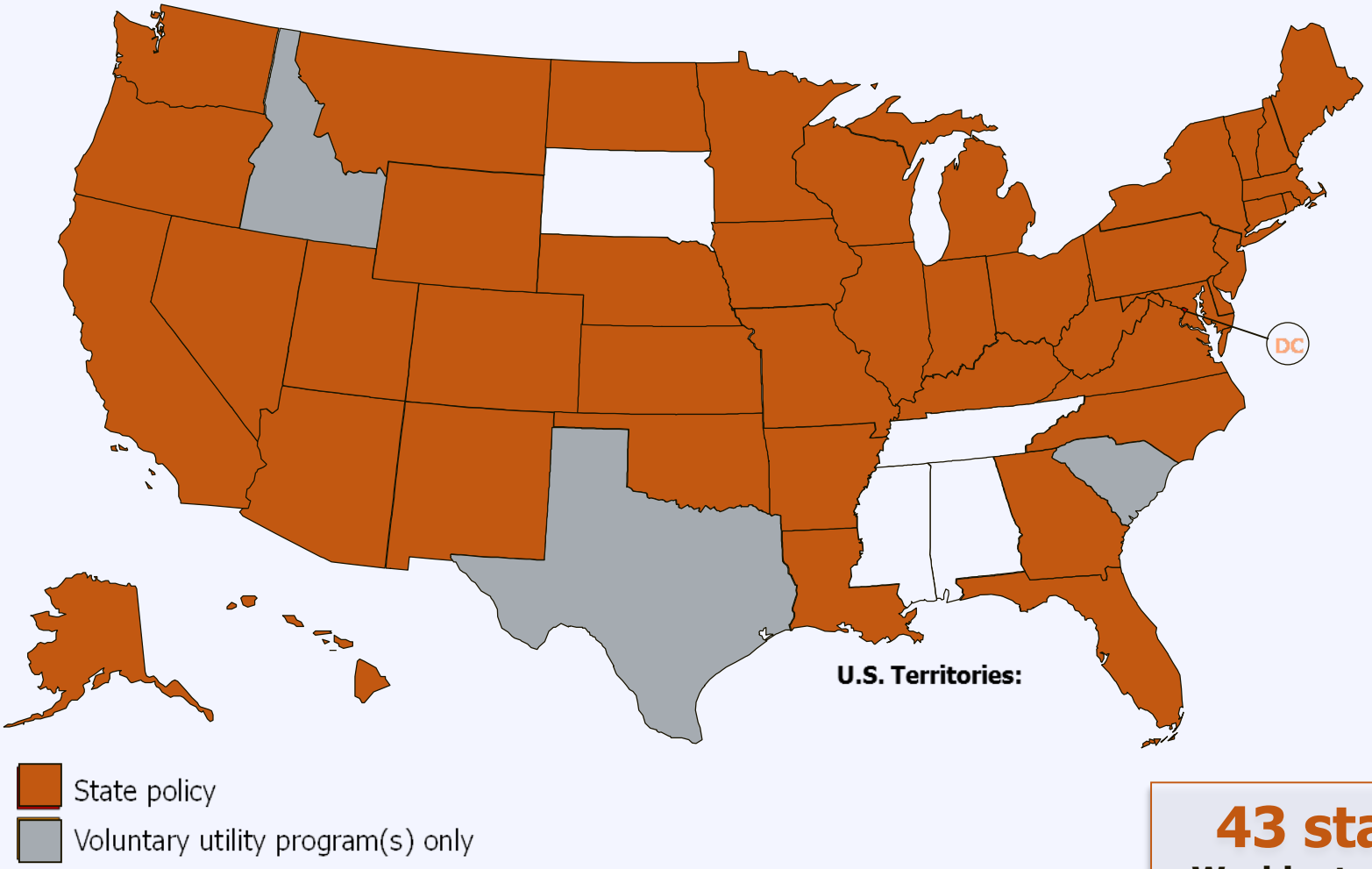
Source: IREC (http://www.irecusa.org/wp-content/uploads/IRECSolarMarketTrends-2012-web.pdf)

Net Metering



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

Source: DSIRE (July 2013)

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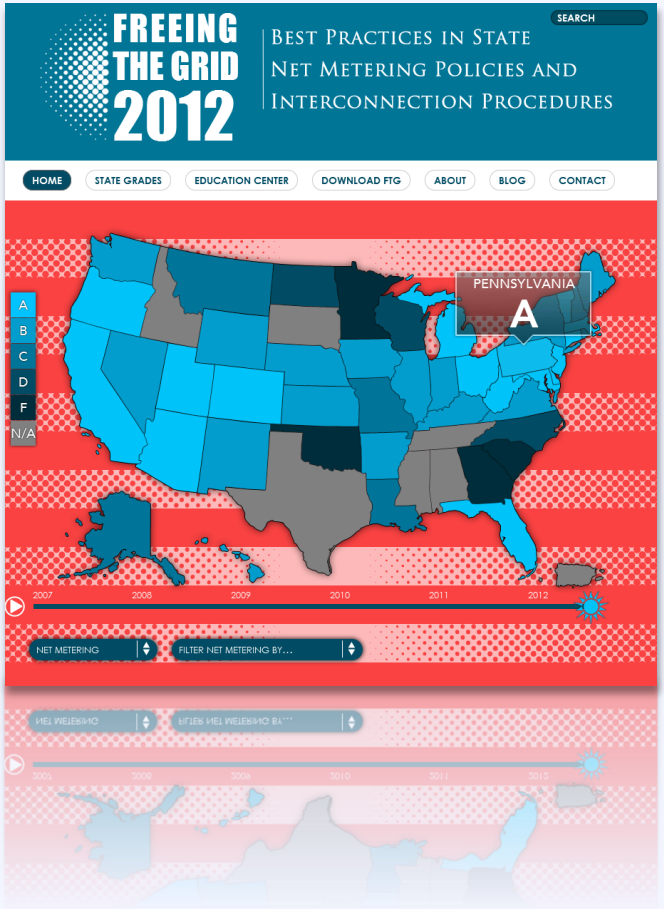
Net Metering: Resources

Resource **Freeing the Grid**

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

http://freeingthegrid.org/



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U.S. Department of Energy

Net Metering: Georgia

Net Excess Credit Value
Wholesale Rate (RNR)

Credit Rollover
Yes, with restrictions

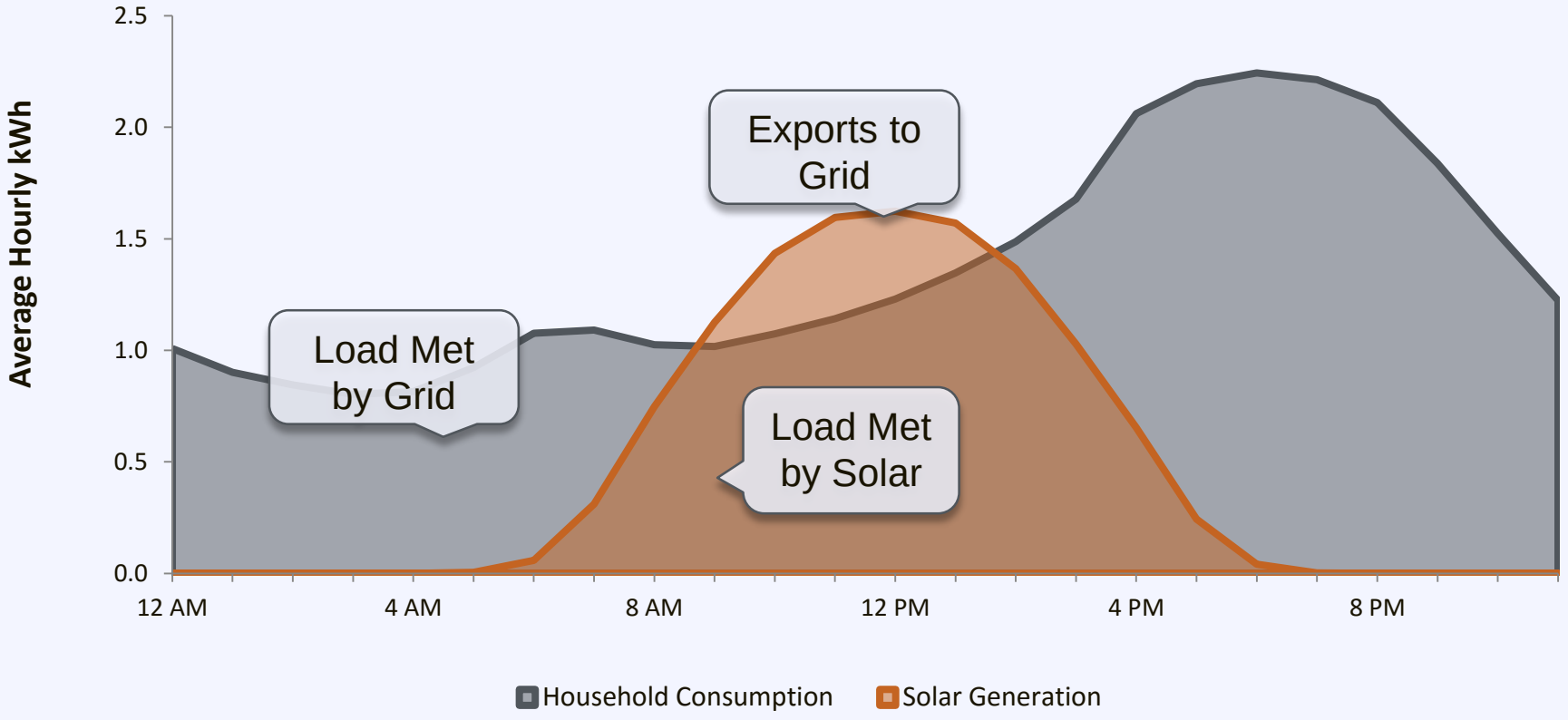
System Capacity Limit
10 kW- Residential
100 kW- Non-residential

REC Ownership
N/A

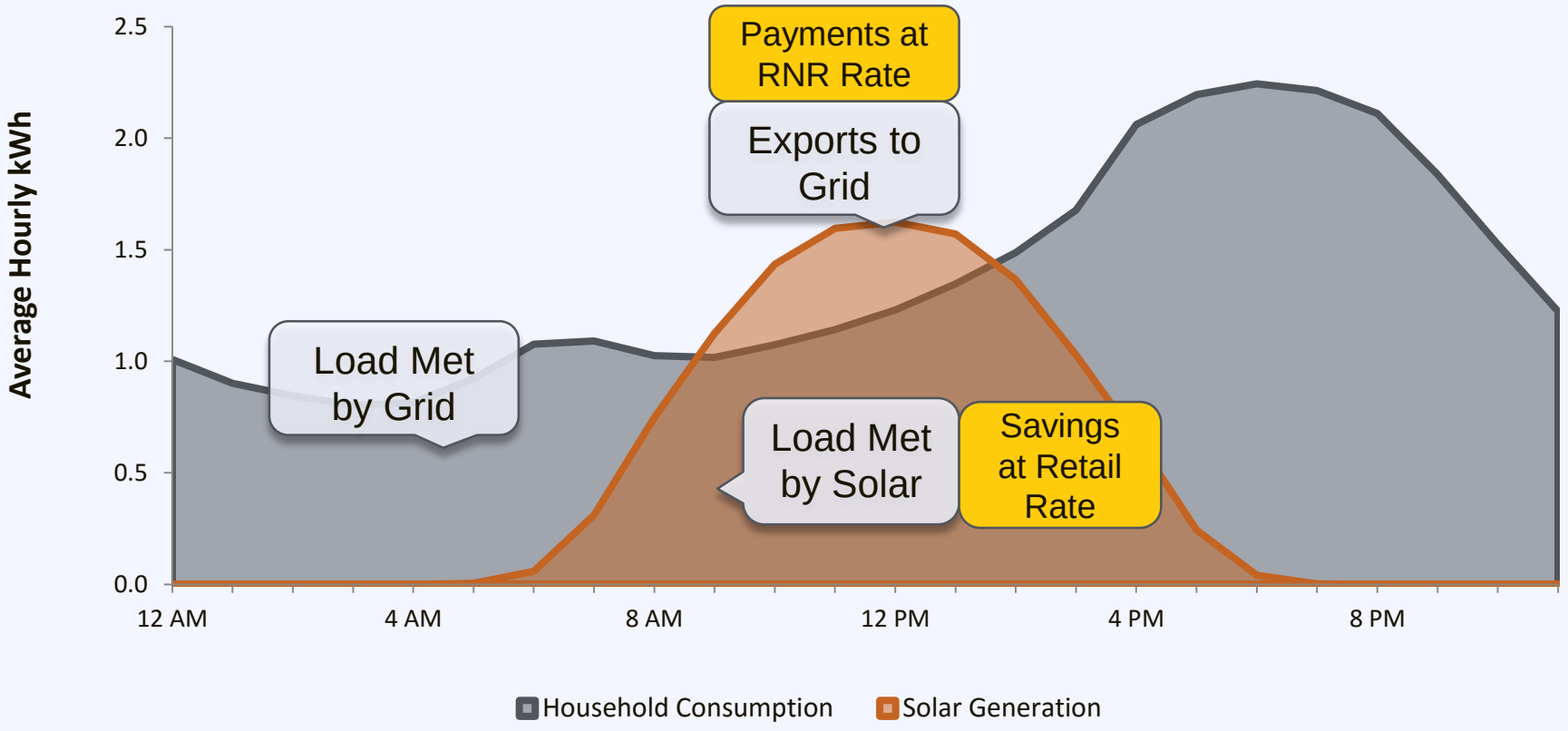
Powered by SunShot
U.S. Department of Energy

