Solar Powering Your Community

Addressing Soft Costs and Barriers

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U.S. Department of Energy

About the SunShot Solar Outreach Partnership

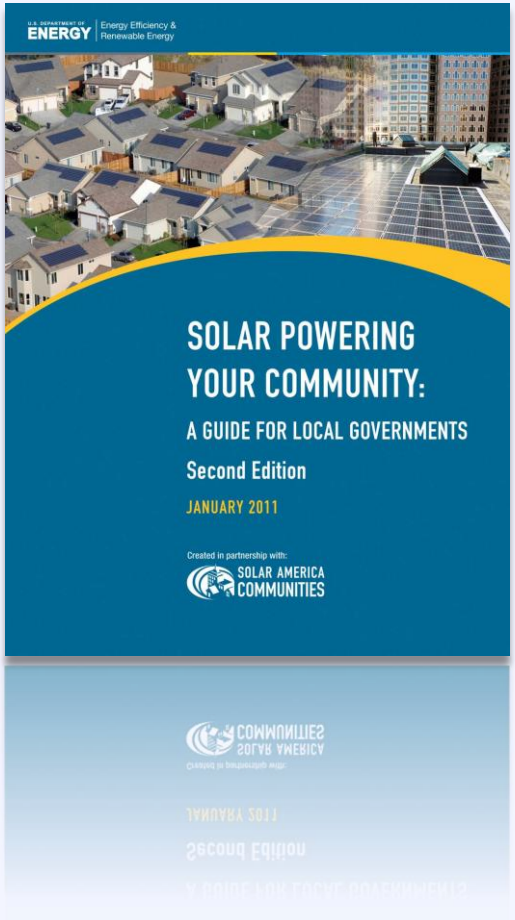
- Increase installed capacity of solar electricity in U.S. communities
- Streamline and standardize permitting and interconnection processes
- Improve planning and zoning codes/regulations for solar electric technologies
- Increase access to solar financing options

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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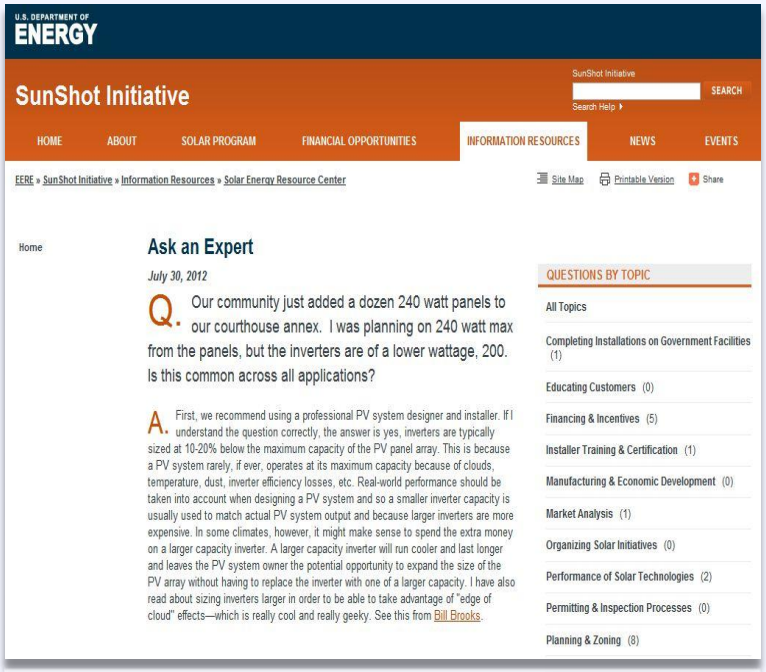
About the SunShot Solar Outreach Partnership

Technical Support

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



www.solaroutreach.org/ta

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

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Poll

Who's in the room?

Poll

What is your experience with solar?

Workshop Goal

Enable local governments to replicate successful solar practices, incorporate solar in the planning process, 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]

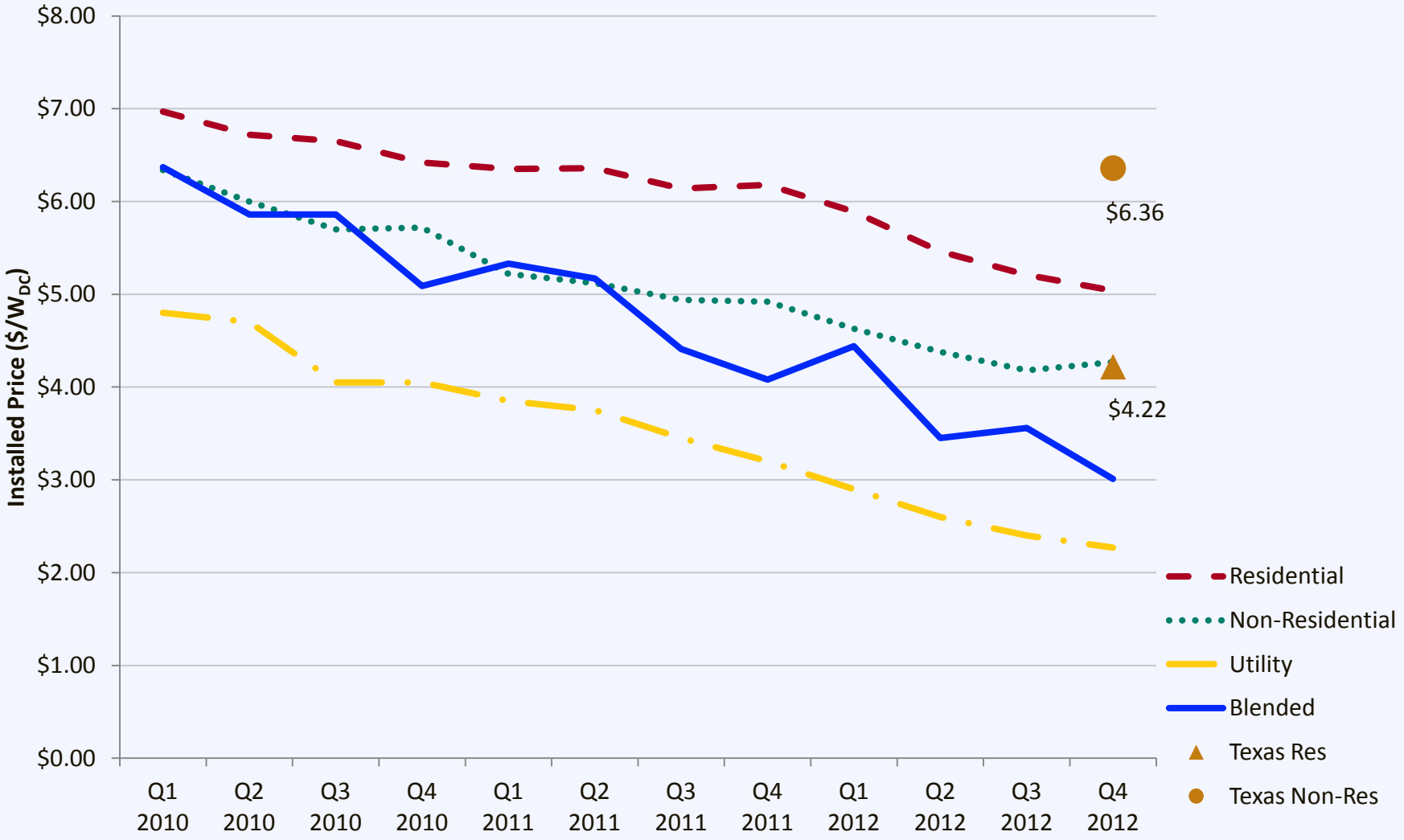
Right Now	During Session	After Break
		
Write answer on card	Compile results	Group discussion

Activity: Addressing Barriers

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

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

Installed Costs are Falling



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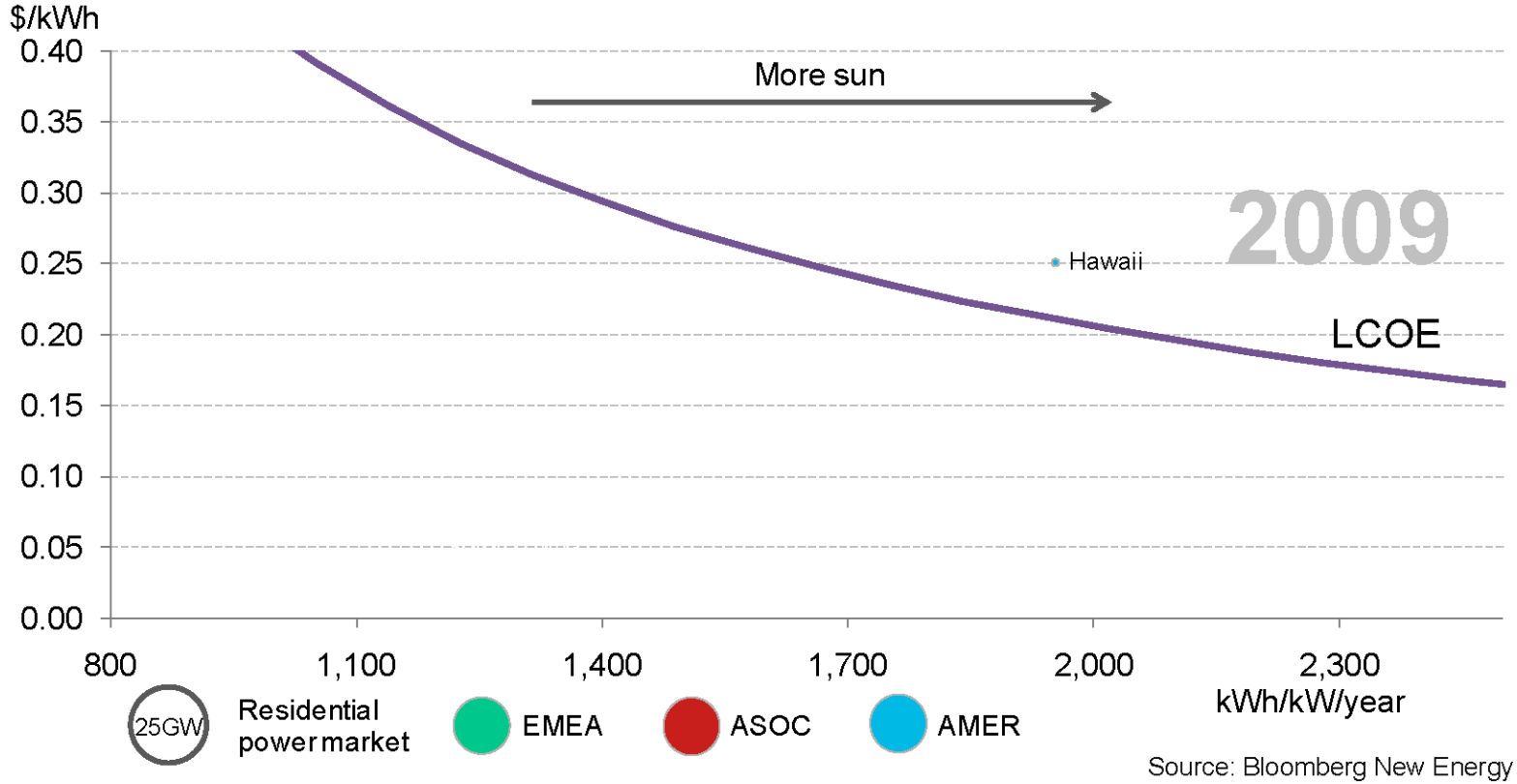
RESIDENTIAL PV PRICE PARITY



Source: Bloomberg New Energy Finance , EuroStat, grid operators

Note: LCOE based on 6% cost of capital, 0.7%/year module degradation, 1% capex as O&M annually.

