Solar Powering Your Community

Addressing Soft Costs and Barriers

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About the SunShot Solar Outreach Partnership

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

Agenda

09:10 – 09:45	Introductions and Overview
09:45 – 10:10	Solar 101: Policy Environment and Economics
10:10 – 10:20	*Break*
10:20 – 10:40	Benefits and Barriers Activity
10:40 – 11:10	Creating a Solar Ready Community
11:10 – 11:50	Growing Your Local Solar Market
11:50 – 12:00	*Break*
12:00– 01:00	Lunch and Local Session

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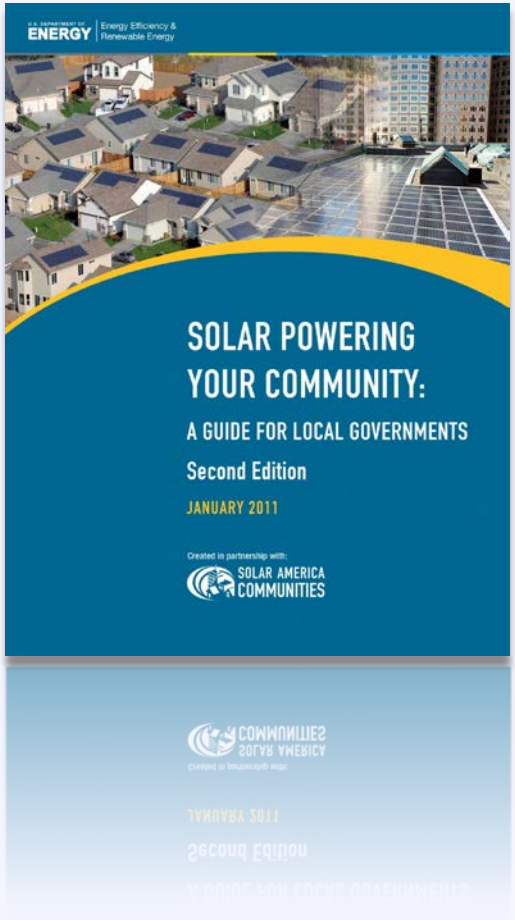
About the SunShot Solar Outreach Partnership

Resource **Solar Powering Your Community Guide**

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

www.energy.gov



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About the SunShot Solar Outreach Partnership

Resource Sunshot Resource Center

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

www4.eere.energy.gov/solar/sunshot/resource_center

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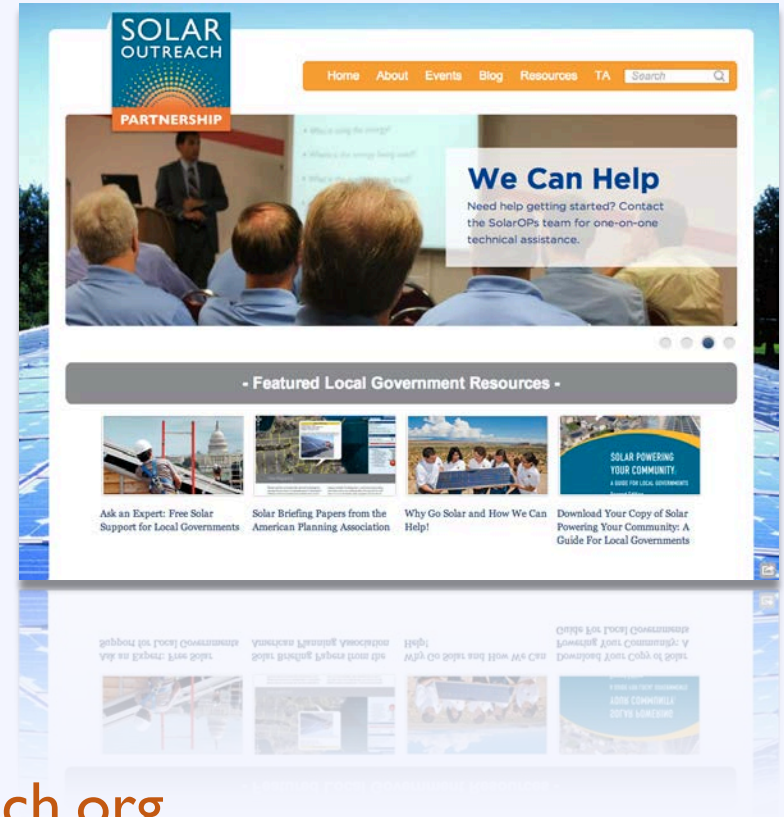
About the SunShot Solar Outreach Partnership

Technical Support

- 'Ask an Expert' Live Web Forums
- 'Ask an Expert' Web Portal
- Peer Exchange Facilitation
- In-Depth Consultations
- Customized Trainings



www.solaroutreach.org

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Poll

Who's in the room?

Poll

What is your experience with solar?

Solar Technologies

Solar Photovoltaic (PV)

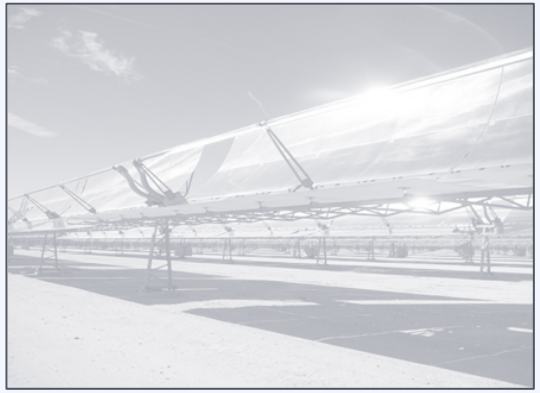
Solar Hot Water

Concentrated Solar Power

Solar Technologies

Solar Photovoltaic (PV)

Solar Hot Water



Concentrated Solar Power

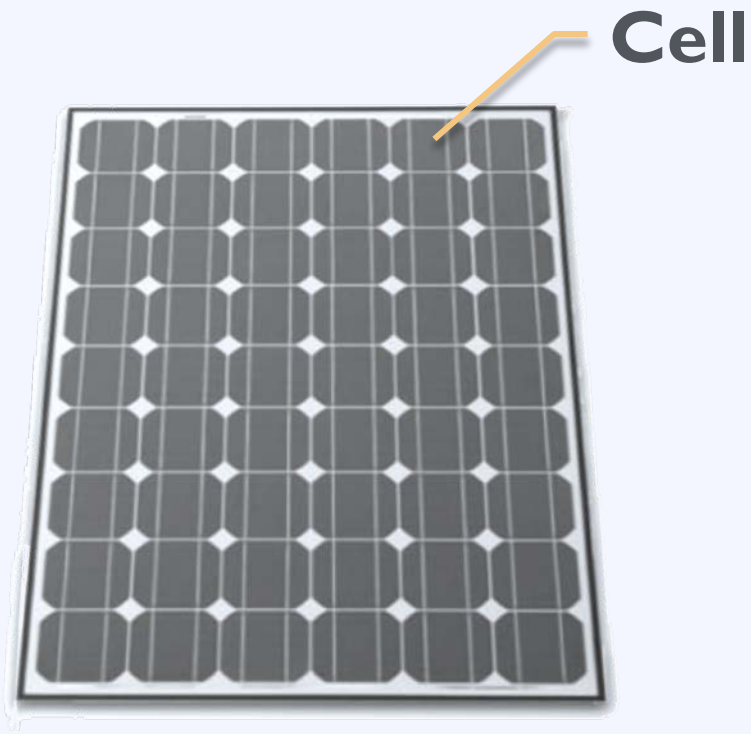
Solar Technologies

Solar Photovoltaic (PV)

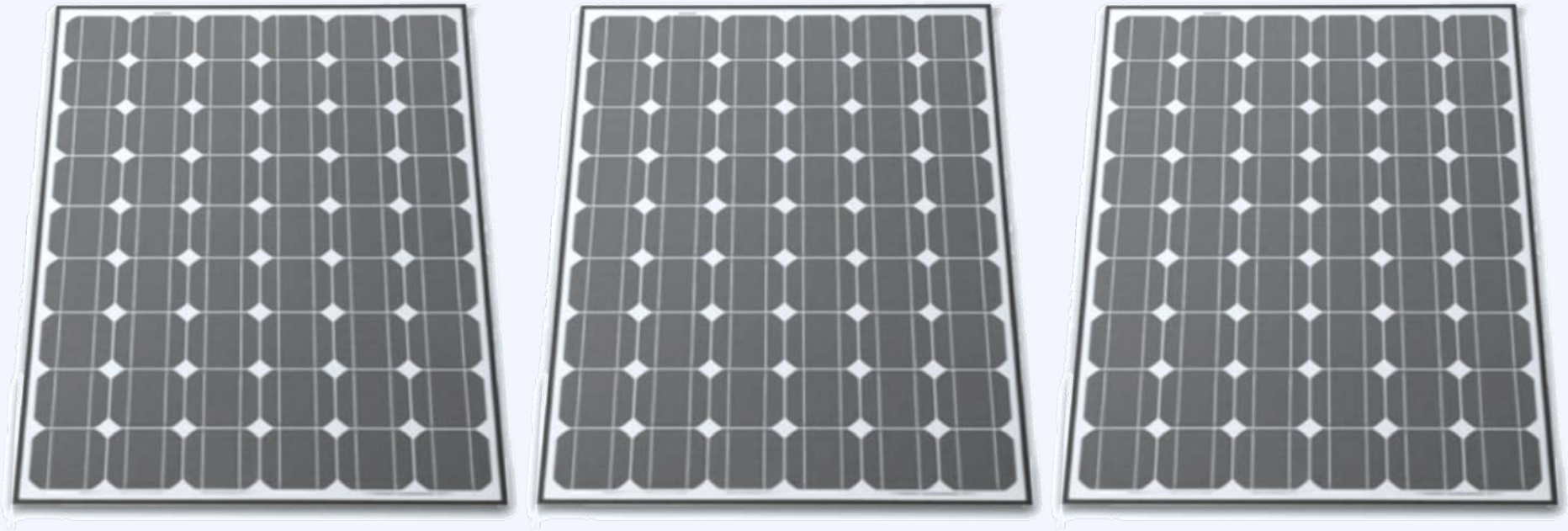
Solar Hot Water

Concentrated Solar Power

Some Basic Terminology

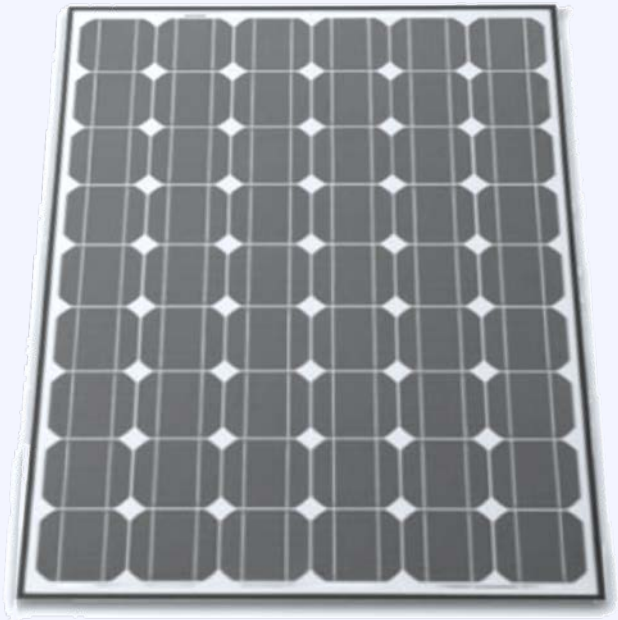


Some Basic Terminology



Array

Some Basic Terminology



Capacity / Power

kilowatt (kW)

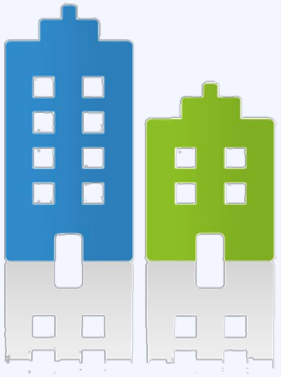
Production

Kilowatt-hour (kWh)

Some Basic Terminology

Residence
5 kW

Factory
1 MW+



Office
50 – 500 kW

Utility
2 MW+

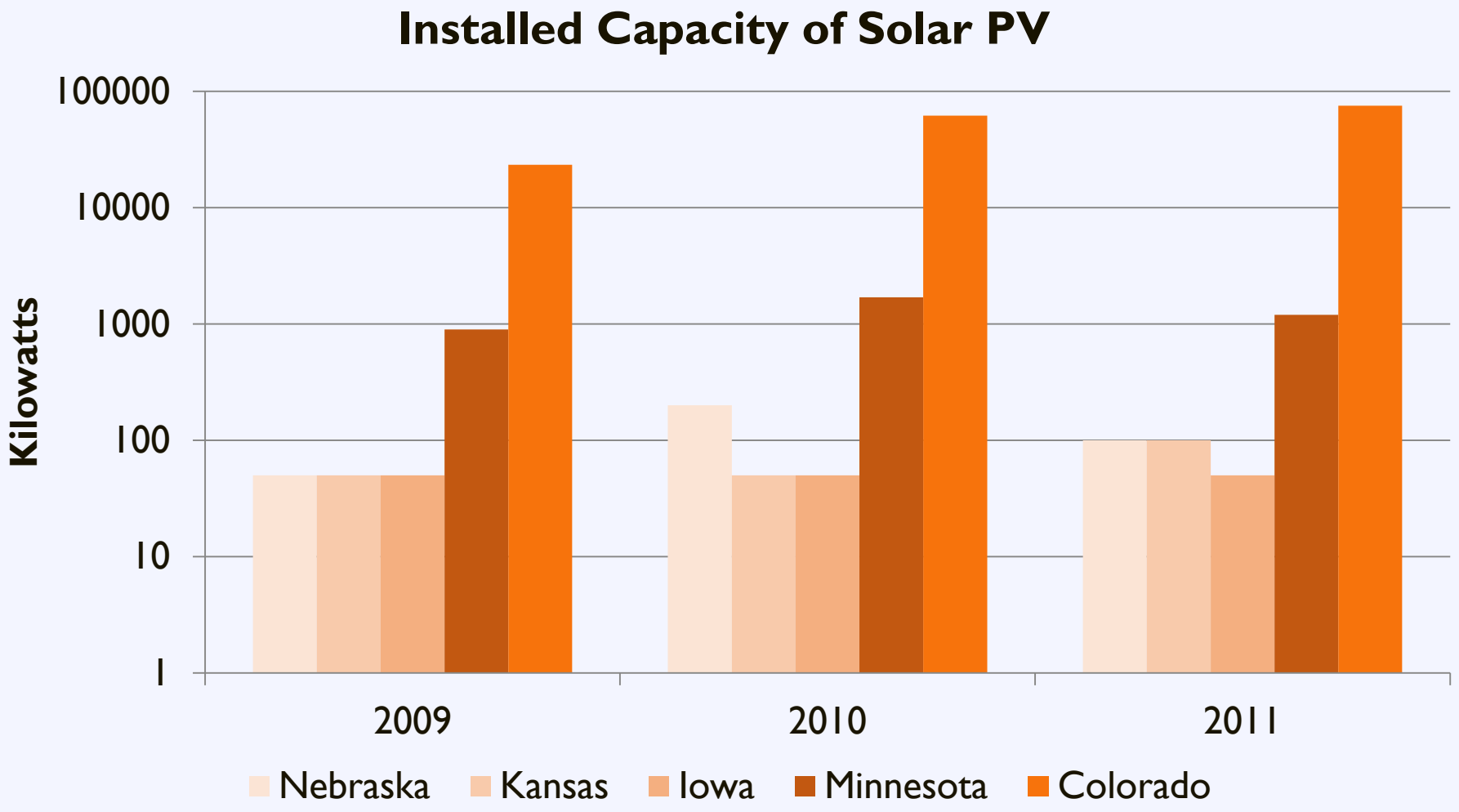
Solar Technologies

Solar Photovoltaic (PV)

Solar Hot Water

Concentrated Solar Power

Nebraska Regional Solar Market



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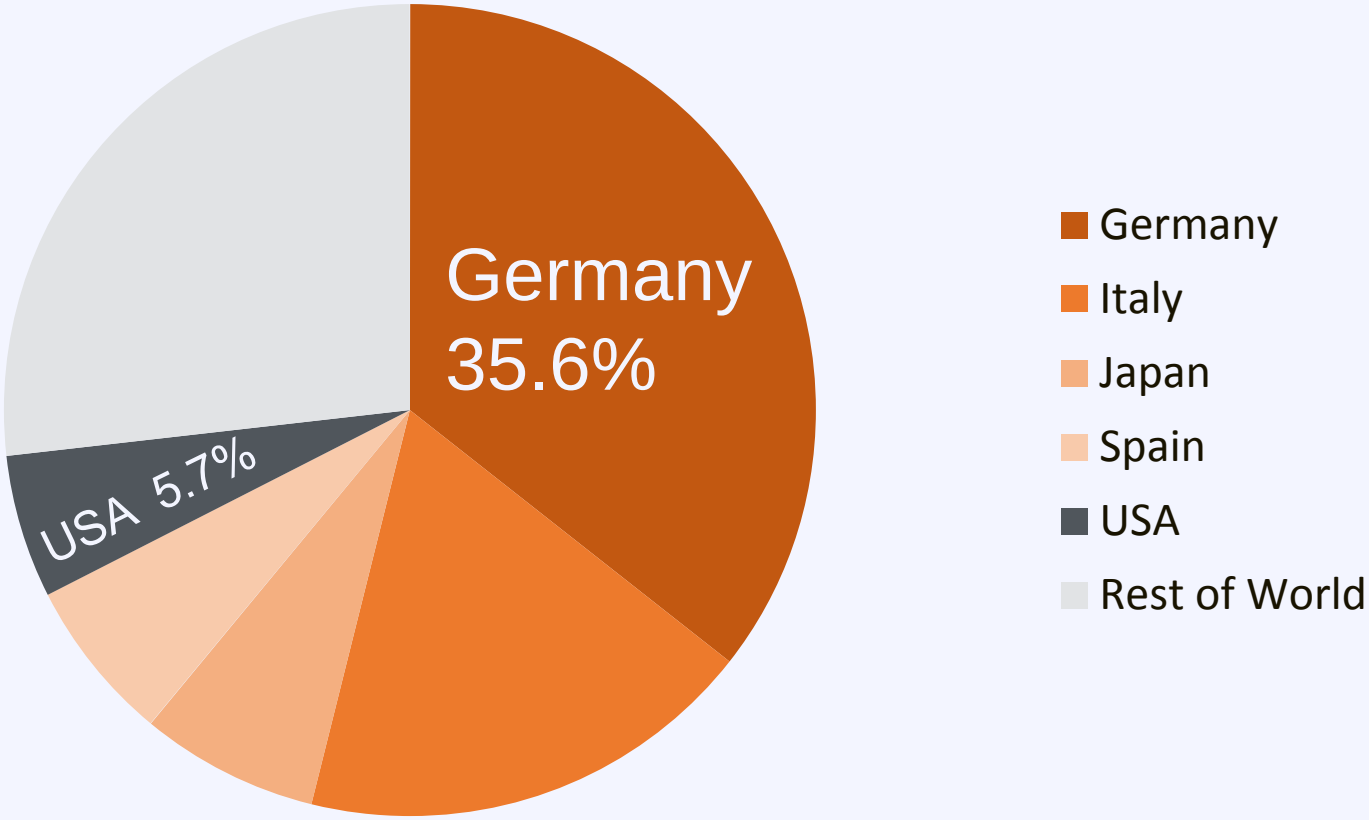
Source: IREC

Installed Capacity

Top 5 Countries Solar Operating Capacity (2011)



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http://www.map.ren21.net/GSR/GSR2012.pdf

Installed Capacity

Total installed solar capacity in the US

7.7 GW

Capacity installed in Germany in 2012 alone

7.6 GW

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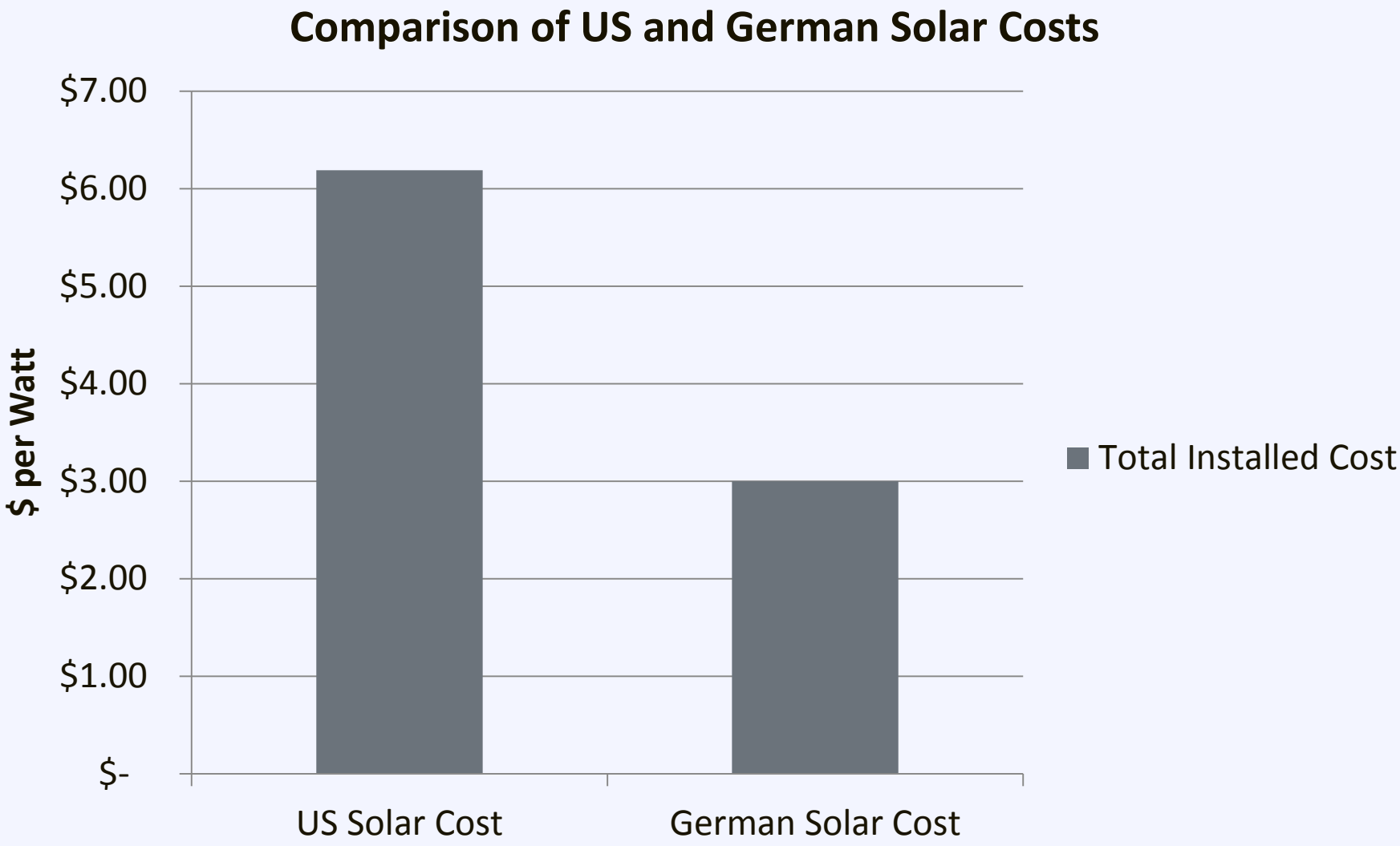
Source: (1) GTM Research/ Solar Energy Industries Association. *U.S. Solar Market Insight Report 2012 Year-in-Review*; (2) www.erneuerbare-energien.de/fileadmin/Daten_EE/Dokumente__PDFs_/20130328_hgp_e_ppt_2012_fin_bf.pdf

The Cost of Solar in the US



Source: NREL (http://ases.conference-services.net/resources/252/2859/pdf/SOLAR2012_0599_full%20paper.pdf) (http://www.nrel.gov/docs/fy12osti/53347.pdf) (http://www.nrel.gov/docs/fy12osti/54689.pdf)

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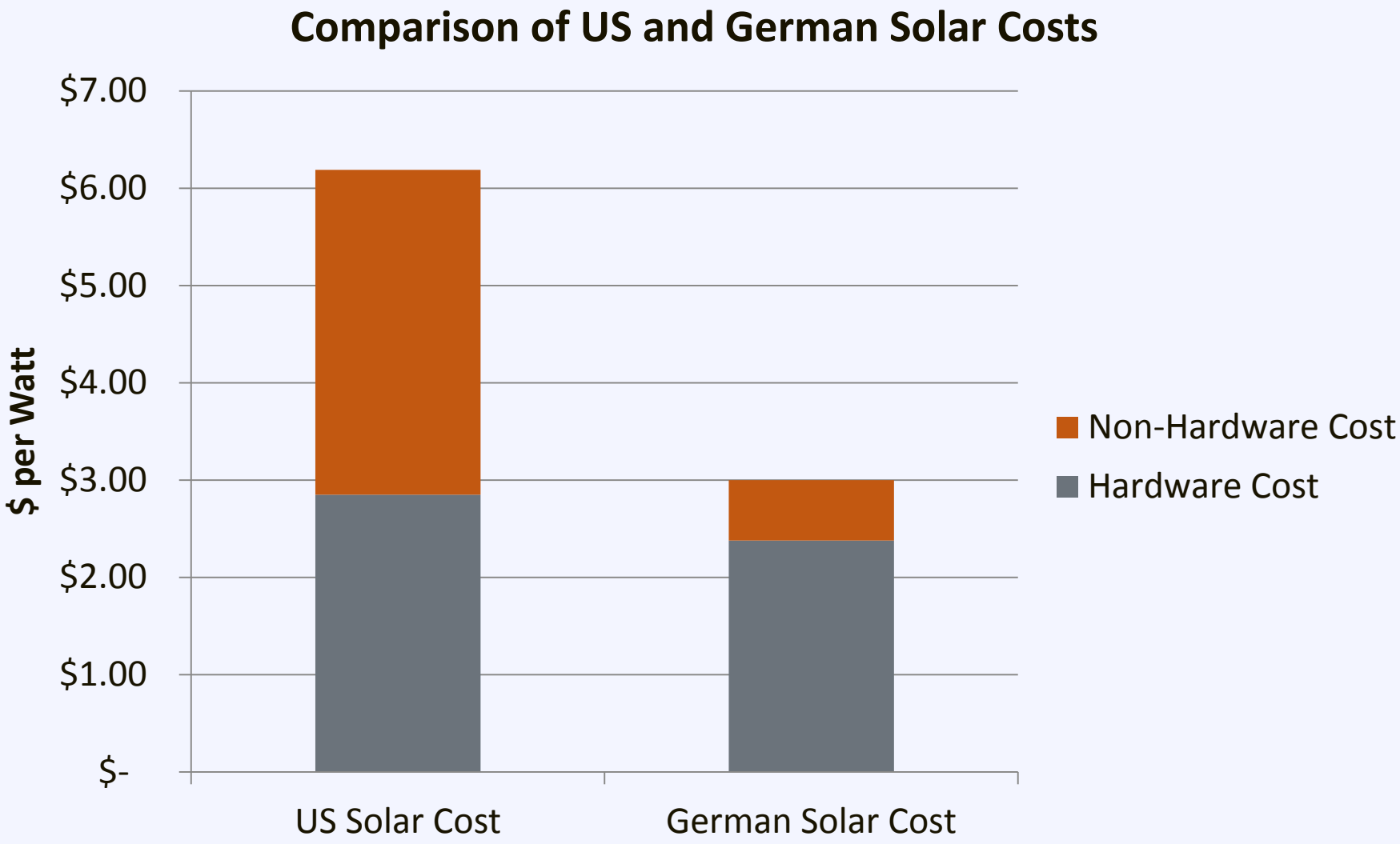

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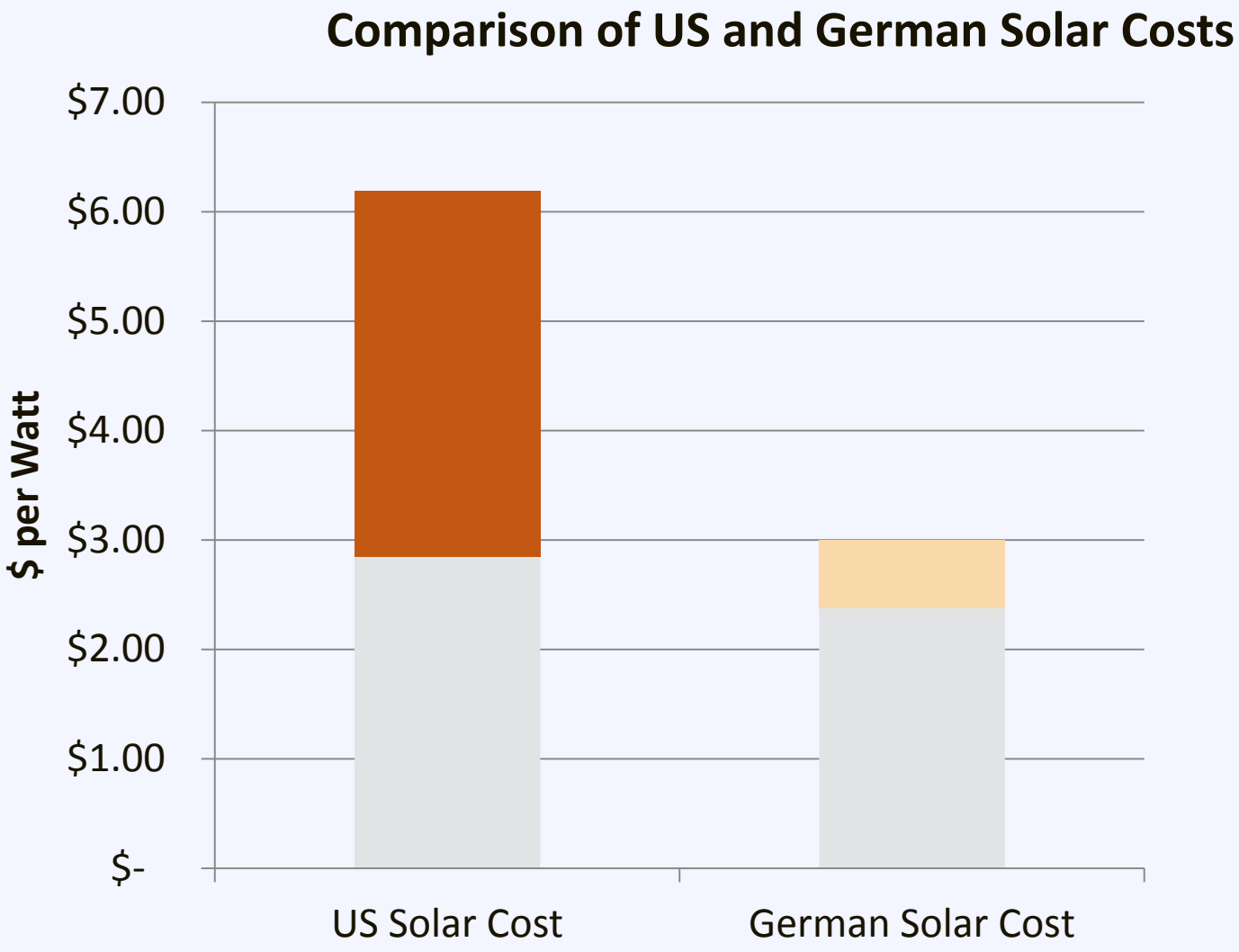

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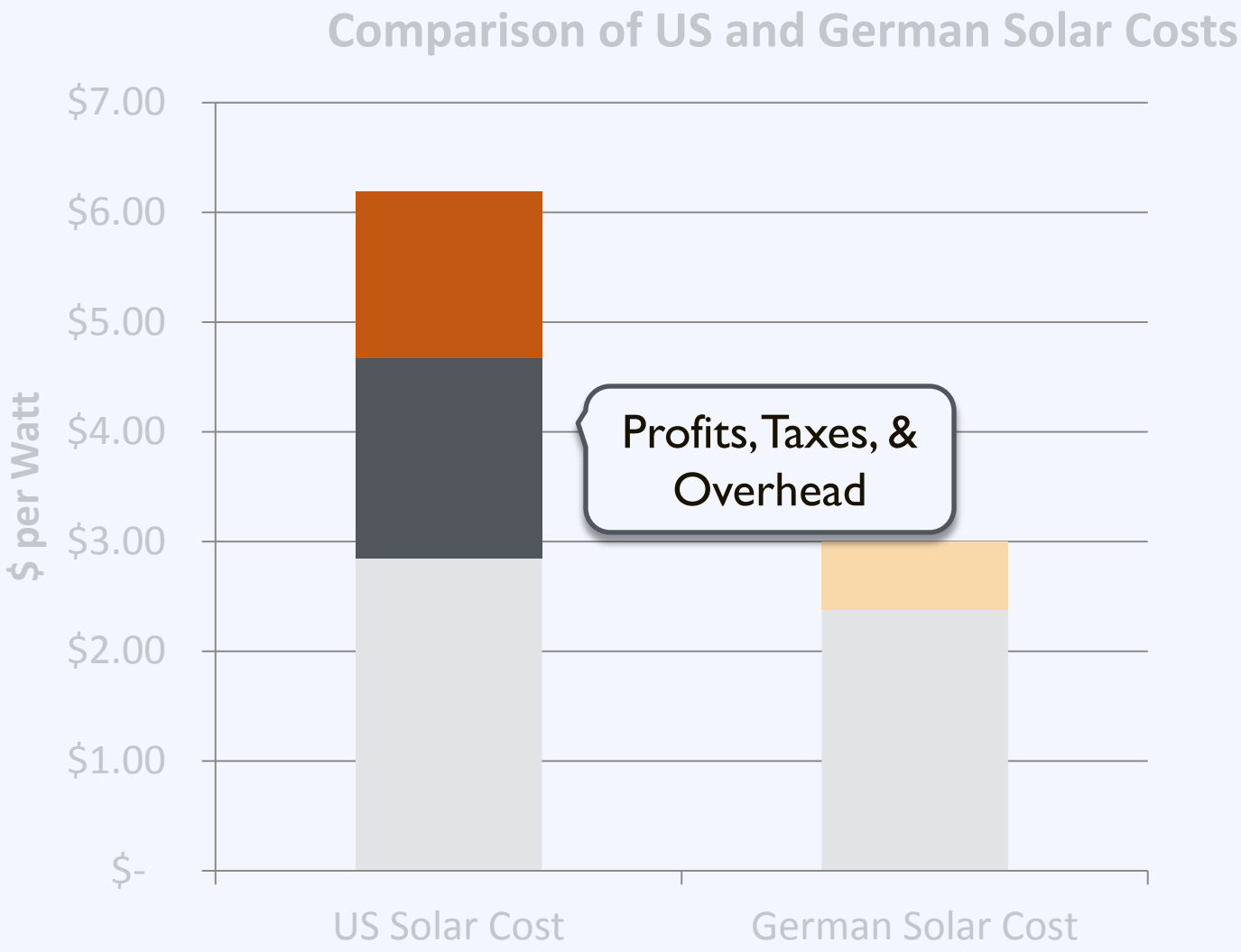

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Source: NREL (http://ases.conference-services.net/resources/252/2859/pdf/SOLAR2012_0599_full%20paper.pdf) (http://www.nrel.gov/docs/fy12osti/53347.pdf) (http://www.nrel.gov/docs/fy12osti/54689.pdf)

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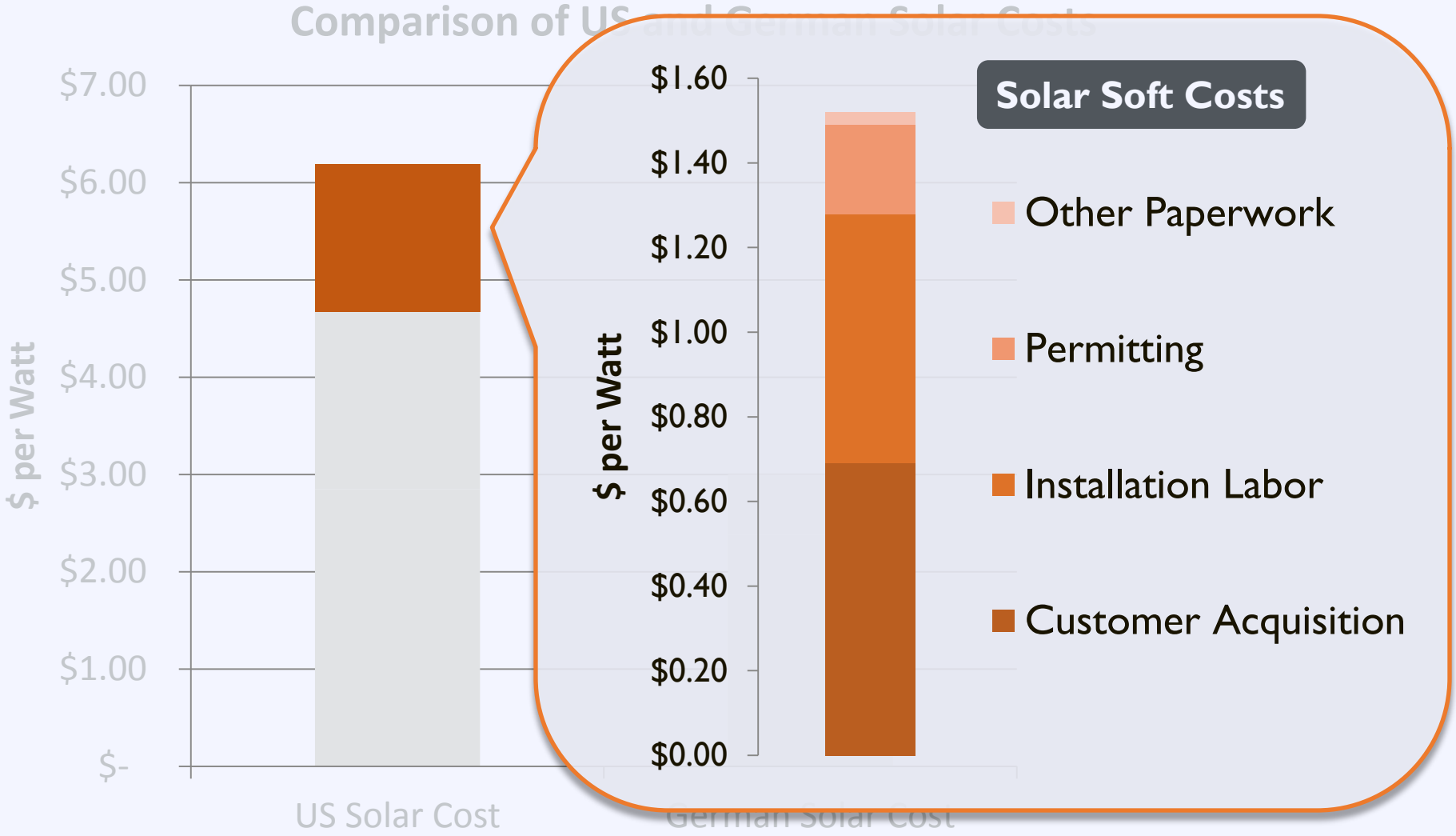

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Workshop Goal

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

Explore benefits

and

Overcome barriers

Activity: Identifying Benefits

What is the greatest benefit solar can bring to your community? [Blue Card]

Right Now	During Session	After Break
		
Write answer on card	Compile results	Group discussion

Activity: Addressing Barriers

What is the greatest barrier to solar adoption in your community? [Green Card]

Right Now	During Session	After Break
		
Write answer on card	Compile results	Group discussion

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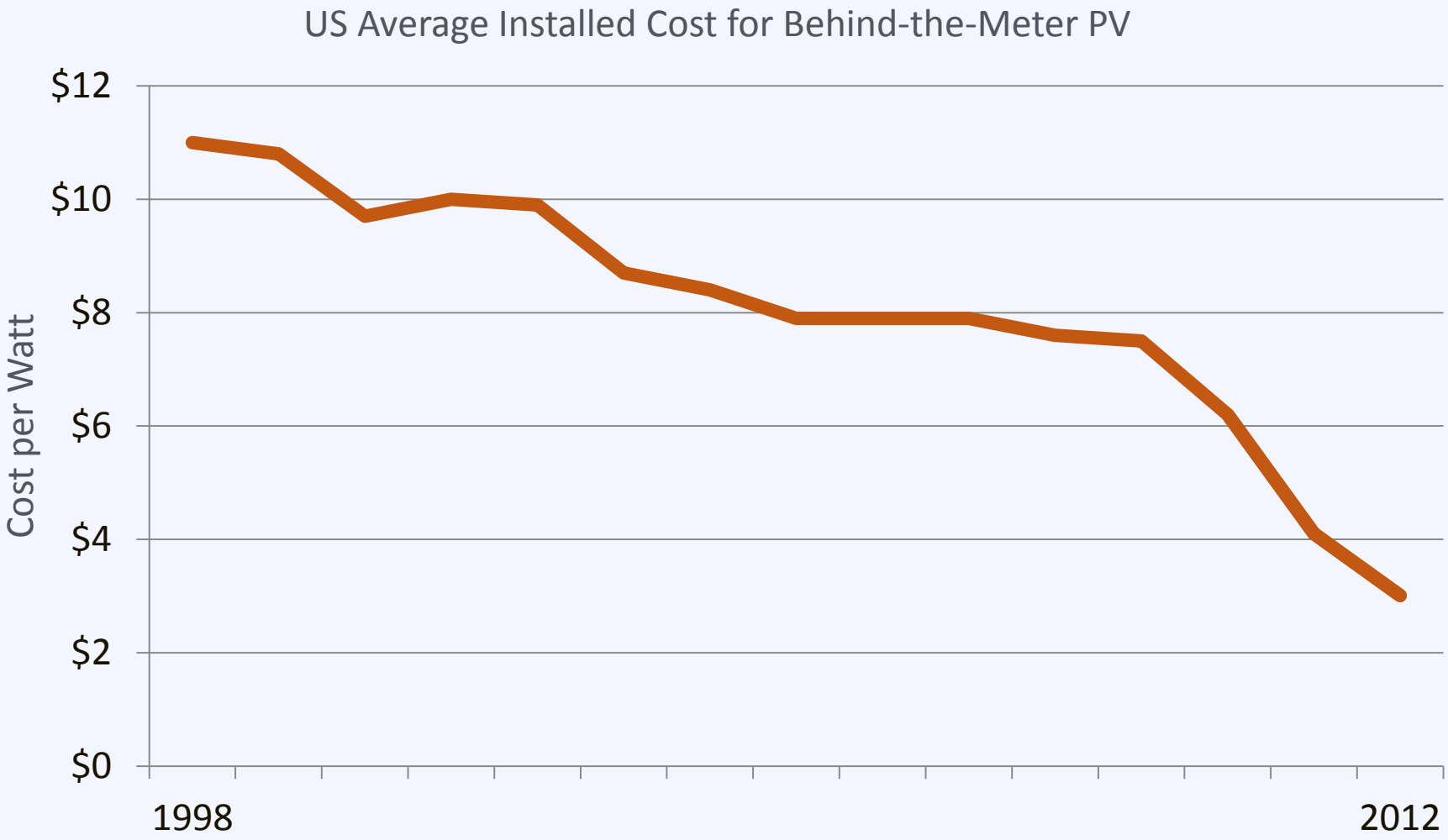
Solar Market: Trends