Source: Freeing the Grid

Net Metering

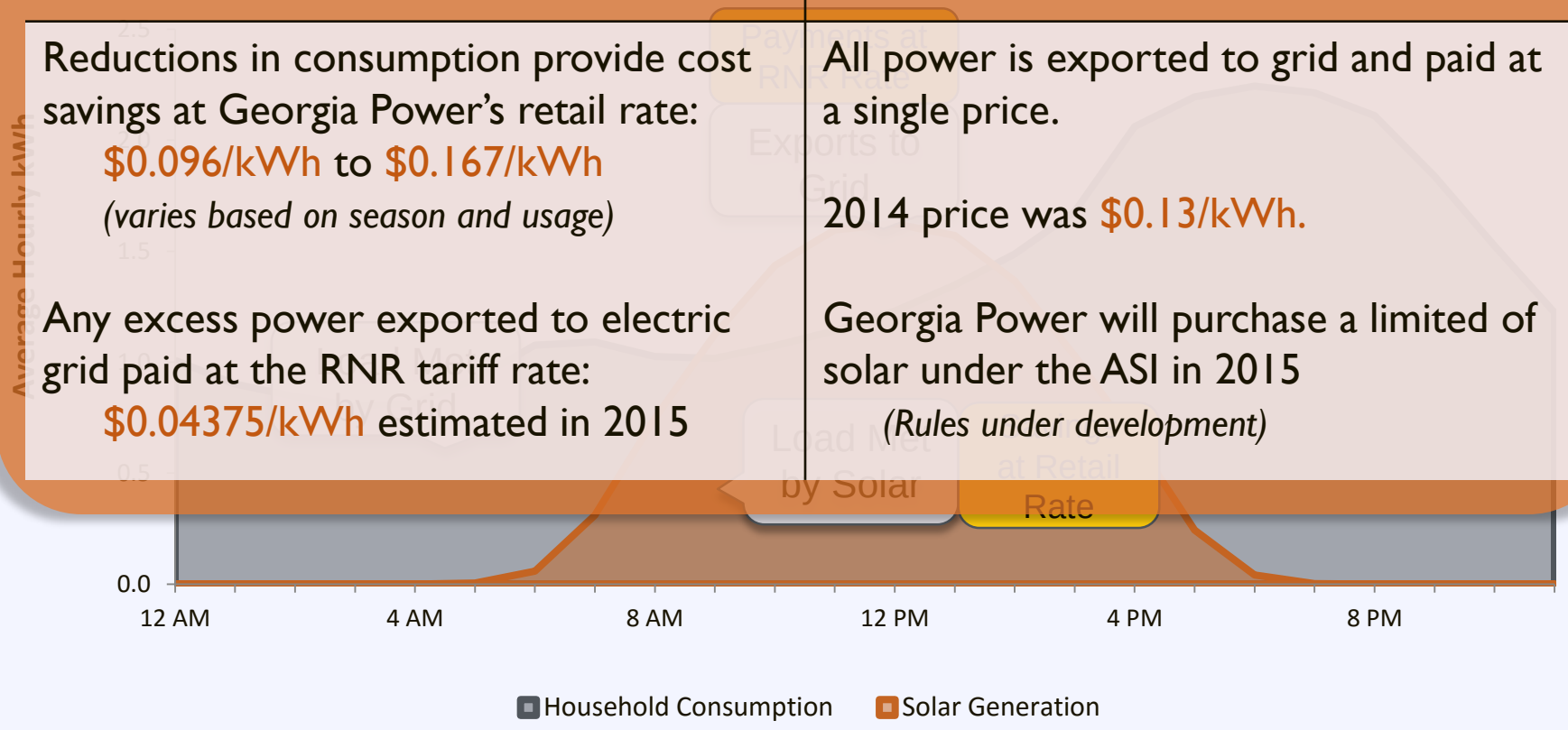


Net Metering

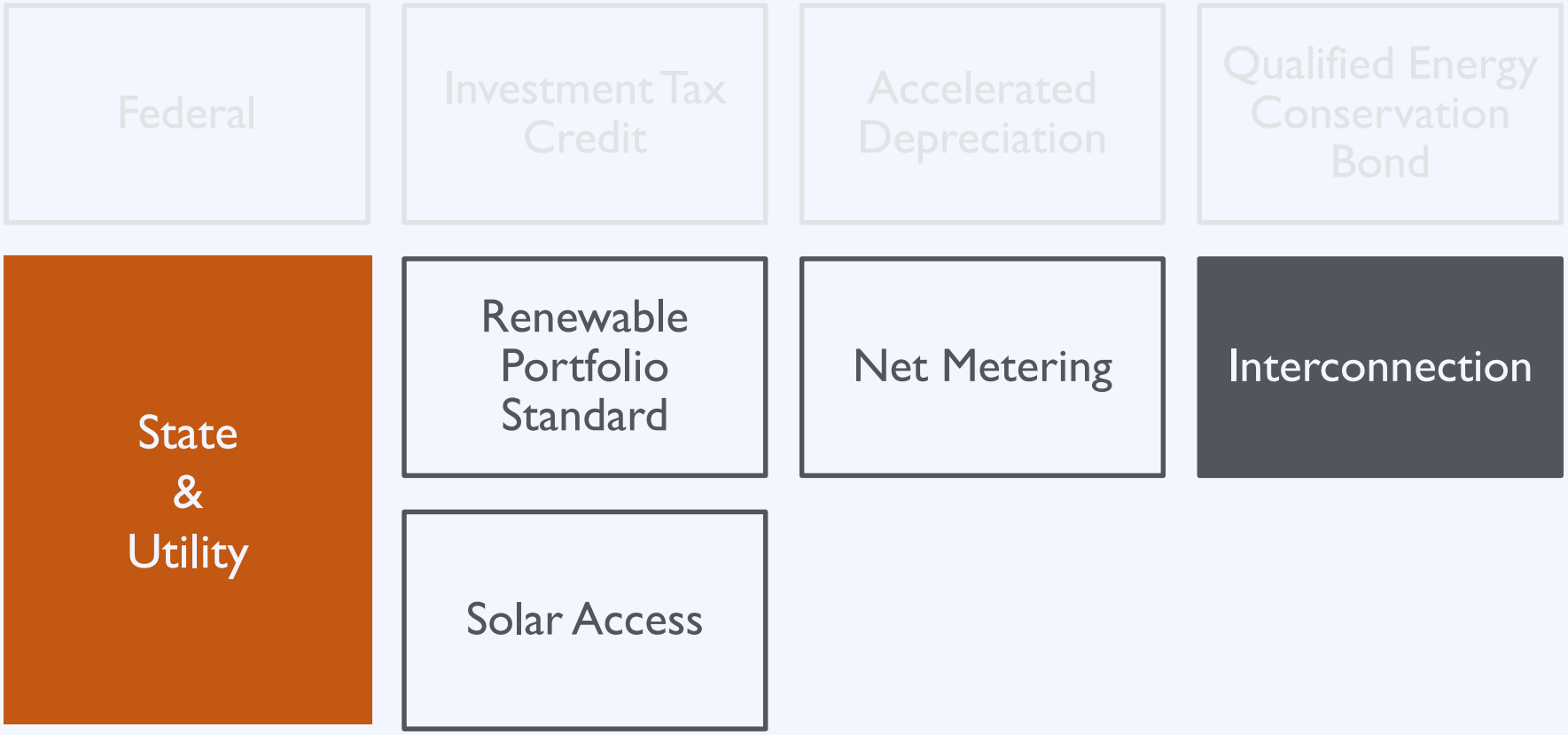


Net Metering

RNR Tariff	Advanced Solar Initiative
Reductions in consumption provide cost savings at Georgia Power's retail rate: $0.096/kWh to $0.167/kWh *(varies based on season and usage)*	All power is exported to grid and paid at a single price. 2014 price was $0.13/kWh.
Any excess power exported to electric grid paid at the RNR tariff rate: $0.04375/kWh estimated in 2015	Georgia Power will purchase a limited of solar under the ASI in 2015 *(Rules under development)*



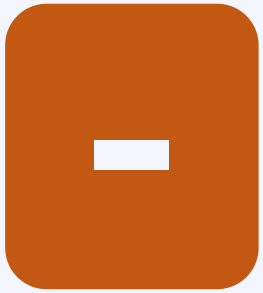
A Policy Driven Market

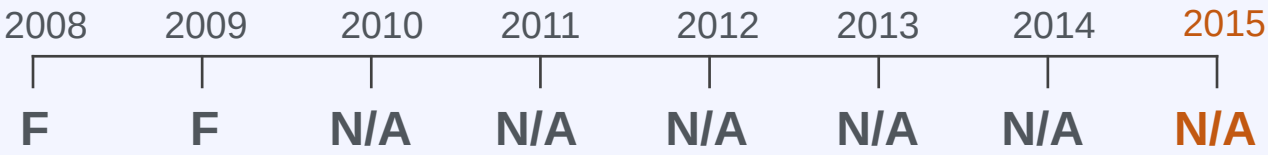


Interconnection

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: Georgia





Applicable Technologies
N/A

Applicable Utilities
N/A

System Capacity Limit
N/A

Other Features
N/A

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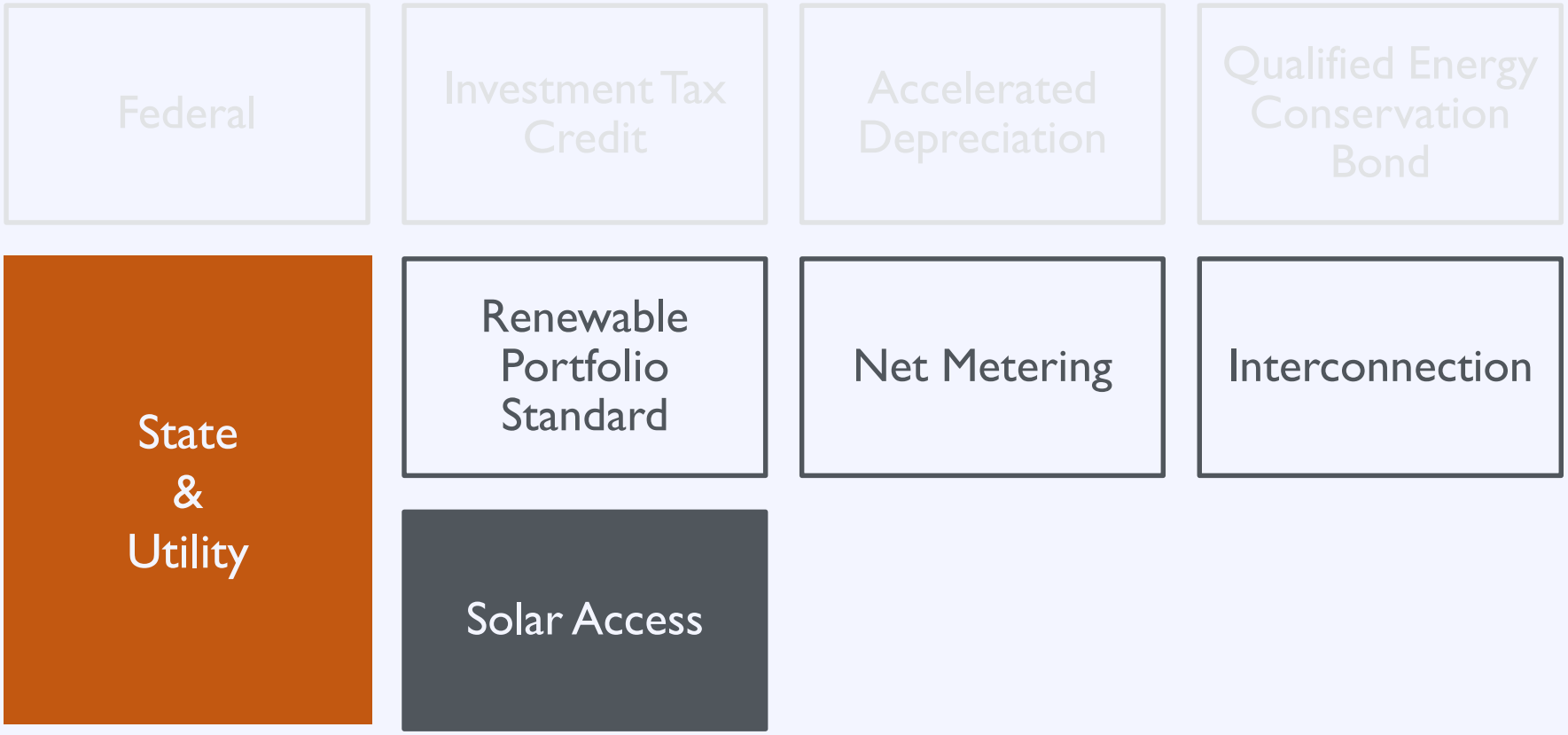
Source: Freeing the Grid

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 neighbor

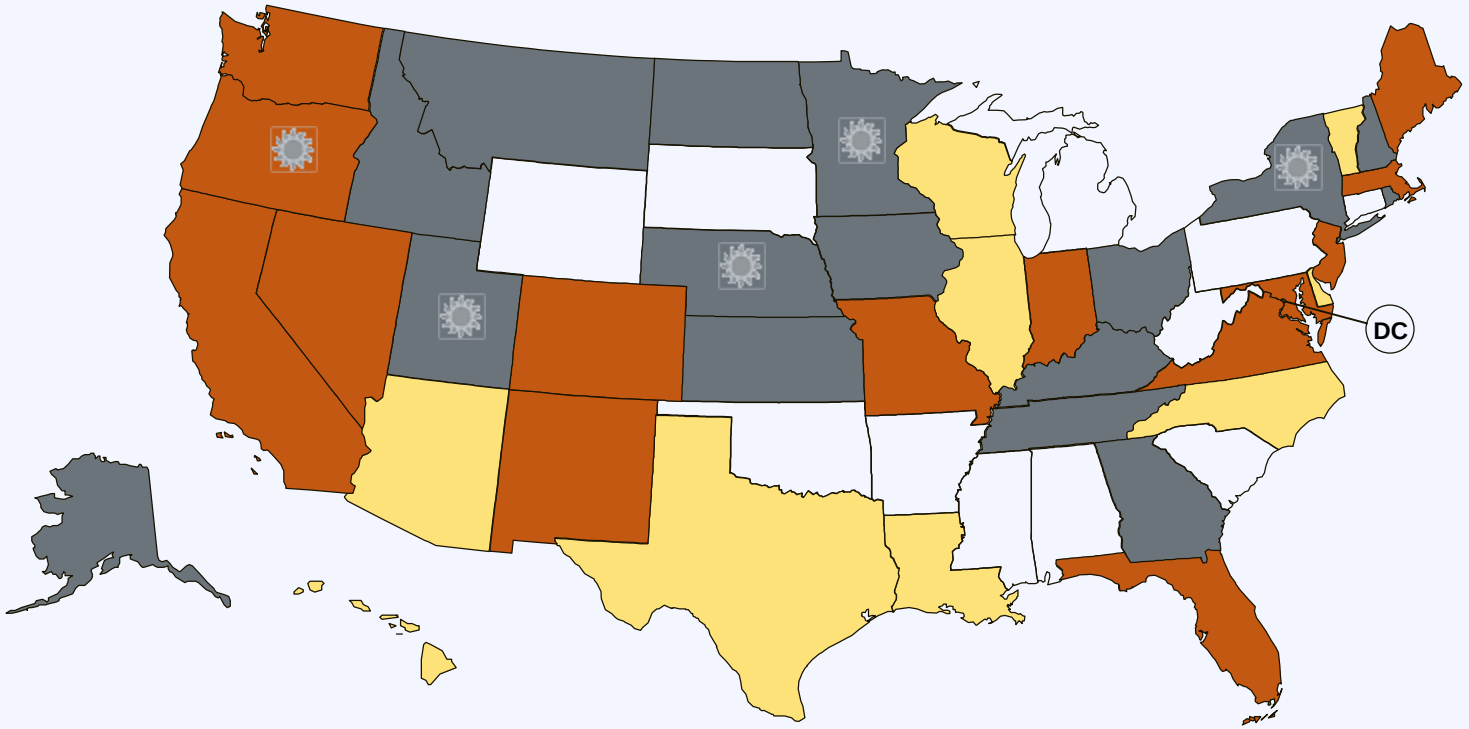
Source: Google Earth

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 Easements Provision

Solar Rights Provision

Solar Easements and Solar Rights Provisions

U.S. Virgin Islands

Local option to create solar rights provision

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U.S. Department of Energy

Source: Database of State Incentives for Renewables & Efficiency (www.dsireusa.org)

Georgia Solar Access Law

Solar Easements:

- O.C.G.A. § 44-9-22. Establishment of Solar Easements.