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Source: Bloomberg New Energy Finance Summit, Michael Liebreich Keynote, 20 March 2012; Bloomberg New Energy Finance, "Reconsidering the Economics of Photovoltaic Power"

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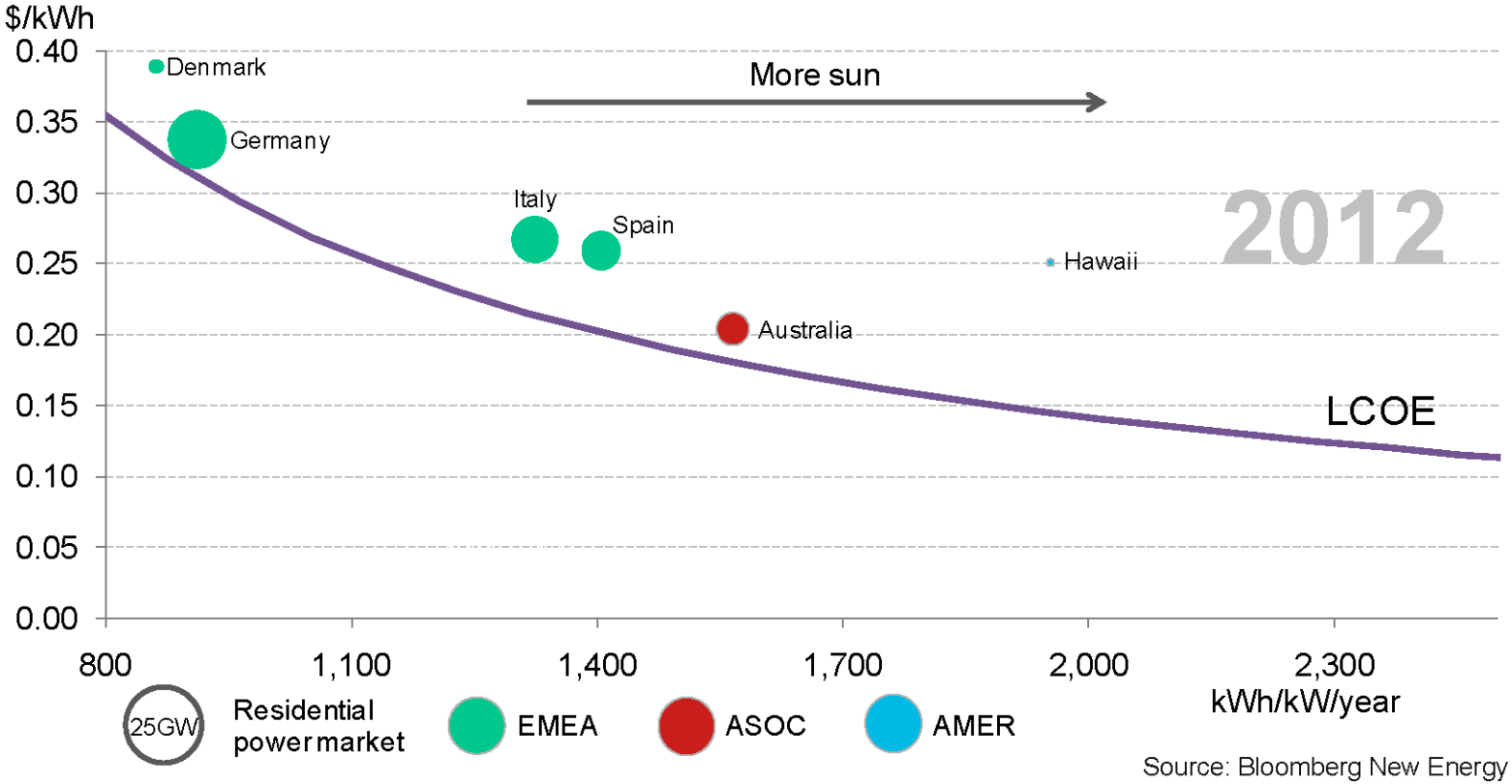

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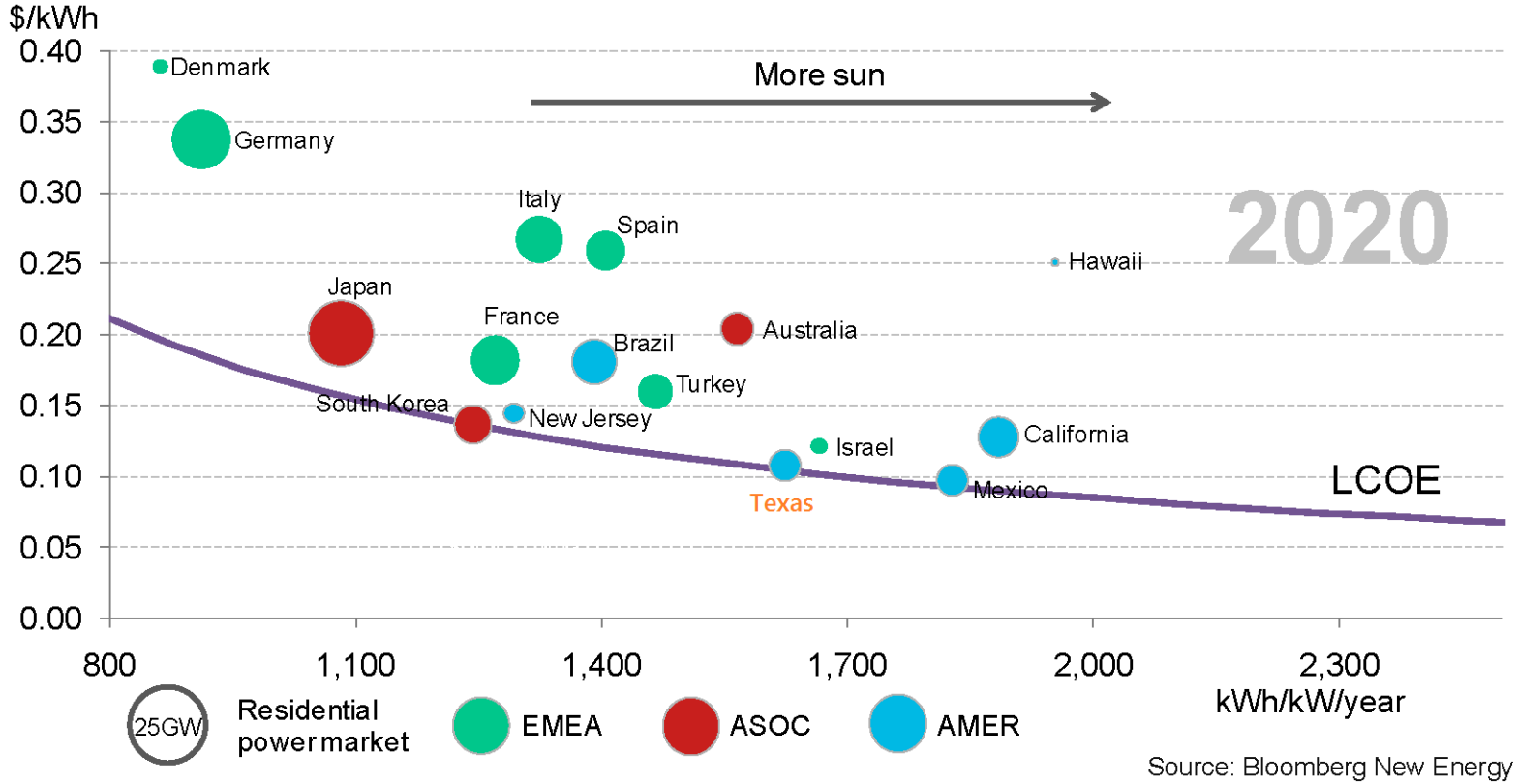

