Solar Powering Your Community

Addressing Soft Costs and Barriers

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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
Research and Education to Advance Solar Energy

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

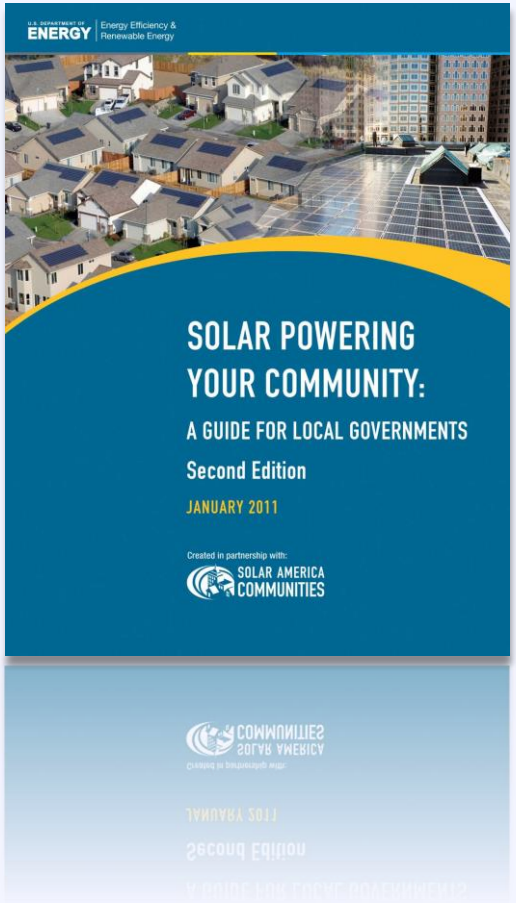
Email solar-usa@iclei.org to request a 20 minute consultation

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

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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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After This Session

Talk to Us!

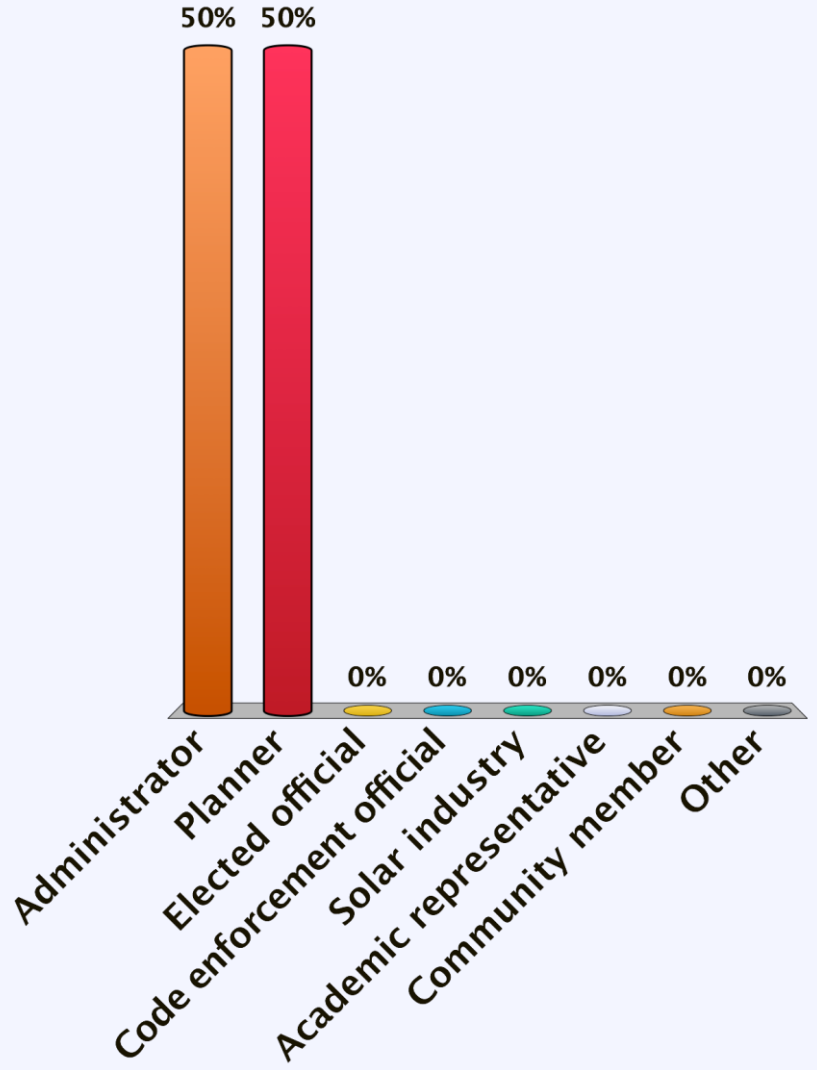
Sign up for a 20 minute consultation to learn more about our free services

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

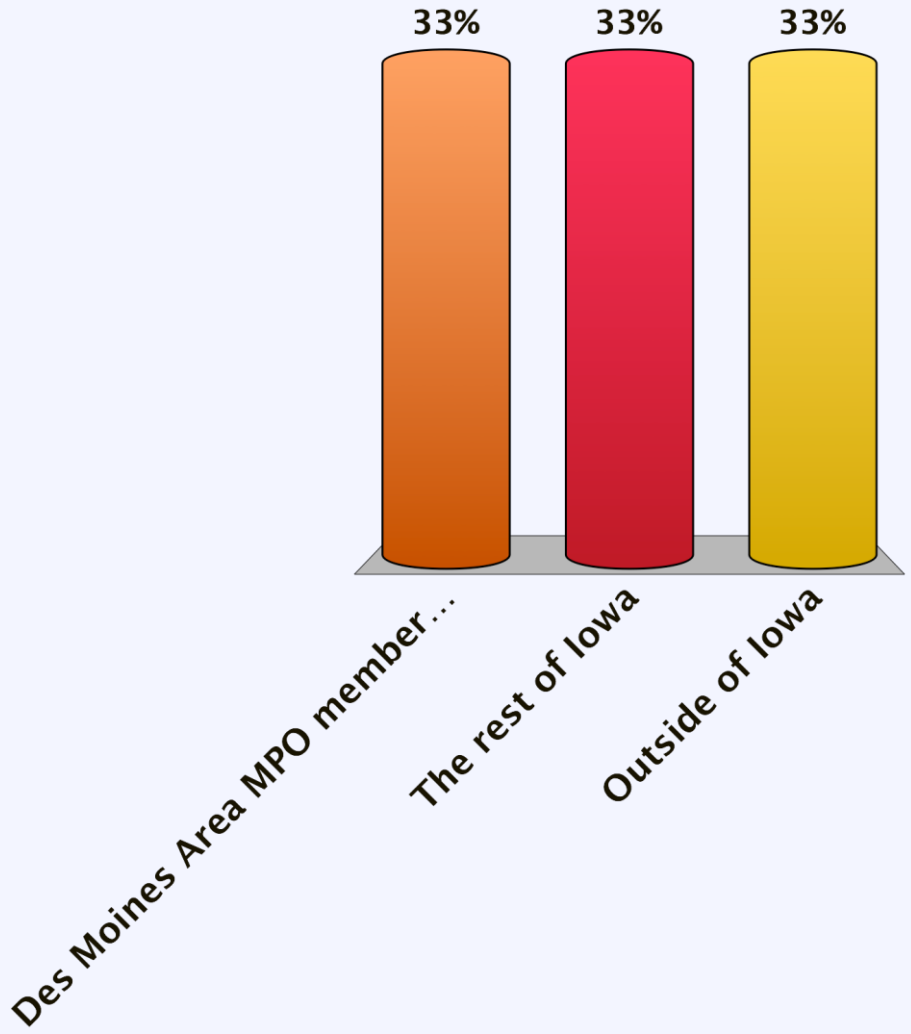


Where are you coming from?

A. Dubuque area

B. The rest of Iowa

C. Outside of Iowa



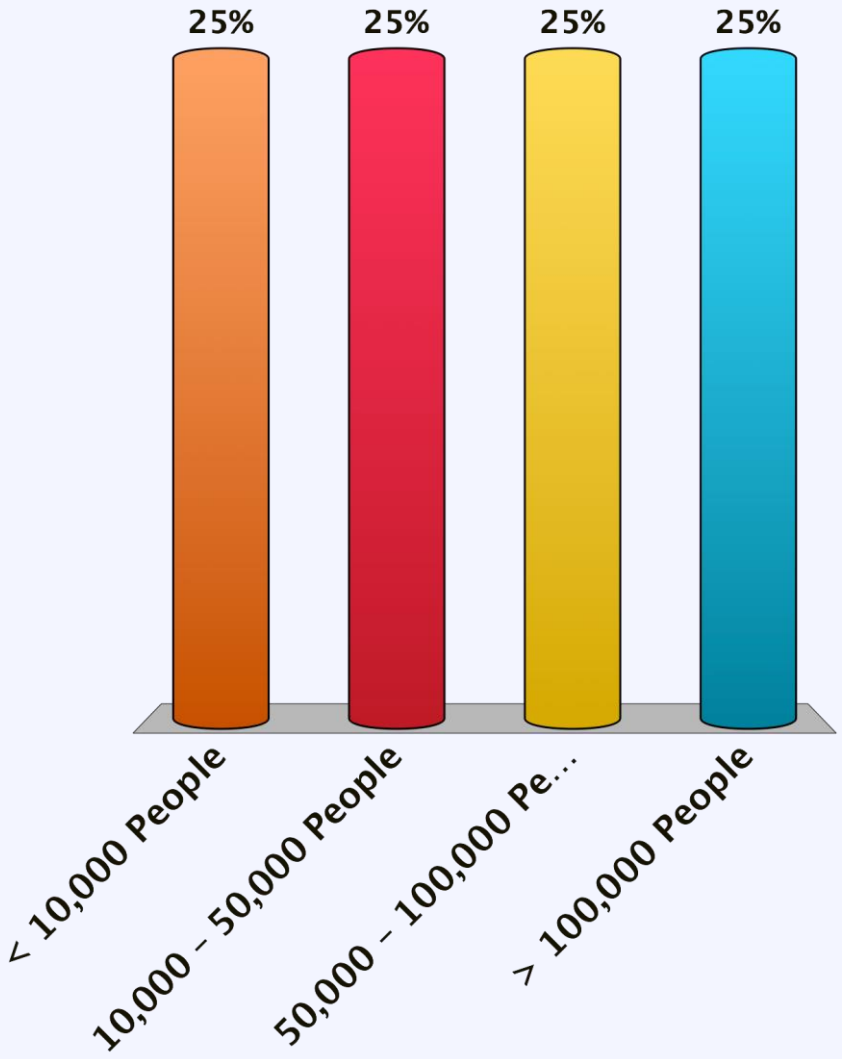
What size is your community?

A. < 10,000 People

B. 10,000 – 50,000 People

C. 50,000 – 100,000 People

D. > 100,000 People

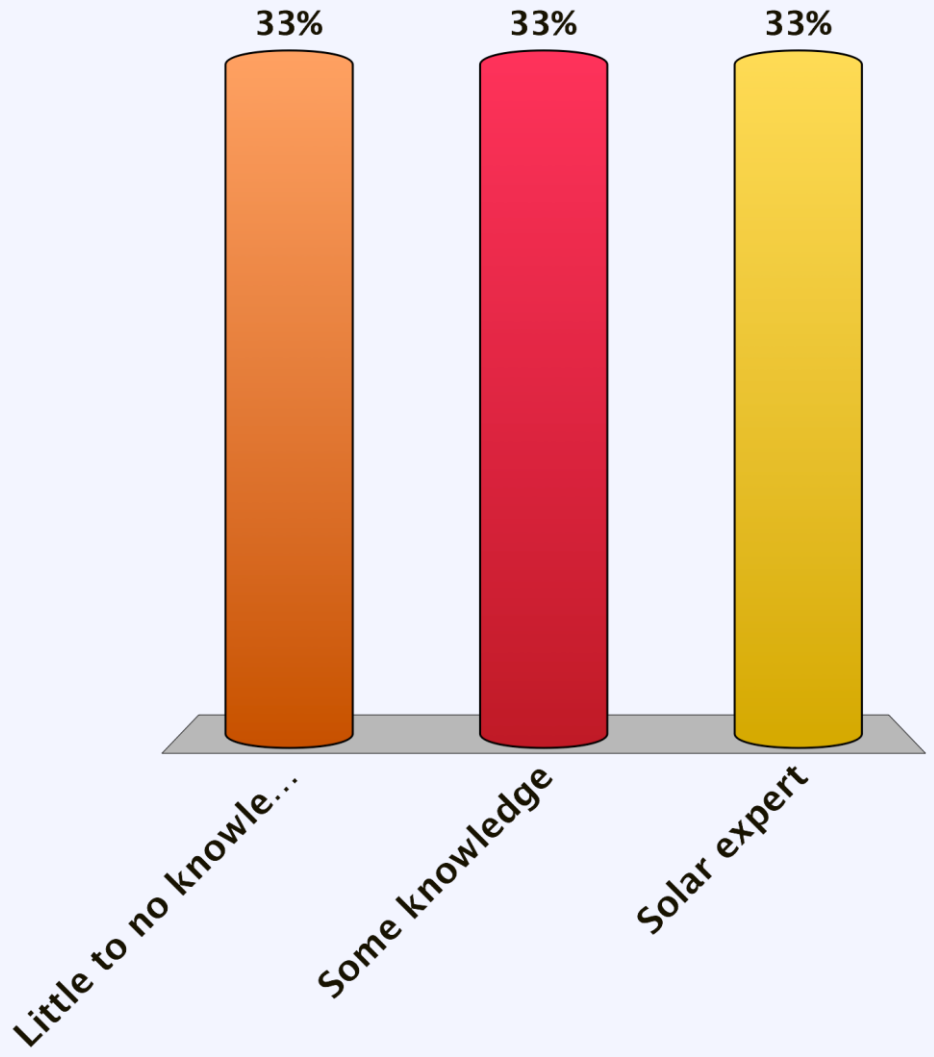


How familiar are you with solar?

A. Little to no knowledge

B. Some knowledge

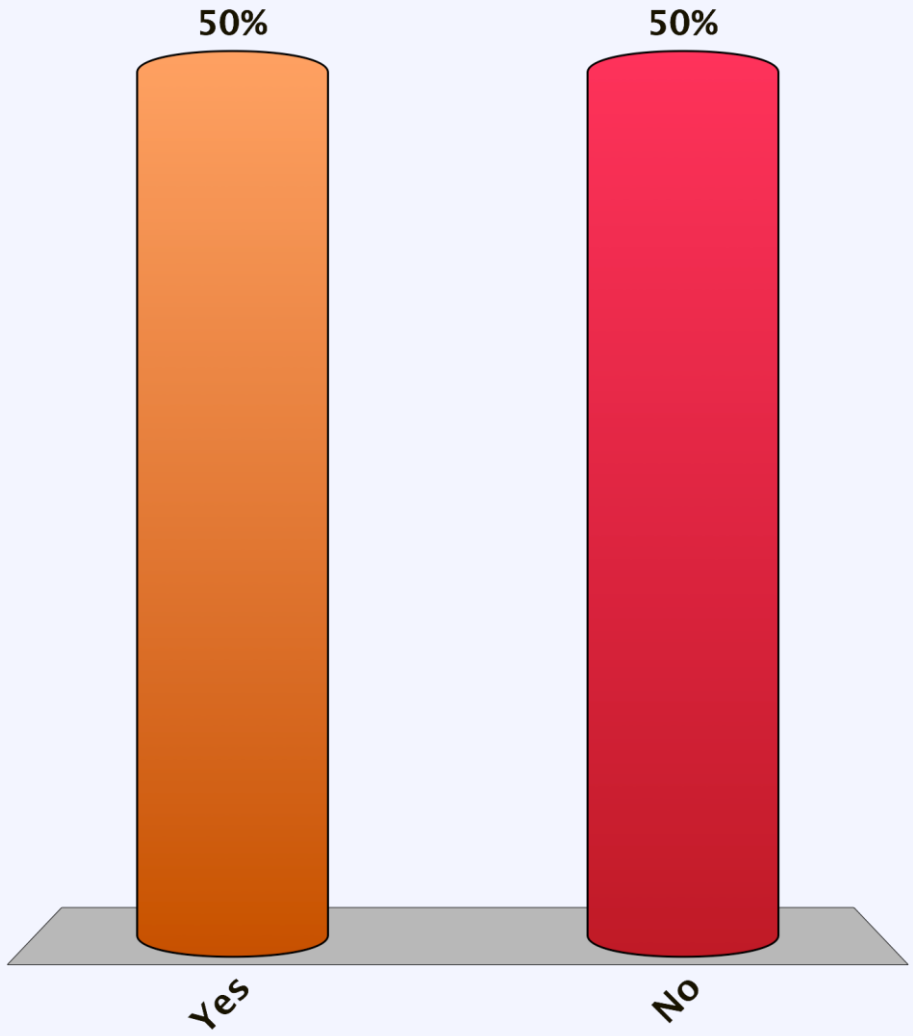
C. Solar expert



Do you have solar on your home?

A. Yes

B. No



Solar Development in the US

In 2013, the US solar industry installed

131,000 new solar installations

of which

94% were residential projects

If you do have solar on your home:

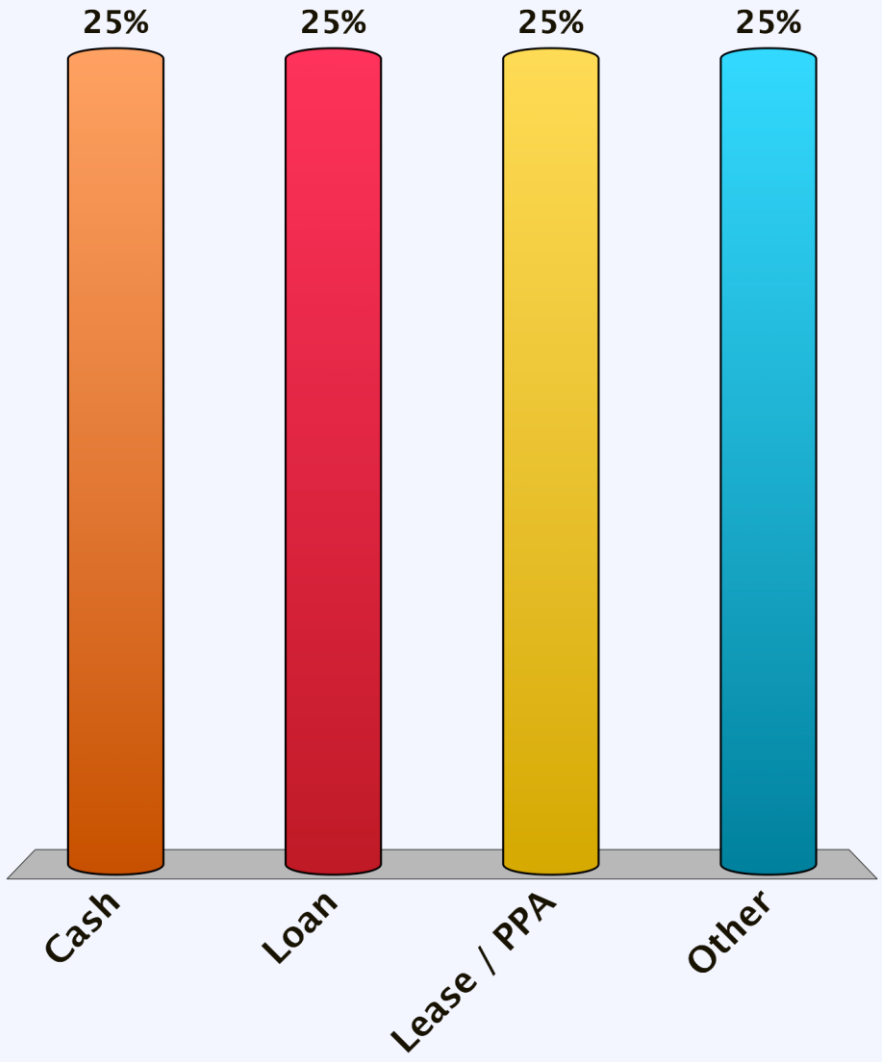
How did you finance it?

A. Cash

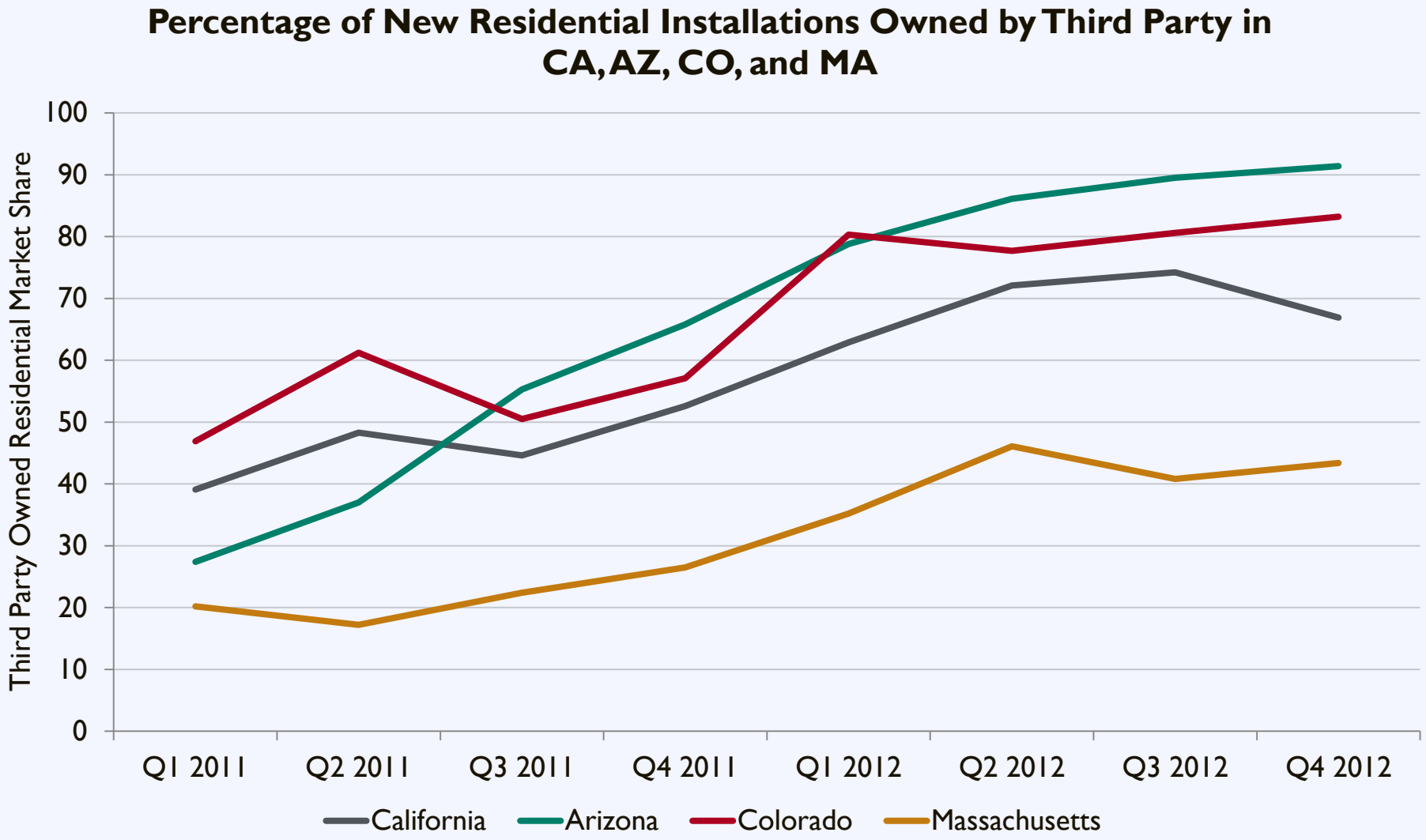
B. Loan

C. Lease / PPA

D. Other



Third Party Ownership



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U.S. Department of Energy

Source: GTM Research/ Solar Energy Industries Association, *U.S. Solar Market Insight 2012 Year-in-Review*

If you don't have solar on your home: **Why not?**

A. Shaded roof

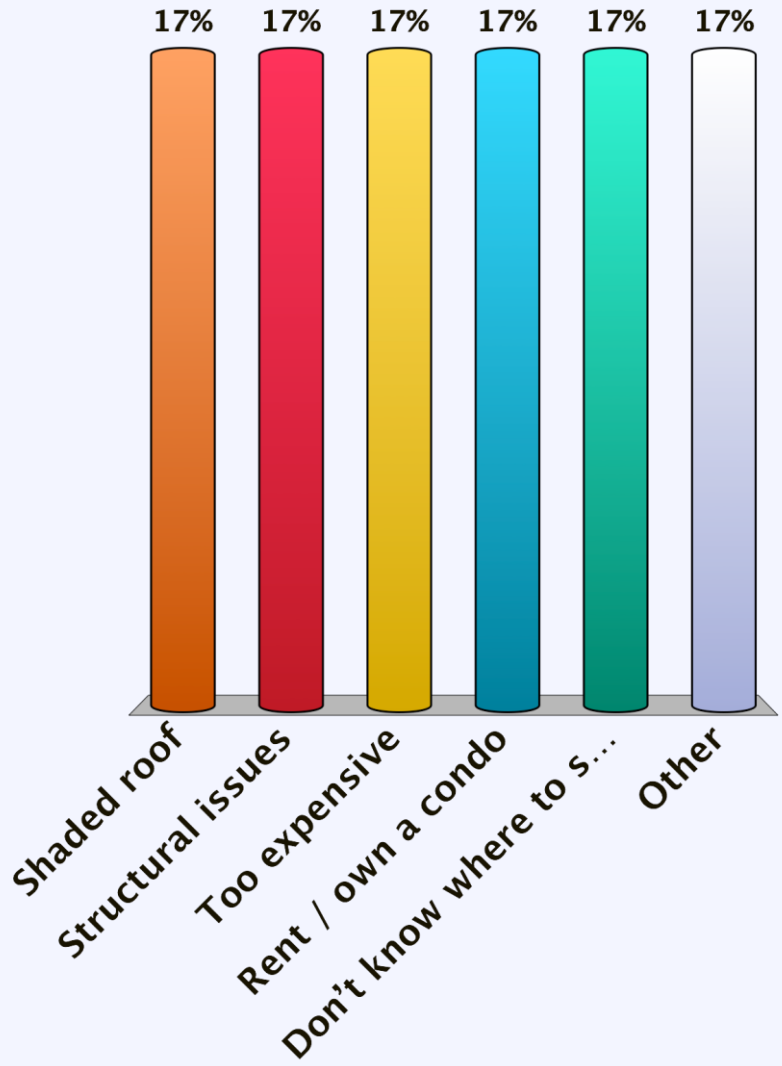
B. Structural issues

C. Too expensive

D. Rent / own a condo

E. Don't know where to start

F. Other

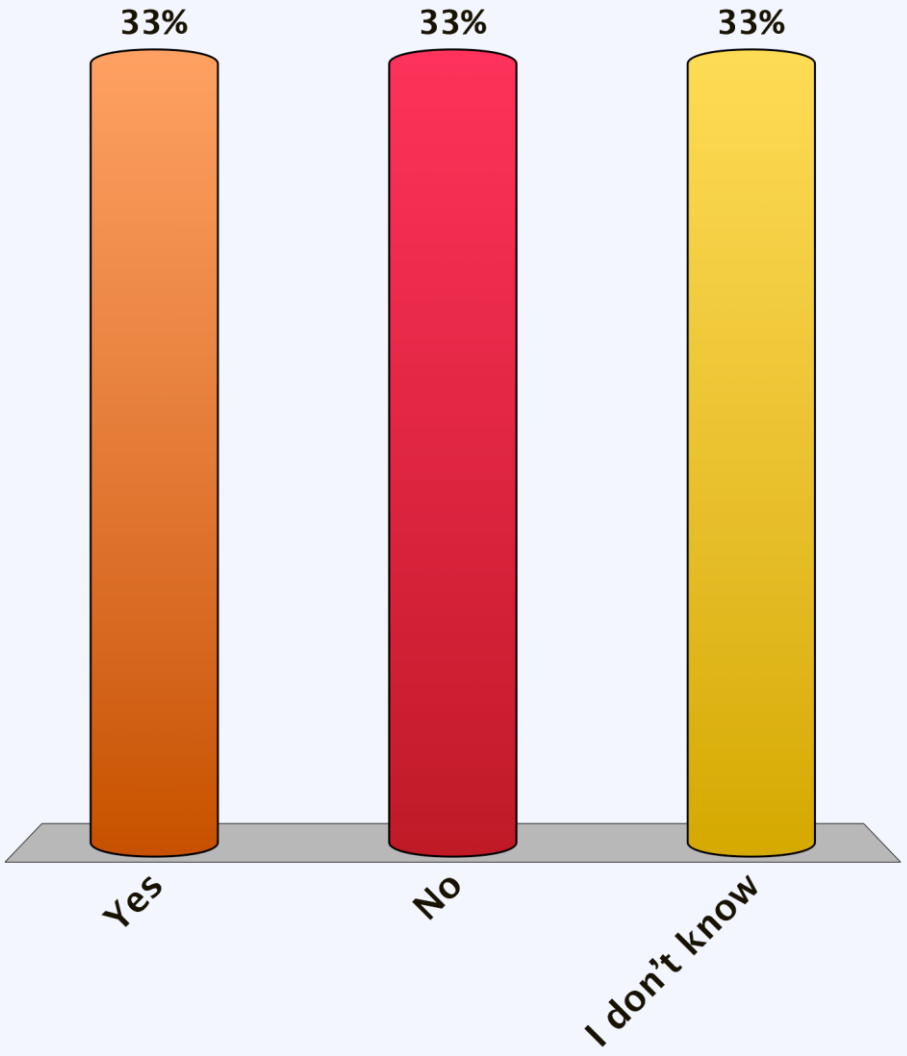


Does your local government have solar on public properties?

A. Yes

B. No

C. I don't know



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10:20 – 10:50	Putting Solar Energy on the Local Policy Agenda
10:50 – 11:20	State of the Local Solar Market
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Solar Technologies

Solar Photovoltaic (PV)

Solar Hot Water

Concentrated Solar Power

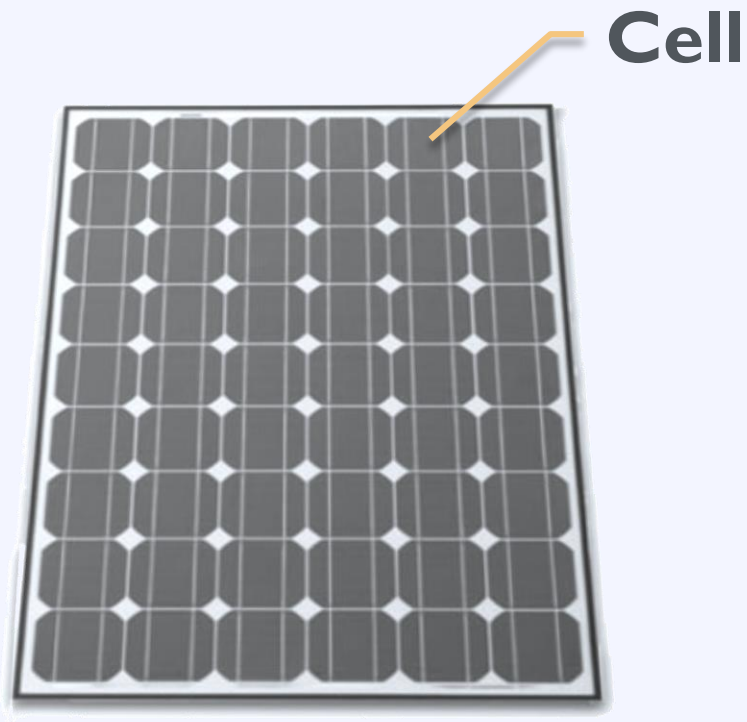
Solar Technologies

Solar Photovoltaic (PV)

Solar Hot Water

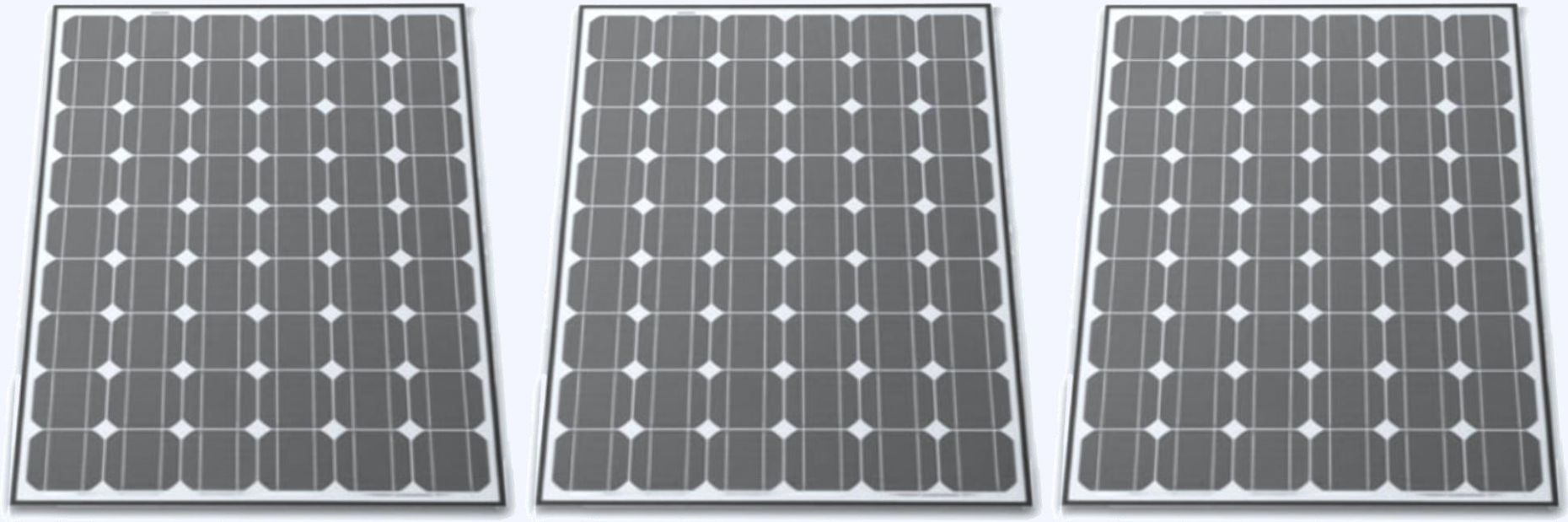
Concentrated Solar Power

Some Basic Terminology



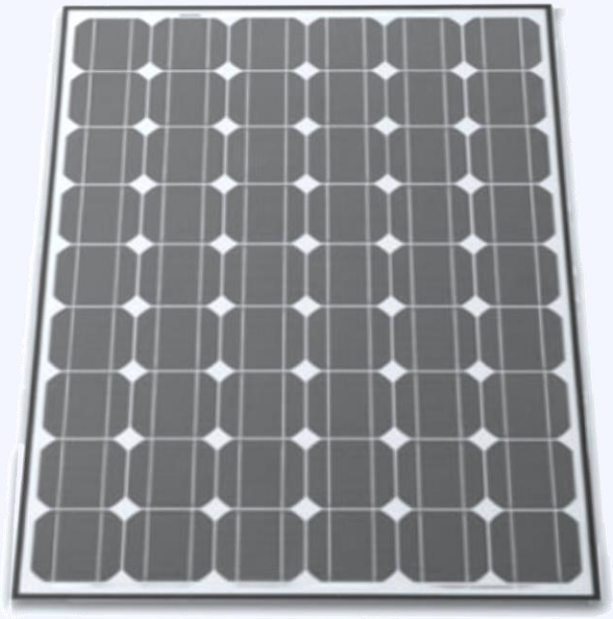
Panel / Module

Some Basic Terminology



Array

Some Basic Terminology



Capacity / Power

kilowatt (kW)

Production

Kilowatt-hour (kWh)

Some Basic Terminology

Residence
5 kW

Factory
1 MW+

Office
50 – 500 kW

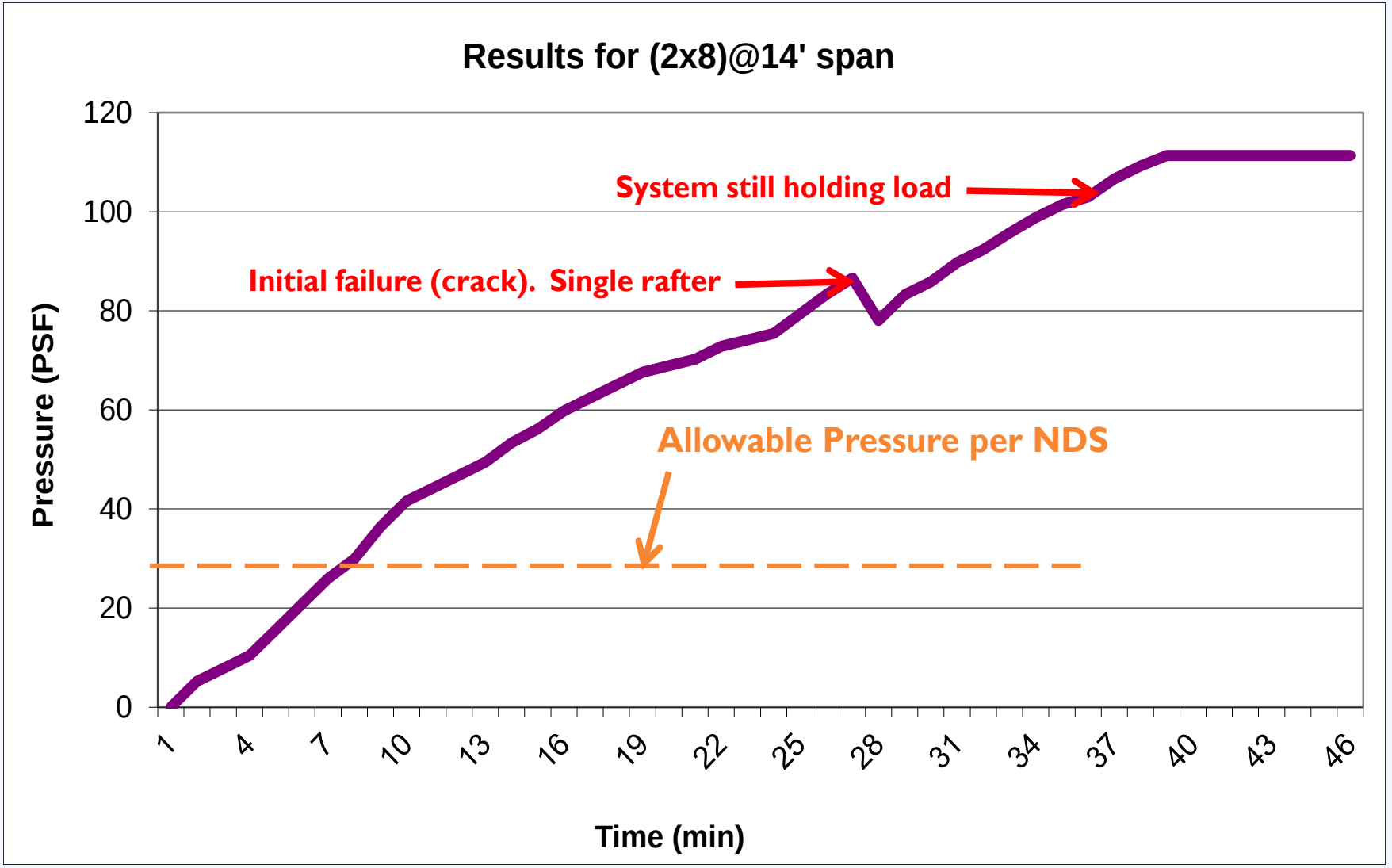
Utility
2 MW+

What About Snow?