  Under Georgia's Solar Easements Act of 1978, easements may be established to allow owners of solar-energy systems to negotiate for assurance of continued access to sunlight. Any easement must be created in writing and is subject to the same requirements as all other legal easements. The easement must contain:

  - A description of the airspace affected by the easement

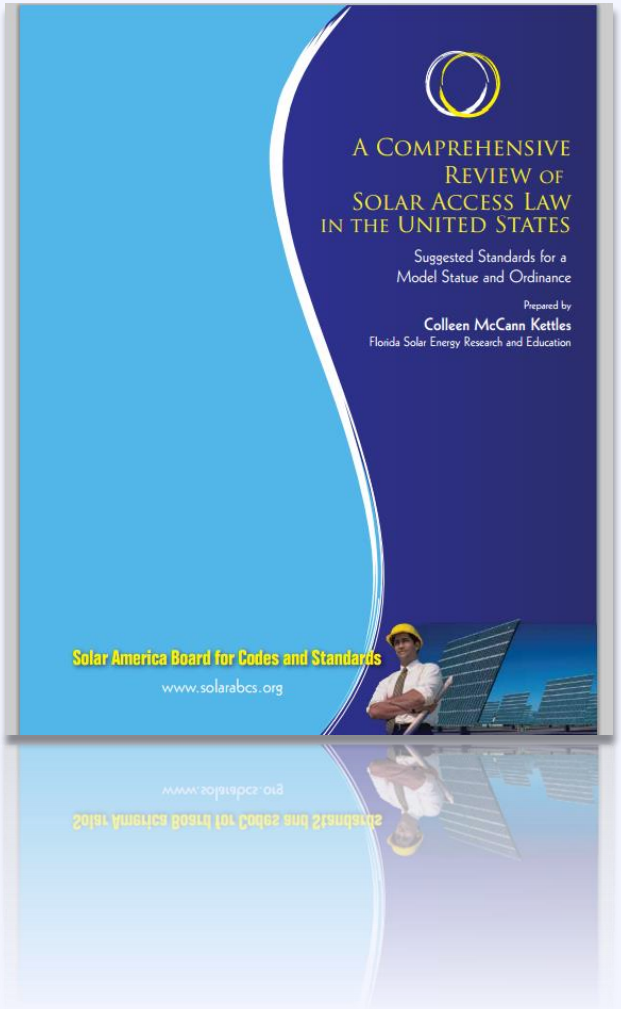
  - Any terms and/or conditions under which the easement is granted or will be terminated

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



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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

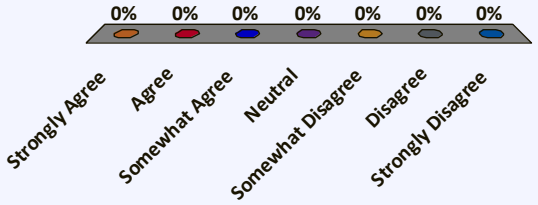
Visioning & goal setting

Effective Solar Permitting Process

Solar Market Development Tools

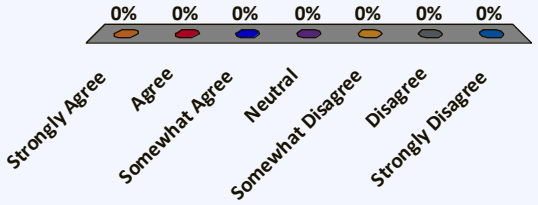
Solar advances your energy goals

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



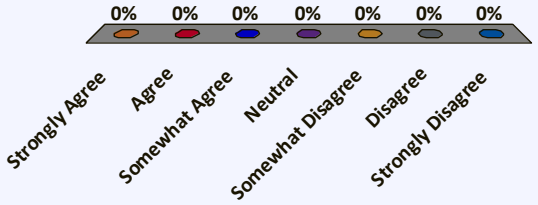
Solar advances your economic development goals

A. Strongly Agree
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

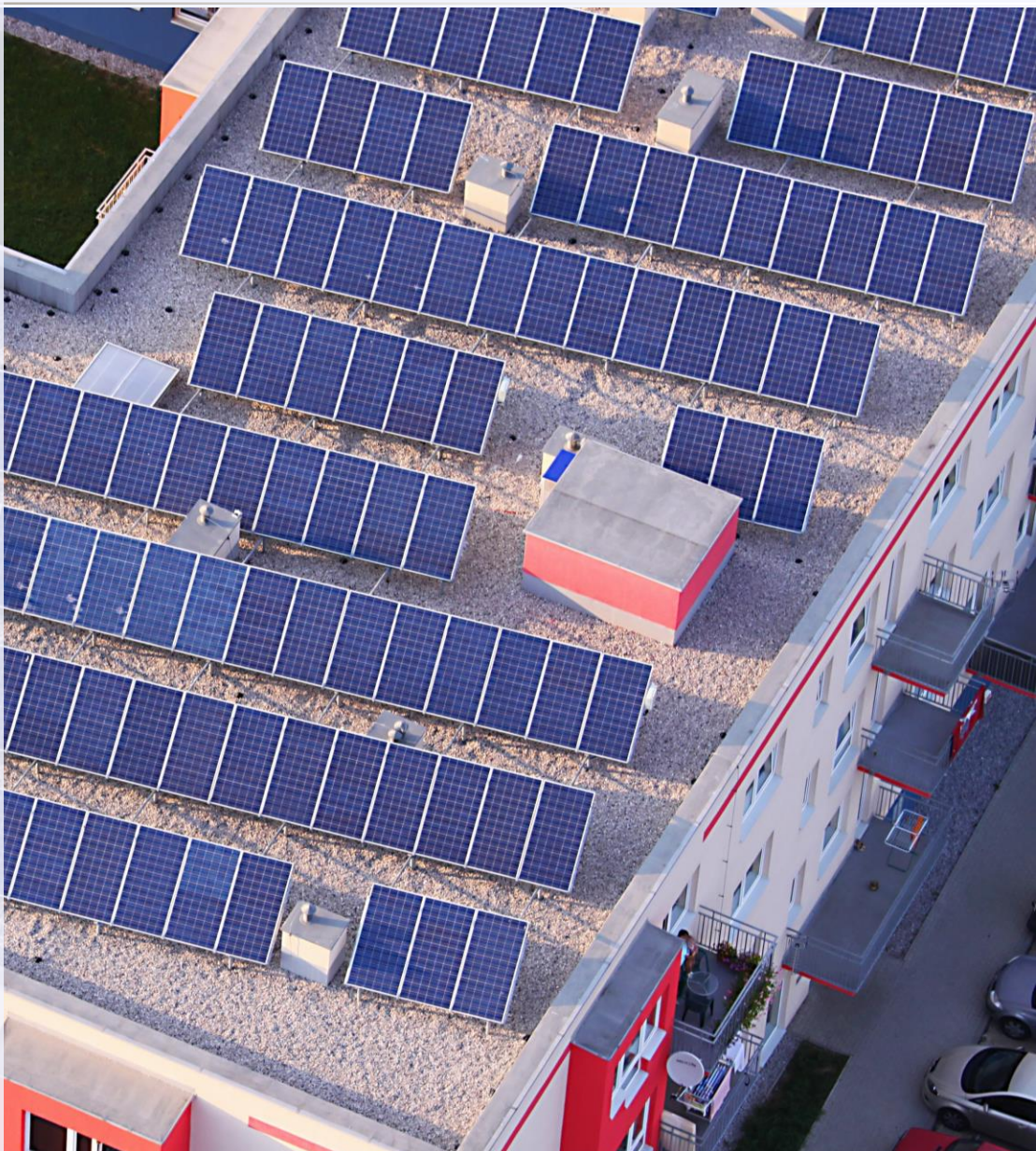


Visioning: Scales & Contexts

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

Neighborhood Plans

Corridor Plans

Special District Plans

Green Infrastructure Plans

Energy Plan

Climate Action Plan

Powered by SunShot U.S. Department of Energy

Source: American Planning Association

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.*

Source:
http://www.lawrencetwp.com/documents/planning/Lawrence%20Sustainability%20Element.pdf

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

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U.S. Department of Energy

Effective Local Solar Policy

Local Solar Policy

Planning for Solar

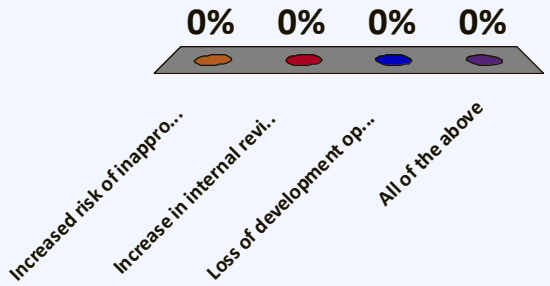
Solar in Development Regulation

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	• Height • Size • Setbacks • Lot coverage
Design Standards	• Signage • Disconnect • Screening • Fencing

Source: American Planning Association

Zoning Standards: Small Solar

Typical Requirements:

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

Zoning Standards: Example

Resource **City of Dublin**

Code of Ordinances, Appendix A, "Zoning"

§14.2. Small scale solar collection systems

(a) Freestanding solar panels:

1. Shall only be permitted as an accessory use on the lot of a principal structure
2. Shall only be permitted in the rear and side yard of the lot of a principal structure, or on the roof of conforming structures
3. When located on the ground or attached to a framework located on the ground shall not exceed twenty (20) feet in height above the ground
4. Shall conform to all setback requirements as for other uses in the districts in which they are located.
5. The total coverage of a lot with freestanding solar panels cannot exceed fifty percent (50%) lot coverage or the maximum allowable coverage for the district in which they are located, whichever is less

Source: http://www.cityofdublin.org/ordinances/docs/Ordinance_15_04_Solar_Installation_Guidelines_Ordinance.pdf

Zoning Standards: Example

(b) Roof-mounted solar panels:

1. Shall not project vertically more than the height requirements for the district in which they are located
2. Where visible from the ground, shall be color-coordinated to harmonize with roof materials and other dominant colors of the structure.
3. Owner shall provide proof of notification to the managing authority of any airport located within five miles of the proposed location where the size of the installation exceeds one acre.

Source:
http://www.cityofdublin.org/ordinances/docs/Ordinance_15_04_Solar_Installation_Guidelines_Ordinance.pdf

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 **City of Chamblee**

Allows large-scale solar as a principal use, including standards for:

- height
- setback
- buffers
- security
- equipment standards
- lighting
- decommissioning
- application requirements

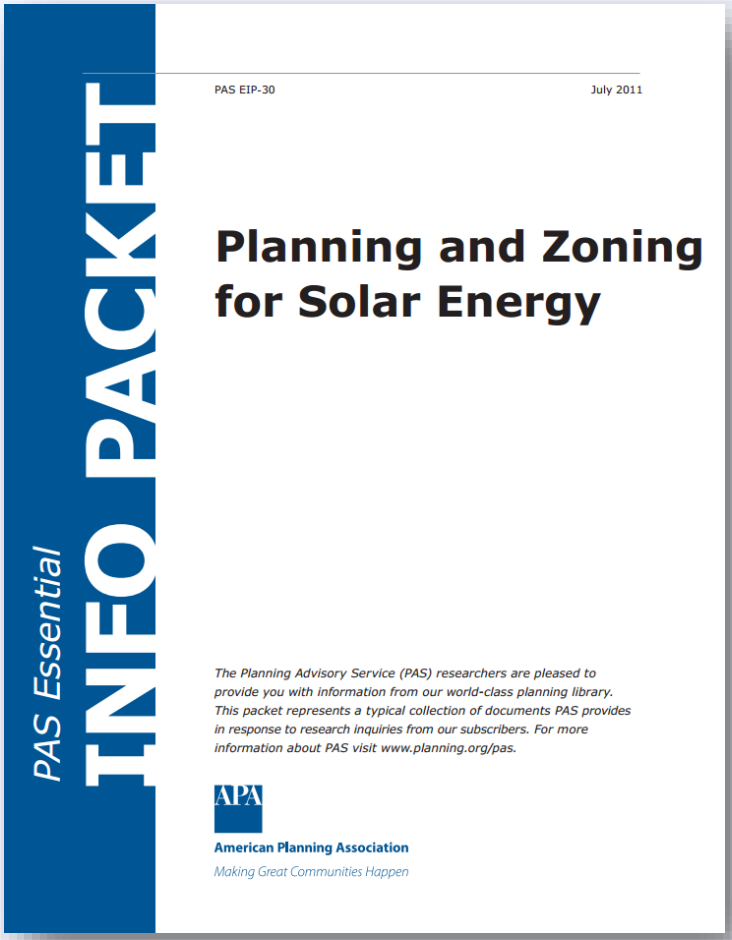
CITY OF CHAMBLEE
CODE OF ORDINANCES, APPENDIX A
UNIFIED DEVELOPMENT ORDINANCE

Source: http://www.chambleega.com/DocumentCenter/View/368

Zoning Standards: Model Ordinances

Resource **American Planning Association**

This Essential Info Packet provides example development regulations for solar.



https://www.planning.org/pas/infopackets/open/pdf/30intro.pdf

Zoning Standards: Historic

Typical Requirements:

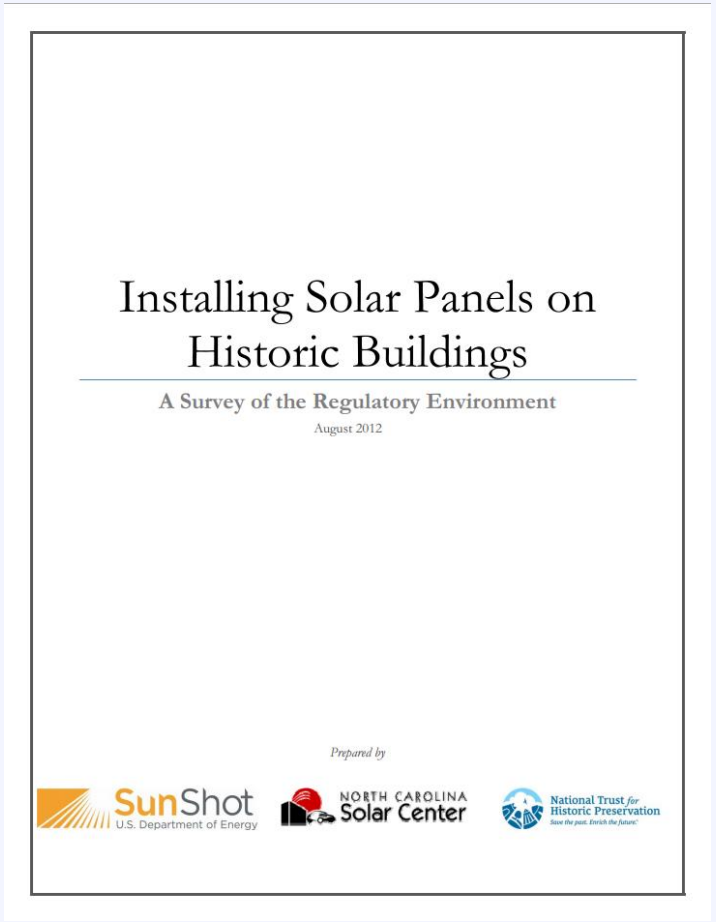
- Prevent permanent loss of "character defining" features
- Possible design requirements
  - Ground mounted
  - Flat roof with setback
  - Panels flush with roof
  - Blend color

Source: SolarCentury

Zoning Standards: Historic

Resource **North Carolina Clean Energy Technology Center**

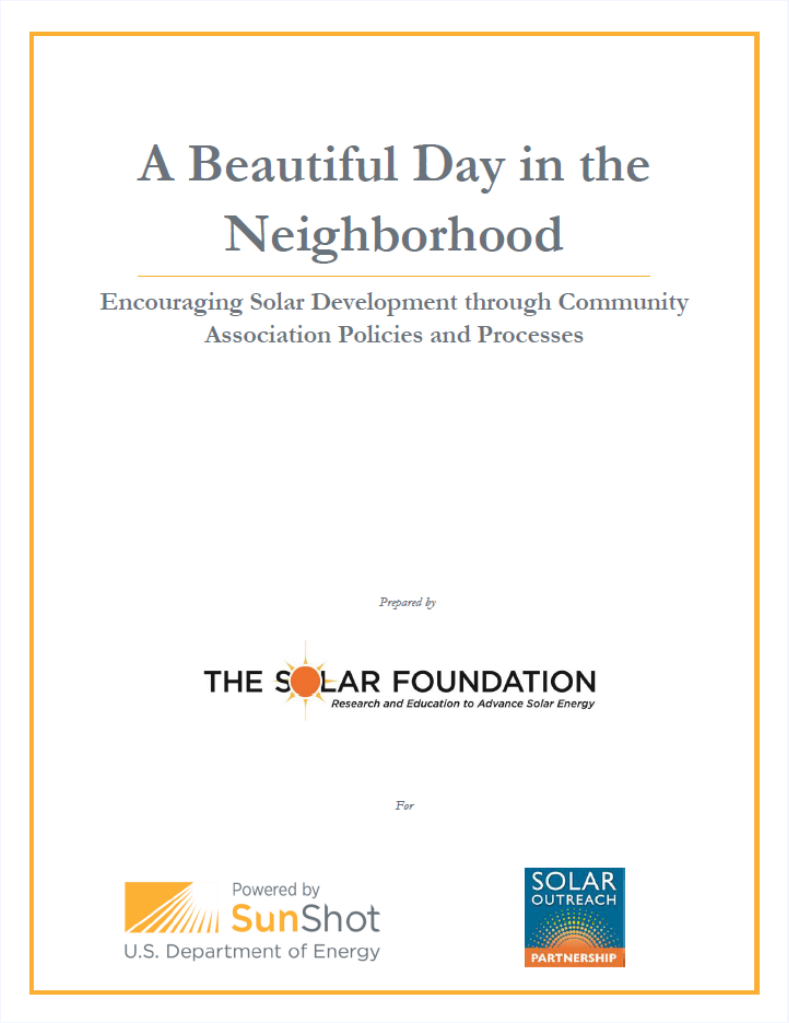
Provides sample design principles and example regulations incorporating historic preservation into sustainability and energy projects.



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.