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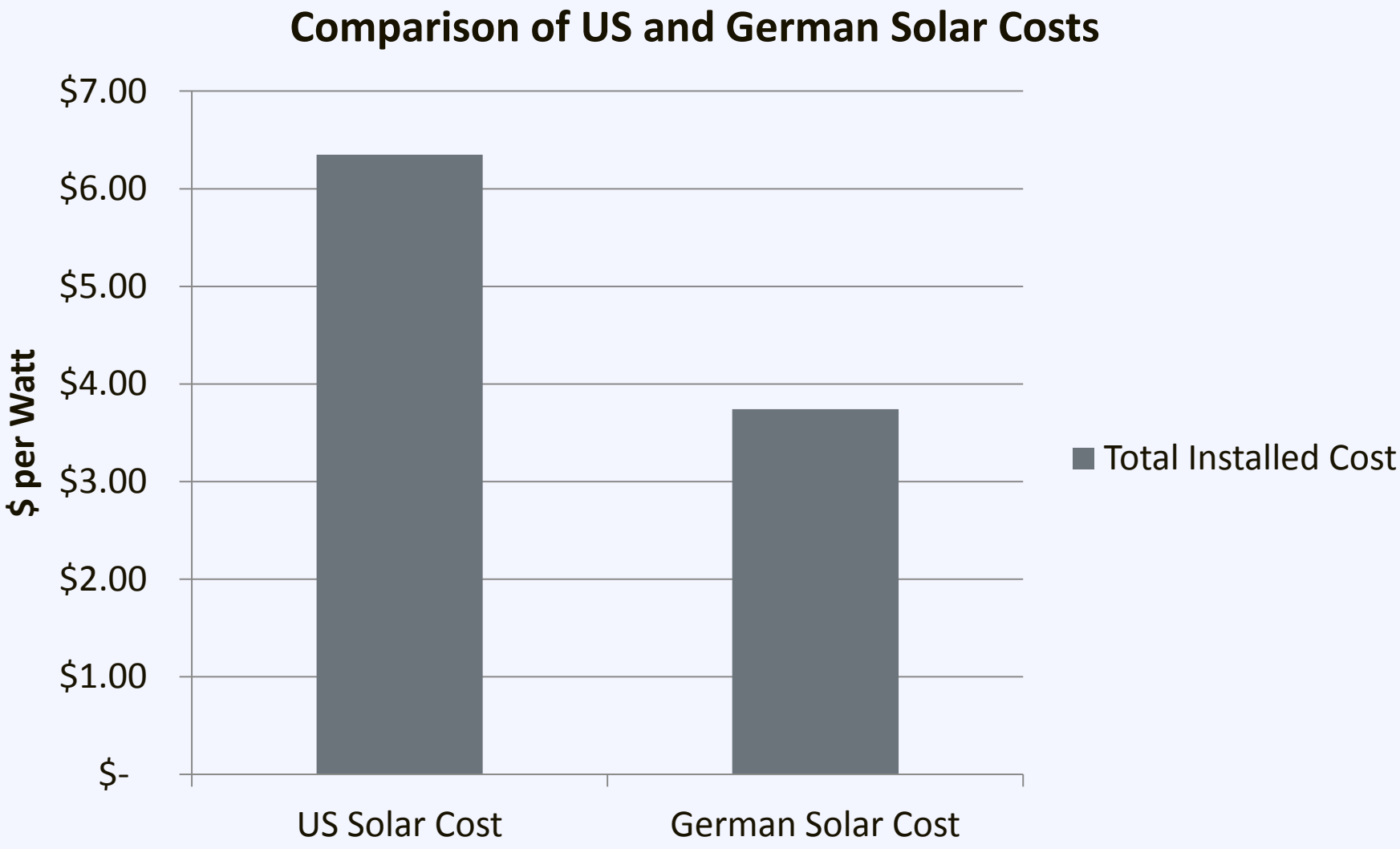
The Cost of Solar in the US



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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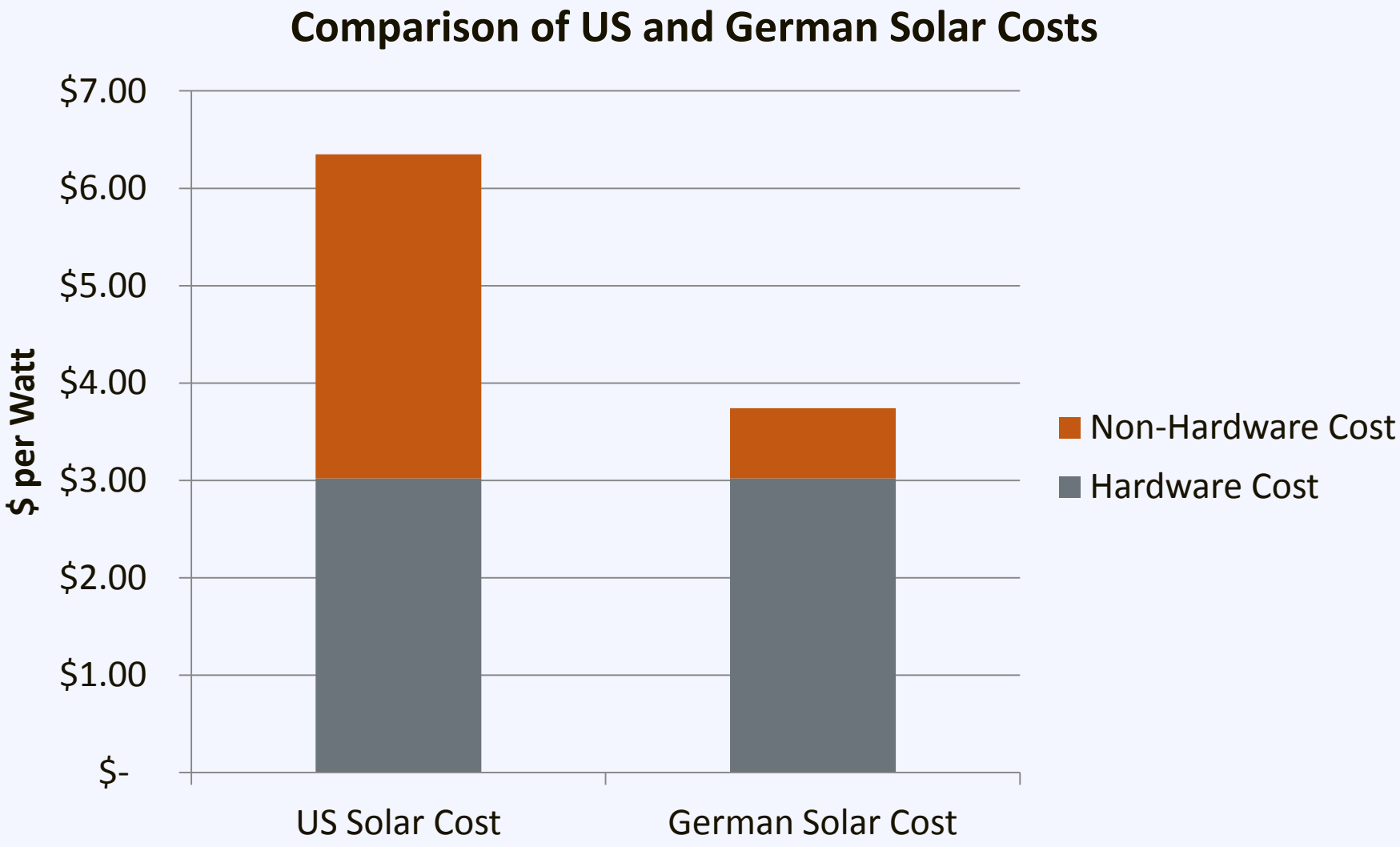

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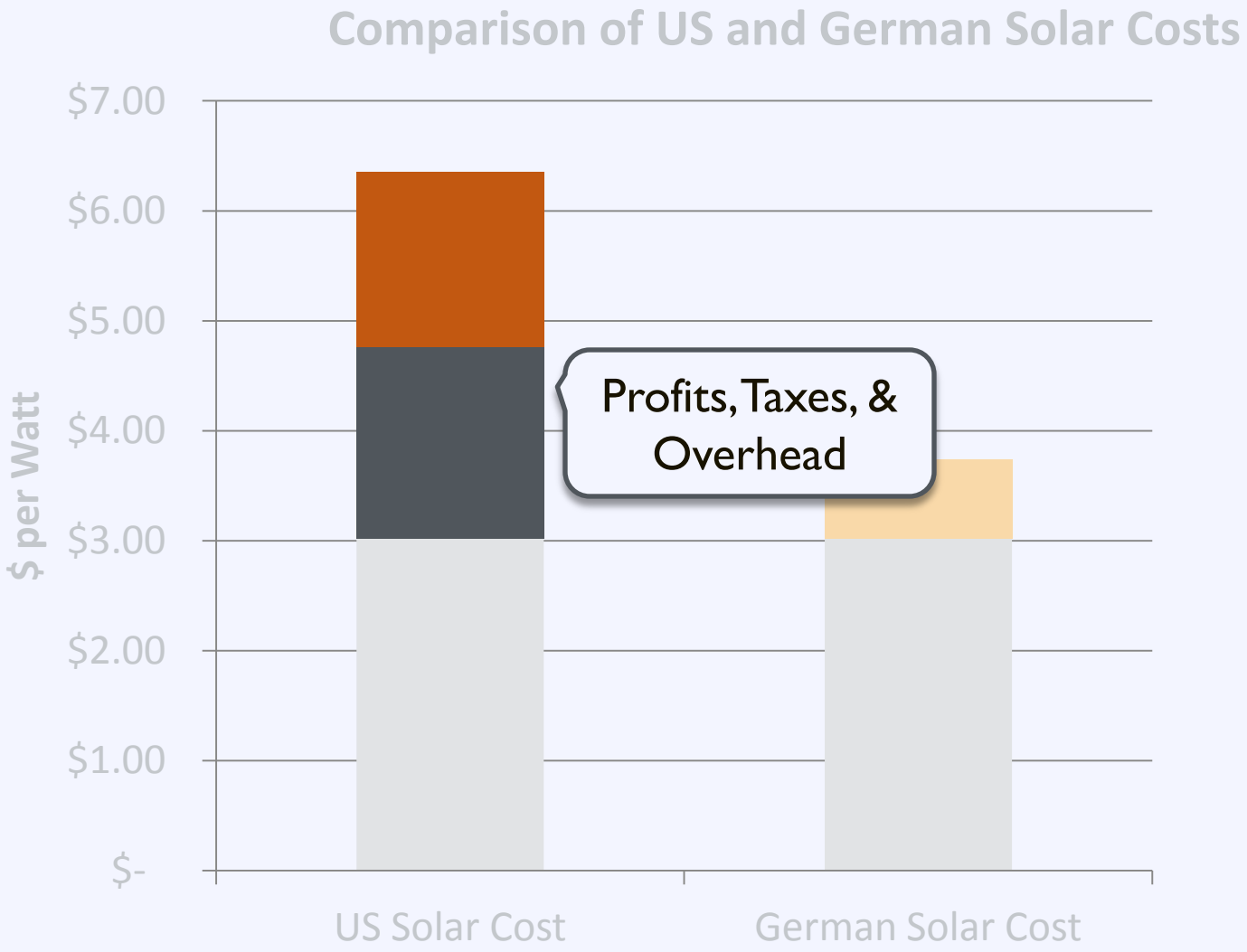