Tracking the Sun IV: The Installed Cost of Photovoltaics in the US from 1998-2010 (LBNL), SEIA/GTM Research *Solar Market Insight 2012 Year-in-Review.*

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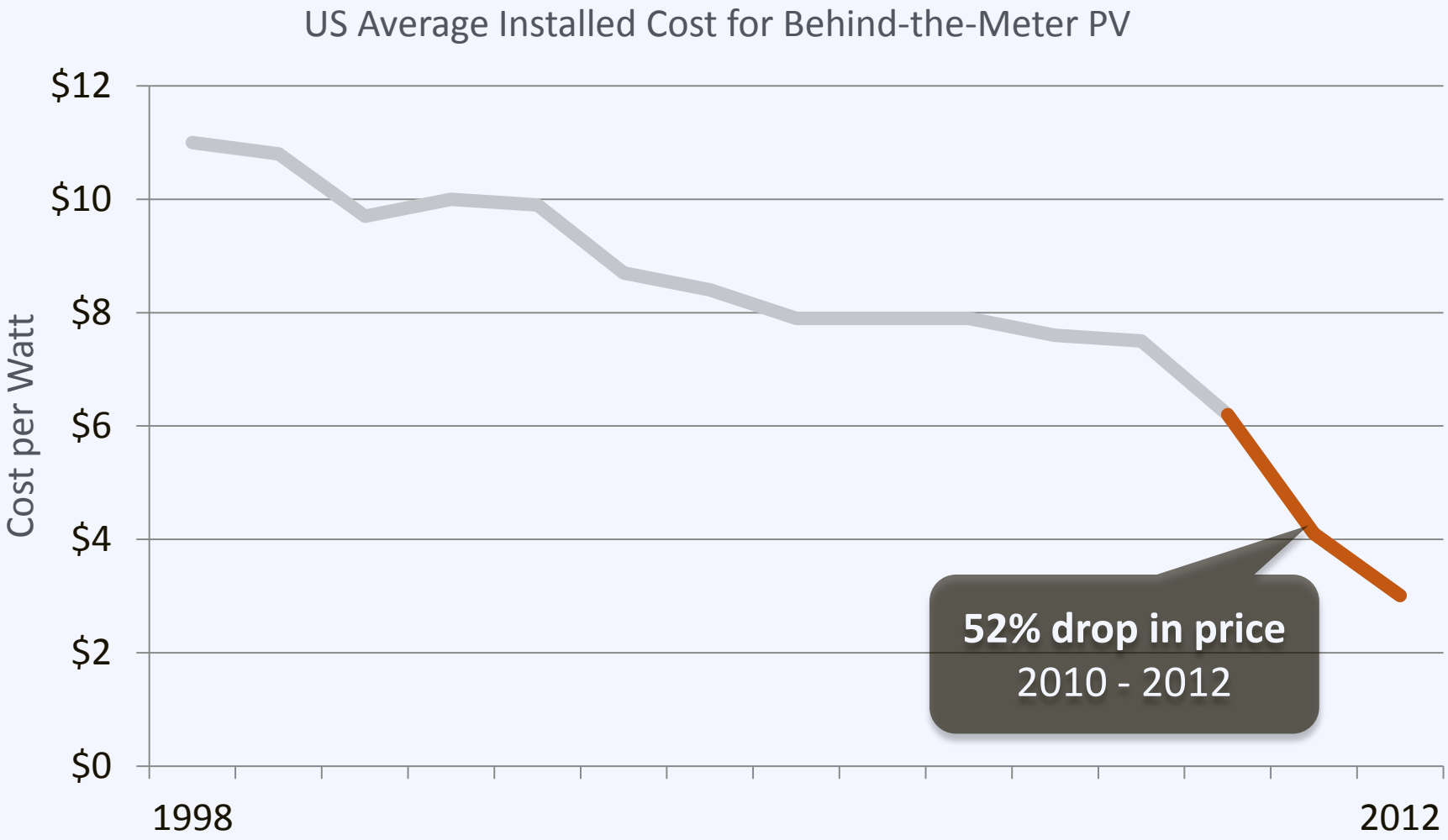
Solar Market: Trends



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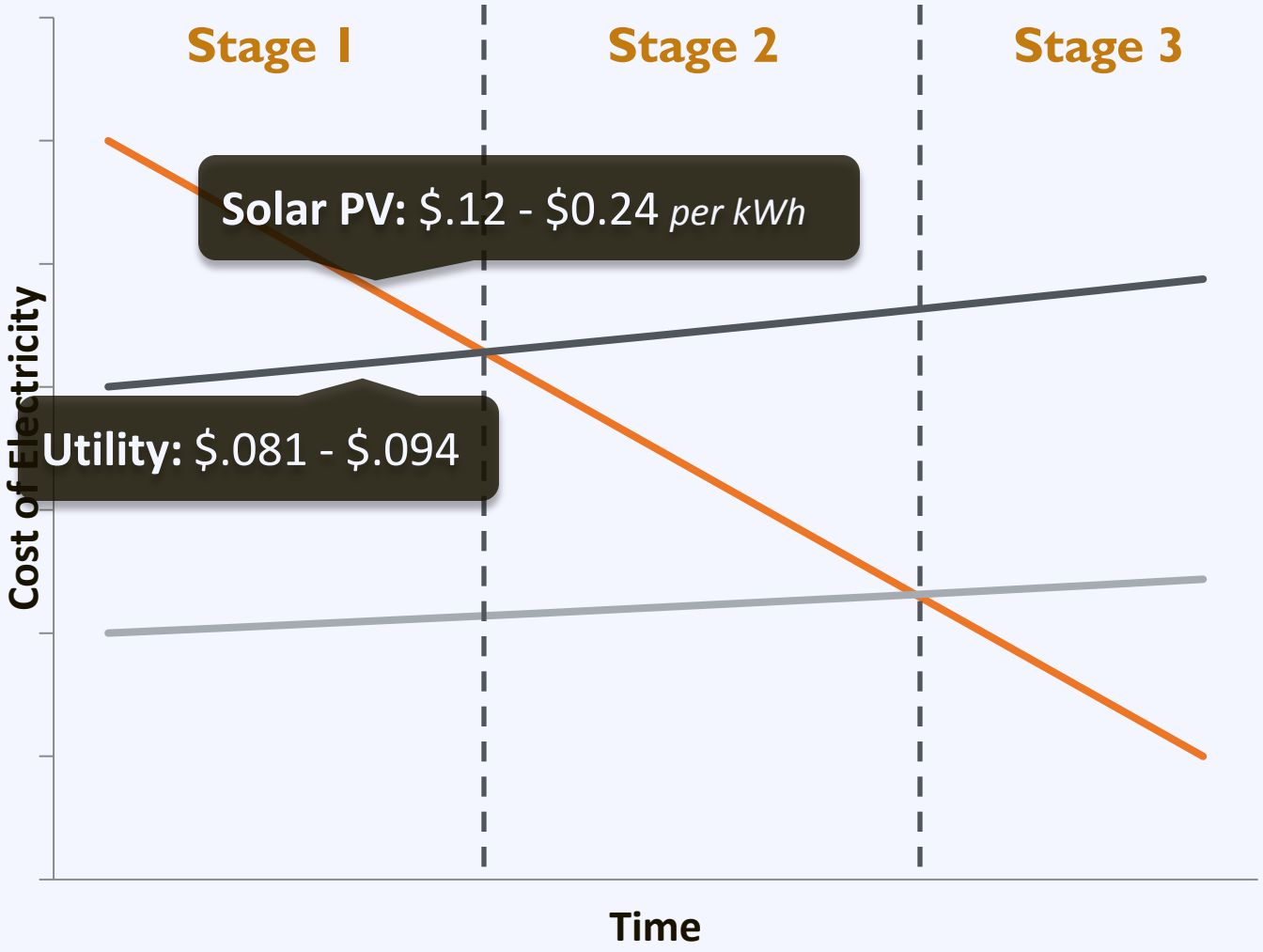
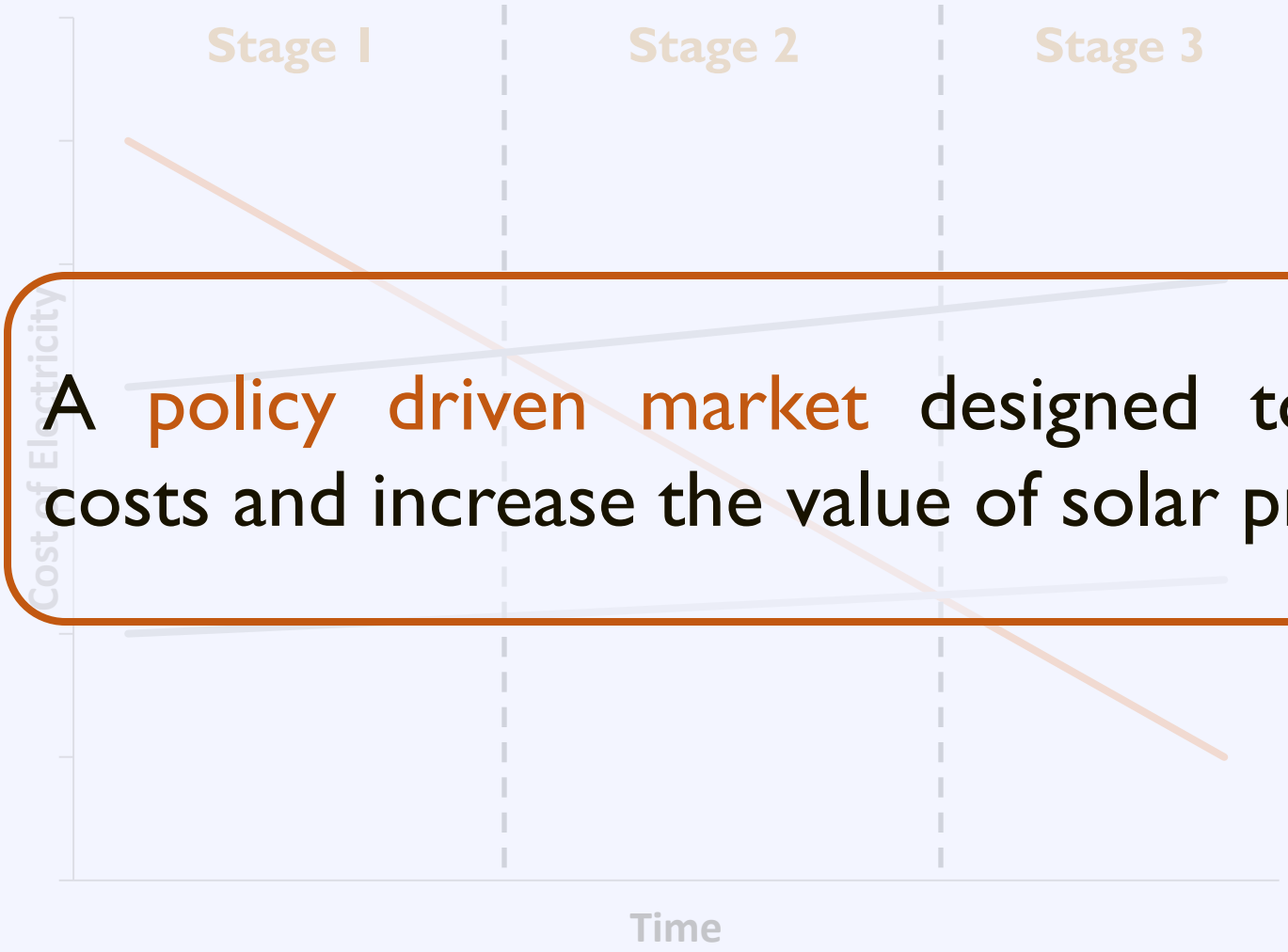


Source: Solar Electric Power Association

Solar Market: Stages



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

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Source: Solar Electric Power Association

A Policy Driven Market

State

- Utility Regulation
- Solar Access
- Community-Based Energy Development

Local

- Planning
- Zoning
- Permitting

A Policy Driven Market

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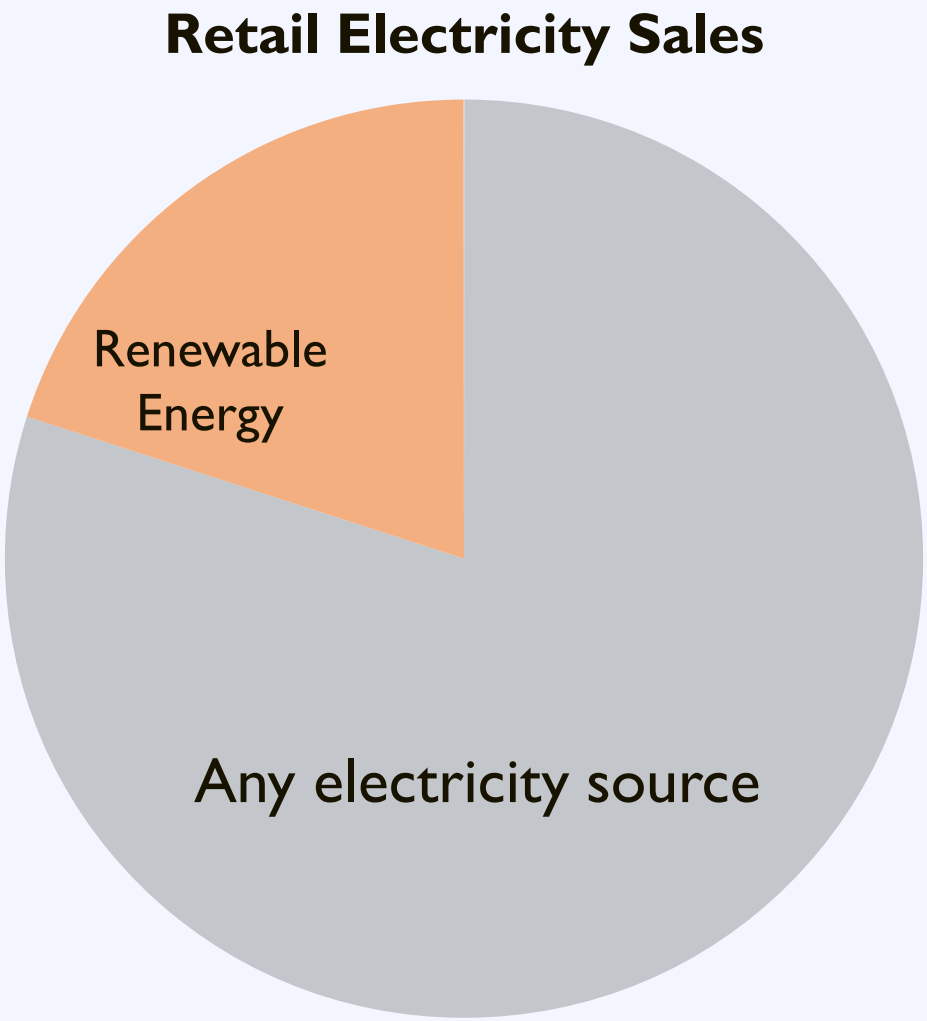
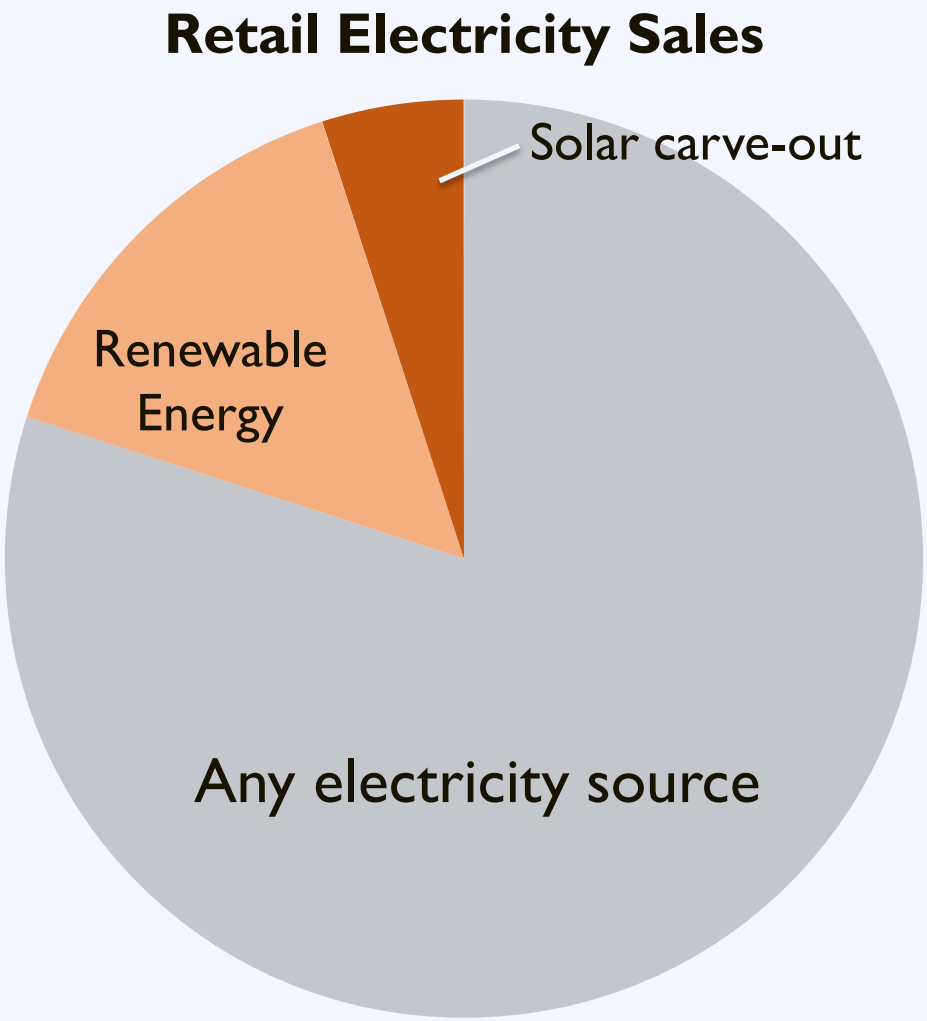
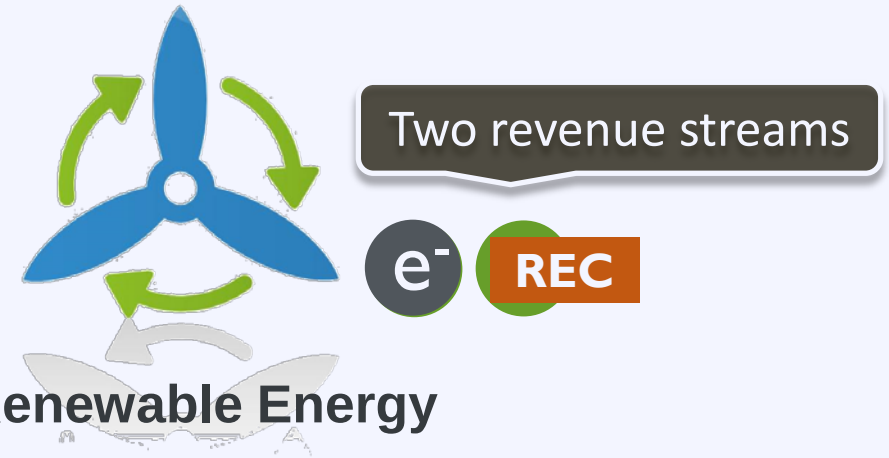
Renewable Portfolio Standard



Renewable Portfolio Standard

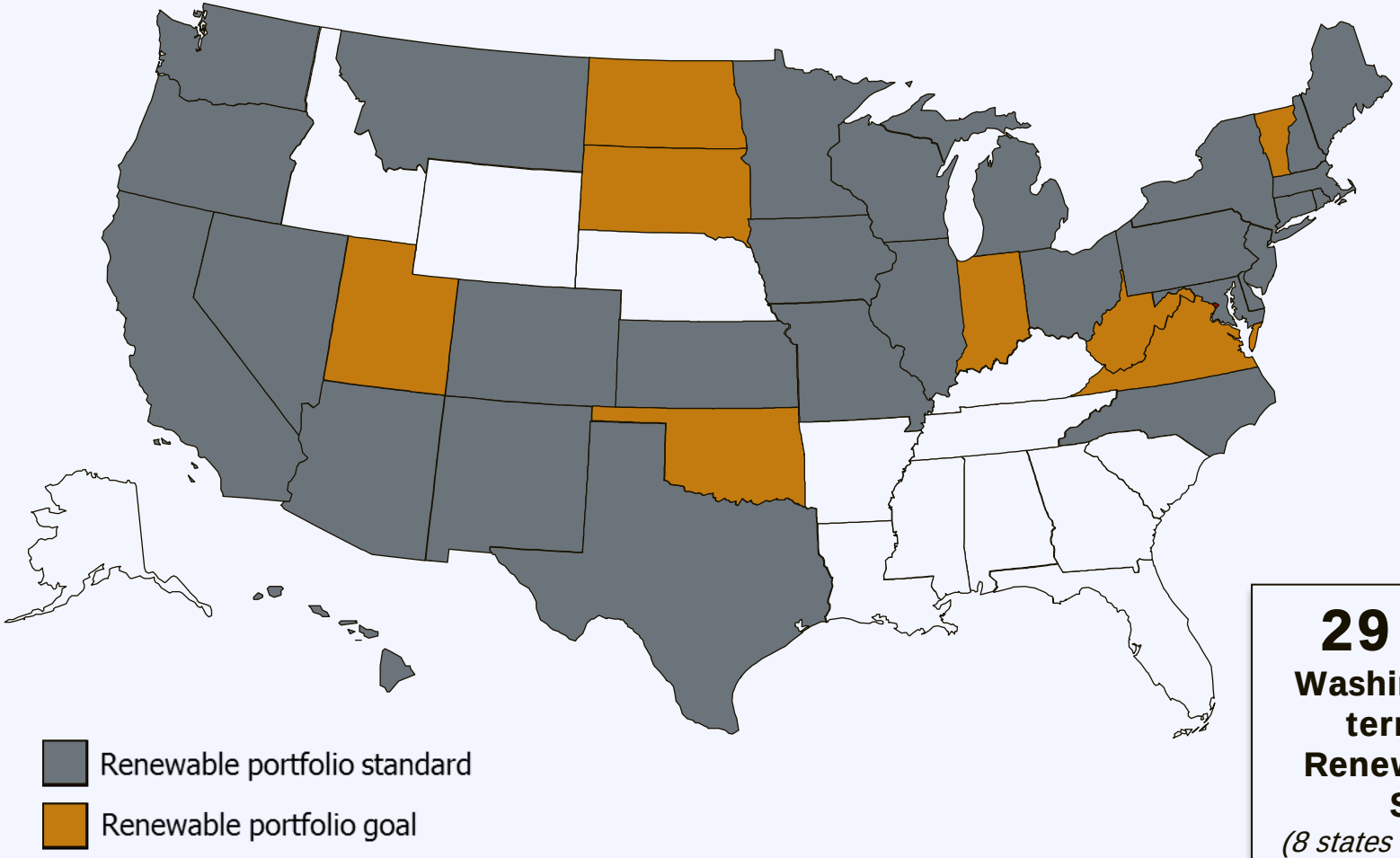


Renewable Portfolio Standard



Renewable Portfolio Standard

www.dsireusa.org / March 2013



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

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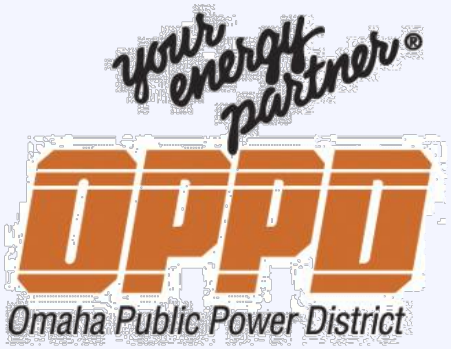
Renewable Portfolio ~~Standard~~



Voluntary goal of

10%

from renewable sources

by 2020

RPS Impacts: Solar Deployment

RPS and Solar/DG Status of Top Ten Solar States by Cumulative Installed Capacity (as of Q4 2012)

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

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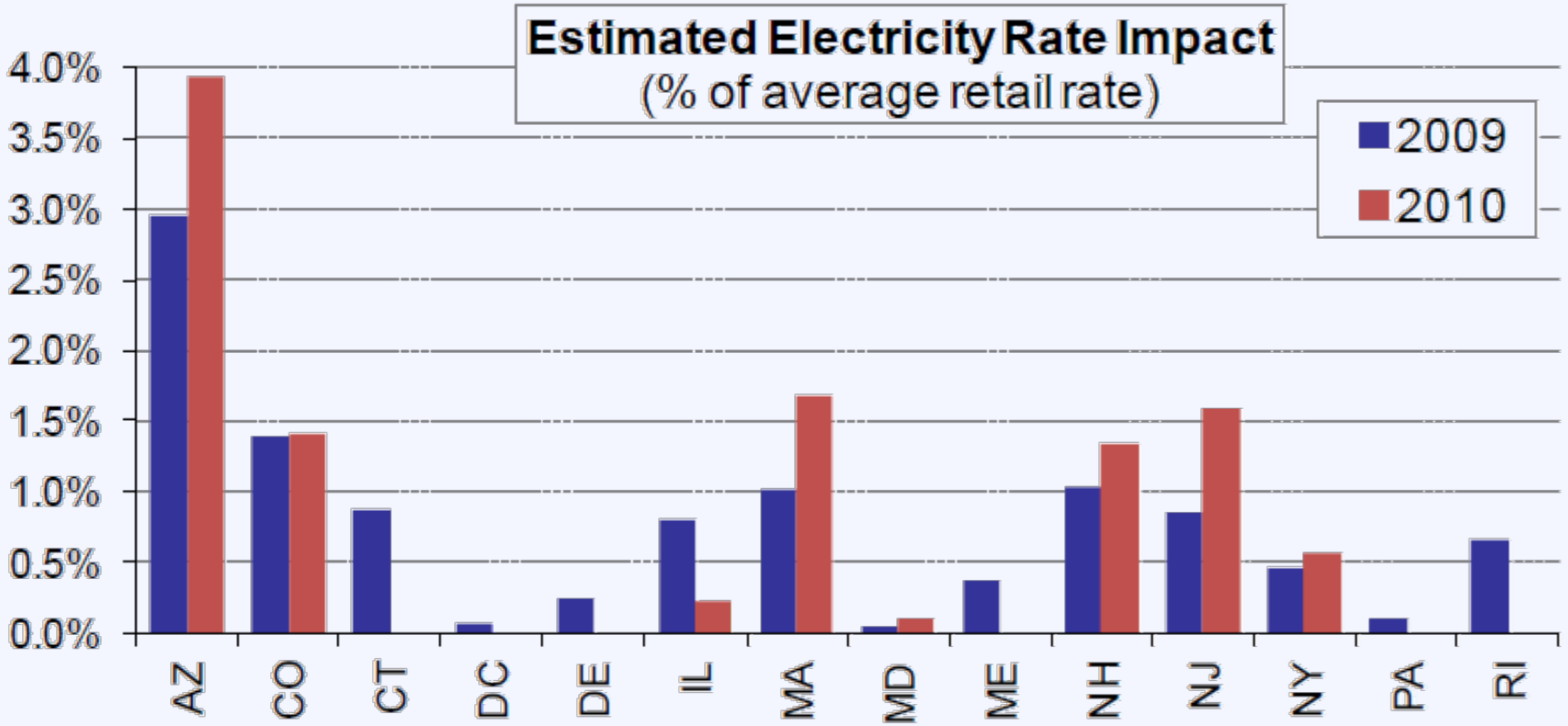
Source: DSIRE Solar (http://dsireusa.org/documents/summarymaps/Solar_DG_RPS_map.pdf); Solar Energy Industries Association/ GTM Research *Solar Market Insight 2012 Year-in-Review*

RPS Impacts: Retail Rates



States not included if data on incremental RPS compliance costs are unavailable (CA, IA, HI, MN, MT, NC, NM, NV, OH, TX, WI) or if RPS did not apply in 2009-10 (KS, MI, MO, OR, WA).

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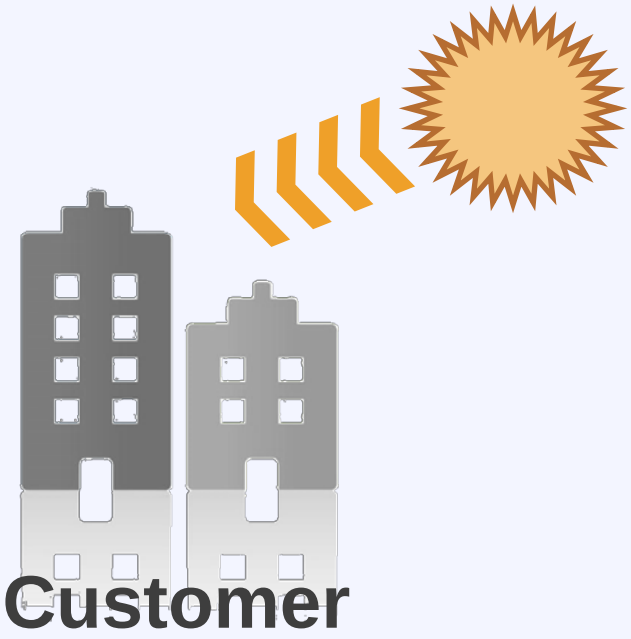
Source: Lawrence Berkeley National Laboratory. *Renewable Portfolio Standards in the United States: A Status Update*. December 2012. www.cleanenergystates.org/assets/2012-Files/RPS/RPS-SummitDec2012Barbose.pdf

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

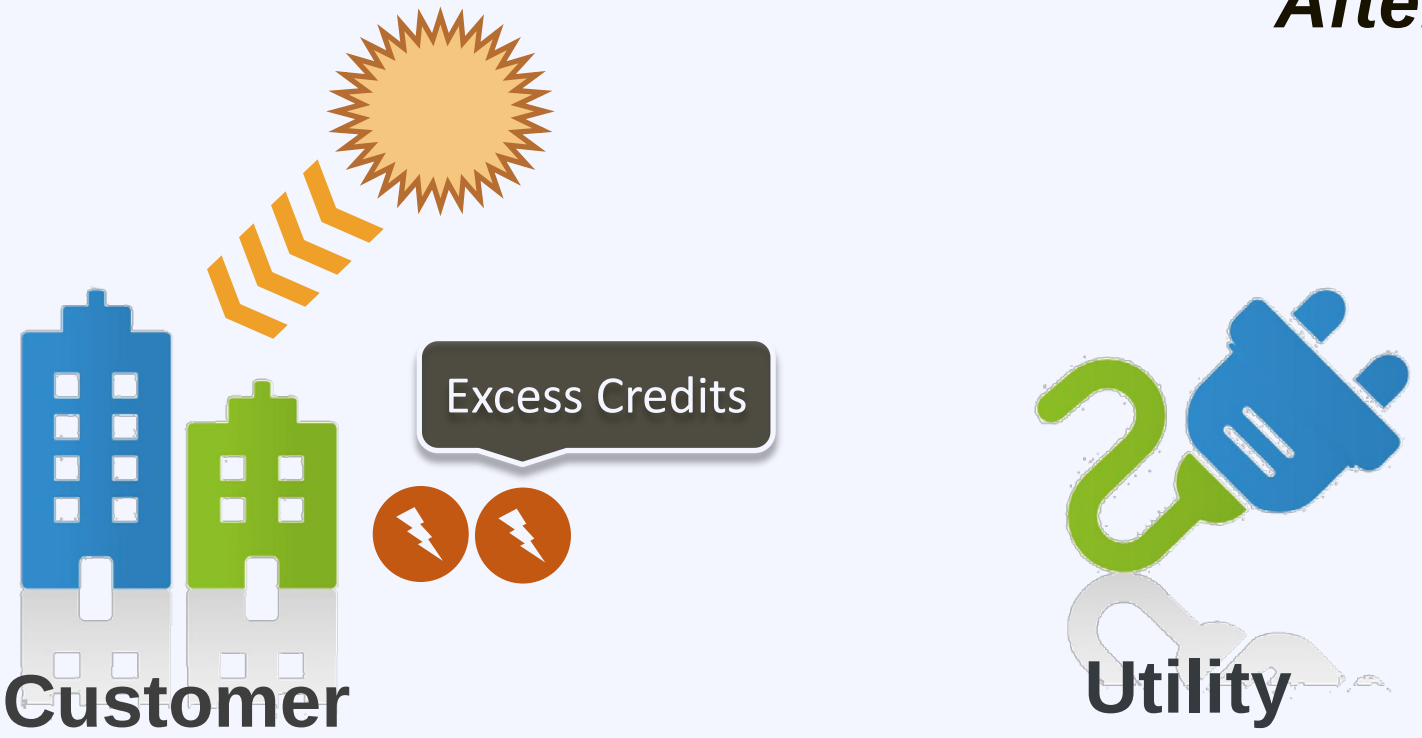
Net Metering: Overview

Morning



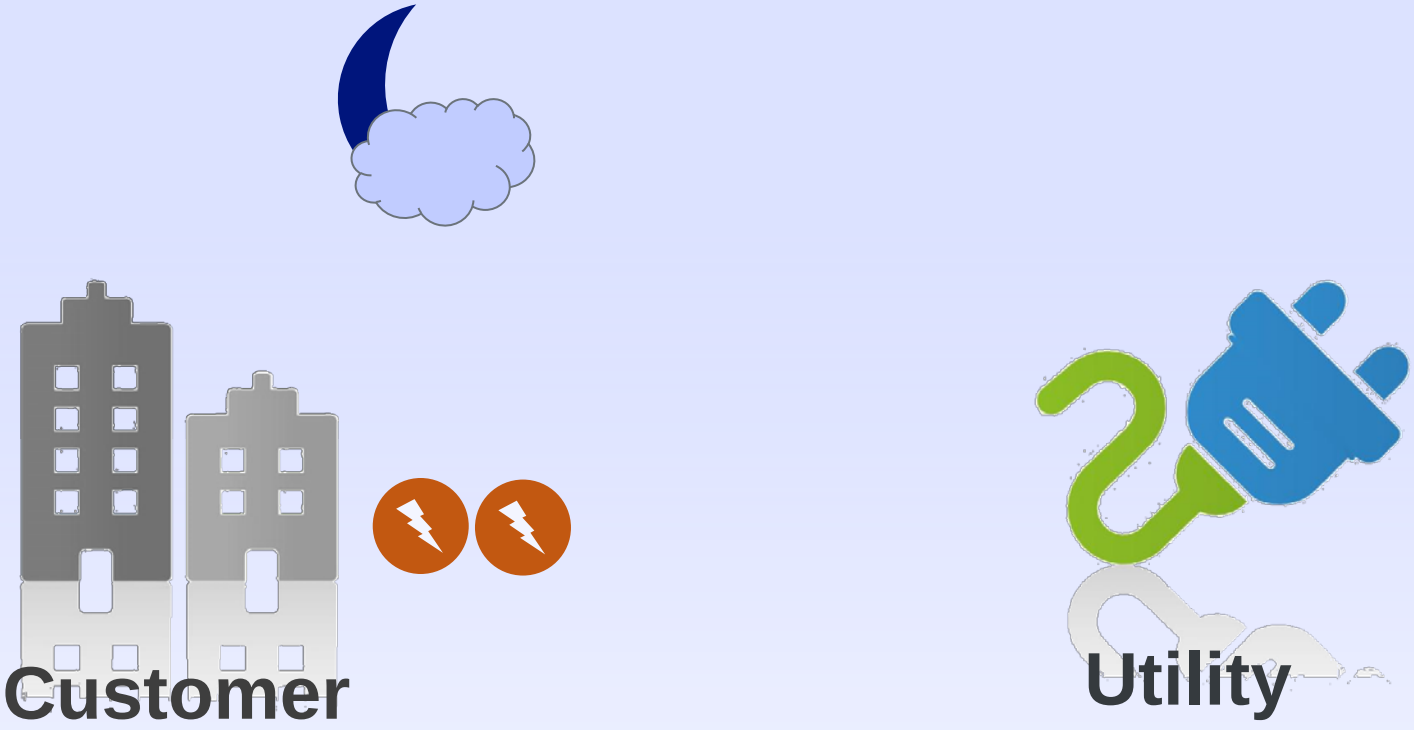
Net Metering: Overview

Afternoon



Net Metering: Overview

Night



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

Net Metering: Market Share

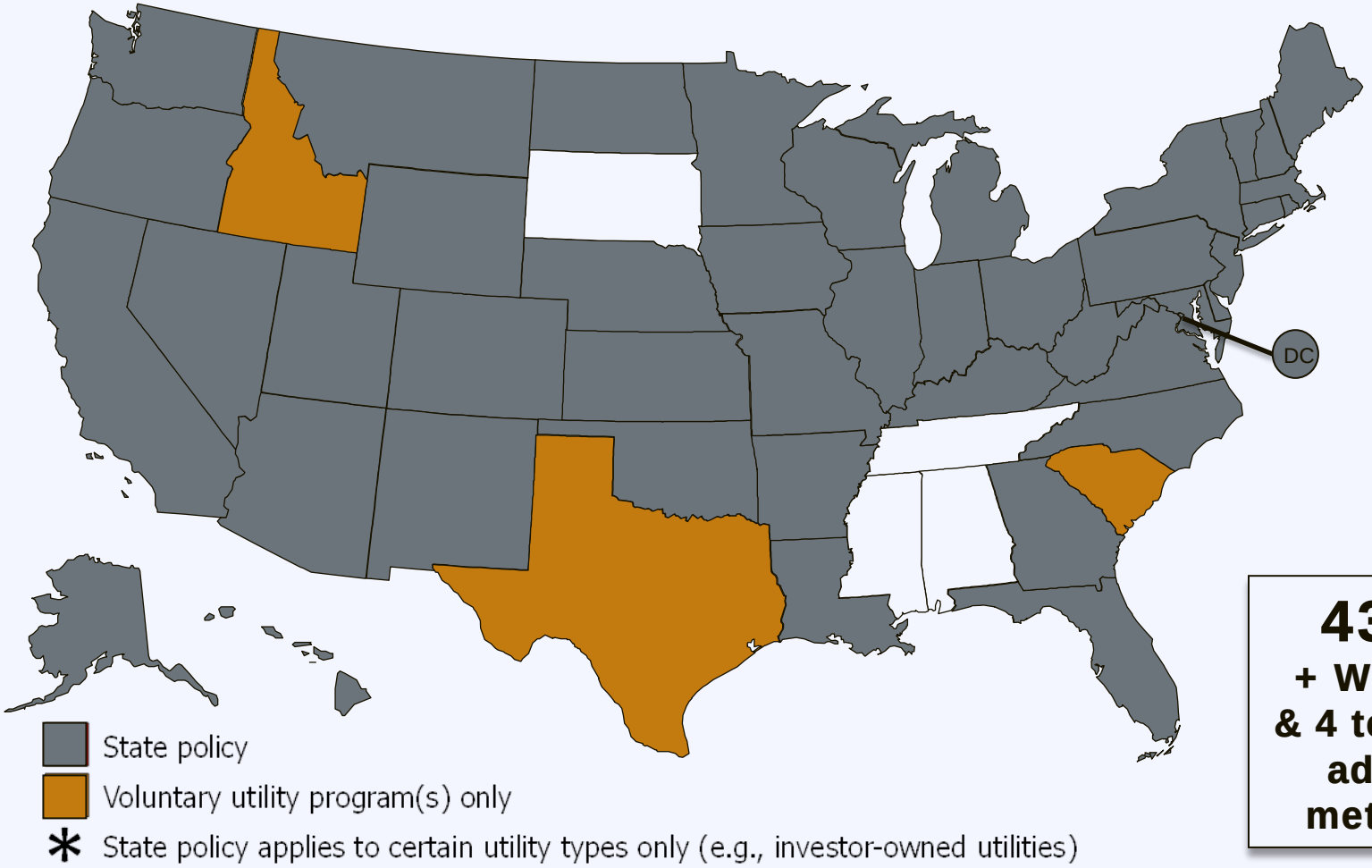
More than **93%** of distributed PV Installations are net-metered

Powered by SunShot U.S. Department of Energy

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

Net Metering: State Policies

www.dsireusa.org / August 2012



43 states
+ Washington DC & 4 territories have adopted a net metering policy

Note: Numbers indicate individual system capacity limit in kilowatts. Some limits vary by customer type, technology and/or application. Other limits might also apply. This map generally does not address statutory changes until administrative rules have been adopted to implement such changes.

