



**The NY-Sun Initiative**  
Solar Powering New York



# Introduction to Solar Policy Workshop

Presented by the  
NY-Sun PV Trainers Network

# NY-Sun Initiative

Statewide Goal of 3 GW

**\$961 Million Total Budget**



Stimulate the  
Market Place



Reduce Soft  
Costs

- Significantly expand installed solar capacity
- Attract private investment
- Enable sustainable development of a robust industry
- Create well-paying skilled jobs
- Improve the reliability of the electric grid
- Reduce air pollution
- Make solar available to all New Yorkers that want it

# About the PV Trainers Network

The NY-Sun PV Trainers Network aims to **lower the installation cost and expand adoption** of solar PV systems throughout the state.

[training.ny-sun.ny.gov](http://training.ny-sun.ny.gov)

# About the PV Trainers Network

## Lead Organizations



## Supporting Organizations



# PVTN Program

Half day workshop covering:

- Benefits of solar
- Policy best practices
- Program's free and low-cost resources

Intro to Solar  
Policy

Community  
Strategy  
Session

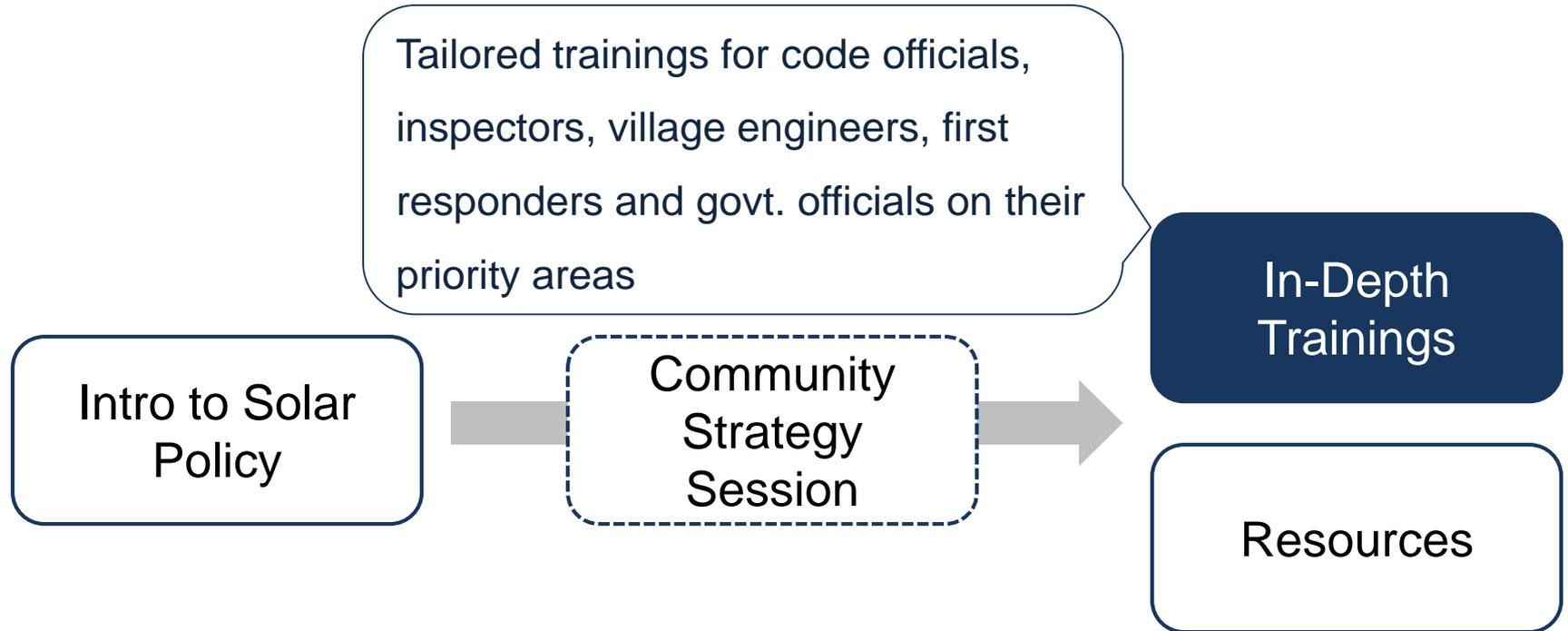
In-Depth  
Trainings

Resources

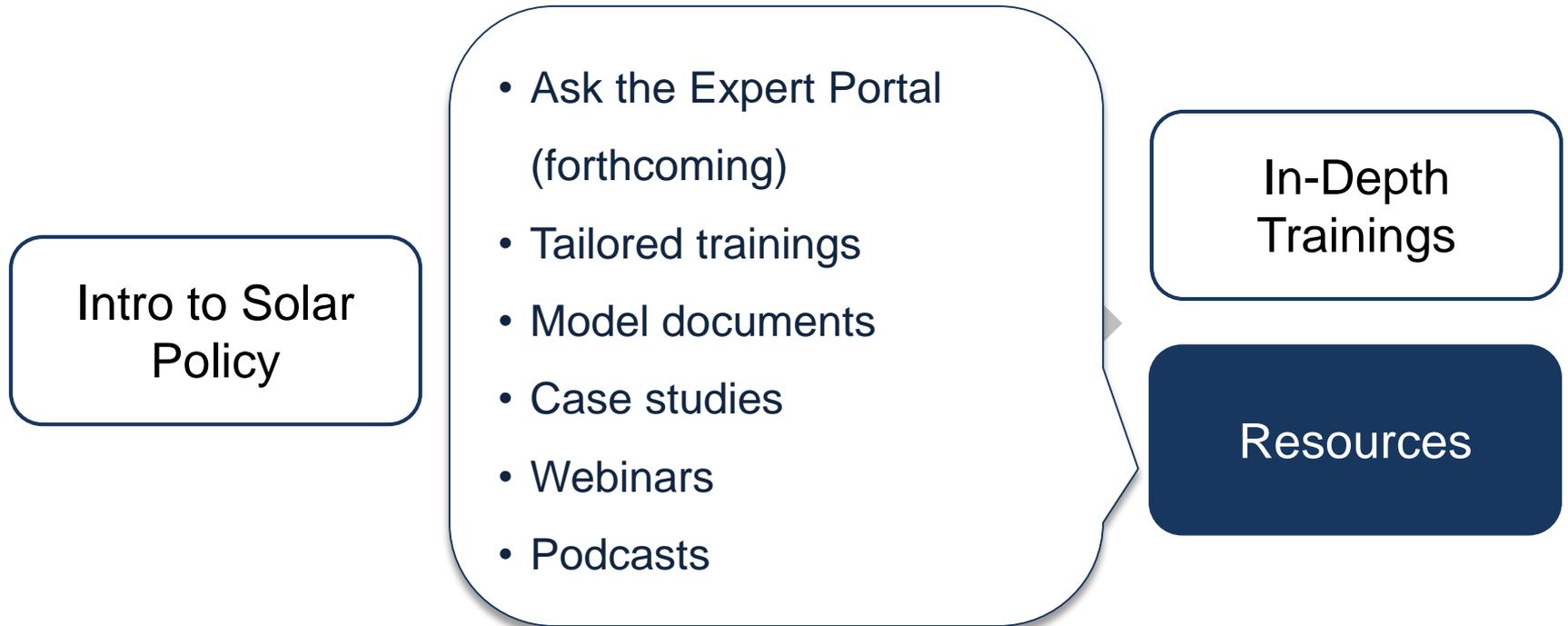
# PVTN Program



# PVTN Program



# PVTN Program



# Upcoming Trainings, Webinars & Podcasts

Subject	Date & Time	Location
Training: Introduction to Solar Policy	Thursday, Oct 16, 8:30am - 12:30pm	Town of Plattsburgh, NY
Training: Introduction to Solar Policy	Friday, Oct 17, 9:00am - 1:00pm	Canton, NY
Webinar: Adopting the NYS Unified Solar Permit	Tuesday, Oct 28, 12:00pm – 1:00pm	
Podcast: Introduction to Solar Technologies	Available Wednesday, Oct 29	
Training: Introduction to Solar Policy	Wednesday, Nov 05, 1:00pm - 5:00pm	Rochester, NY
Training: Introduction to Solar Policy	Thursday, Nov 06, 1:00pm - 5:00pm	Ithaca, NY
Training: Land Use Planning for Solar Energy	Thursday, Nov 13, 7:00pm-9:00pm	Goshen, NY