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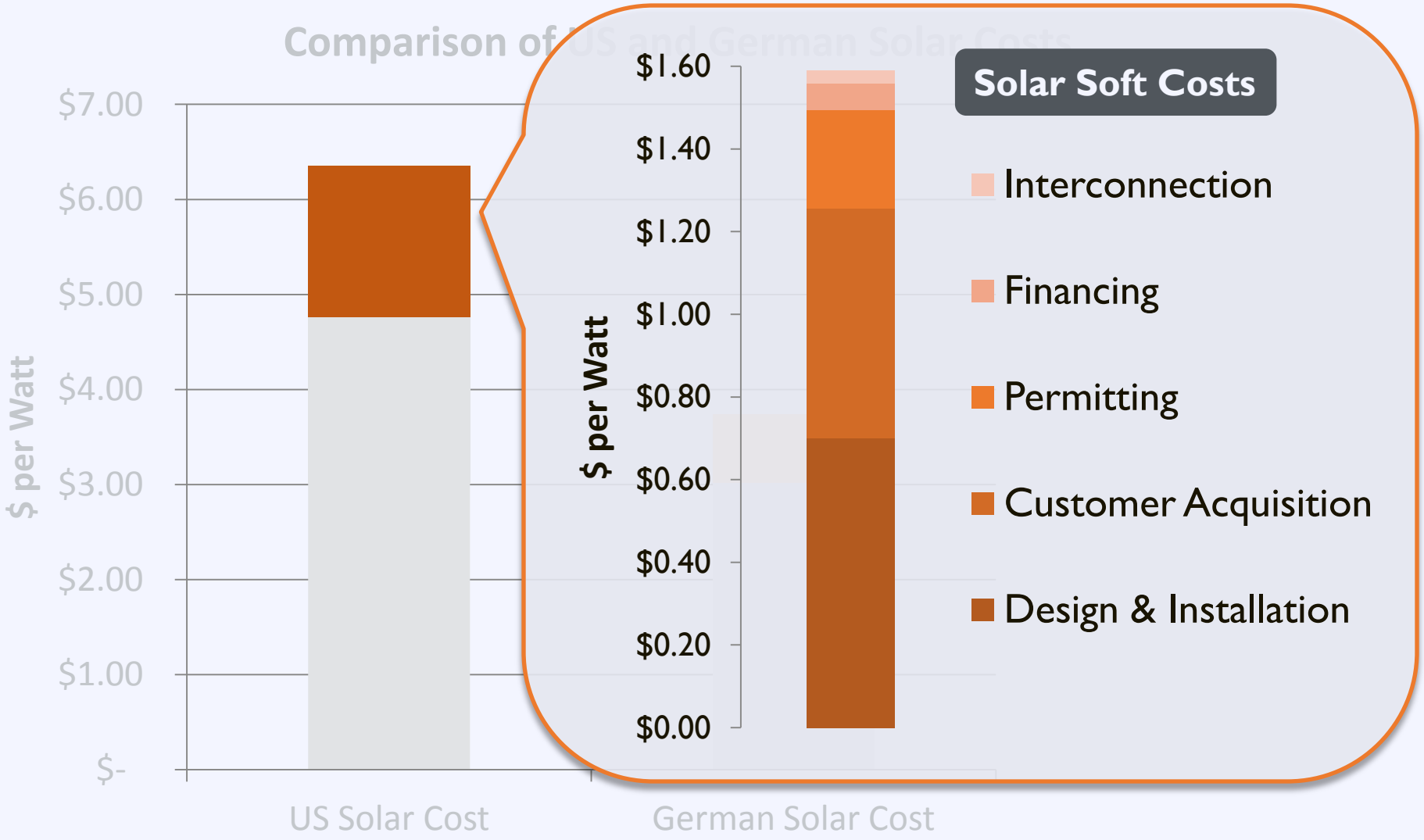

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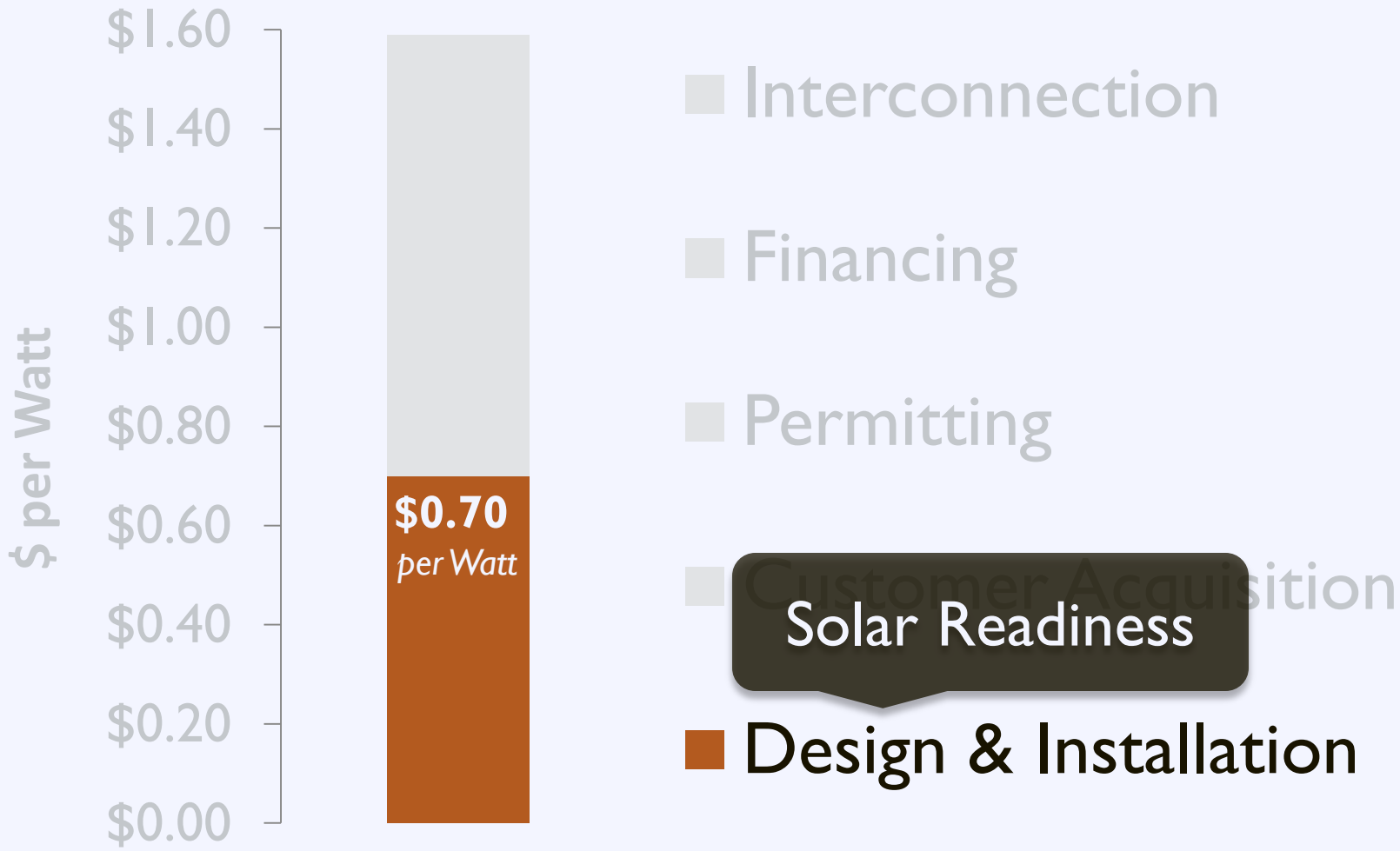
Mitigate Soft Costs



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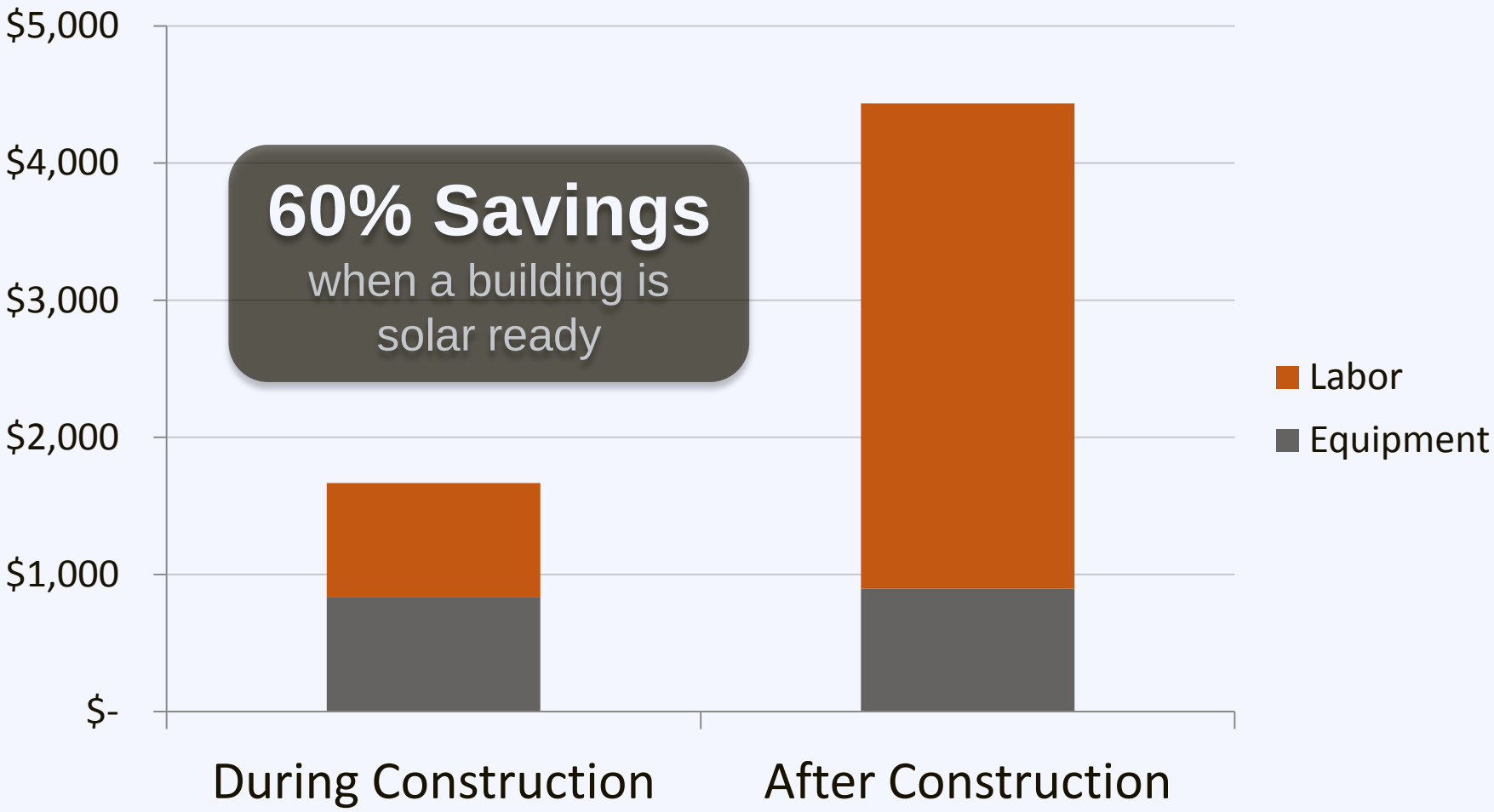
Source: NREL (http://www.nrel.gov/docs/fy12osti/54689.pdf)