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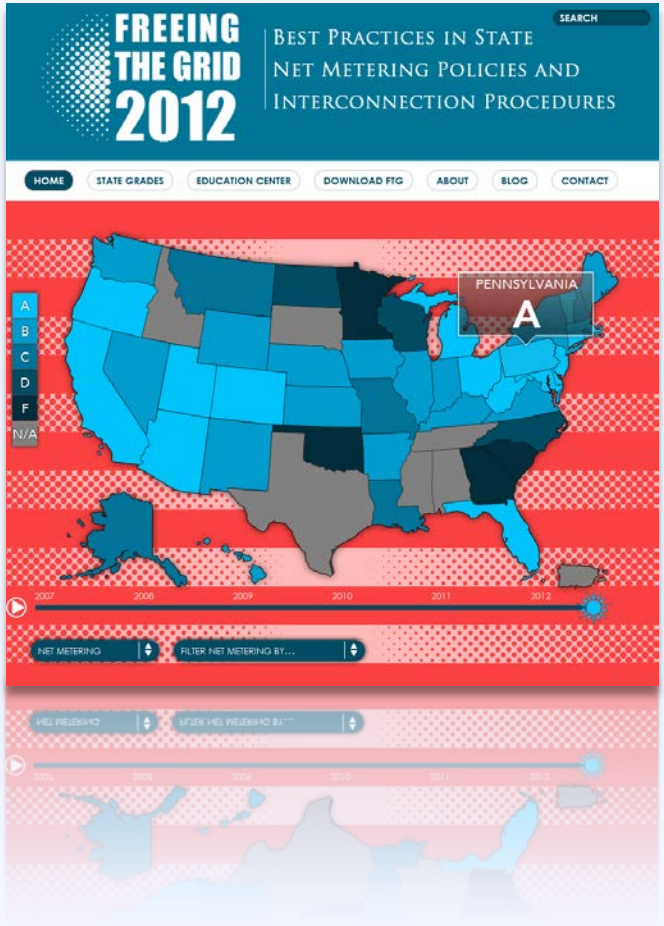
Net Metering: Resources

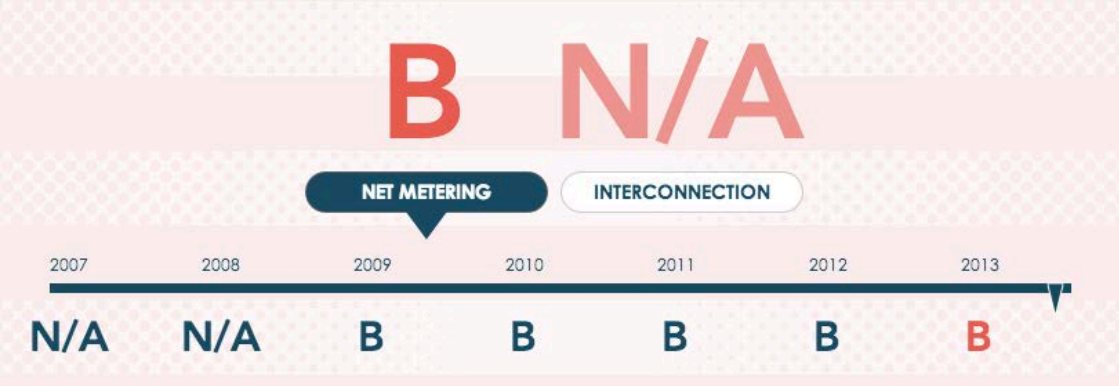
Resource **Freeing the Grid**

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

http://freeingthegrid.org/



Net Metering: Nebraska



Nebraska Net Metering Policy:

Credit Value
Avoided Cost Rate

Credit Rollover
Up to one year

System Capacity Limit
25 kW

Aggregate Limit
1% of monthly peak

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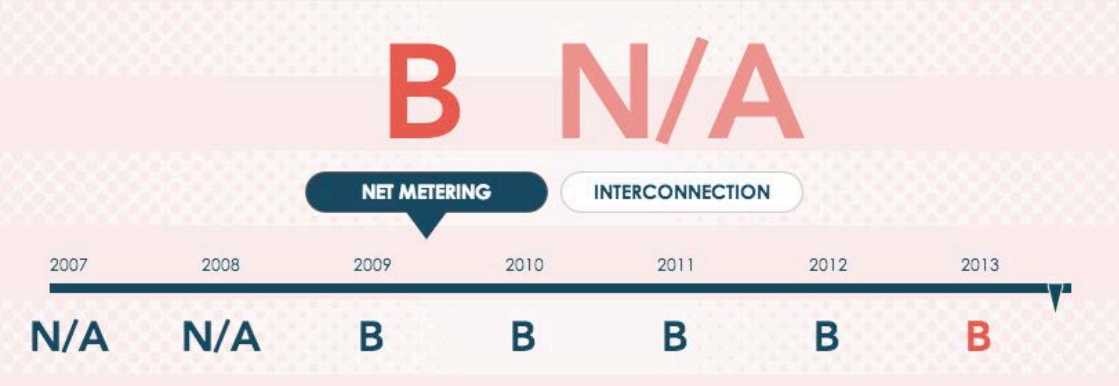
Source: Freeing the Grid

Net Metering: Nebraska



Freeing the Grid Recommendations:

Credit Value
~~Avoided~~ Retail Cost Rate

Credit Rollover
~~Up to one year~~
Indefinite

System Capacity Limit
~~25 kW~~ No Limit

Aggregate Limit
~~1% of monthly peak~~
No Limit

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Source: Freeing the Grid

Net Metering: Virtual

No direct connection necessary

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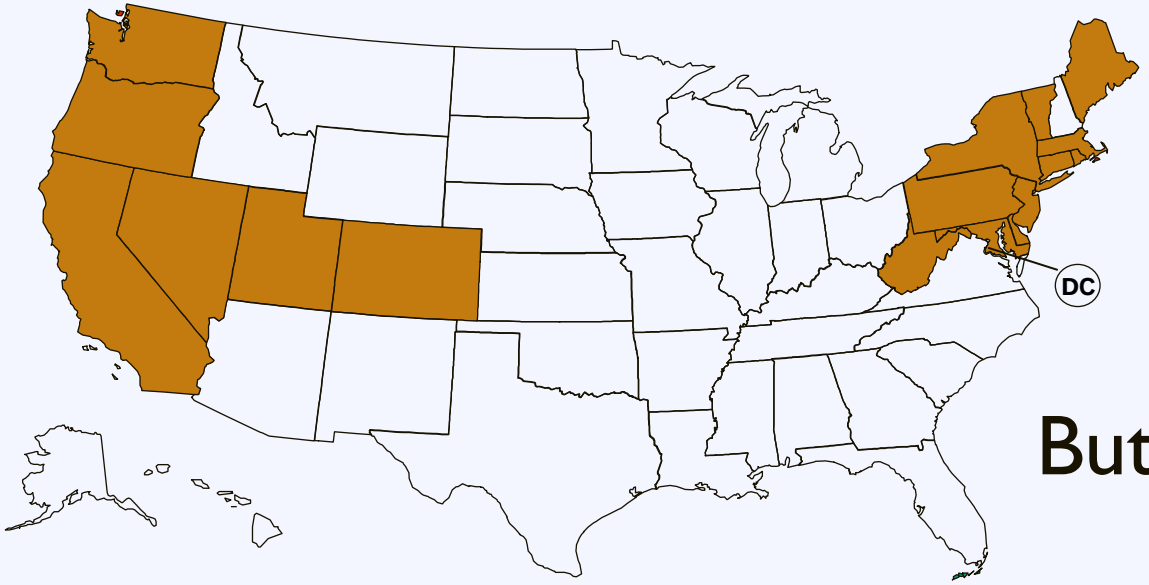
Net Metering: Meter Aggregation



But…It's complicated

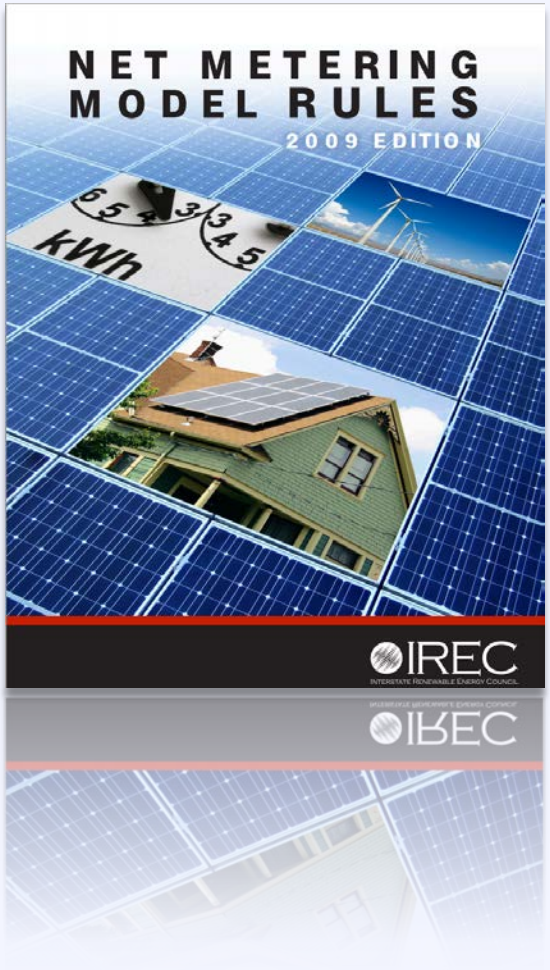
- Ownership requirements
- Contiguous vs. non-contiguous properties
- Multiple customers
- Multiple generators
- Modified system/aggregate system size limits
- Rollover rates
- Distance limitations
- Number of accounts
- How to address accounts on different tariffs

Net Metering: Resources

Resource **Interstate Renewable Energy Council**

IREC developed its model rules in an effort to capture best practices in state net metering policies.

www.irecusa.org



A Policy Driven Market

State

- Utility Regulation
- Solar Access
- Community-Based Energy Development

Local

- Planning
- Zoning
- Permitting

Solar Access

Solar Access Laws:

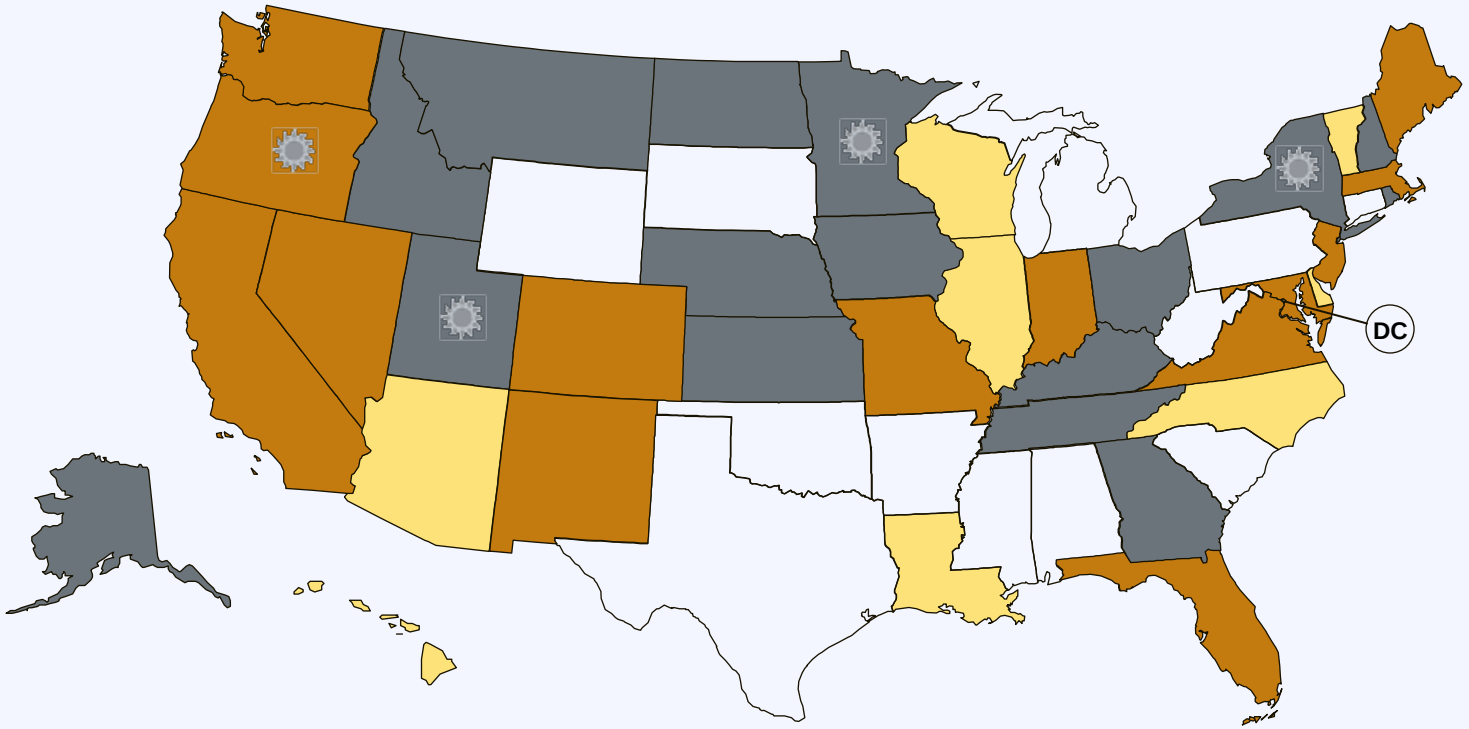
1. Increase the likelihood that properties will receive sunlight
2. Protect the rights of property owners to install solar
3. Reduce the risk that systems will be shaded after installation

Fontainebleau V. Eden Roc (1959)

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 Easements Provision

Solar Rights Provision

Solar Easements and Solar Rights Provisions

U.S. Virgin Islands

Local option to create solar rights provision

Powered by SunShot
U.S. Department of Energy

Source: DSIRE

Solar Access: Nebraska

66-901 The Legislature hereby finds and declares that the use of solar energy…is of such importance to the public health, safety, and welfare that the state should take appropriate action to encourage its use.

66-911 Solar Easement: An instrument creating a land right or an option to secure a land right in real property or the vertical space above real property for a solar agreement or a wind agreement shall be created in writing…

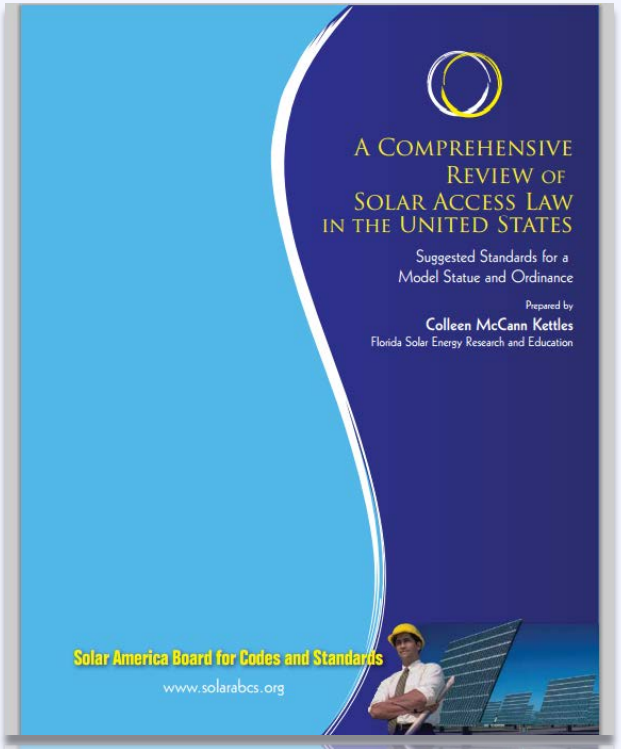
Source: Nebraska Revised Statutes Chapter 66

Solar Access

Resource **Solar ABCs**

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

www.solarabcs.org



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A Policy Driven Market

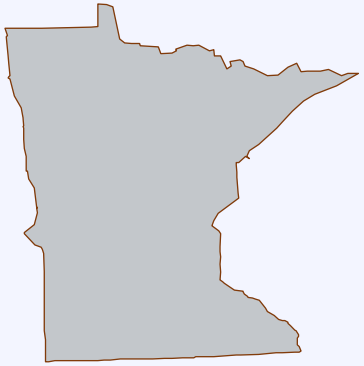
State

- Utility Regulation
- Solar Access
- Community-Based Energy Development

Local

- Planning
- Zoning
- Permitting

C-BED: Minnesota



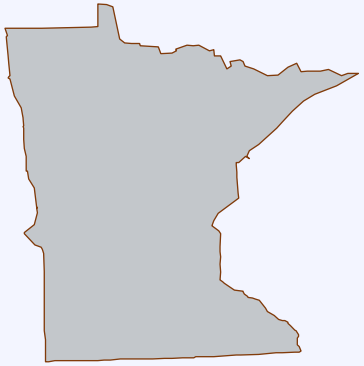
Minnesota

Enacted 2005

Key Elements:

- Qualifying owners must be local
- A single entity owns <15% (wind)
- Power price for levelized cash flow
- Aggregation of projects
- Prioritized by utilities
- Wind, Solar, Biomass, Hydro

C-BED: Minnesota



Minnesota

Enacted 2005

Benefits:

- Qualify for the C-BED tariff
  - 20 Year PPA with utility
  - Front loaded
  - Original Cap: NPV 2.7 cents per kWh
- 266 MW wind developed
- Almost no solar

C-BED: Nebraska

Nebraska

Enacted 2007

Key Elements:

- Qualifying owners must be local
- A single entity owns <15% (wind)
- At least 33% of revenue to owners
- Resolution of support from county
- **Wind only**

C-BED: Nebraska

Nebraska

Enacted 2007

Benefits

- Tax Exemptions
  - Sales tax
  - Property tax
- Encourage utilities to purchase electricity

A Policy Driven Market

State

Utility Regulation

Solar Access

Community-Based Energy Development

Local

Planning

Zoning

Permitting

Q & A

Agenda

09:10 – 09:45	Introductions and Overview
09:45 – 10:10	Solar 101: Policy Environment and Economics
10:10 – 10:20	*Break*
10:20 – 10:40	Benefits and Barriers Activity
10:40 – 11:10	Creating a Solar Ready Community
11:10 – 11:50	Growing Your Local Solar Market
11:50 – 12:00	*Break*
12:00– 01:00	Lunch and Local Session

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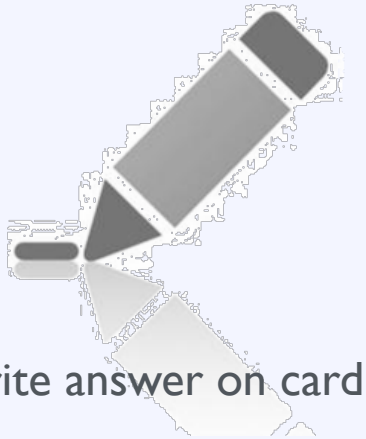
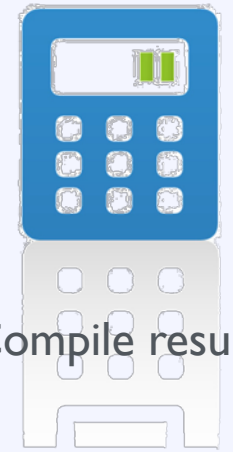
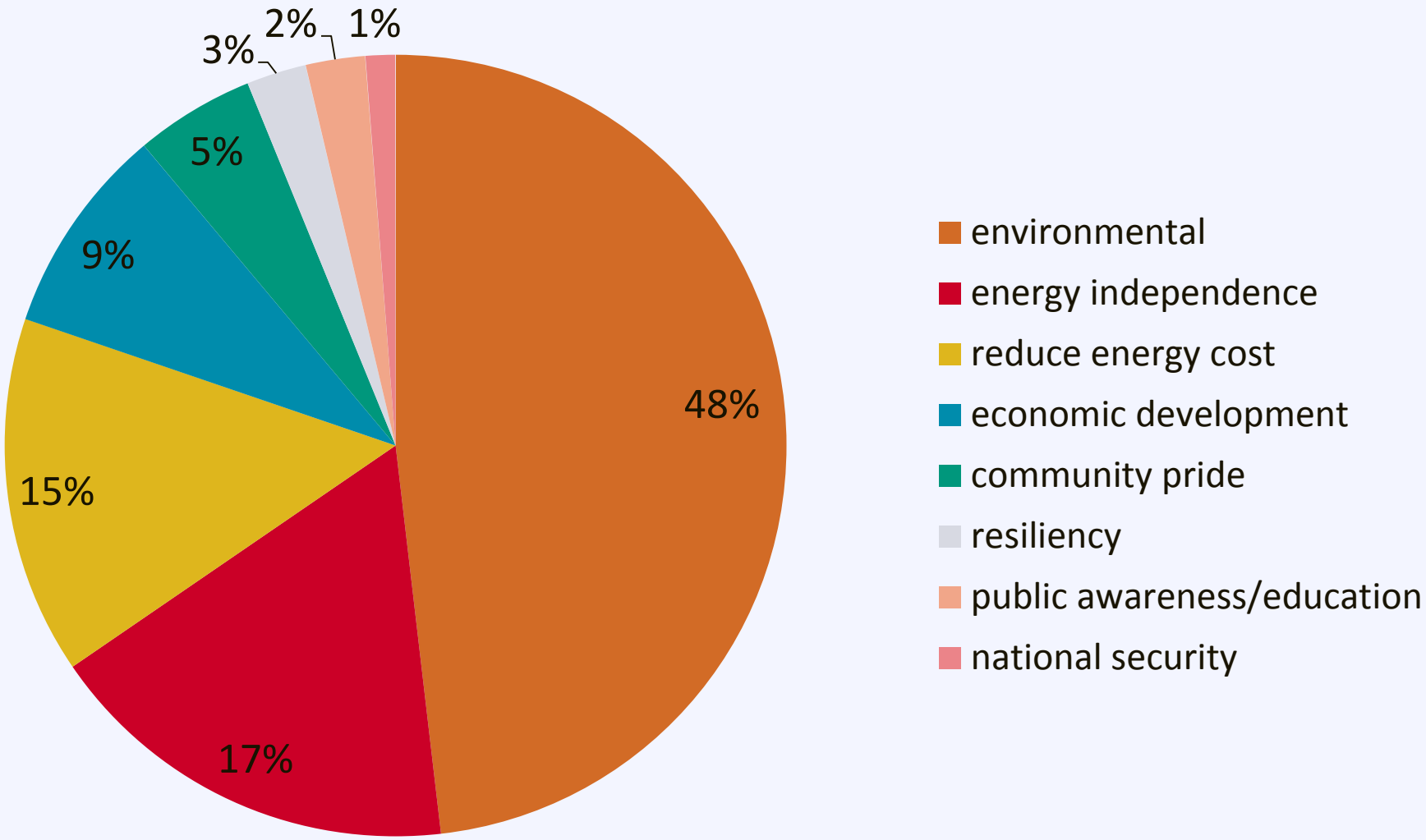
Activity: Identifying Benefits

What is the greatest benefit solar can bring to your community? [Blue Card]

Right Now	During Session	After Break
		
Write answer on card	Compile results	Group discussion

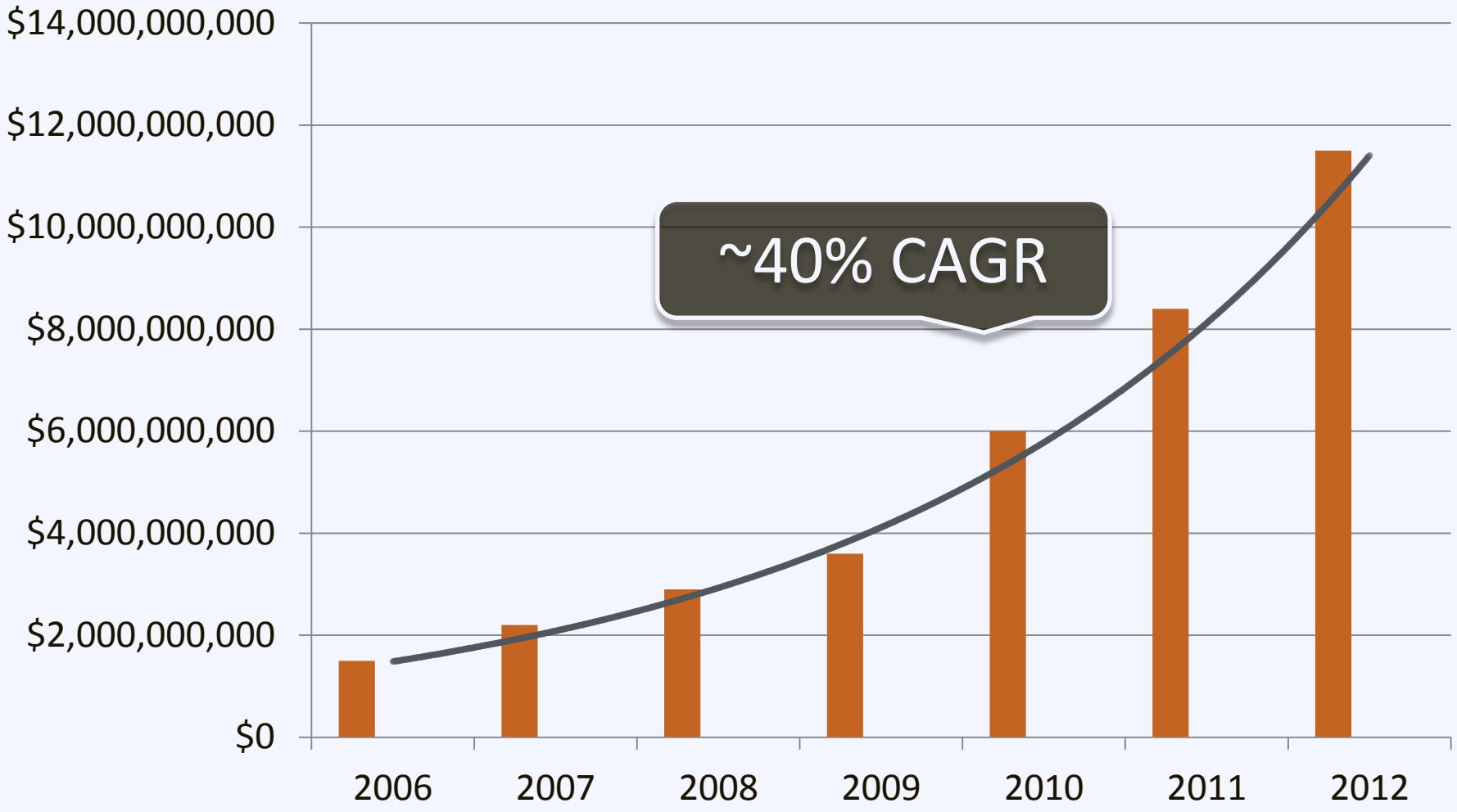
Benefits Poll



Benefits of Solar Energy

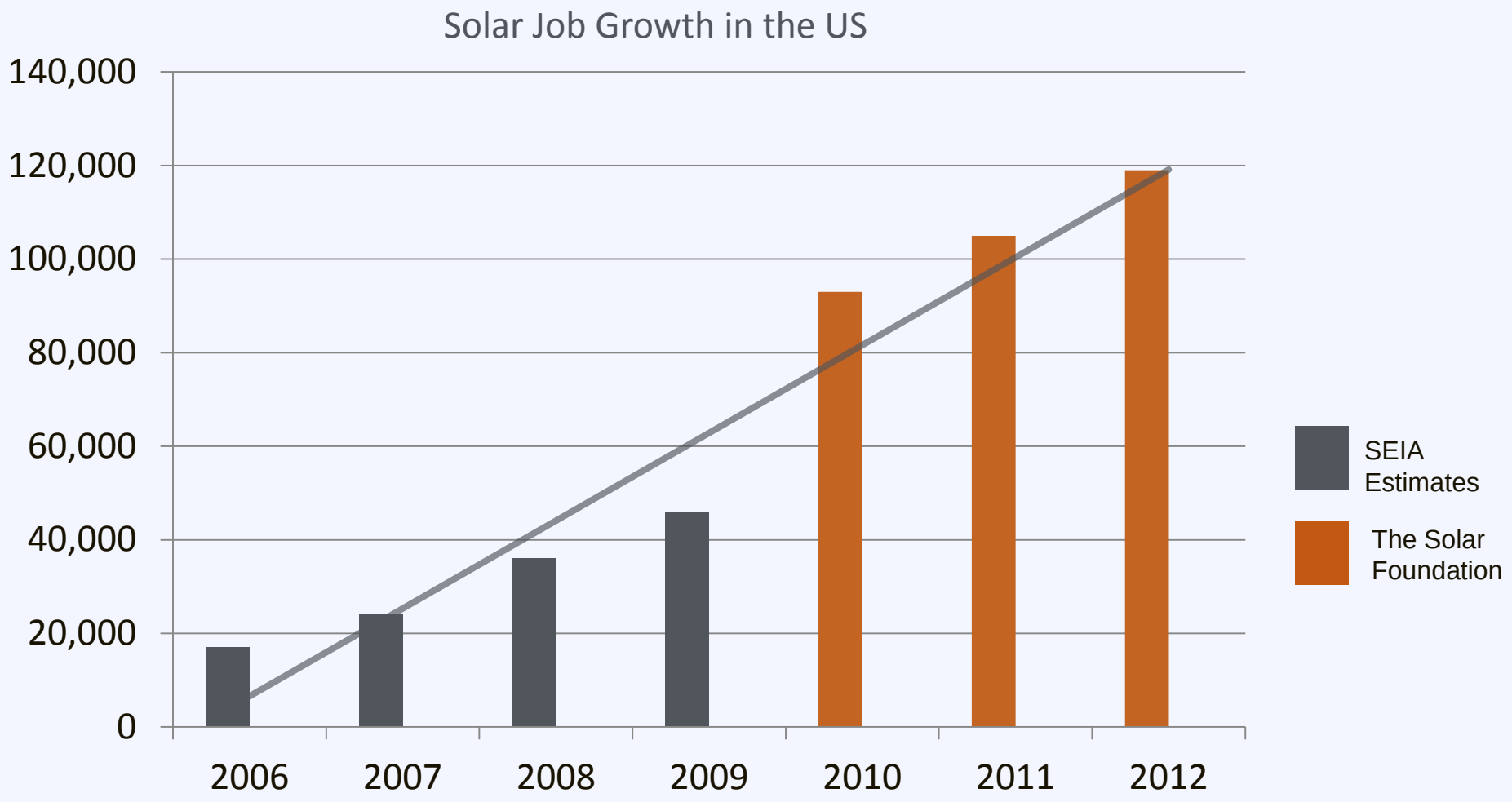
- Local economy growth
- Local jobs
- Energy independence
- Stabilizes price volatility
- Valuable to utilities
- Smart investment

Benefit: Economic Growth



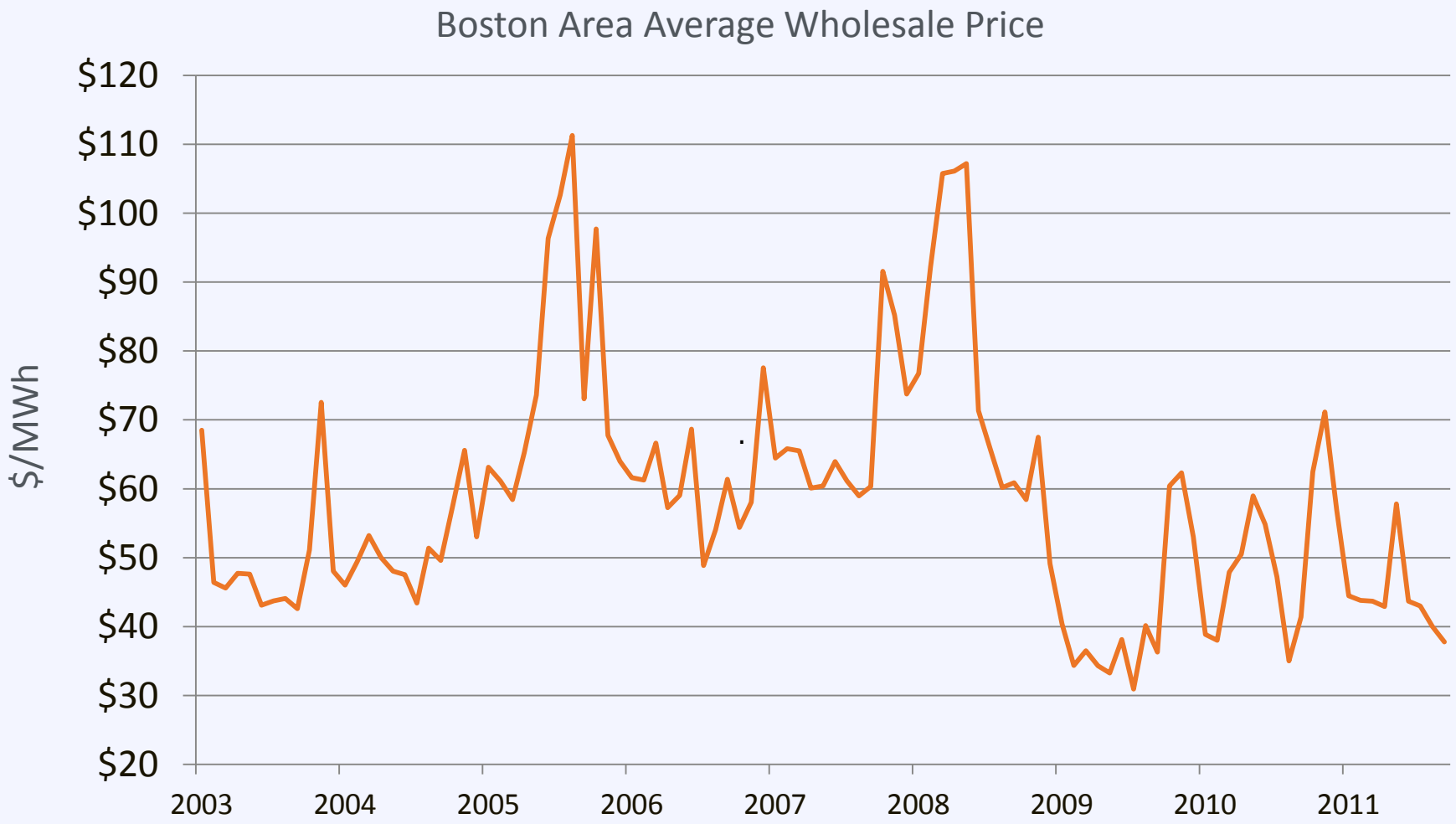
Source: SEIA/GTM Research – 2009/2010/2011/2012 Year in Review Report
http://www.seia.org/research-resources/us-solar-market-insight

Benefit: 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).

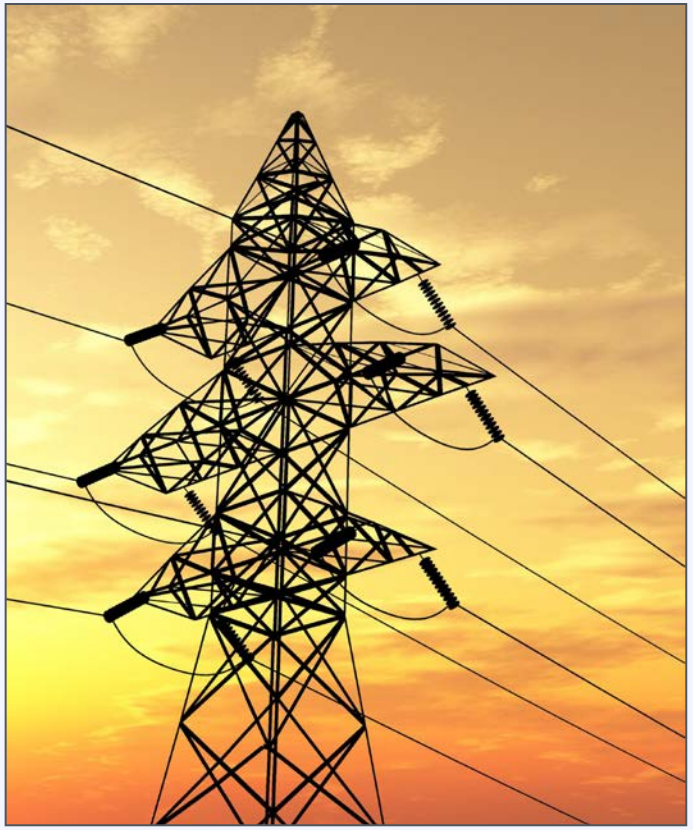
Benefit: Stabilize Energy Prices



Source: NEPOOL

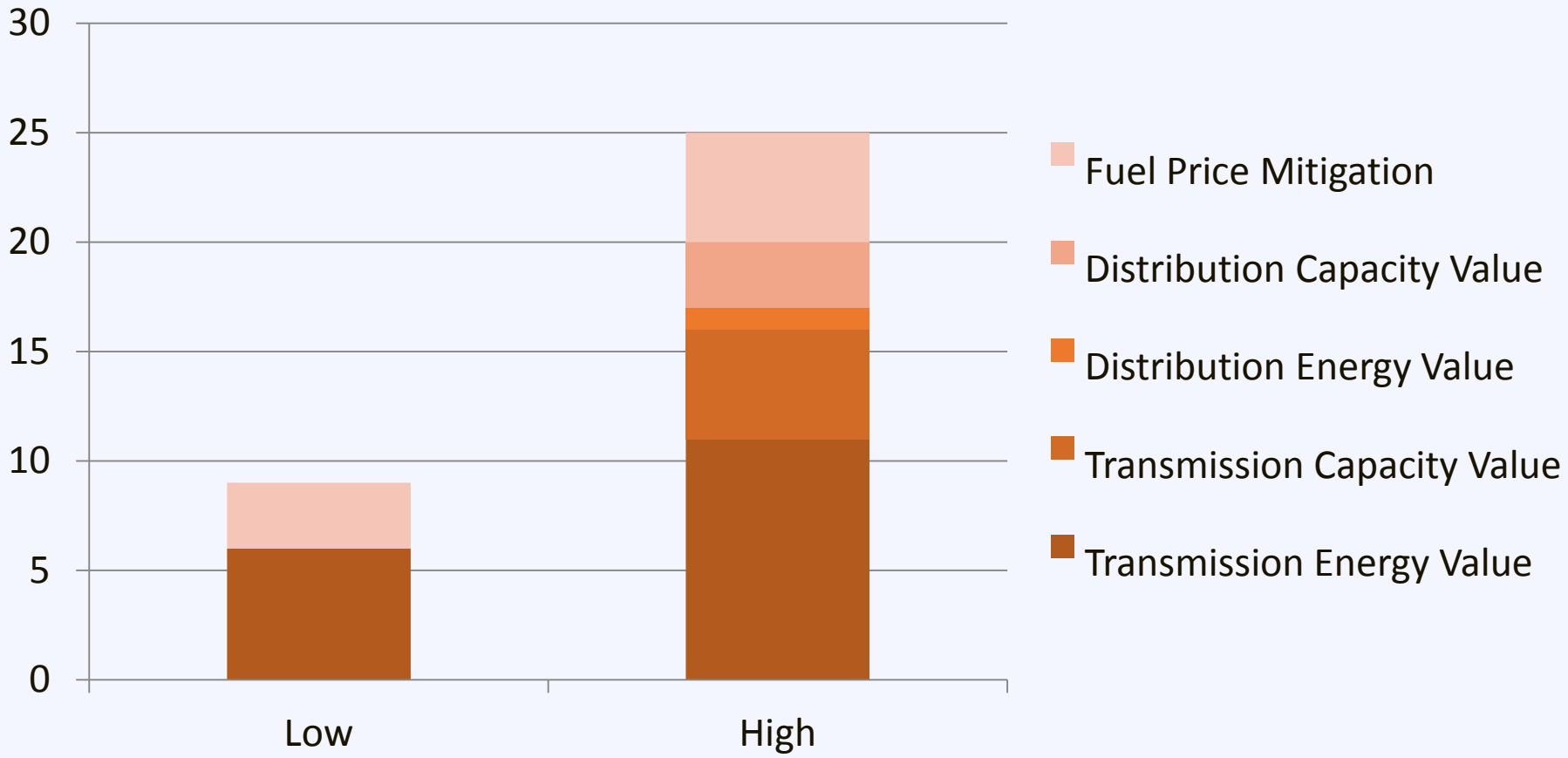
Benefits: Valuable to Utilities

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



Benefits: Valuable to Utilities

Value to the utility is **10 to 25 cents** beyond the value of the electricity



Source: http://www.asrc.cestm.albany.edu/perez/2011/solval.pdf

Benefit: Smart Investment for Homes

From NREL:

Solar homes sold

20% faster

and for

17% more

than the equivalent non-solar homes

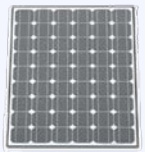
in surveyed California subdivisions

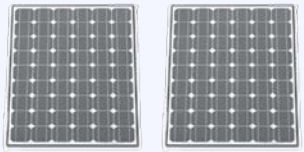
Powered by SunShot U.S. Department of Energy

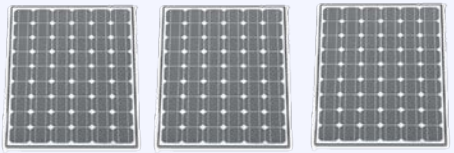
Source: http://www.nrel.gov/docs/fy07osti/38304-01.pdf

Benefit: Smart Investment for Homes

From SunRun:

3 kW  = **$ 16,500** *added sale premium*

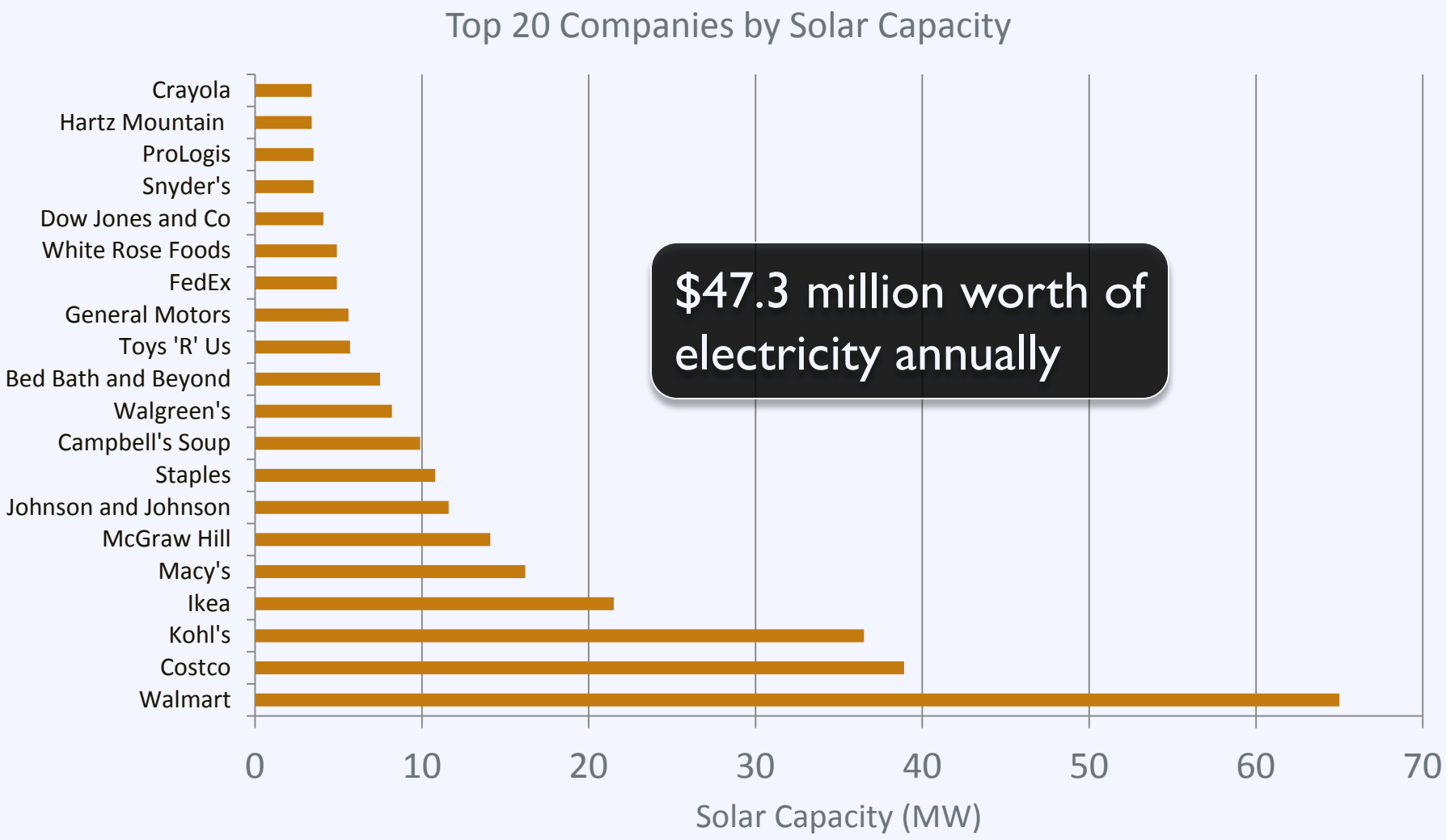
6 kW  = **$ 33,000** *added sale premium*

9 kW  = **$ 49,500** *added sale premium*

Source: Tracking the Sun IV, SunRun

Benefit: Smart Investment for Business

Benefit: Smart Investment for Business



Powered by SunShot U.S. Department of Energy

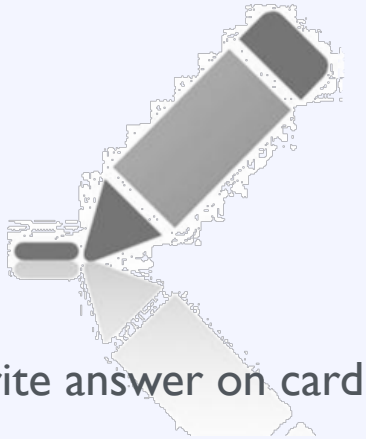
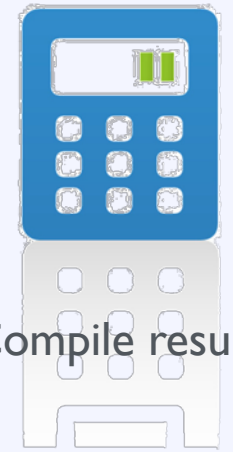
Source: Solar Energy Industries Association