- Snow can temporarily shut down your solar array energy production; however, there is **little sun in the winter to miss out on**.
  - December, January and February is only about 5% of yearly sun
- Safest to let the snow **melt naturally**, or use a roof rake with a squeegee.

Source: Central New York Regional Planning Federation

Rooftop Structural Integrity



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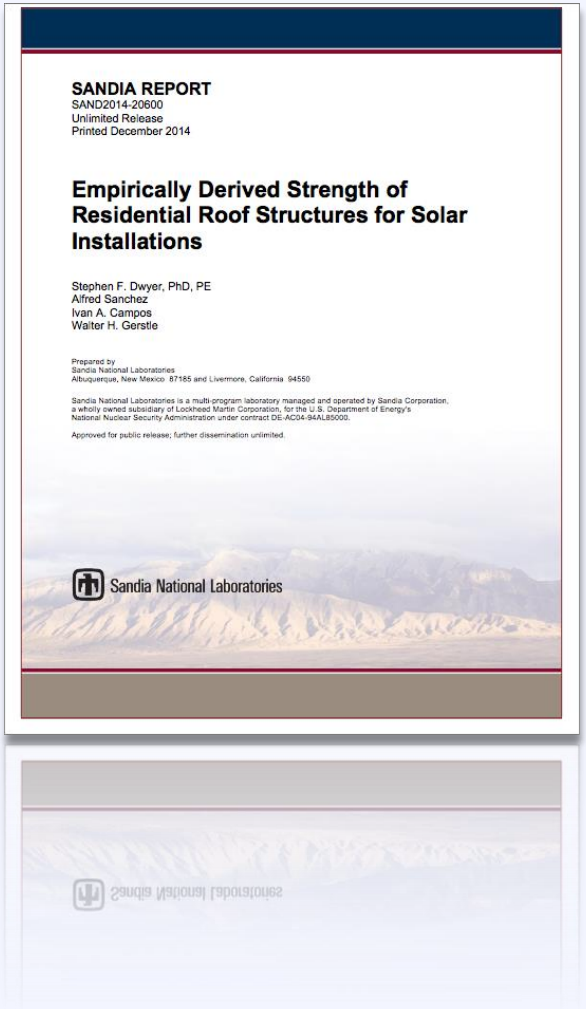
Source: Sandia Lab's Empirically Derived Strengths of Residential Roof Structure for Solar Installations (2014)

Rooftop Structural Integrity

Resource **Sandia National Laboratories**

A comprehensive review of the strength of residential roof structures for solar installations

http://www.sandia.gov/



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

A. Economic development & job creation

B. Environmental & public health benefits

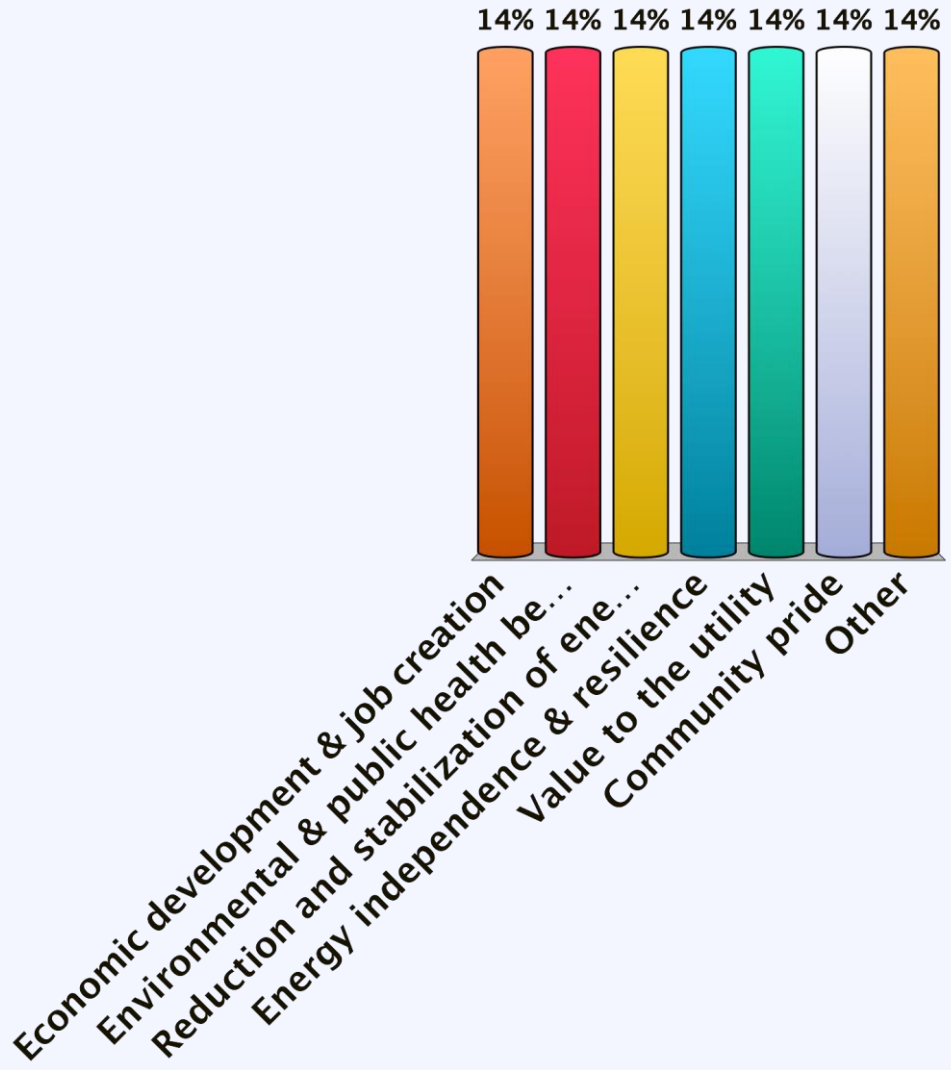
C. Reduction and stabilization of energy costs

D. Energy independence & resilience

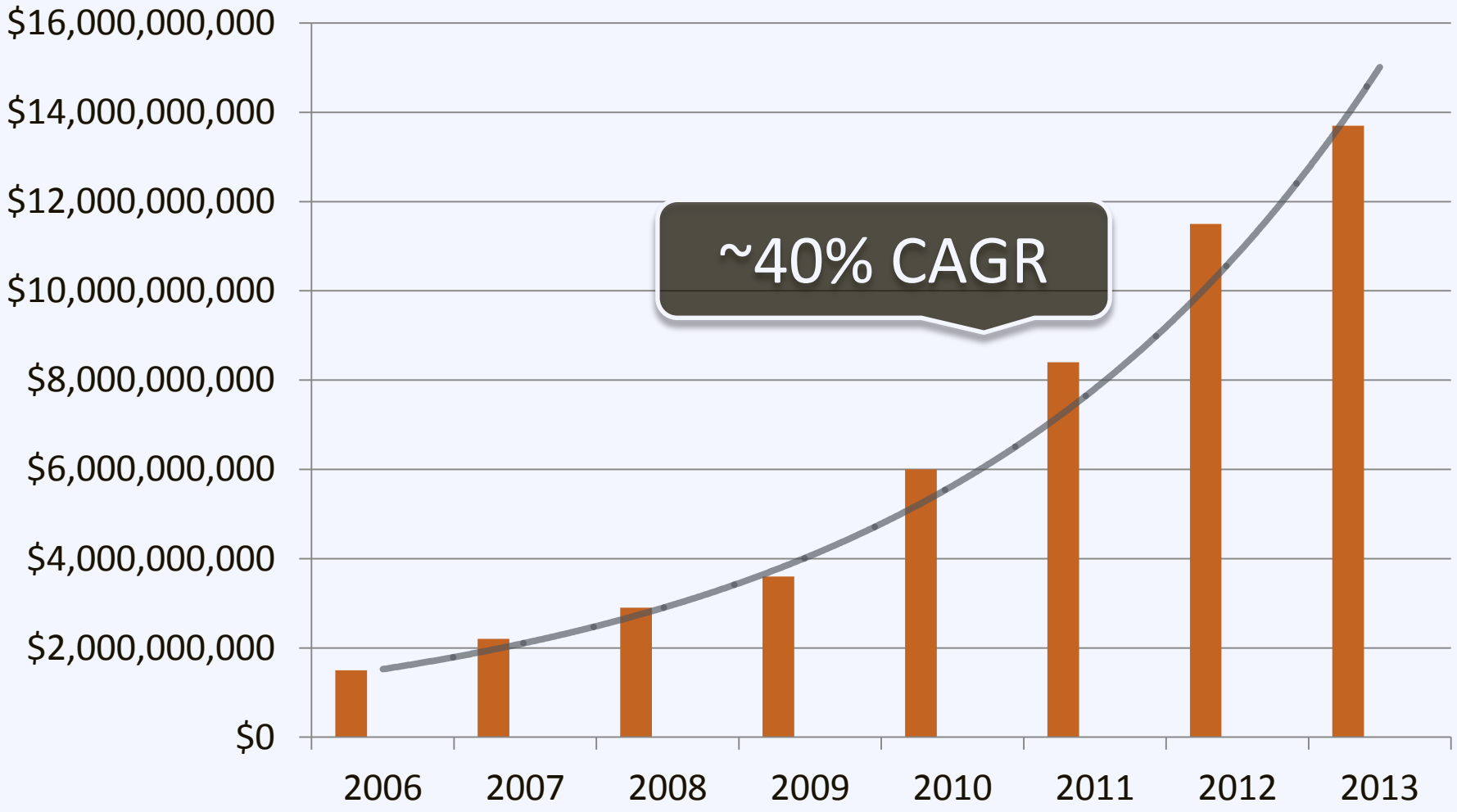
E. Value to the utility

F. Community pride

G. Other

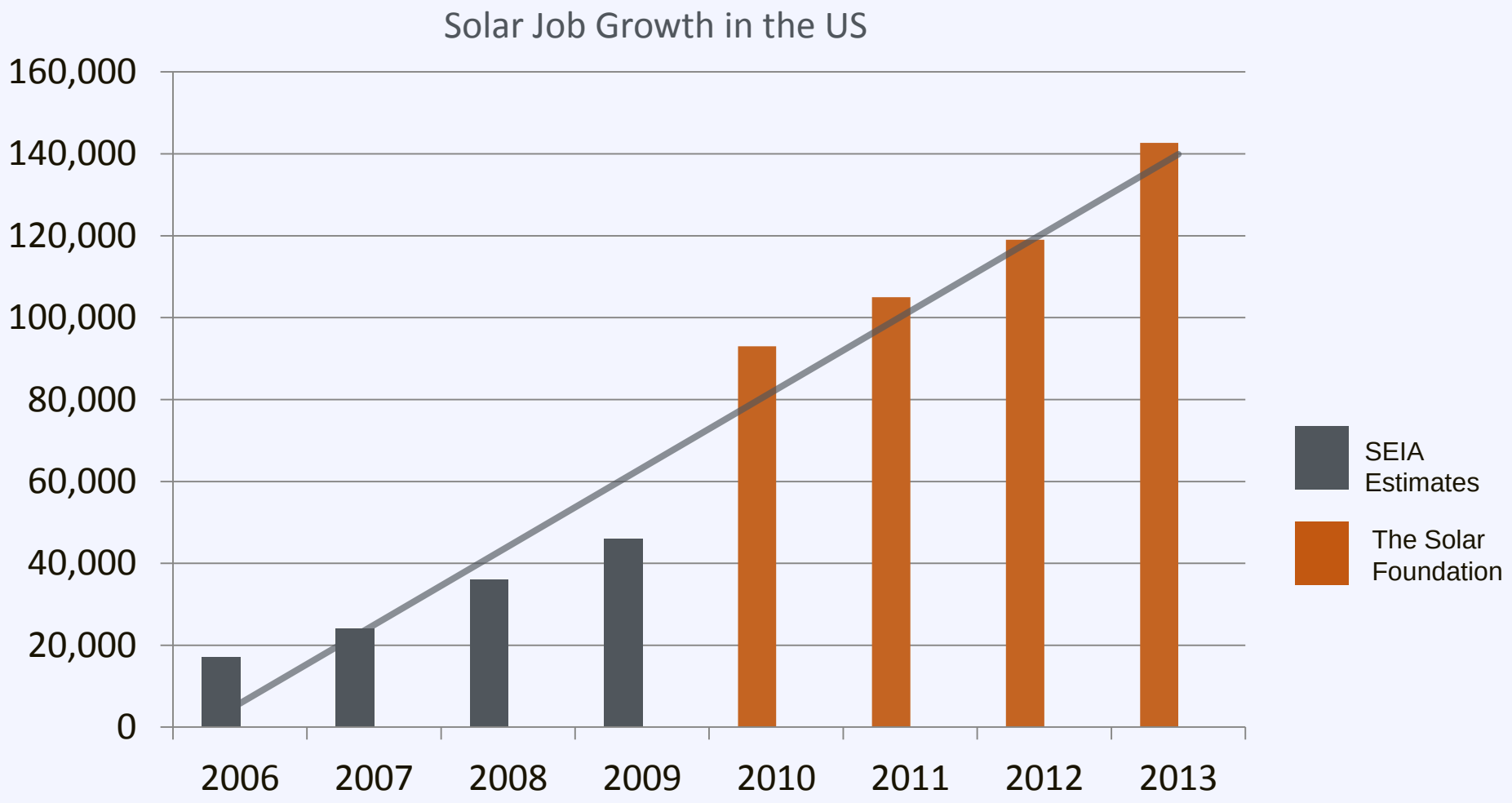


Solar Economic Growth



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

Solar Job Growth



Source: SEIA Estimates (2006-2009), The Solar Foundation's National Solar Jobs Census 2010 (2010), The Solar Foundation's National Solar Jobs Census 2012 (2011-2012).

Economic Development in Iowa

In 2013 the industry invested

$18 million

in solar development in Iowa

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Source: Solar Foundation

Economic Development in Iowa

There are currently

34 solar companies

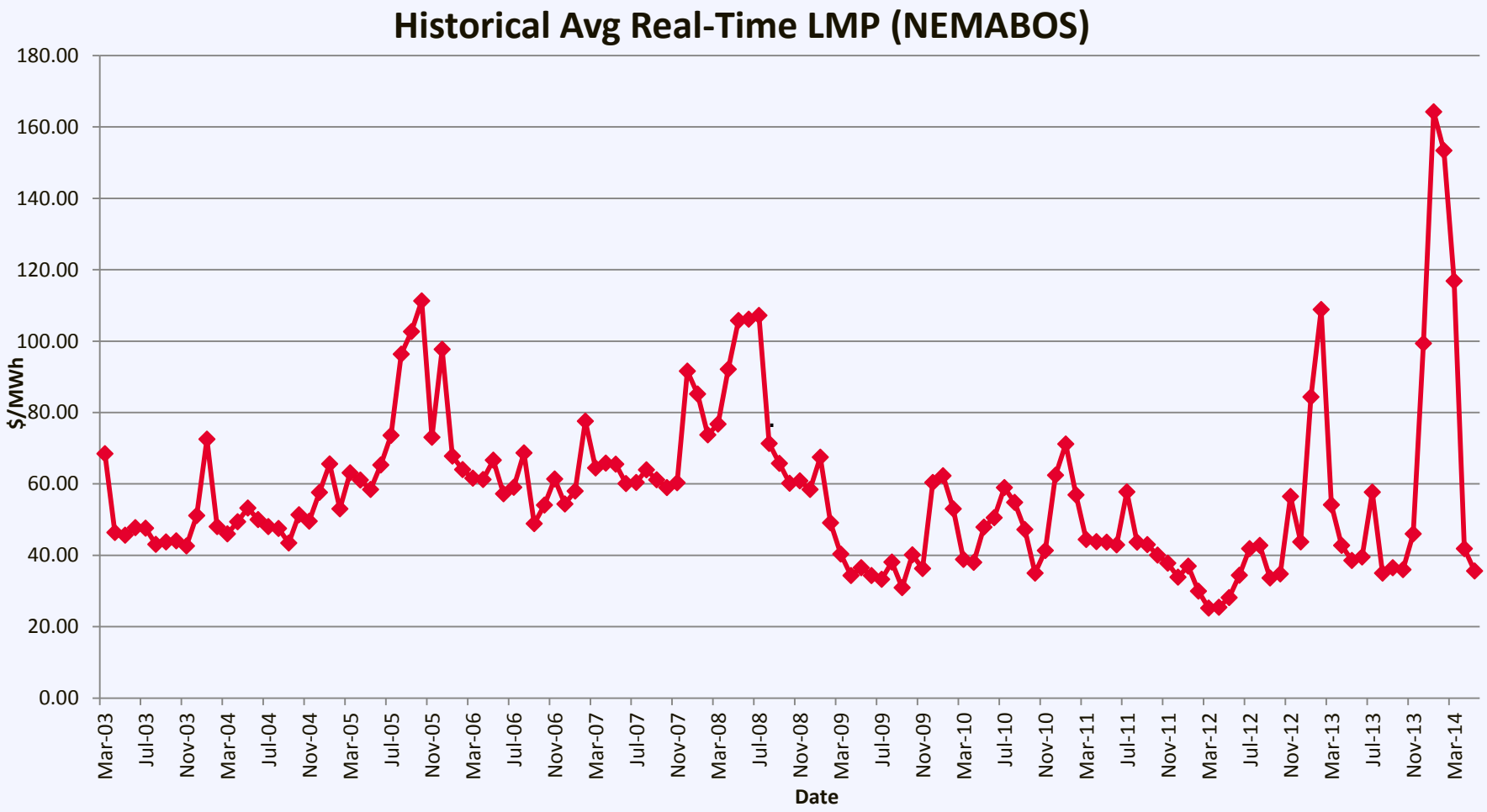
that employ

680 people

Powered by SunShot U.S. Department of Energy

Source: Solar Foundation

Benefit: Stabilize Energy Prices

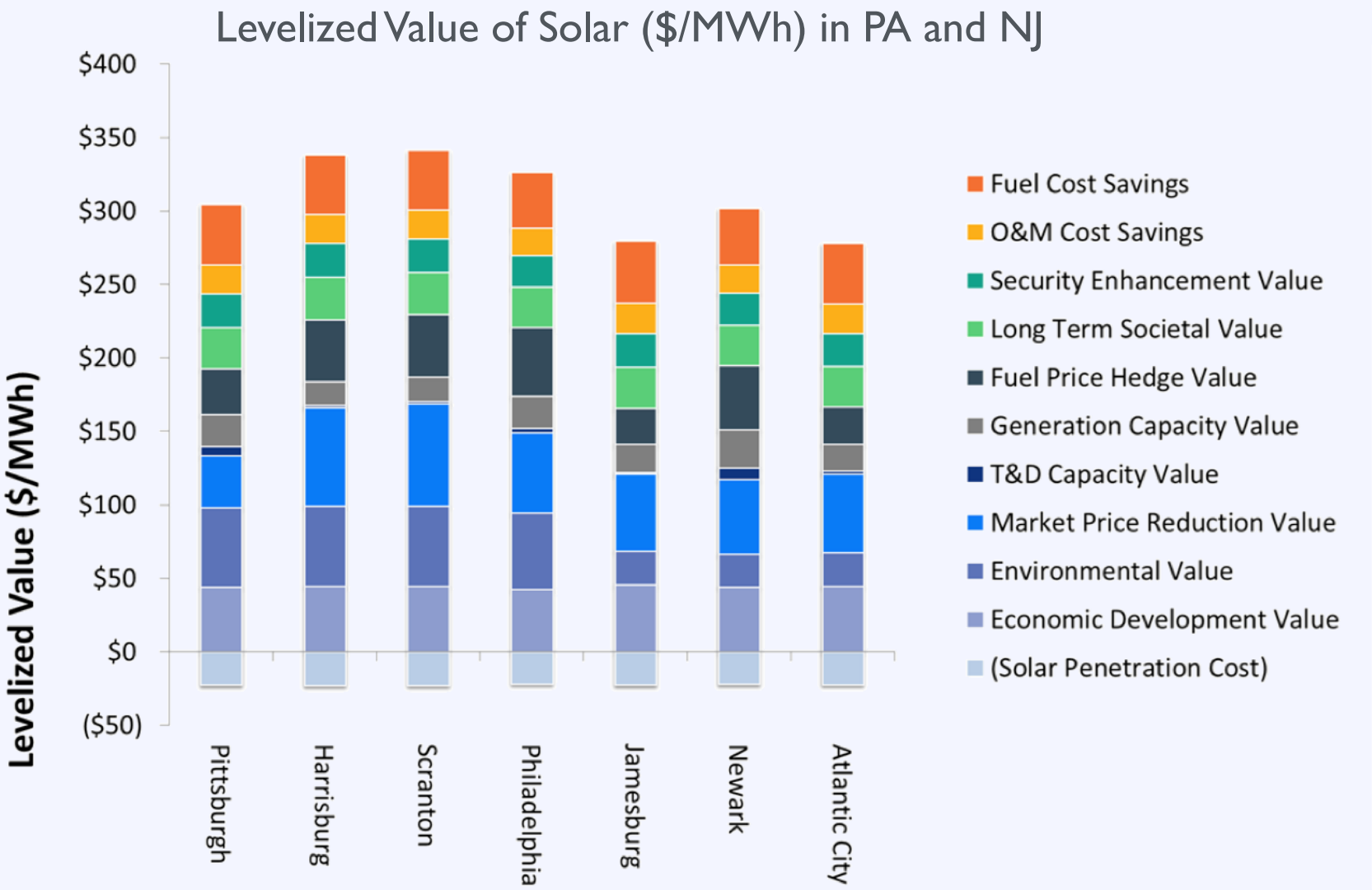


Source: NEPOOL

Benefits: Valuable to Electric Grid

- Avoided Energy Purchases
- Avoided T&D Line Losses
- Avoided Capacity Purchases
- Avoided T&D Investments
- Fossil Fuel Price Impacts
- Backup Power

Value to Community & Utility



Source: Clean Power Research http://mseia.net/site/wp-content/uploads/2012/05/MSEIA-Final-Benefits-of-Solar-Report-2012-11-01.pdf

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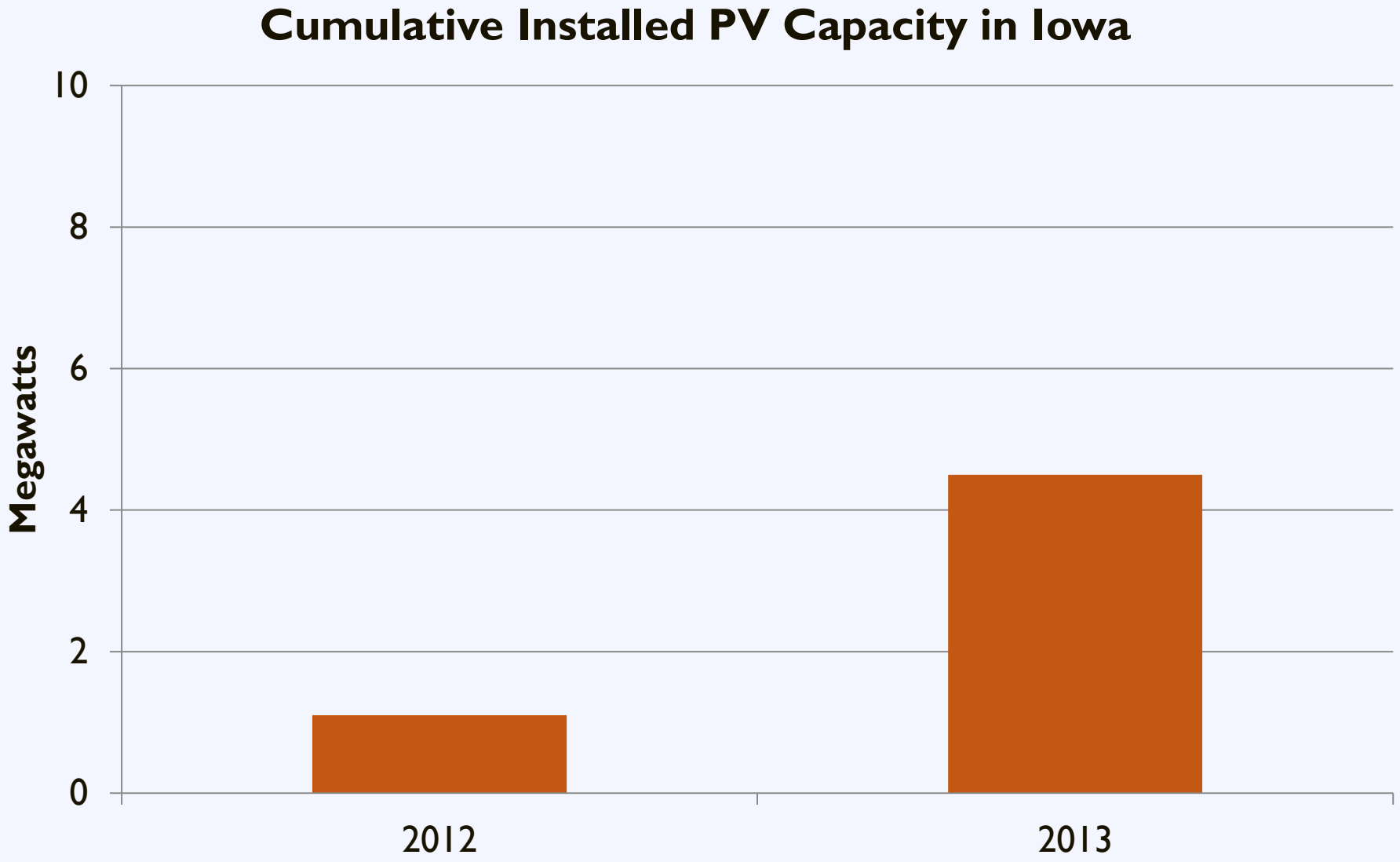
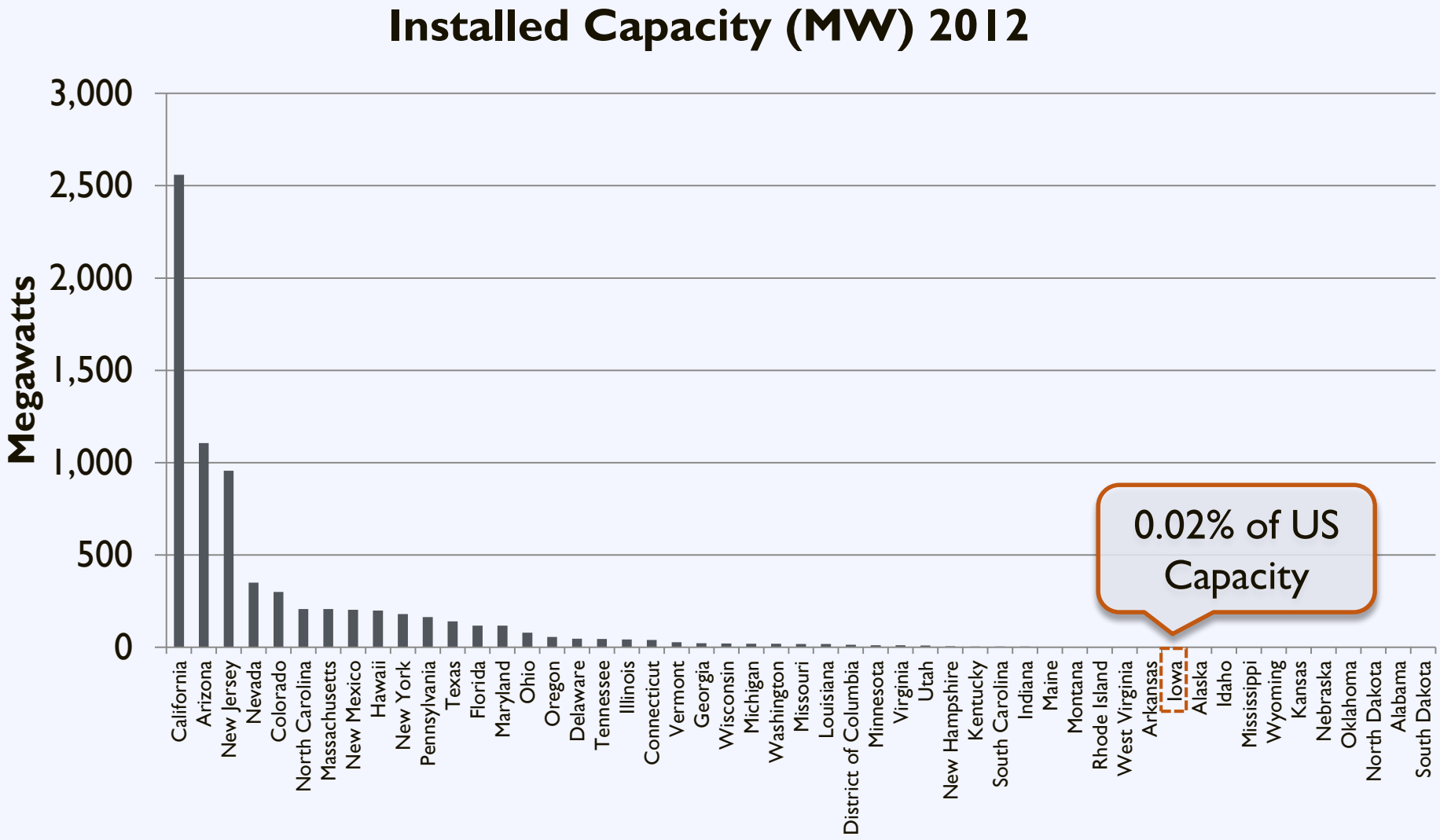
Iowa Solar Market



Source: IREC: US Solar Market Trends

US Solar Market



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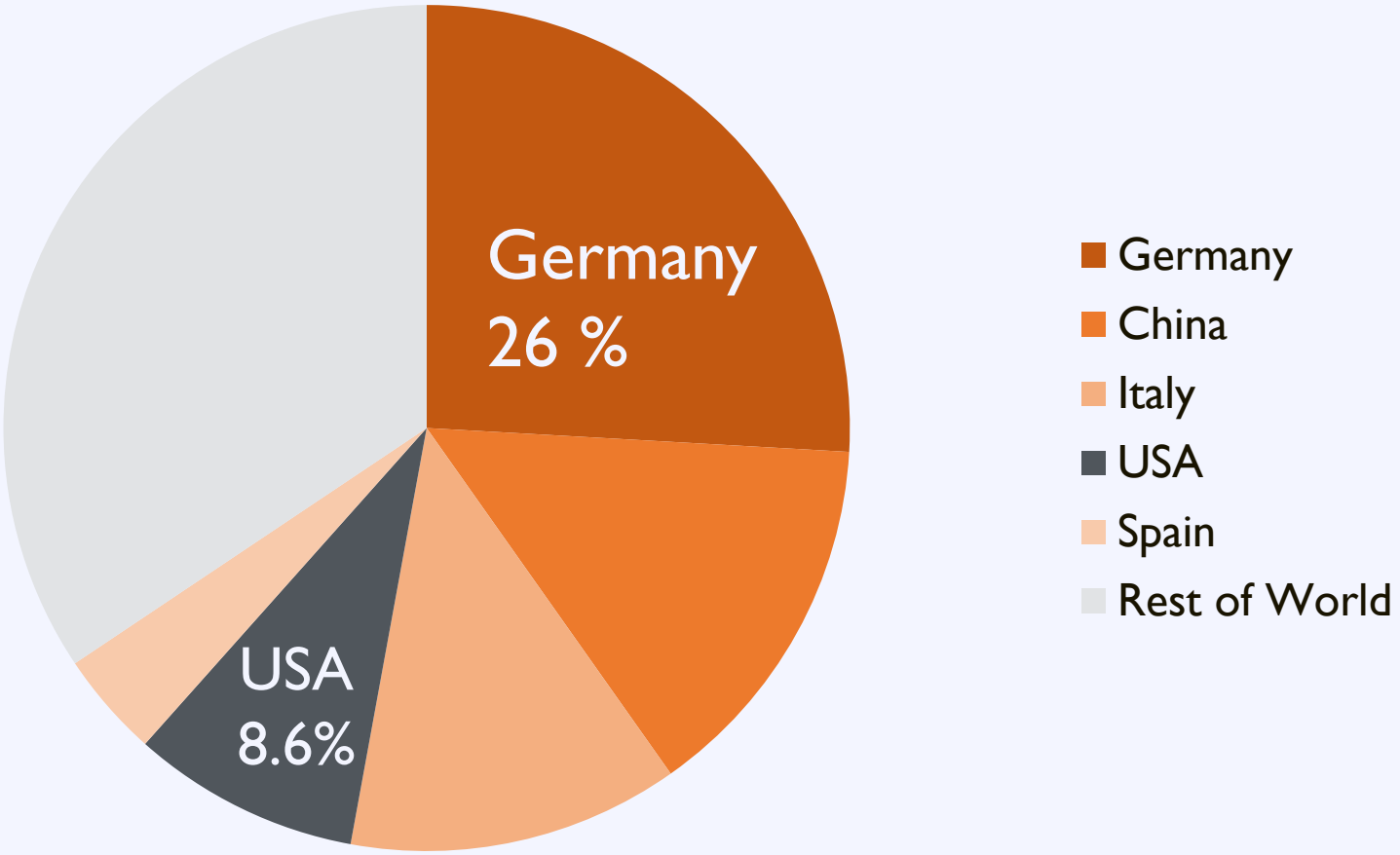
Iowa Solar Market

Iowa	US
0.4	**39**
watts per person	*watts per person*

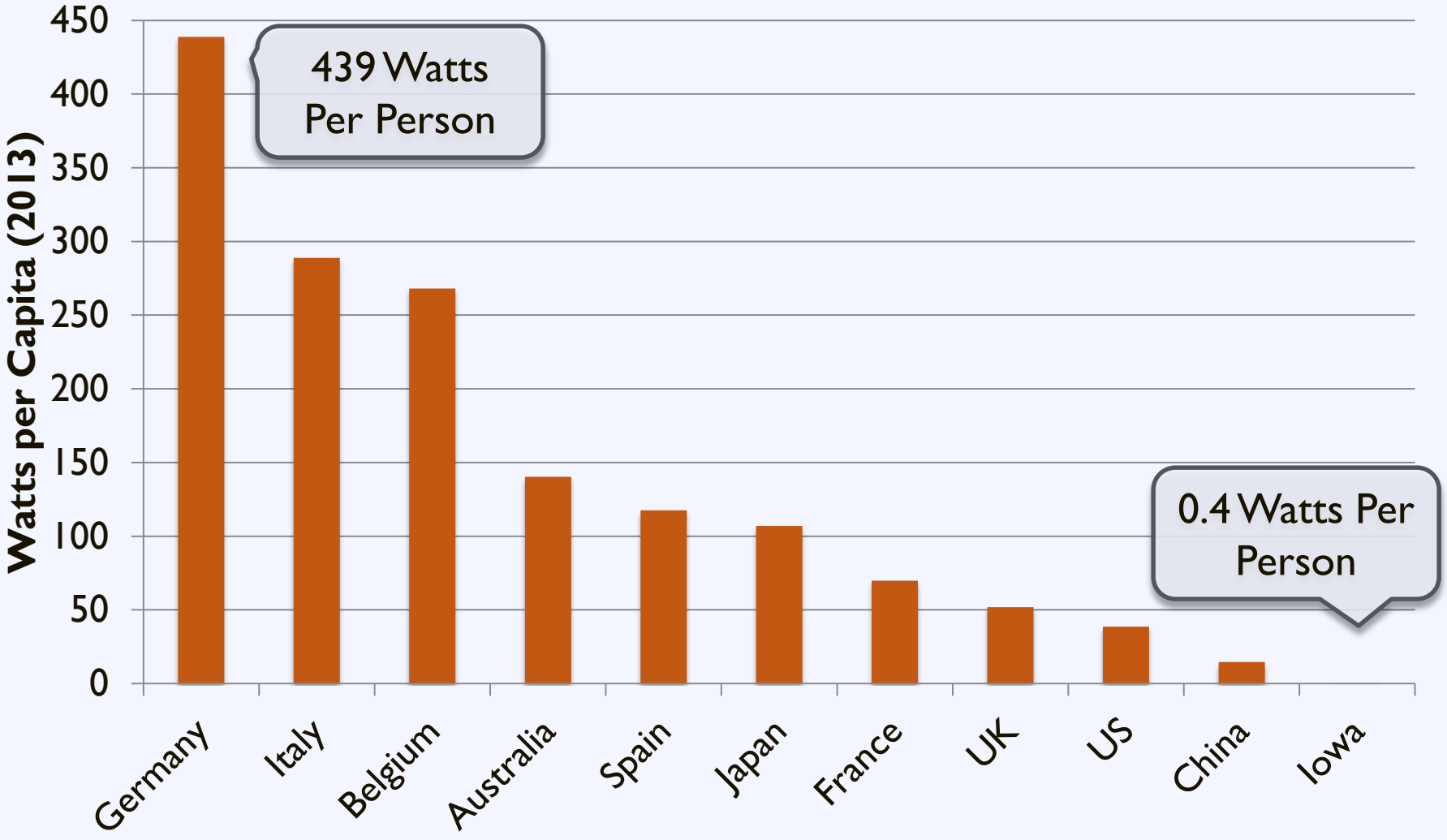
World Solar Market

Top 5 Countries Solar Operating Capacity (2013)