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www.solaroutreach.org

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 for solar

Update Building Code

Solar Ready Construction:

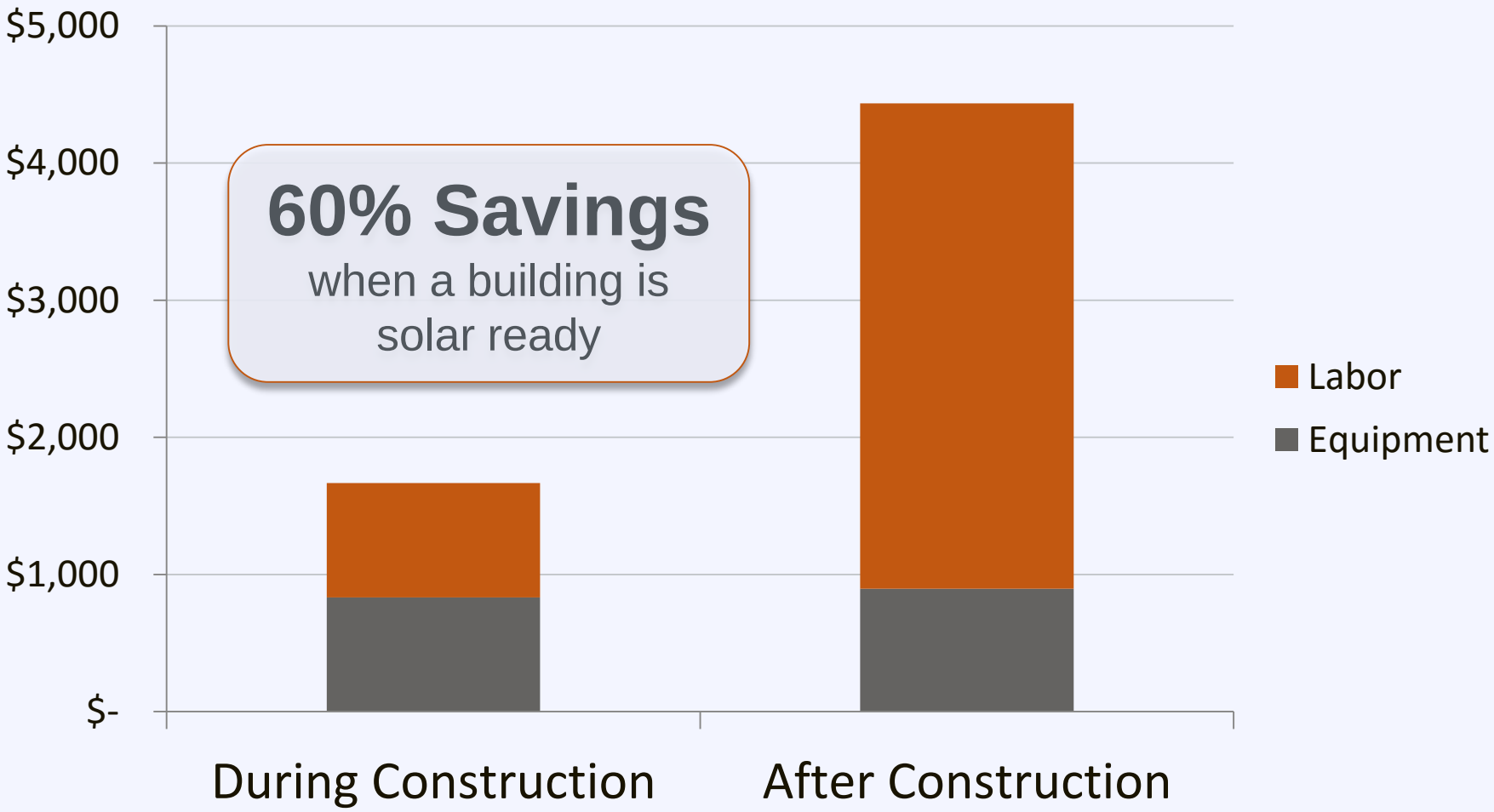
Preparing a building for solar at the outset can help make future solar installations easier and more cost effective.

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



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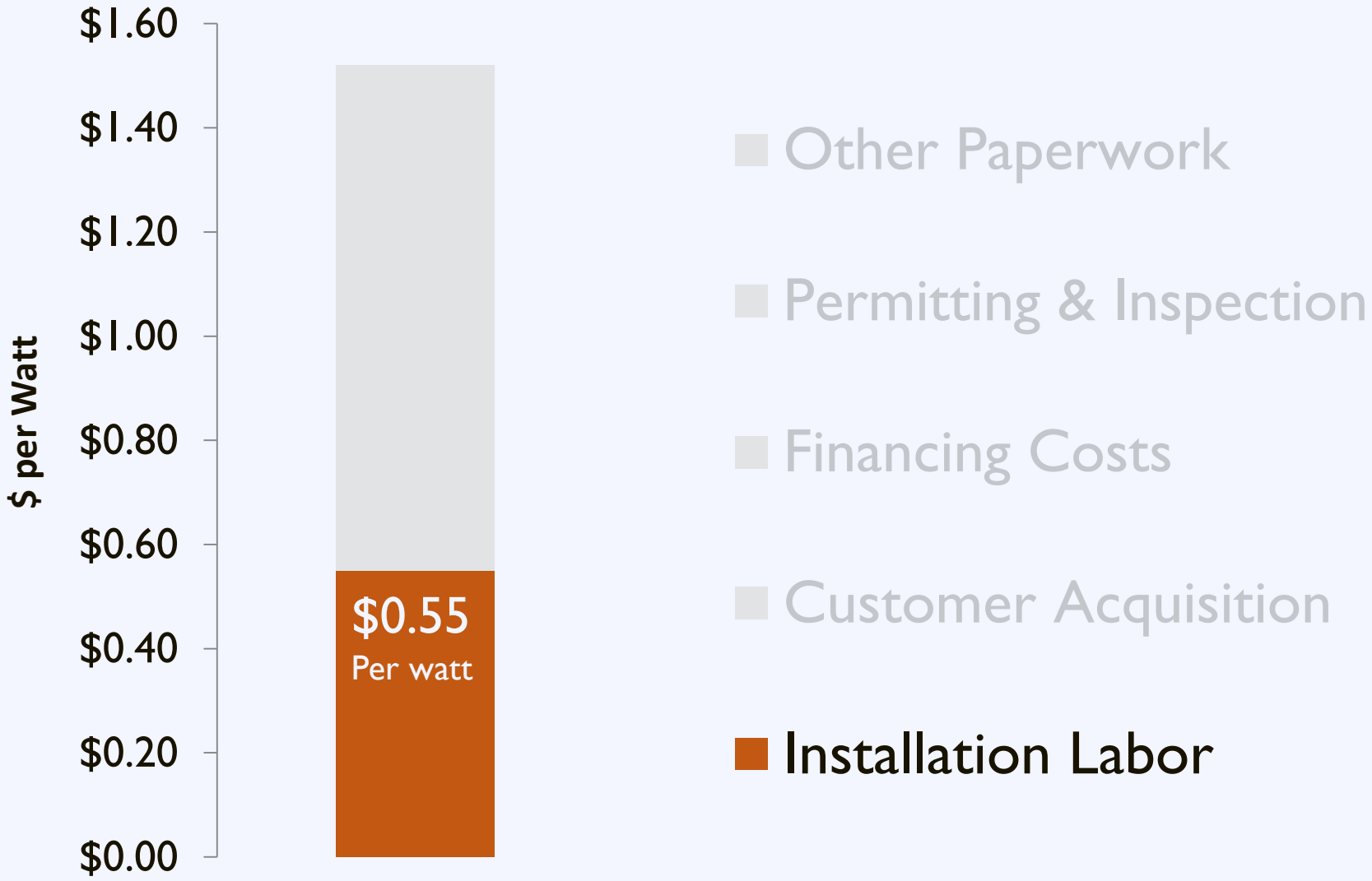
Source: Solar Ready: An Overview of Implementation Practices [Draft]. NREL, Feb. 18, 2011.

Installation Soft Costs



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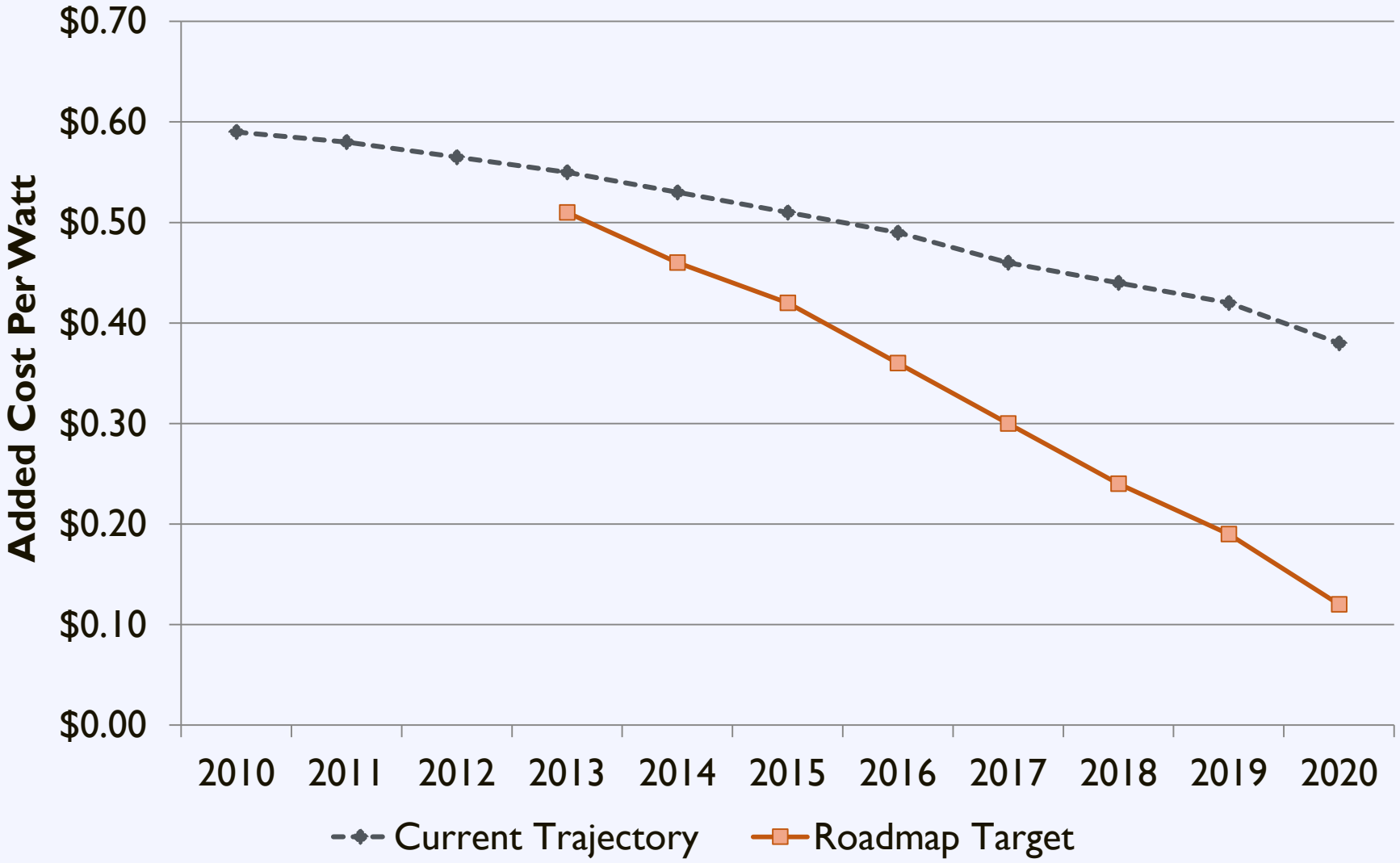
Installation Labor Roadmap



Source: NREL (http://www.nrel.gov/docs/fy13osti/59155.pdf)

Zoning Standards: Model Ordinances

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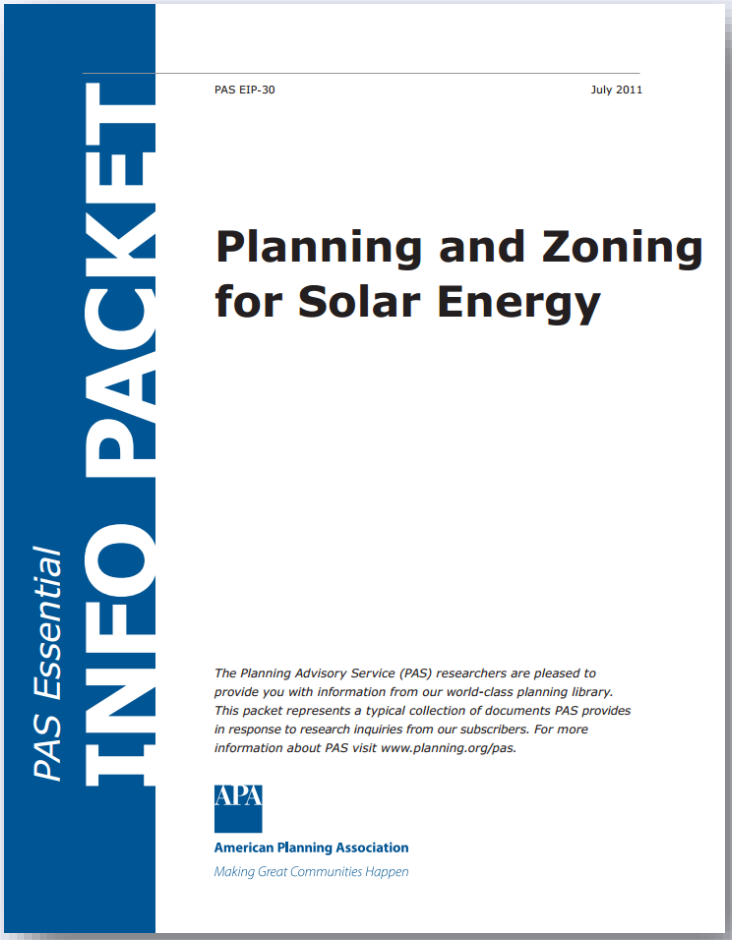

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https://www.planning.org/pas/infopackets/open/pdf/30intro.pdf

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

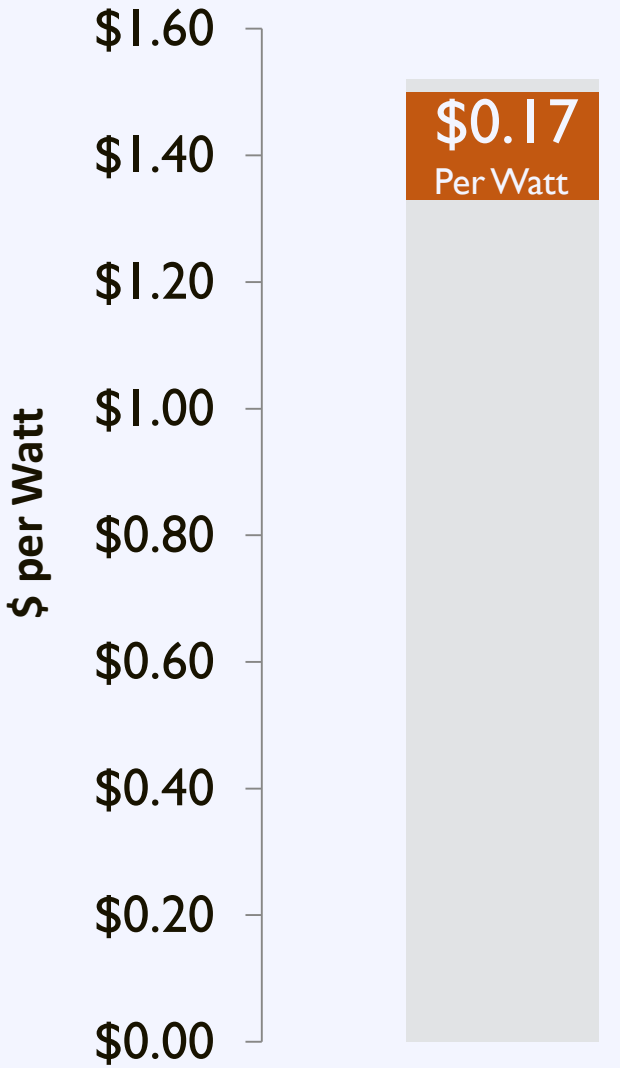
with unique zoning and permitting requirements