**For more information visit: <https://training.ny-sun.ny.gov>**

# Your Presenters Today

**Emily Chessin**

Meister Consultants Group

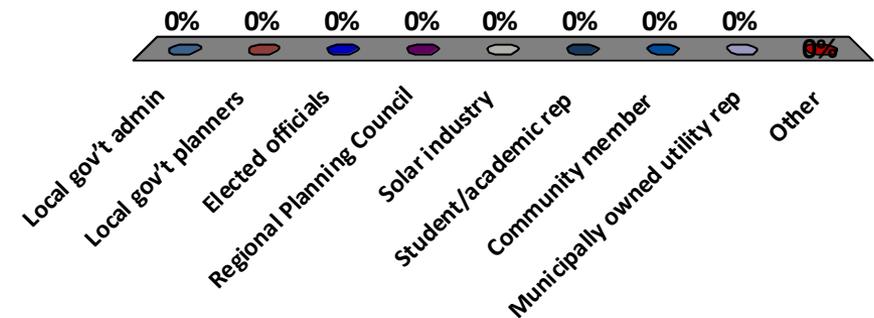
**Adam Schnell**

**Justin Strachan**

Sustainable CUNY

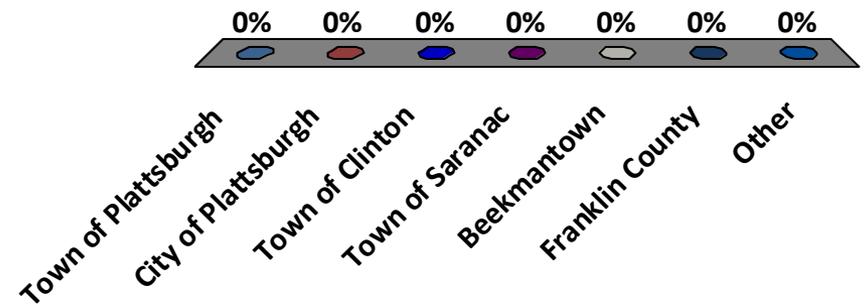
# Who's in the room?

- A. Local gov't admin
- B. Local gov't planners
- C. Elected officials
- D. Regional Planning Council
- E. Solar industry
- F. Student/academic rep
- G. Community member
- H. Municipally owned utility rep
- I. Other



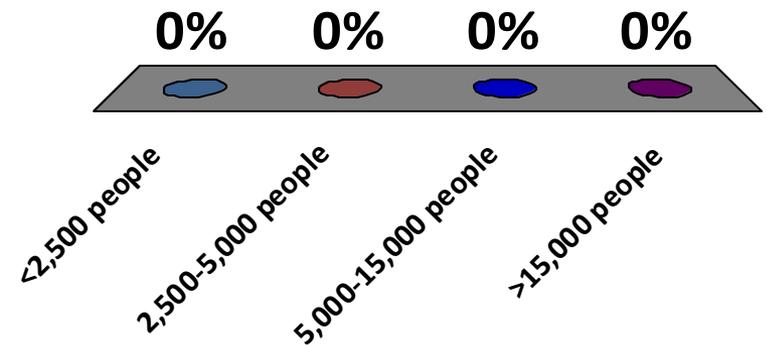
# Where are you coming from?

- A. Town of Plattsburgh
- B. City of Plattsburgh
- C. Town of Clinton
- D. Town Saranac
- E. Beekmantown
- F. Franklin County
- G. Other



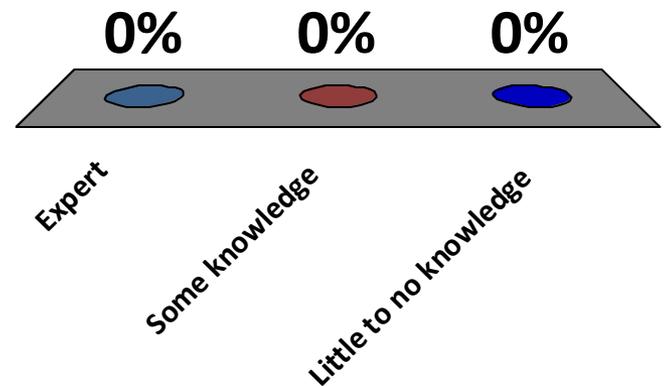
# How big is your community?