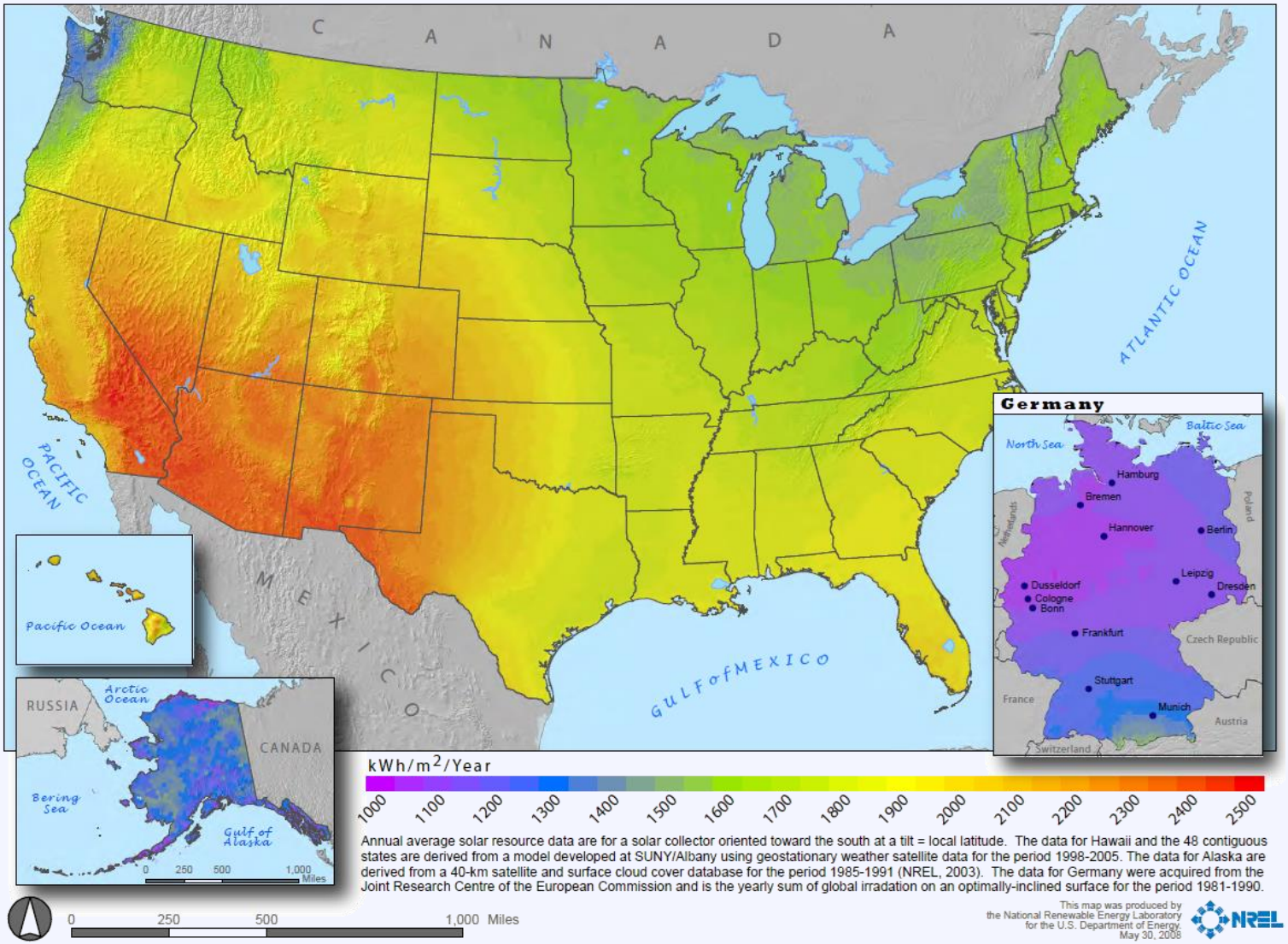
Source: REN 21

Installed Capacity per Capita



Source: REN 21, World Bank

US Solar Resource



Annual average solar resource data are for a solar collector oriented toward the south at a tilt = local latitude. The data for Hawaii and the 48 contiguous states are derived from a model developed at SUNY/Albany using geostationary weather satellite data for the period 1998-2005. The data for Alaska are derived from a 40-km satellite and surface cloud cover database for the period 1985-1991 (NREL, 2003). The data for Germany were acquired from the Joint Research Centre of the European Commission and is the yearly sum of global irradiation on an optimally-inclined surface for the period 1981-1990.

This map was produced by the National Renewable Energy Laboratory for the U.S. Department of Energy. May 30, 2008

NREL

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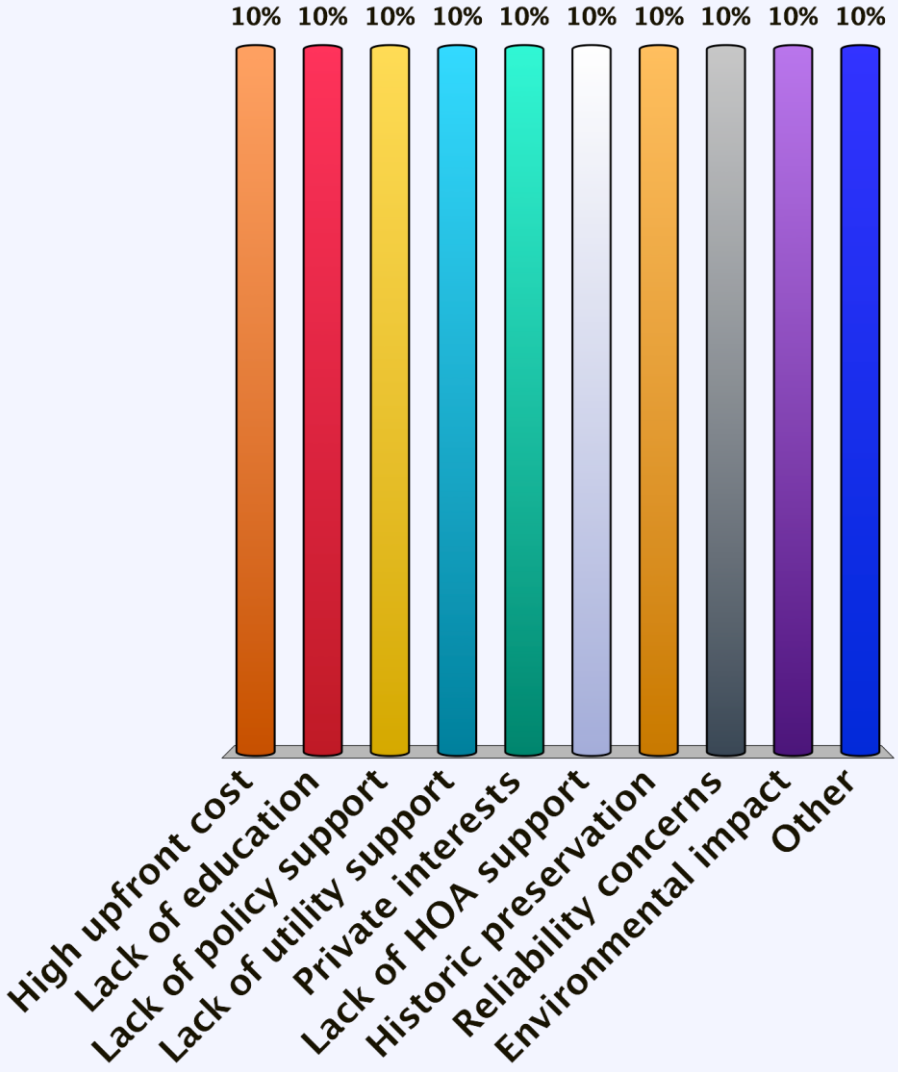
U.S. Department of Energy

Source: National Renewable Energy Laboratory

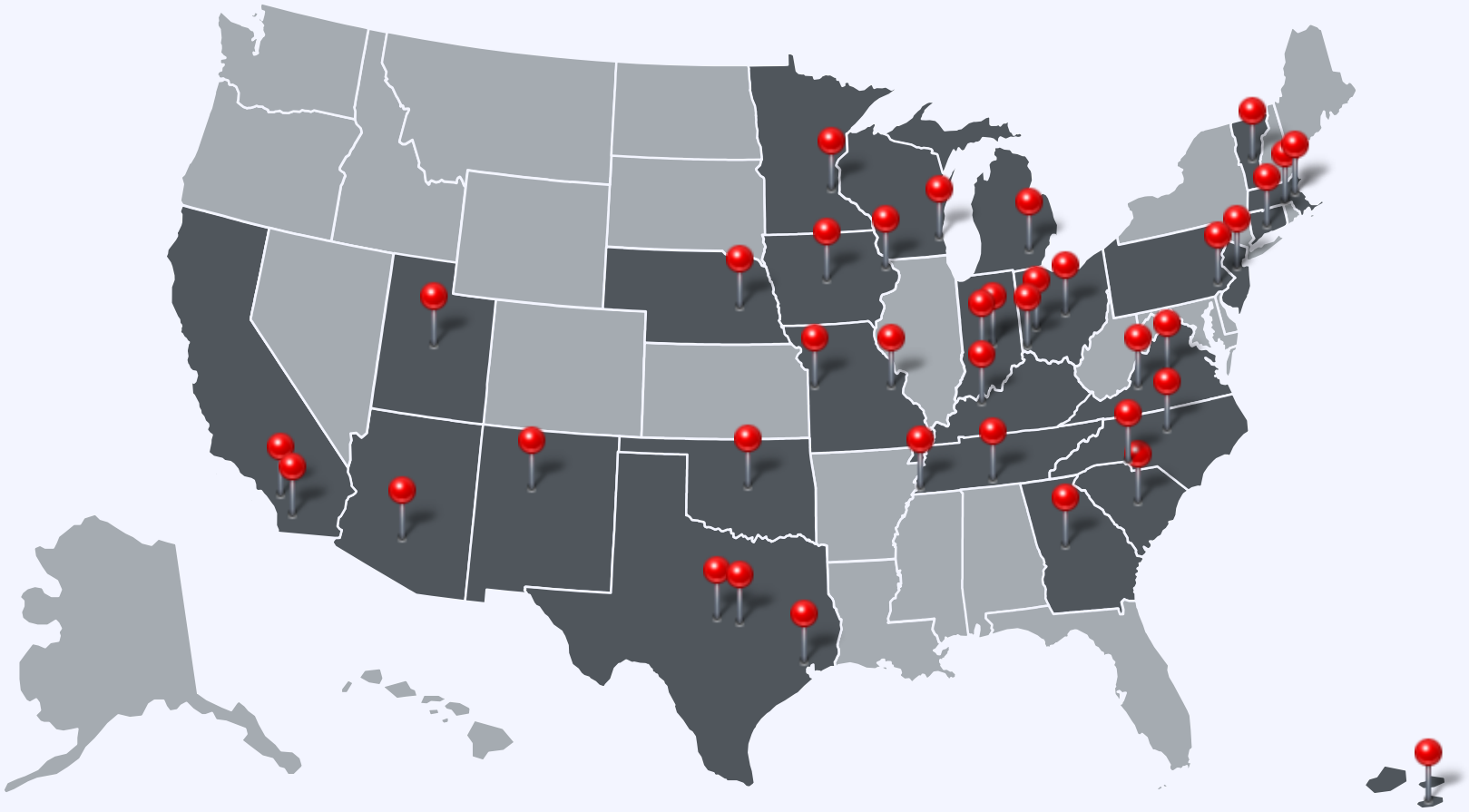
What are the top 3 barriers to solar adoption in your community?

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

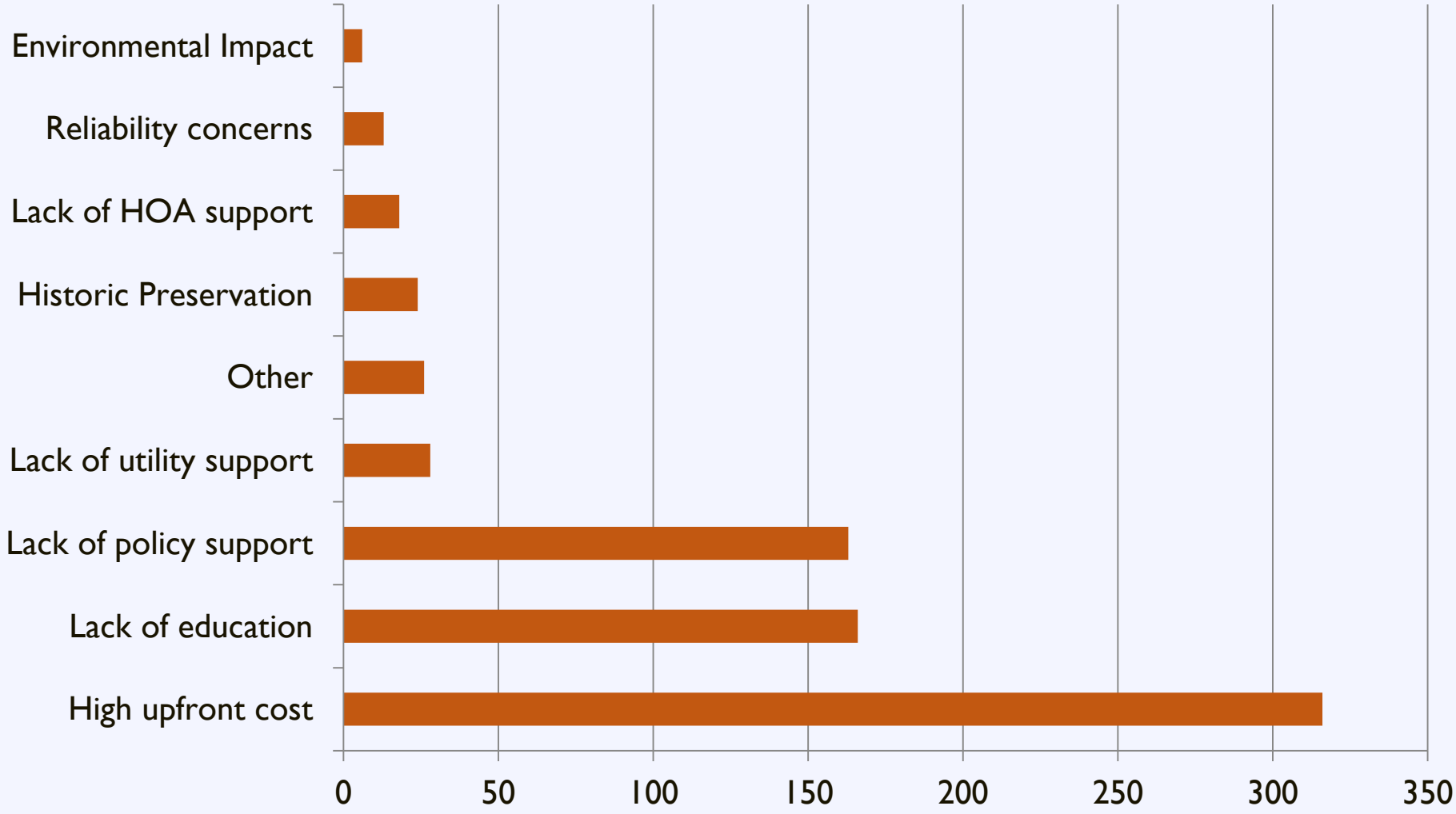


Regional Workshop Surveys

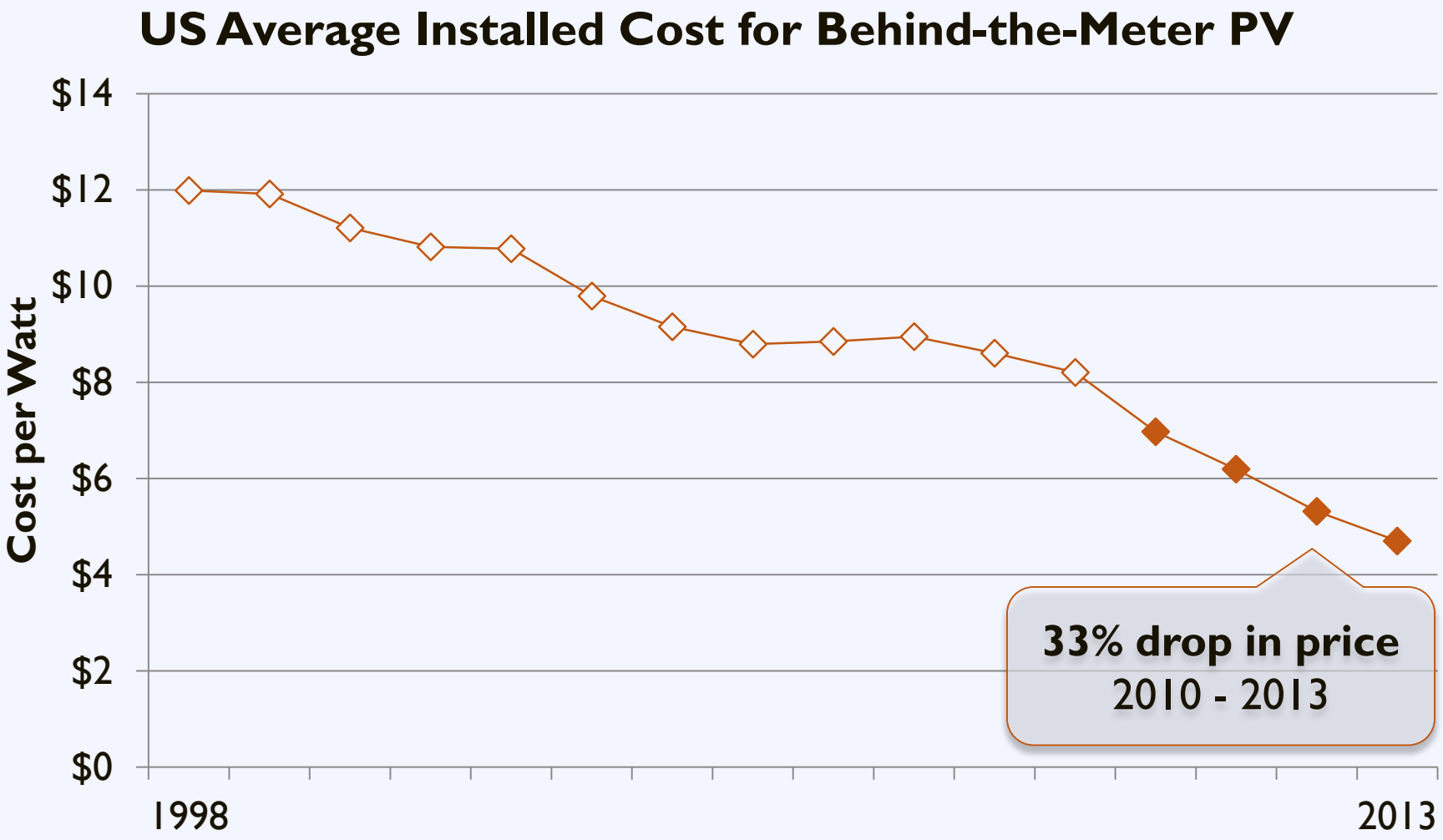
Q: What is the greatest barrier to solar adoption in your community?



Activity: Addressing Barriers



The Cost of Solar PV



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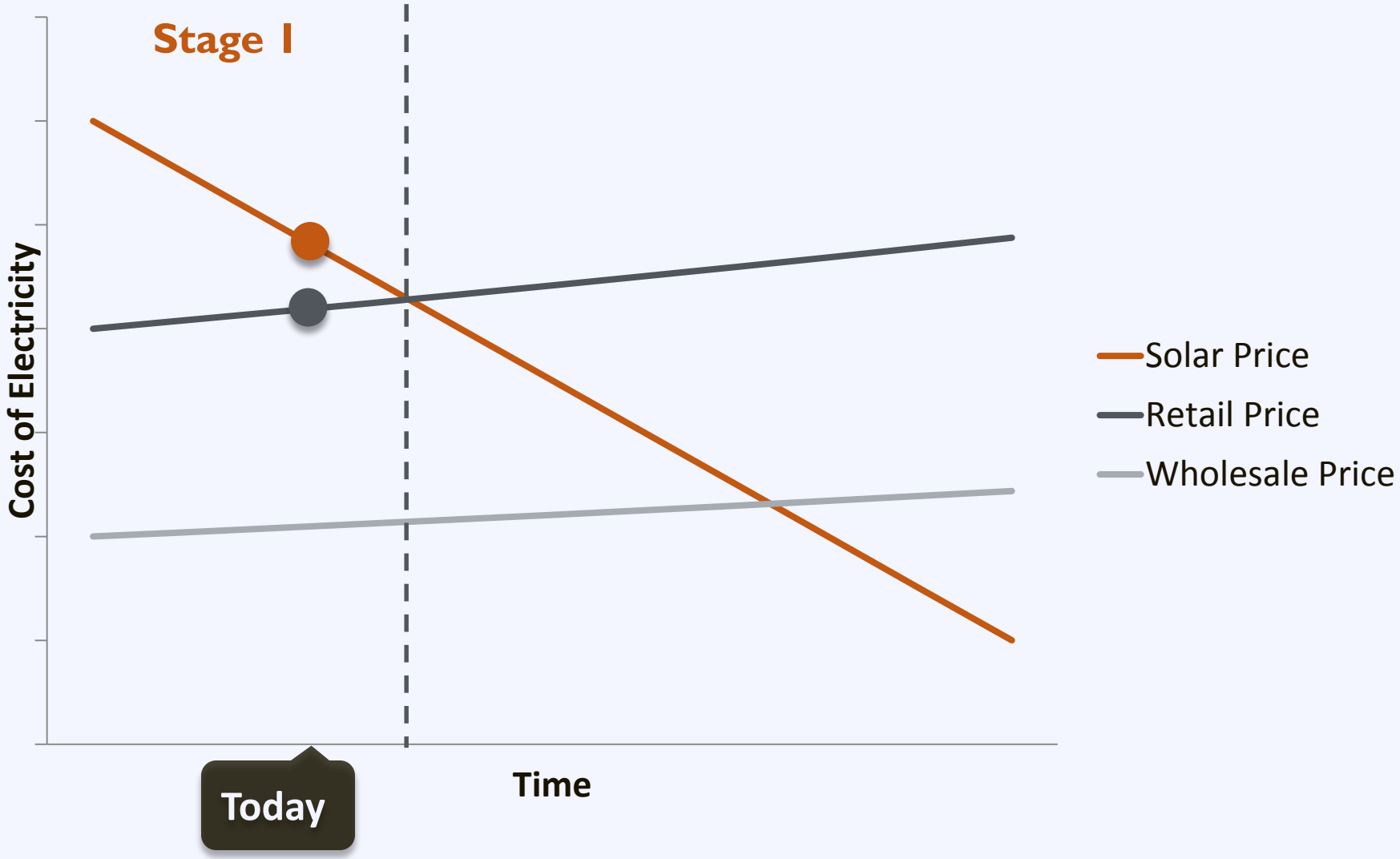
Tracking the Sun VI: The Installed Cost of Photovoltaics in the US from 1998-2012 (LBNL)

The Cost of Solar PV



Source: Solar Electric Power Association

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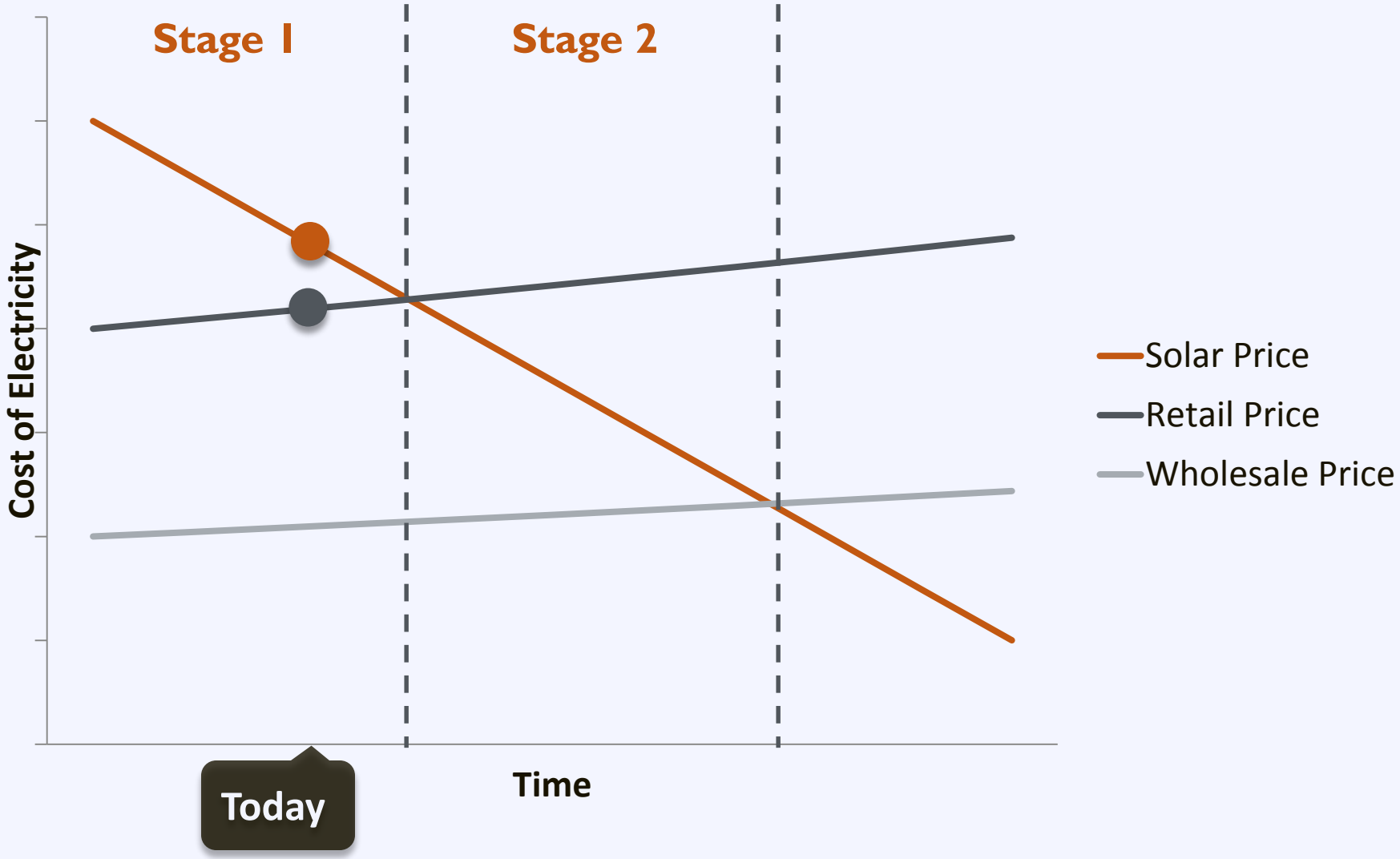

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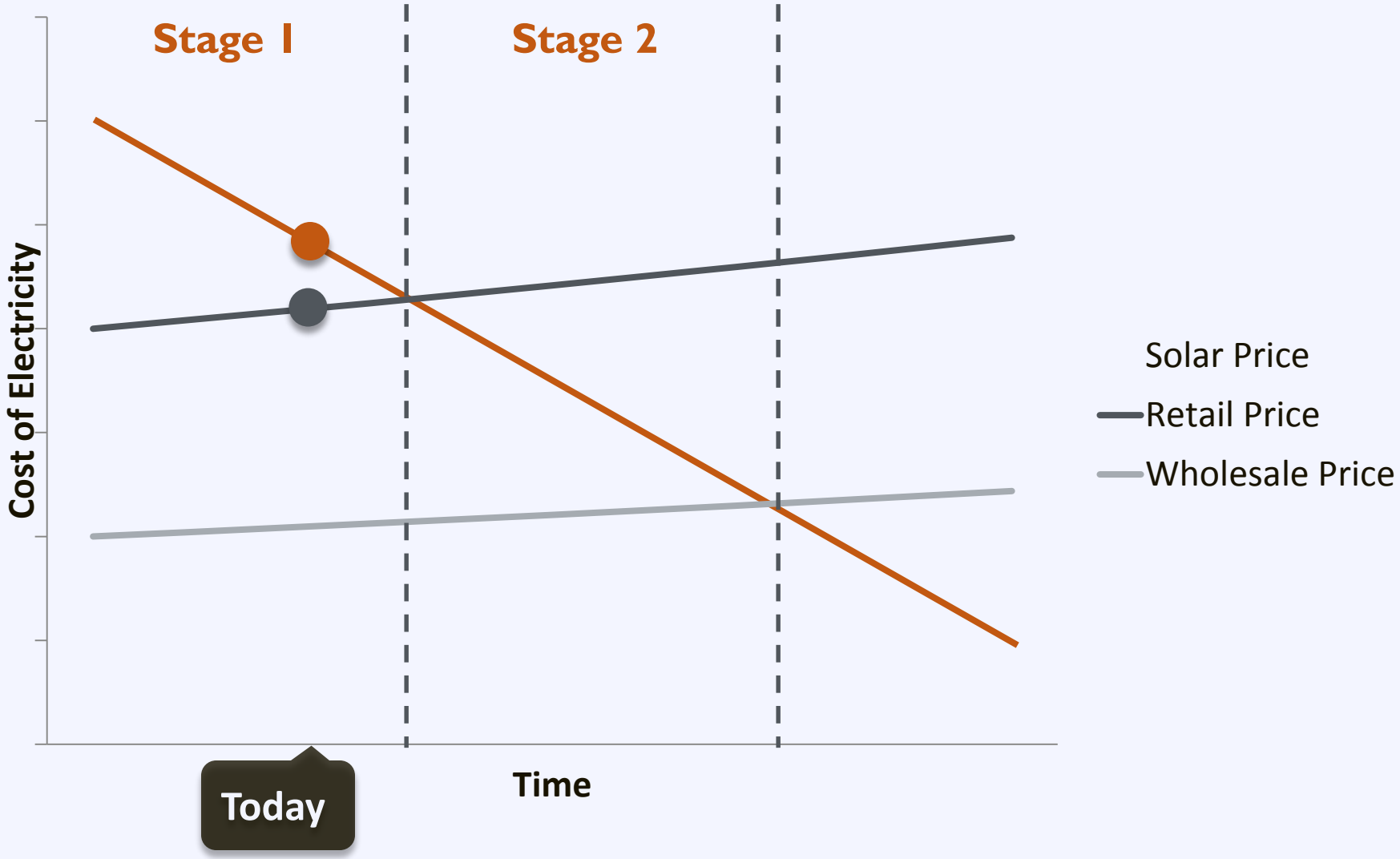
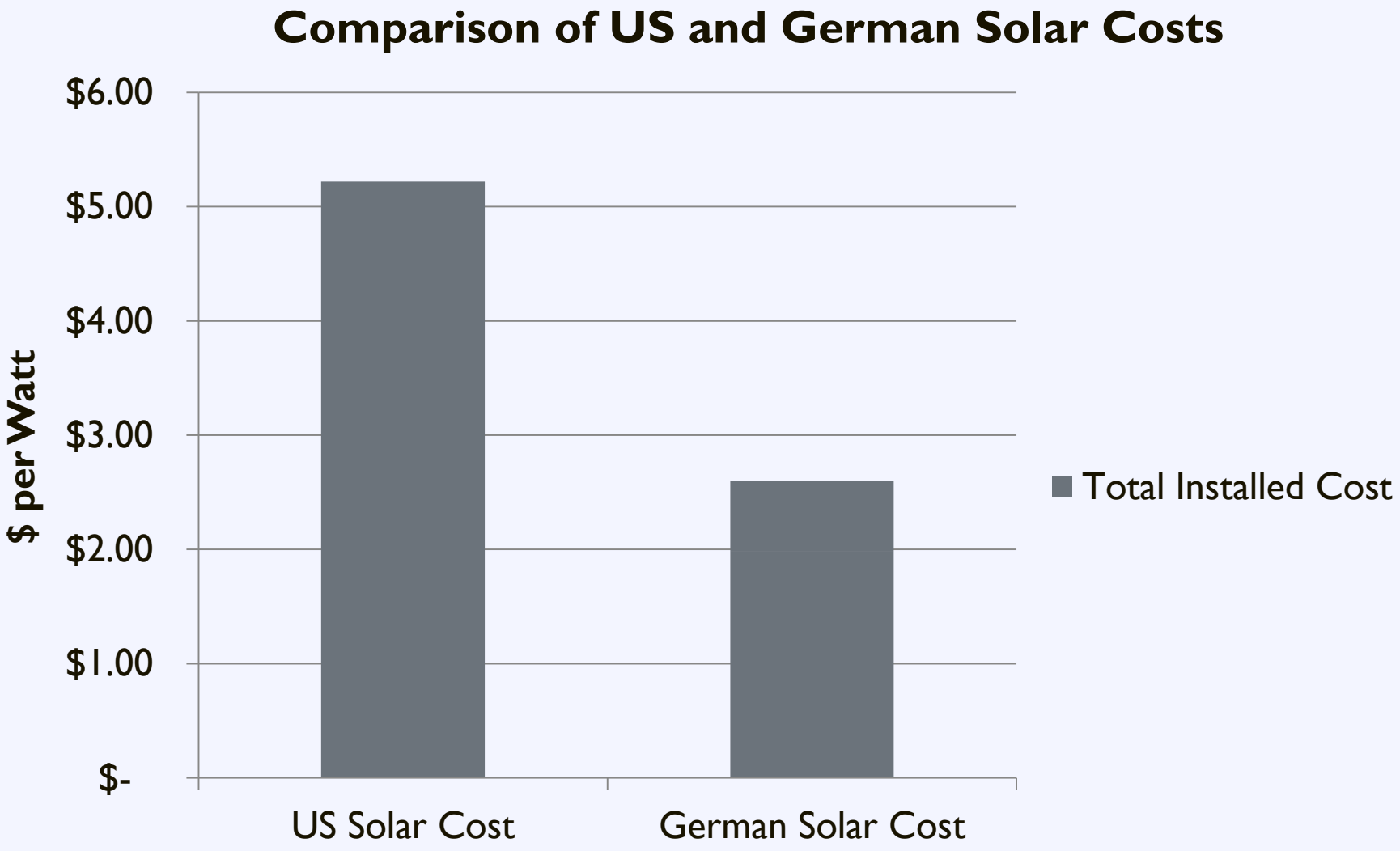


Source: Solar Electric Power Association

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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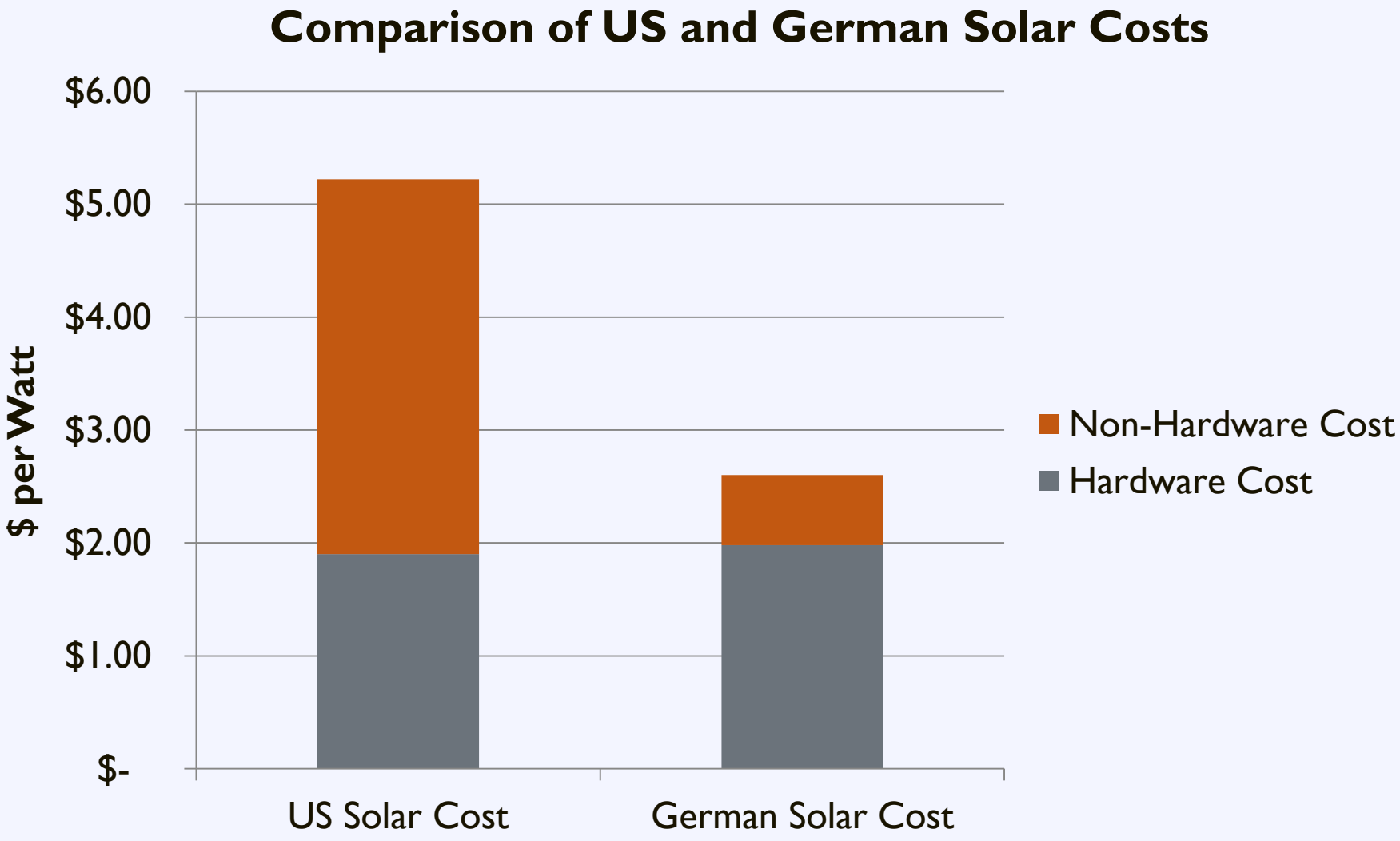
The Cost of Solar in the US