Source: http://www.nrel.gov/docs/fy12osti/54689.pdf

Consumer Challenges

Source: Forbes

Regulatory Barriers



- Other Paperwork
- **Permitting & Inspection**
- Financing Costs
- Customer Acquisition
- Installation Labor

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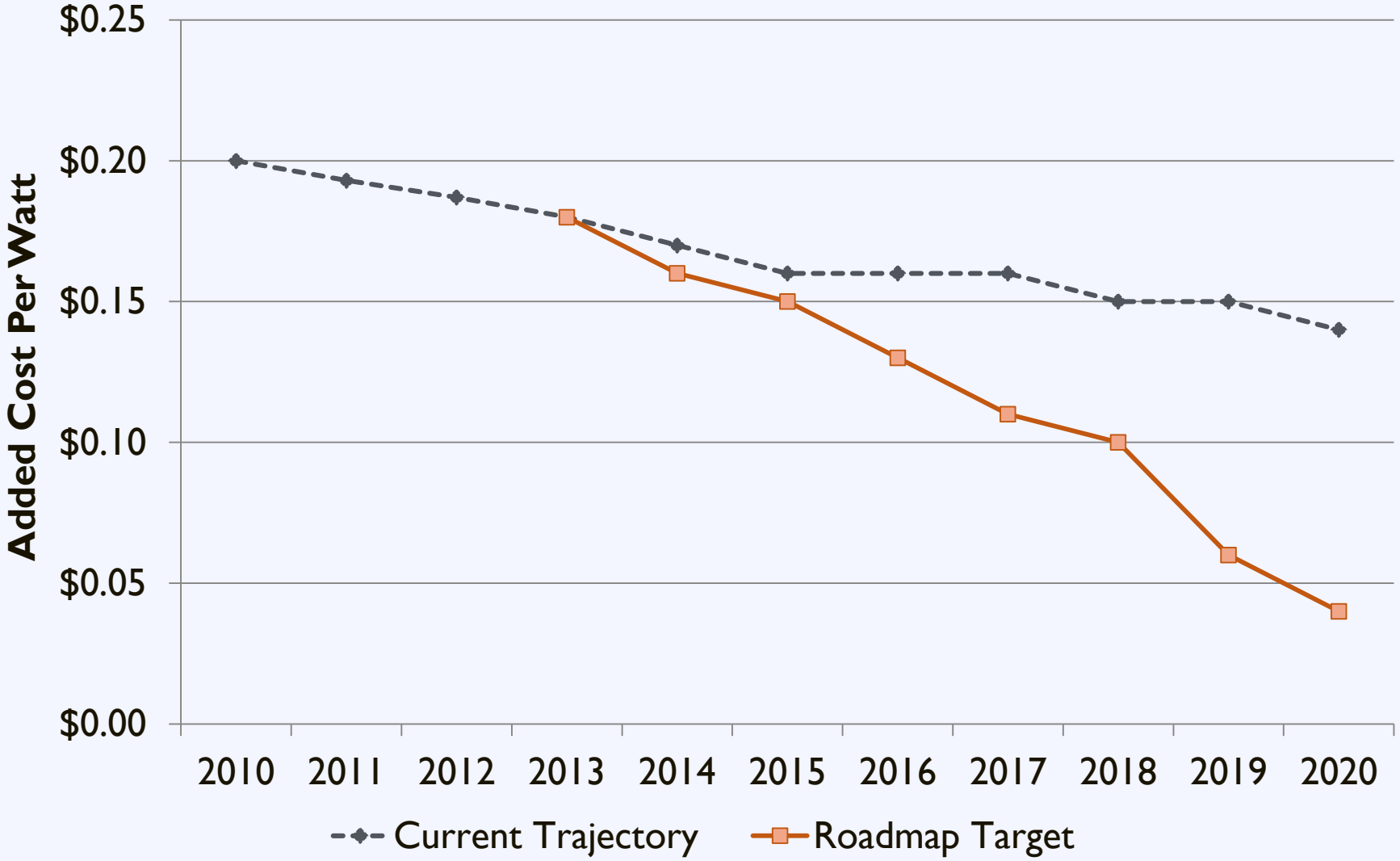
Planning & Permitting Roadmap



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Expedited Permitting

Solar Permitting Best Practices:

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

Powered by SunShot U.S. Department of Energy

Source: IREC/ Vote Solar

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

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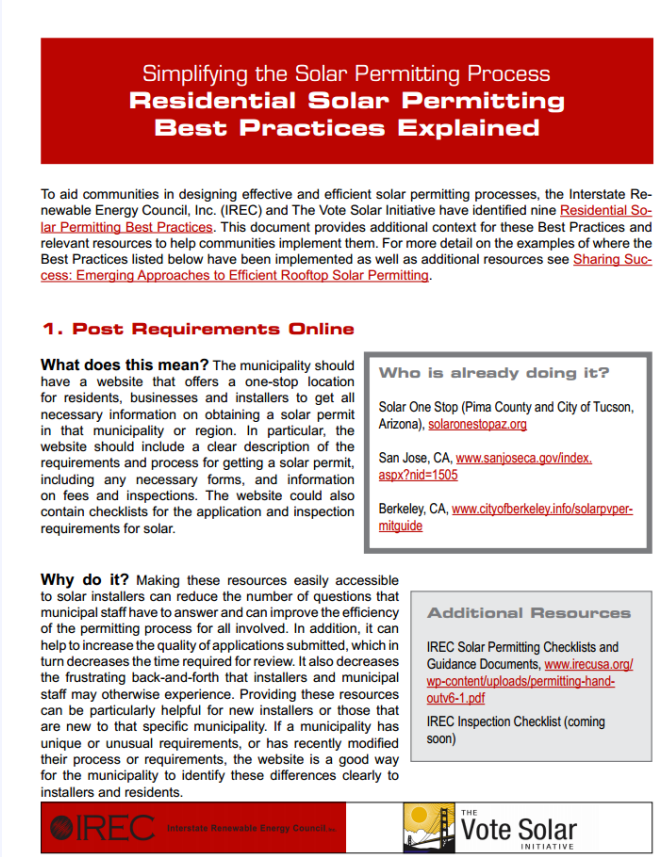
U.S. Department of Energy

Source: IREC/Vote 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/solarpvpermitguide

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-outv6-1.pdf

IREC Inspection Checklist (coming soon)

IREC Interstate Renewable Energy Council

THE Vote Solar INITIATIVE

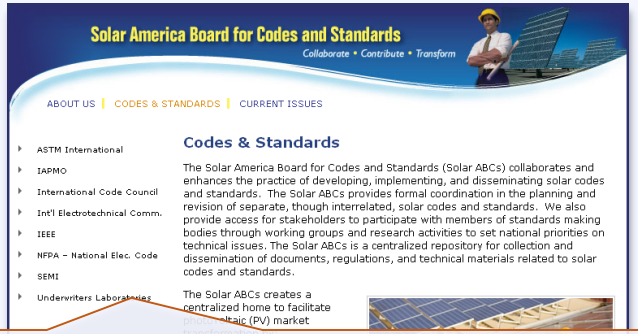
http://projectpermit.org/wp-content/uploads/2013/04/Expanded-Best-Practices-7.23.13_VSI.pdf

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

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Effective Local Solar Policy

Local Solar Policy

Understanding solar financing

Expanding financing options

Addressing customer acquisition

Solar Market Development Tools

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The Solar Equation

Cost

+ Installed Cost

+ Maintenance

- Direct Incentive

Benefit

+ Avoided Energy Cost

+ Excess Generation

+ Performance Incentive

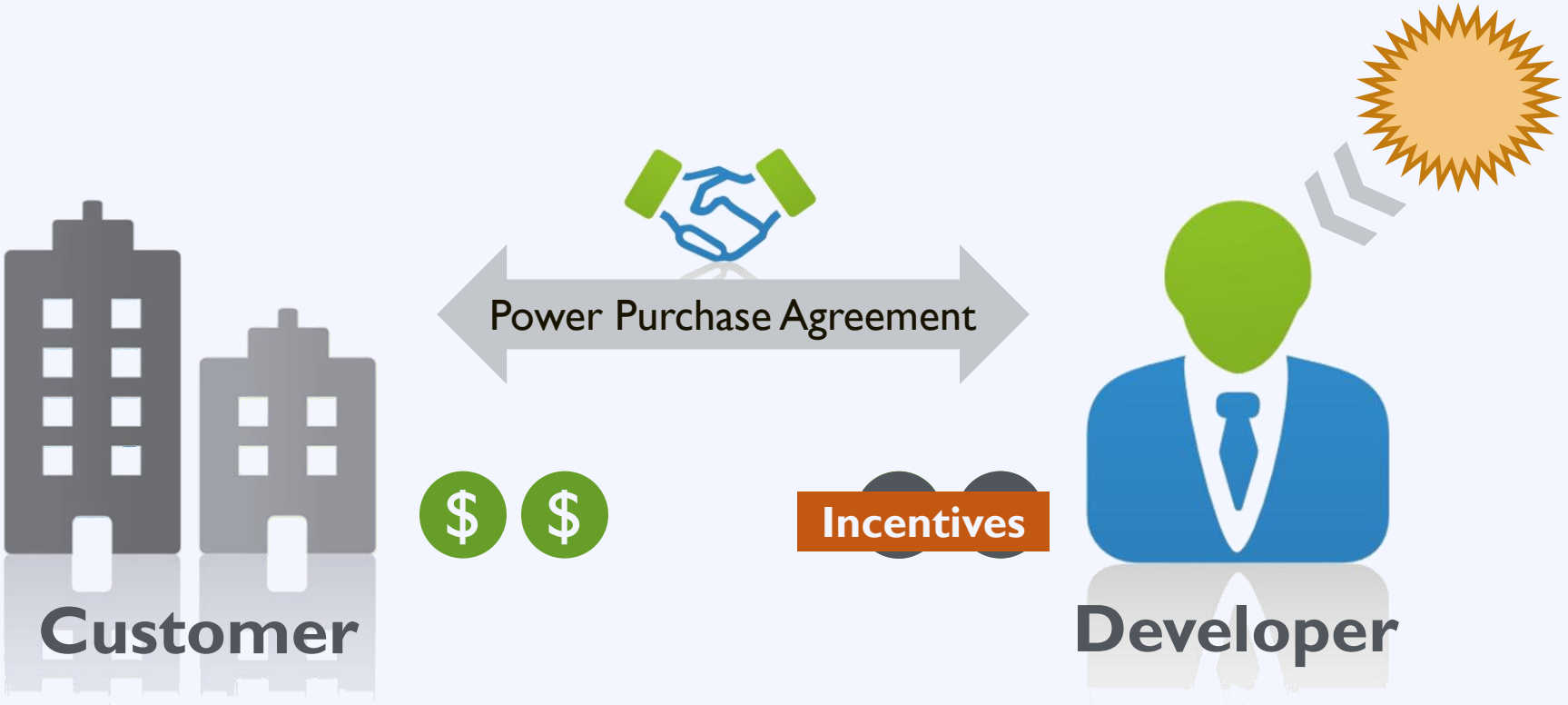
Ownership Options for Solar

Direct Ownership

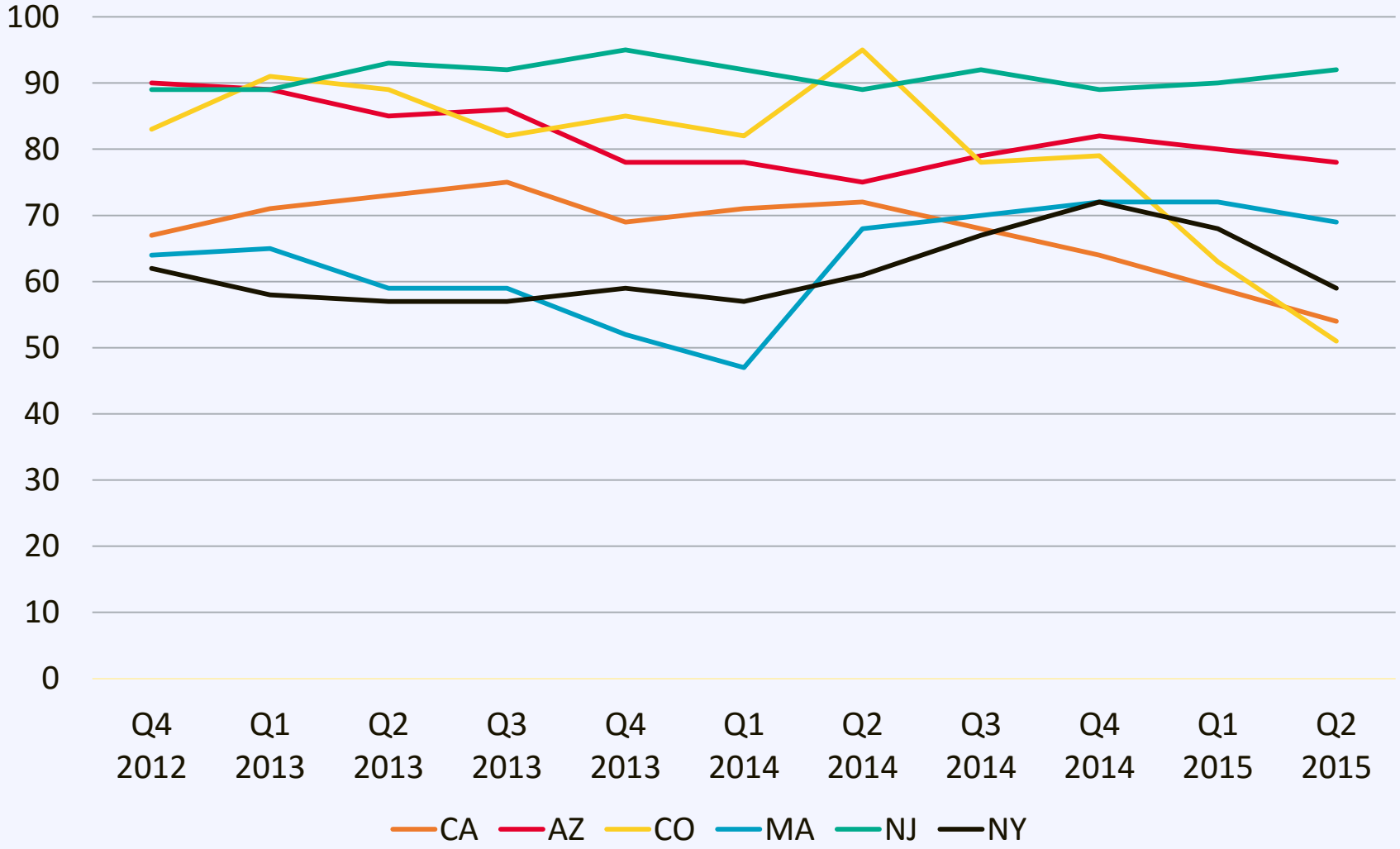
Third-Party Ownership

Direct Ownership

Third Party Ownership



Third Party Ownership



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Source: GTM Research/ Solar Energy Industries Association, *U.S. Solar Market Insight Q2 2015*