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



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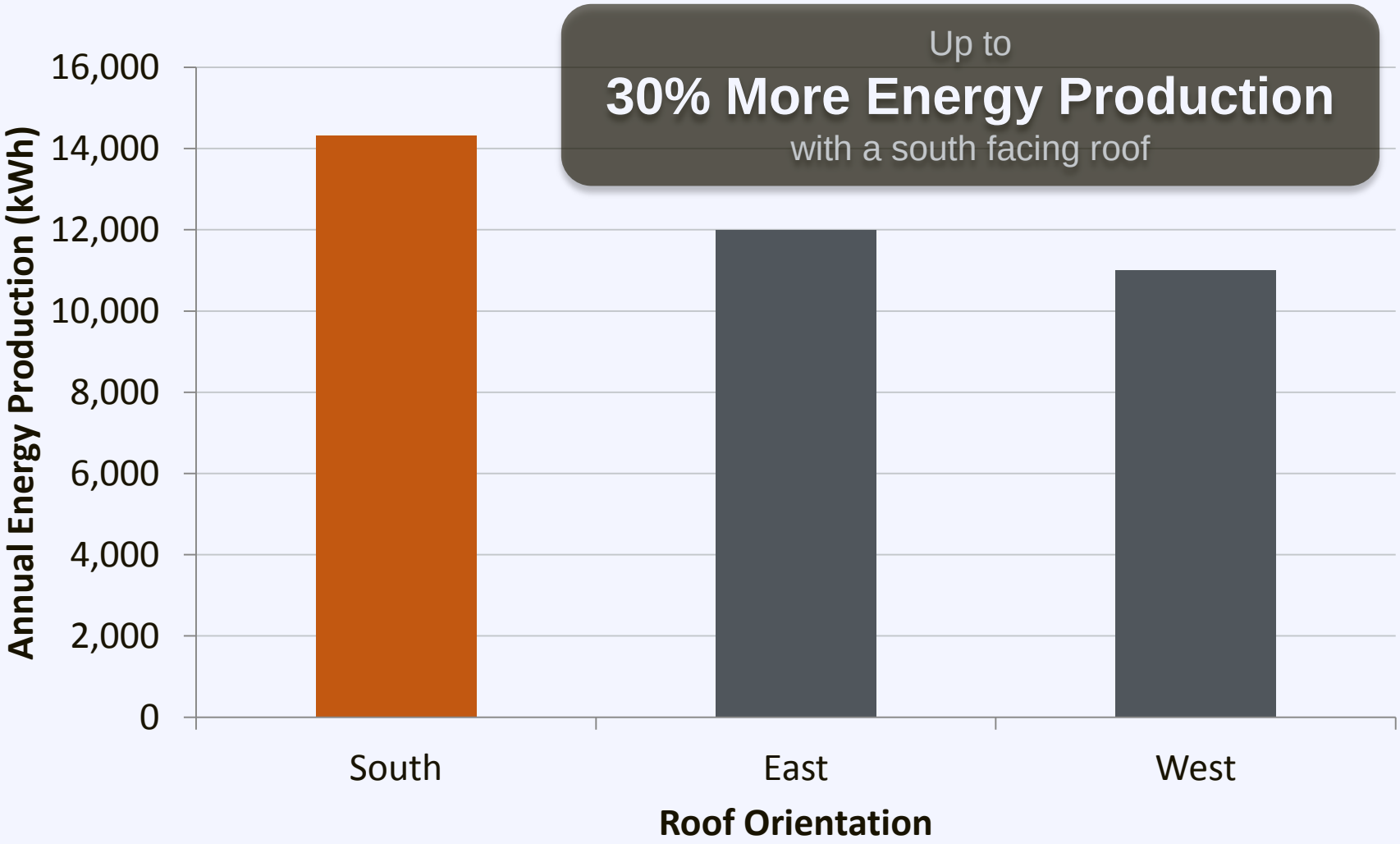
Source: Solar Ready: An Overview of Implementation Practices [Draft]. NREL, Feb. 18, 2011.

Solar Readiness



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

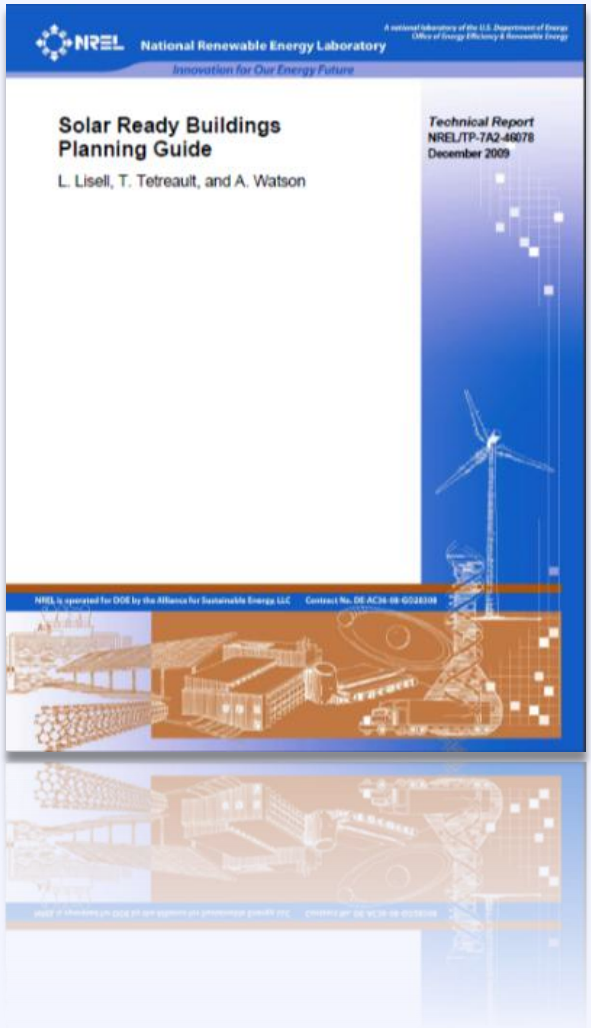
Solar Readiness

Resource **NREL**

Creating a solar ready guide for buildings:

- Legislation
- Certification programs
- Stakeholder Education

www.nrel.gov



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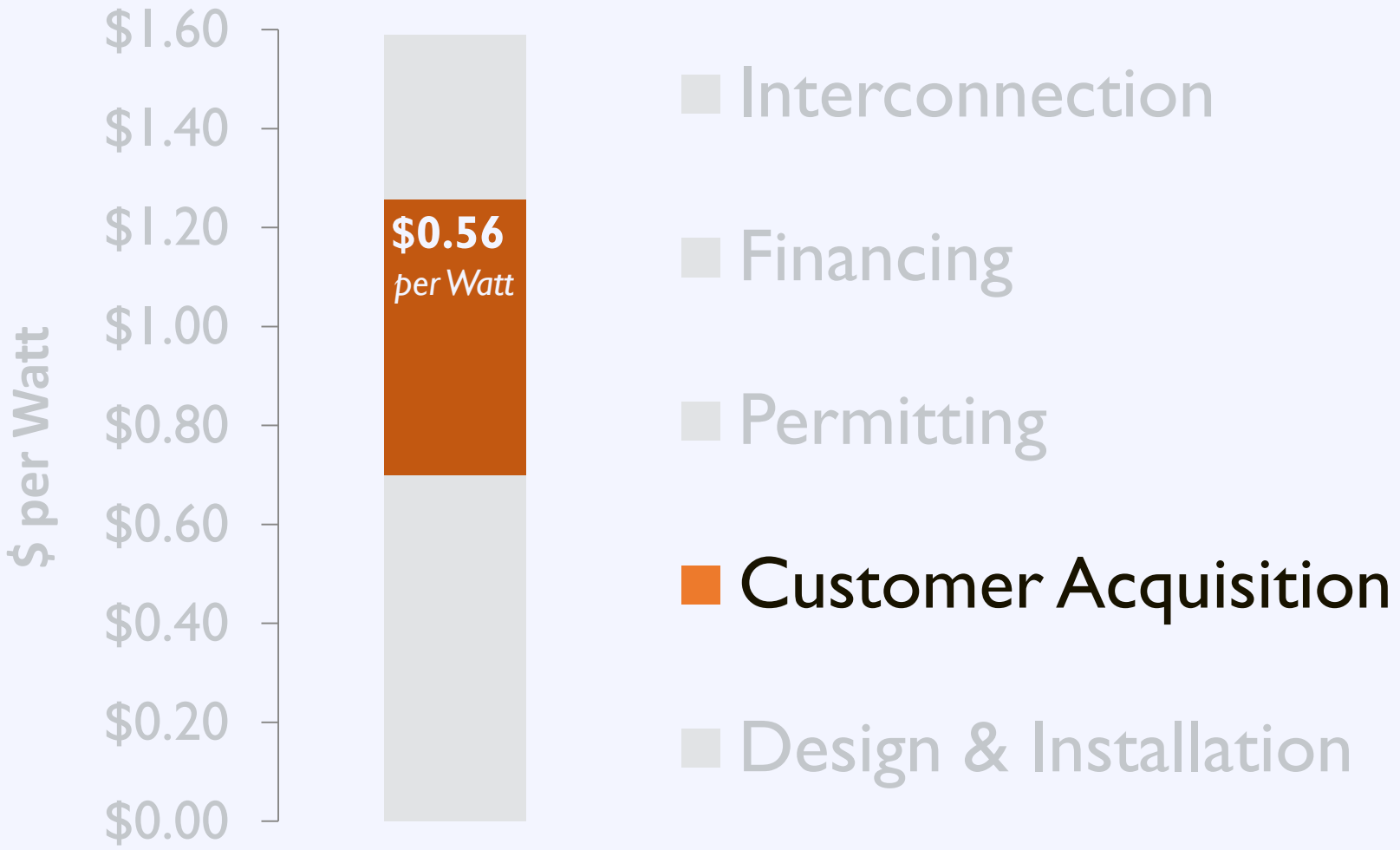
Source: NREL