Benefit: Smart Investment for Government

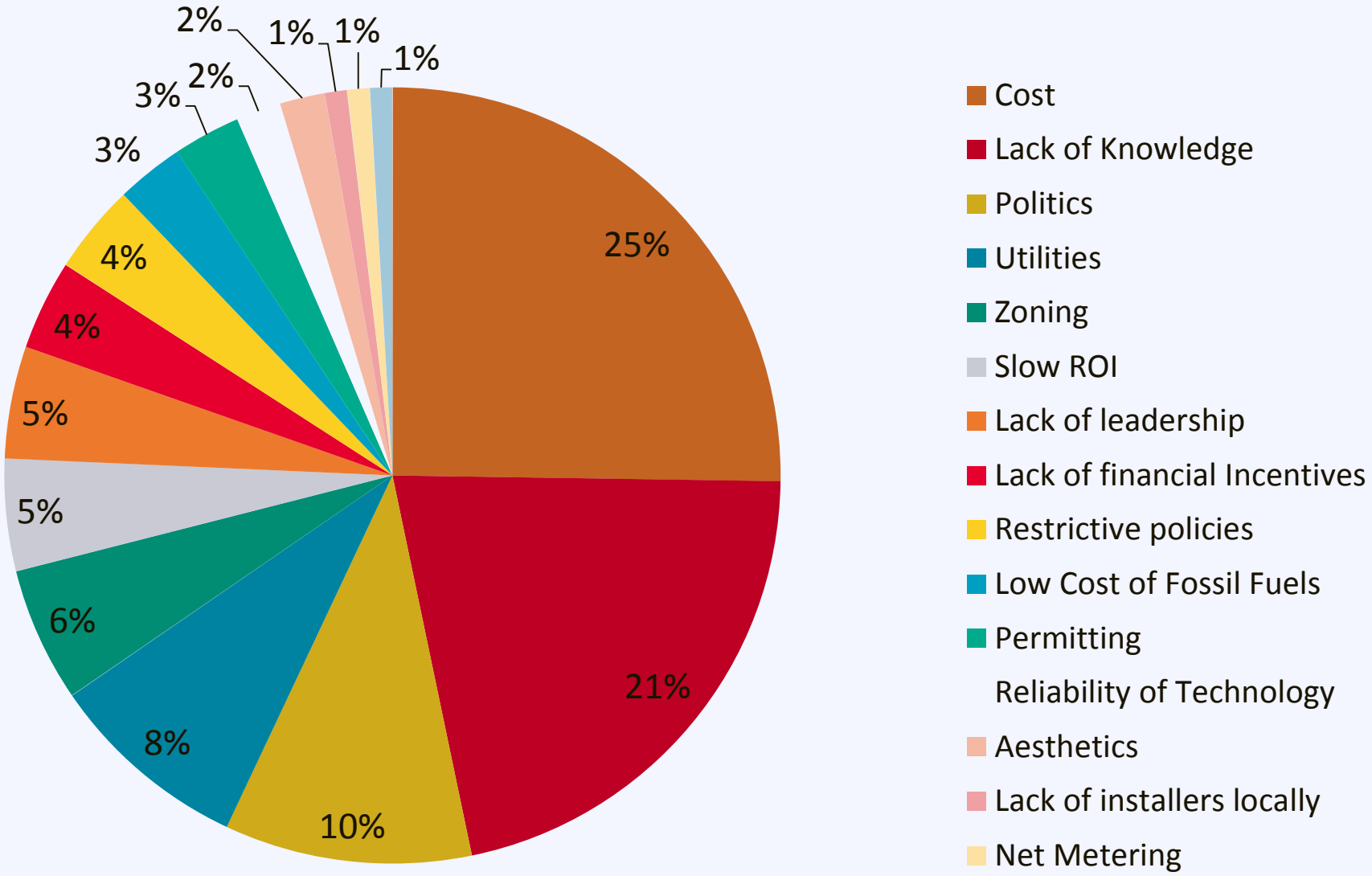
Source: Borrego Solar

Activity: Addressing Barriers

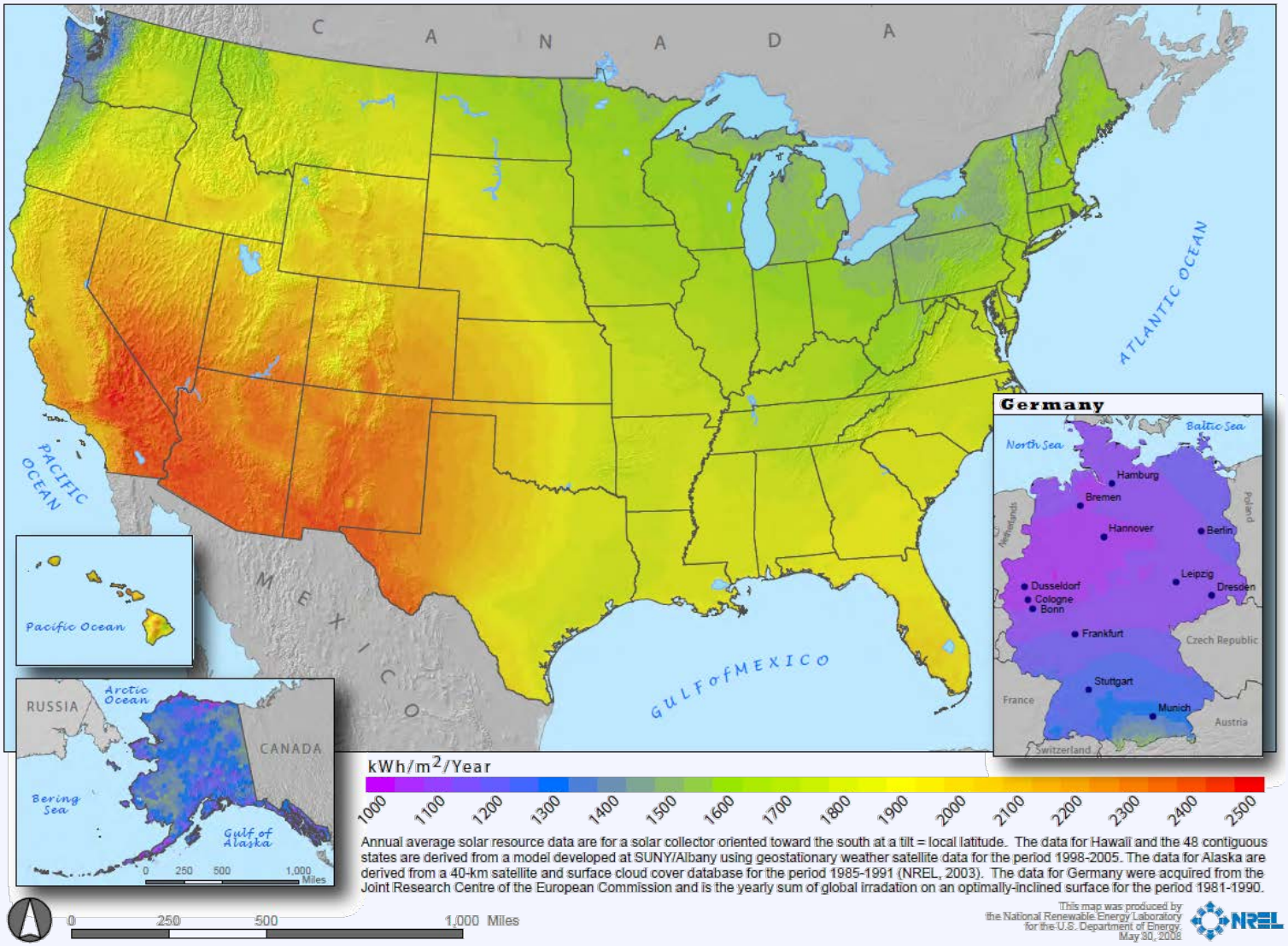
What is the greatest barrier to solar adoption in your community? [Green Card]

Right Now	During Session	After Break
		
Write answer on card	Compile results	Group discussion

Barriers Poll



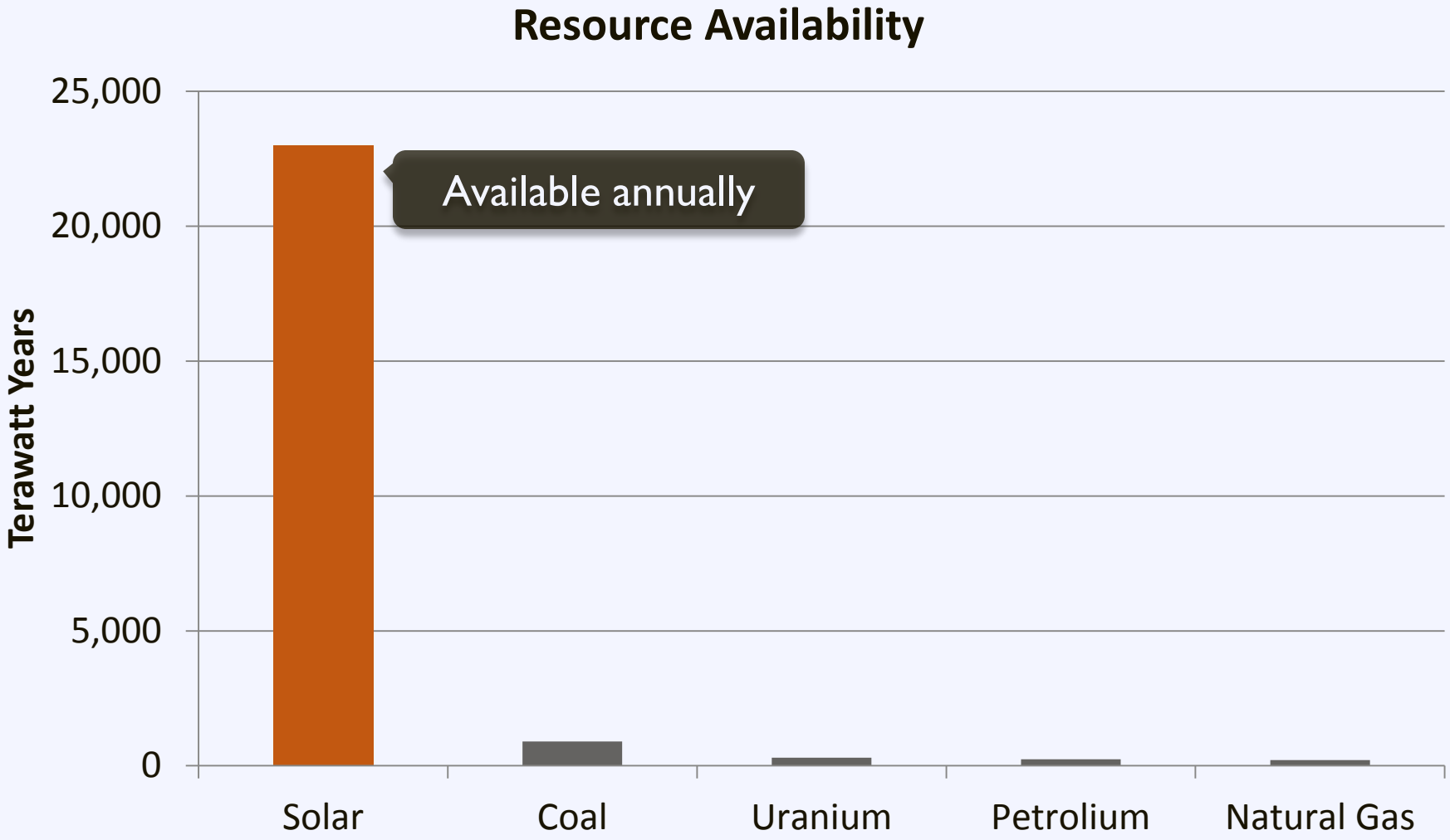
Fact: Solar works across the US



Powered by SunShot U.S. Department of Energy

Source: National Renewable Energy Laboratory

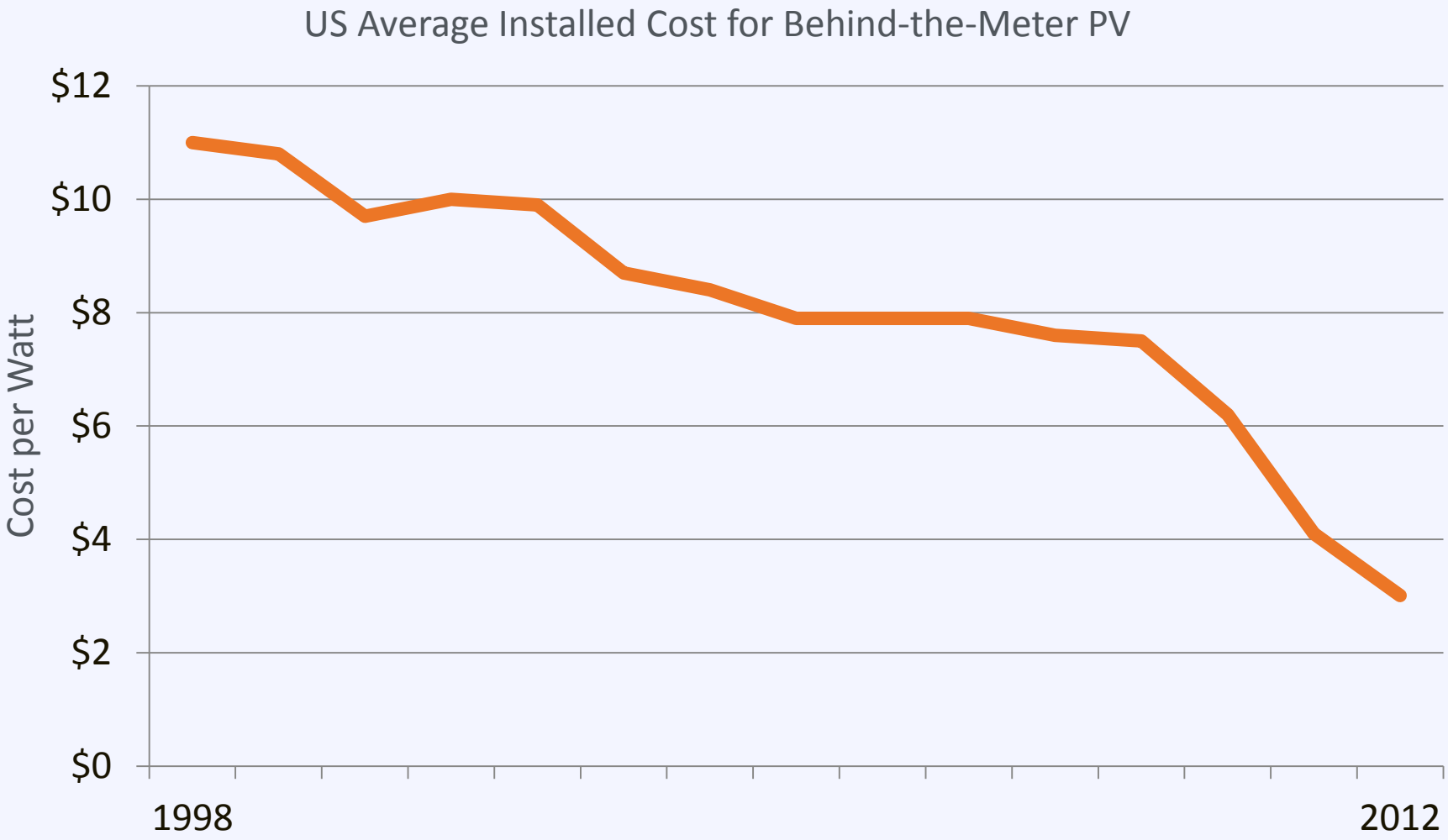
Fact: Solar is a ubiquitous resource



Powered by SunShot
U.S. Department of Energy

Source: Perez & Perez. 2009. *A fundamental look at energy reserves for the planet.*

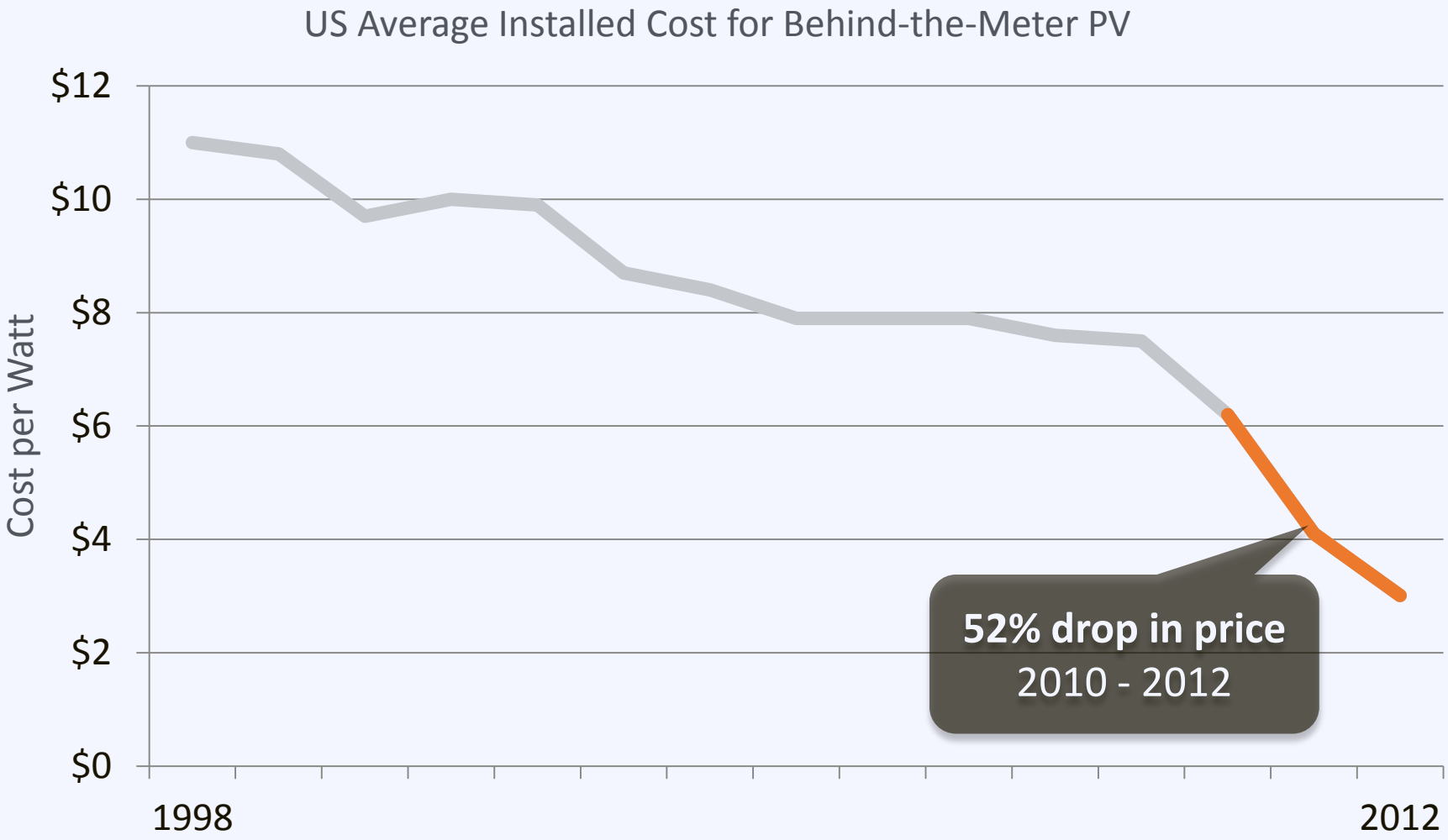
Fact: Solar is cost competitive



Tracking the Sun IV: The Installed Cost of Photovoltaics in the US from 1998-2010 (LBNL), SEIA/GTM Research *Solar Market Insight 2012 Year-in-Review.*

Powered by SunShot U.S. Department of Energy

Fact: Solar is cost competitive



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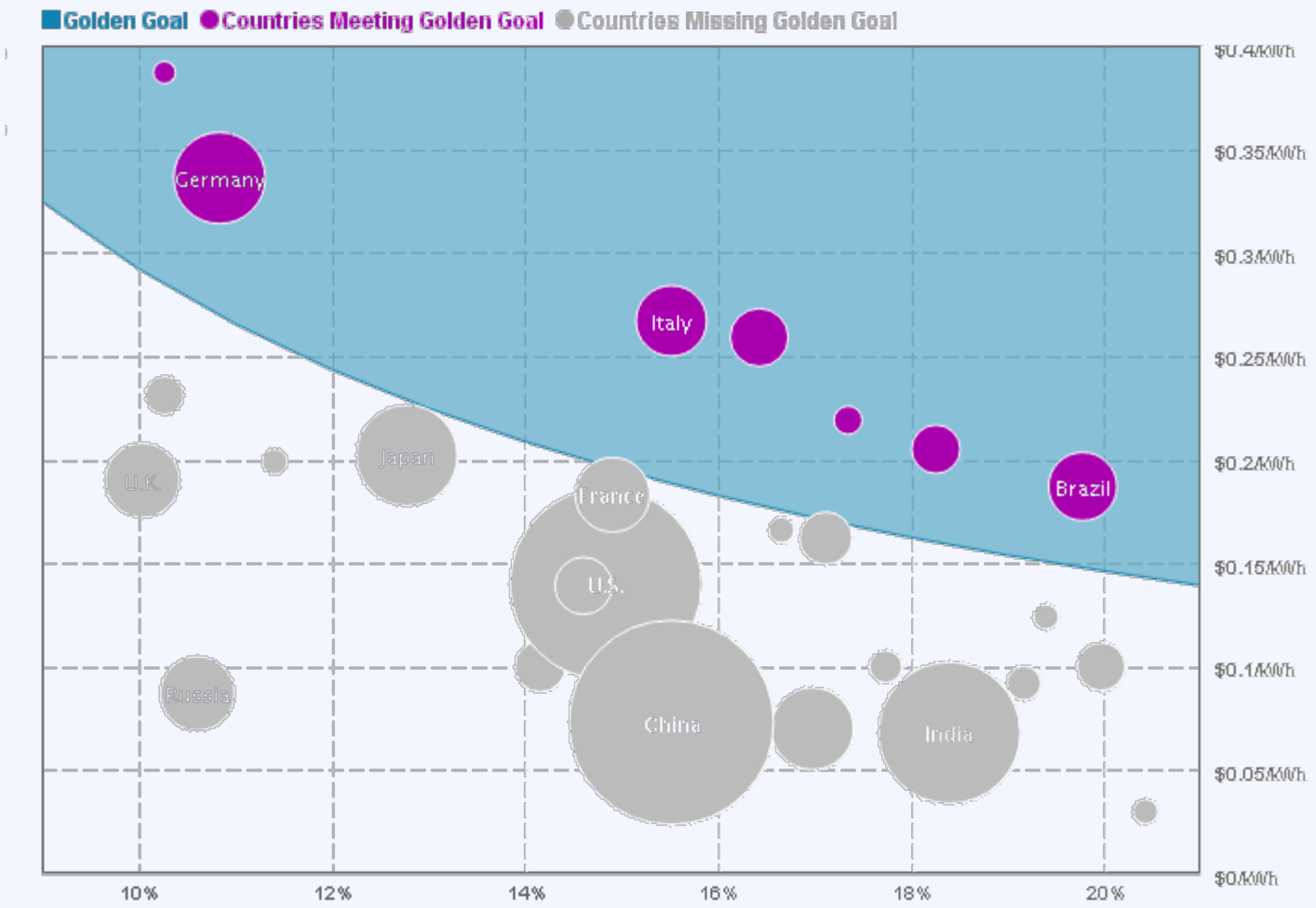
Fact: Solar is cost competitive

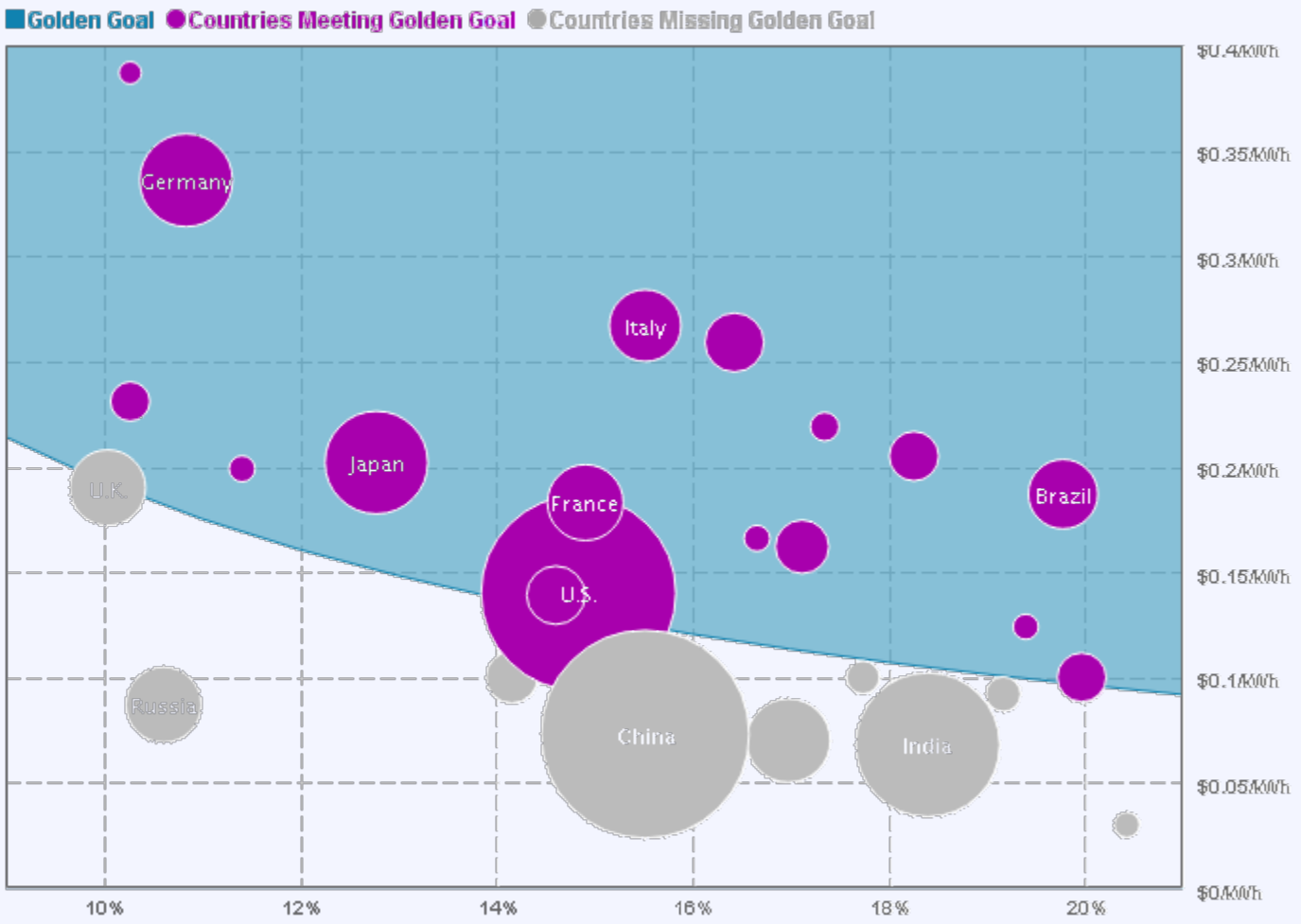
2012



Source: Bloomberg

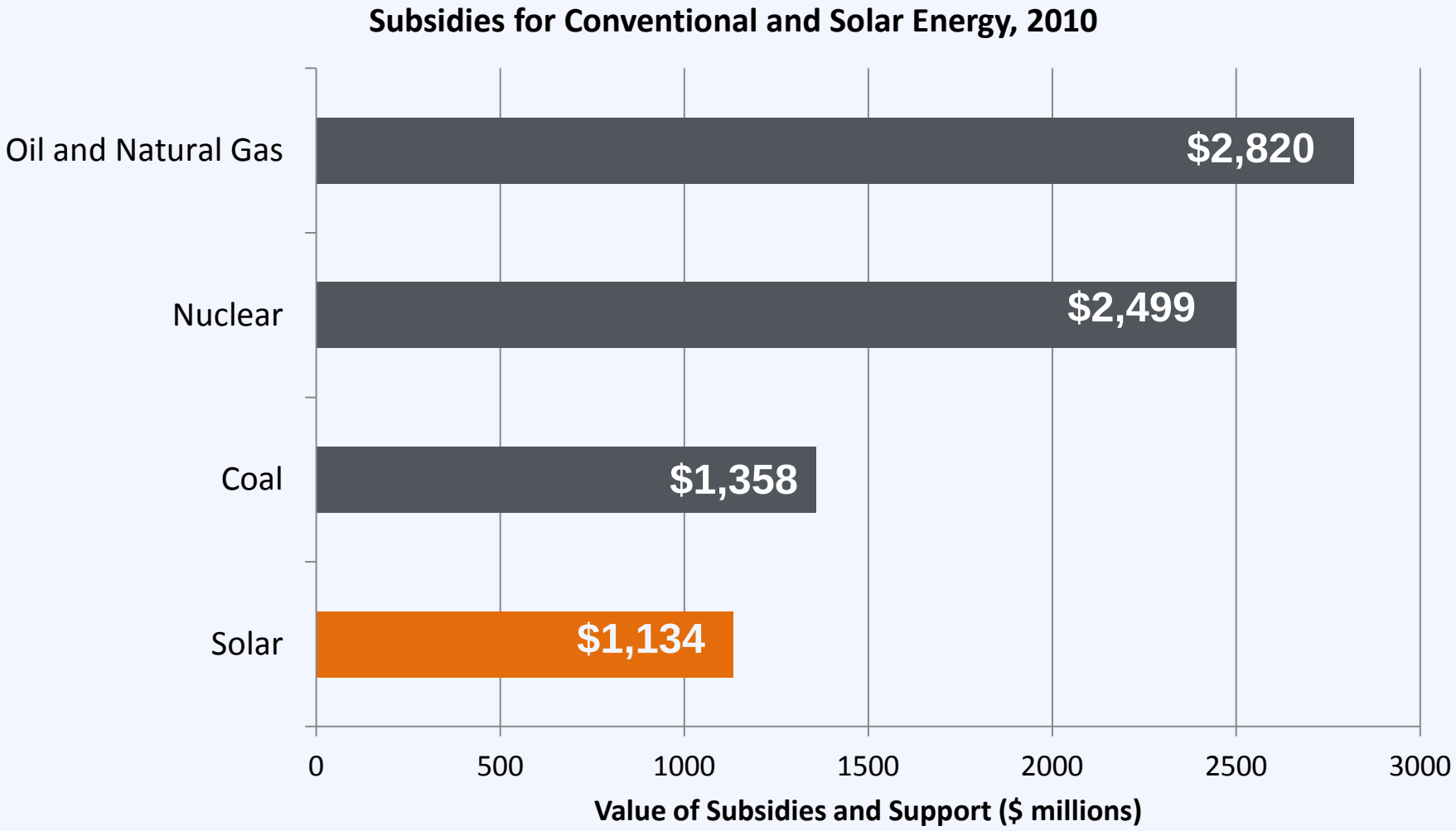
Fact: Solar is cost competitive

2020



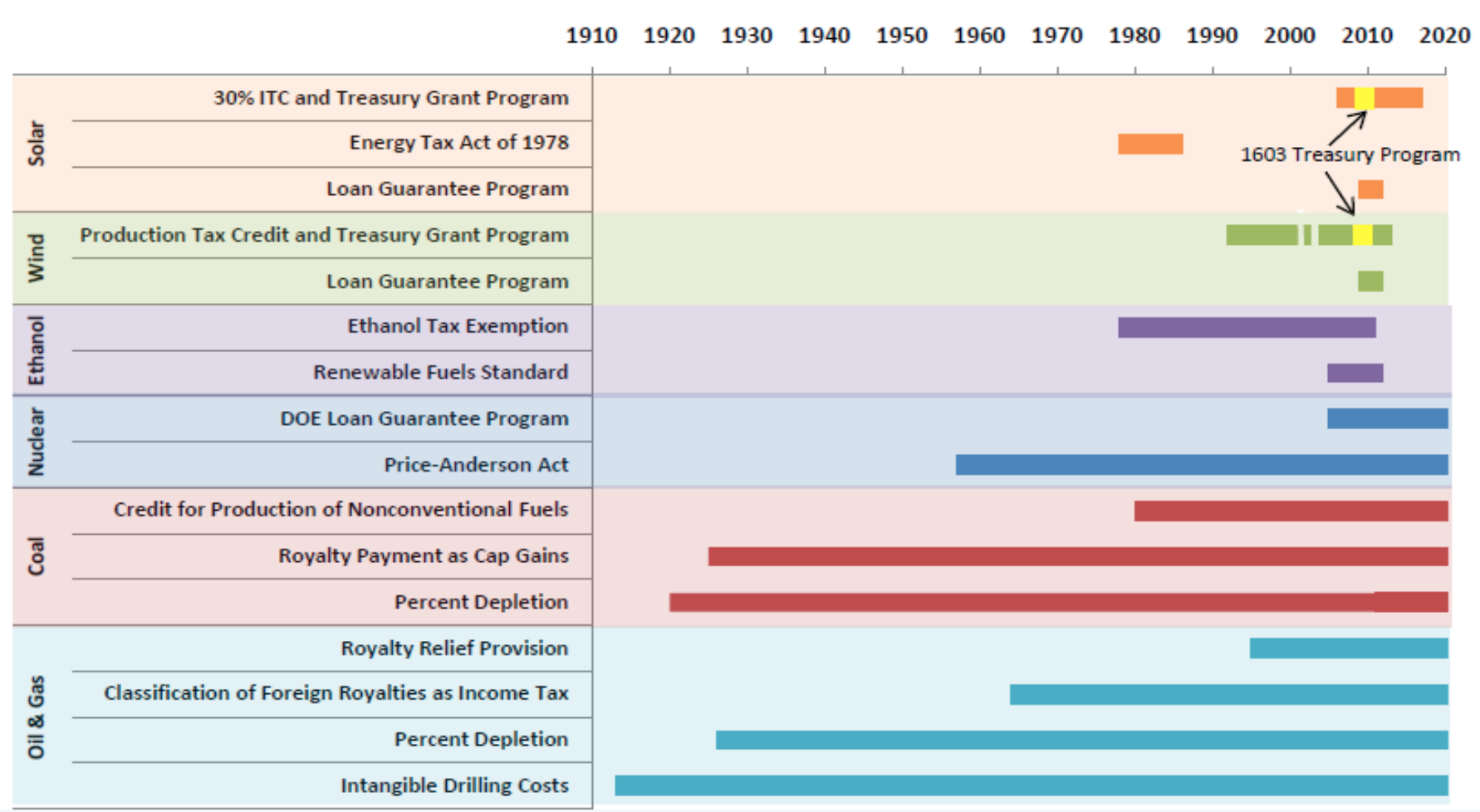
Source: Bloomberg

Subsidies and Support



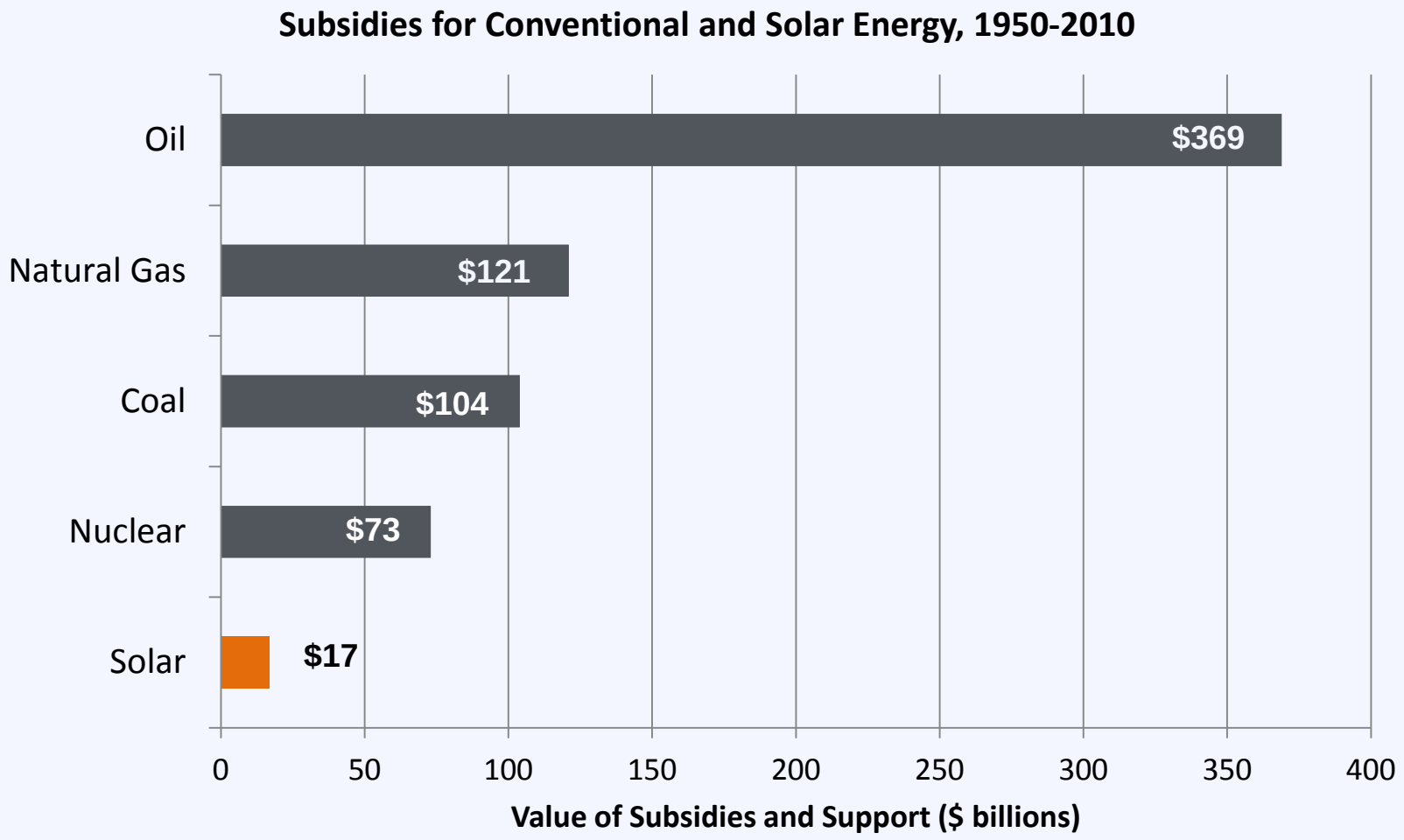
Source: U.S. Energy Information Administration. July 2011. *Direct Federal Interventions and Subsidies in Energy in Fiscal Year 2010*

Subsidies and Support



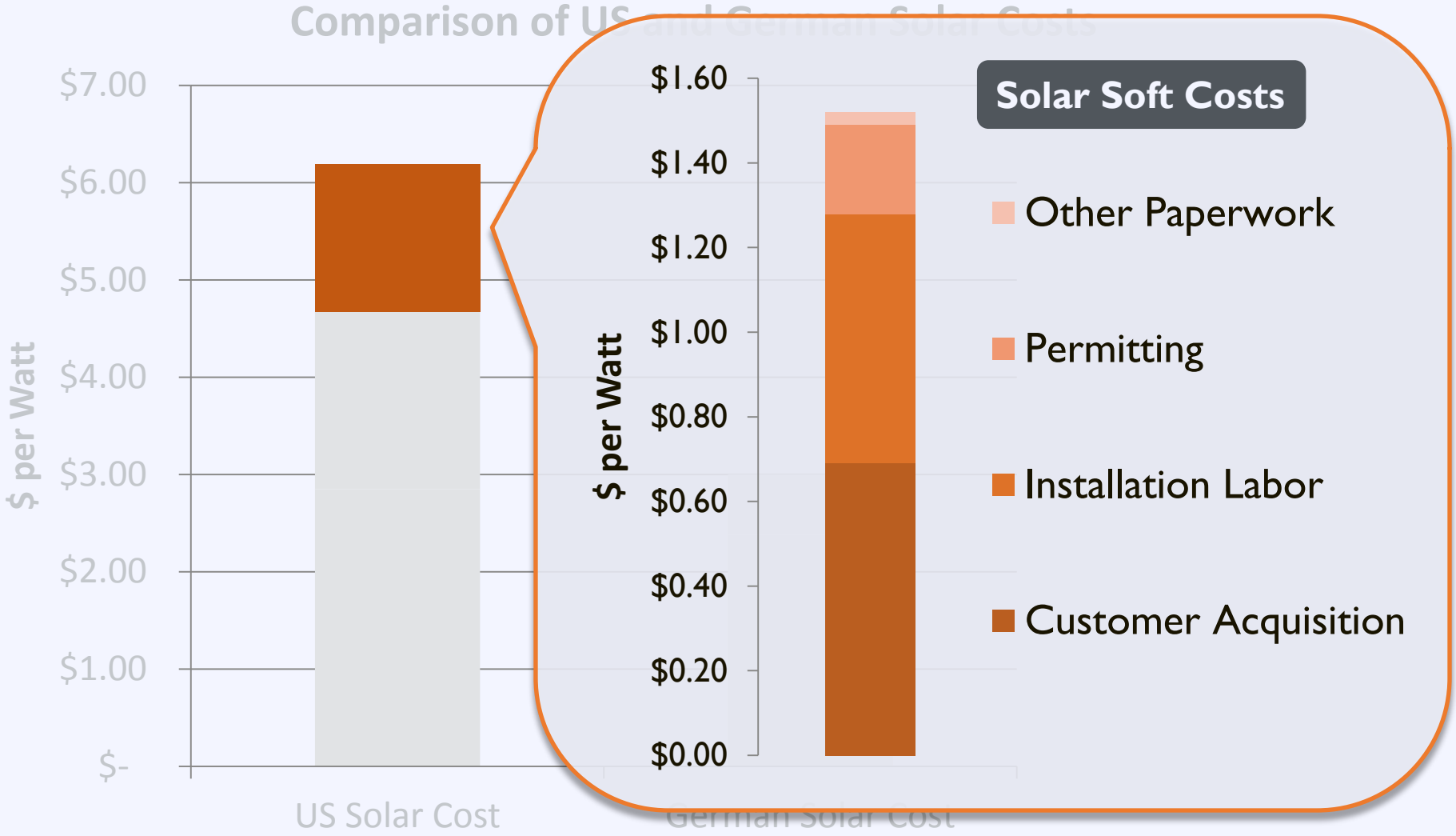
Source: SEIA, Federal Energy Incentives in the United States (2011), http://www.seia.org/galleries/pdf/Federal_Energy_Incentives_in_the_United_States.pdf