Third Party Ownership

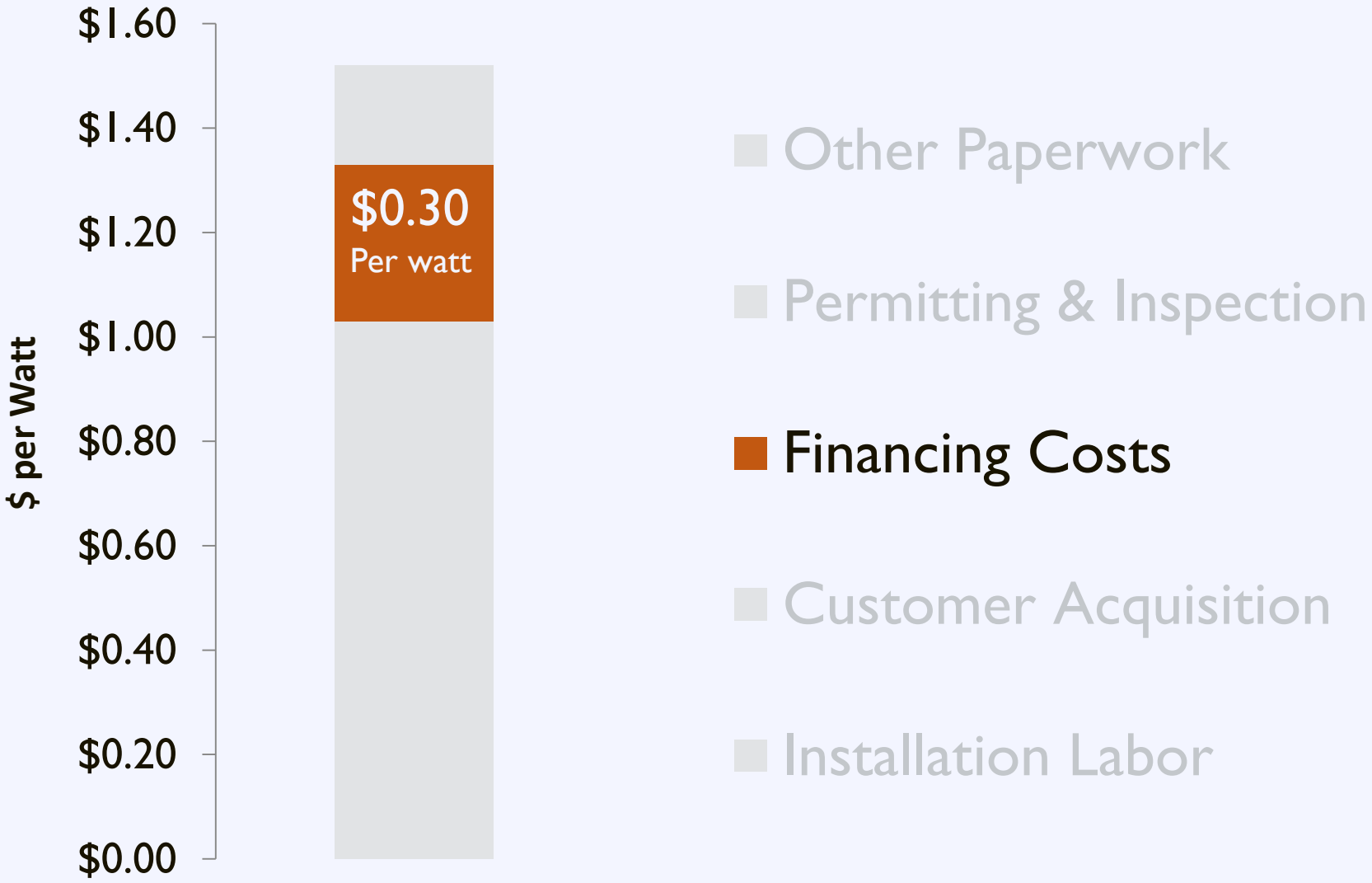
Benefits

- No upfront cost
- No O&M costs
- Low risk
- Predictable payments

Drawbacks

- Investor needs higher ROI
- Not available in all states

Third Party Ownership



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Ownership Options for Solar

Direct Ownership

Third-Party Ownership

Expand direct ownership options by engaging local lenders

Engage Local Lenders

Fewer than **5%**

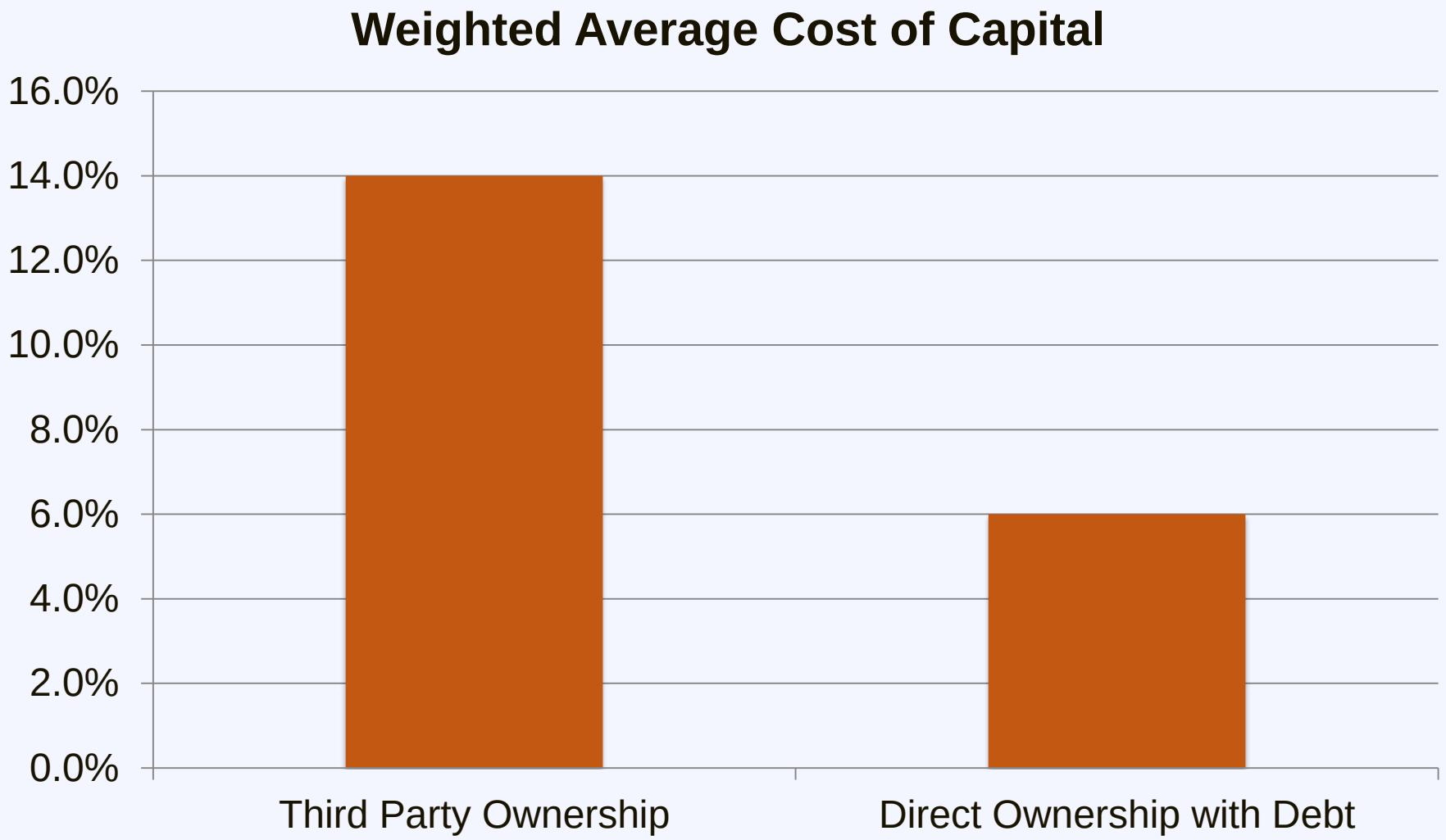
of the

6,500 banks in the US

are

actively financing solar PV projects

Third Party Ownership: Cost



Engage Local Lenders: Resources

Resource **Local Lending for Solar PV**

A guide for local governments seeking to engage financial institutions

www.solaroutreach.org

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Customer Acquisition

Source: National Renewable Energy Laboratory

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

solarize portland

Solarize CONNECTICUT

SOLARIZE MASS

solarize ASHEVILLE

Solarize Blacksburg

SOLARIZEtybee

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The Solarize Program

Barriers		Solutions
High upfront cost	→	Group purchase
Complexity	→	Community outreach
Customer inertia	→	Limited-time offer

Solarize: Partnership

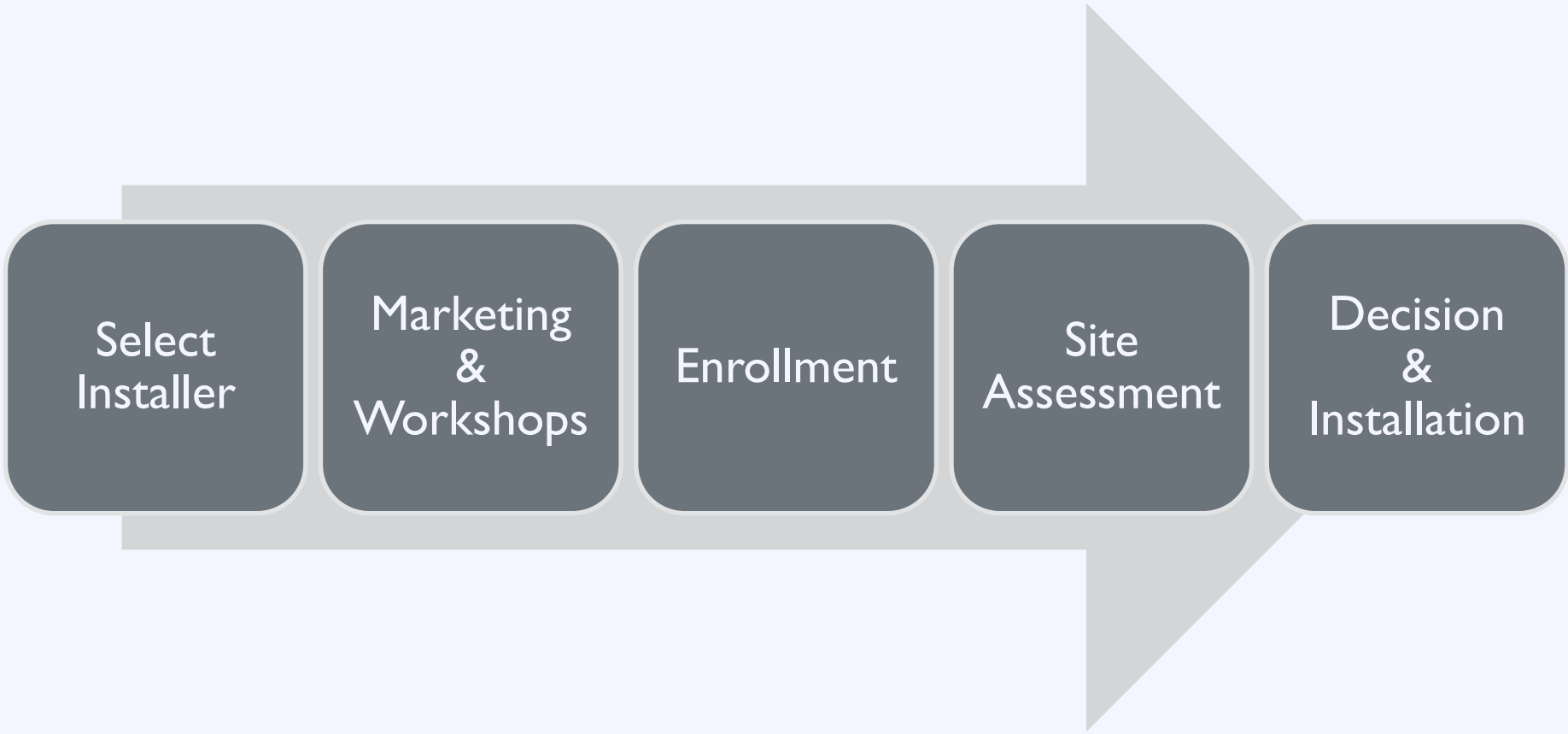
Program Sponsor
- Competitive selection
- Community ties
- Technical knowledge
- Marketing & outreach

Solar Contractor
- Free site assessments
- Solar installations
- Volume discounts
- Tiered pricing

Citizen Volunteers
- Campaign support
- Neighborhood outreach

Community Residents
- Program participation
- Word of mouth

Solarize: Process



Solarize: Case Study

SOLARIZEtybee

Tybee Island, Georgia

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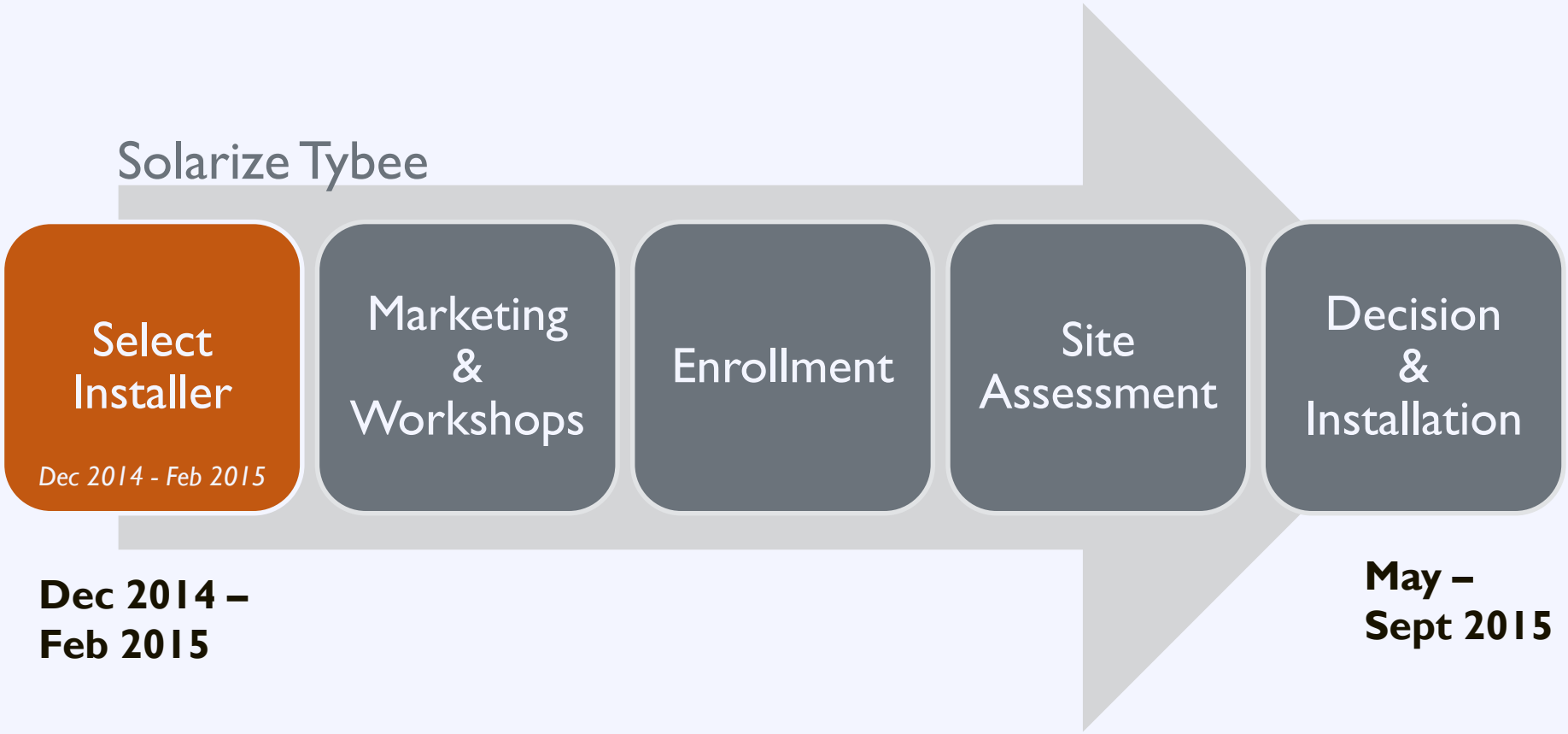
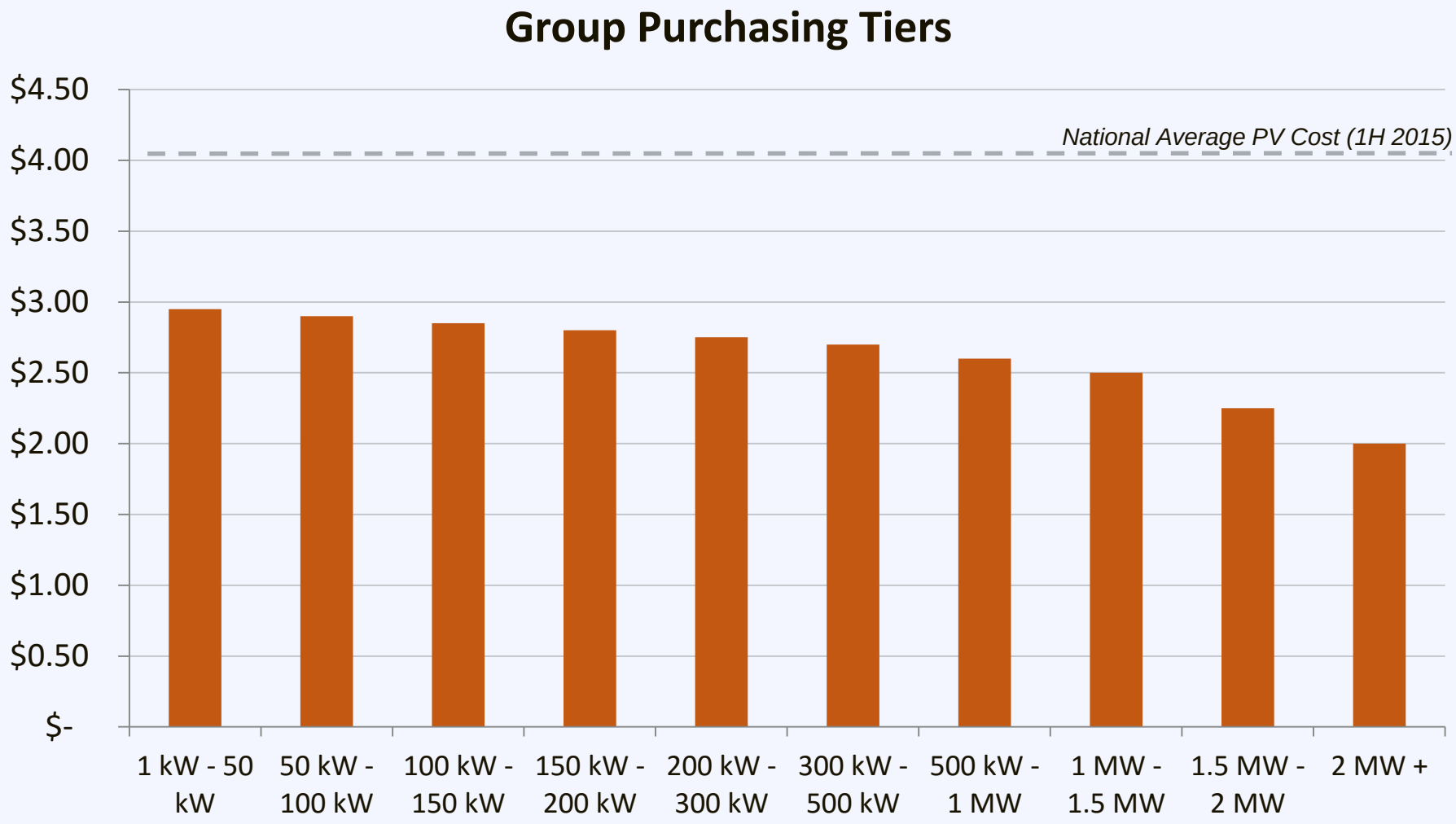
Solarize: Case Study