Mitigate Soft Costs



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

Customer Acquisition

Solarize

Group Purchasing

Solarize: Advantages

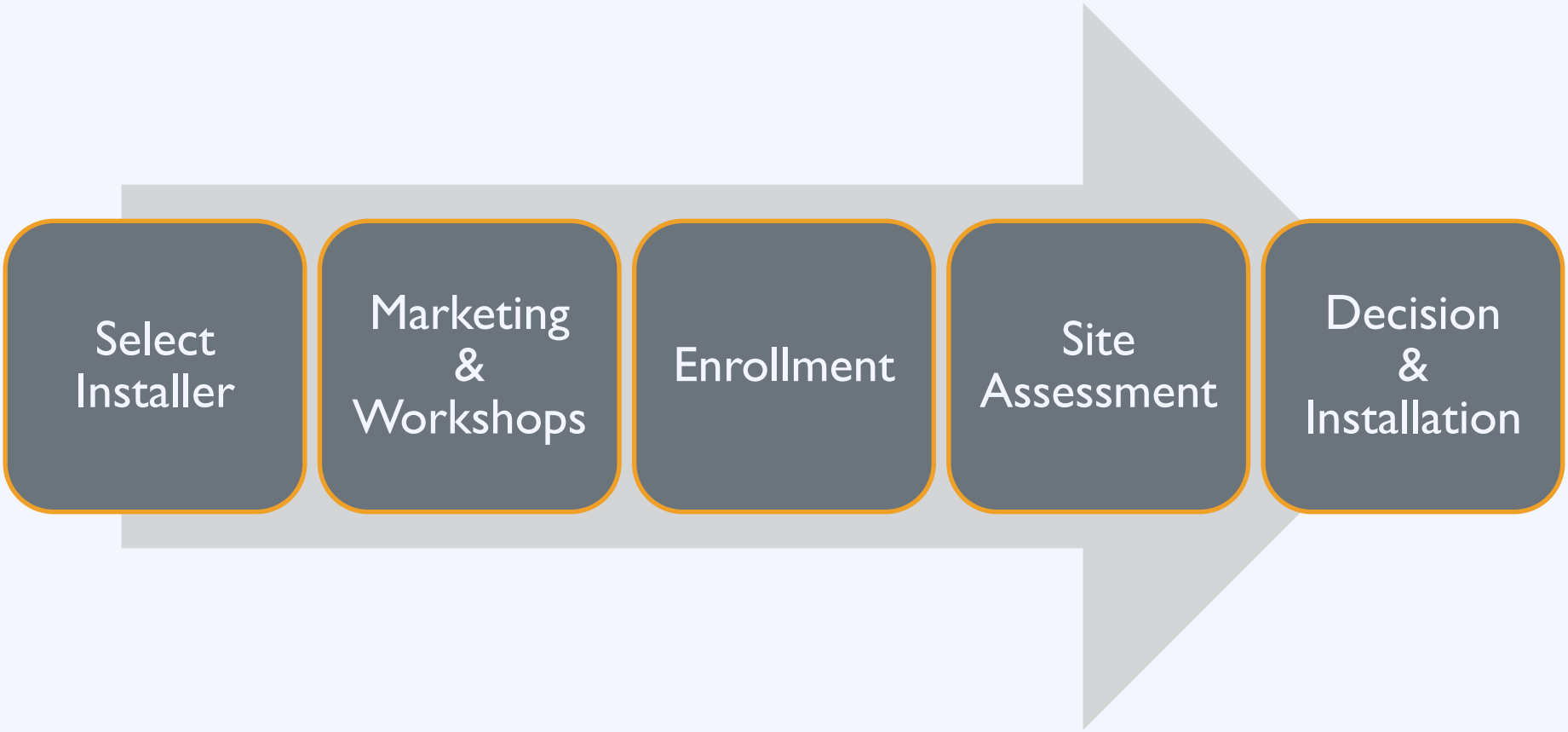
Benefits to Local Government:

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

Quick turn-around: 9 Months

Long-term impact: Sustainable ecosystem

Solarize: Process



Solarize: Case Study

75 new installations totaling 403 kW

30% reduction in installation costs

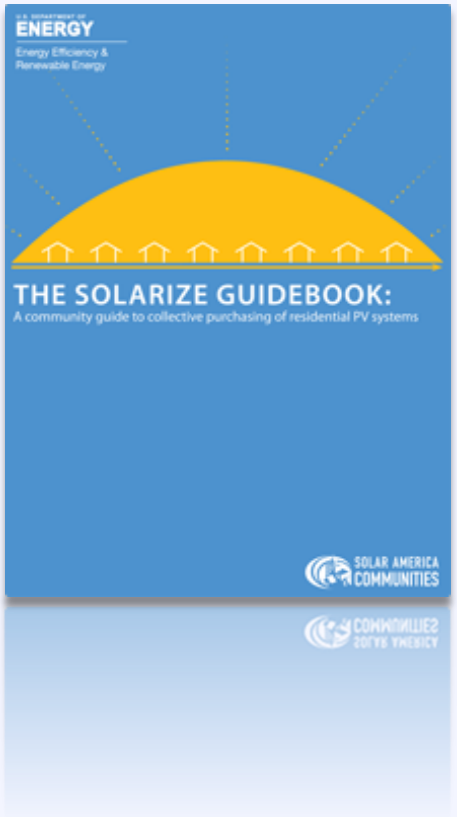
575% increase in residential installations

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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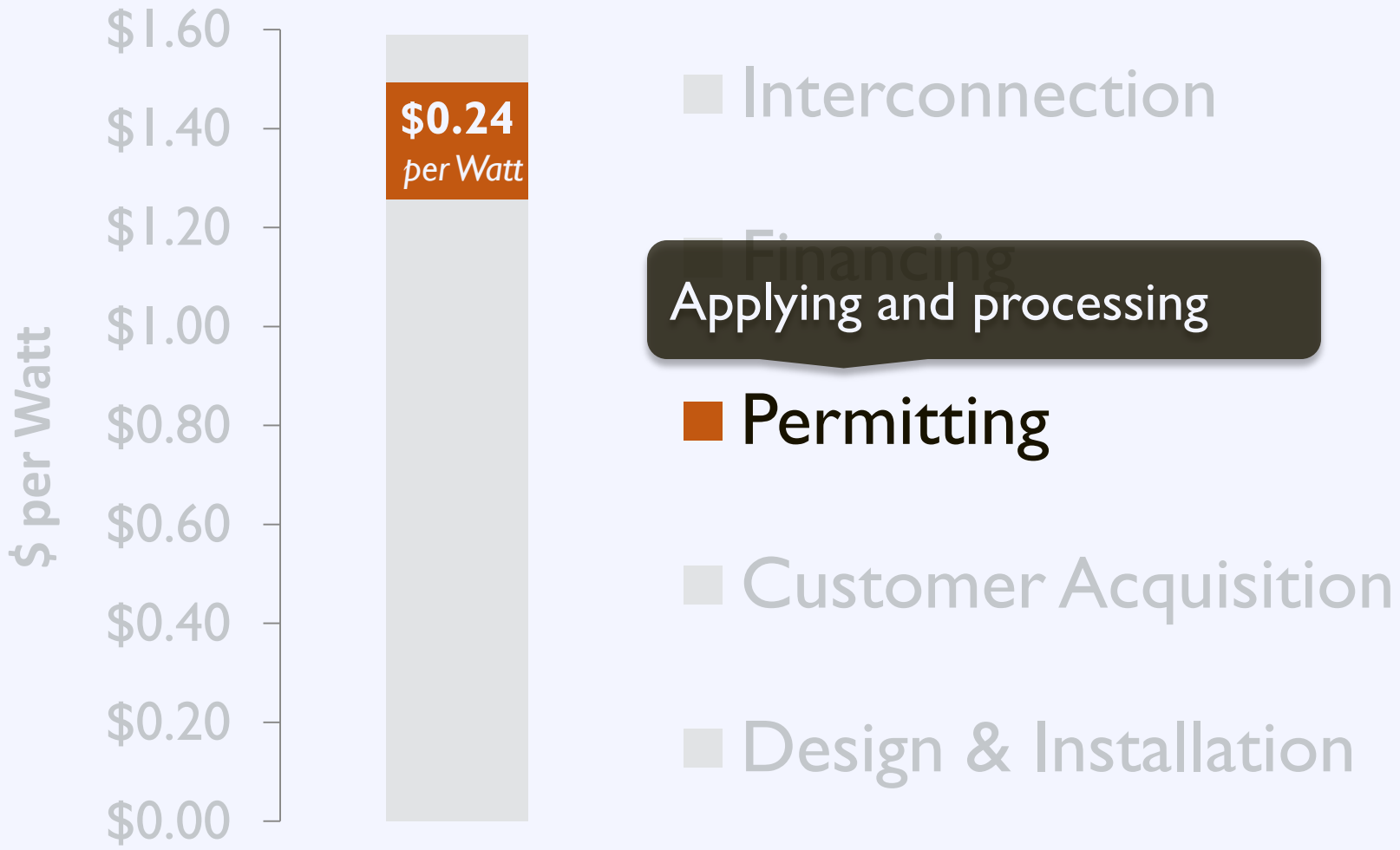

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Source: NREL (http://www.nrel.gov/docs/fy12osti/54689.pdf)

The Permitting Process: Challenges

Local permitting processes add on average

$2,516

to the installation cost of residential PV

Due to permitting difficulties

1 in 3 Installers Avoid

selling in an average of 3.5 jurisdictions

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Source: SunRun; Clean Power Finance

Expedited Permitting

Solar Permitting Best Practices:

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

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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