- A. <2,500 people
- B. 2,500-5,000 people
- C. 5,000-15,000 people
- D. >15,000 people



# How familiar are you with solar?

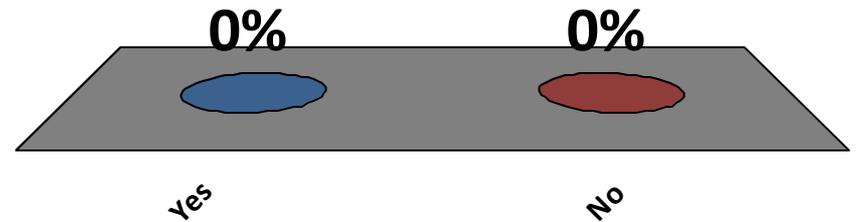
- A. Expert
- B. Some knowledge
- C. Little to no knowledge



# Do you have solar on your home?

A. Yes

B. No



# Solar Development in the US

In 2013, the US solar industry installed

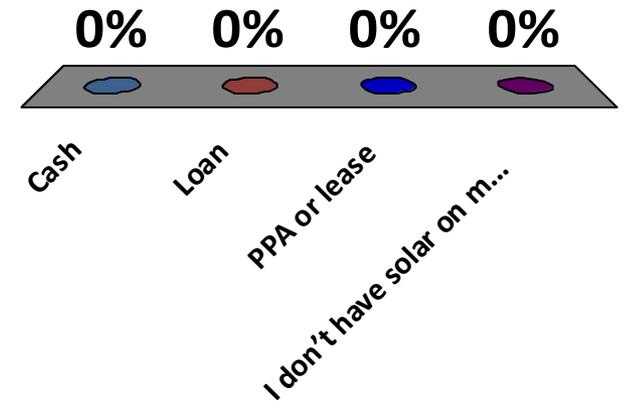
**131,000** new solar installations

*of which*

**94%** were residential projects

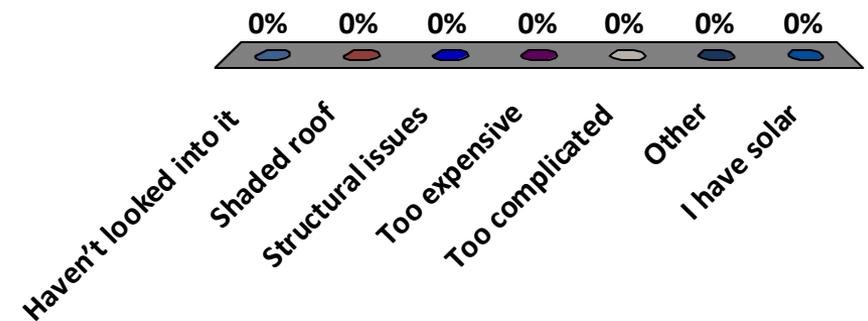
# If you do have solar on your home, how did you finance it?

- A. Cash
- B. Loan
- C. PPA or lease
- D. I don't have solar on my home



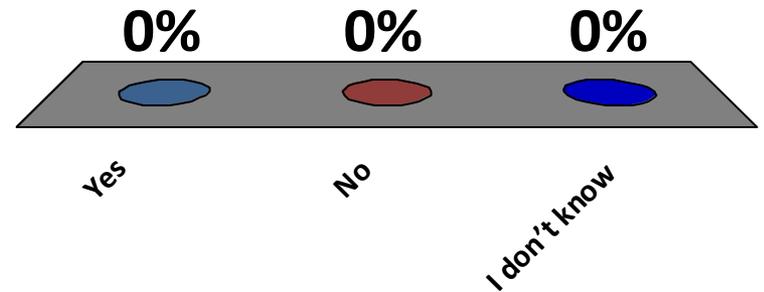
# If you don't have solar on your home, why not?