Group Purchasing



Group Purchasing

5.4 kW System	National Price	Solarize Price
Installed Cost	$4.00/W	$2.70/W
Total Cost Before Incentives	$21,600	$14,580
Federal ITC (30%)	($6,480)	($4,374)
Cost After Incentives	$15,120	$10,206

~33% savings compared with national average price

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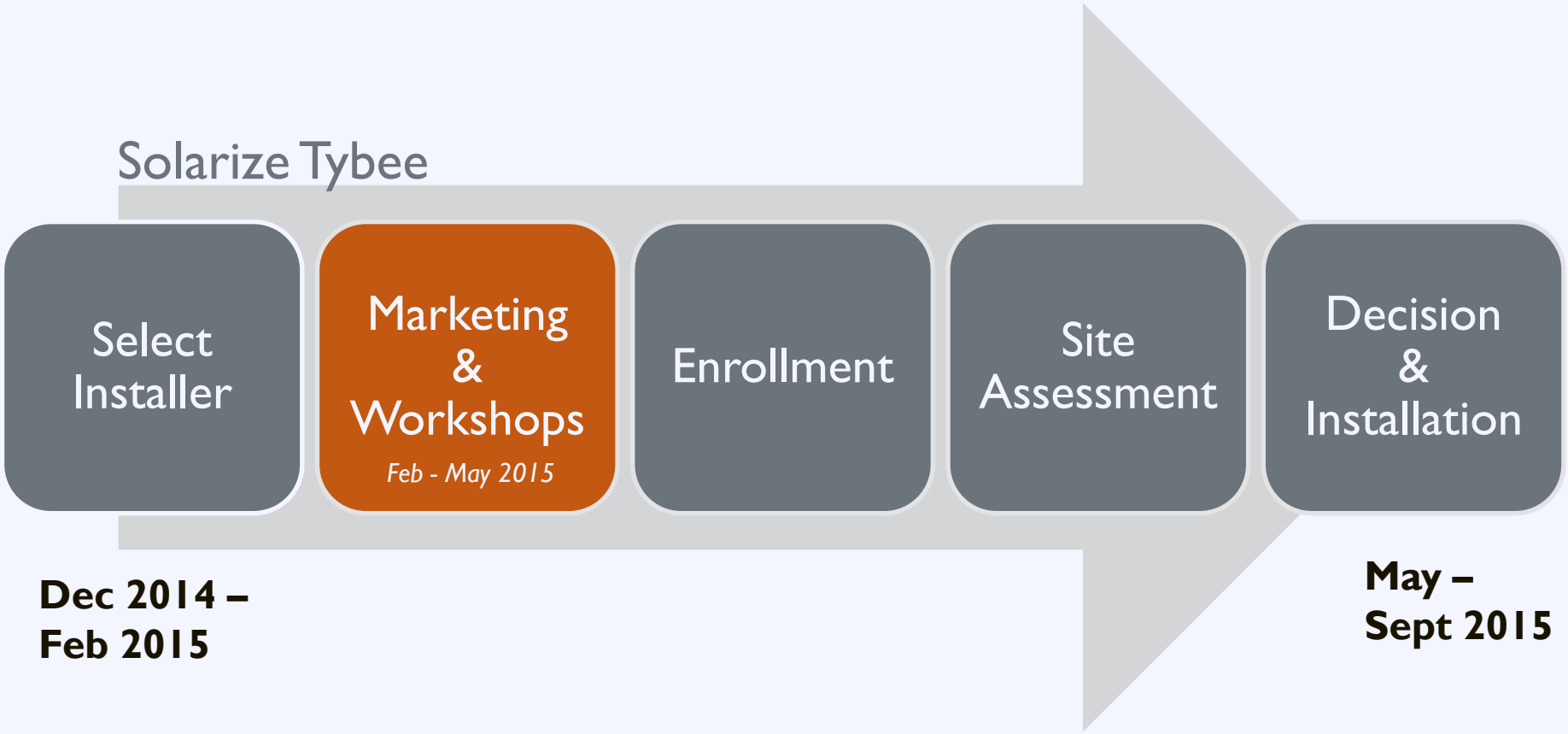
Source: http://www.solarizeblacksburg.org/financing/

Solarize: Case Study



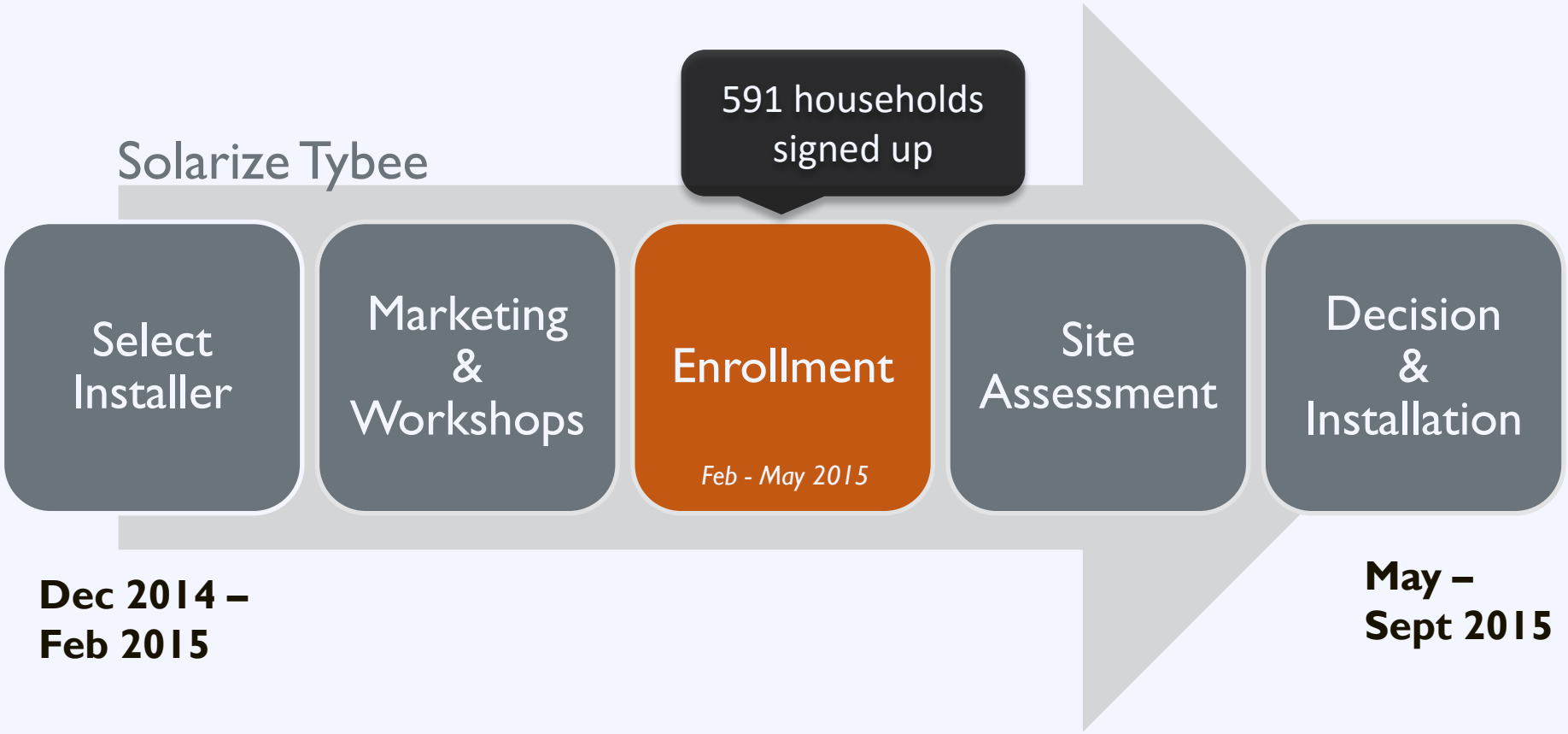
Solarize: Case Study

Marketing Strategy:

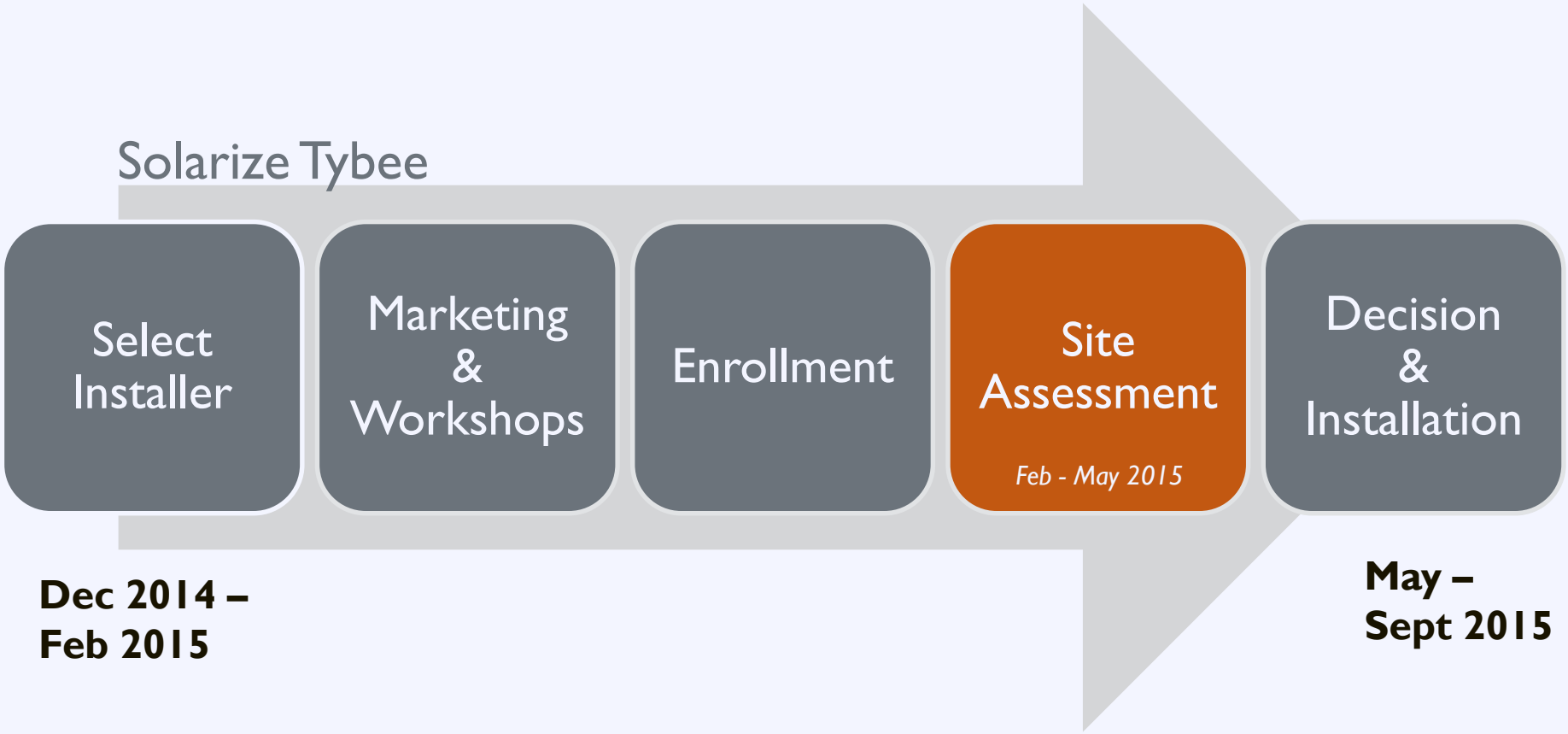
- Pre-RFP town hall meeting to discuss program
- Kick-off workshop with program representatives
- Community signage designed by local art students
- Technical workshops hosted by installer
- Articles in local media outlets and social media
- Presence at Savannah Earth Day Festival and local farmer's markets
- 1,000 postcards sent out to community