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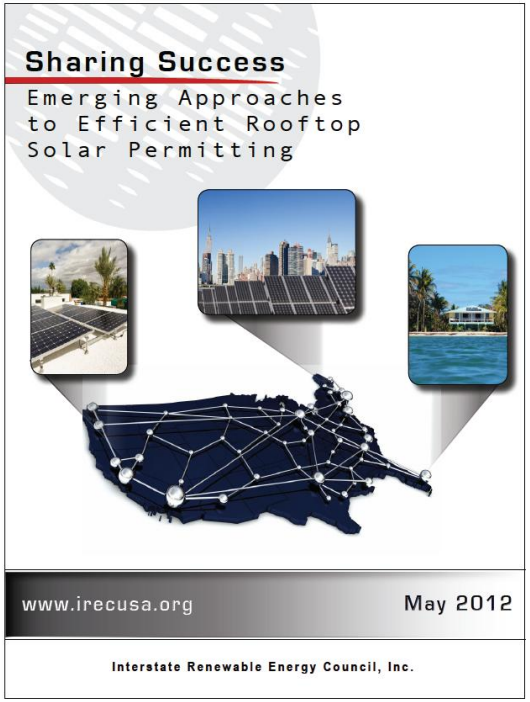
Source: Vote Solar

Permitting

Resource Sharing Success

Provides a detailed discussion on how both solar installers and municipalities can do their part to enable effective improvements to permitting processes.

www.irecusa.org



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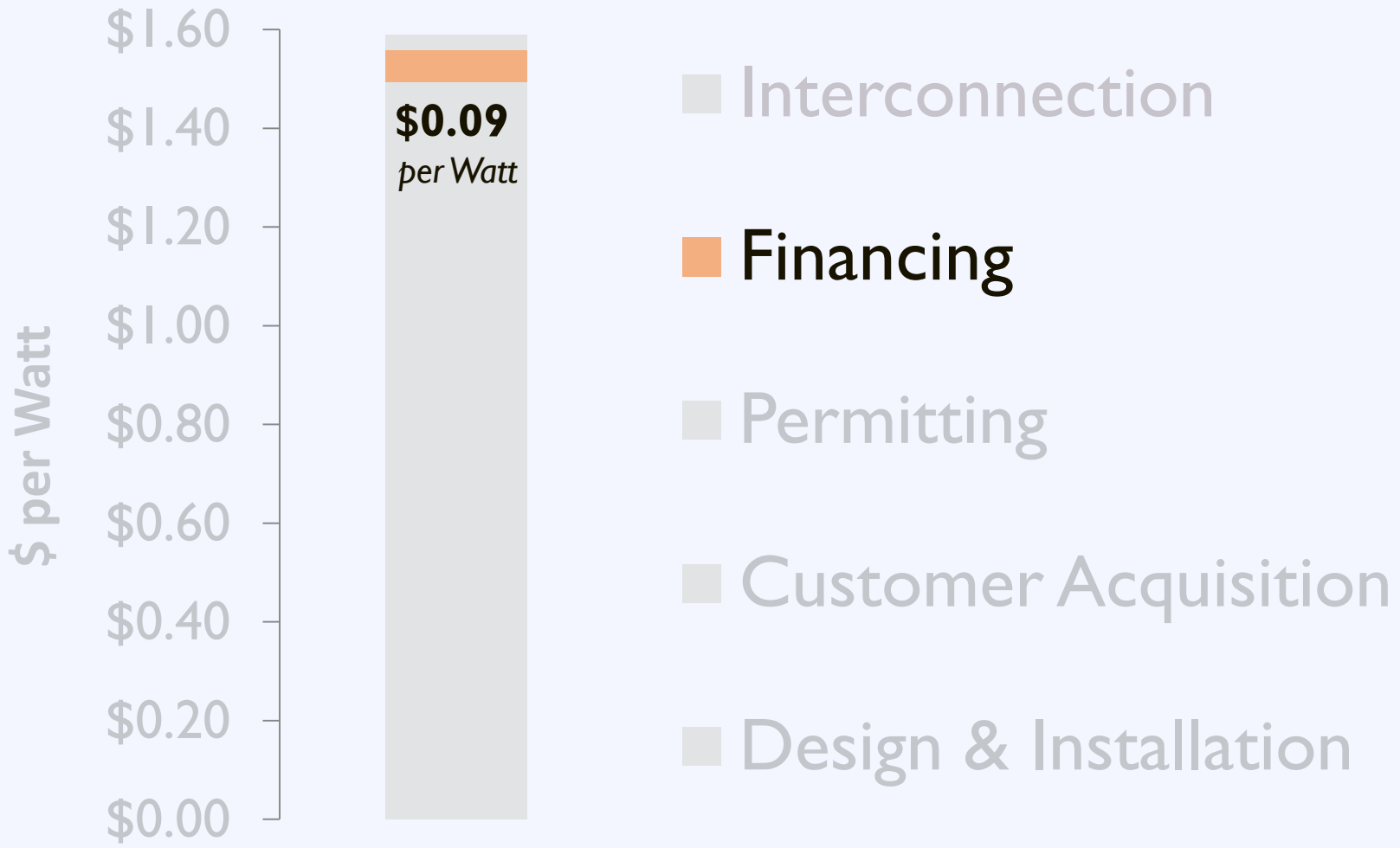
Mitigate Soft Costs



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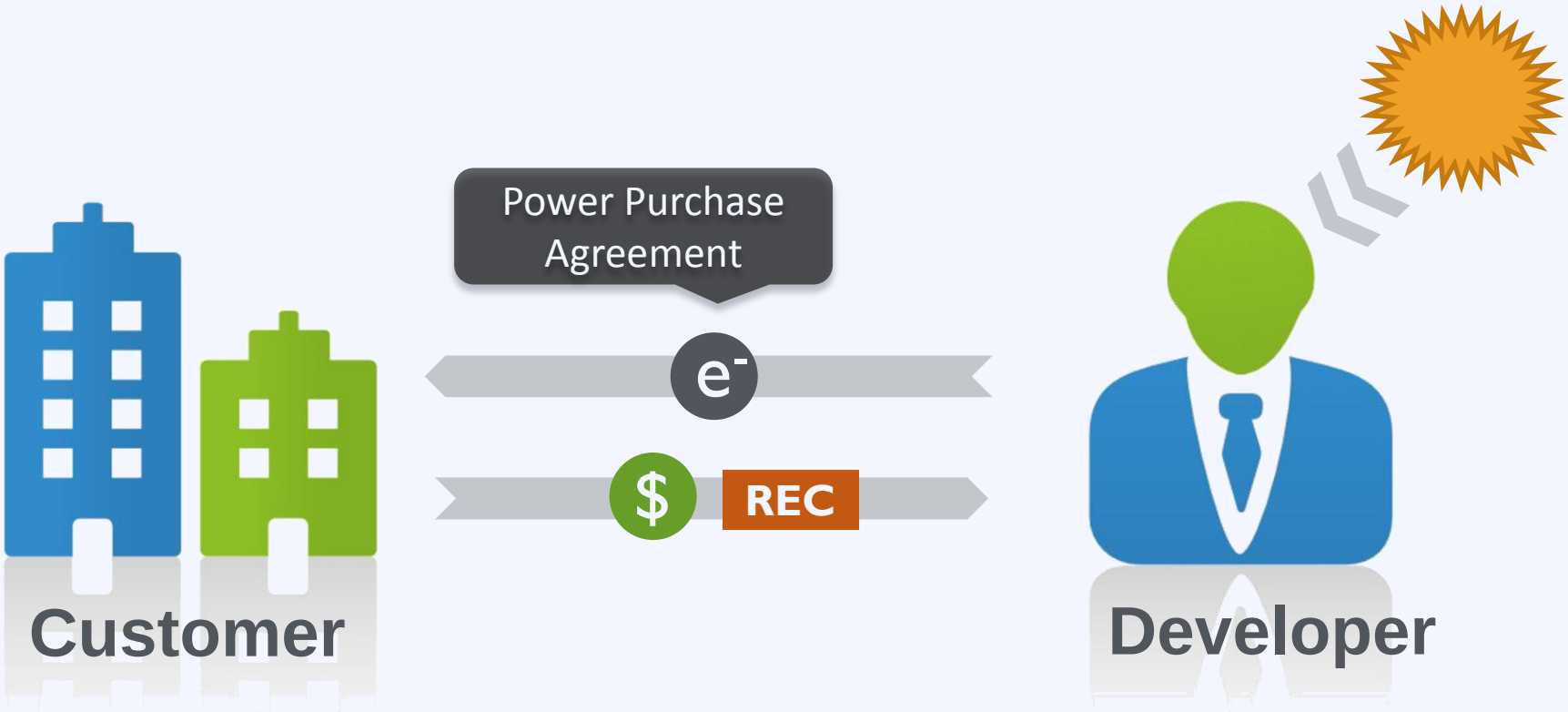
Third Party Ownership