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 in the US



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Source: NREL (http://ases.conference-services.net/resources/252/2859/pdf/SOLAR2012_0599_full%20paper.pdf) (http://www.nrel.gov/docs/fy12osti/53347.pdf) (http://www.nrel.gov/docs/fy12osti/54689.pdf)

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12:00– 01:00	Lunch and Local Session

Time to Installation

New York City's Goal

100 days

from inception to completion

Germany Today

8 days

from inception to completion

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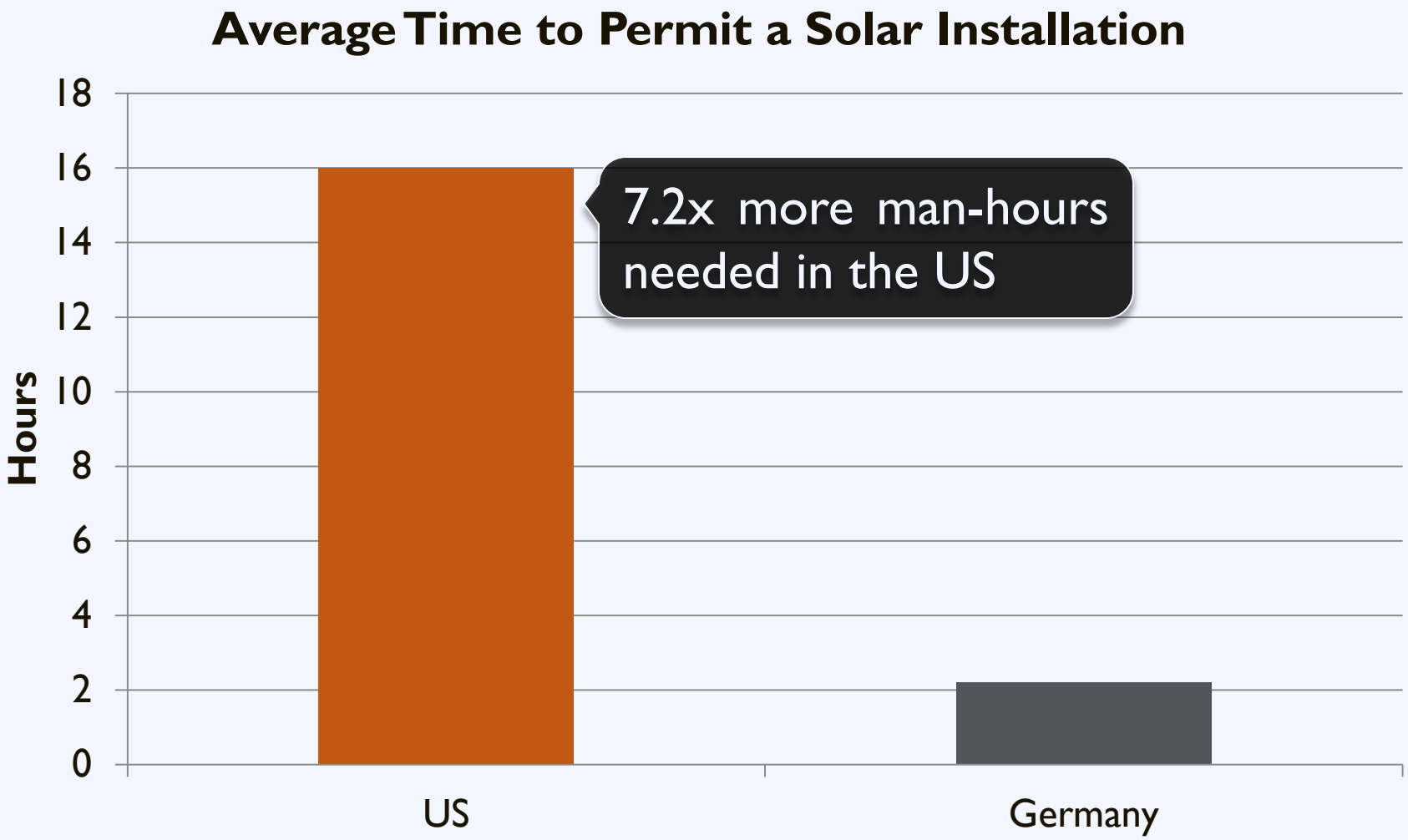
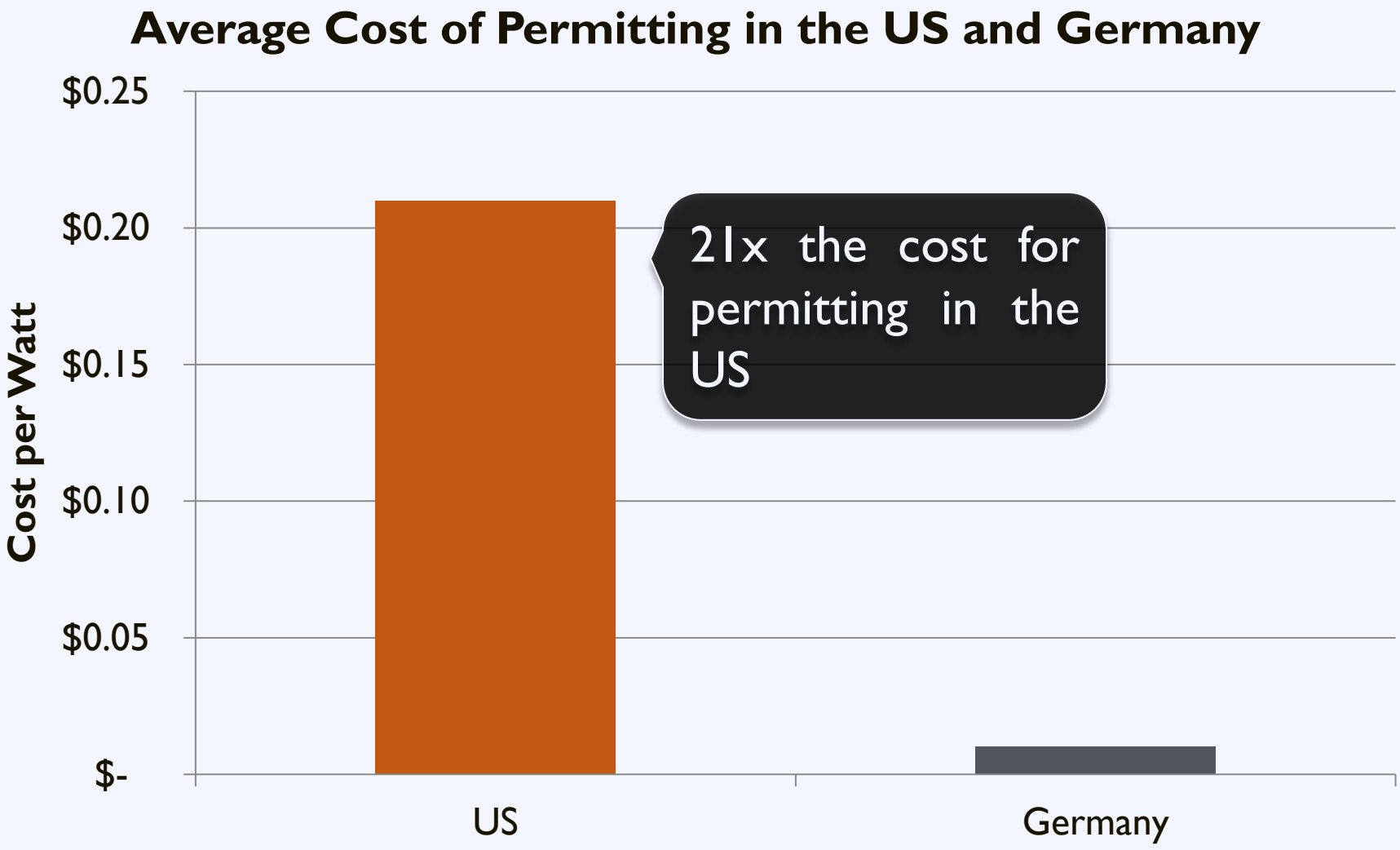
Photon Magazine

Time to Installation



Permitting Costs



Source: NREL, LBNL

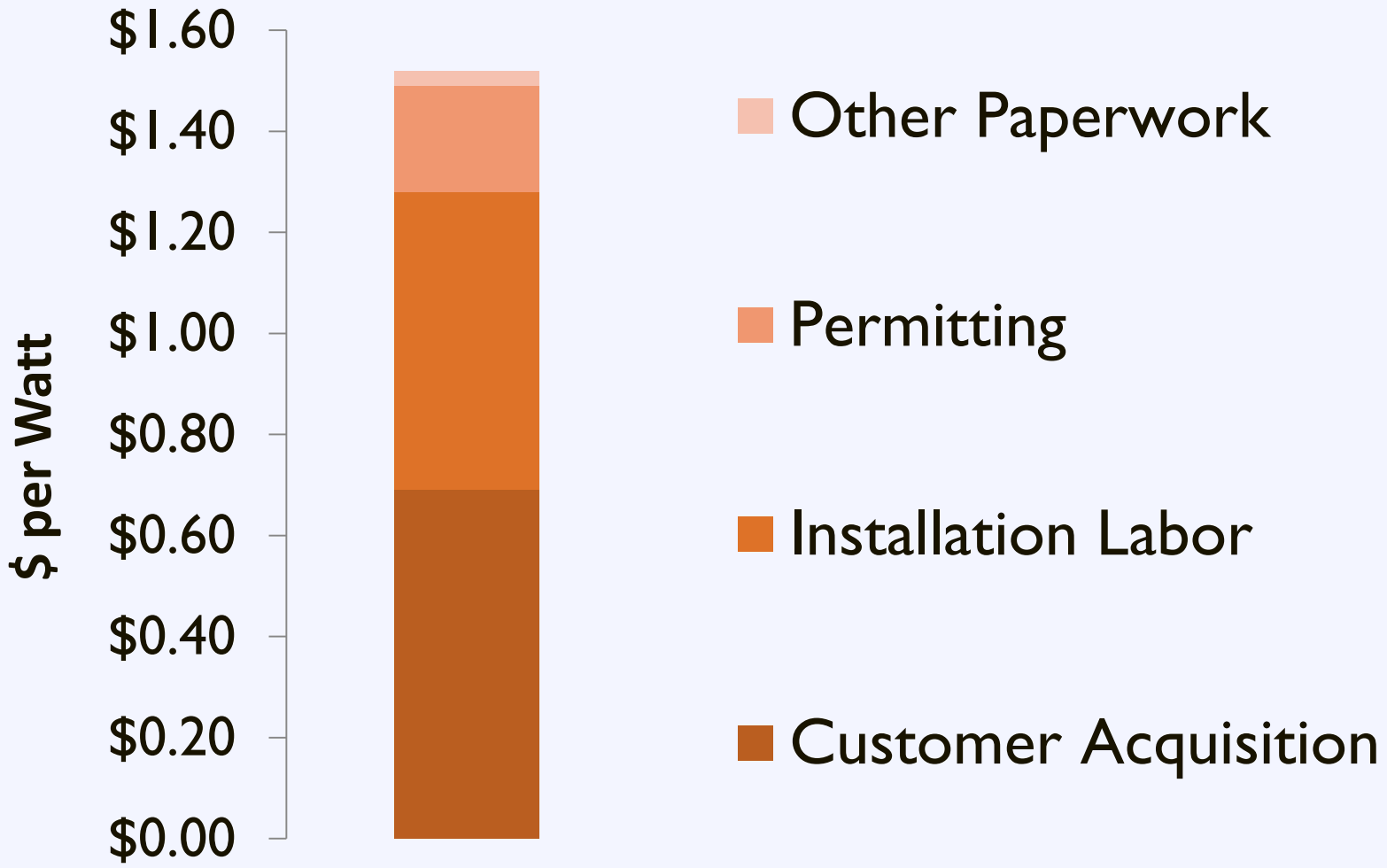
Germany's Success

Consistency and Transparency

through

Standardized Processes

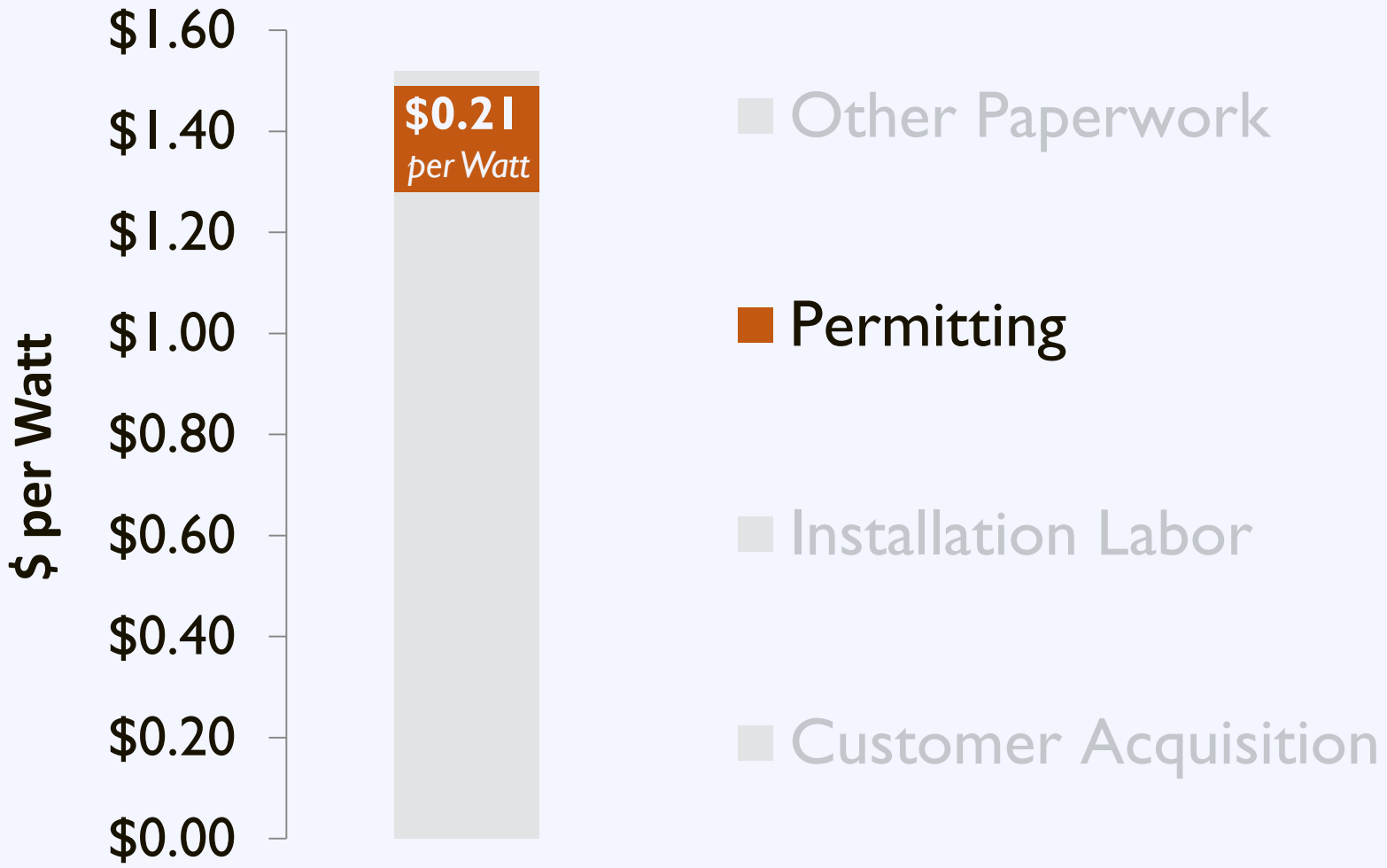
Mitigate Soft Costs



Powered by SunShot
U.S. Department of Energy

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

Mitigate Soft Costs



Powered by SunShot
U.S. Department of Energy

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

Permitting

Remove barriers by:

- Make qualified solar projects a by-right accessory use
- Modify regulations to clarify what types of solar projects are allowed where
- Streamline the permitting process

Zoning Code: Solar Framework

Section	Topics to Address
Definitions	Define technologies
Applicability	Primary vs. accessory use
Dimensional Standards	• Height • Size • Setbacks • Lot coverage
Design Standards	• Signage • Disconnect • Screening • Fencing

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U.S. Department of Energy

Source: American Planning Association

Zoning Codes: Small Scale Solar

Typical Requirements:

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

Zoning Codes: Large Scale Solar

Typical Requirements:

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

Zoning Code: Model Ordinances

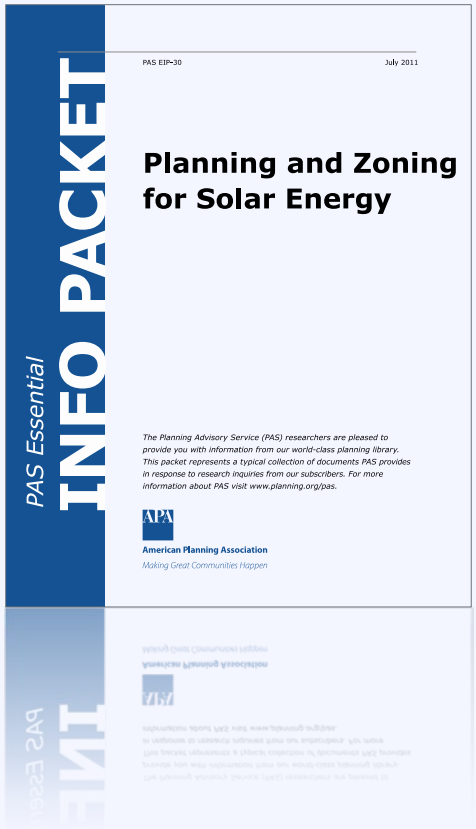
Resource City of Milwaukee: Solar Permitting Guide

http://city.milwaukee.gov/milwaukeeshines/GoSolarHowto/Solar-Permitting-Guide.htm

Zoning Code: Model Ordinances

Resource **Planning and Zoning for Solar Energy**

This Essential Info Packet provides a number of articles and guidebooks to help planners plan for solar in their communities.



planning.org/research/solar

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The Permitting Process: Challenges

18,000+ local jurisdictions

with unique permitting requirements

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U.S. Department of Energy

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

The Permitting Process: Challenges

Local permitting processes add on average

$2,516

to the installation cost of residential PV

Powered by SunShot
U.S. Department of Energy

Source: SunRun

The Permitting Process: Challenges

Source: Forbes

Expedited Permitting

Solar Permitting Best Practices:

- ✓ Fair flat fees
- ✓ Electronic or over-the-counter issuance
- ✓ Standardized permit requirements
- ✓ Electronic materials

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U.S. Department of Energy

Source: Vote Solar

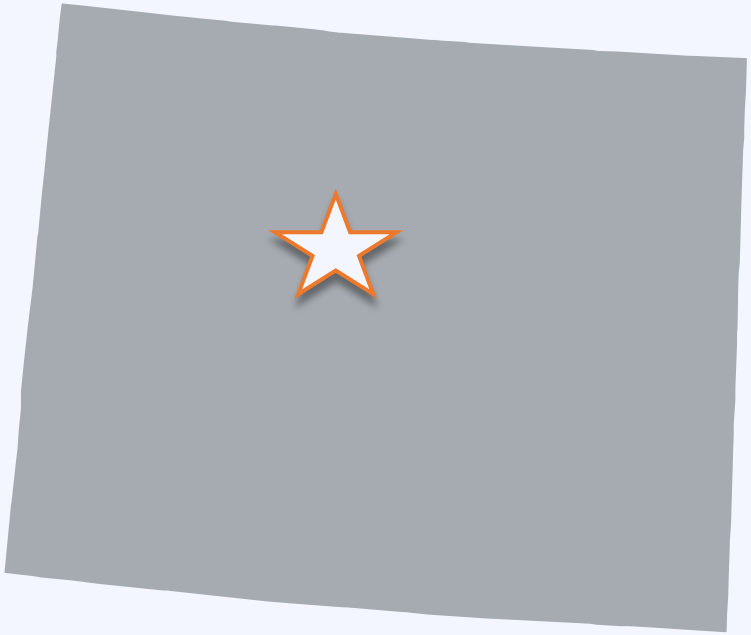
Expedited Permitting

Solar Permitting Best Practices:

- ✓ Training for permitting staff in solar
- ✓ Removal of excessive reviews
- ✓ Reduction of inspection appointment windows
- ✓ Utilization of standard certifications

Source: Vote Solar

Expedited Permitting: Case Study



Breckenridge, Colorado

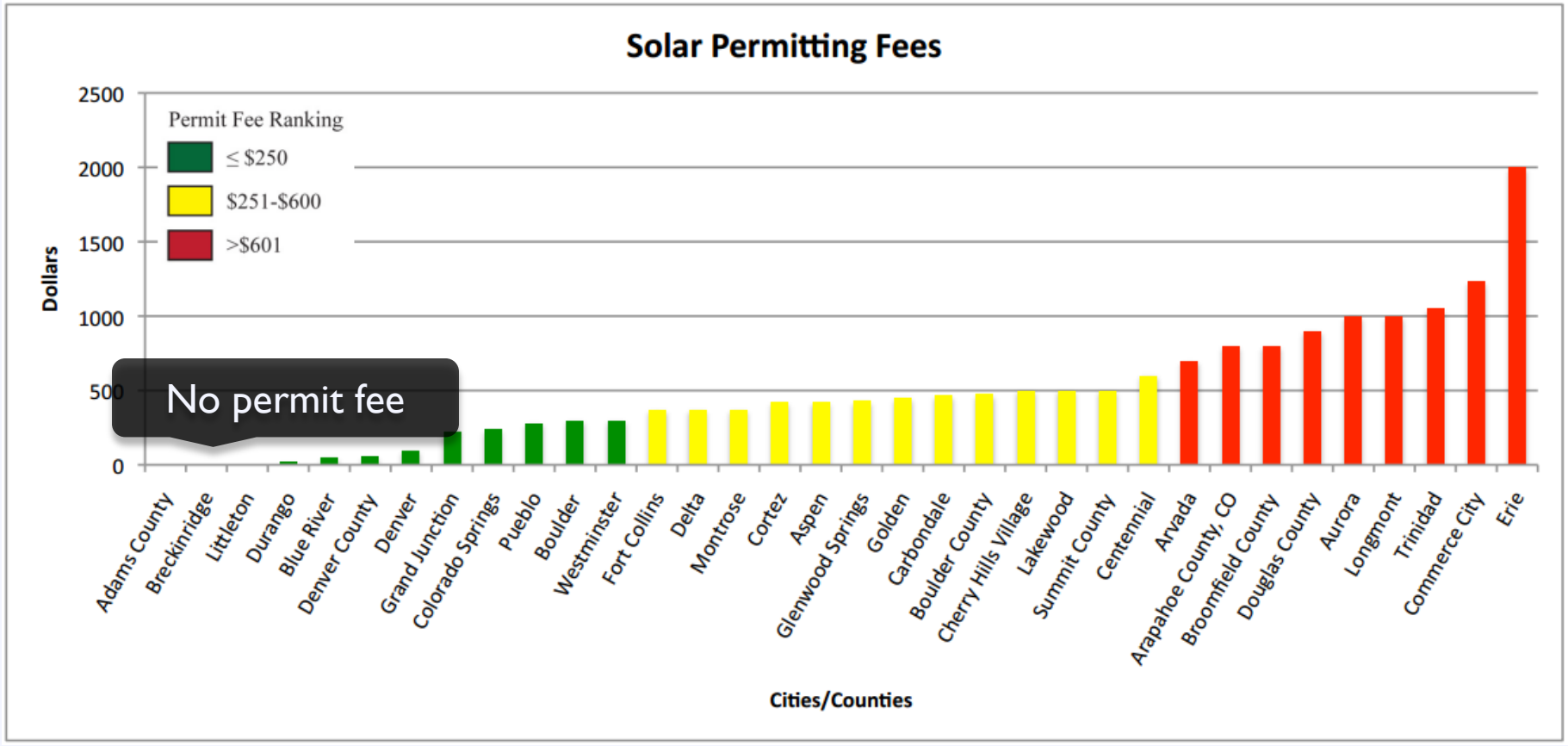
Population: 4,540

Powered by SunShot
U.S. Department of Energy

Source: Wikipedia

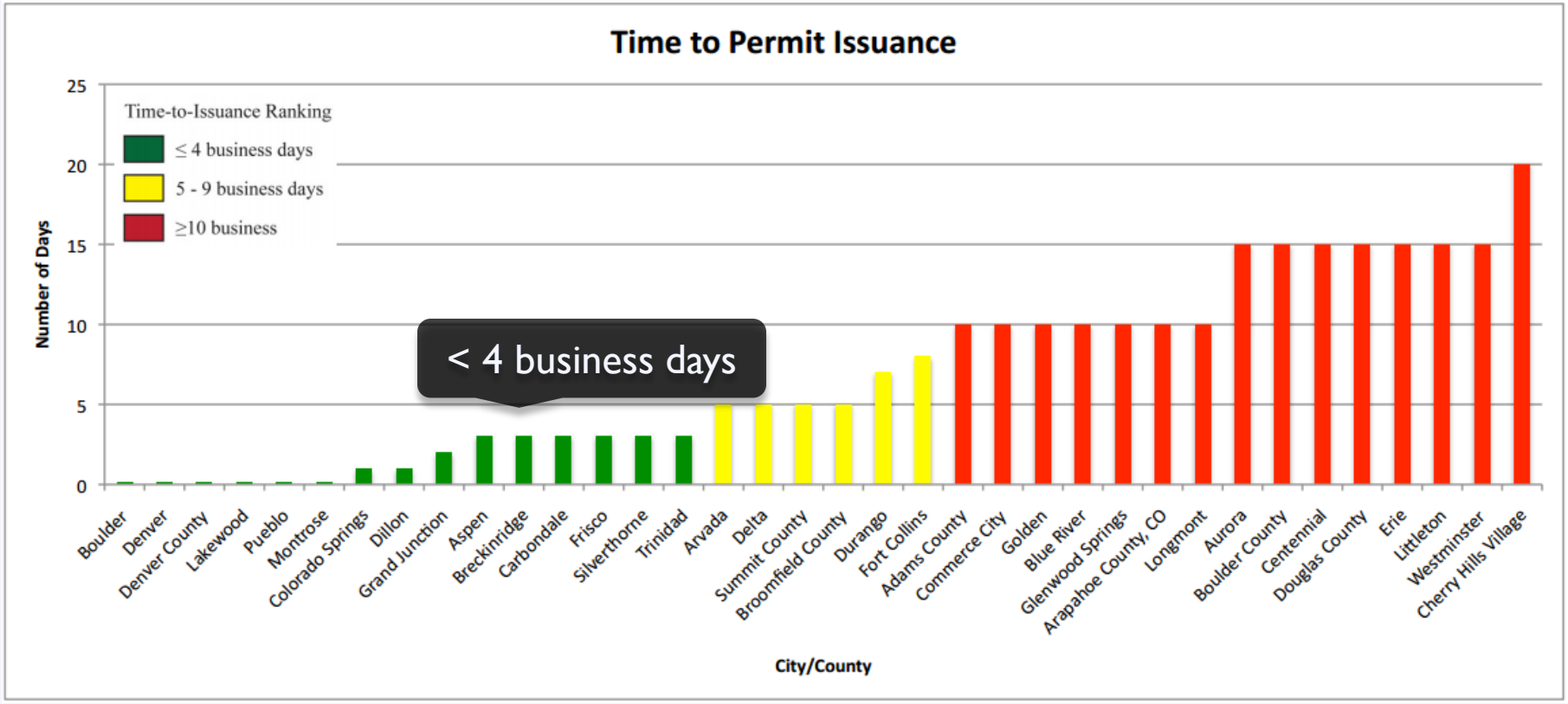
Expedited Permitting: Case Study

Breckenridge charges no fees to file for a solar permit



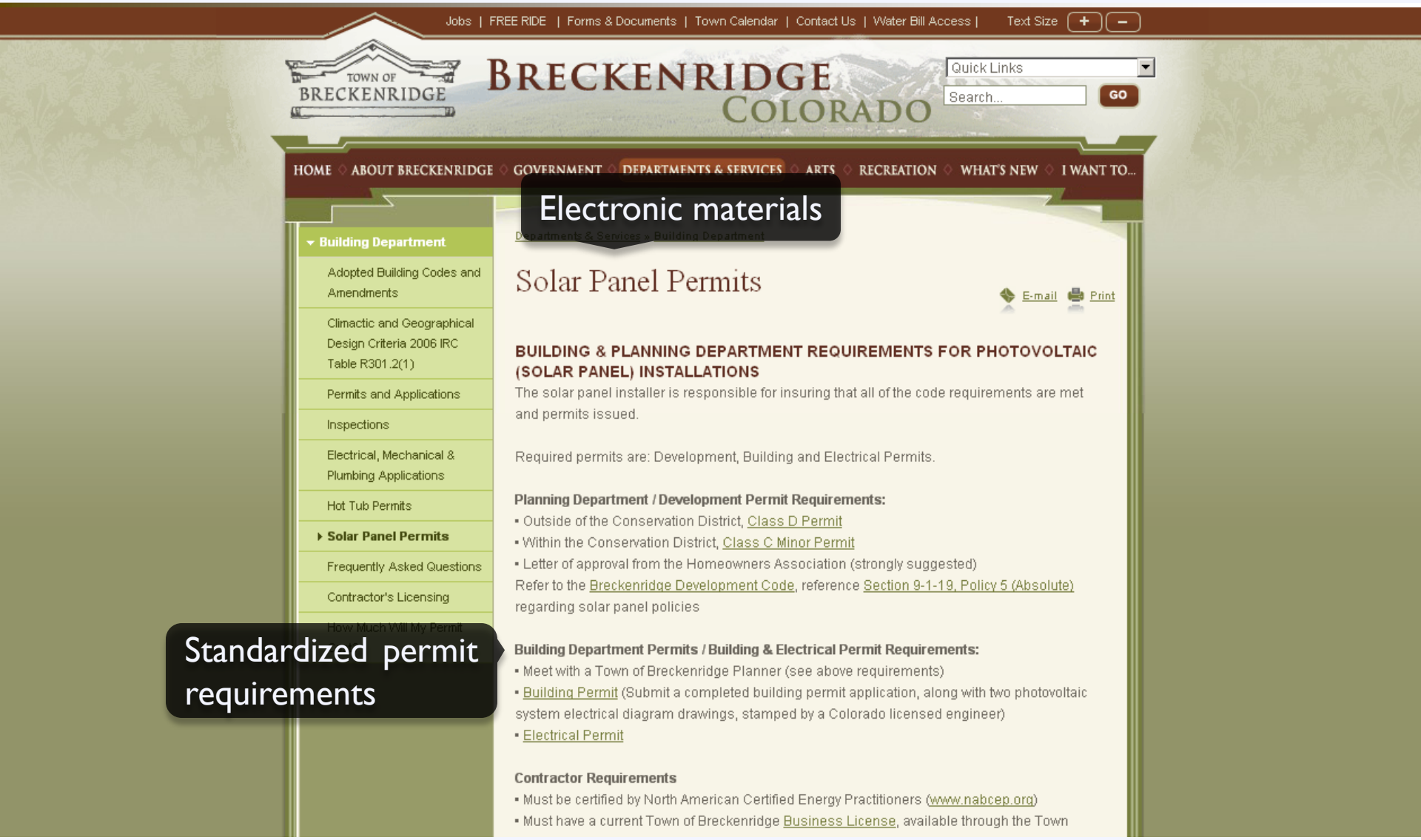
Expedited Permitting: Case Study

Breckenridge offers a short turn around time for solar permits



Source:Vote Solar (http://votesolar.org/wp-content/uploads/2011/03/COPermitReport.pdf)

Expedited Permitting: Case Study



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U.S. Department of Energy

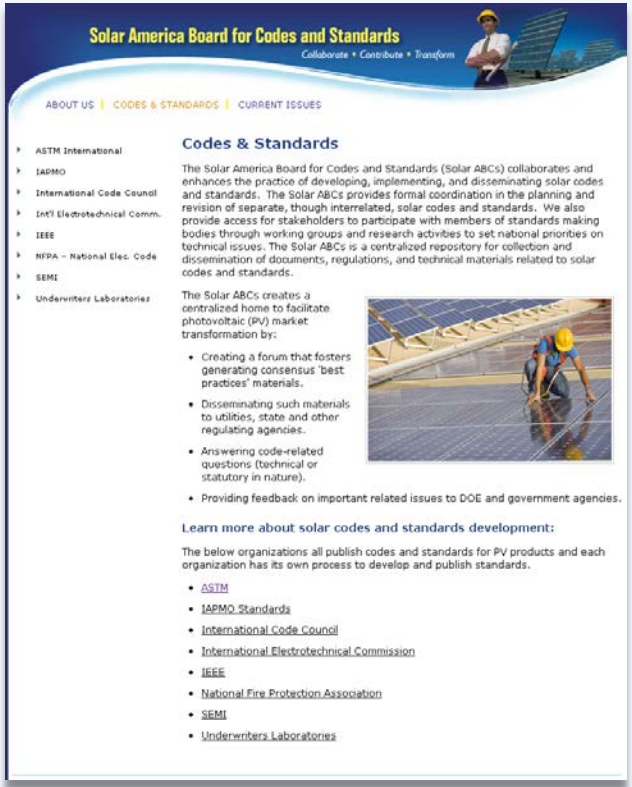
Source: Breckenridge, CO (http://www.townofbreckenridge.com/index.aspx?page=694)

Expedited Permitting

Resource **Solar ABCs**

Expedited Permitting:

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



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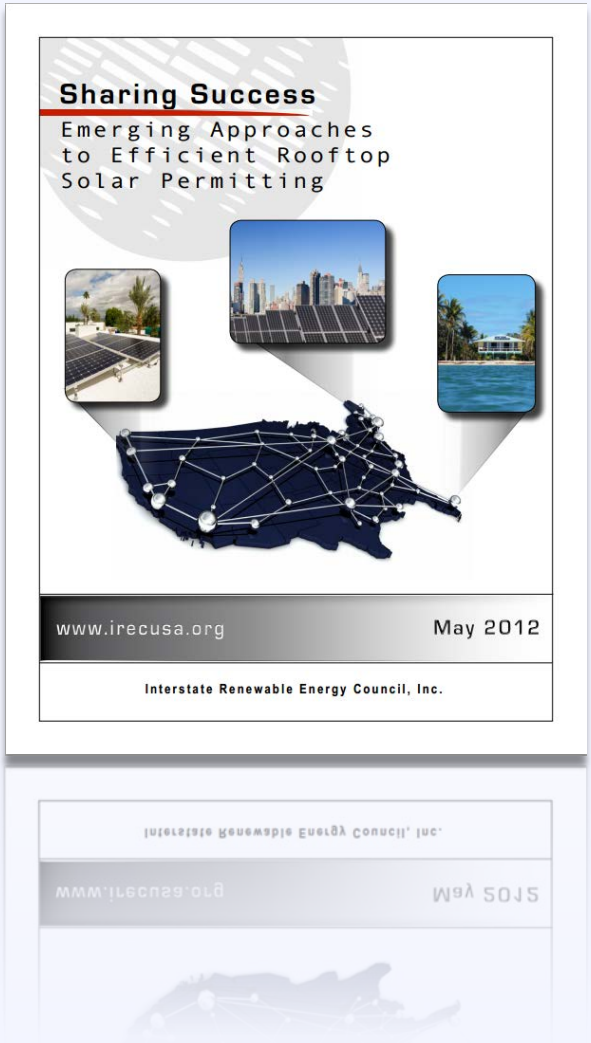
U.S. Department of Energy

Expedited Permitting

Resource **Interstate Renewable Energy Council**

Outlines emerging approaches to efficient rooftop solar permitting

www.irecusa.org



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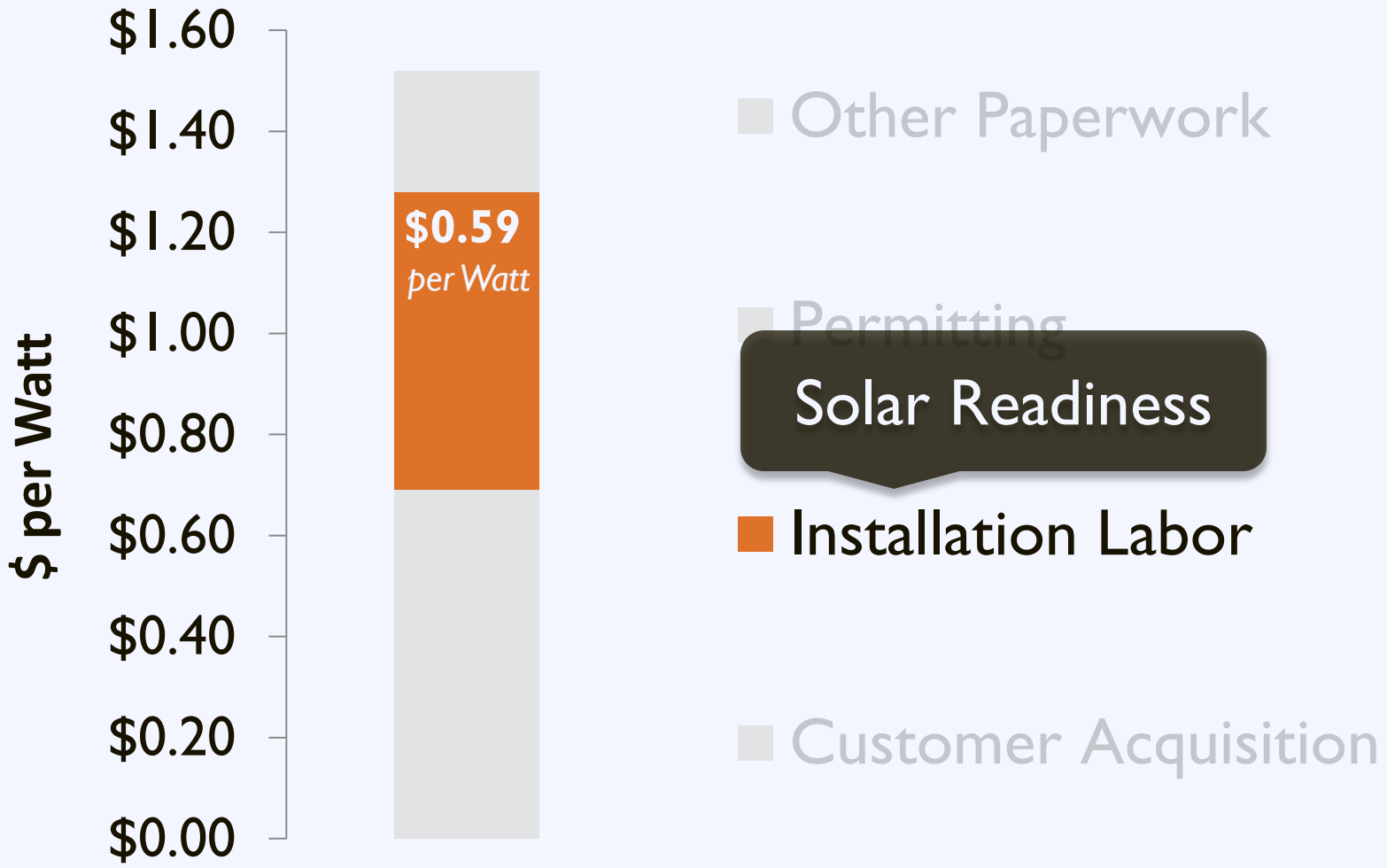
U.S. Department of Energy

Mitigate Soft Costs



Powered by SunShot
U.S. Department of Energy

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

Solar Readiness

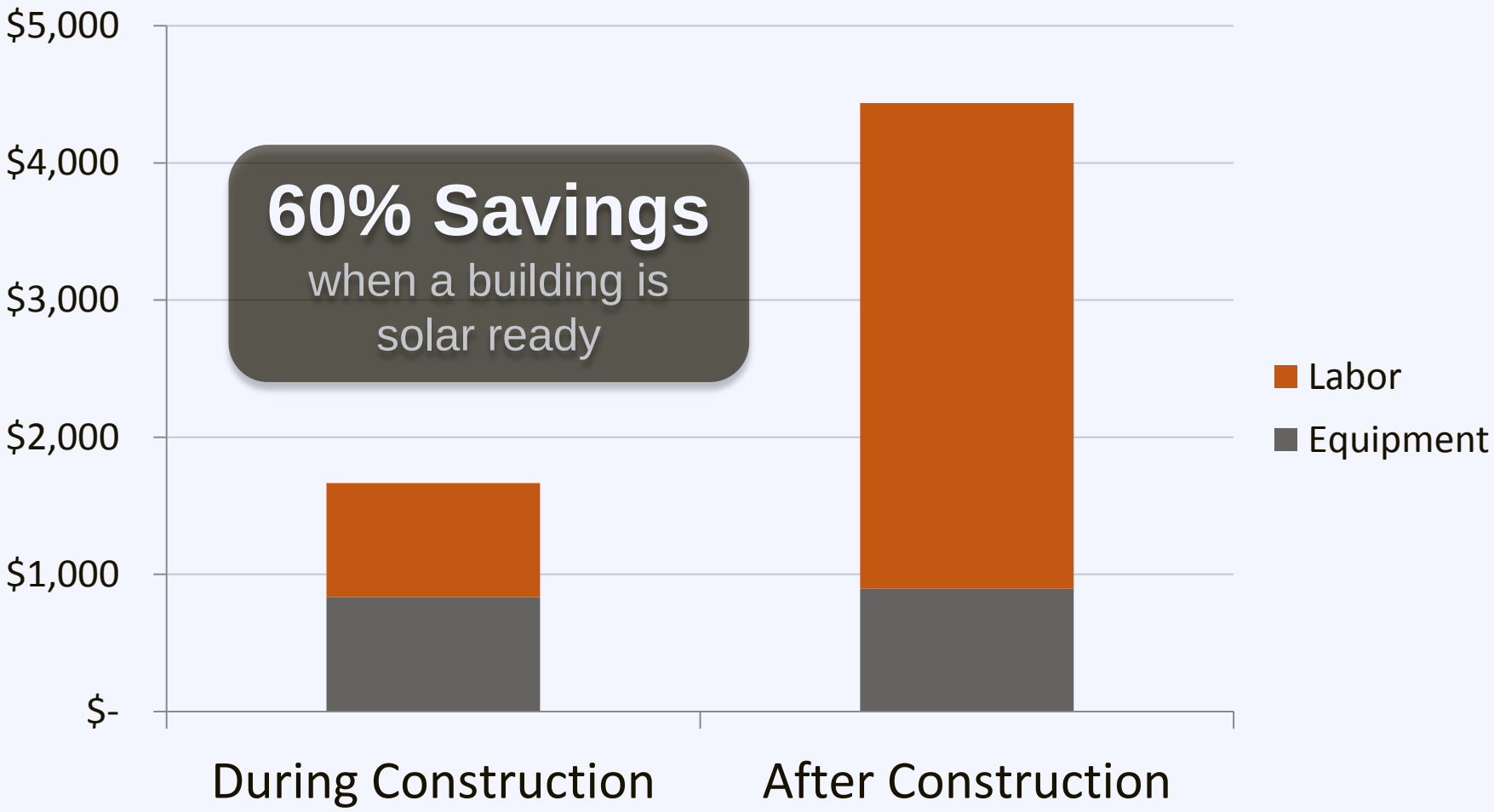
Creating solar-ready guidelines and promoting energy efficiency at the outset can help make future solar installations easier and more cost effective.