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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)

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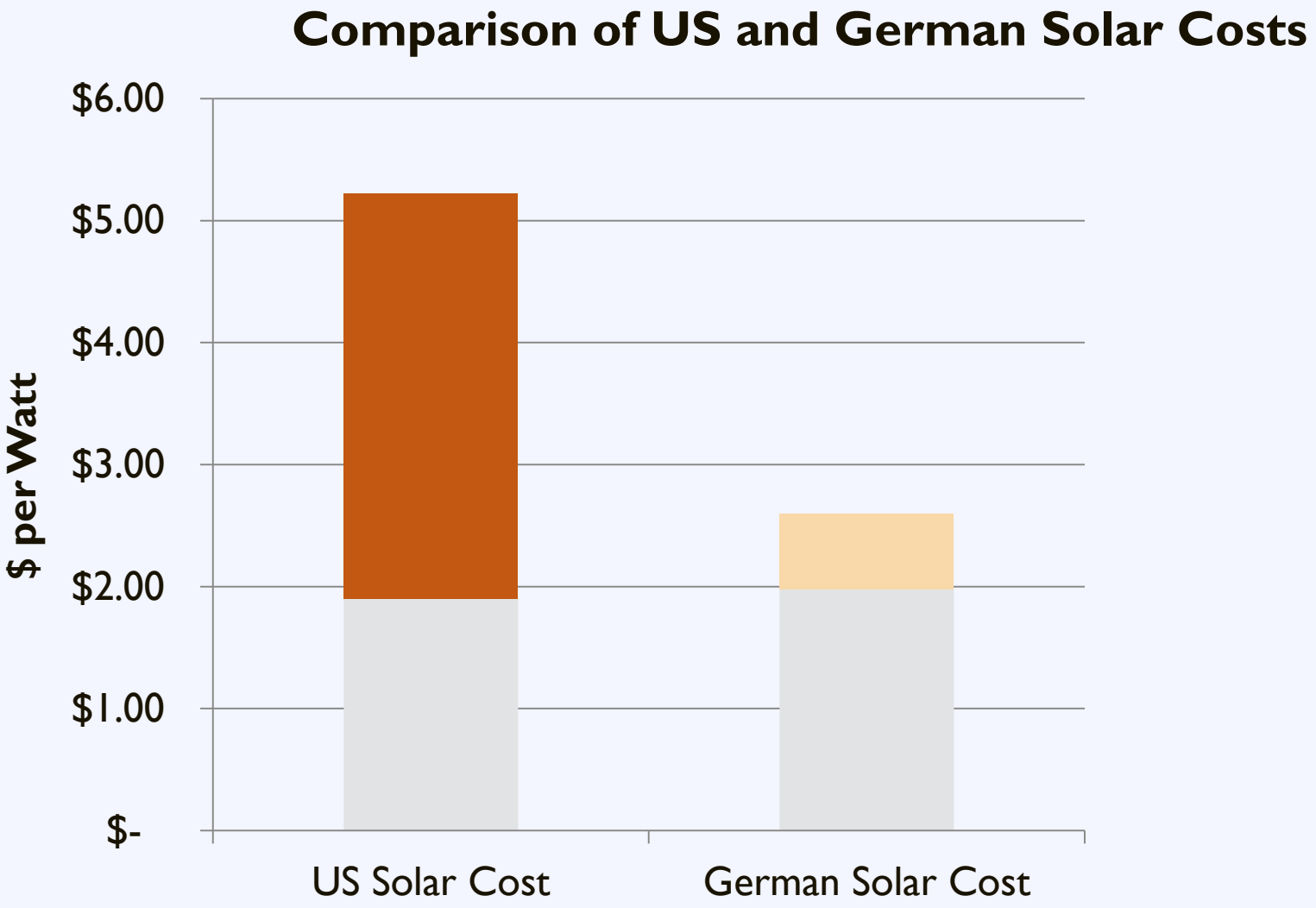

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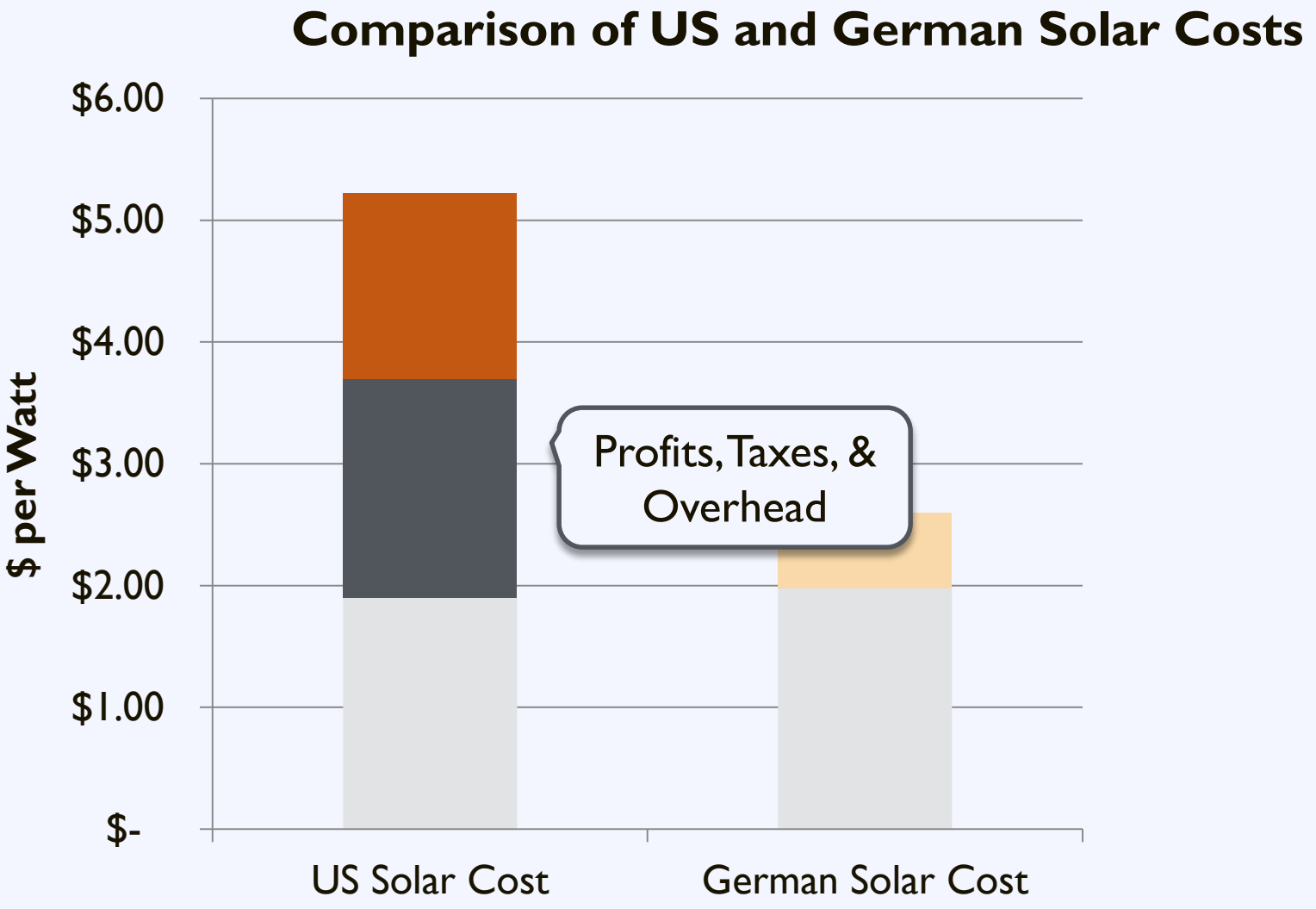

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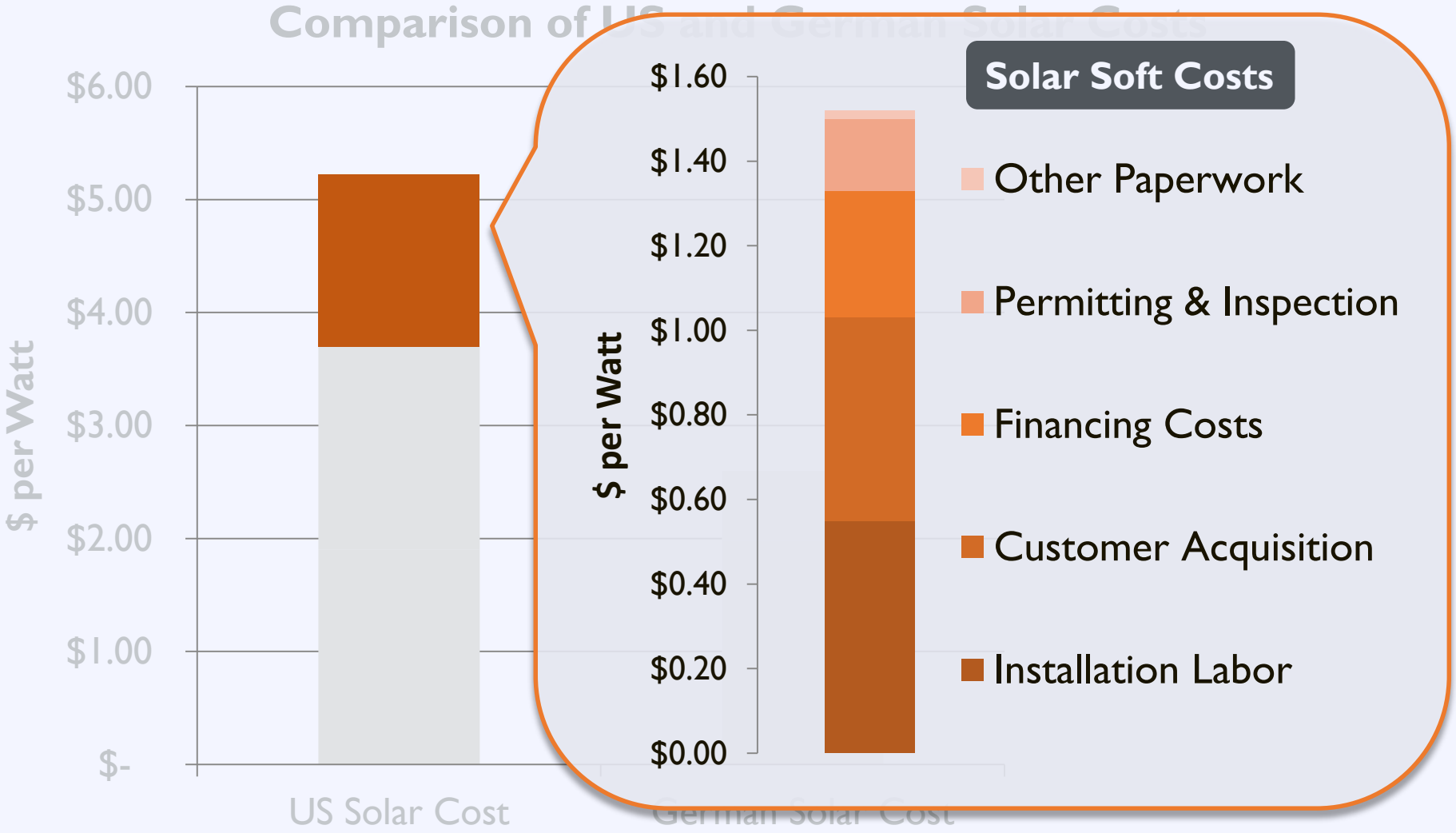
LBNL (http://emp.lbl.gov/sites/all/files/lbnl-6350e.pdf)(http://www1.eere.energy.gov/solar/pdfs/sunshot_webinar_20130226.pdf)

The Cost of Solar in the US



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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)

Challenge: Installation Time

New York City's Goal

100 days

from inception to completion

Germany Today

8 days

from inception to completion

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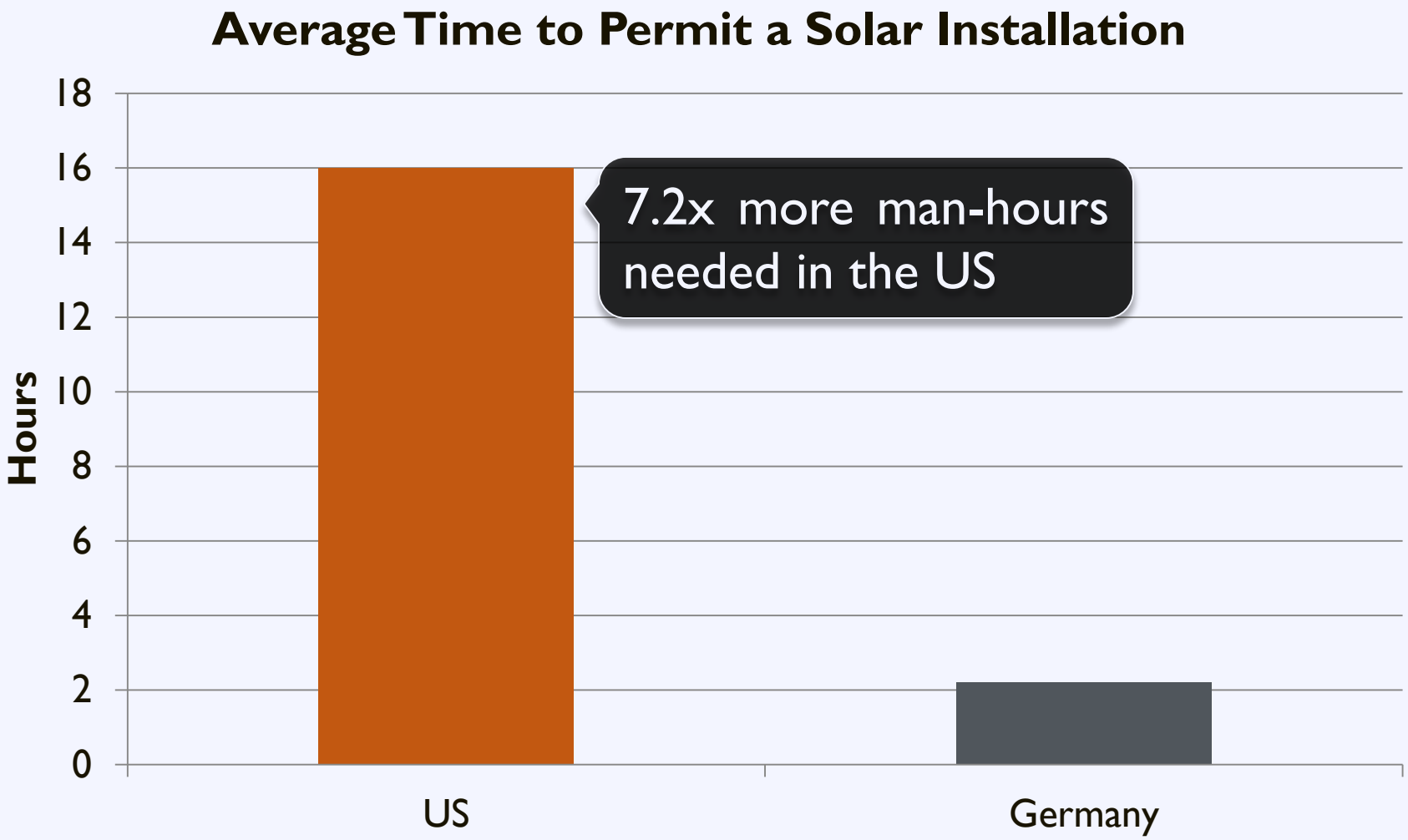
U.S. Department of Energy

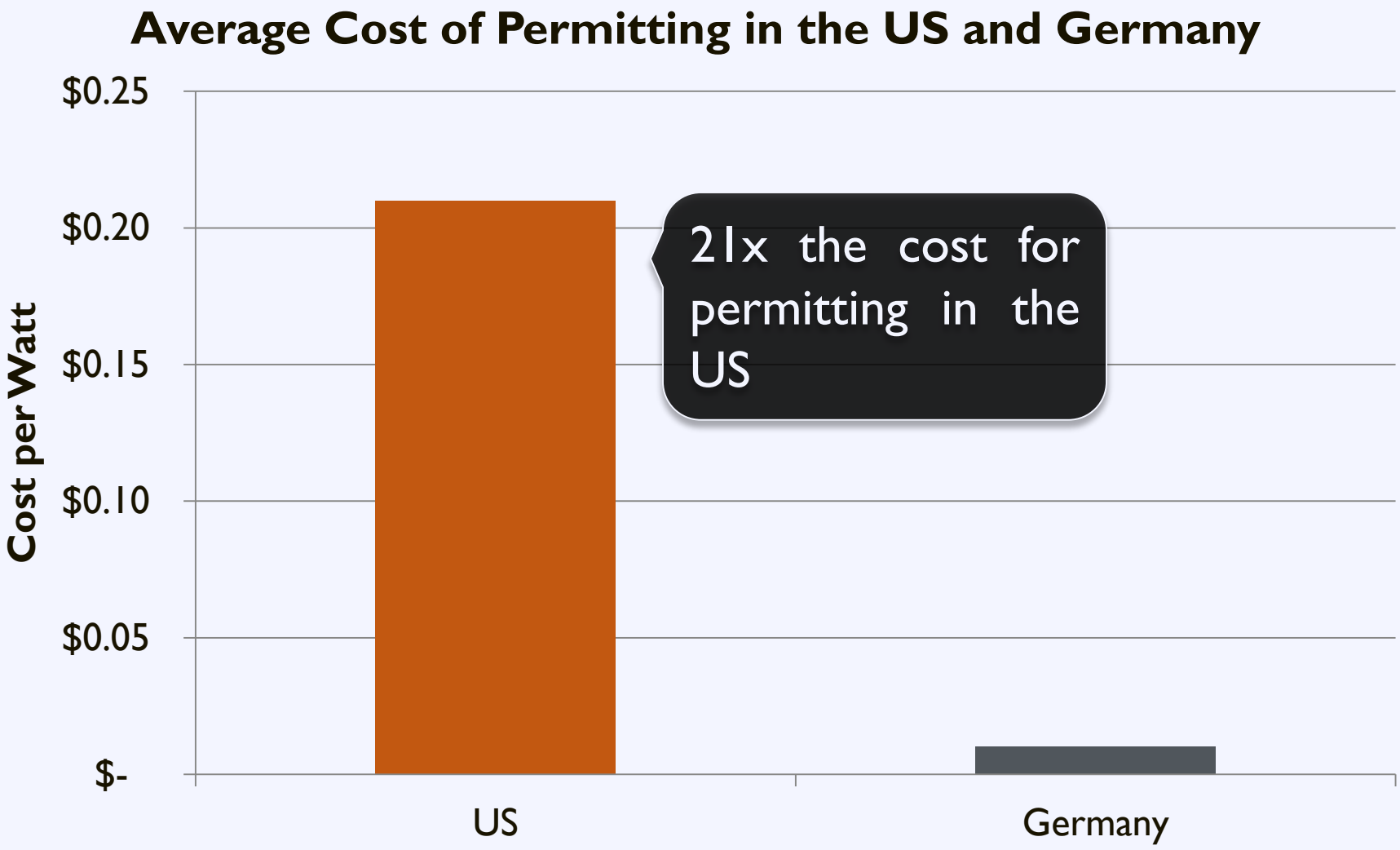
Photon Magazine

Time to Installation



Source: NREL, LBNL

Permitting Costs



Source: NREL, LBNL

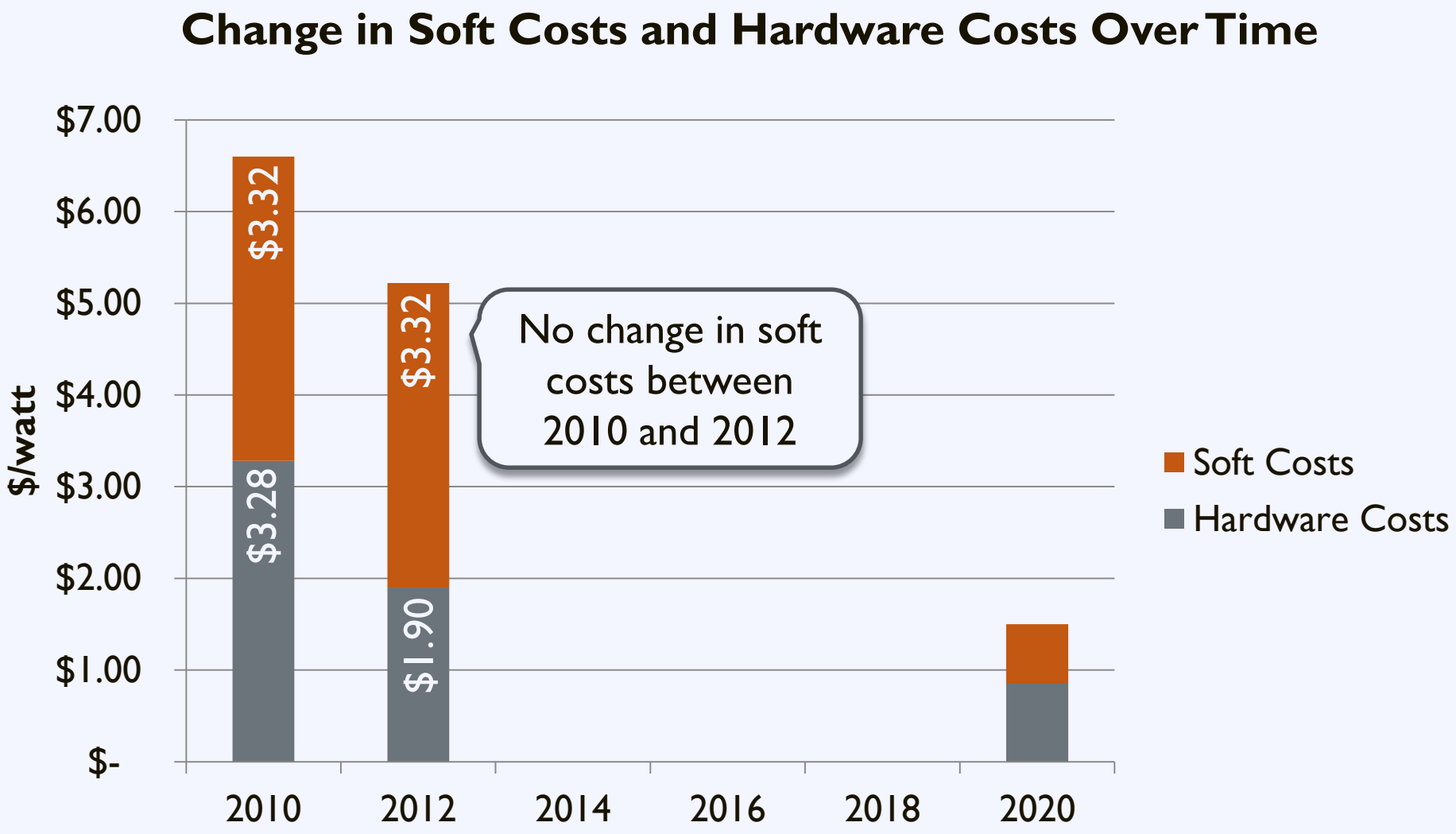
Germany's Success

Consistency and Transparency

through

Standardized Processes

The Cost of Solar in the US



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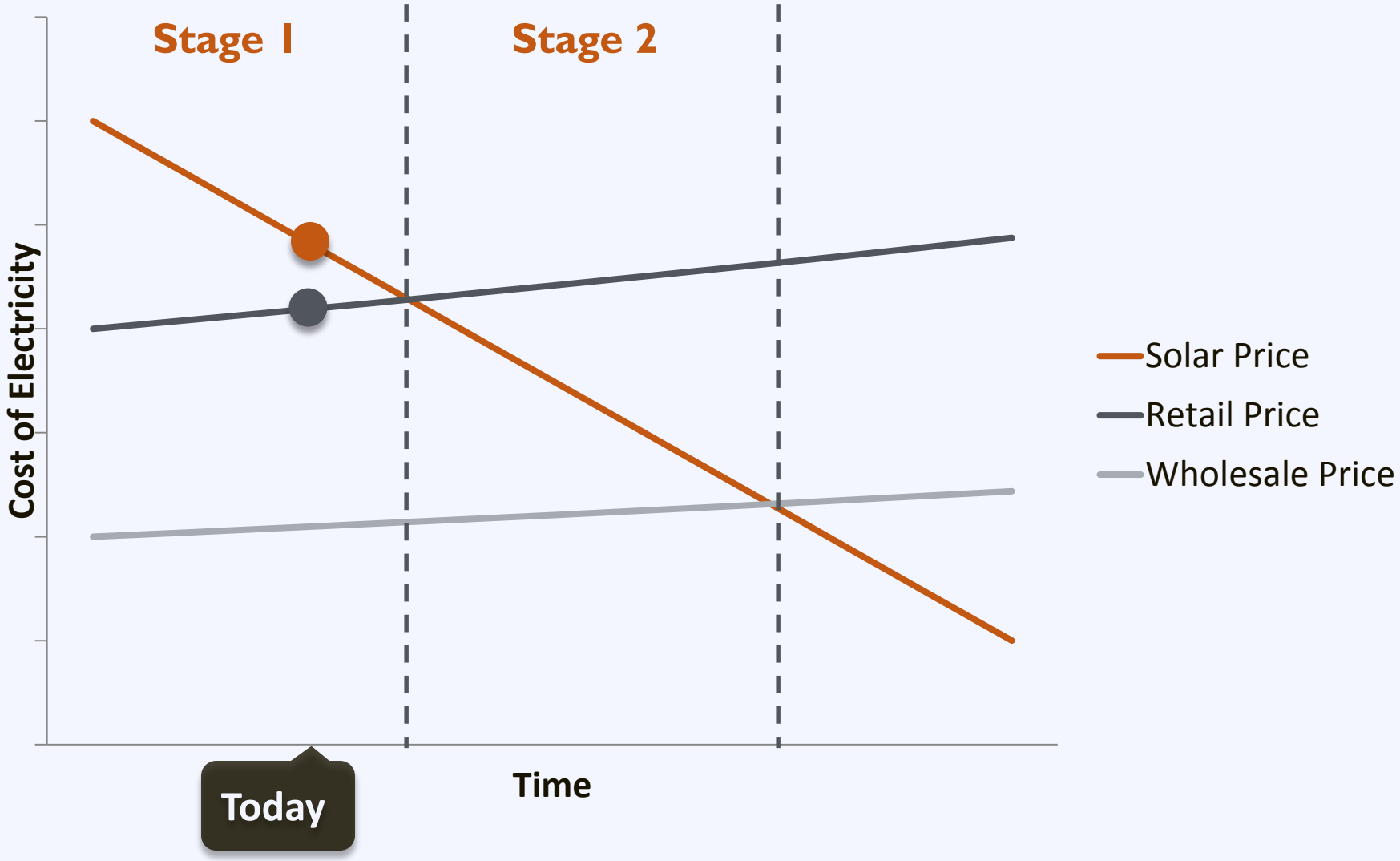
Workshop Goal

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

Agenda

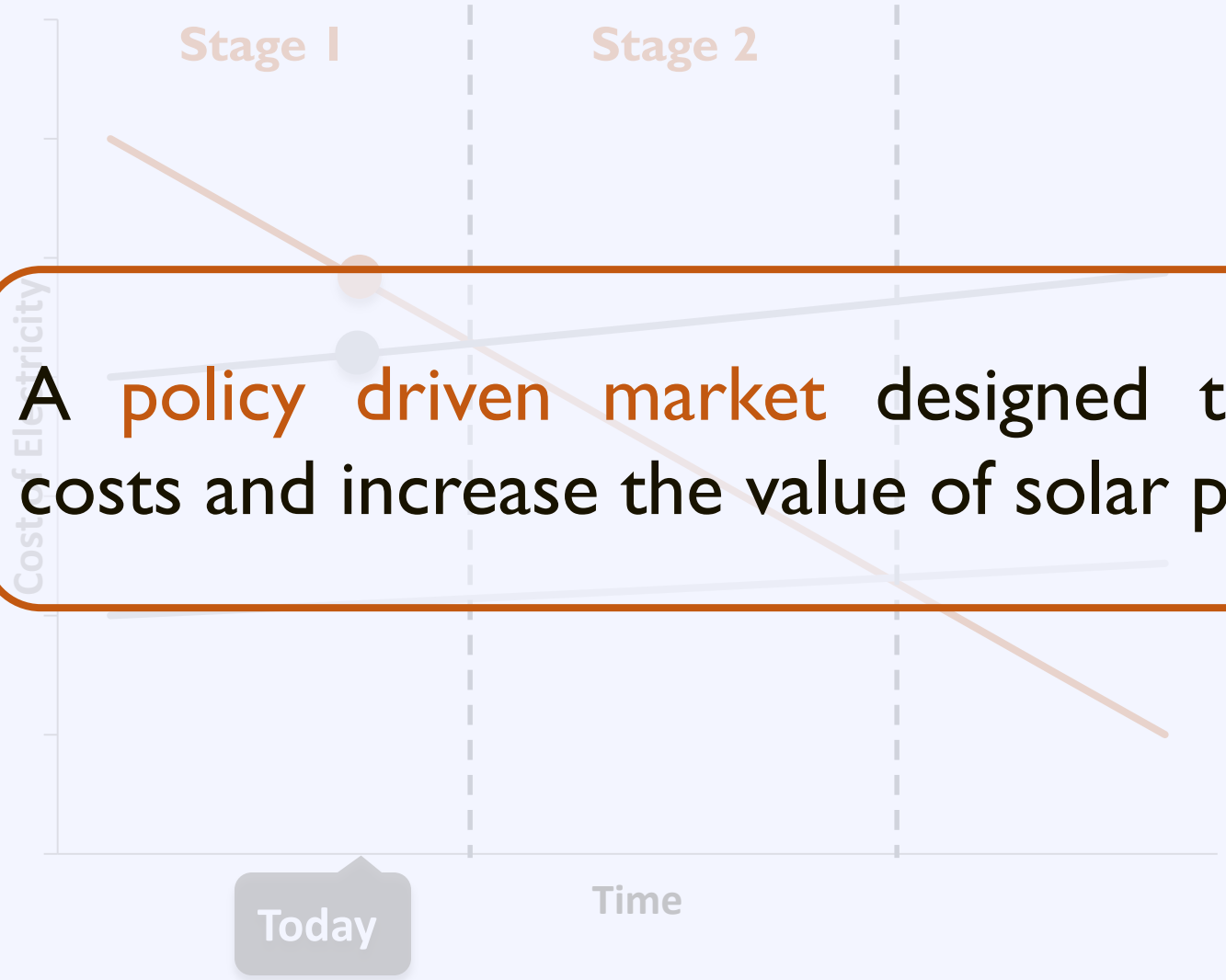
10:20 – 10:50	Putting Solar Energy on the Local Policy Agenda
10:50 – 11:20	State of the Local Solar Market
11:20 – 11:50	Federal, State, and Utility Policy Drivers
11:50 – 12:15	*Break & Lunch*
12:15 – 12:45	Planning for Solar: Getting Solar Ready
12:45 – 01:20	Solar Market Development Tools
01:20 – 01:30	*Break*
01:30 – 02:30	Solar in Iowa: A Local Perspective
02:30 – 02:50	Developing Solar Policy for Your Community
02:50 – 03:00	Next Steps

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	State Tax Credits	Property & Sales Tax Exemptions
	Net Metering	Interconnection	Solar Access