Source: Solarize Tybee

Solarize: Case Study



Solarize: Case Study



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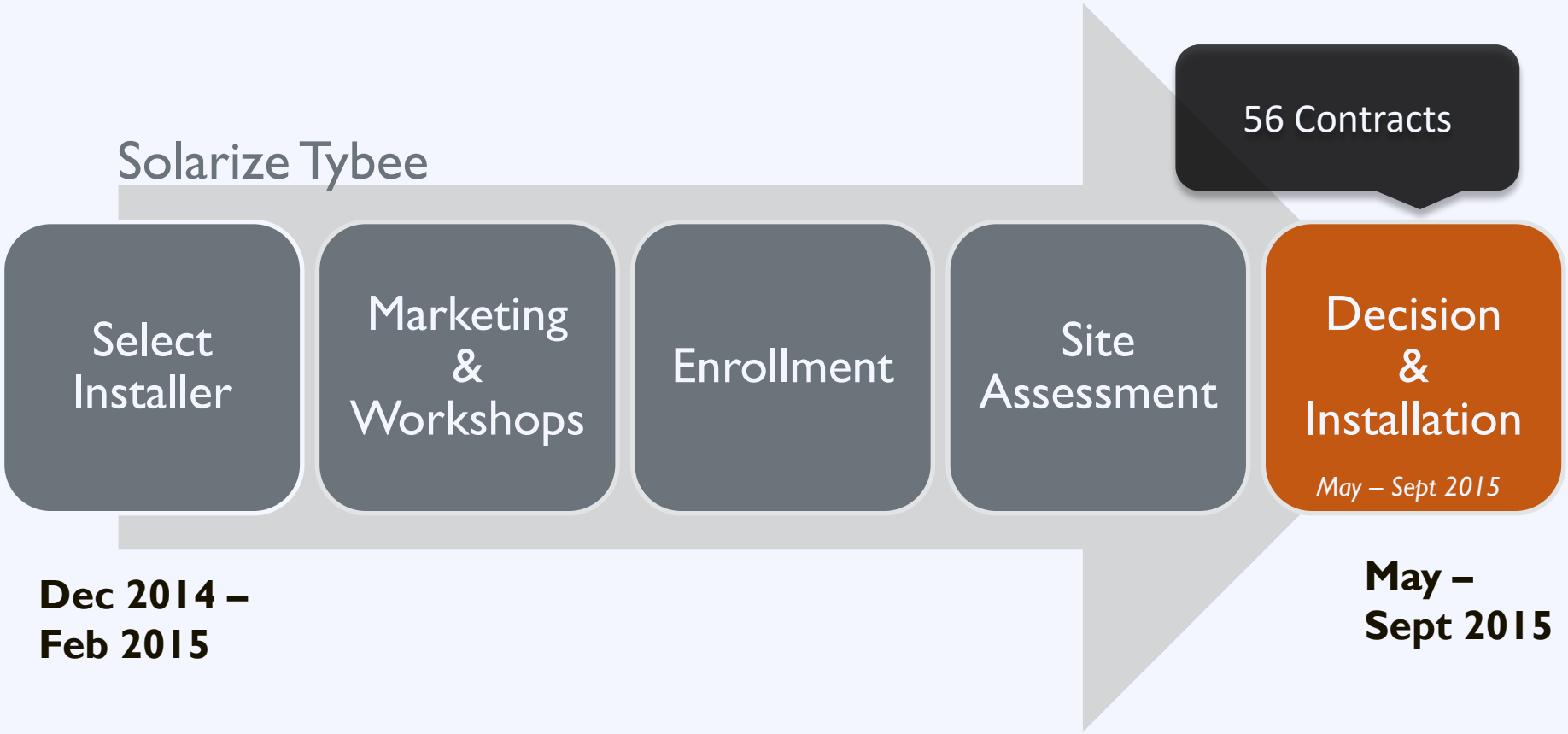

Solarize: Case Study

56 new installations totaling 303 kW

~33% reduction in installation costs

Tripled capacity for residential solar in county

Installer donated 5 kW system to community

Inspiring new programs throughout region

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U.S. Department of Energy

Solarize: Lasting Impact

A household is

0.78% more likely to adopt solar

for

each additional installation in their zip code

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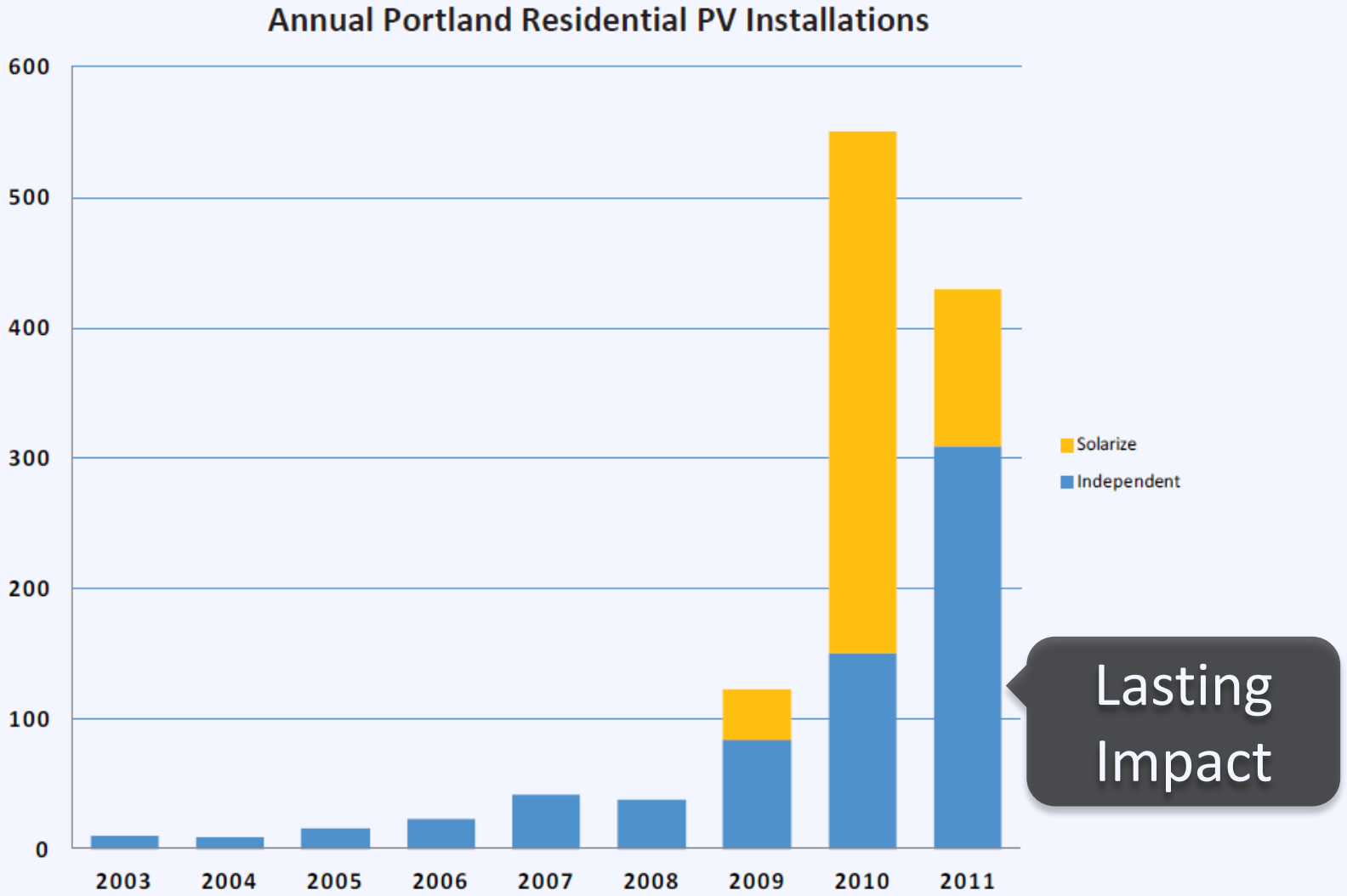
Source: NYU Stern and Yale School of Forestry – Peer Effects in the Diffusion of Solar Panels

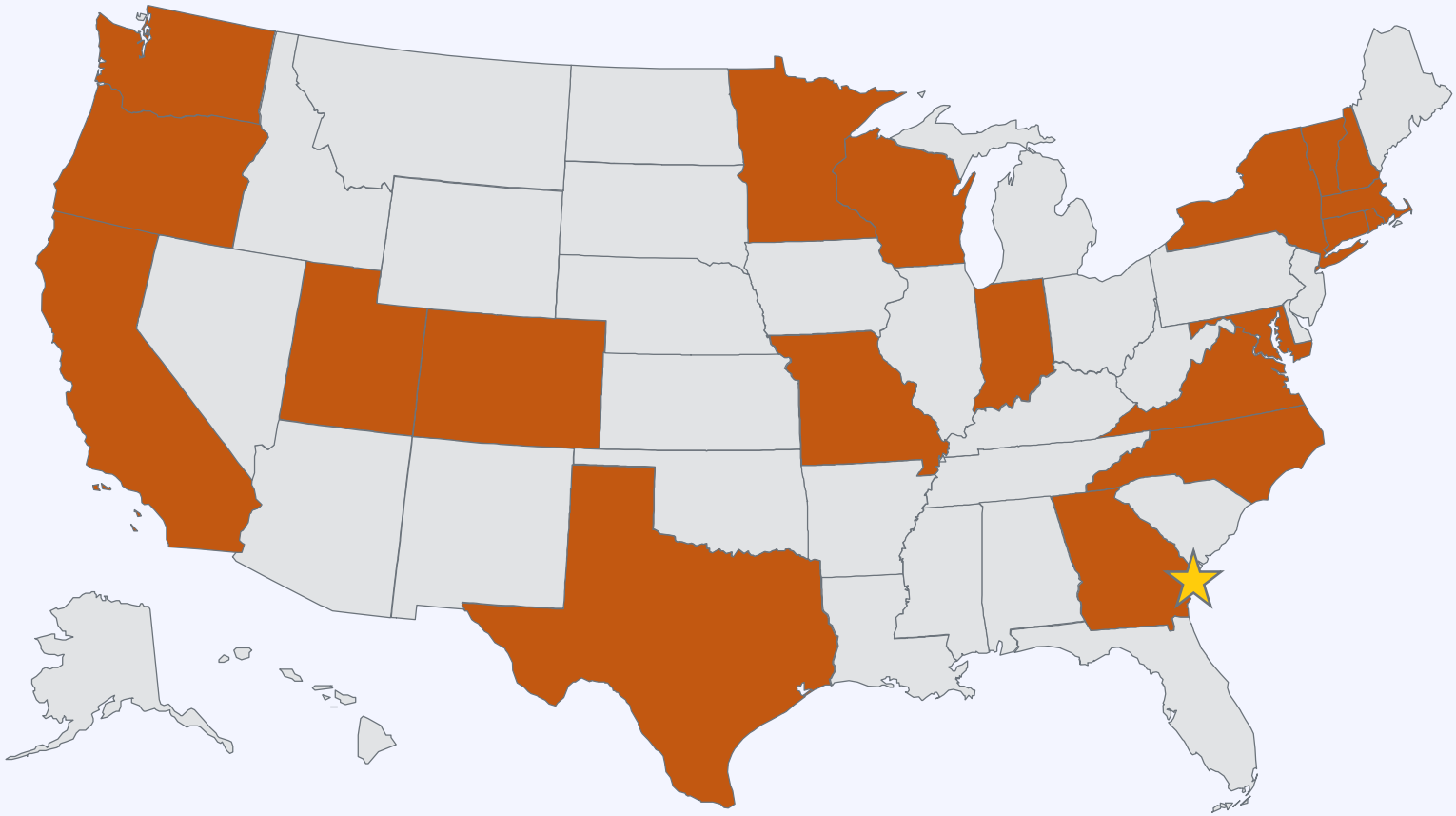
Solarize: Lasting Impact



Source: NREL

Solarize: Lasting Impact

Over 200 Campaigns in 20 States



Thousands of homes Solarized!

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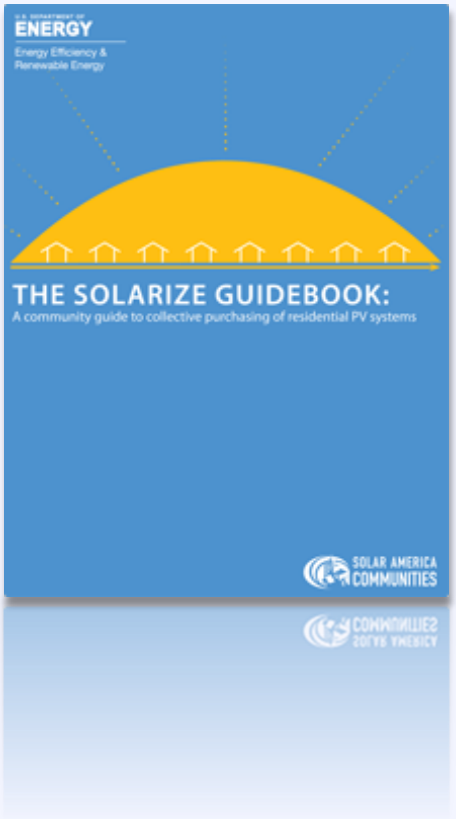
Solarize: Resources

Resource **The Solarize Guidebook**

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

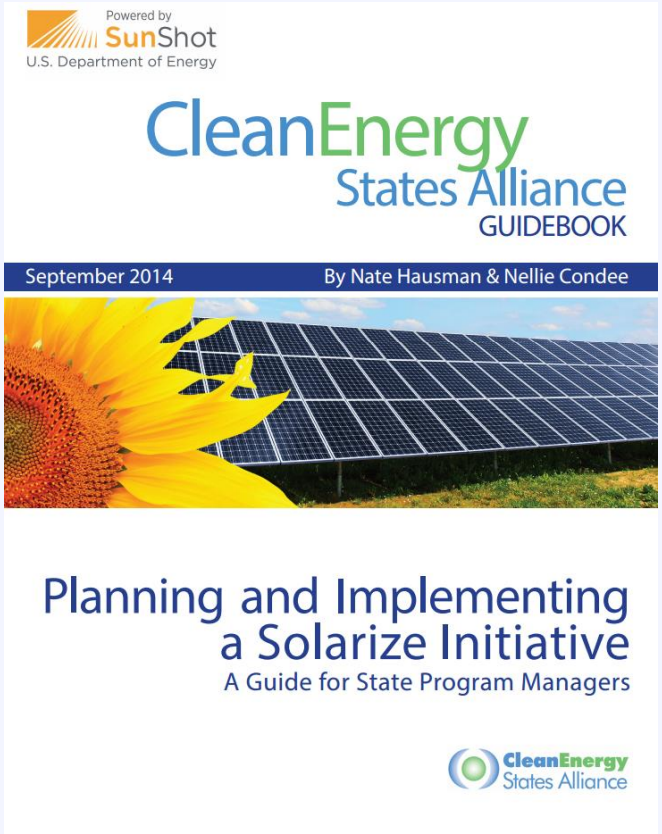
www.nrel.gov



Solarize: Resources

Resource **Planning and Implementing a Solarize Initiative**

Presents two successful state-driven Solarize programs (Solarize Mass and Solarize Connecticut) to provide best practices to stakeholders interested in replicating these successes.



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http://solaroutreach.org/wp-content/uploads/2014/04/CESA-Solarize-Guide-September-2014-Final.pdf

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Activity: Solar in Your Community

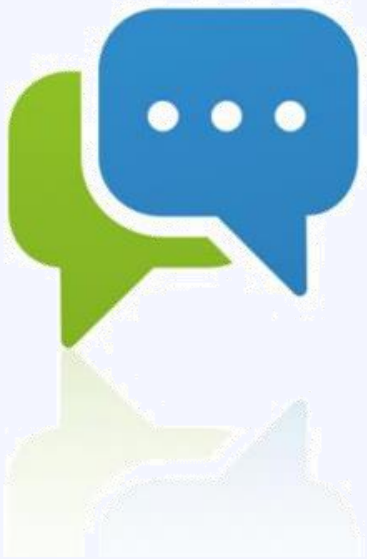
1. Recognize successes
2. Identify opportunities
3. Select strategies & best practices
4. Outline implementation plan
5. Discuss barriers to implementation

Activity: Solar in Your Community

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

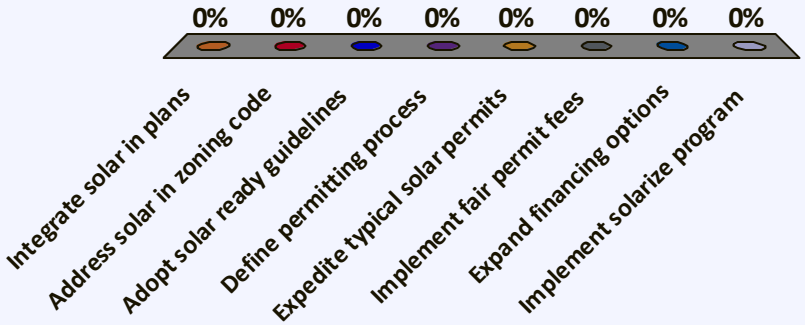
Activity: Solar in Your Community

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?

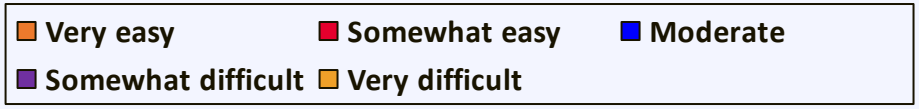
A. Integrate solar in plans
B. Address solar in zoning code
C. Adopt solar ready guidelines
D. Define permitting process
E. Expedite typical solar permits
F. Implement fair permit fees
G. Expand financing options
H. Implement solarize program



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%



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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