Third Party Ownership

Pros

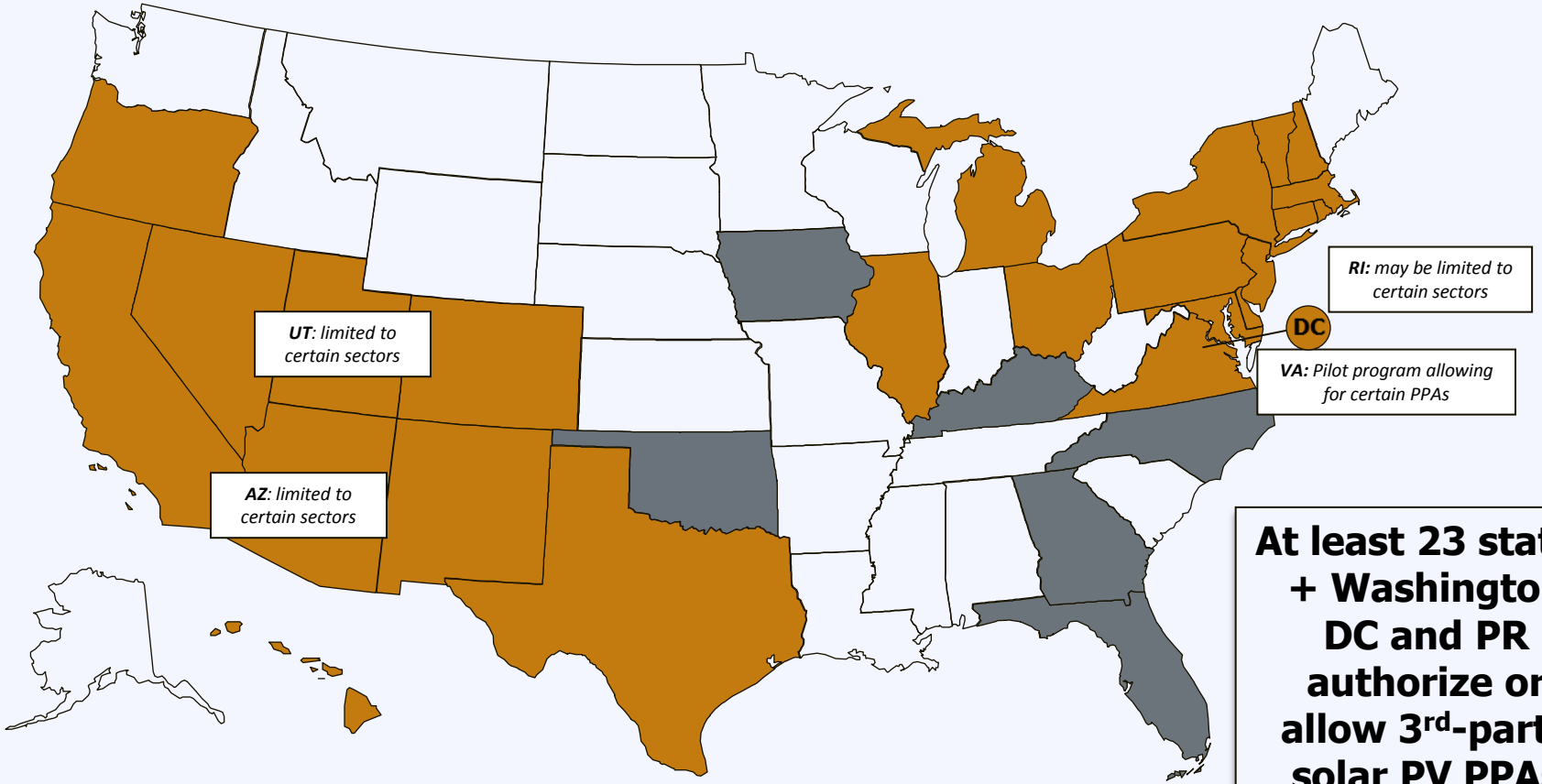
- No upfront cost
- No O&M costs
- Low risk
- Predictable payments
- No need to deal with RECs

Cons

- Market electricity price risk
- Opportunities may be limited in some locations
- Don't keep RECs

3rd-Party Solar PV Power Purchase Agreements (PPAs)

www.dsireusa.org / February 2013



At least 23 states + Washington DC and PR authorize or allow 3rd-party solar PV PPAs

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

Apparently disallowed by state or otherwise restricted by legal barriers

Status unclear or unknown

Puerto Rico

Note: This map is intended to serve as an unofficial guide; it does not constitute legal advice. Seek qualified legal expertise before making binding financial decisions related to a 3rd-party PPA. See following slides for additional important information and authority references.

Qualified Energy Conservation Bonds

- What?

  Tax credit or direct payment subsidy

- Why?

  Subsidy lowers the effective cost of capital

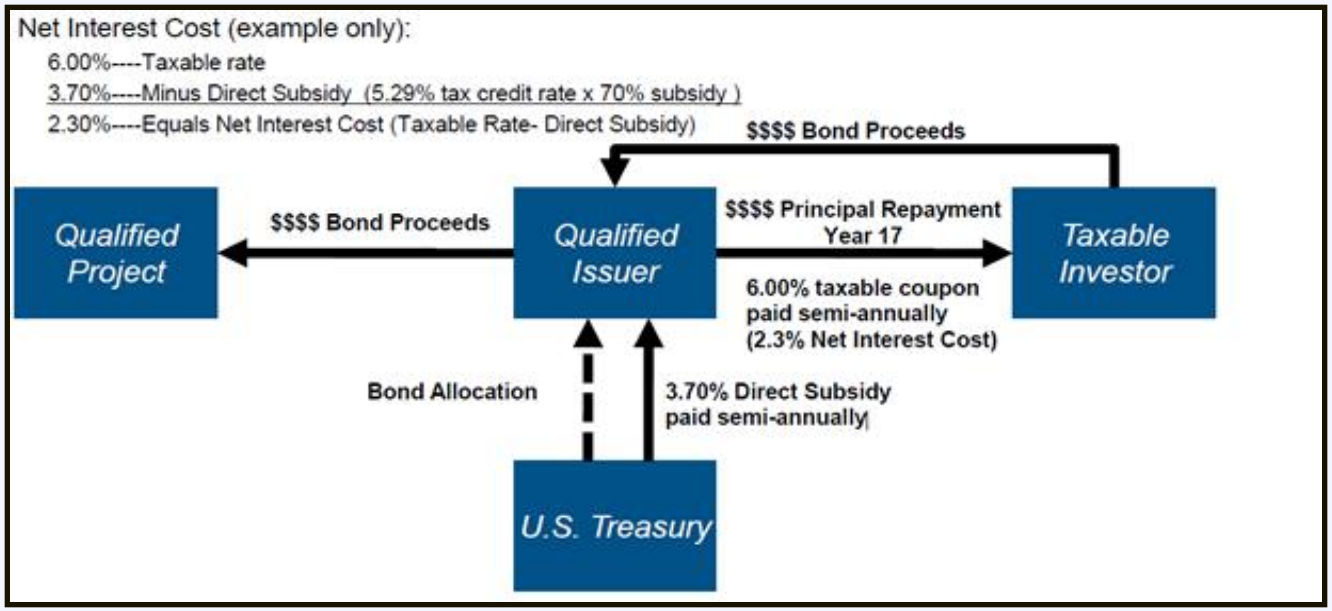
- Relevance?

  Can be used for certain renewable energy facilities (including solar)

- How?

  State allocation or automatic allocation

Qualified Energy Conservation Bonds



- Texas' $252m allocation untouched (as of 9/2012)
- Local Sub-allocations:
  - Houston City $23.37m
  - Harris County $16.89m

Info on QECBs and Application: www.brb.state.tx.us/QECB/QECB.aspx

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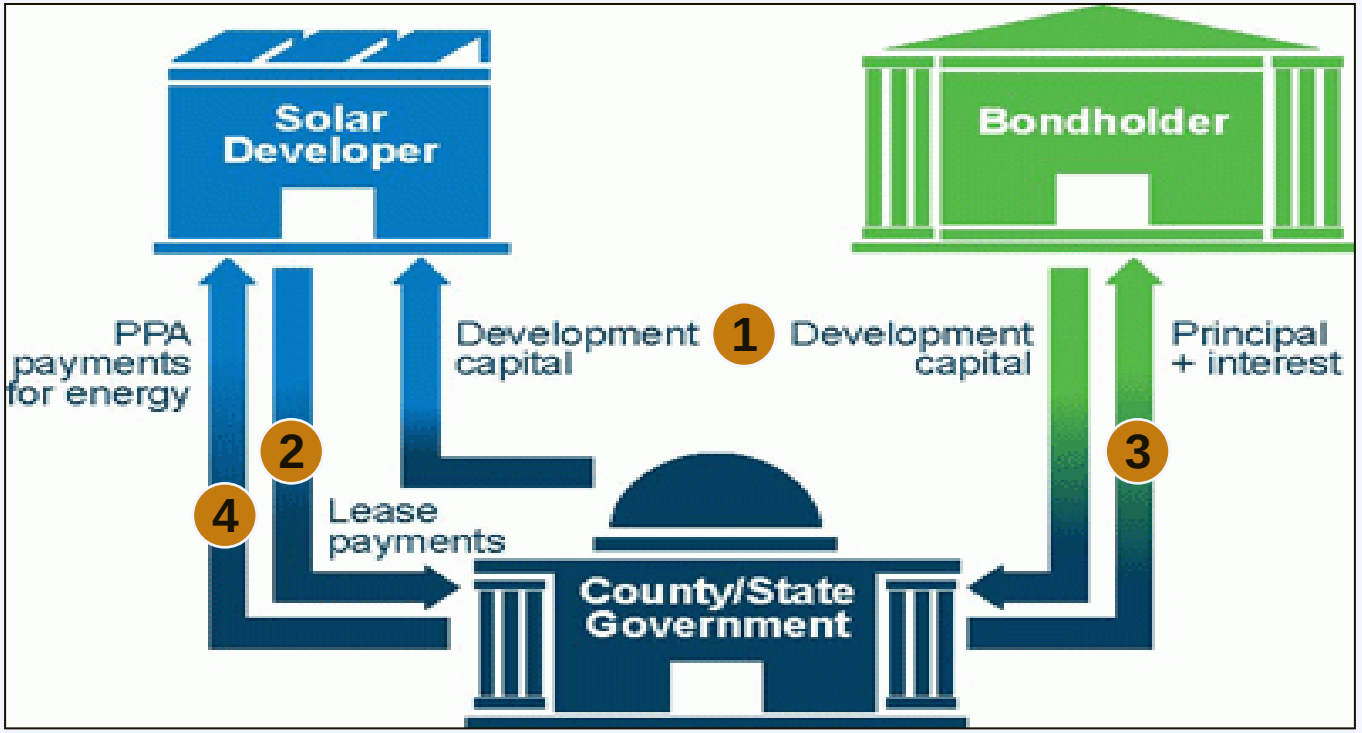
Source: National Association of State Energy State Energy Officials: State Financing Energy Resources.; Energy Programs Consortium QECB Memo, September 2012.

Innovative: Morris Model

Public Debt + PPA = **MORRIS MODEL**



Source: NREL . 2011. Financing Solar PV at Government Sites with PPAs and Public Debt

Replication of Morris Model

- Renewable Energy Law

  Renewable Portfolio Standard; RECs; tax credits; incentives

- Legality of PPA Model
- Laws Governing Public Contracts

  PPAs require multi-year contracting (≥15 years)

- Laws Governing Bond Issuance

  Best when streamlined (no vote required)

- Laws Governing Procurement

  Best when gov can consider certain criteria other than price

Source: NREL . 2011. Financing Solar PV at Government Sites with PPAs and Public Debt

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

[Results from Survey]

Activity: Addressing Barriers

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

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

[Results from Survey]

Activity: Next Steps

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

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