A Policy Driven Market

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

Investment Tax Credit

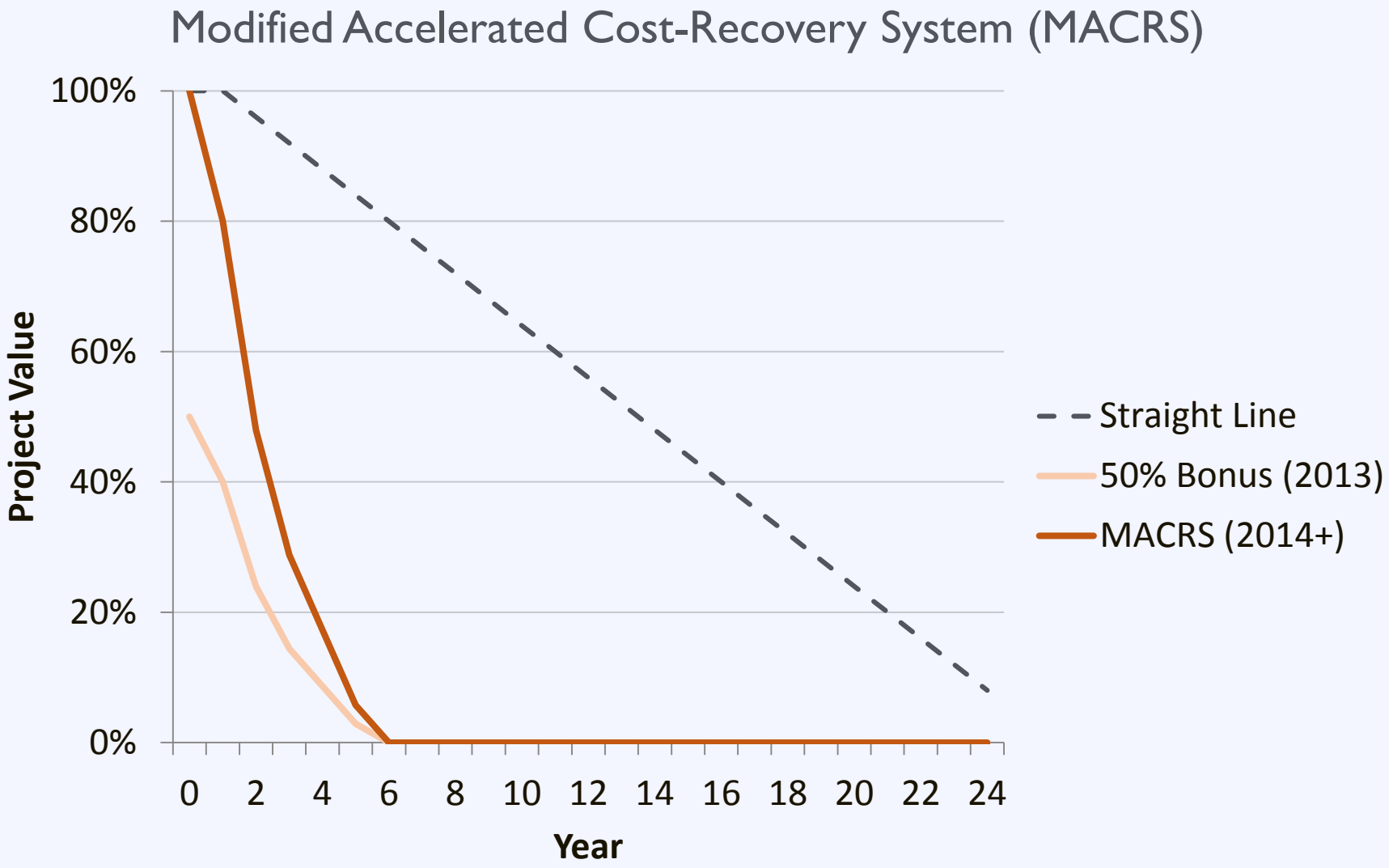
Type: Tax Credit

Eligibility: For-Profit Organization

Value: 30% of the installation cost

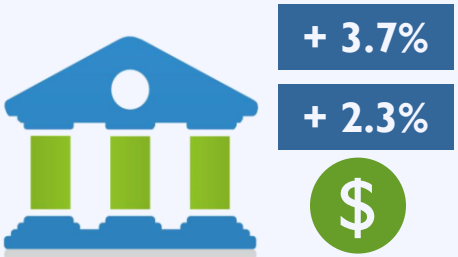
Availability: Through 2016

Accelerated Depreciation

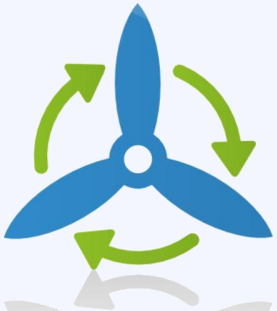


Qualified Energy Conservation Bond

US Treasury



Local Gov



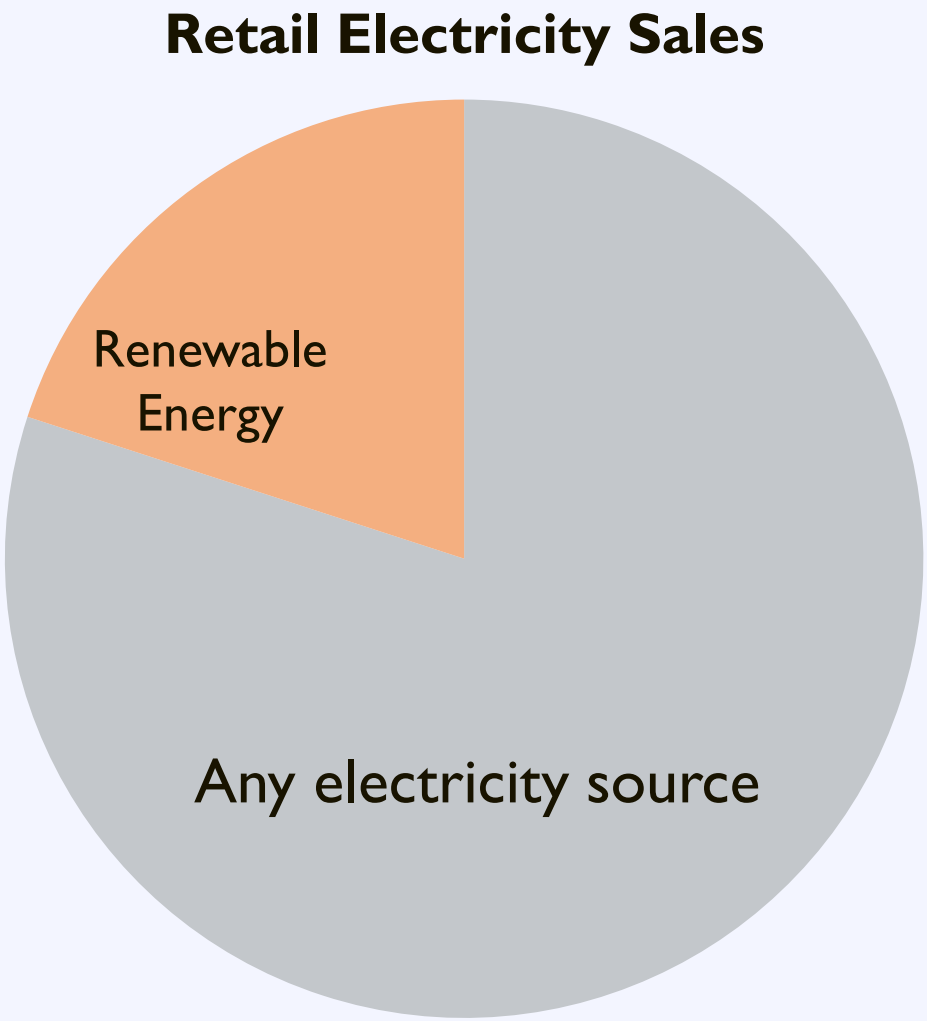
Project

Bond Holders

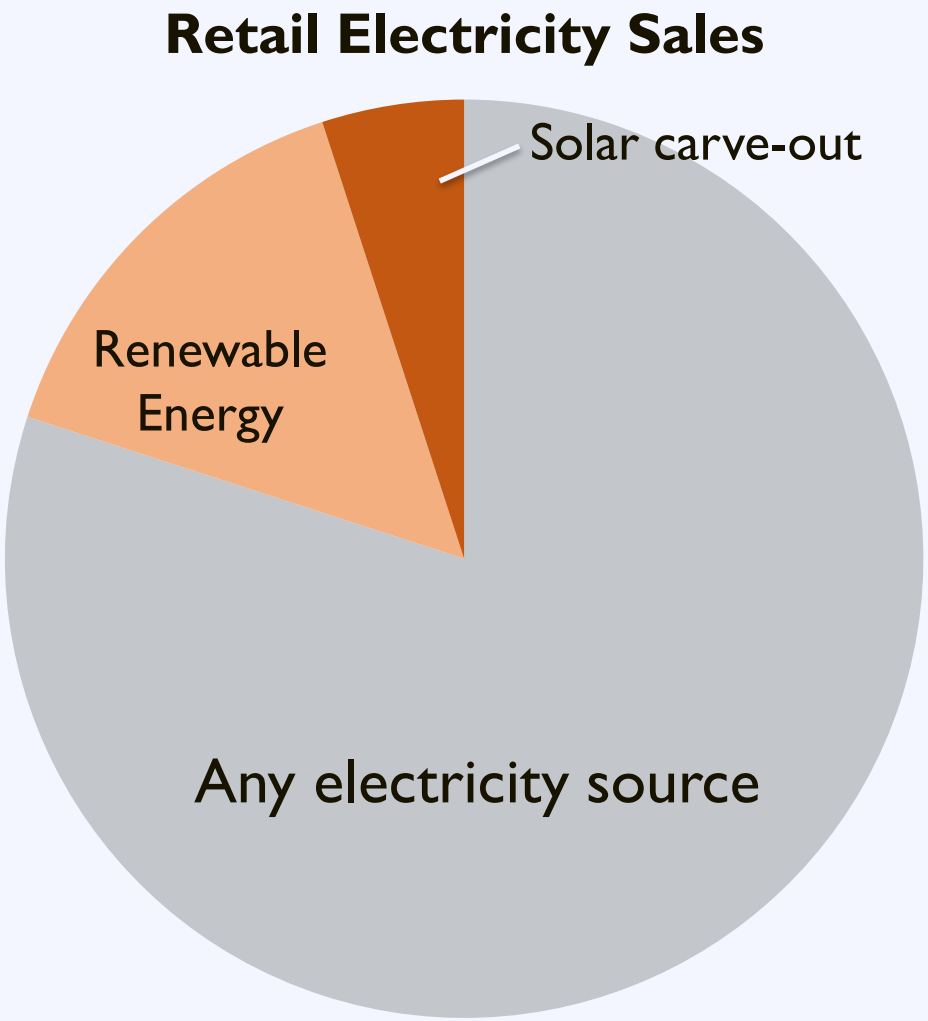
A Policy Driven Market

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

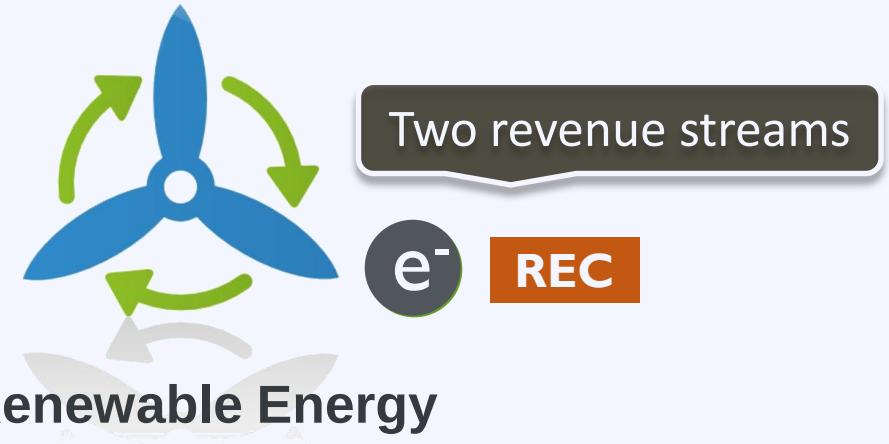
Renewable Portfolio Standard



Renewable Portfolio Standard

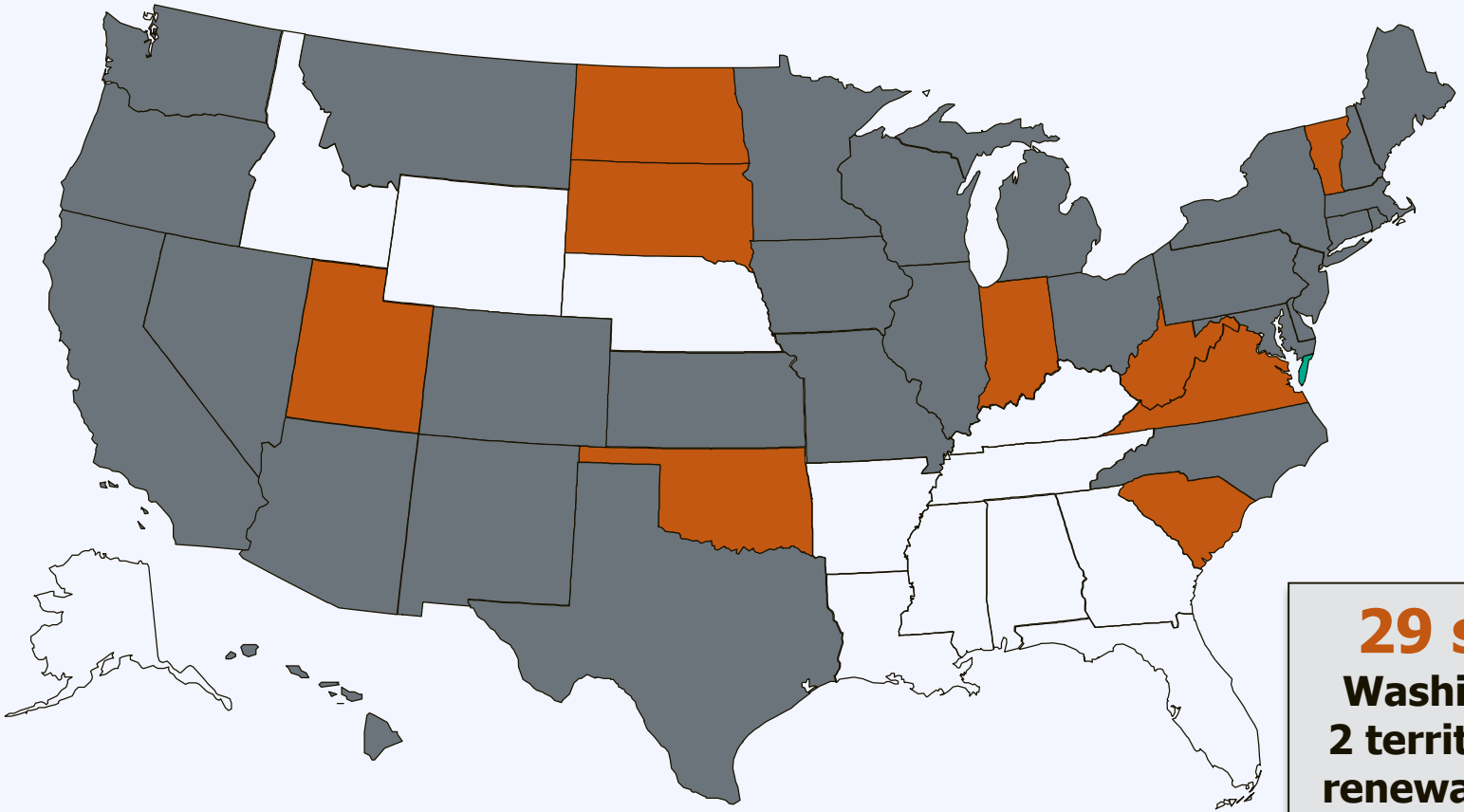


Renewable Portfolio Standard



Renewable Portfolio Standard

www.dsireusa.org / September 2014



Renewable portfolio standard

Renewable portfolio goal

29 states + Washington DC + 2 territories have a renewable portfolio standard

(9 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 by Cumulative Installed Grid-Connected PV Capacity (as of Q4 2013)

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	Massachusetts	Y	Y
6	Nevada	Y	Y
7	Colorado	Y	Y
8	Hawaii	Y	N
9	New Mexico	Y	Y
10	New York	Y	Y

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Source: DSIRE Solar (http://dsireusa.org/documents/summarymaps/Solar_DG_RPS_map.pdf); IREC, U.S. Solar Market Trends 2013 (http://www.irecusa.org/annual-u-s-solar-market-trends-report/)

Iowa: RPS Status

Investor-Owned Utilities

105 MW target
(already met)

75.7% of state market

Muni & Coop Utilities

no target

24.7% of state market

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U.S. Department of Energy

Source: DSIRE

A Policy Driven Market

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

Renewable Energy Production Tax Credit

- 1.5 cents/kWh for electricity produced
- Available to residential, commercial, industrial, & agricultural entities
- Expires 01/01/2017
- May not be taken with the state solar energy systems tax credit

Solar Energy Systems Tax Credit

- 18% of installation cost of a solar system
  - Max credit is $5,000 for residential and $20,000 for commercial
- Available to residential, commercial, & agricultural entities
- Annual limit of $4.5 million
- Expires 12/31/2016
- May not be taken with the state renewable energy production tax credit

A Policy Driven Market

Federal	Investment Tax Credit	Accelerated Depreciation	Qualified Energy Conservation Bond
State & Utility	Renewable Portfolio Standard	State Tax Credits	Property & Sales Tax Exemptions
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Tax Exemptions

- Property Tax Exemption
  - Property value added by solar energy systems is fully exempt from Iowa state property tax for 5 years
- Sales Tax Exemption
  - Solar energy equipment is fully exempt from Iowa state sales tax (Iowa state sales tax is currently 6%)

A Policy Driven Market

Federal	Investment Tax Credit	Accelerated Depreciation	Qualified Energy Conservation Bond
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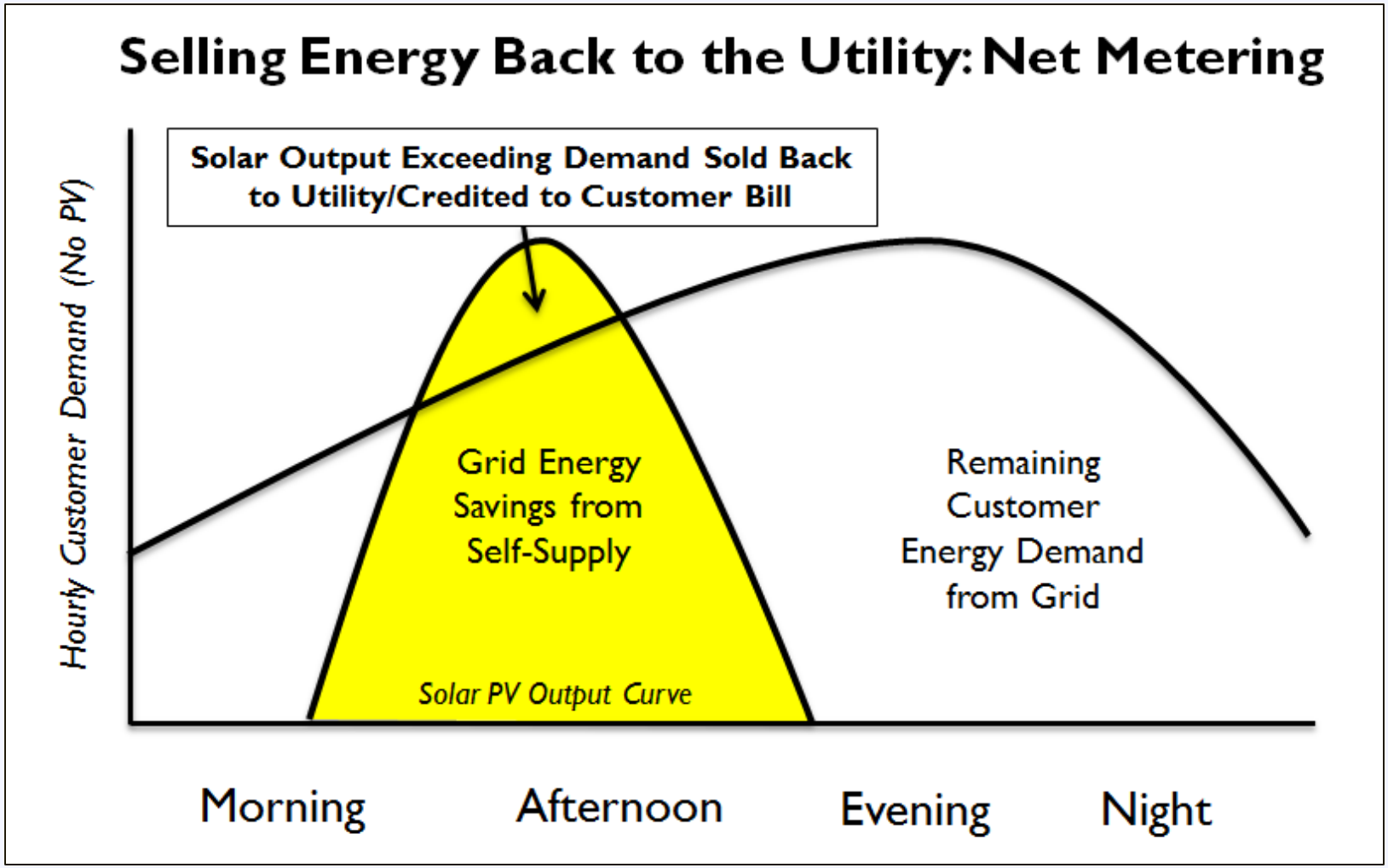
Net Metering

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



Source: NC Clean Energy Technology Center (2014), *Residential Customer Guides to Going Solar (Duke Carolinas & Duke Progress territories)*

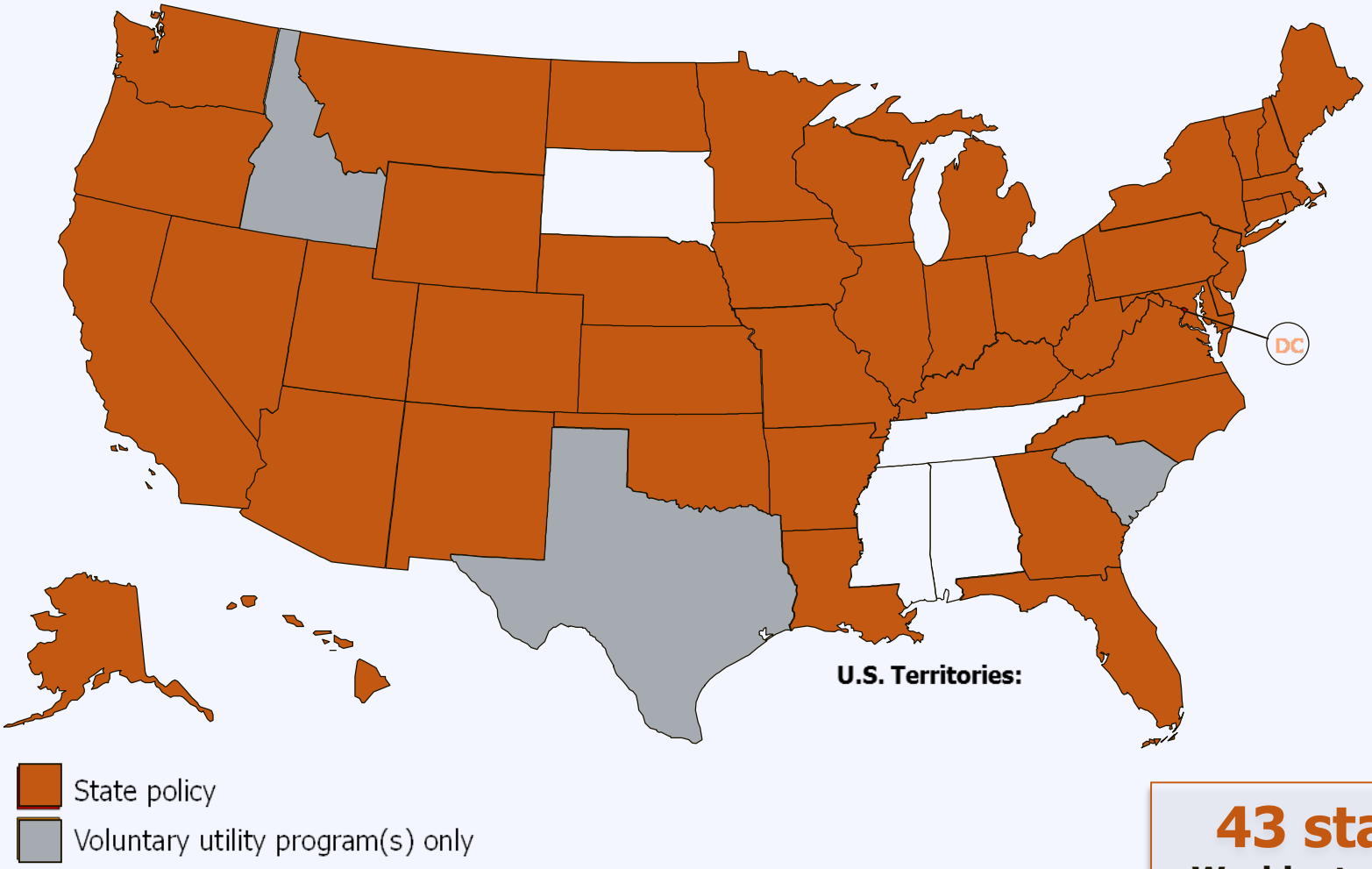
Net Metering: Market Share

More than **95%** of distributed PV Installations are net-metered

Powered by SunShot U.S. Department of Energy

Source: IREC, *U.S. Solar Market Trends 2013* (http://www.irecusa.org/annual-u-s-solar-market-trends-report/)

Net Metering



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

Source: DSIRE (September 2014)

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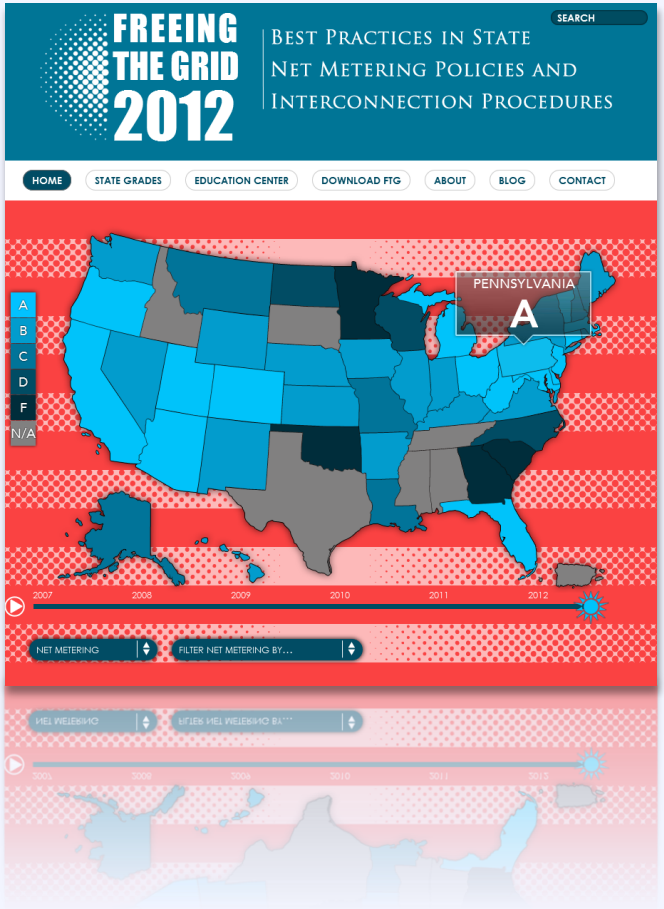
U.S. Department of Energy

Net Metering: Resources

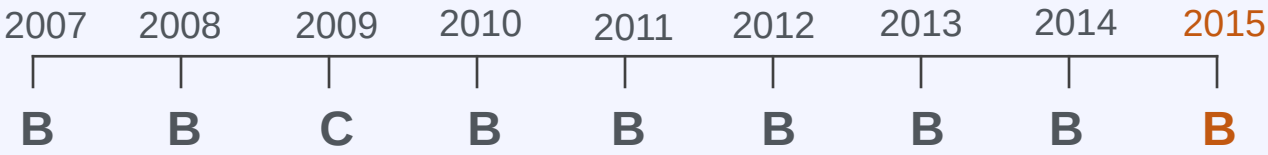
Resource **Freeing the Grid**

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

http://freeingthegrid.org/



Net Metering: Iowa



Net Excess Credit Value
Retail Rate
Carried Over Indefinitely

Applicable Utilities
IOUs Only

System Capacity Limit
500 KW

REC Ownership
Not Addressed

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Source: Freeing the Grid

A Policy Driven Market

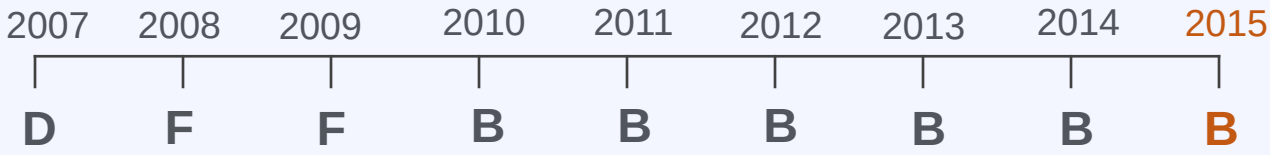
Federal	Investment Tax Credit	Accelerated Depreciation	Qualified Energy Conservation Bond
State & Utility	Renewable Portfolio Standard	State Tax Credits	Property & Sales Tax Exemptions
	Net Metering	Interconnection	Solar Access

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: Iowa

B



Applicable Technologies
All DG renewables

Applicable Utilities
IOUs
Lynn County REC

System Capacity Limit
10 MW

Bonus
Electronic Application
Standardized Process

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Source: Freeing the Grid

A Policy Driven Market

Federal	Investment Tax Credit	Accelerated Depreciation	Qualified Energy Conservation Bond
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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

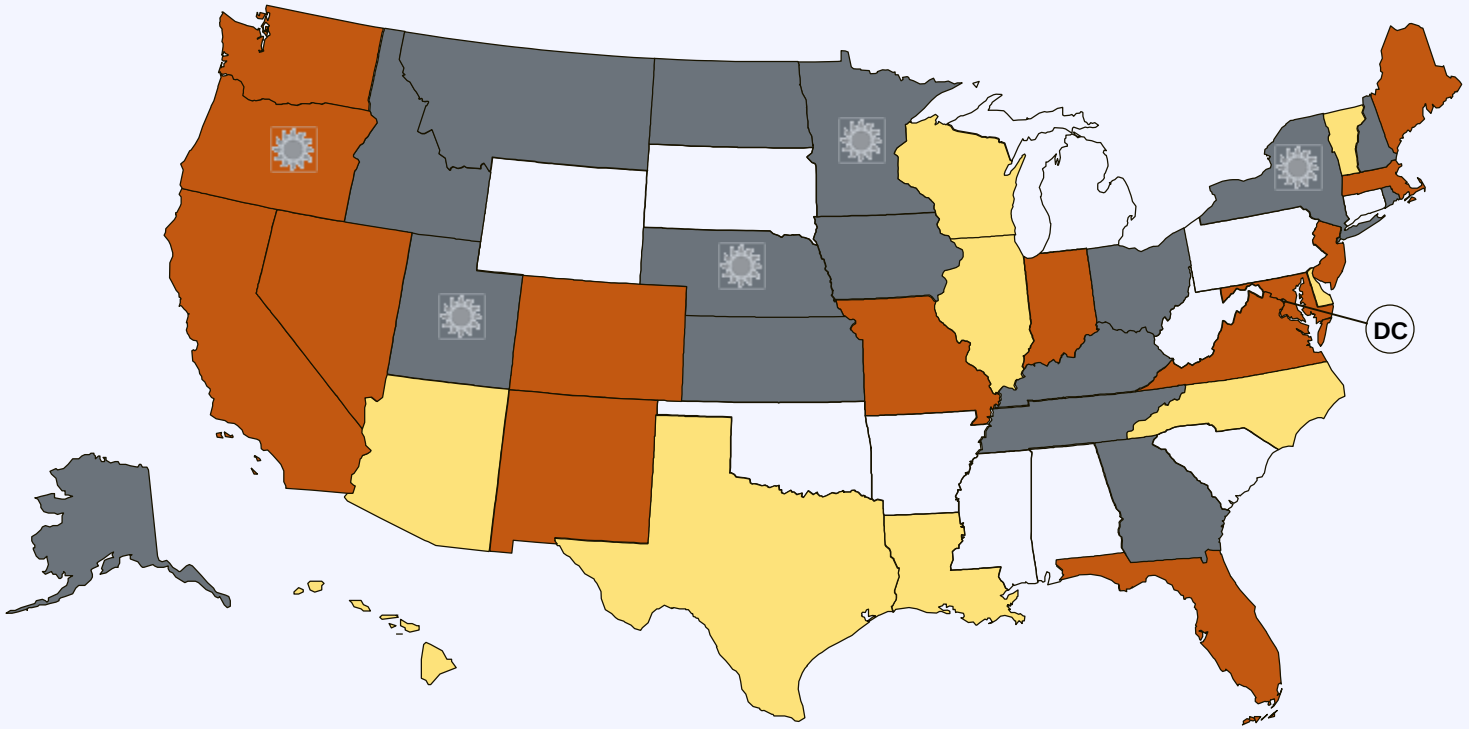
Source: Google Earth

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)

Solar Access in Iowa

Obtaining an Easement:

- Homeowners can obtain voluntary easements from neighbors
- Court-ordered easements are also available

Municipal Actions:

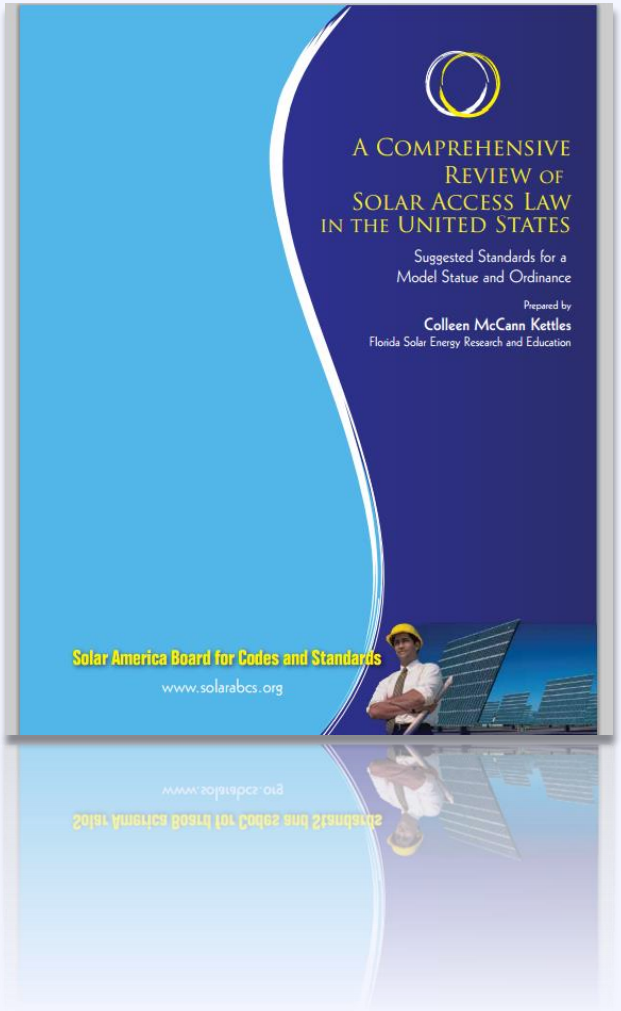
- Establish solar access regulatory boards
- Pass ordinances prohibiting restrictive subdivision rules regarding solar

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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ENERGY TRANSITION INITIATIVE

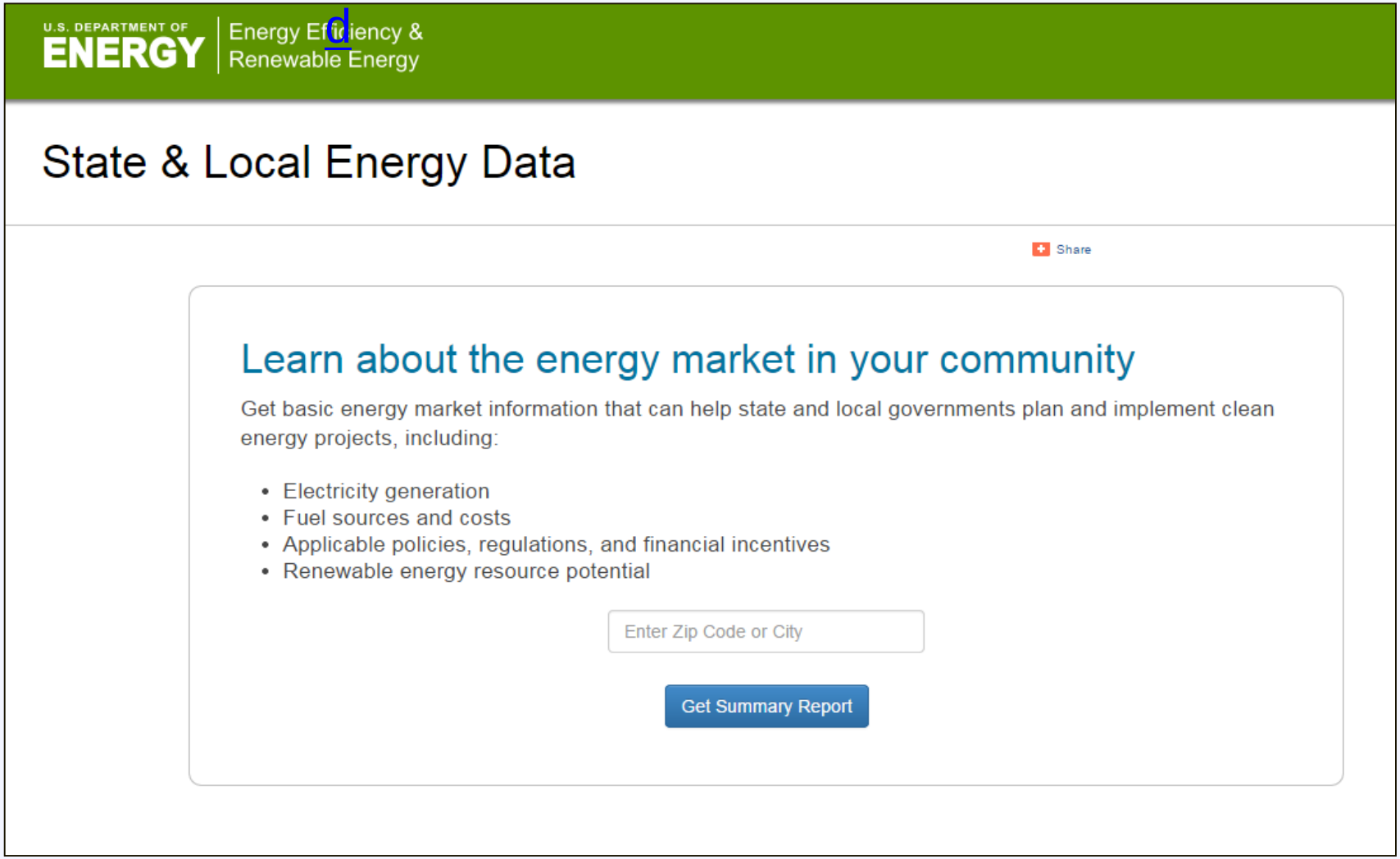
State & Local Energy Data (SLED)

DOE EERE SLED Overview

- Centrally aggregates a broad array of rich data sets in real-time on regional energy systems, demands, and resources
- Gives decision makers the information they need for a clearer understanding of a market's energy picture
- Allows for more effective planning and implementation of clean energy projects

Access SLED

www.eere.energy.gov/sled



- **Electricity Generation**
- Energy Efficiency
- Renewable Energy
- Transportation
- Community Planning
- Data Sources

New Search

Enter Zip Code or City, State

Start Over

Download PDF of this Page

Electricity Generation Summary for 80020

This section provides details on the electric utilities that serve your area and the related average electricity costs. Trends in electricity rates over time are presented as well as details on the mix of fuel sources used and electricity use by sector in your area.