Solar Readiness

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

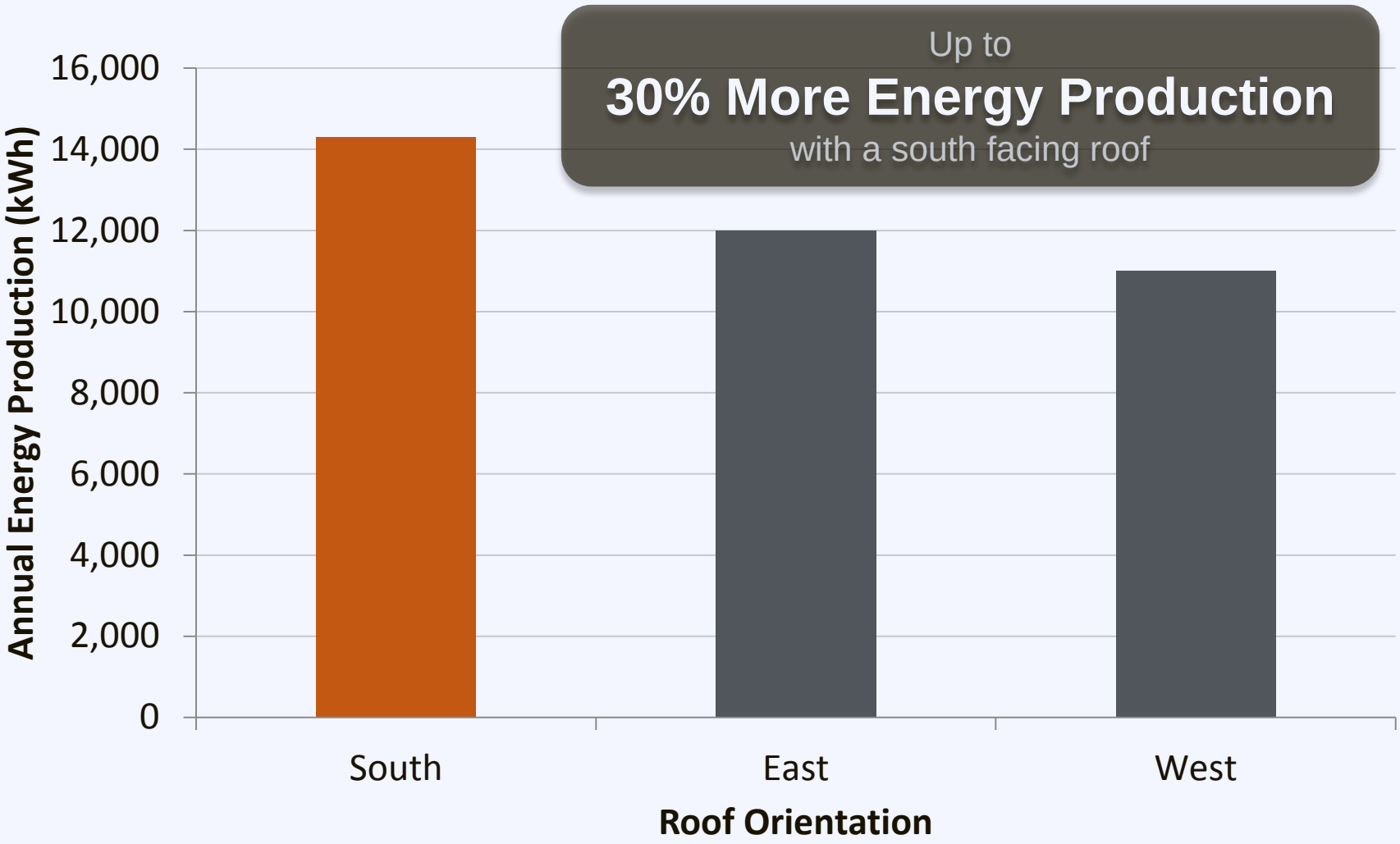
Solar Readiness



Powered by SunShot U.S. Department of Energy

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

Solar Readiness



Powered by SunShot
U.S. Department of Energy

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

Solar Readiness

Resource **NREL**

Creating a solar ready guide for buildings:

- Legislation
- Certification programs
- Stakeholder Education

www.nrel.gov

Powered by SunShot U.S. Department of Energy

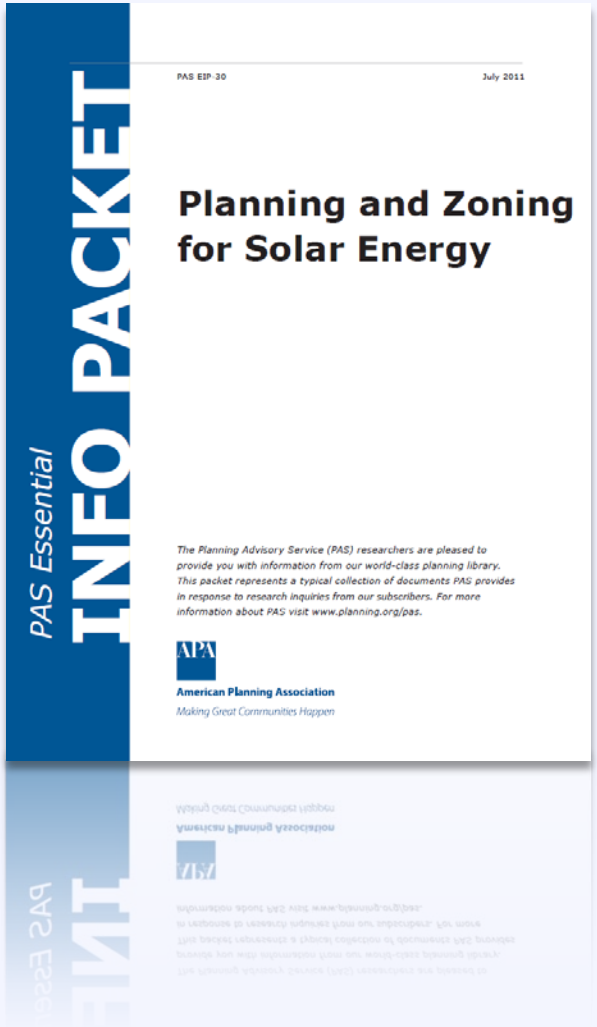
Source: NREL

Solar Readiness Model Ordinance

Resource **American Planning Association**

Includes references to ordinances requiring solar-ready homes in select communities.

www.planning.org/research/solar



Source: APA

Q & A

Agenda

09:10 – 09:45	Introductions and Overview
09:45 – 10:10	Solar 101: Policy Environment and Economics
10:10 – 10:20	*Break*
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10:40 – 11:10	Creating a Solar Ready Community
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11:50 – 12:00	*Break*
12:00– 01:00	Lunch and Group Discussion

- Costs and Revenue
- Solar Project Finance
- Local Solar Programs

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U.S. Department of Energy

The Solar Equation

Cost

+ Installed Cost

+ Maintenance

- Direct Incentive

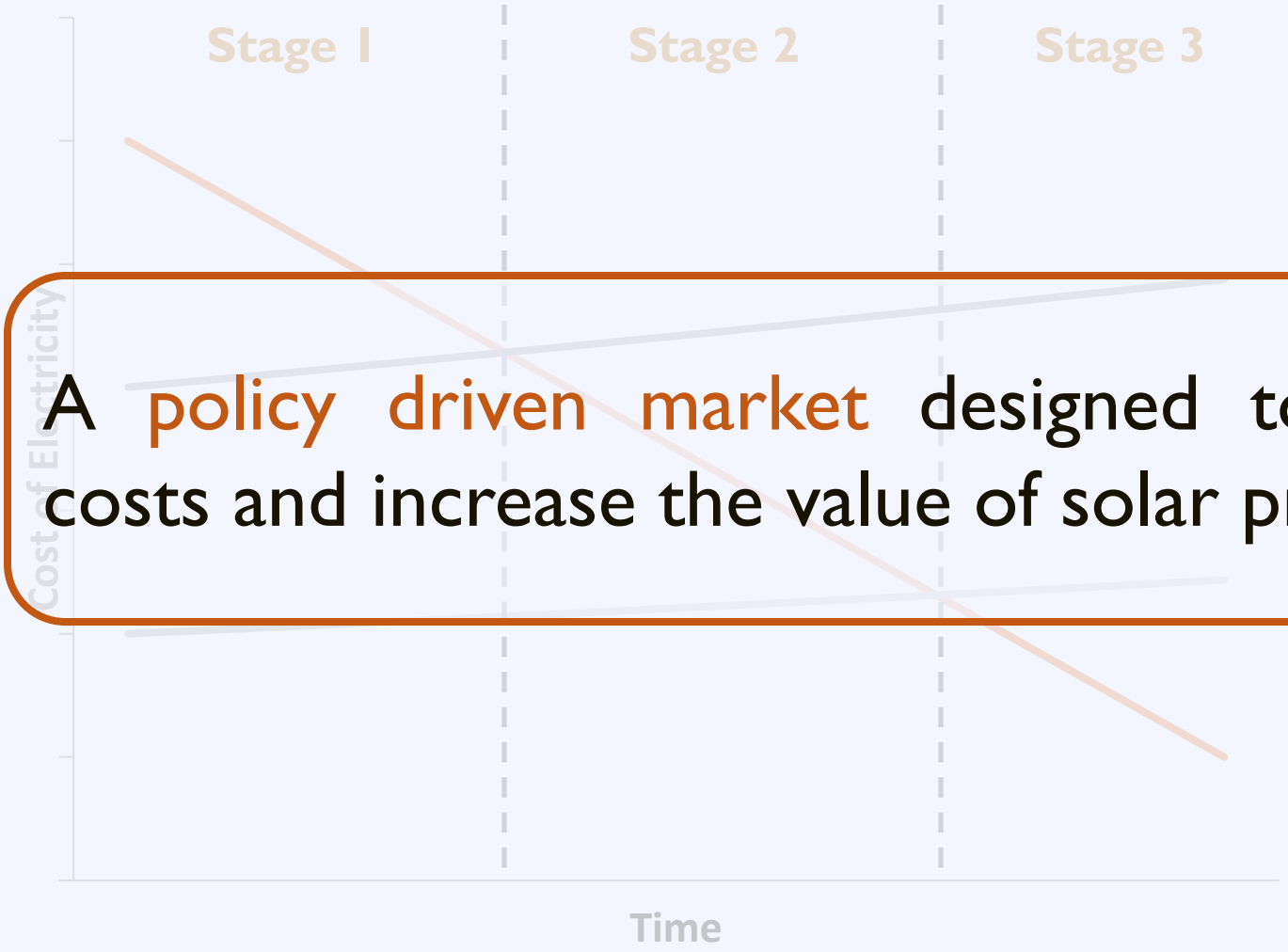
Benefit

+ Avoided Energy Cost

+ Excess Generation

+ Performance Incentive

Solar Market: Stages



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

Powered by SunShot
U.S. Department of Energy

Source: Solar Electric Power Association

The Solar Equation

Cost

+ Installed Cost

+ Maintenance

- Direct Incentive

Benefit

+ Avoided Energy Cost

+ Excess Generation

+ Performance Incentive

Incentives

Federal	Investment Tax Credit	Accelerated Depreciation	QECBs
State	Production Tax Credit	State Loan Program	Sales Tax Exemption

Incentives

Federal	Investment Tax Credit	Accelerated Depreciation	QECBs
State	Production Tax Credit	State Loan Program	Sales Tax Exemption

Investment Tax Credit

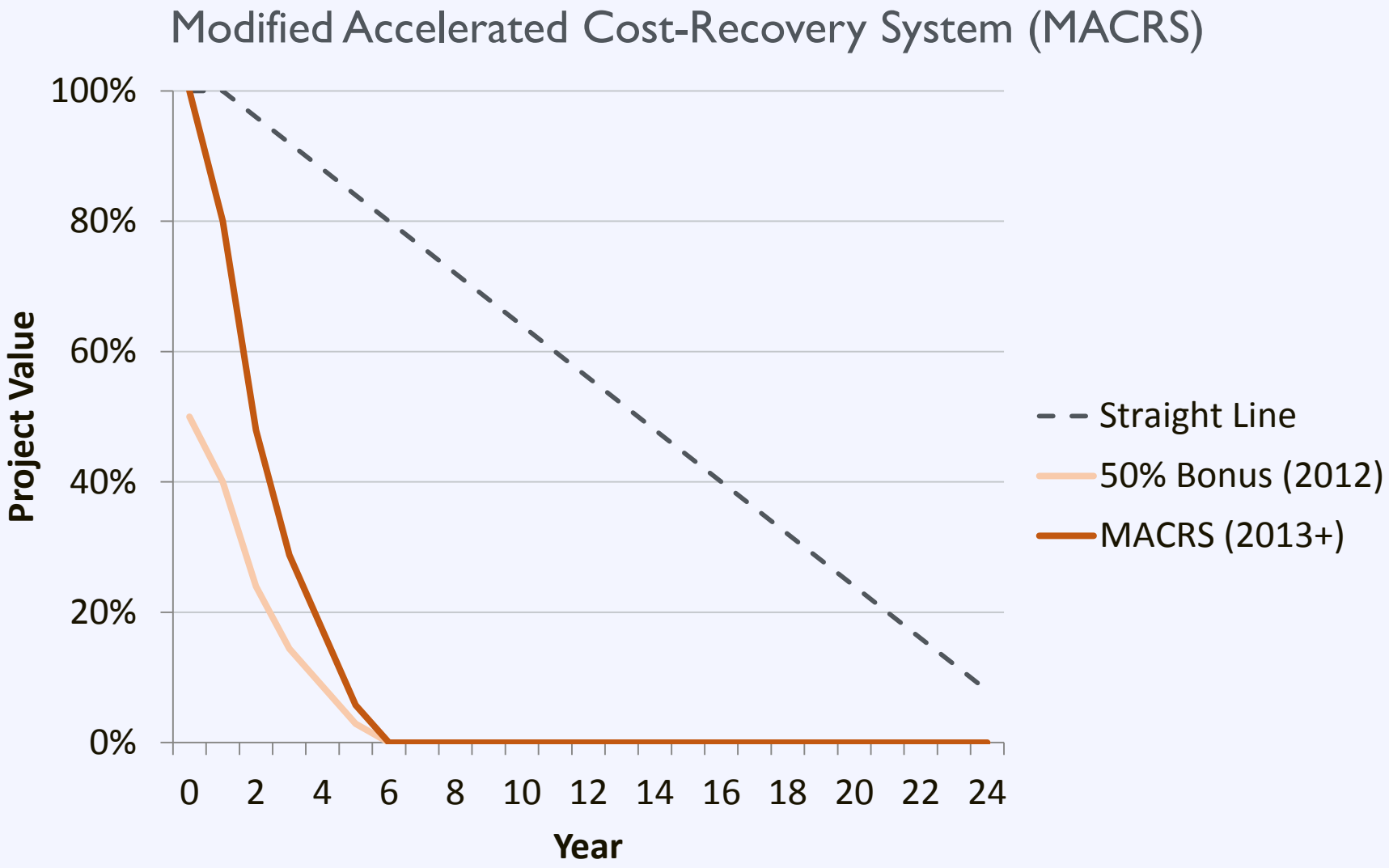
Type: Tax Credit

Eligibility: For-Profit Organization

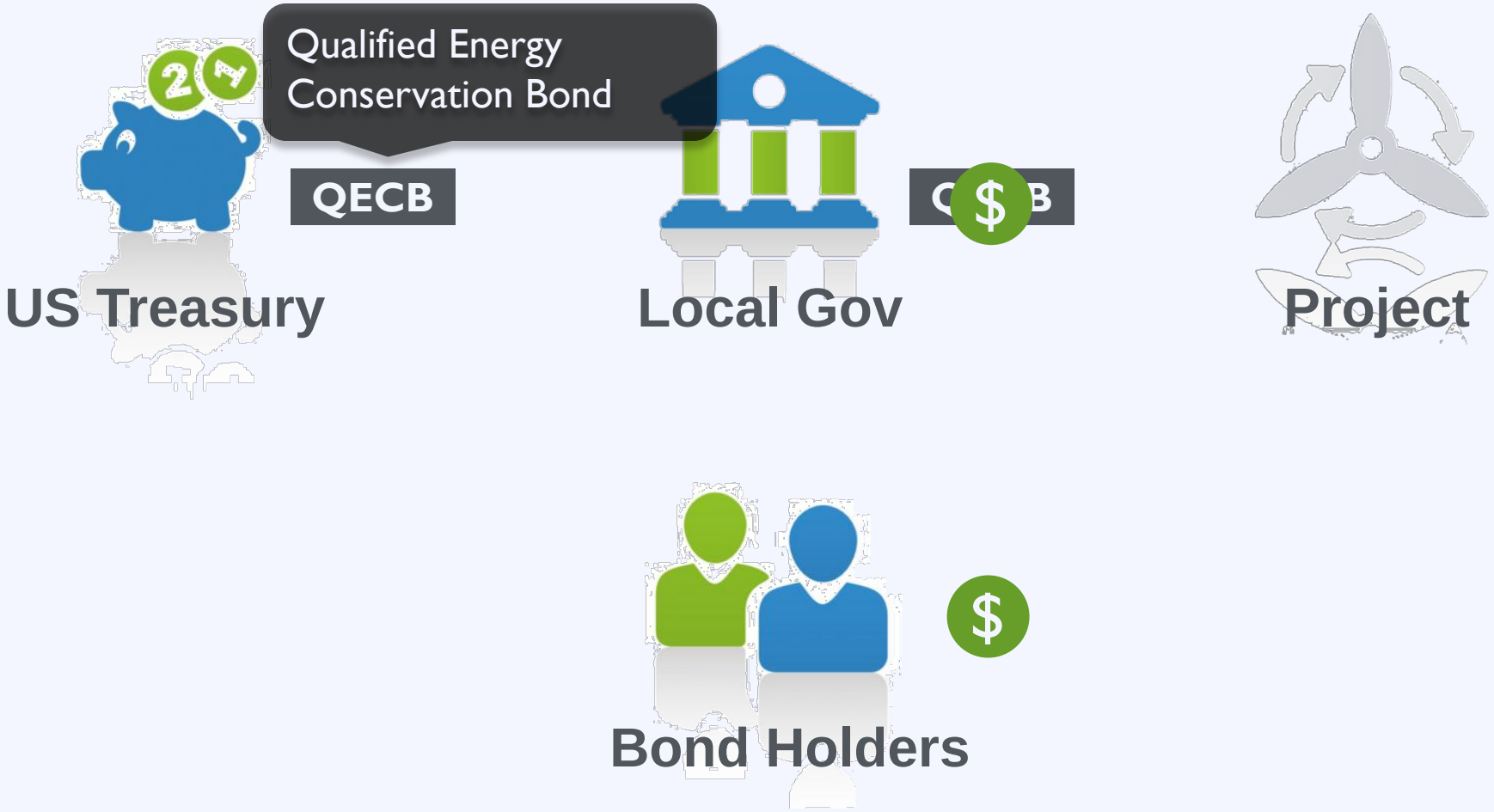
Value: 30% of the installation cost

Availability: Through 2016

Accelerated Depreciation



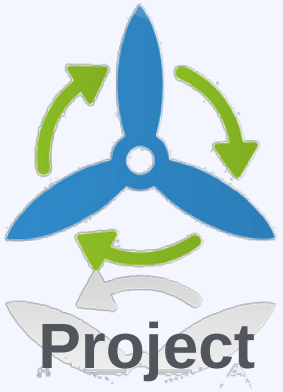
Qualified Energy Conservation Bond



Qualified Energy Conservation Bond

US Treasury

Local Gov



Project

QECB

Bond Holders

Incentives

Federal	Investment Tax Credit	Accelerated Depreciation	QECBs
State	Production Tax Credit	State Loan Program	Sales Tax Exemption

Production Tax Credit

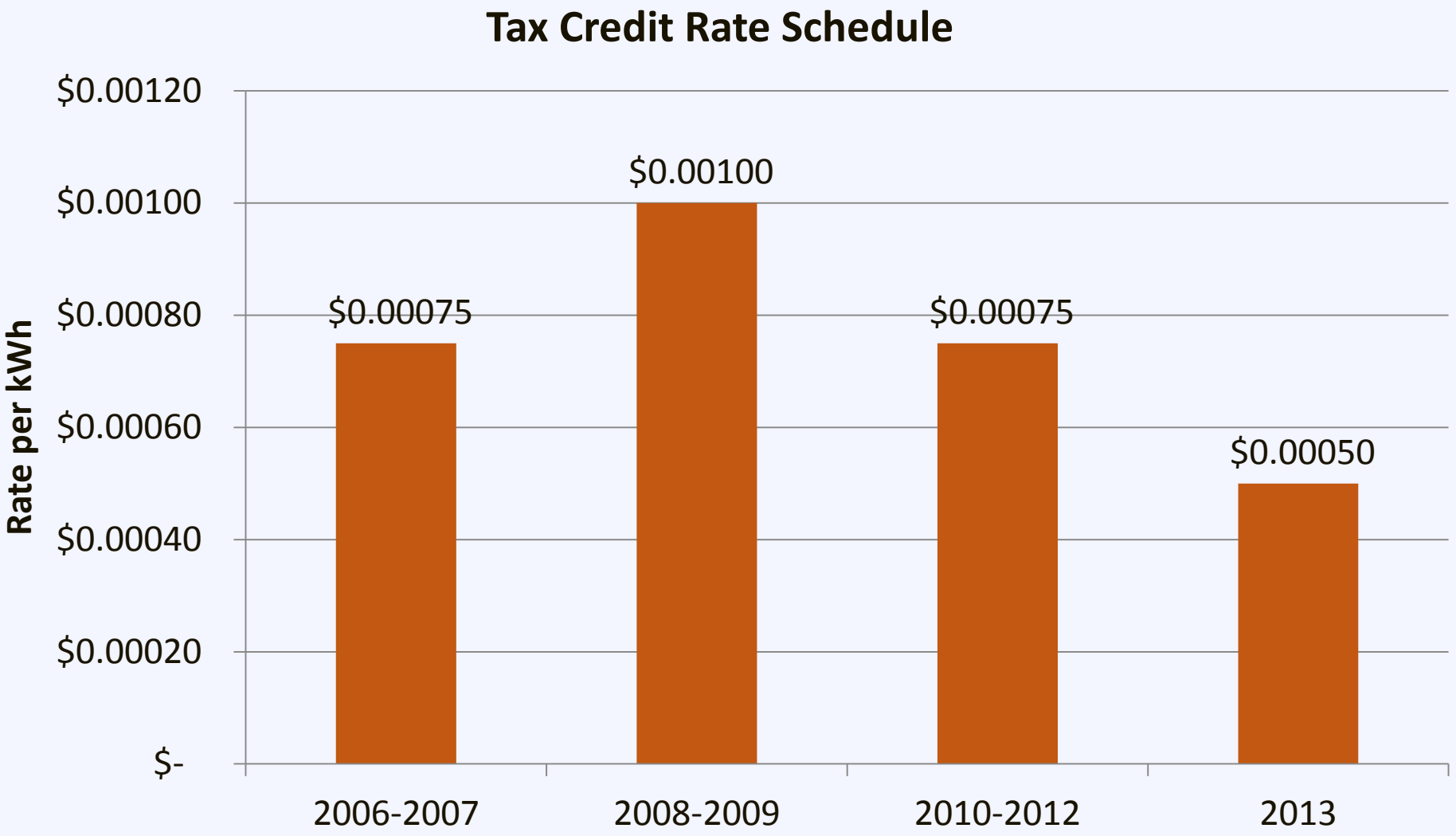
Type: Tax Credit

Eligibility: Corporations and Residents

Value: $0.0005 per kWh for 10 Years

Budget: $50,000 Corp. & $50,000 Personal

Production Tax Credit



Powered by SunShot
U.S. Department of Energy

Source: DSIRE

State Loan Program

Dollar and Energy Savings Loan Program

Makes available low interest loans for energy efficiency and renewable energy projects

State Loan Program

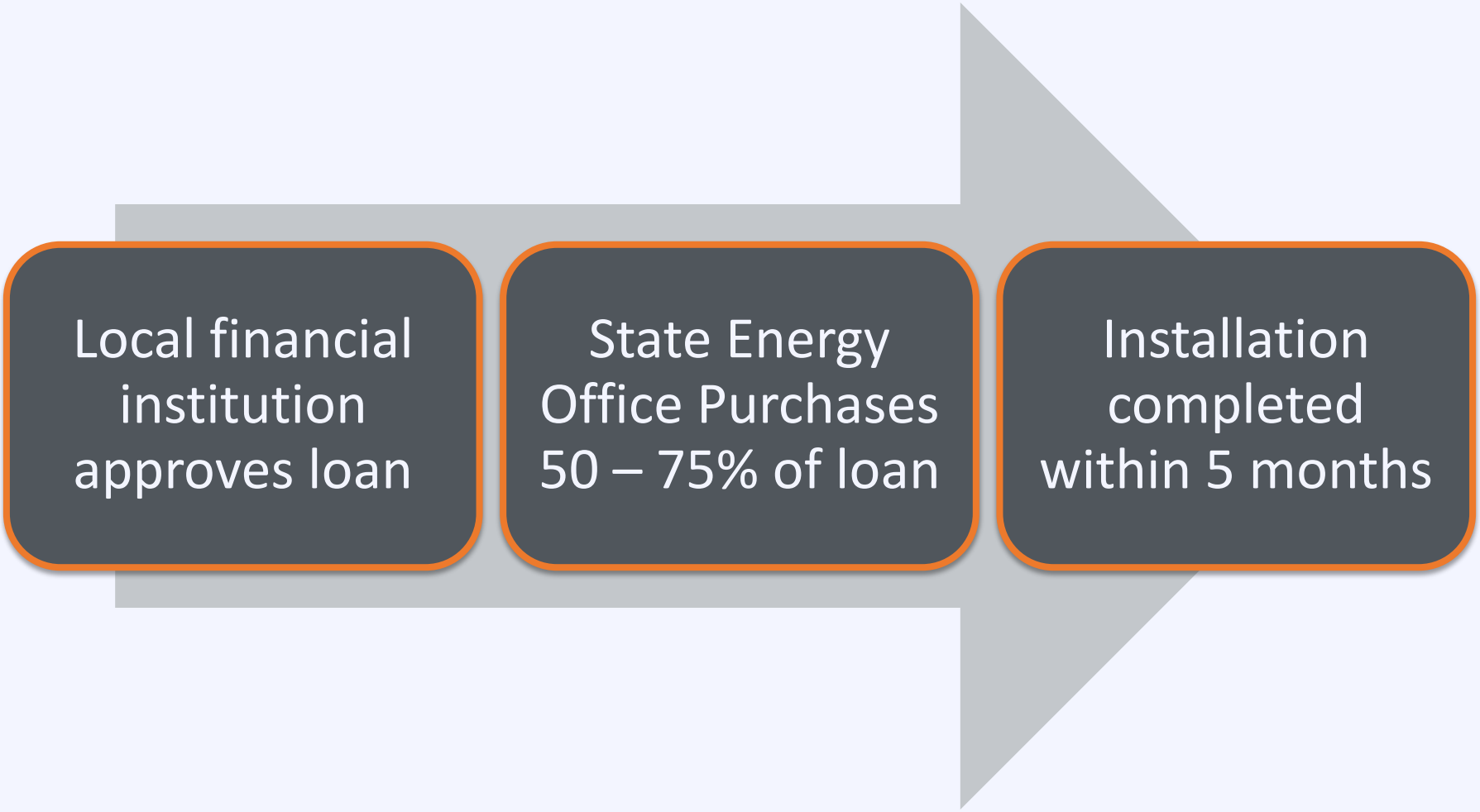
Type: Revolving Loan Fund

Maximum Loan: $125,000* for prequalified loans

Interest: 2.5% – 5%

Term: 5 Years to 15 Years

State Loan Program



State Loan Program

The State Energy Office's initial investment of

$11.1 Million has leveraged

$218.5 million

in loans from Nebraska financial institutions

Powered by SunShot
U.S. Department of Energy

Source: DSIRE

Sales Tax Credit

Type: Sales Tax Credit

Requirement: Minimum $20 million investment

Available Until: January 1, 2019

Ownership Options

Direct Ownership

Third-Party Ownership

Community Ownership

Direct Ownership

Direct Ownership

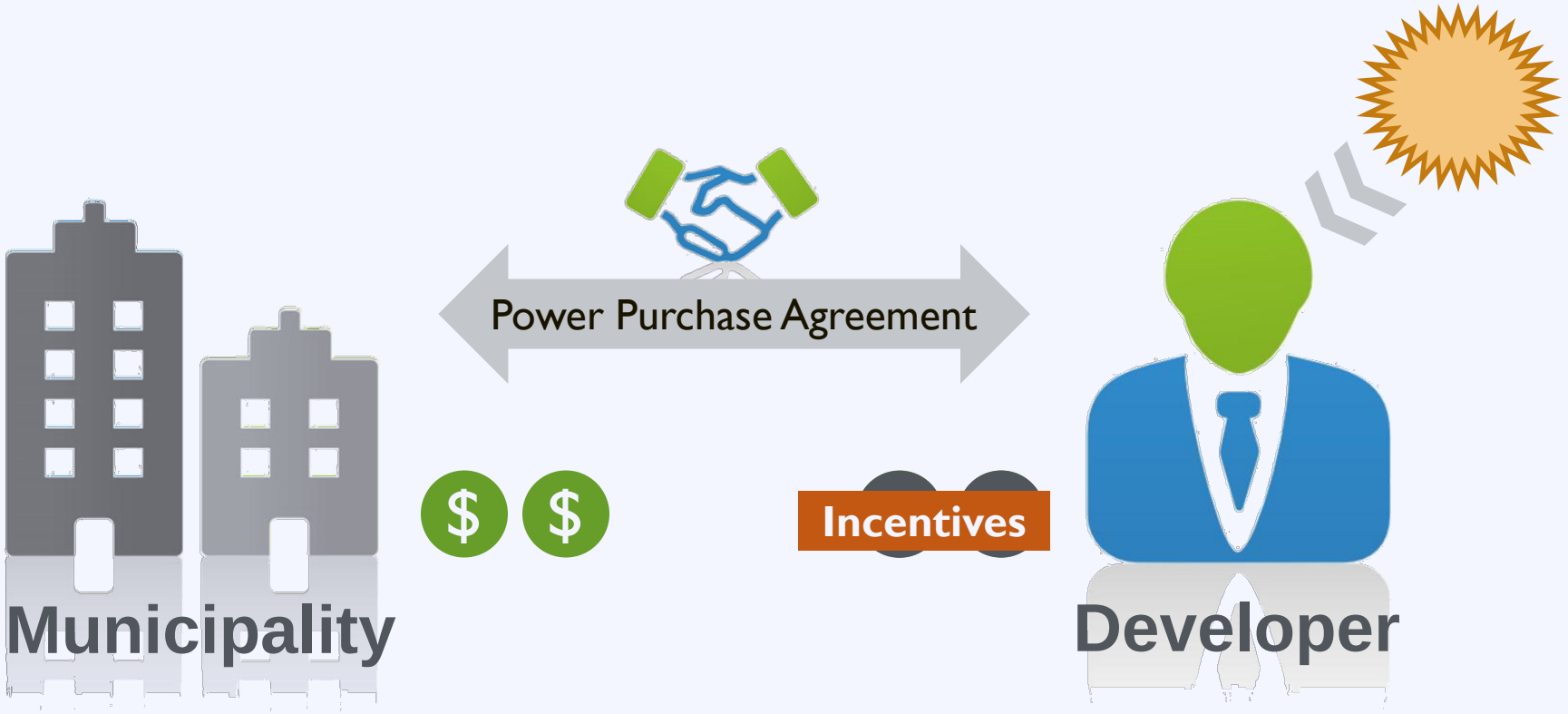
Pros

- Low – cost electricity
- REC revenue
- Utilize cheap bond money

Cons

- Large upfront cost
- Long term management
- Can't take tax benefits
- Development risk
- Performance risk

Third Party Ownership



Third Party Ownership

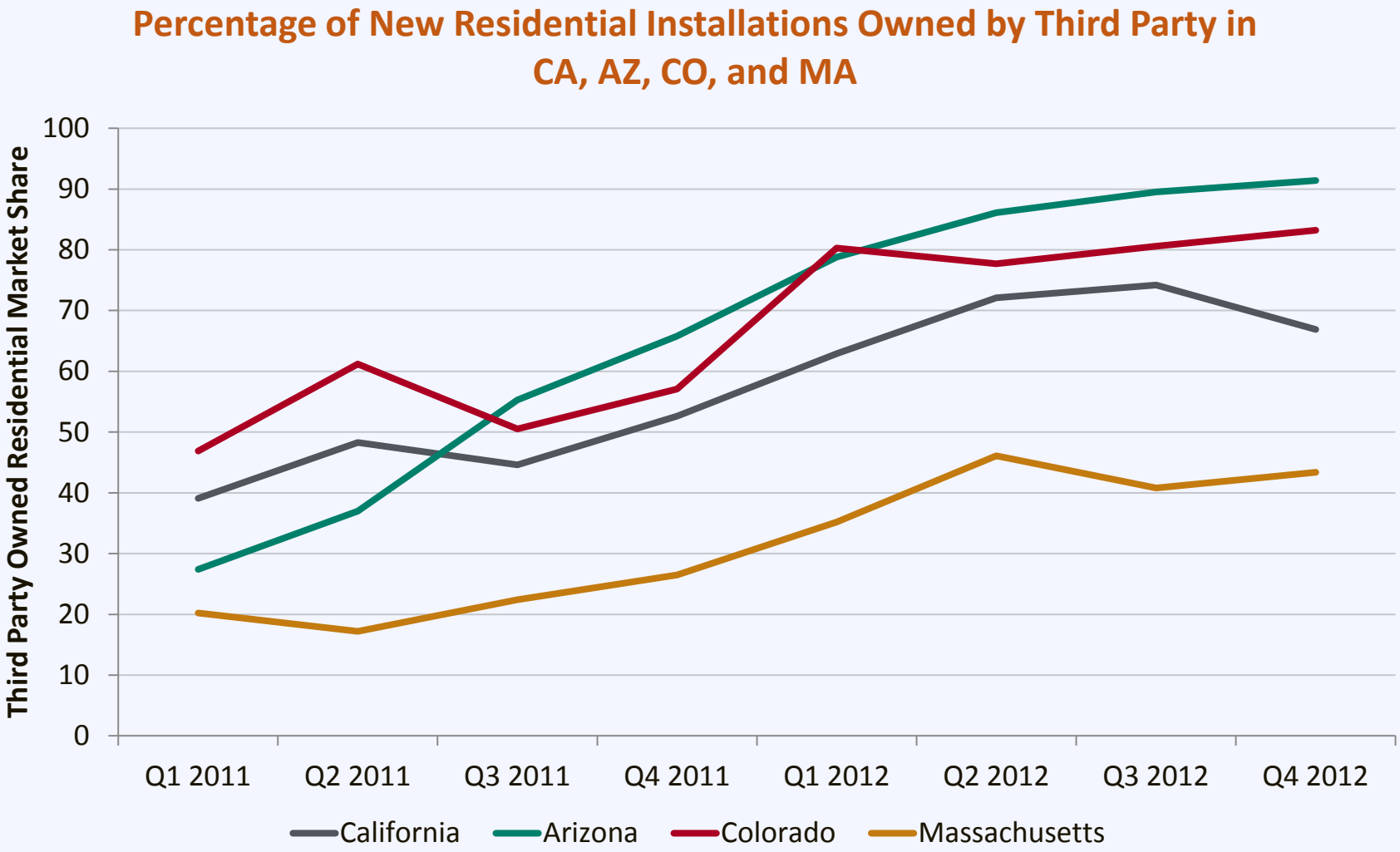
Pros

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

Cons

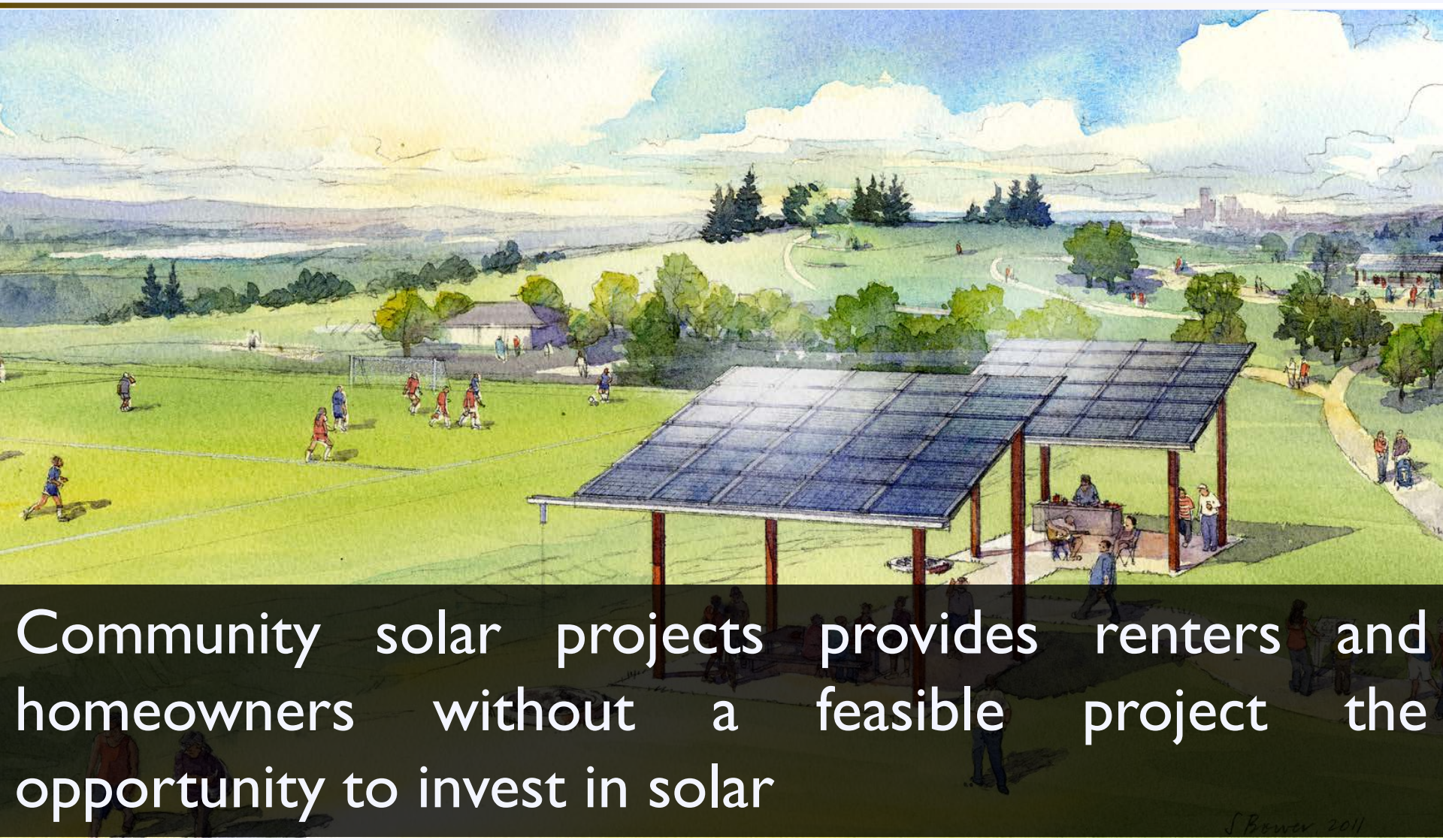
- Don't keep RECs
- Can't use bonds

Benefits of PPAs



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

Community Ownership



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

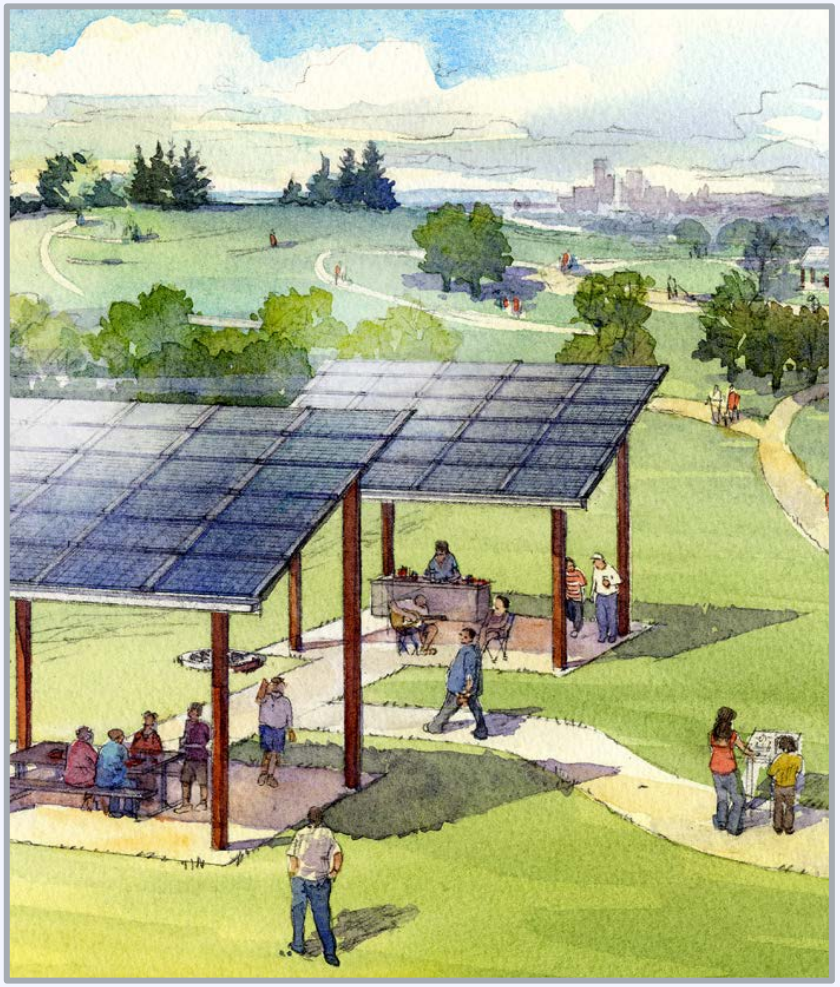
Powered by SunShot
U.S. Department of Energy

Source: Seattle City Light

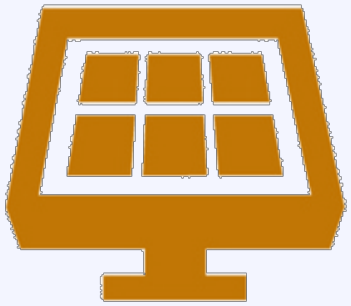
Community Ownership

Program Models:

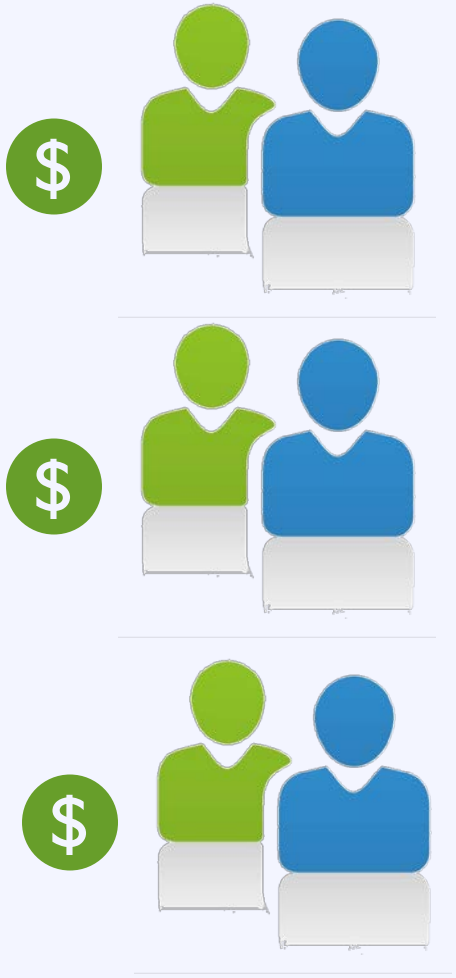
- SPE Model
- Investment Model
- Utility Model



Community: SPE Model

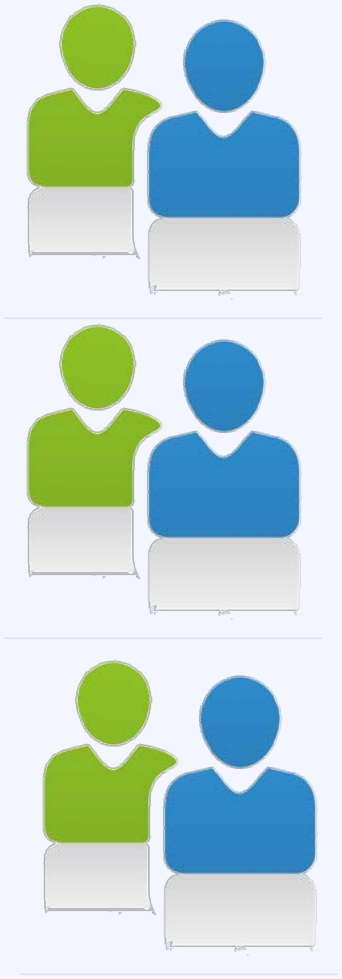


Solar Installation



Community: SPE Model

Solar Installation



Community Ownership

Program Models:

- ~~SPE Model~~
- Investment Model
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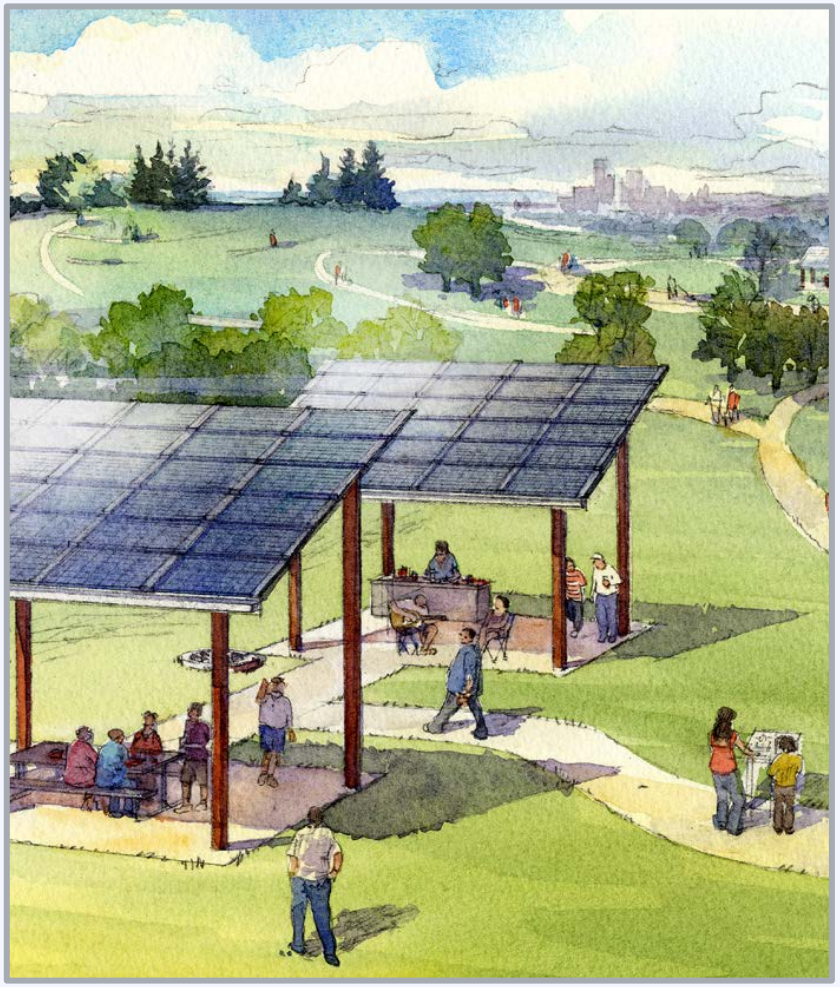
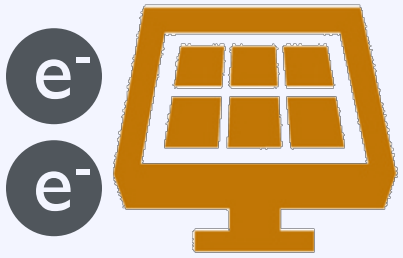
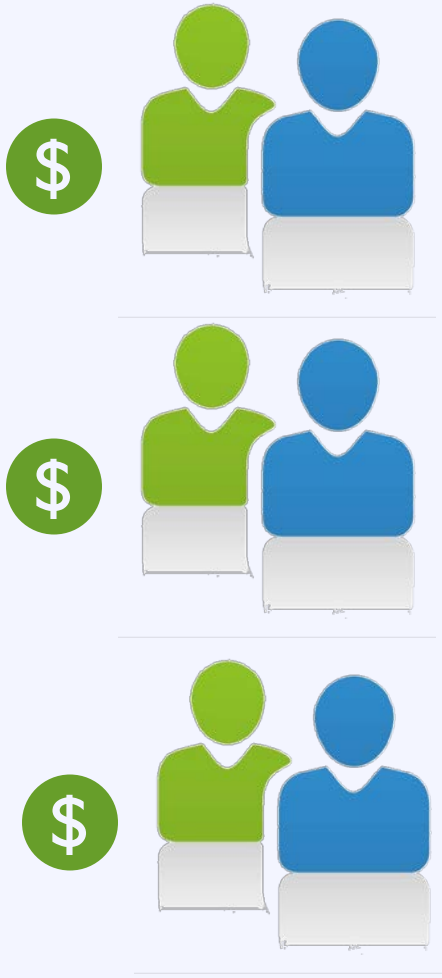


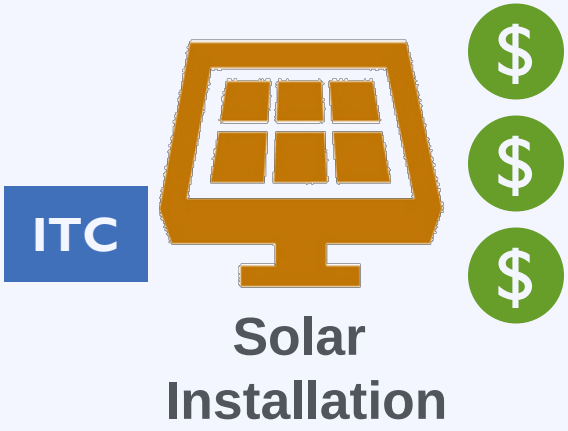
Community: Investment Model



Solar Installation



Community: Investment Model



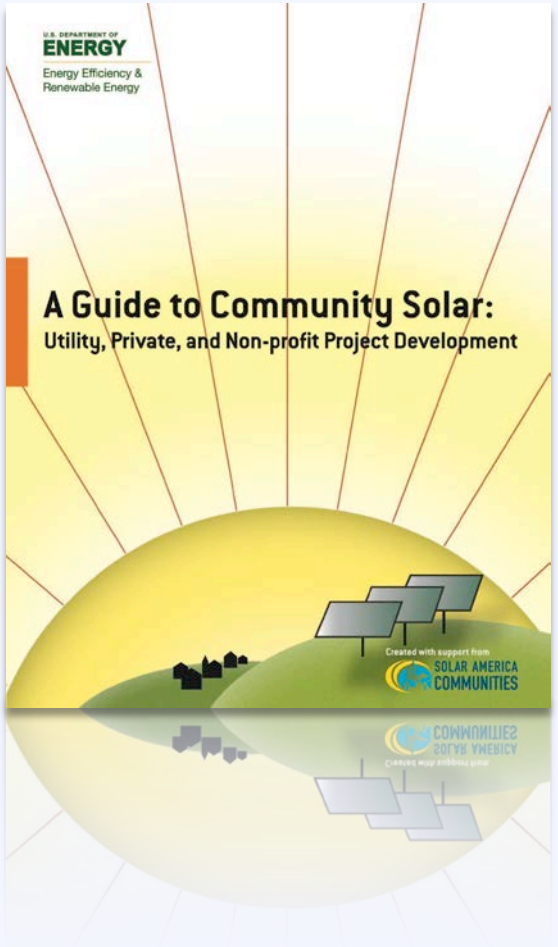
Community: Utility Model

Community: Resources

Resource **A Guide to Community Solar**

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

www.nrel.gov



Programs to Grow your Solar Market

Solarize

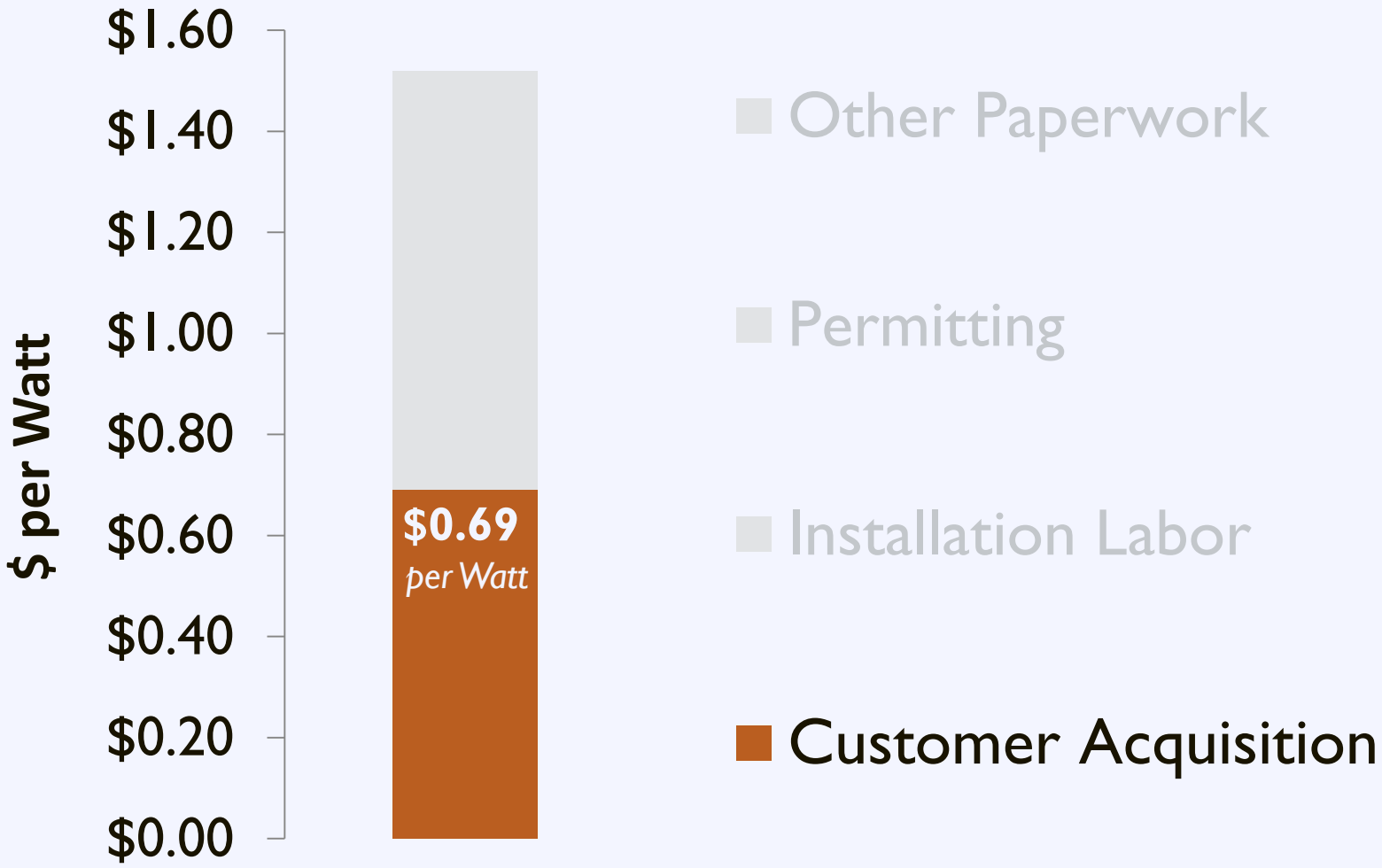
Feed-in Tariff
(CLEAN Contract)

Solarize

Solarize

Group Purchasing

Solarize: Mitigate Soft Costs

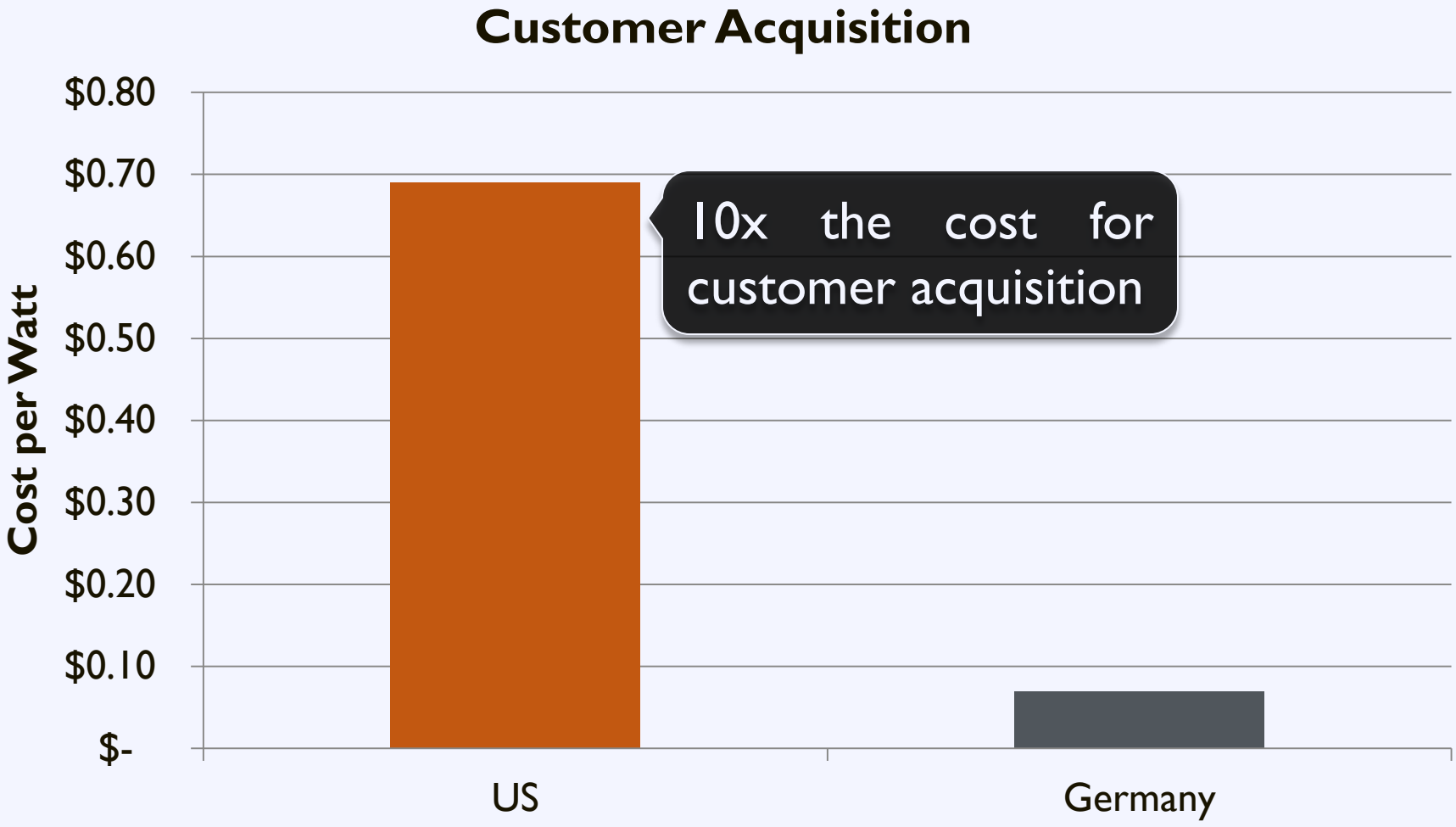


Source: NREL (http://www.nrel.gov/docs/fy12osti/54689.pdf)

Solarize: Advantages

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

Solarize: Advantages



Source: NREL, LBNL

Solarize: Advantages

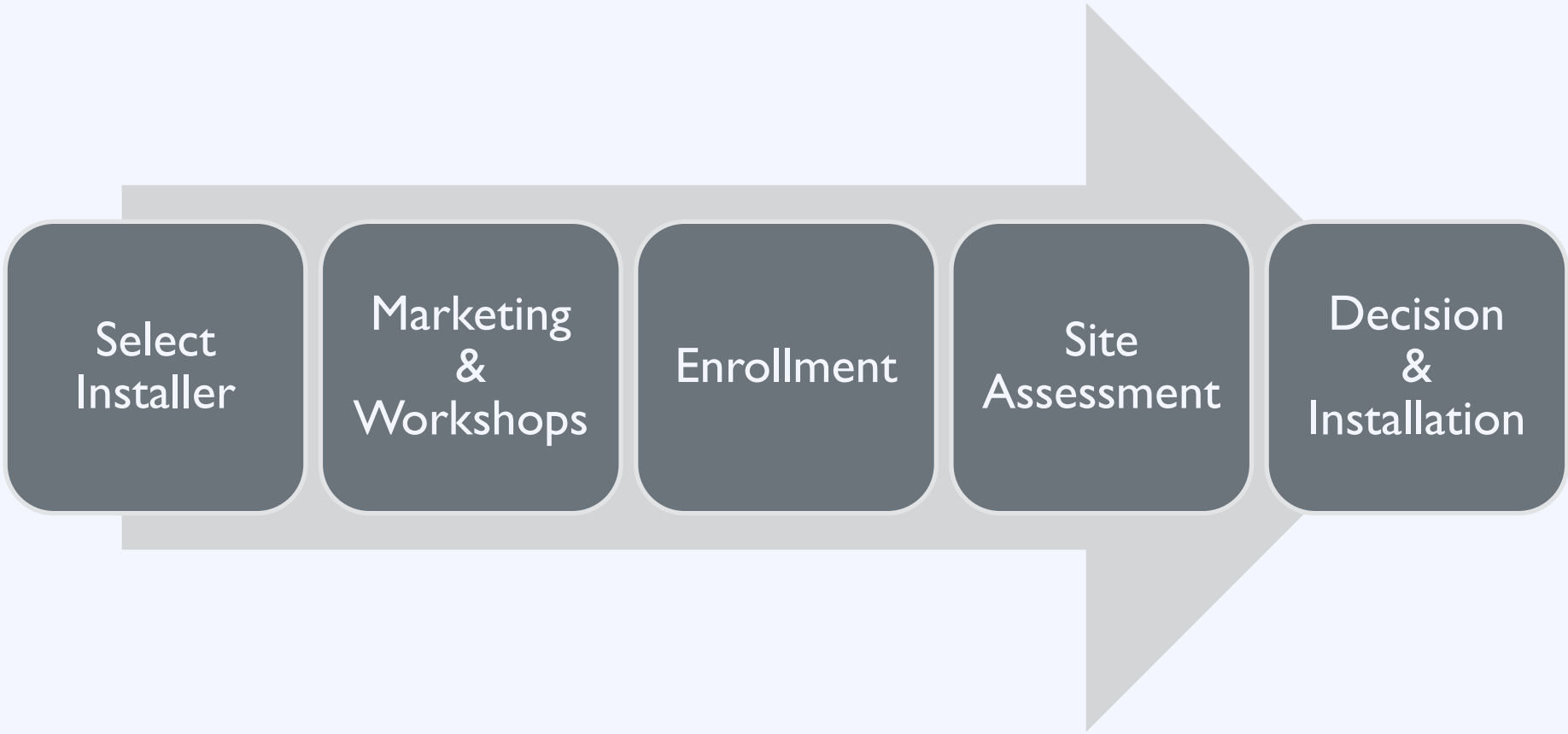
Benefits to Local Government:

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

Quick turn-around: 9 Months

Long-term impact: Sustainable ecosystem

Solarize: Process



Solarize: Case Study

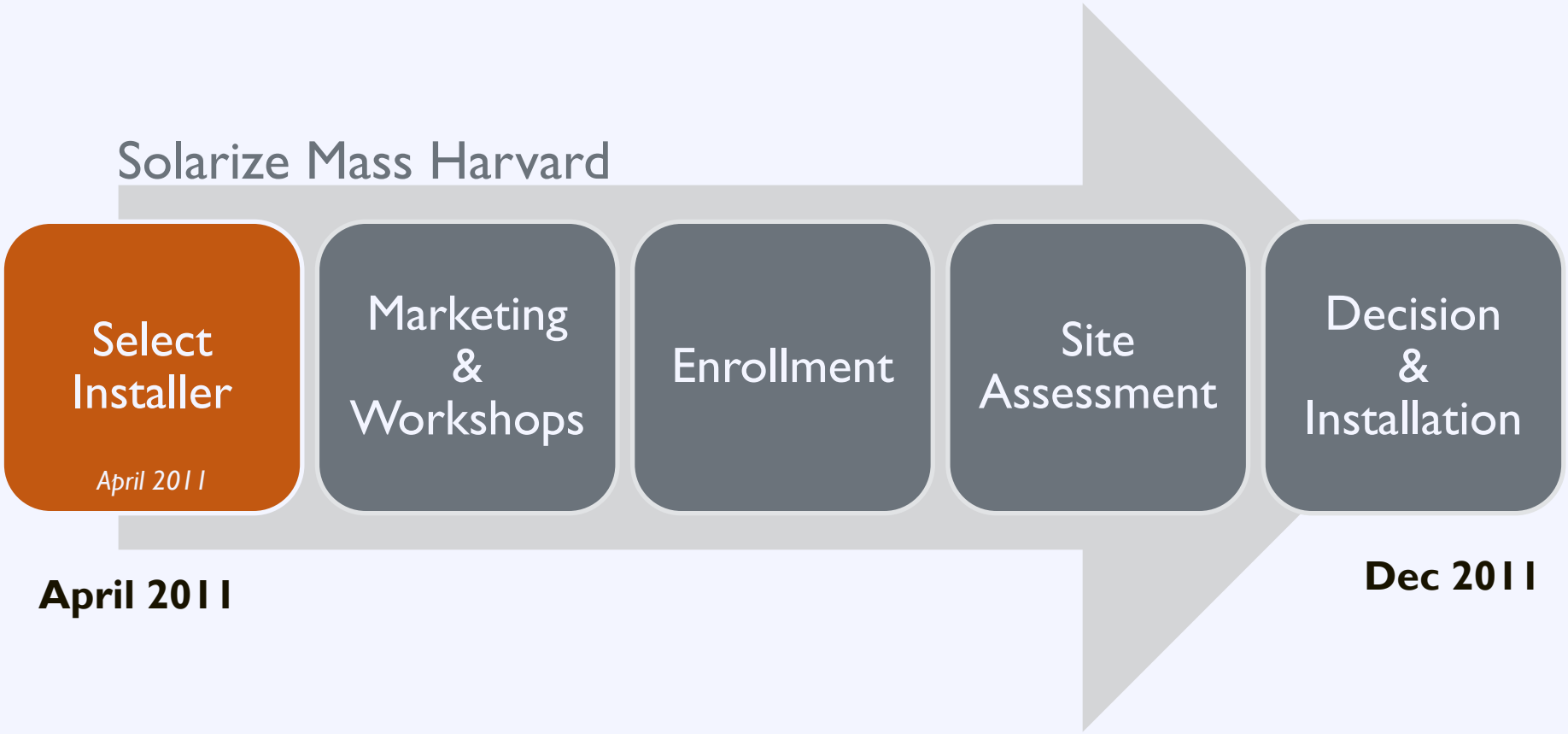
Harvard, Massachusetts

Population: 6,520

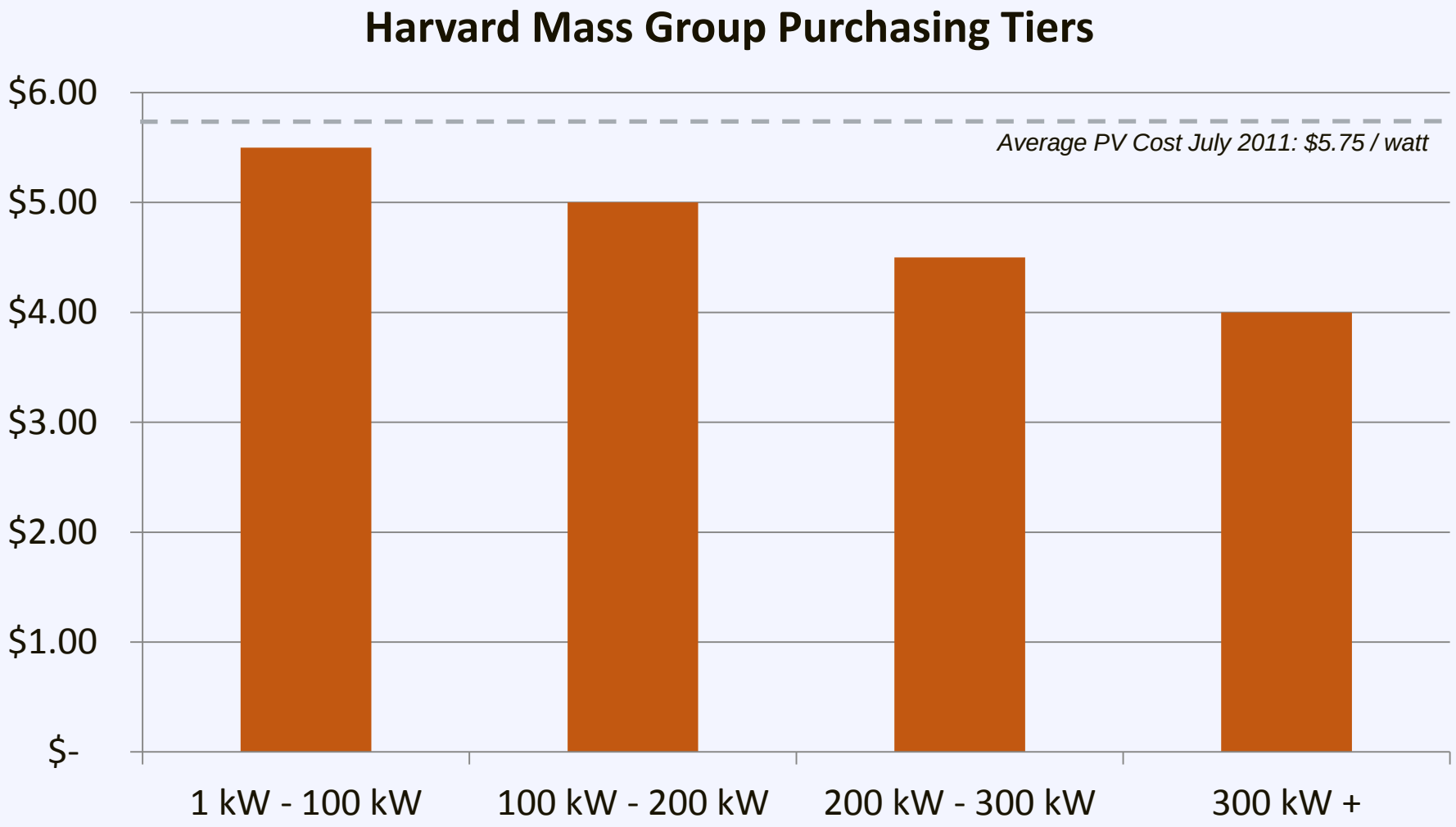
Powered by SunShot
U.S. Department of Energy

Source: Wikipedia

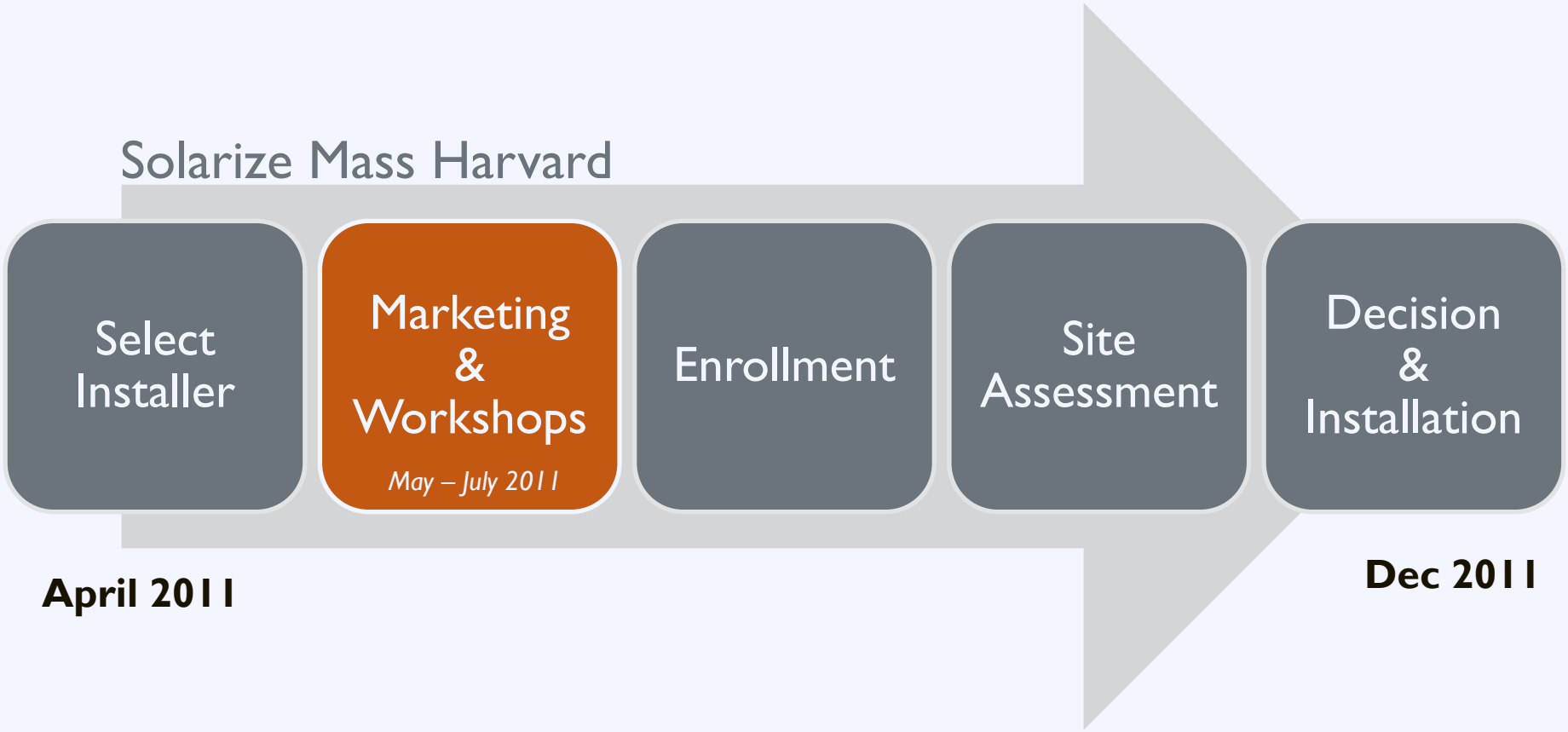
Solarize: Case Study



Group Purchasing



Solarize: Case Study



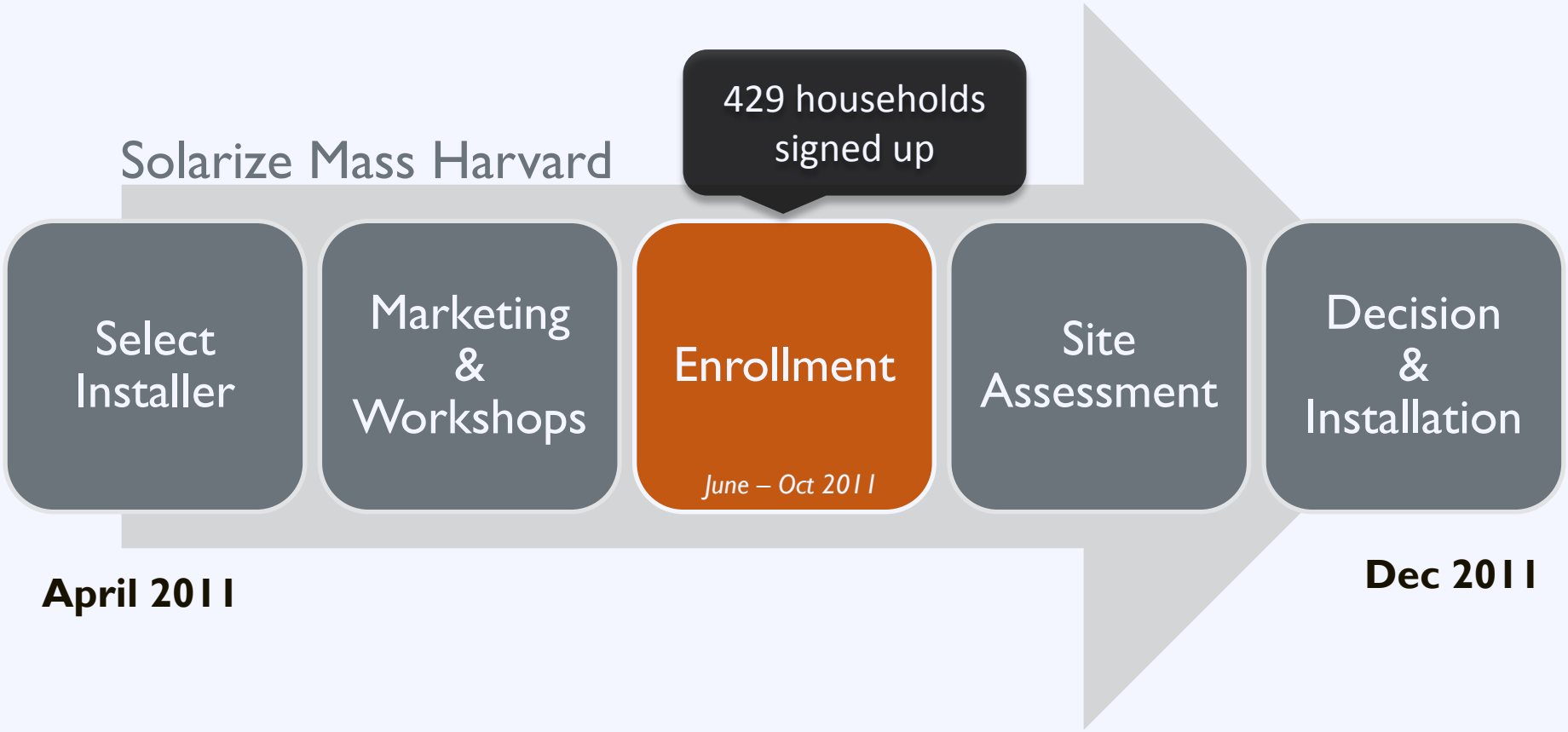
Solarize: Case Study

Marketing Strategy:

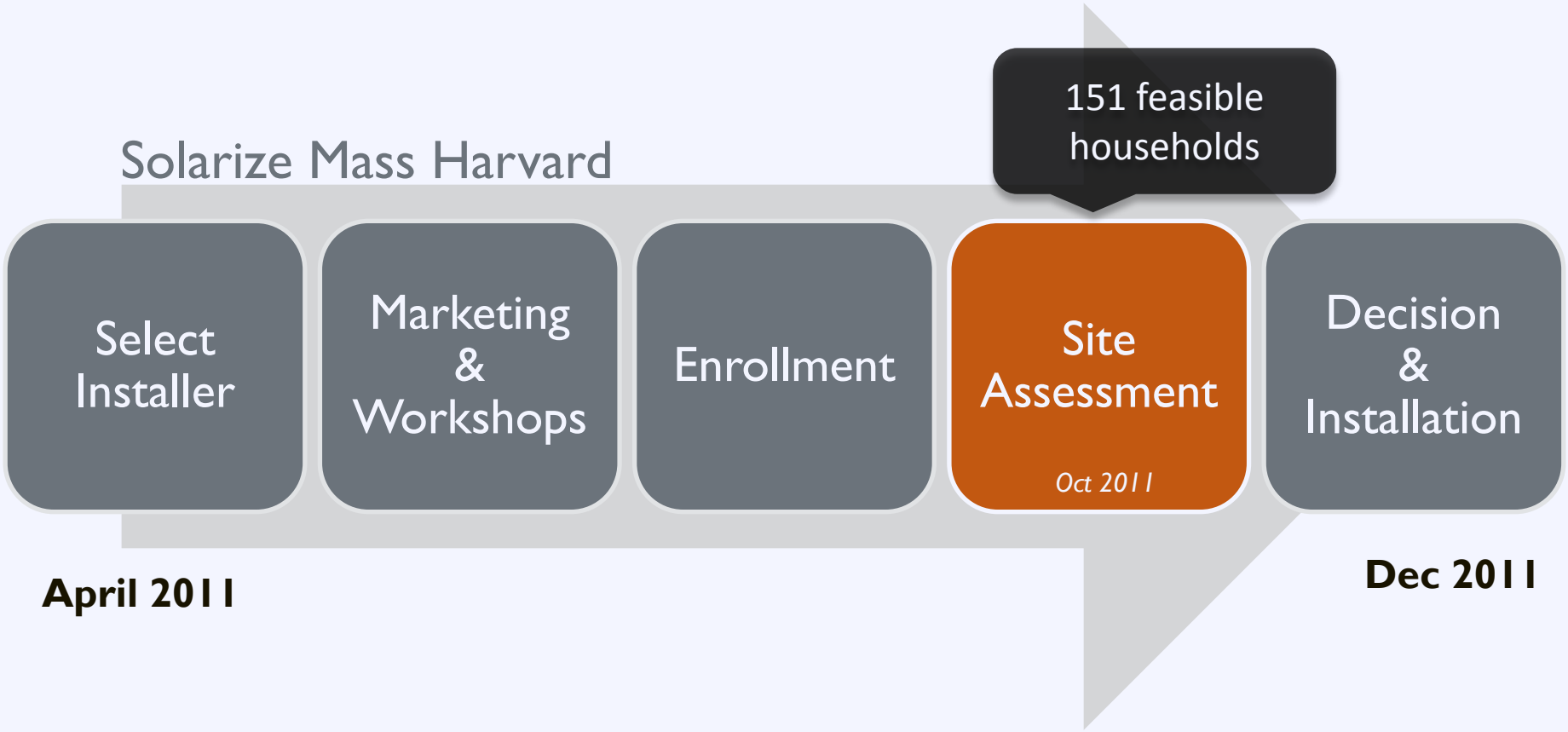
- Electronic survey of 1,100 households
- Email newsletters and direct mailings
- Float in July 4 parade
- Articles and advertisements in local newspaper
- Facebook page and online discussion board