Electric Utility Names

Public Service Co of Colorado

Source: National Renewable Energy Laboratory, 2012 [1]

Average Retail Electricity Rates ($/kWh)

Download Chart

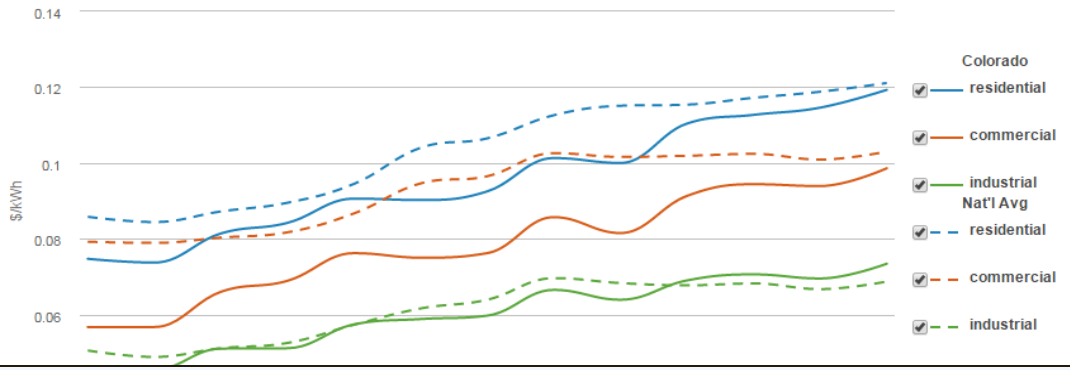
	Public Service Co of Colorado	Colorado Avg.	Nat'l Avg.
Residential	0.1105	0.1211	0.1211
Commercial	0.0916	0.1030	0.1030
Industrial	0.0604	0.0687	0.0687

Note: Contact your utility or search the Utility Rate Database for specific rate schedules

Source: Energy Information Administration, 2013 [2, 3]

State and National Retail Electricity Rate Trends

Download Chart



http://youtu.be/VAzAGIX1zag

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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

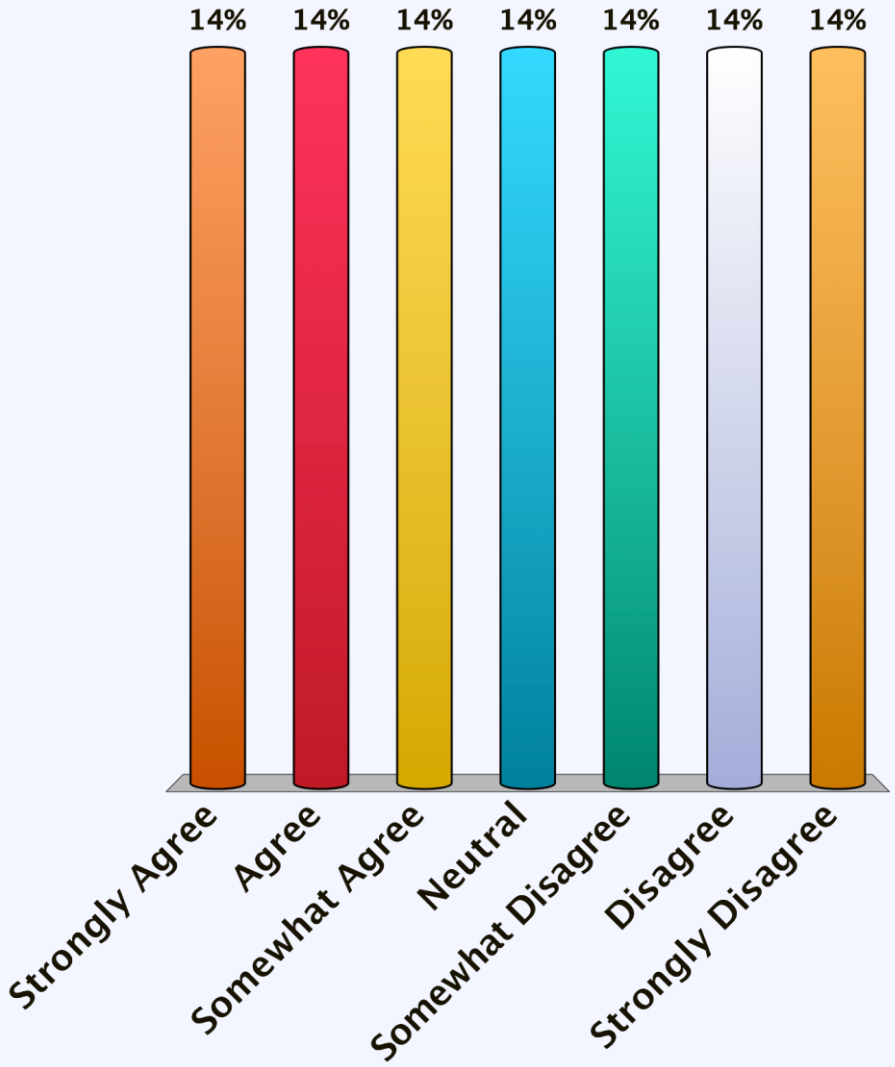
Visioning & goal setting

Effective Solar Permitting Process

Solar Market Development Tools

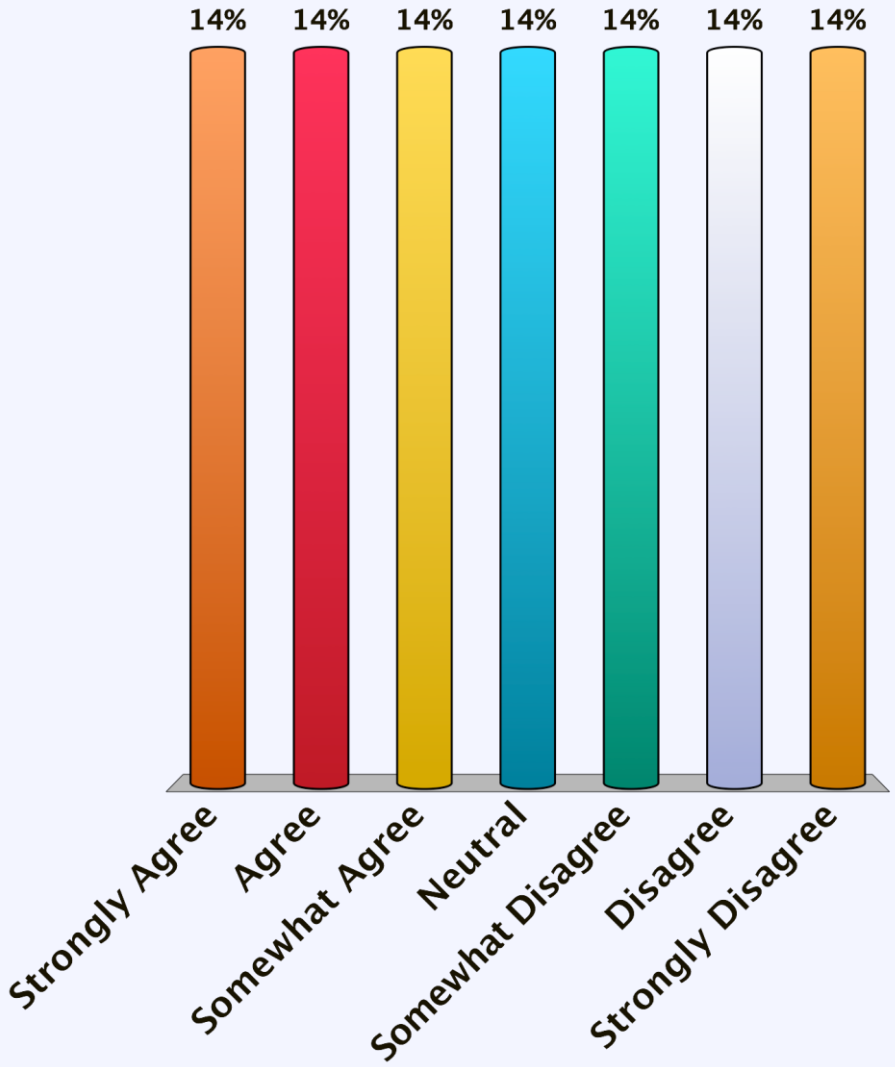
Solar advances your energy goals

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



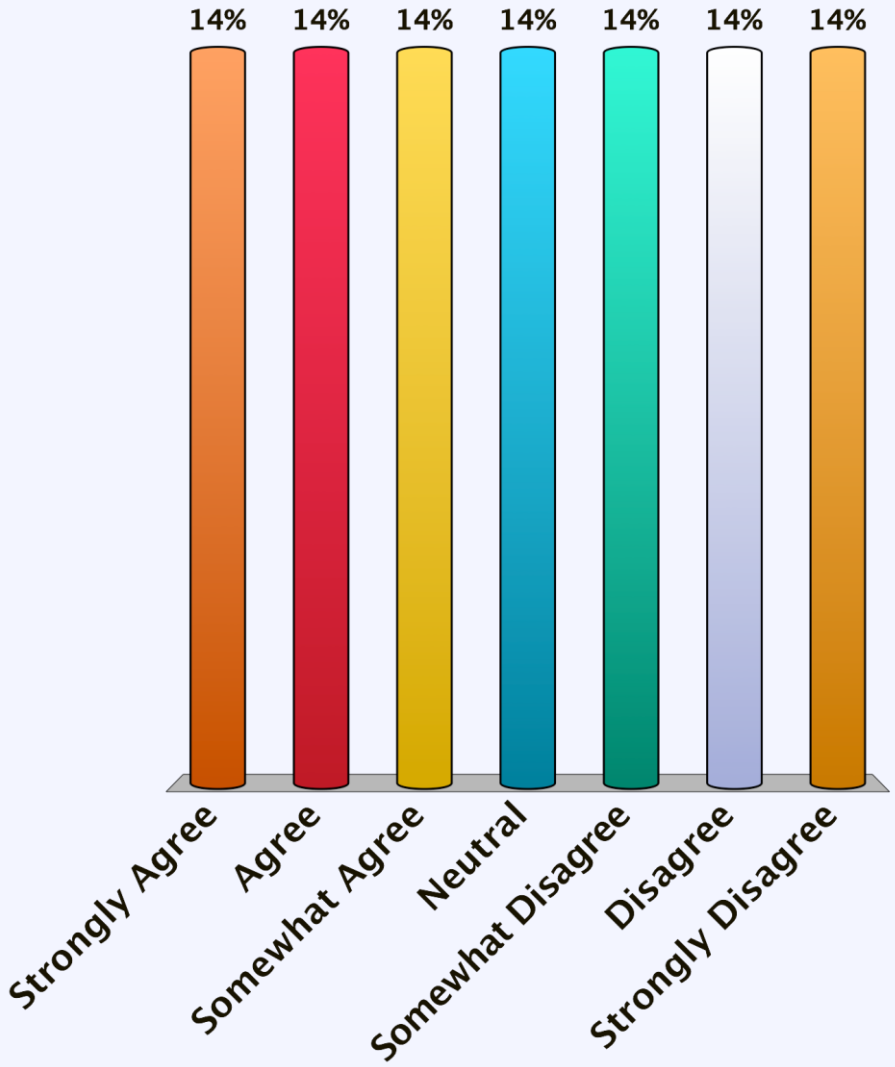
Solar advances your economic development goals

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

Poll

Is solar on residential rooftops appropriate for your community?

Visioning: Scales & Contexts

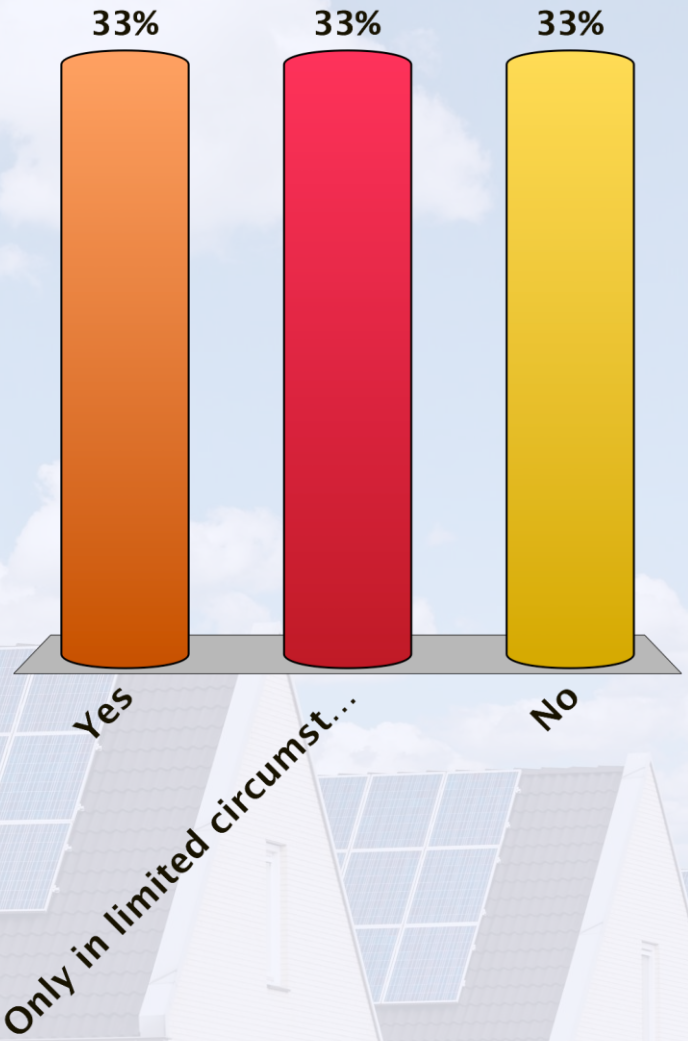
Poll

Is solar on residential rooftops appropriate for your community?

A. Yes

B. Only in limited circumstances

C. No



Visioning: Scales & Contexts

Poll

Is solar on commercial rooftops appropriate for your community?

Visioning: Scales & Contexts

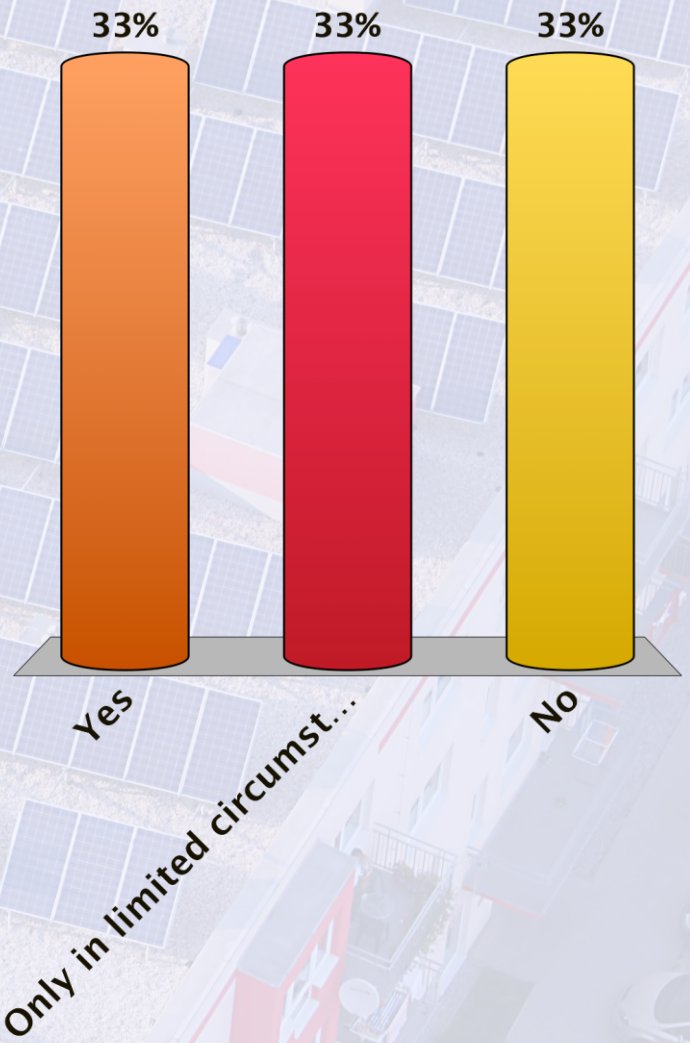
Poll

Is solar on commercial rooftops appropriate for your community?

A. Yes

B. Only in limited circumstances

C. No



Visioning: Scales & Contexts

Poll

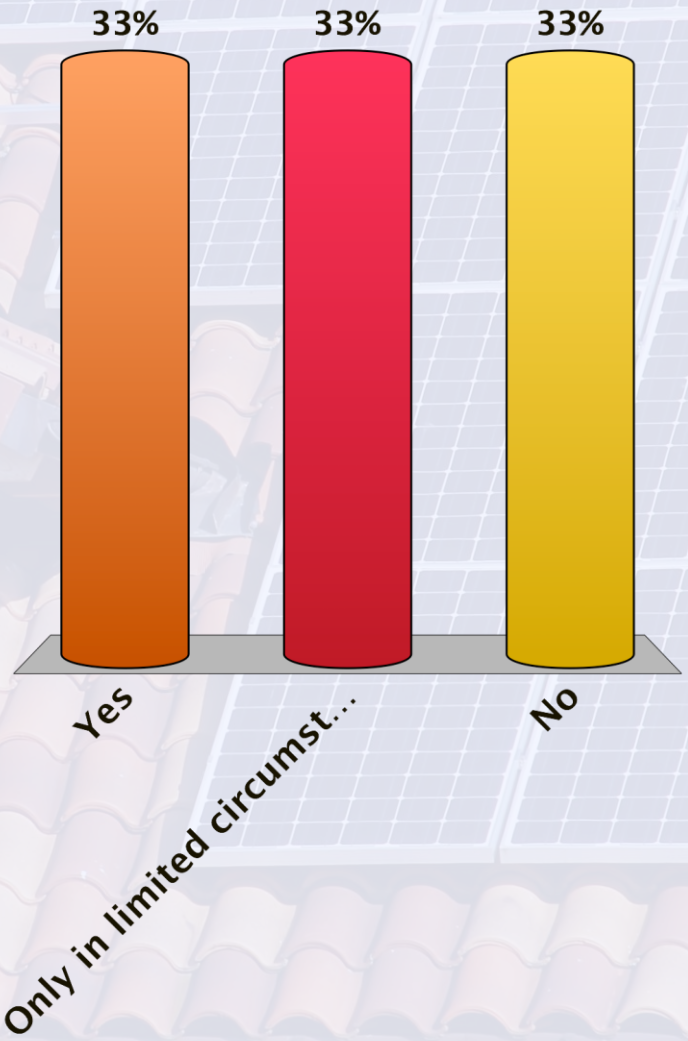
Is solar on historic structures appropriate for your community?

Visioning: Scales & Contexts

Poll

Is solar on historic structures appropriate for your community?

A. Yes
B. Only in limited circumstances
C. No



Visioning: Scales & Contexts

Poll

Is solar on brownfields appropriate for your community?

Visioning: Scales & Contexts

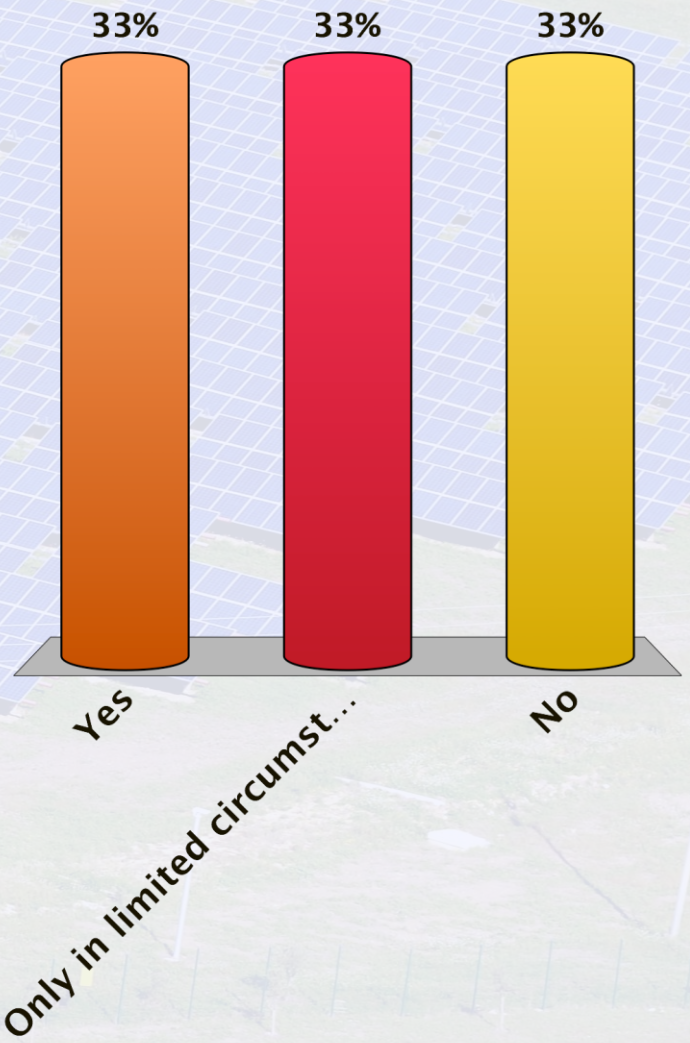
Poll

Is solar on brownfields appropriate for your community?

A. Yes

B. Only in limited circumstances

C. No



Visioning: Scales & Contexts

Poll

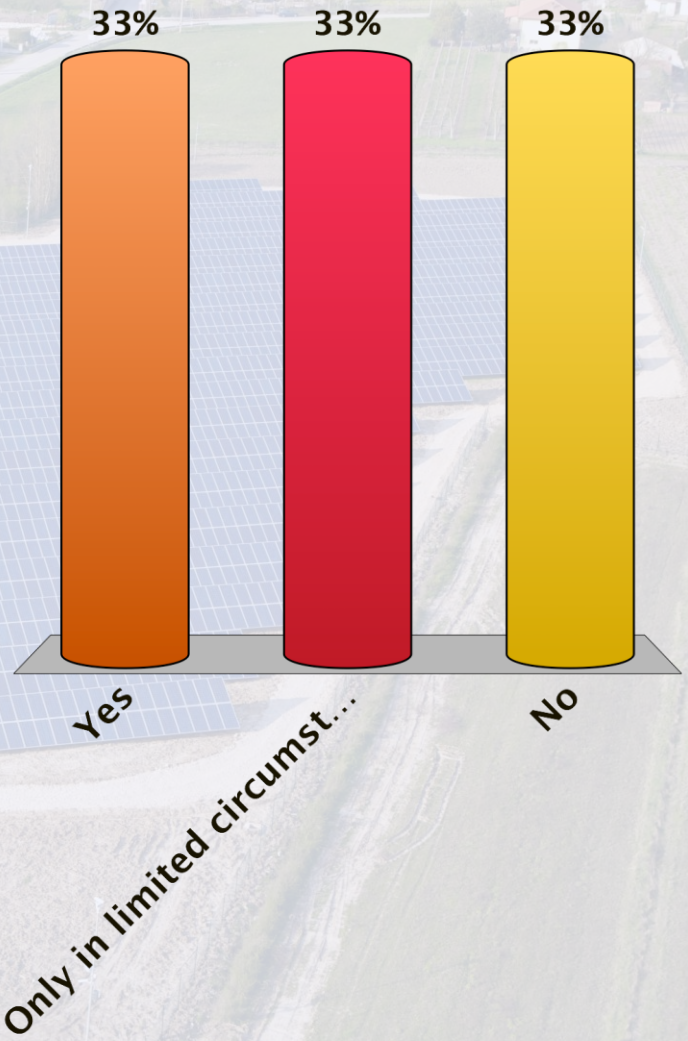
Is solar on greenfields appropriate for your community?

Visioning: Scales & Contexts

Poll

Is solar on greenfields appropriate for your community?

A. Yes
B. Only in limited circumstances
C. No



Visioning: Scales & Contexts

Poll

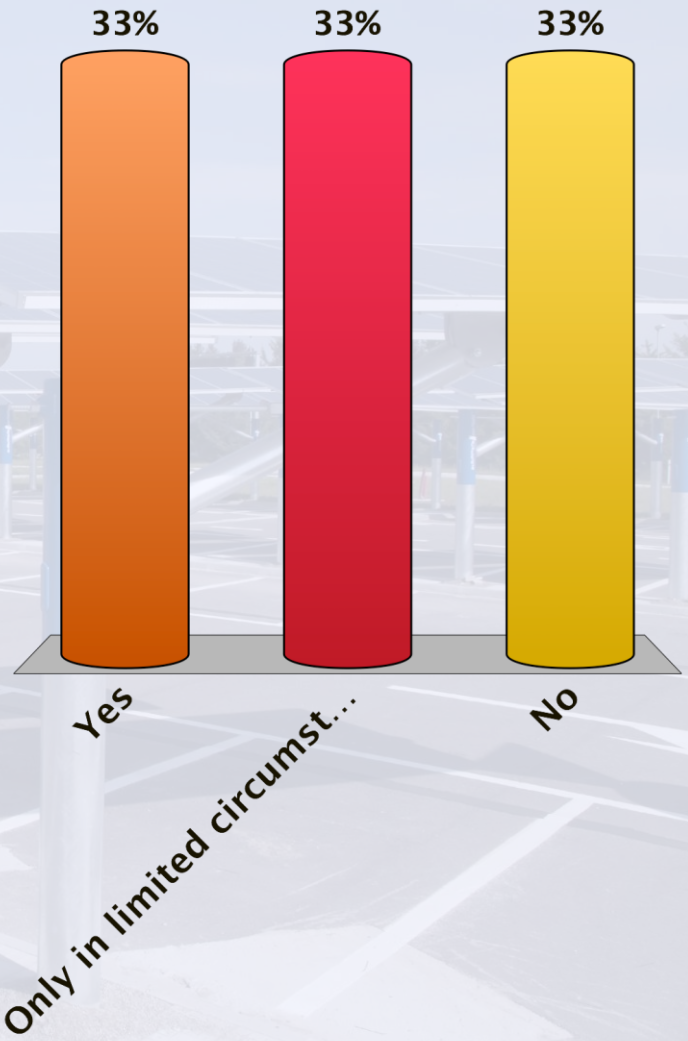
Is solar on parking lots appropriate for your community?

Visioning: Scales & Contexts

Poll

Is solar on parking lots appropriate for your community?

A. Yes
B. Only in limited circumstances
C. No



Visioning: Scales & Contexts

Poll

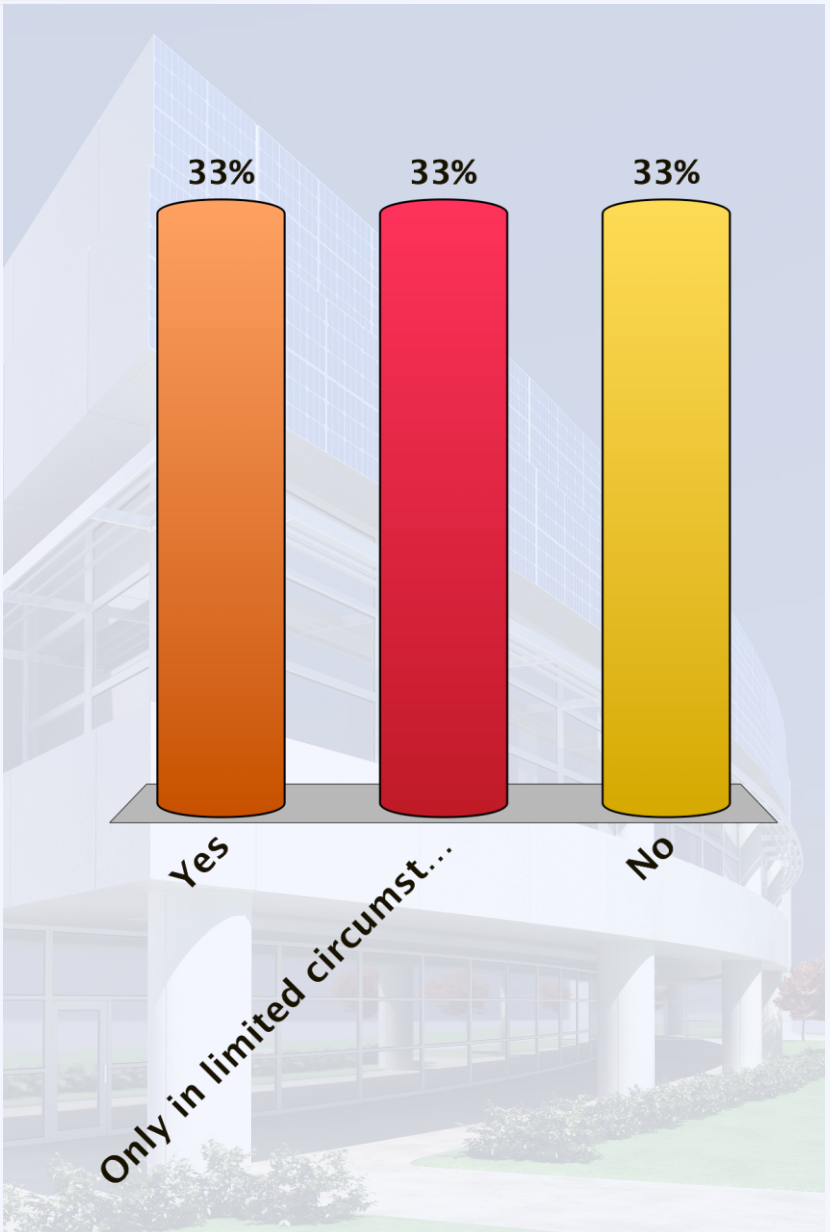
Is building-integrated solar appropriate for your community?

Visioning: Scales & Contexts

Poll

Is building-integrated solar appropriate for your community?

A. Yes
B. Only in limited circumstances
C. No



Planning for Solar Development

Communitywide Comprehensive Plan

Neighborhood Plans	Corridor Plans	Special District Plans
Green Infrastructure Plans	Energy Plan	Climate Action Plan

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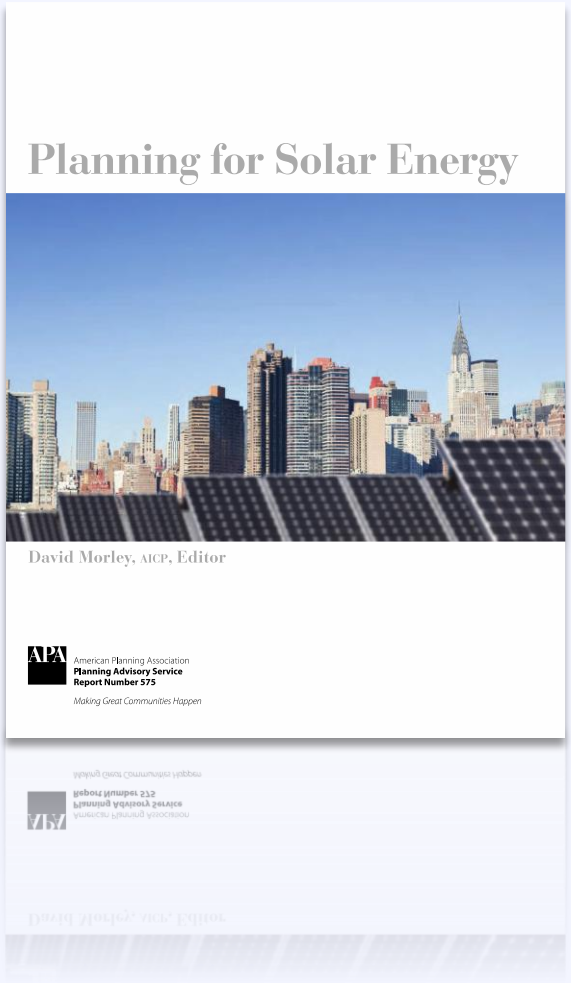
Source: American Planning Association

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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Effective Local Solar Policy

Local Solar Policy

Planning for Solar

Solar in Development Regulation

Effective Solar Permitting Process

Solar Market Development Tools

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: Large Solar

Typical Requirements:

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

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

Update Building Code

Solar Ready Construction:

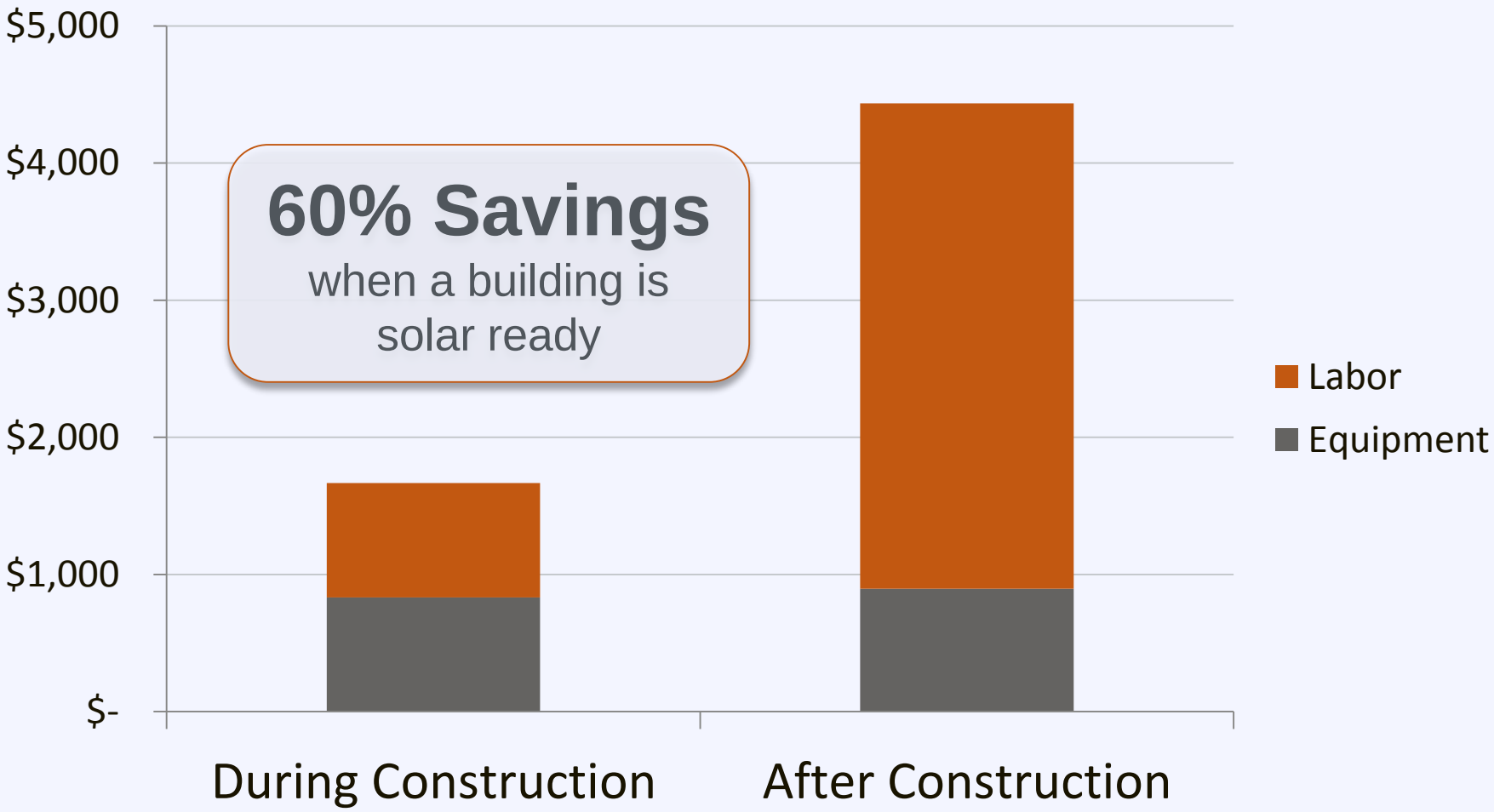
Preparing a building for solar at the outset can help make future solar installations easier and more cost effective.

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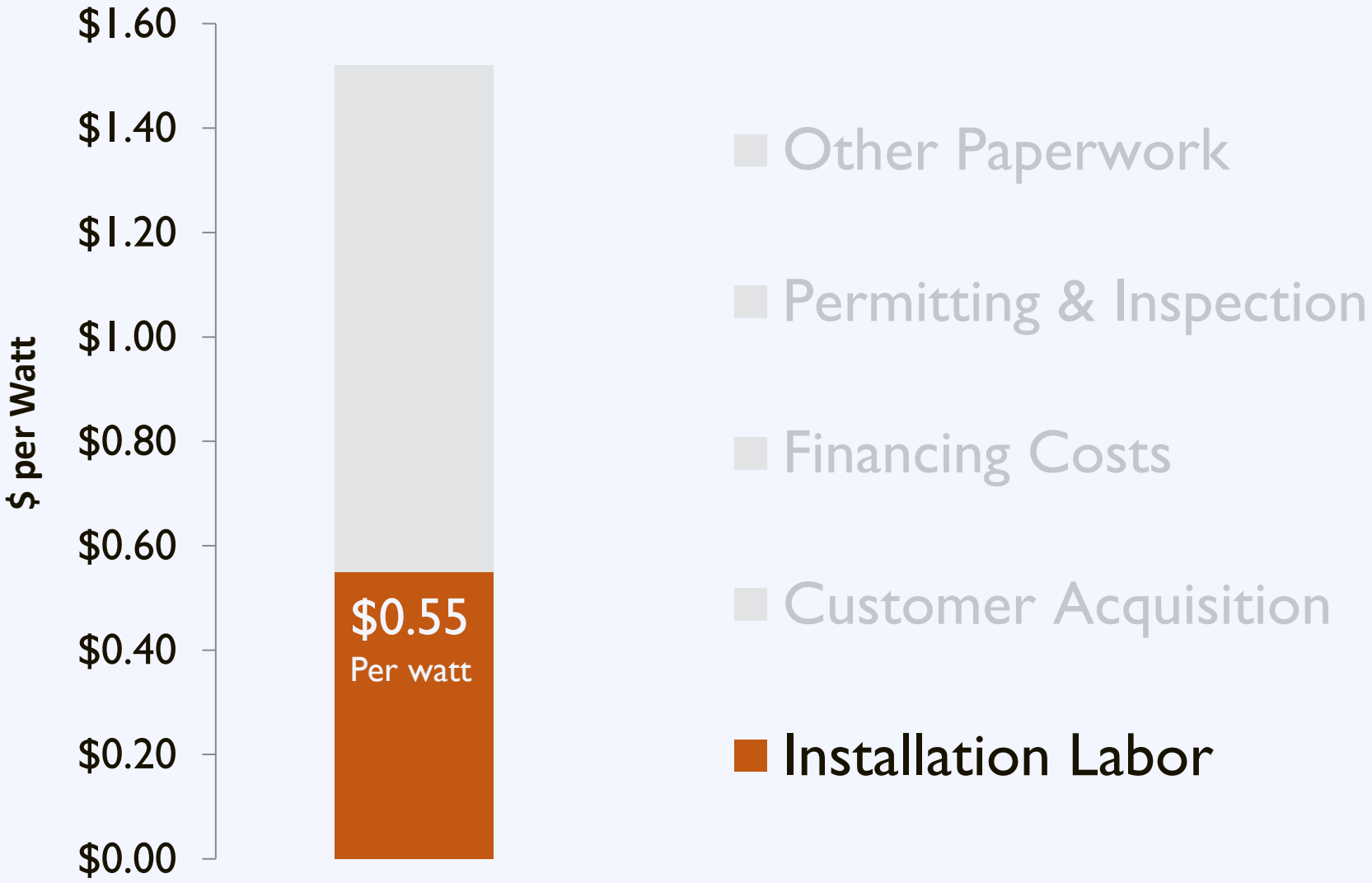
Source: Solar Ready: An Overview of Implementation Practices [Draft]. NREL, Feb. 18, 2011.

Installation Soft Costs



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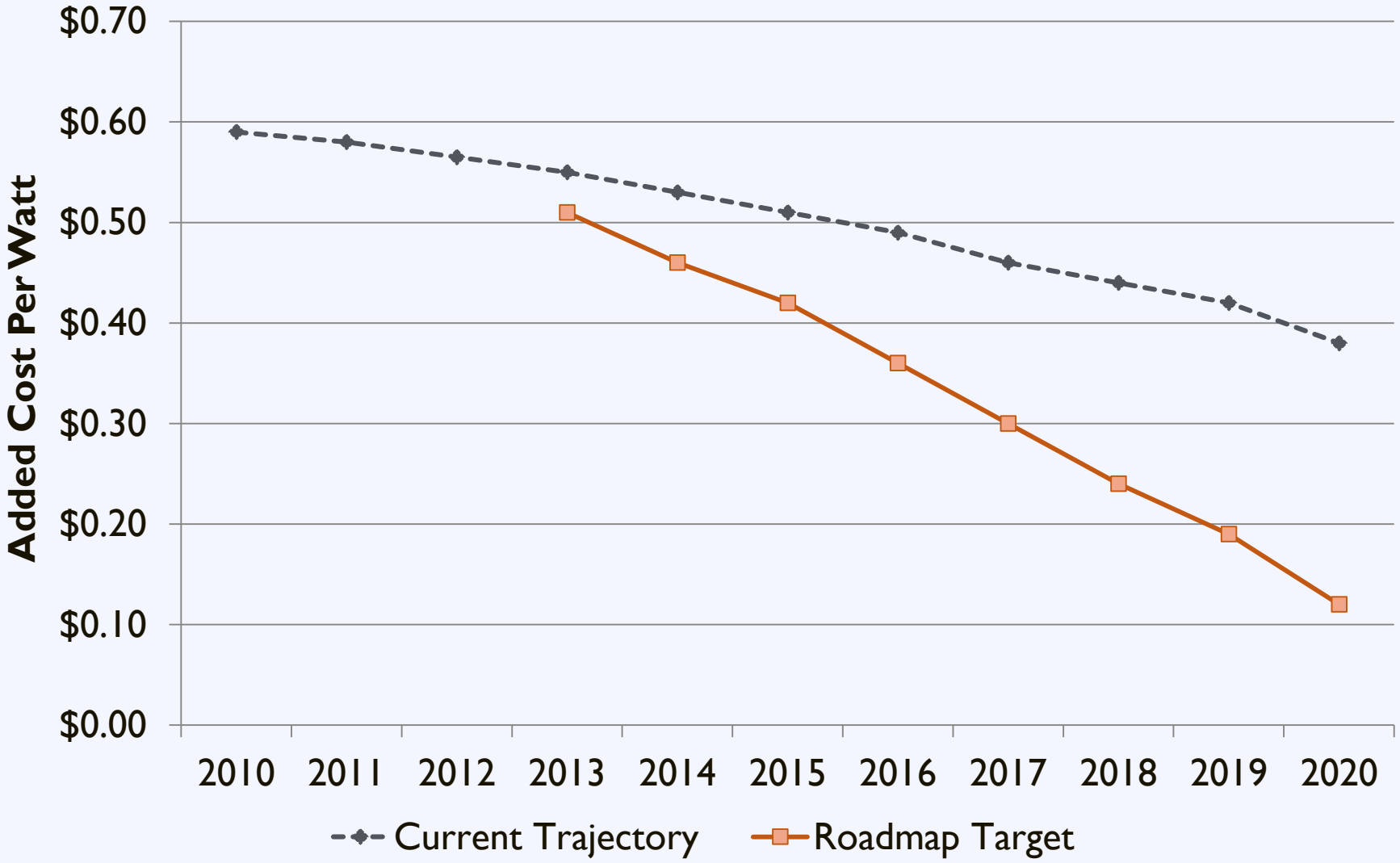
Installation Labor Roadmap



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

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

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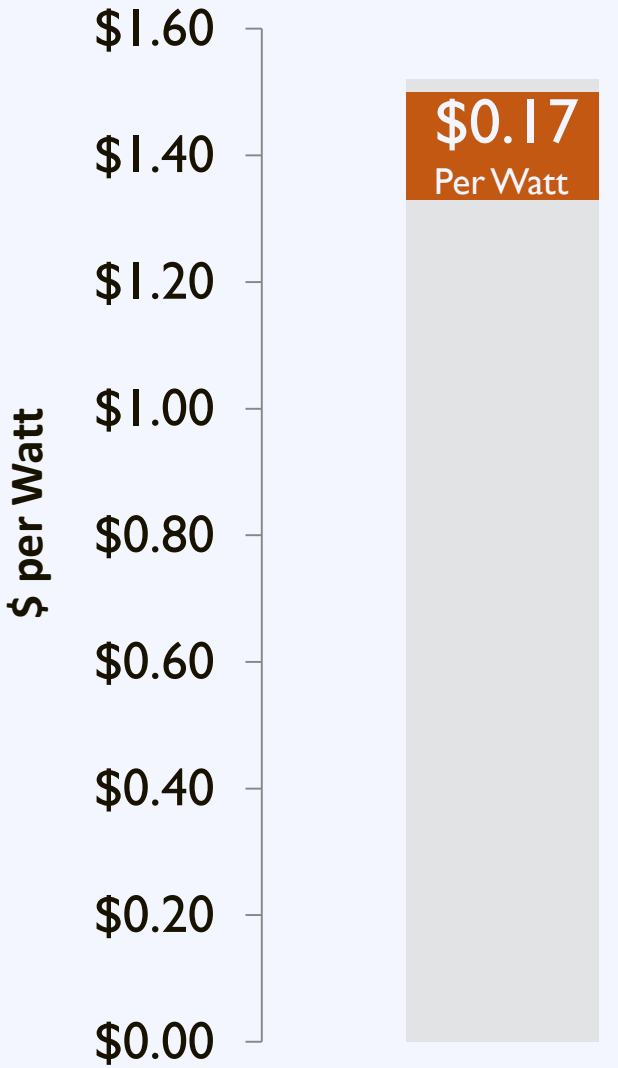
U.S. Department of Energy

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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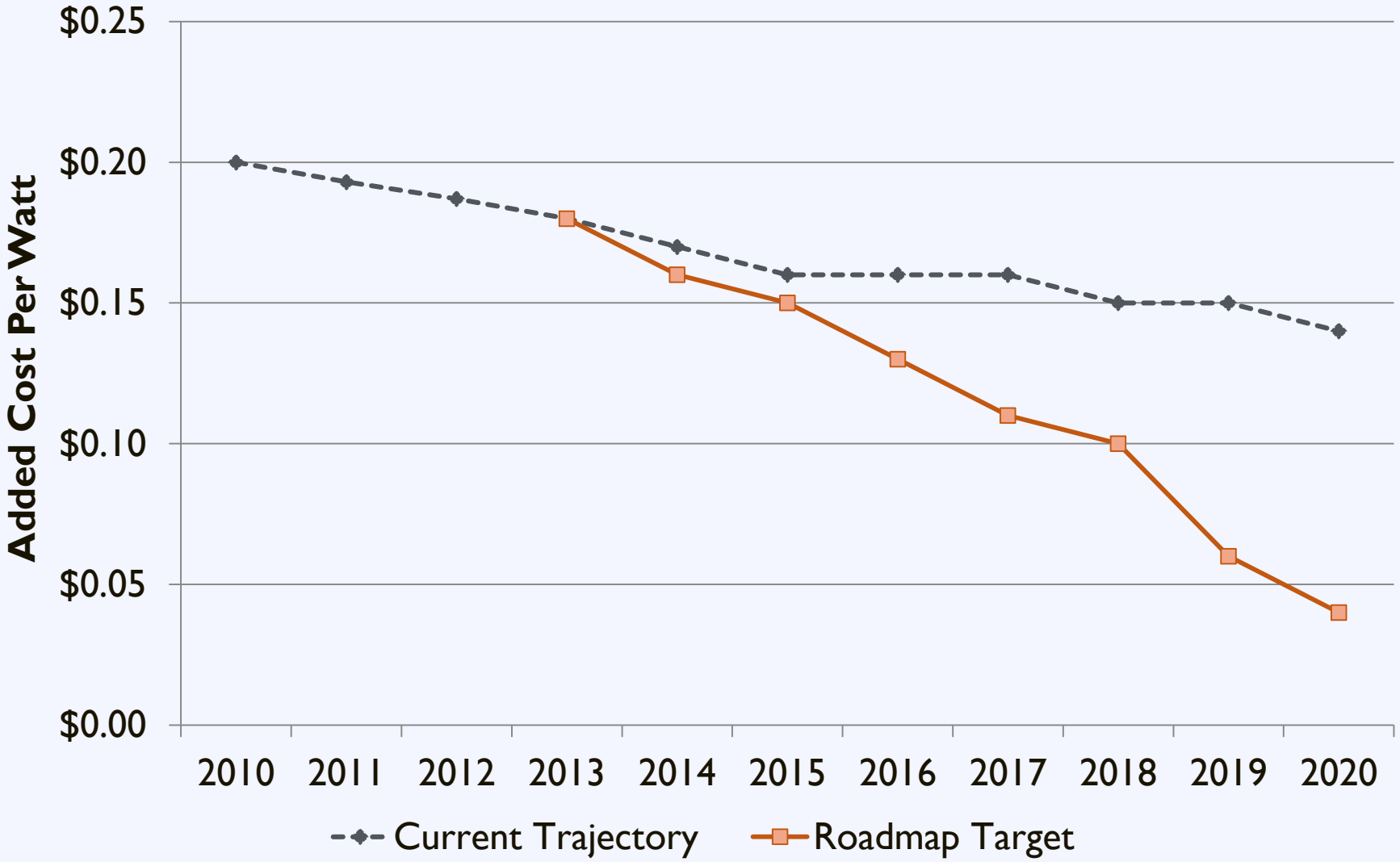
Planning & Permitting Roadmap



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Expedited Review

Expedited Review

Depth of Review

Expedient	**Expedient**	**Standard**
Within established design parameters		Outside of established design parameters
Impacts are well understood		Review necessary to understand impacts
Quick, Easy, Cheap		Flexible

Expedited Review

Depth of Review

Expedient | **Expedient** | **Standard**

Within established design parameters

Outside of established design parameters

1-1. Example Design Criteria:

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

Review necessary to understand impacts

Flexible

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Expedited Review

No Permit Required

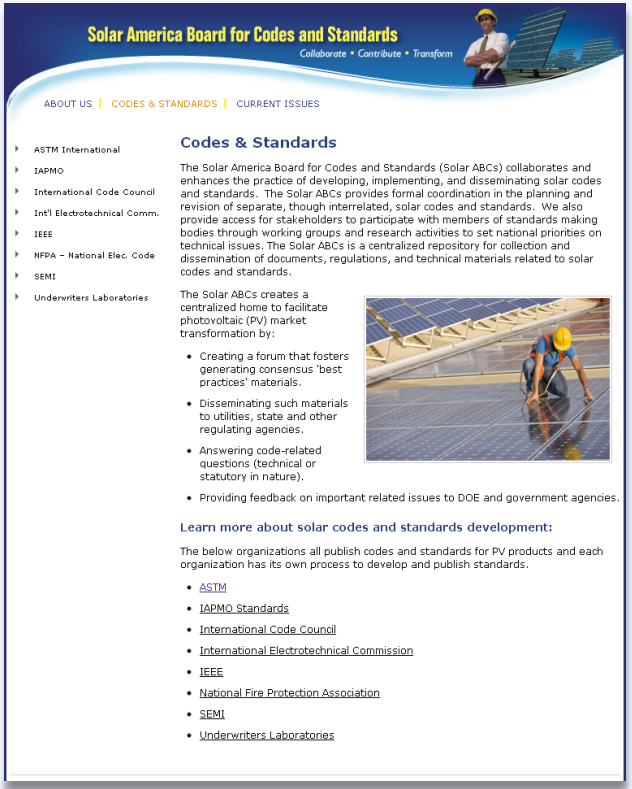
Only interconnection agreement required

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



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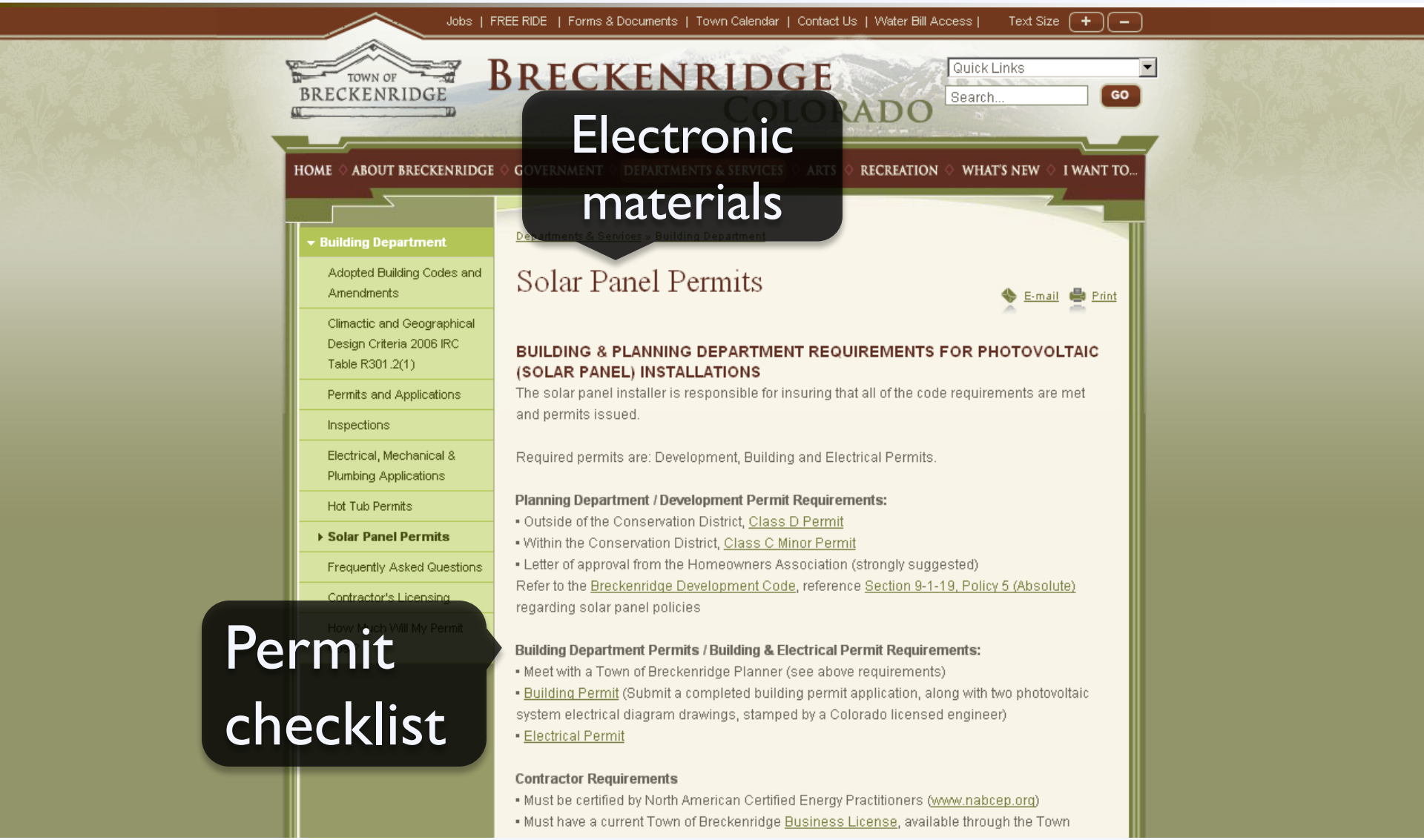
Cost-Based Recovery Fees

Residential
Flat Fees

Commercial
Fee Calculator

Fee = (Est. Staff Time x Rate) + Additional Review

Transparent process



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Source: Breckenridge, CO (http://www.townofbreckenridge.com/index.aspx?page=694)

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Effective Local Solar Policy

Local Solar Policy

Understanding solar financing

Expanding financing options

Addressing customer acquisition

Effective Solar Permitting Process

Solar Market Development Tools

Ownership


$1.60
$1.40
$1.20
$1.00
$0.80
$0.60
$0.40
$0.20
$0.00
$ per Watt
$0.30
Per watt
Other Paperwork
Permitting & Inspection
Financing Costs
Customer Acquisition
Installation Labor

The Solar Equation

Cost

+ Installed Cost

+ Maintenance

- Direct Incentive

Benefit

+ Avoided Energy Cost

+ Excess Generation

+ Performance Incentive

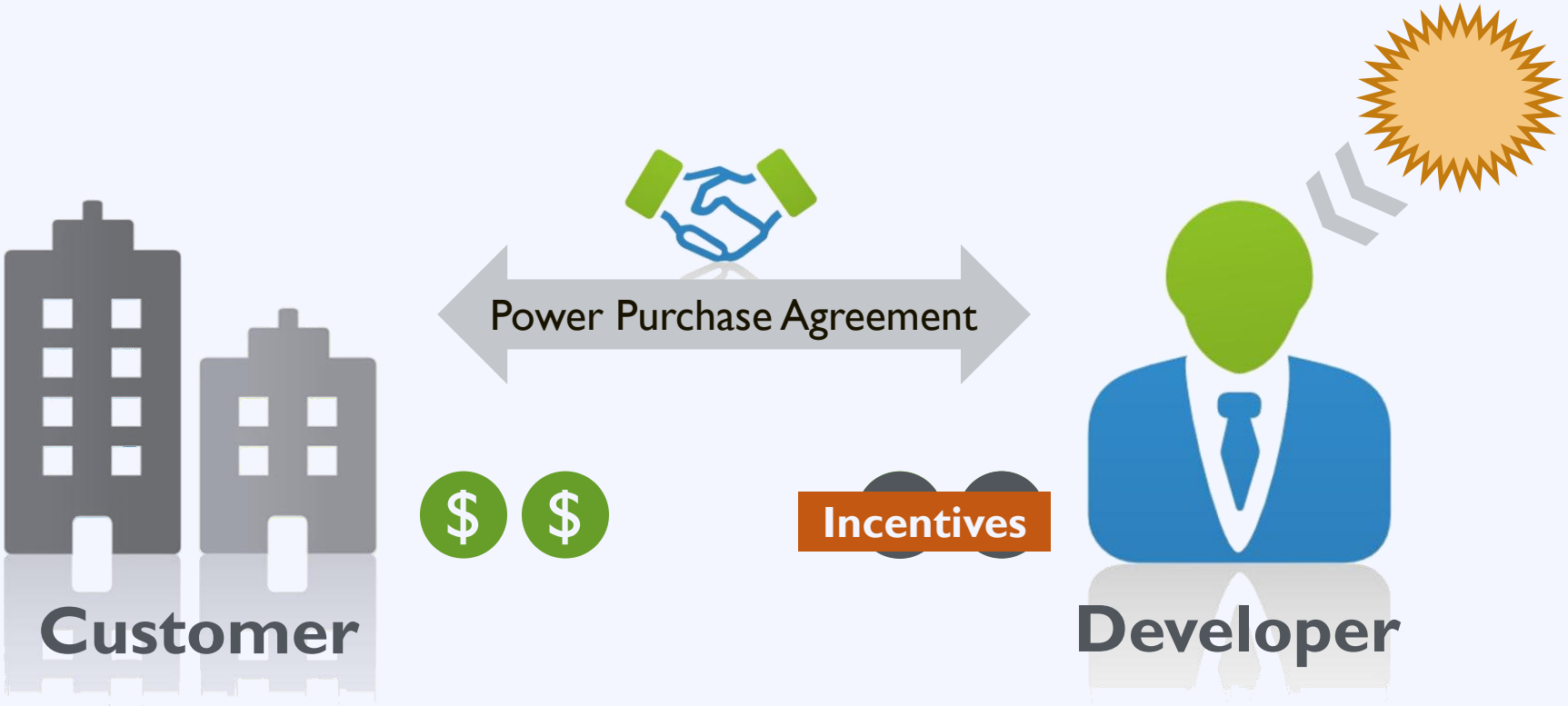
Ownership Options for Solar

Direct Ownership

Third-Party Ownership

Direct Ownership

Third Party Ownership



Power Purchase Agreements

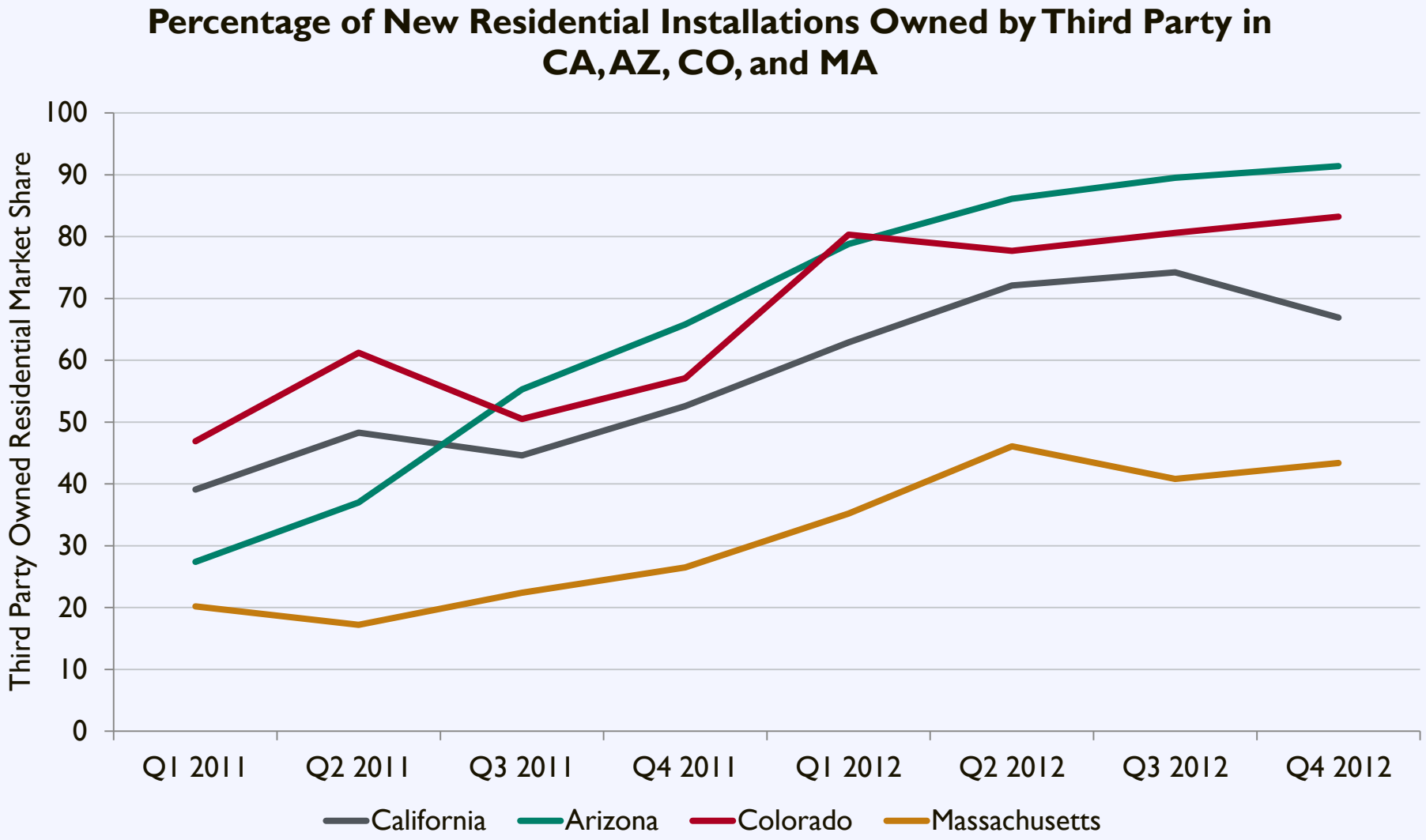
Eagle Point Solar Supreme Court Ruling

Eagle Point Solar **was not** acting as an illegal utility by installing a solar system on a Dubuque city building.

Effectively, this ruling **opens the door to PPAs in Iowa.**

Source: Eagle Point Solar

Third Party Ownership



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Source: GTM Research/ Solar Energy Industries Association, *U.S. Solar Market Insight 2012 Year-in-Review*

Third Party Ownership

Benefits

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

Drawbacks

- Not available in all states
- Investor needs higher ROI

Ownership Options for Solar

Direct Ownership

Third-Party Ownership

Solar lending products to enable direct ownership

Engage Local Lenders

Fewer than **5%**

of the

6,500 banks in the US

are

actively financing solar PV projects

Ownership Options for Solar

Direct Ownership

Third-Party Ownership

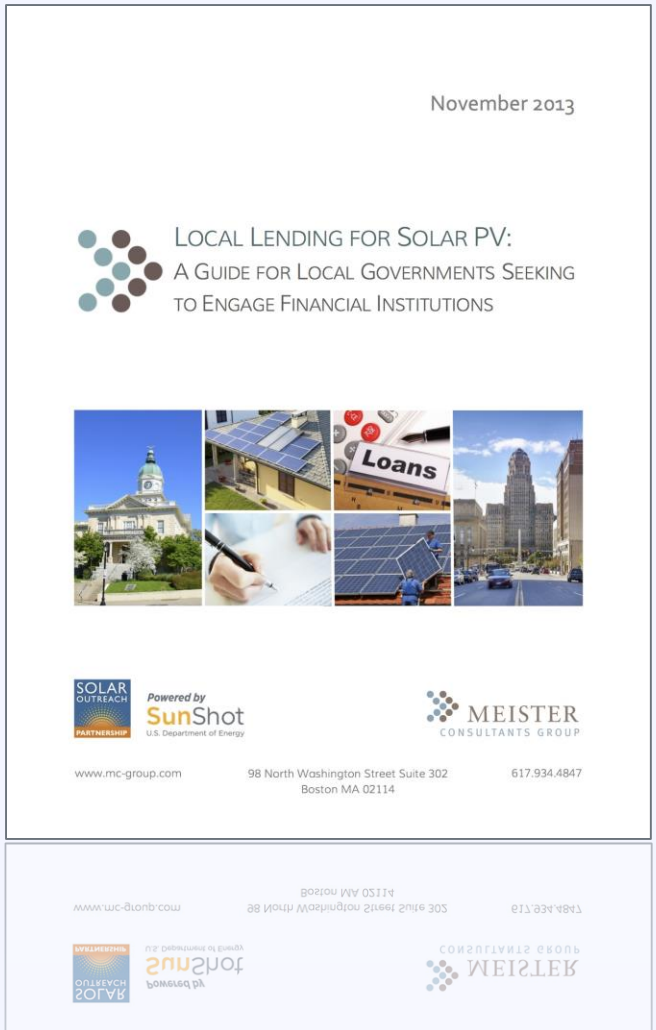
Expand direct ownership options by engaging local lenders

Solarize: Resources

Resource **Local Lending for Solar PV**

A guide for local governments seeking to engage financial institutions

www.solaroutreach.org



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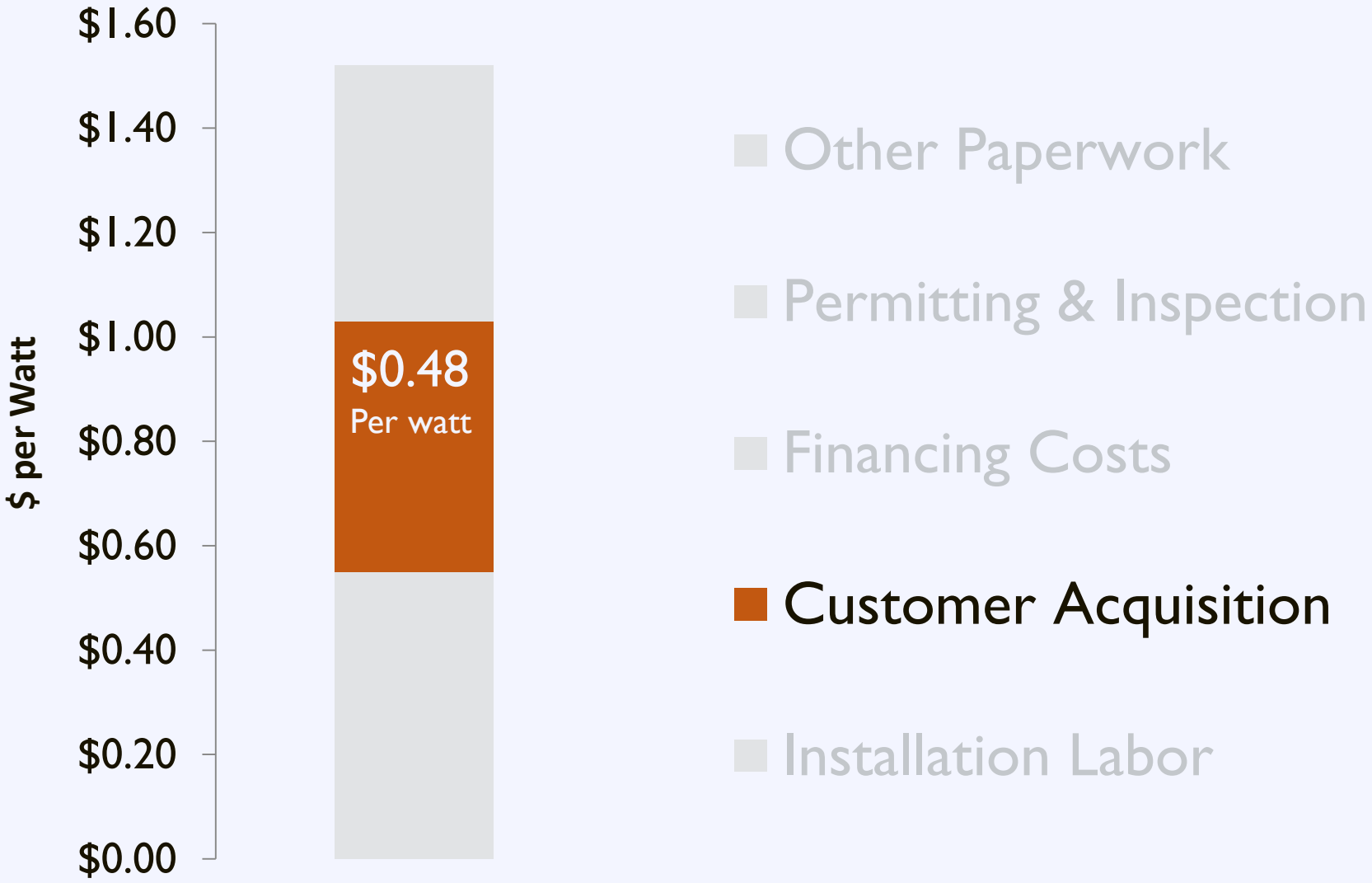
Customer Acquisition



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 MASS

Solarize CONNECTICUT

solarize ASHEVILLE

solarize washington
a program of northwest seed

solarize portland

I helped solarize pendleton oregon

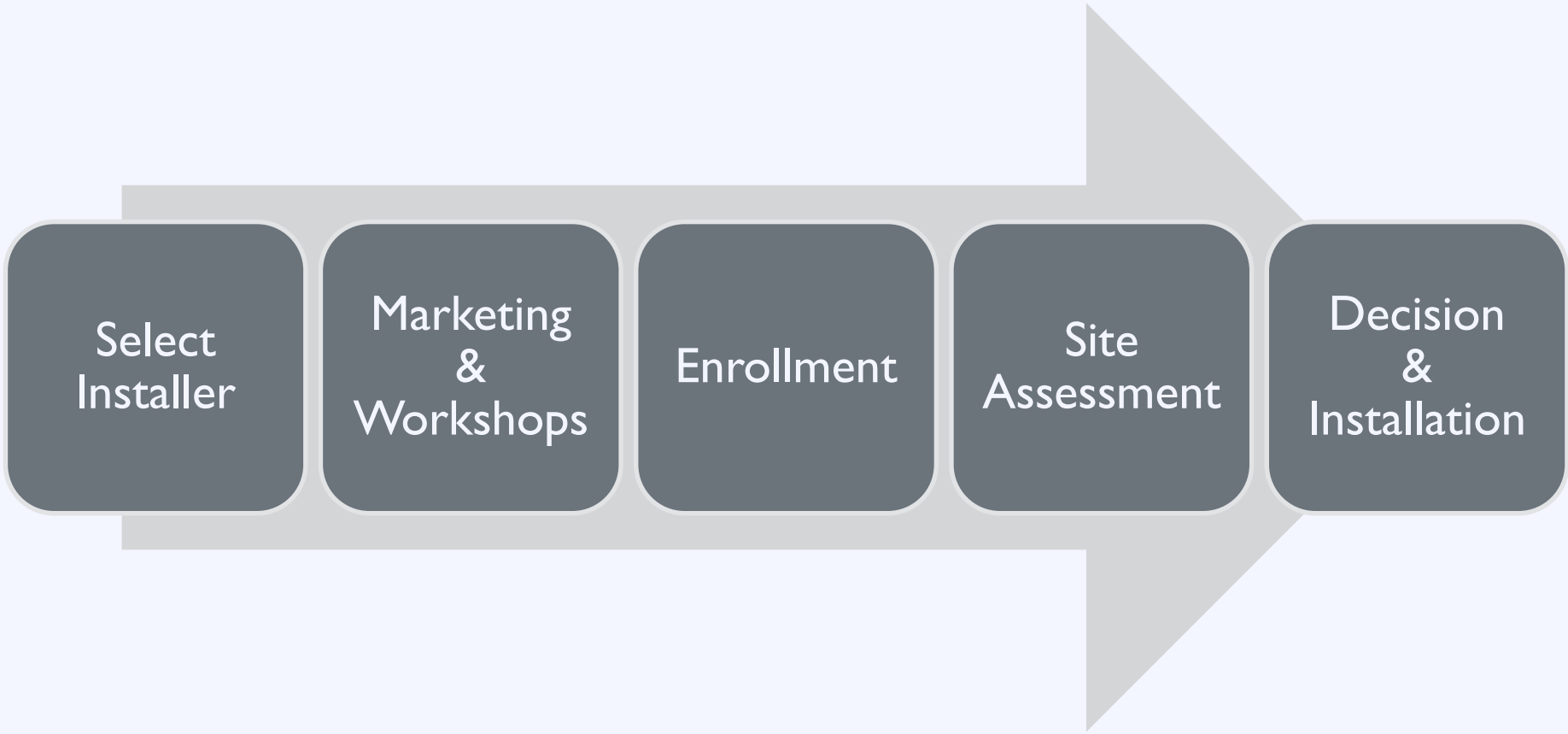
The Solarize Program

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

Solarize: Partnership

Program Sponsor	Community ties Technical knowledge
Solar Contractor	Solar installations Volume discounts
Citizen Volunteers	Campaign support Neighborhood outreach
Community Residents	Program participation Word of mouth