Source: Vote Solar

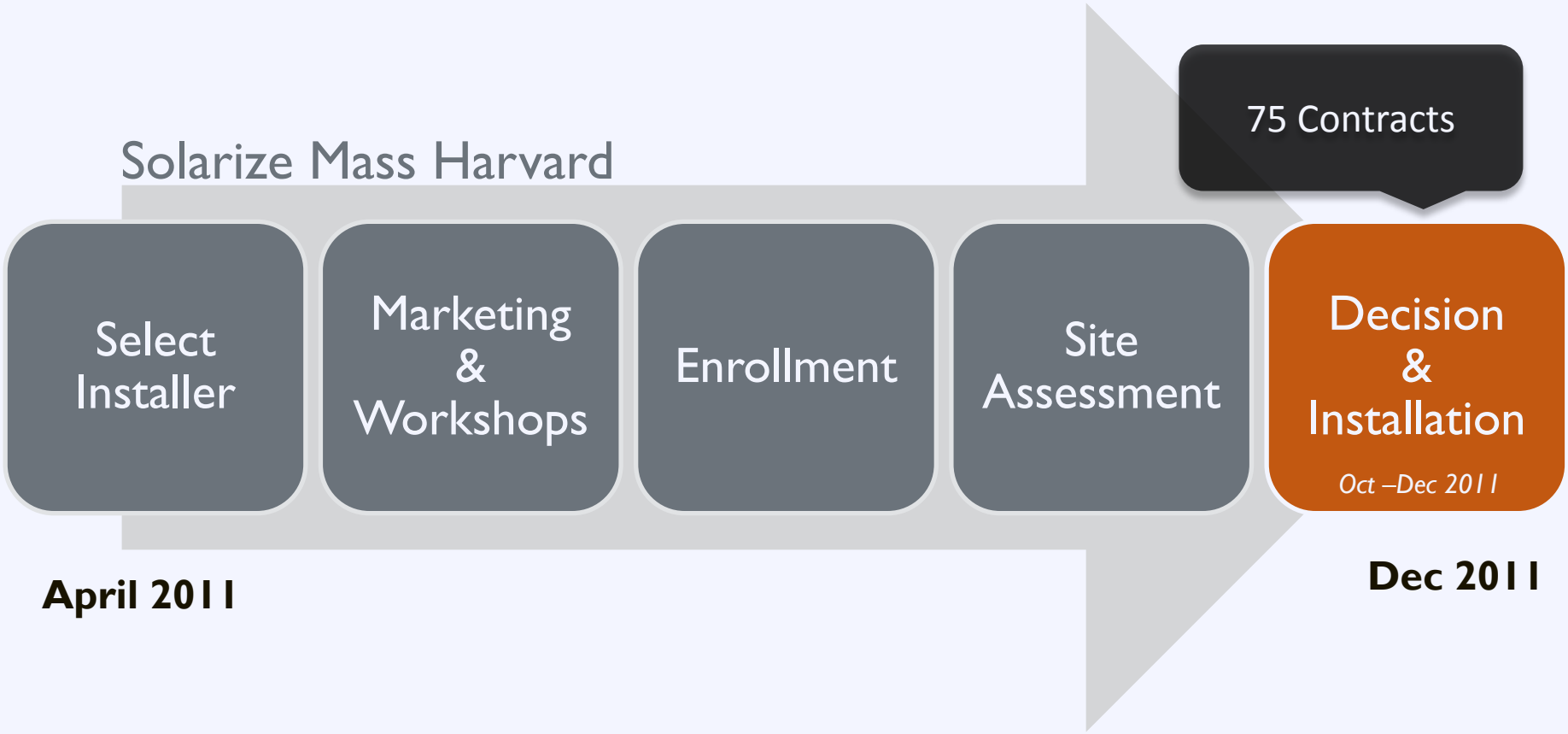
Solarize: Case Study



Solarize: Case Study



Solarize: Case Study



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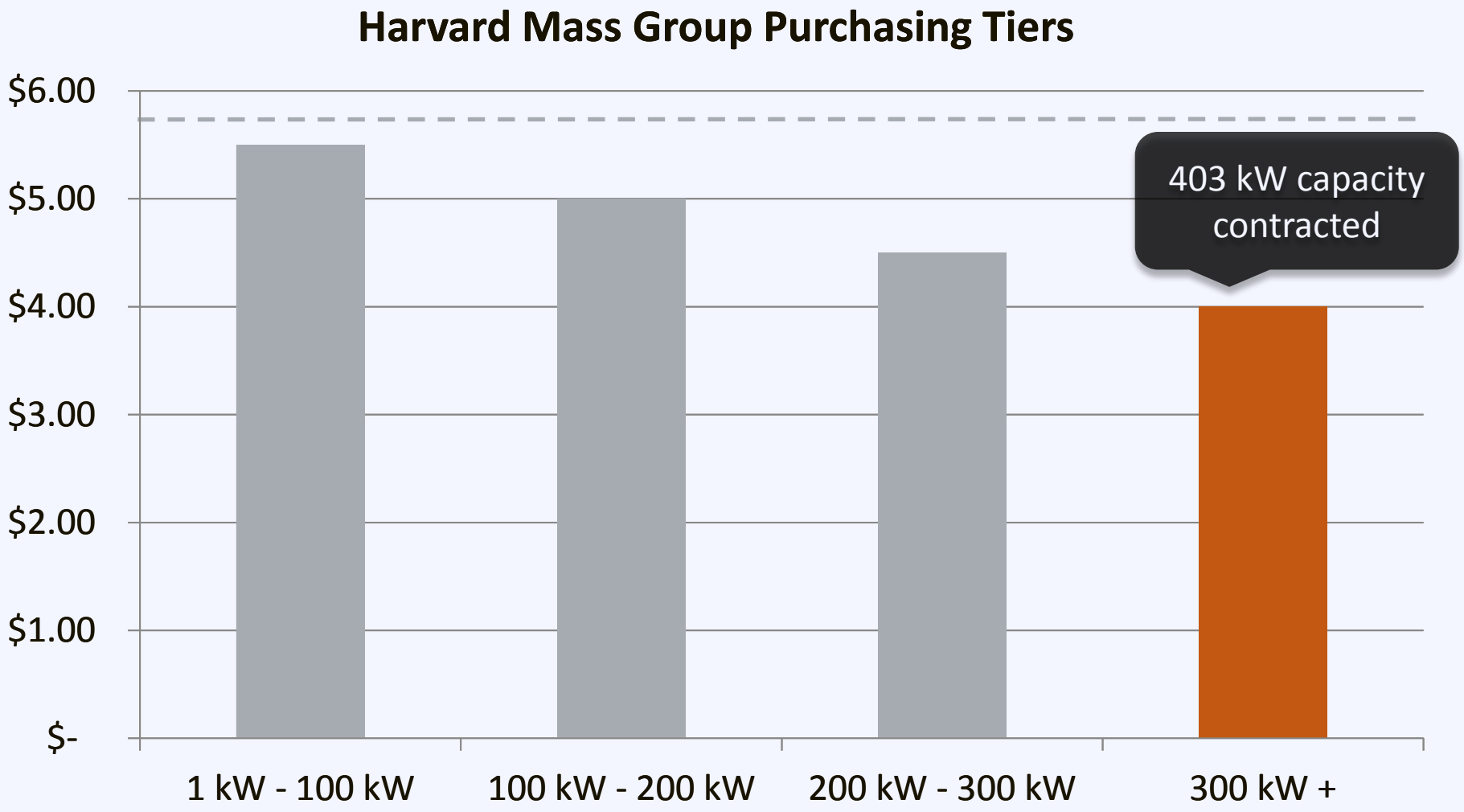


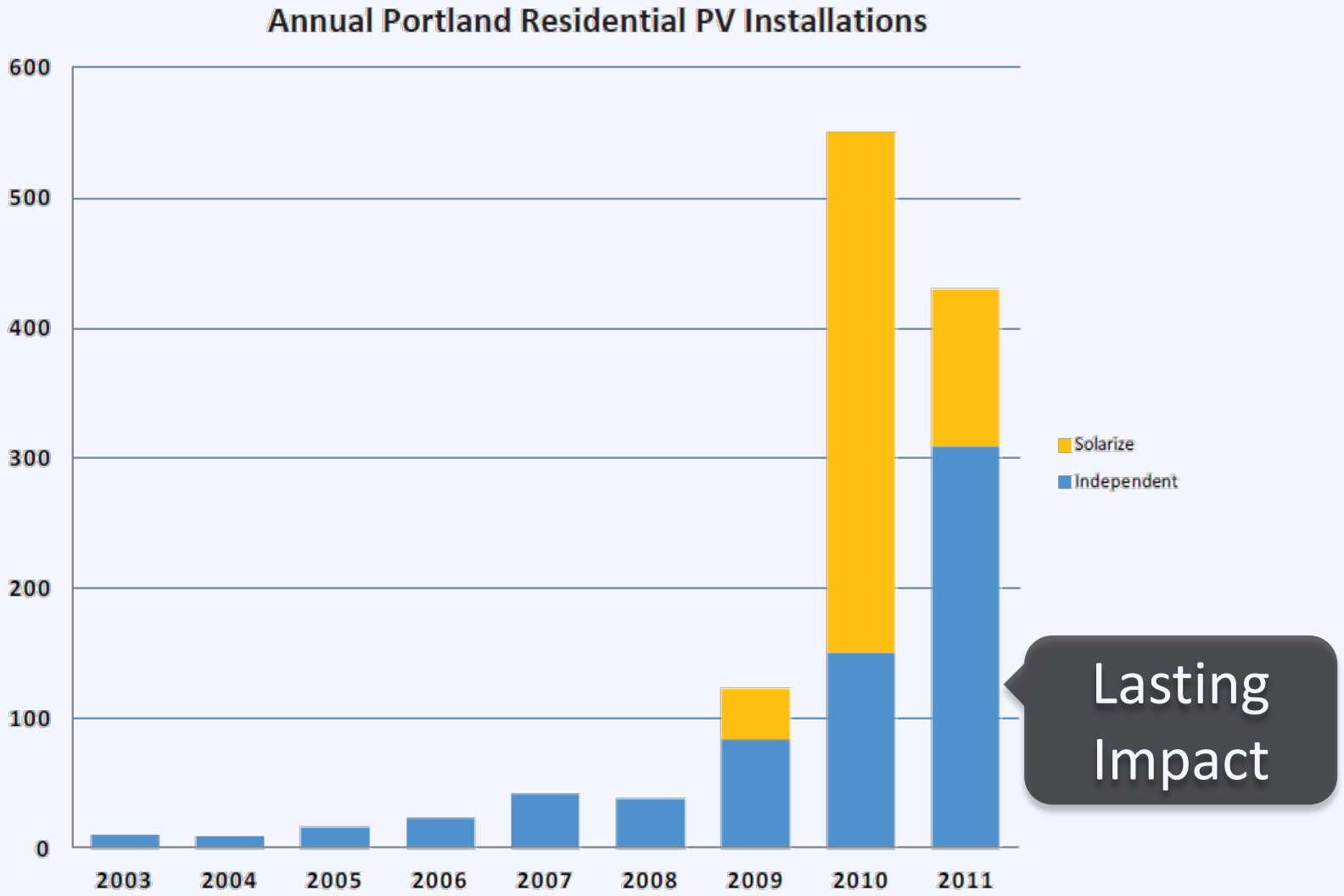
Solarize: Case Study

75 new installations totaling 403 kW

30% reduction in installation costs

575% increase in residential installations

Solarize: Lasting Impact



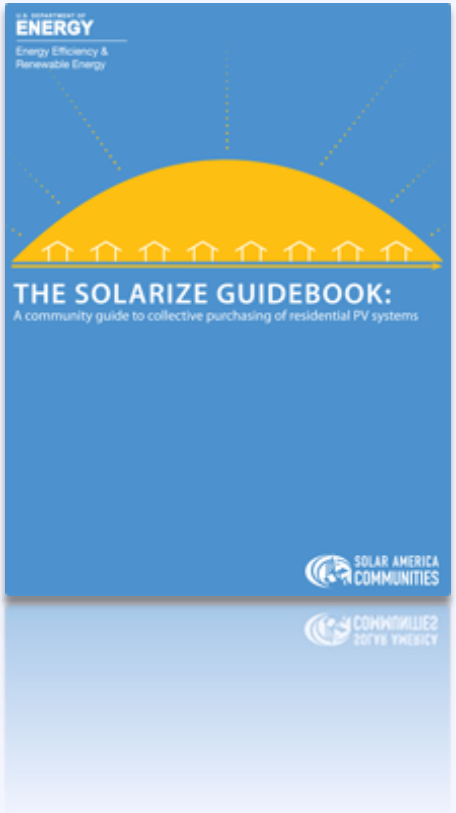
Source: NREL

Solarize: Resources

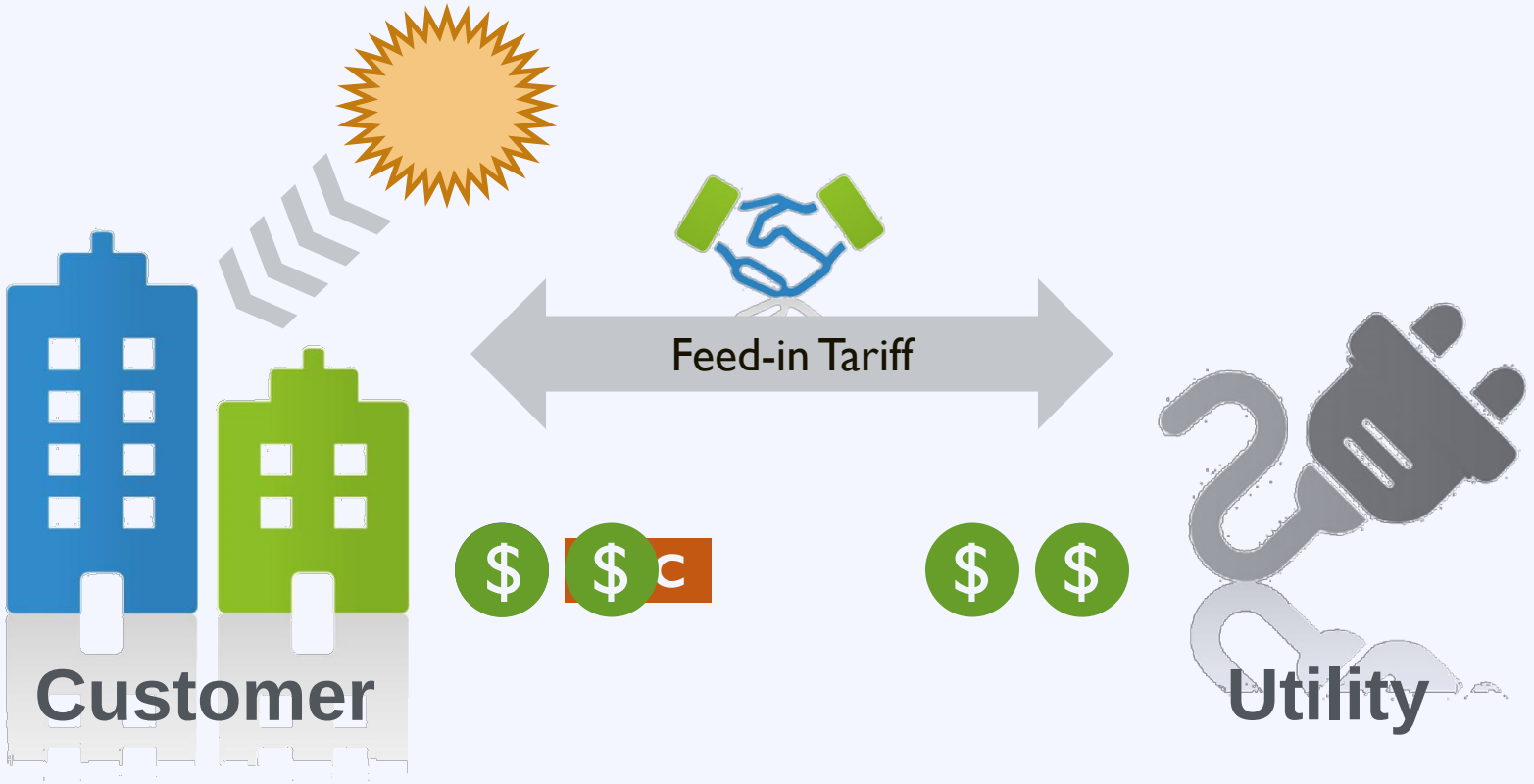
Resource **The Solarize Guidebook**

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

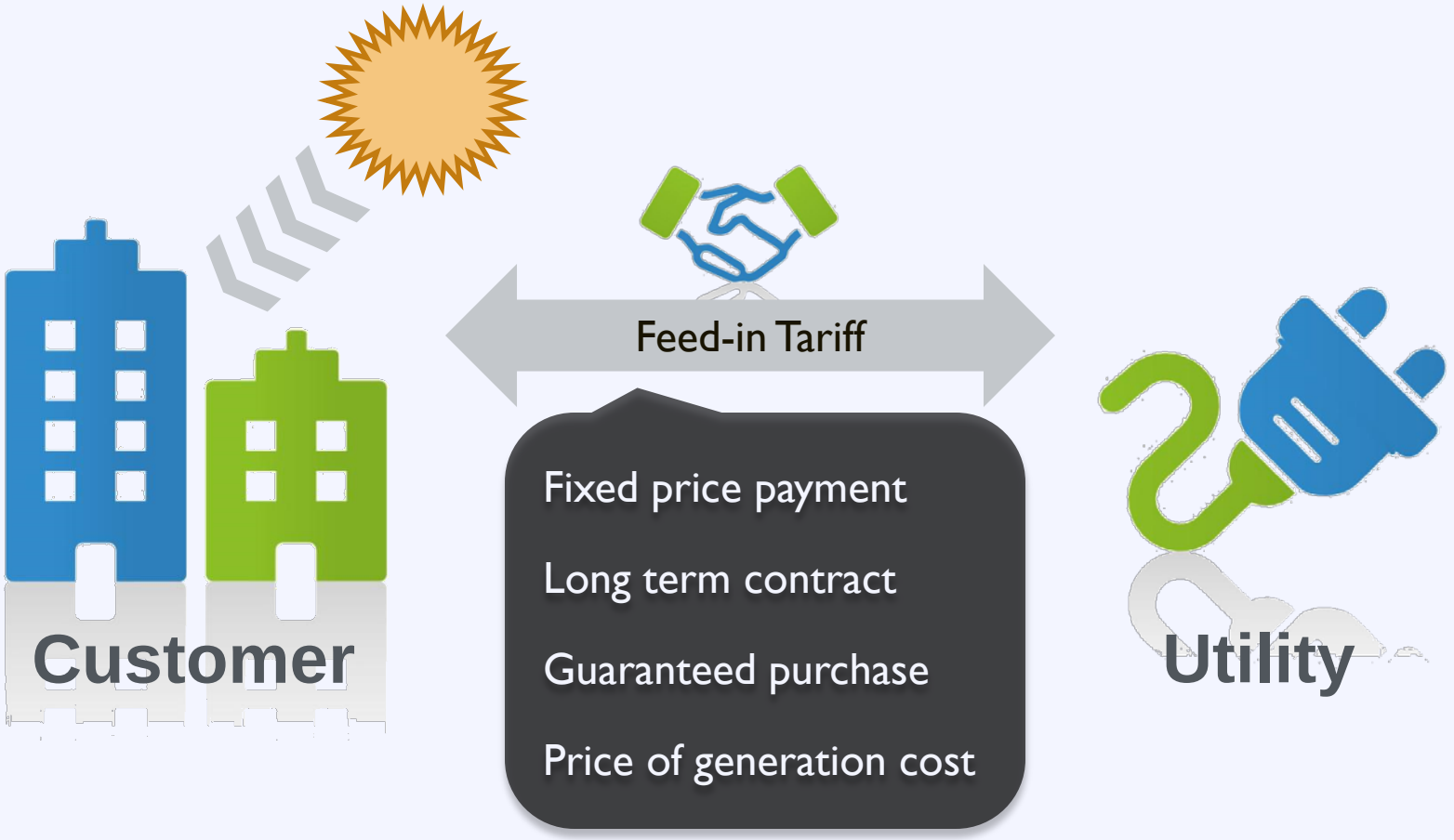
www.nrel.gov



Feed in Tariff



Feed in Tariff



Feed-in Tariff: Case Study

Gainesville, Florida

Population: 125,326

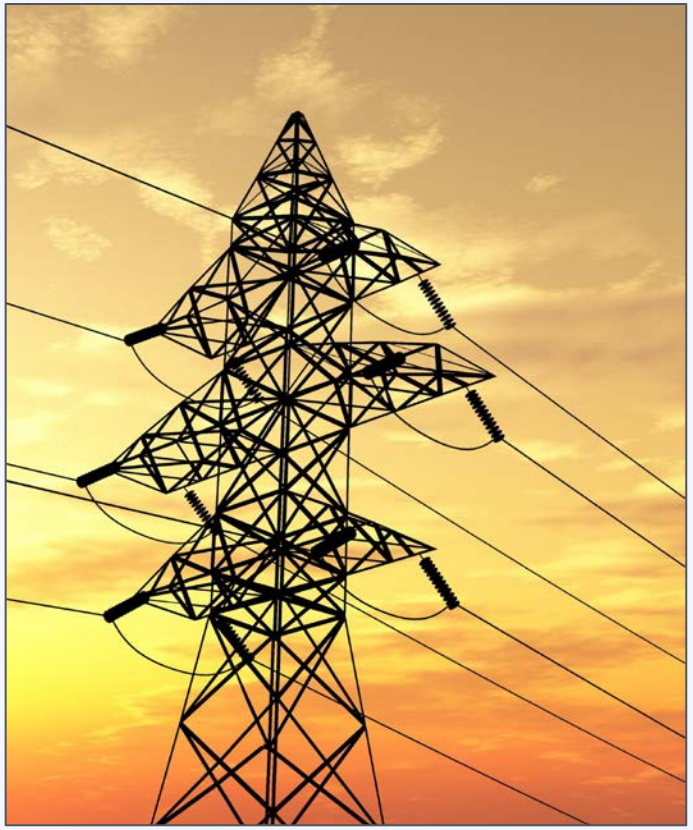
Powered by SunShot
U.S. Department of Energy

Source: Wikipedia

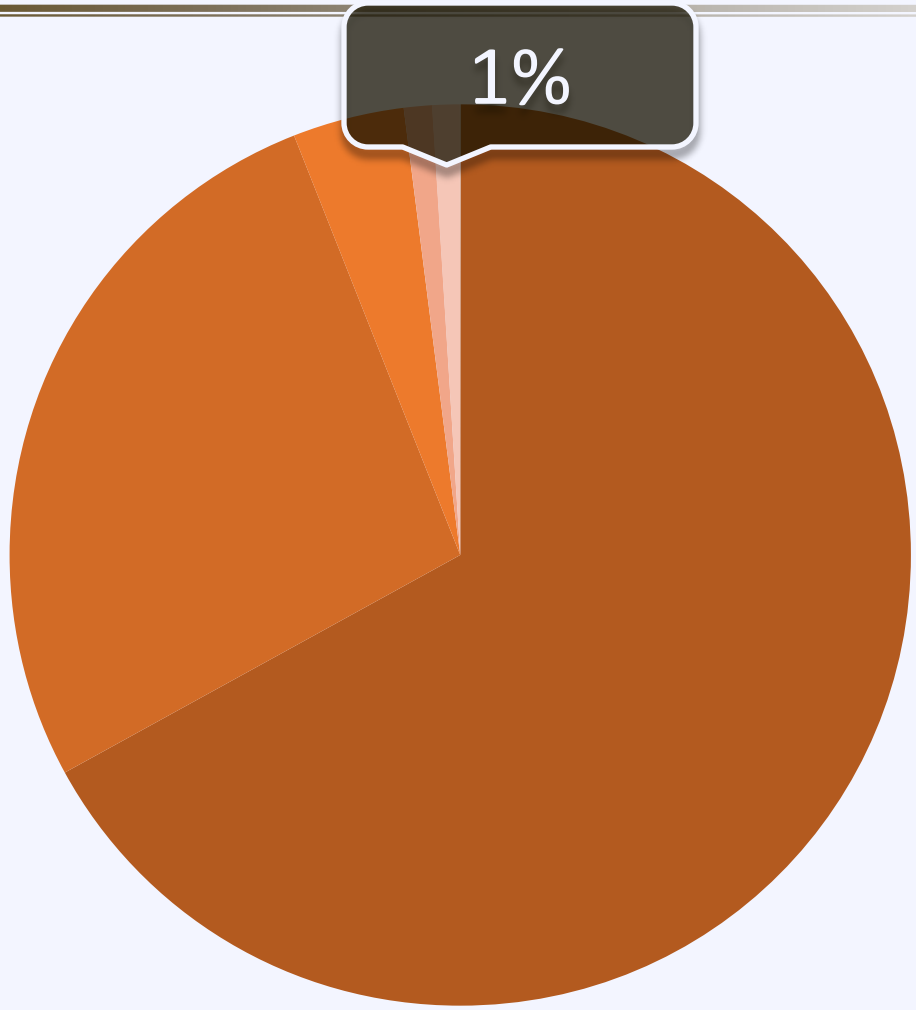
Gainesville Regional Utility (GRU)

Overview:

- 93,000 Customers
- Budget of $385 million
- Largest customer is UF

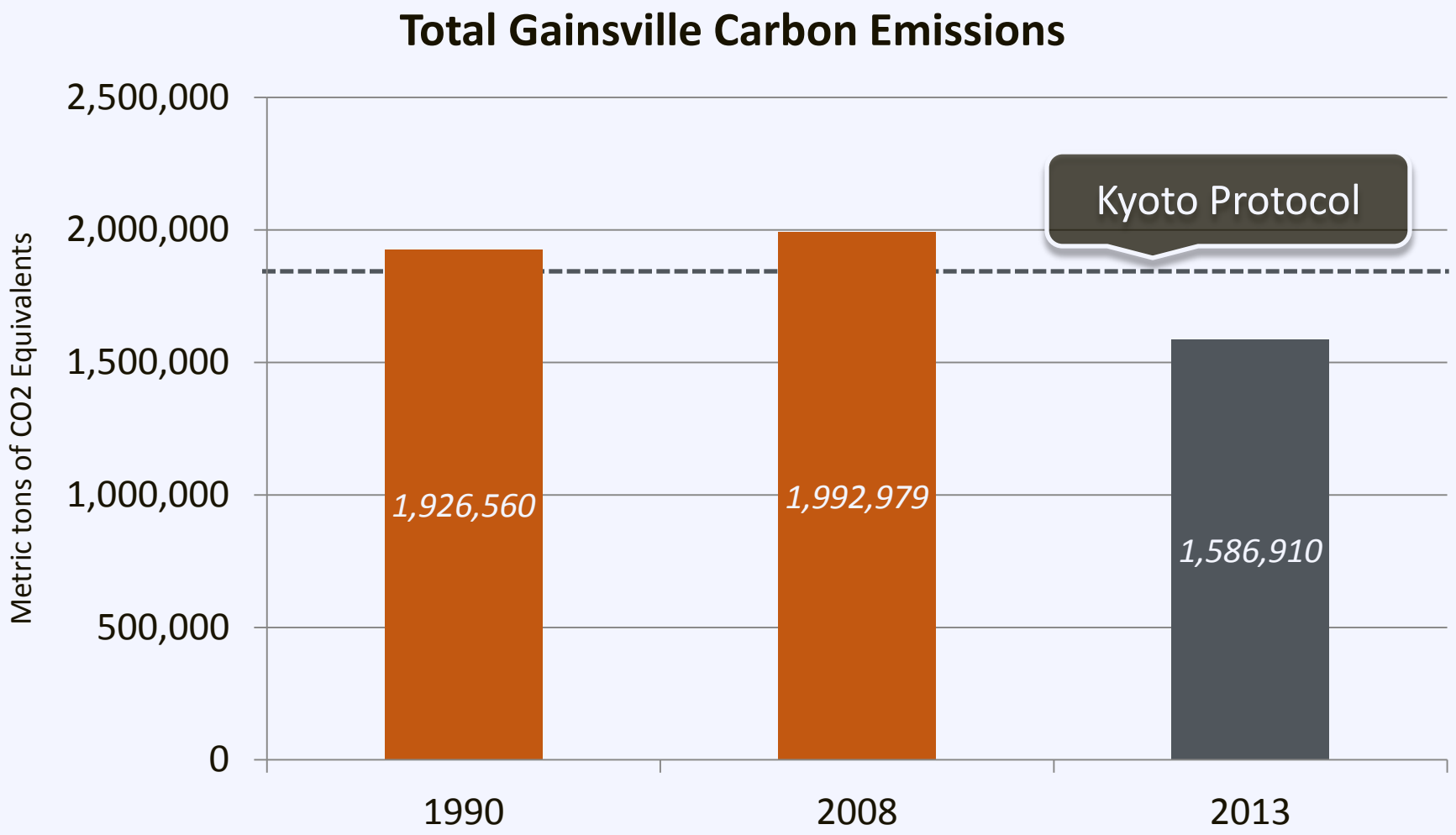


Gainesville Regional Utility (GRU)



Goal: To reduce fossil fuel energy purchase by 143,000 MWh per year by 2016

Gainesville Carbon Goals



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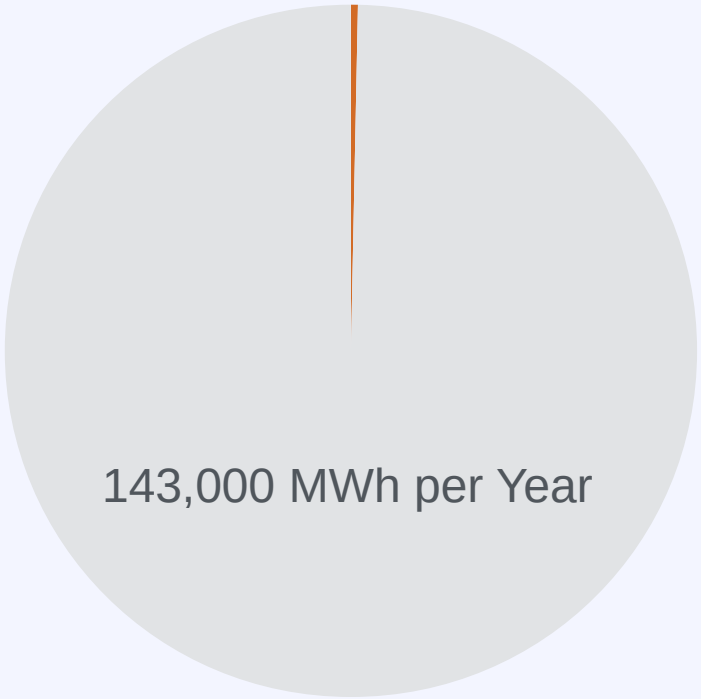
U.S. Department of Energy

Even with progressive solar programs in place, Gainesville was not meeting its goals

Solar Rebate Program Results

Incentive program helped GRU reach 0.5% of Goal



Source: ICLEI Case Study *Gainesville, FL, Feed-in Tariff: A Boost for Solar Power*

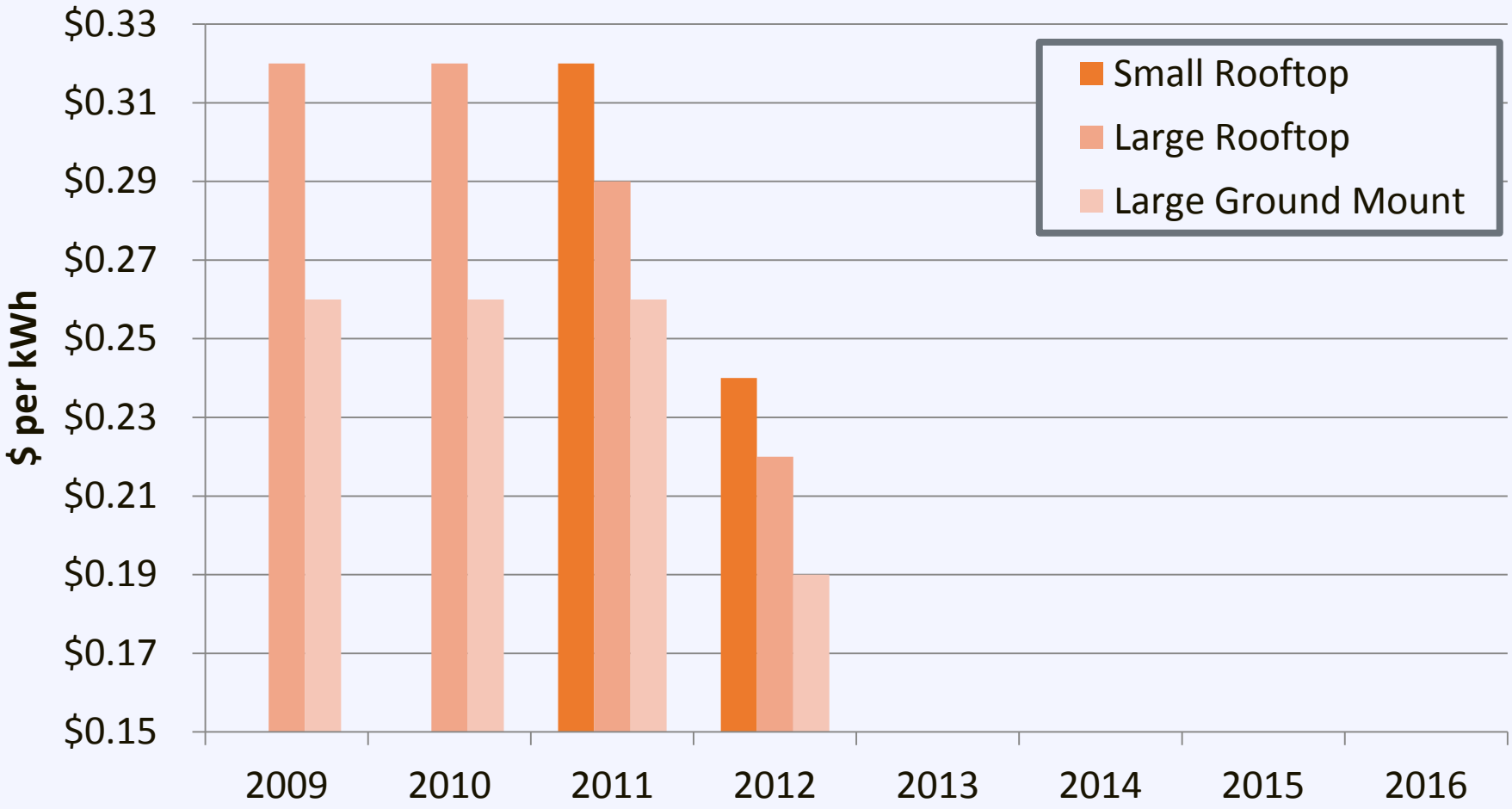
Feed in Tariff (FiT)

GRU FiT: Program Design

32 MW Capacity

2009	2010	2011	2012	2013	2014	2015	2016
4 MW	4 MW	4 MW	4 MW	4 MW	4 MW	4 MW	4 MW

GRU FiT: Contract Rates



Source: Gainesville Regional Utilities

GRU FiT: Launch Timeline

February 2009

Feed in Tariff Program Opens

Two weeks later

First year is fully subscribed

July 2009

Queue is fully subscribed through 2016

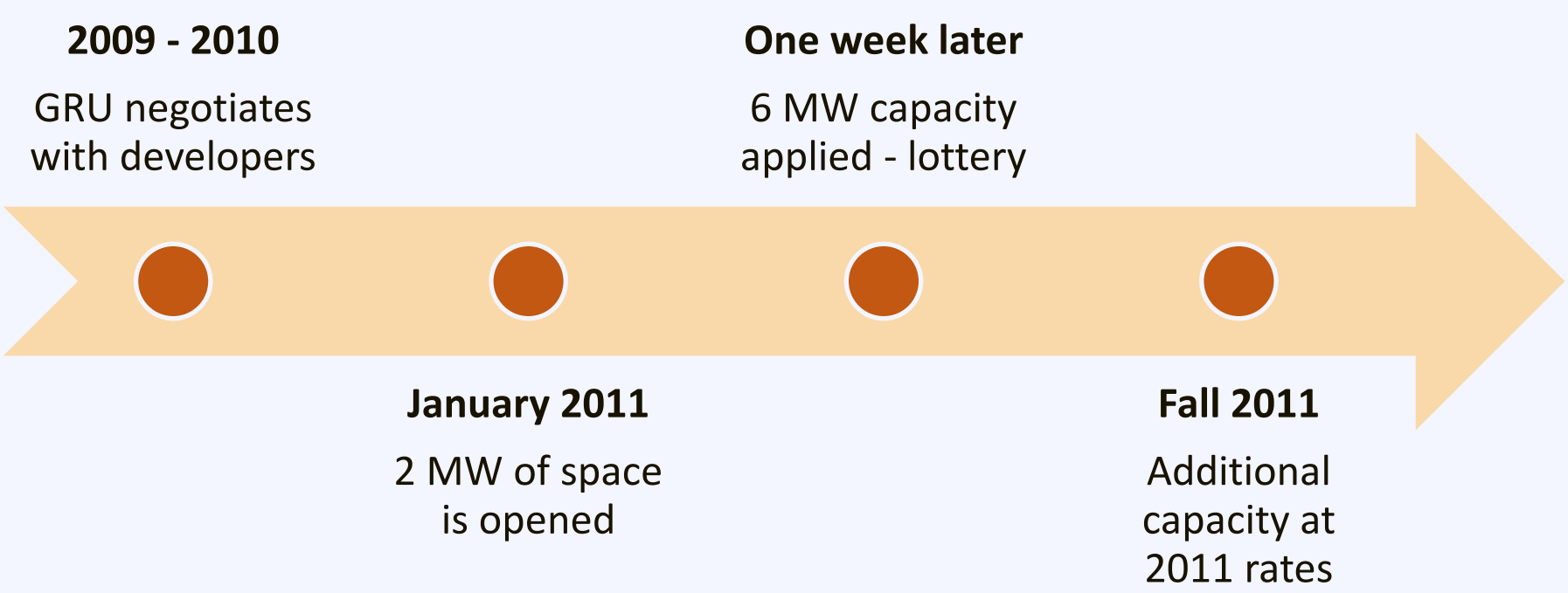
January 2010

563 kW of solar has already come online

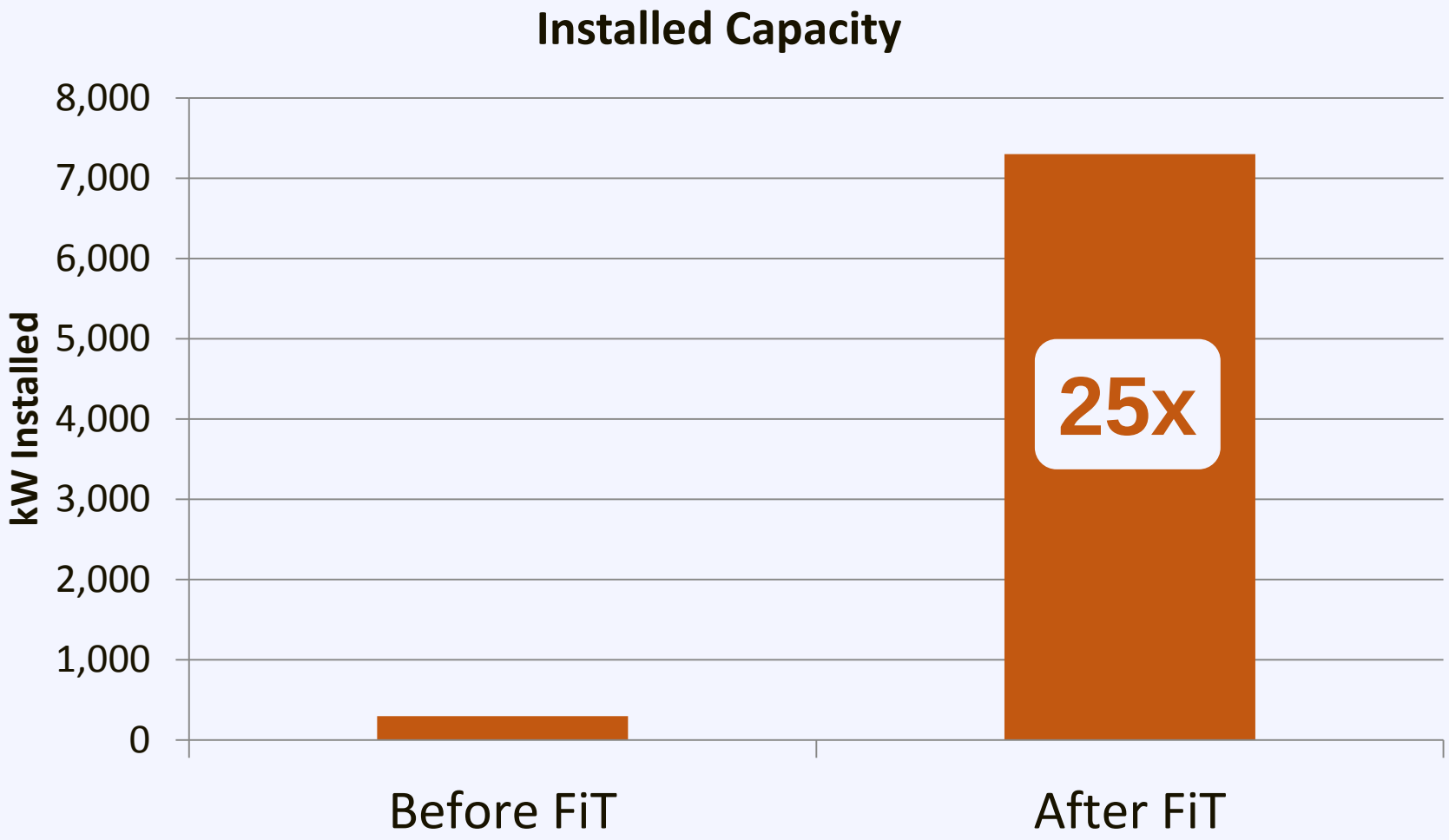
200% more than past 2 years combined

GRU FiT: Launch Timeline

GRU FiT: Reconfiguring the Program



GRU Fit: A Success



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http://wind-works.org/FeedLaws/USA/SolarPVLeadsSmallTownintoSolarBigLeagues.html

GRU FiT: Cost

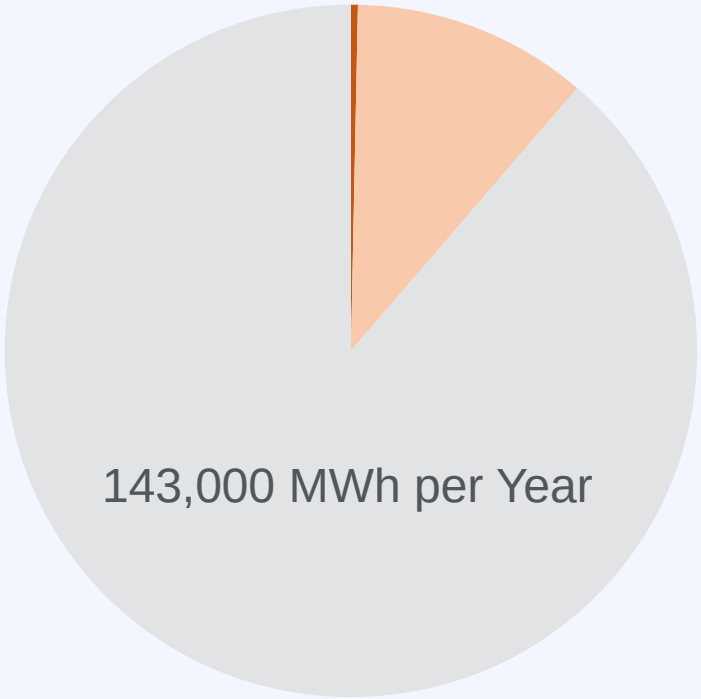
$1 per Month per rate payer

Similar cost as rebate program

Source: Gainesville Regional Utilities

GRU FiT: Projected Impact by 2016

Expected to contribute to 11% of Energy Goal



Powered by SunShot U.S. Department of Energy

Source: ICLEI Case Study *Gainesville, FL, Feed-in Tariff: A Boost for Solar Power*

The FiT program provides a better investment yield than the rebate program for the customer and utility

Q & A

Agenda

09:10 – 09:45	Introductions and Overview
09:45 – 10:10	Solar 101: Policy Environment and Economics
10:10 – 10:20	*Break*
10:20 – 10:40	Benefits and Barriers Activity
10:40 – 11:10	Creating a Solar Ready Community
11:10 – 11:50	Growing Your Local Solar Market
11:50 – 12:00	*Break*
12:00– 01:00	Lunch and Local Session

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Local Speakers

- Robert Webber, Solar Electrcician,
  ContinuingElectricalEducation.biz
- Michael Shonka, Nebraskans for Solar & MCC Instructor
  SolarOmaha.com
- Ken Deffenbacher, President-Elect of Nebraskans for Solar
  NebraskansForSolar.org

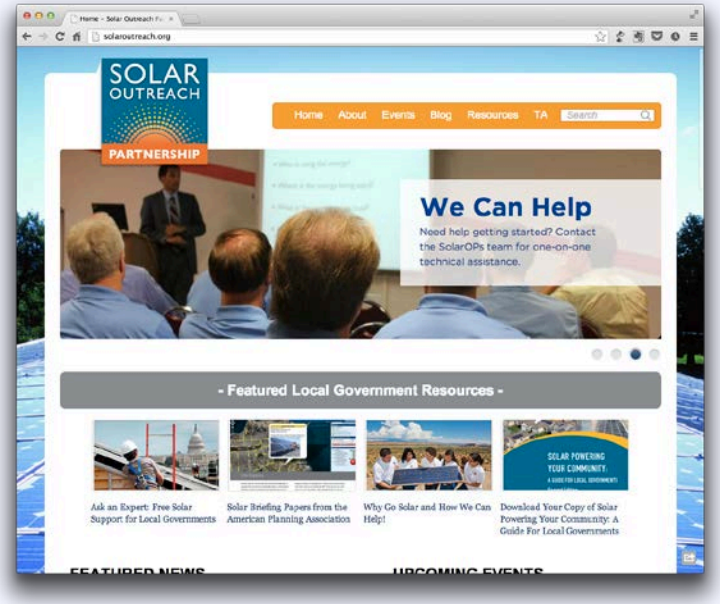
Activity: Next Steps

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

About the SunShot Solar Outreach Partnership

Technical Support

- 'Ask an Expert' Live Web Forums
- 'Ask an Expert' Web Portal
- Peer Exchange Facilitation
- In-Depth Consultations
- Customized Trainings



www.solaroutreach.org

For more information email: solar-usa@iclei.org

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