Solarize: Process

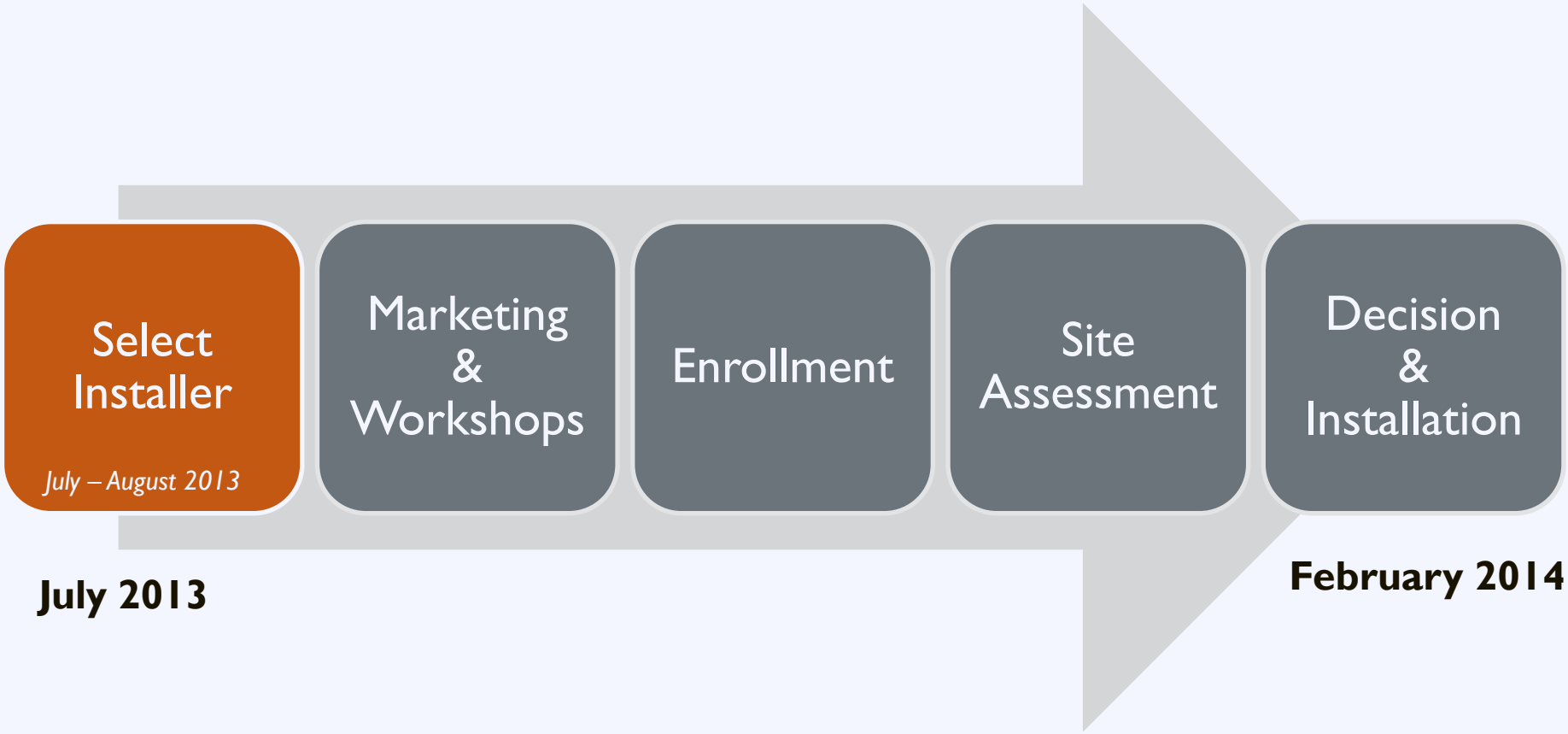


Solarize Plano: Case Study

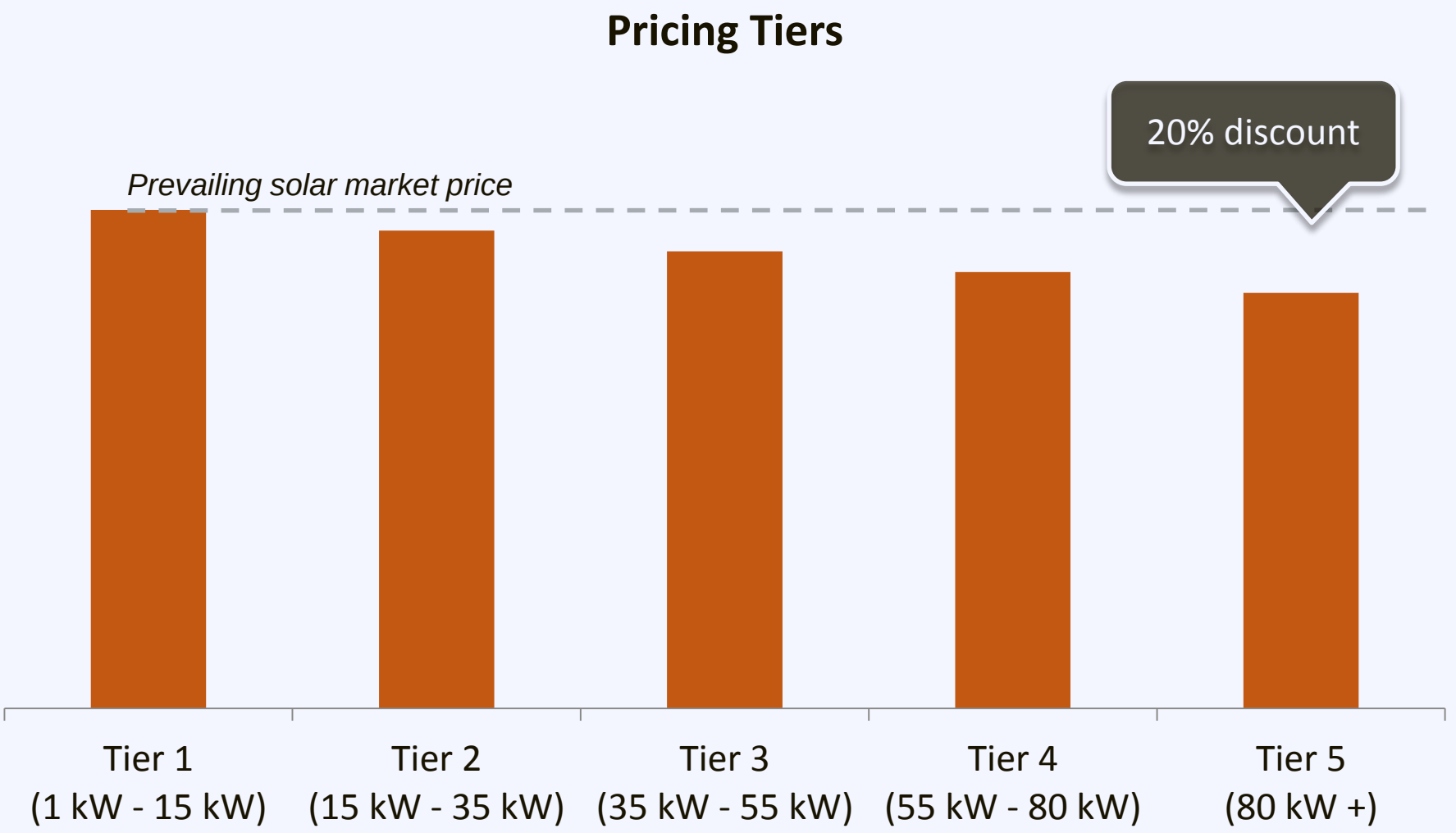
Plano, Texas

Population: 272,000

Solarize Plano: Case Study



Solarize Plano: Case Study



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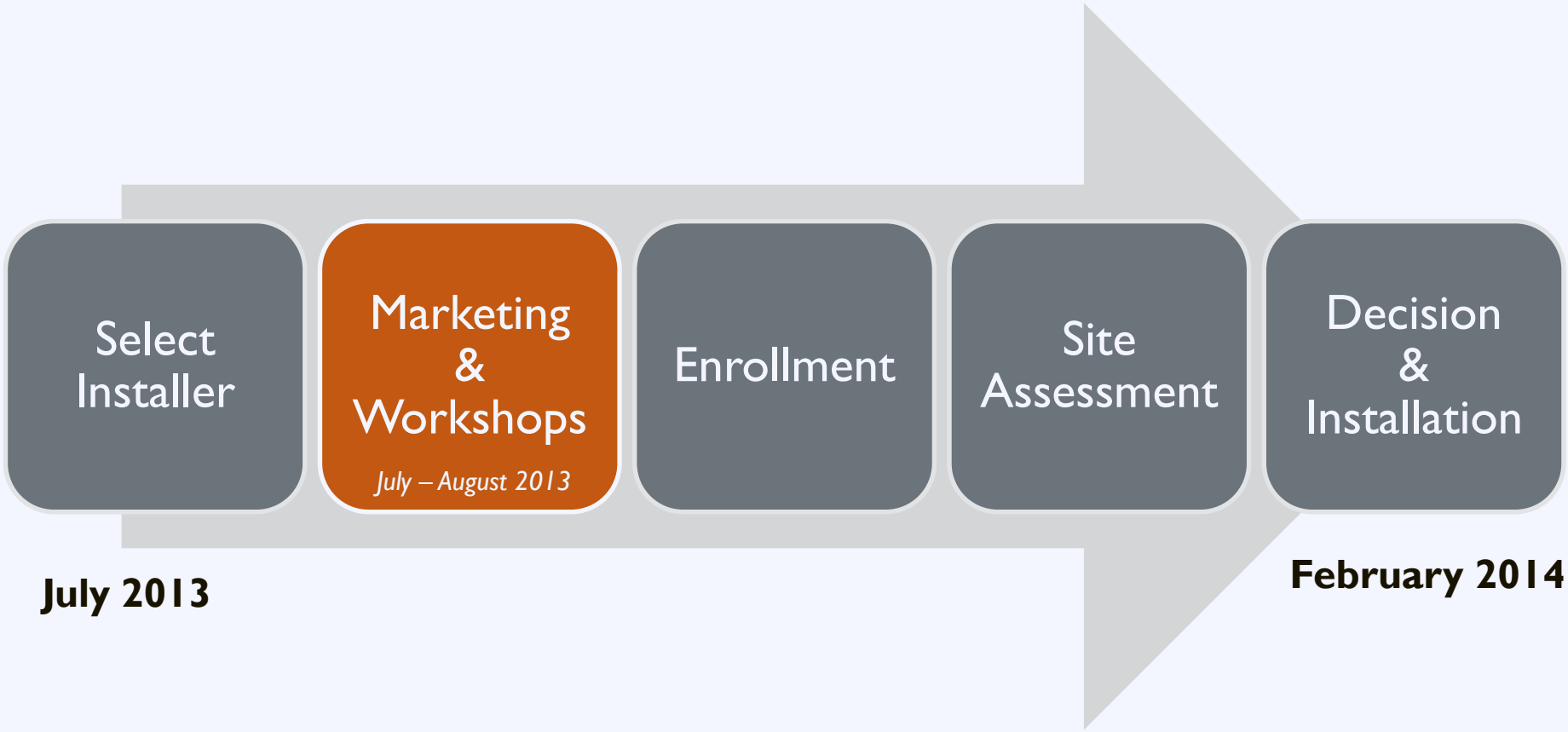
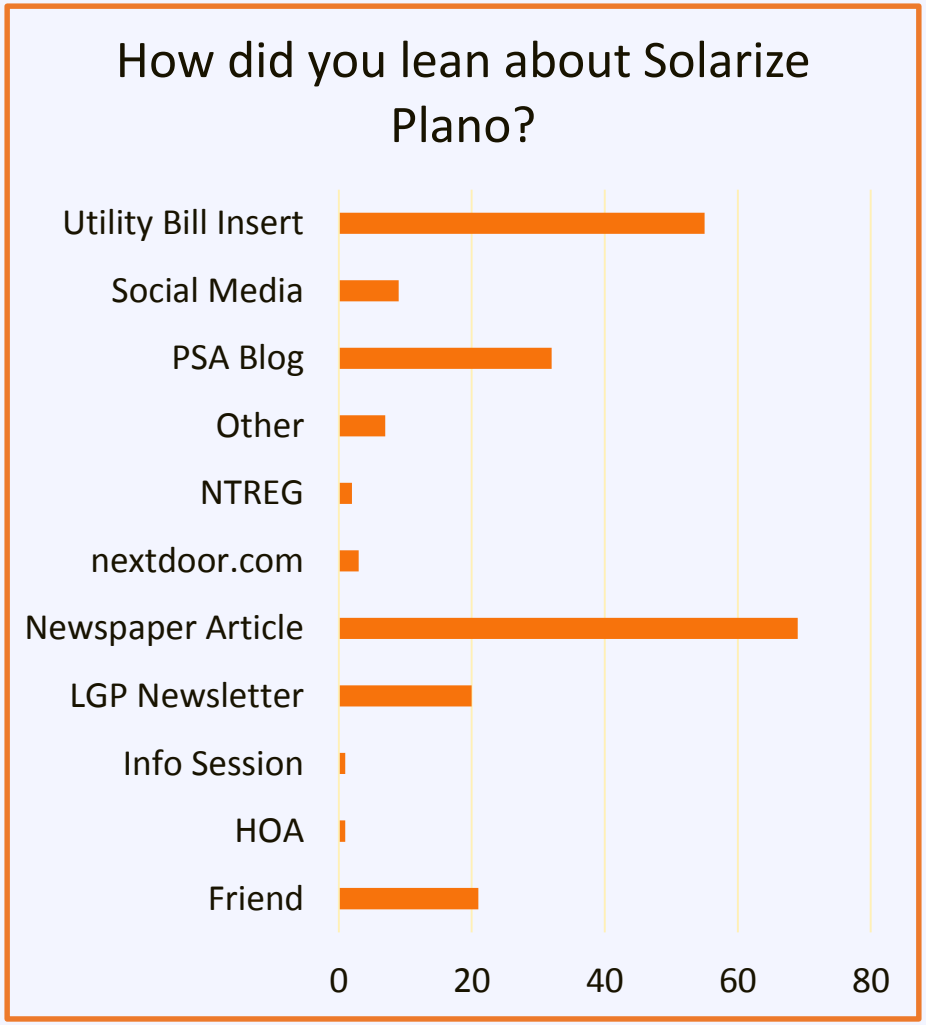


Solarize Plano: Case Study

Marketing Strategy:

- Used Google for online communications
- Online Solar 101 presentations and videos
- Local newspaper and media
- Utility bill insert



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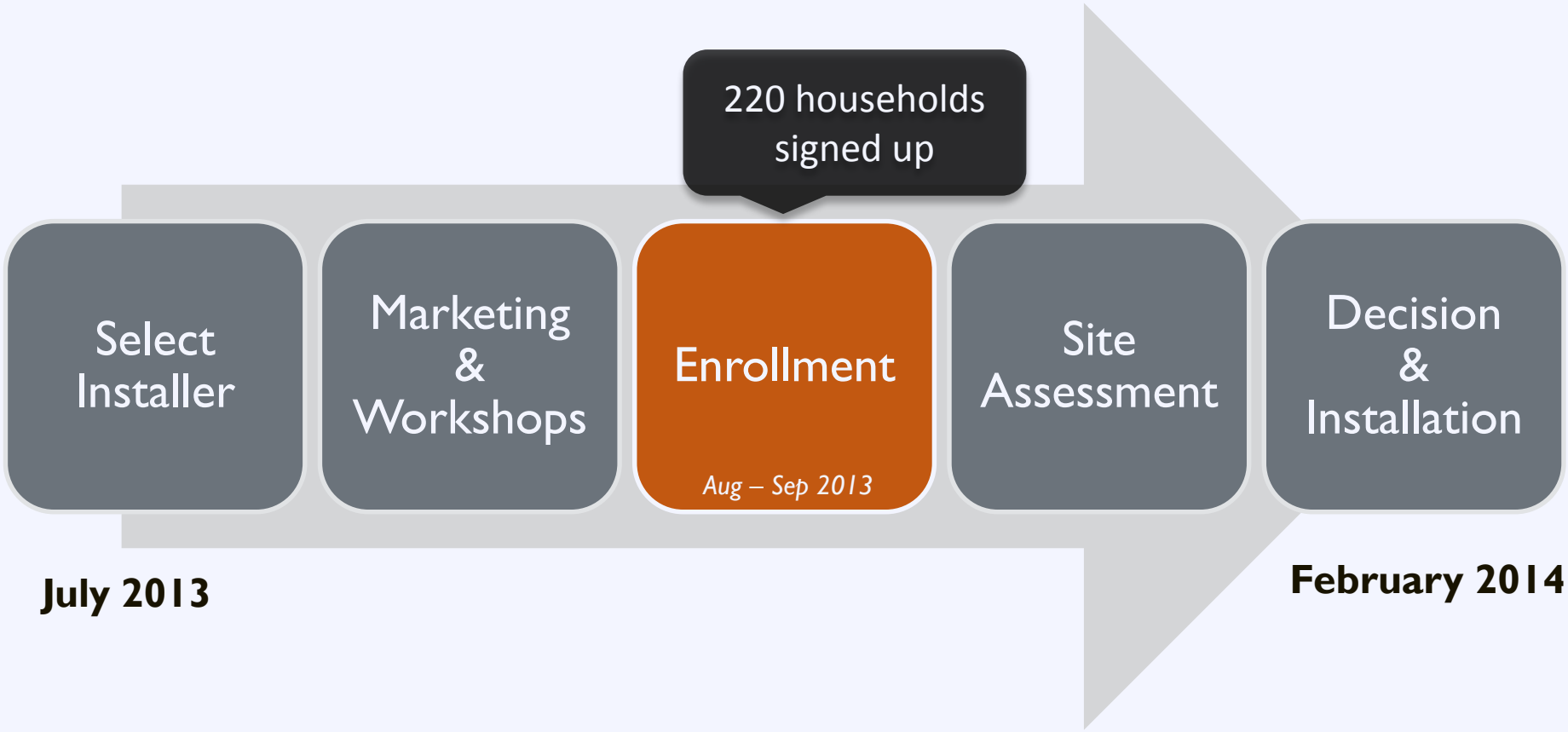
Source: Solarize Plano & NCTCOG

Solarize Plano: Case Study



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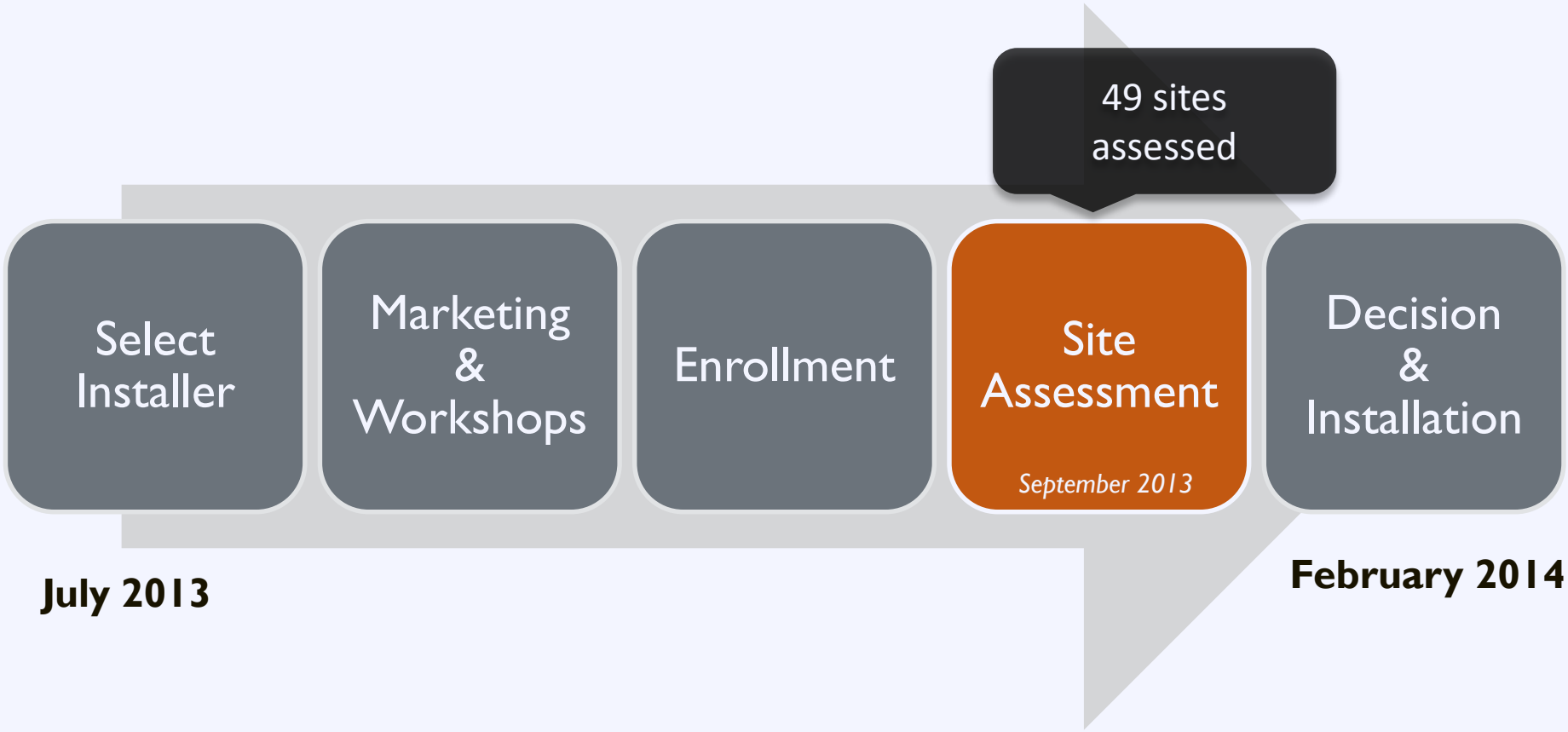

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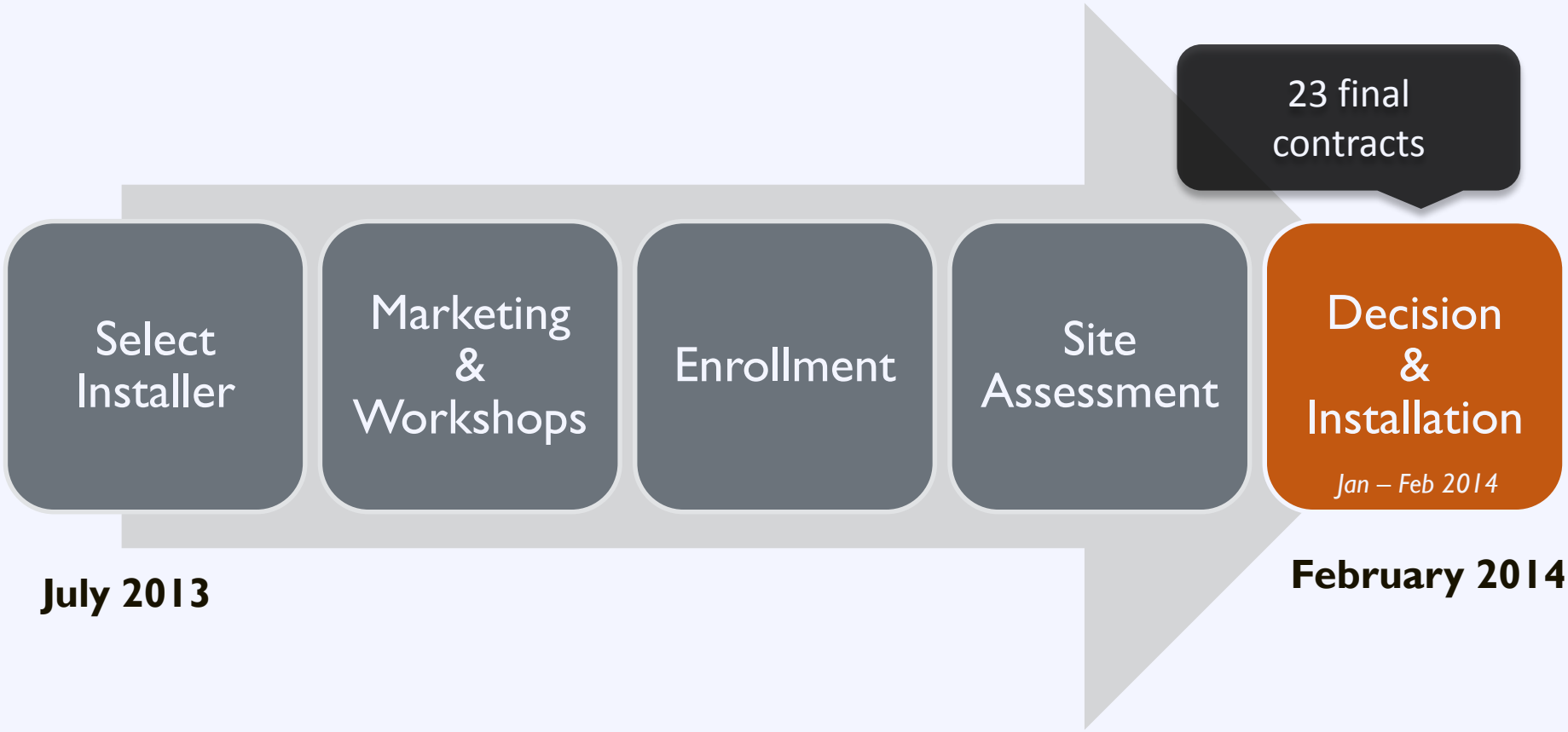


Solarize Plano: Case Study

Results:

23 new installations totaling 112 kW

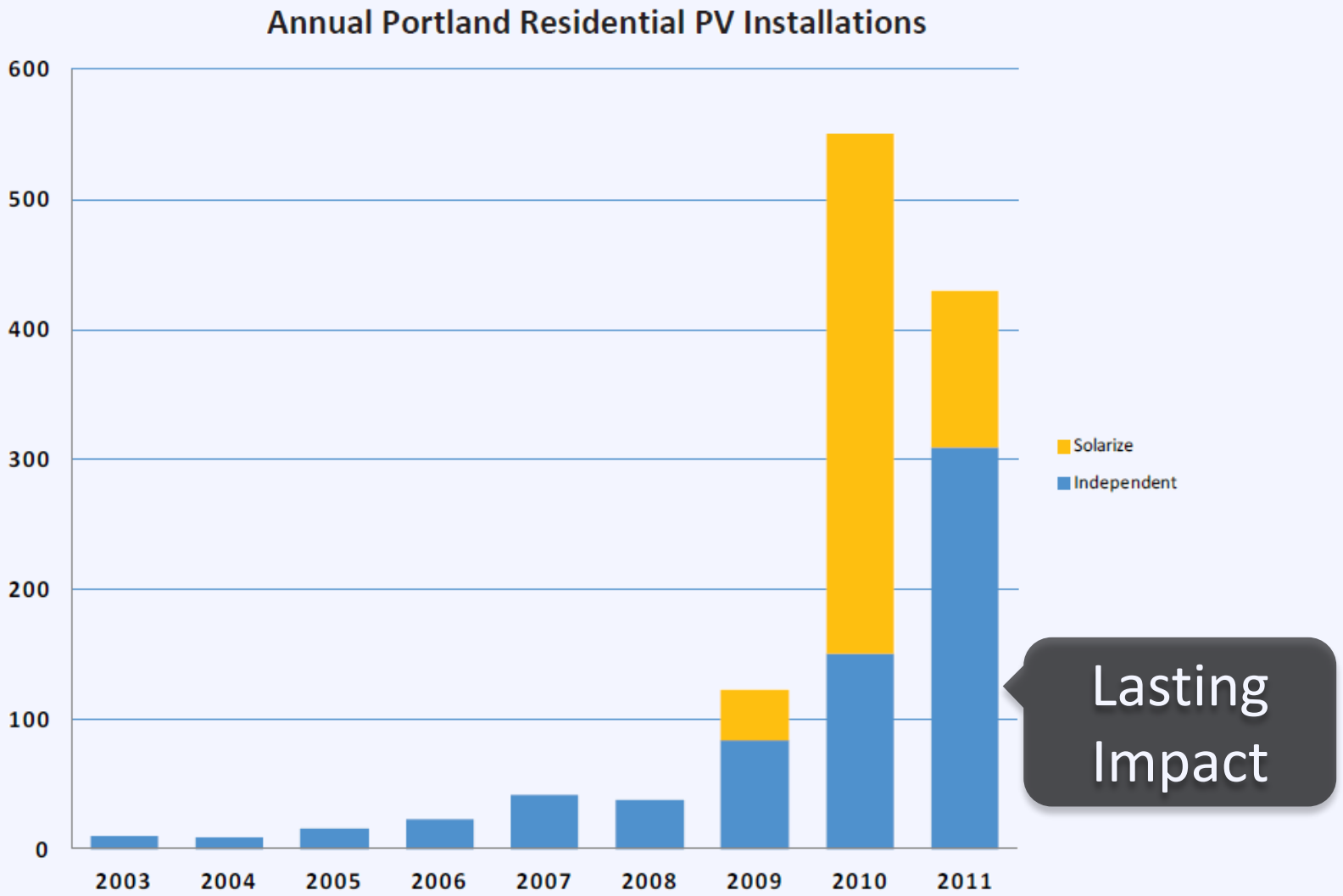
45% of assessed sites signed contracts

20% reduction in solar price

Round 2 of Solarize Plano in 2014

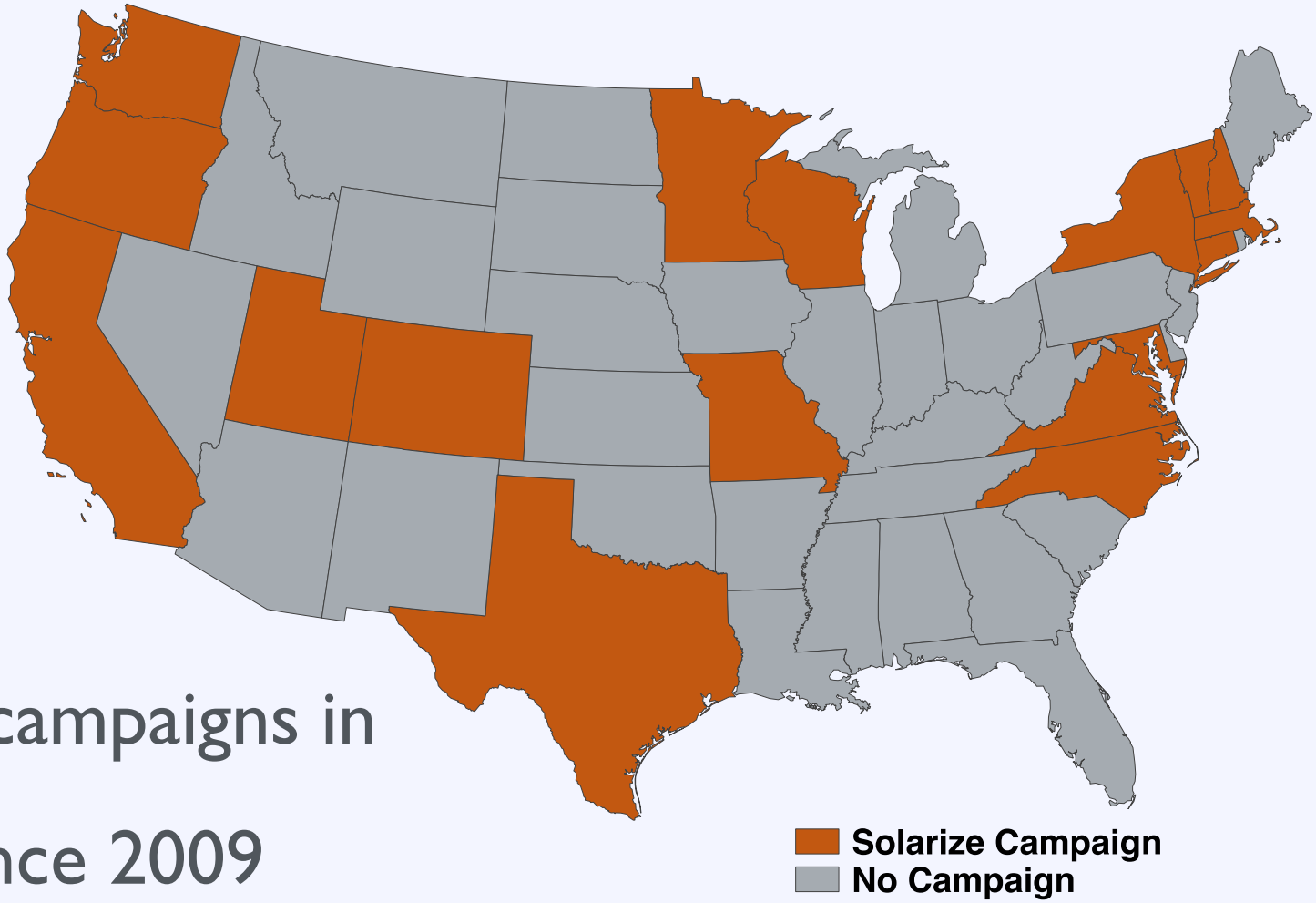
5 new Solarize communities in Texas

Solarize: Lasting Impact



Source: NREL

Solarize: National Growth



Over 150 campaigns in

17 states since 2009

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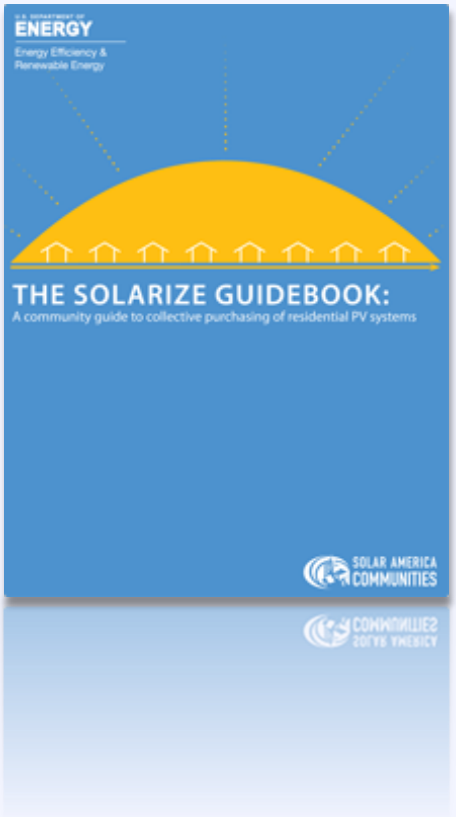
Solarize: Resources

Resource **The Solarize Guidebook**

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

www.nrel.gov



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Activity: Solar in Your Community

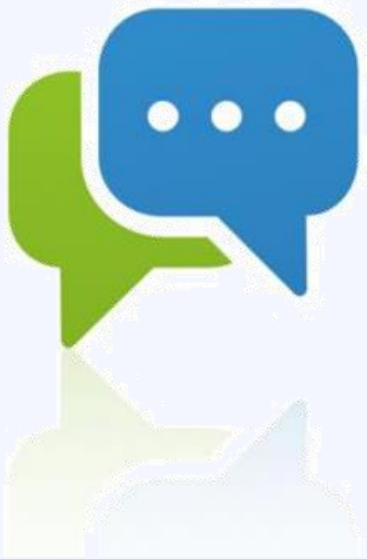
1. Recognize successes
2. Identify opportunities
3. Select strategies & best practices
4. Outline implementation plan
5. Discuss barriers to implementation

Activity: Solar in Your Community

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

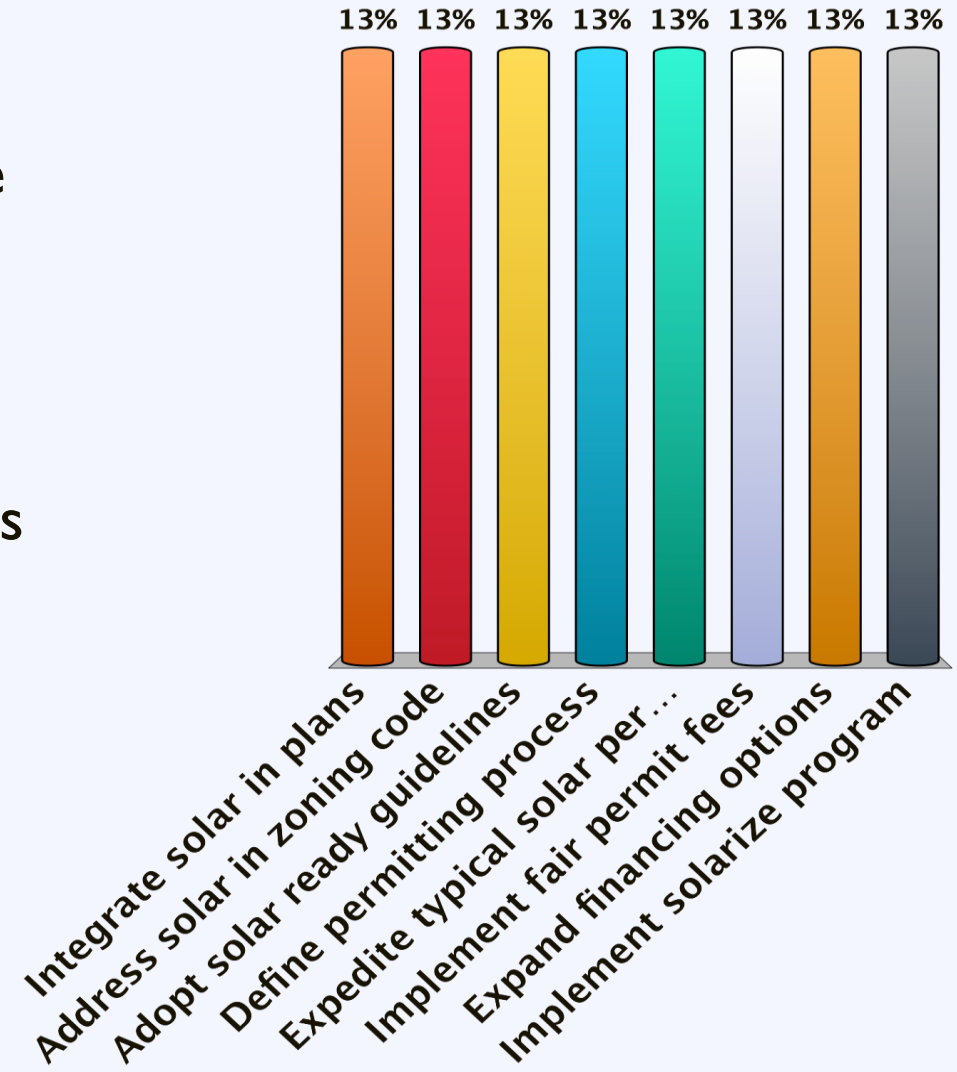
Activity: Solar in Your Community

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.



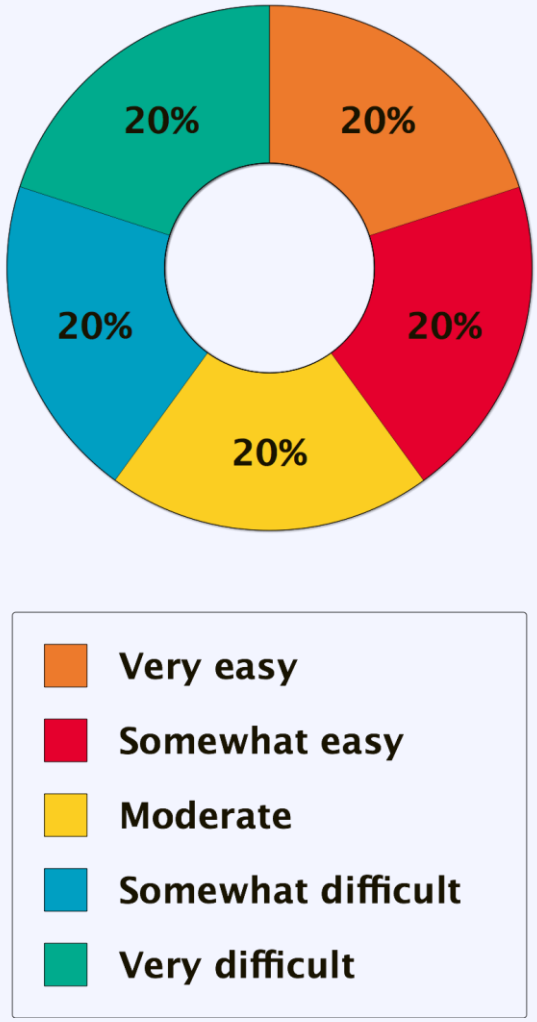
Which "best practice" did you select to pursue first?

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



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? [Colored Index Card]

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Next Steps

1. Meet with us for 20 minutes
2. Apply for free Technical Assistance
3. Complete a DOE solar policy audit
4. Host a in-person strategy session
5. Implement policy changes & programs

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