- A. Haven't looked into it
- B. Shaded roof
- C. Structural issues
- D. Too expensive
- E. Too complicated
- F. Other
- G. I have solar



# Has your local government installed solar on public property?

- A. Yes
- B. No
- C. I don't know



# Agenda

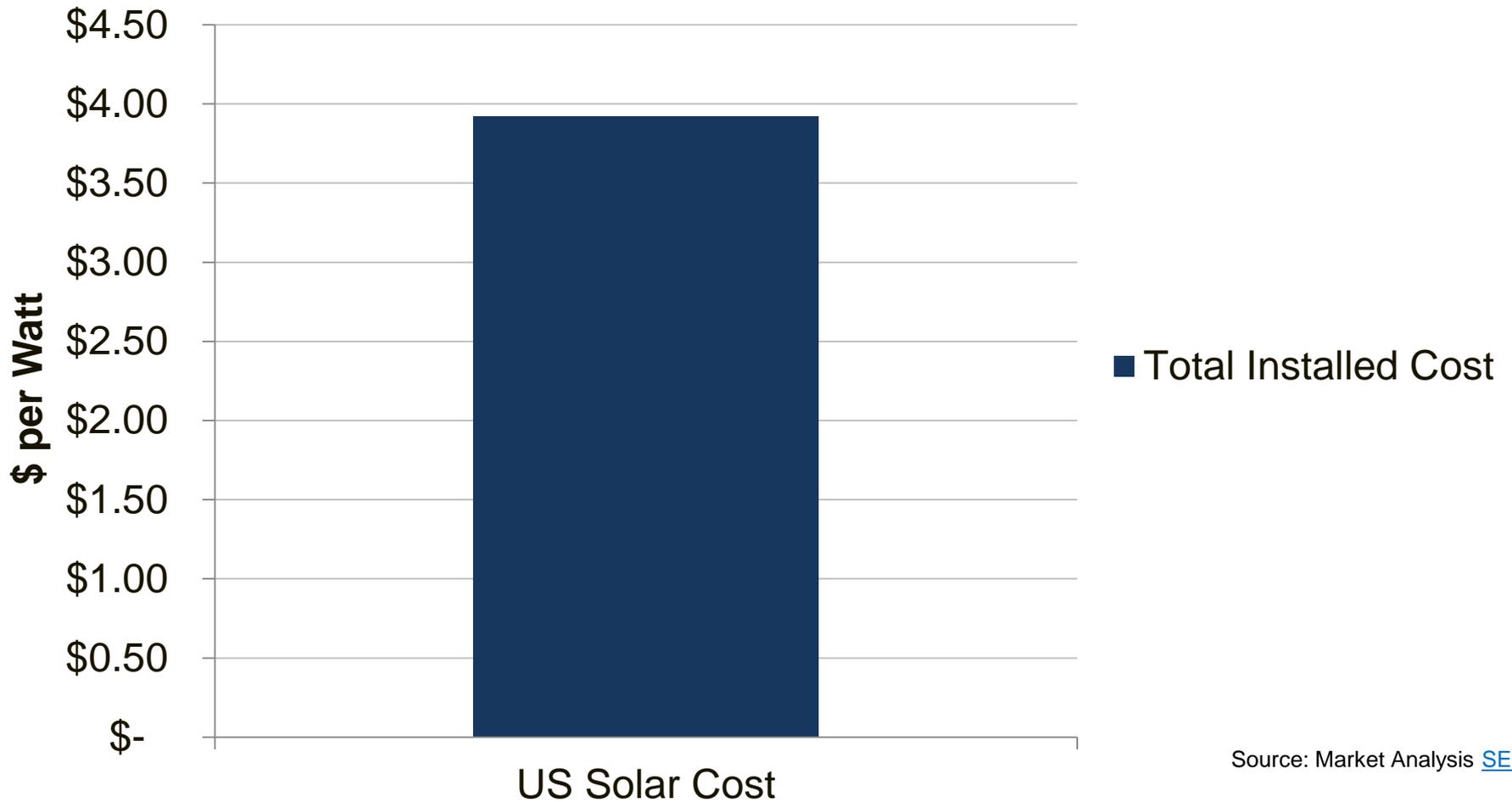
1. **Putting Solar Energy on the Local Policy Agenda**
2. State of the NY Solar Market & Intro to Solar Soft Costs
3. Federal, State, and Utility Policy Drivers
4. *Break*
5. Making your Community Solar Ready
6. *Break*
7. Programs to Grow Your Solar Market
8. Developing Solar Policy For Your Community
9. Next Steps

# Why We Are Here

## Workshop Goal:

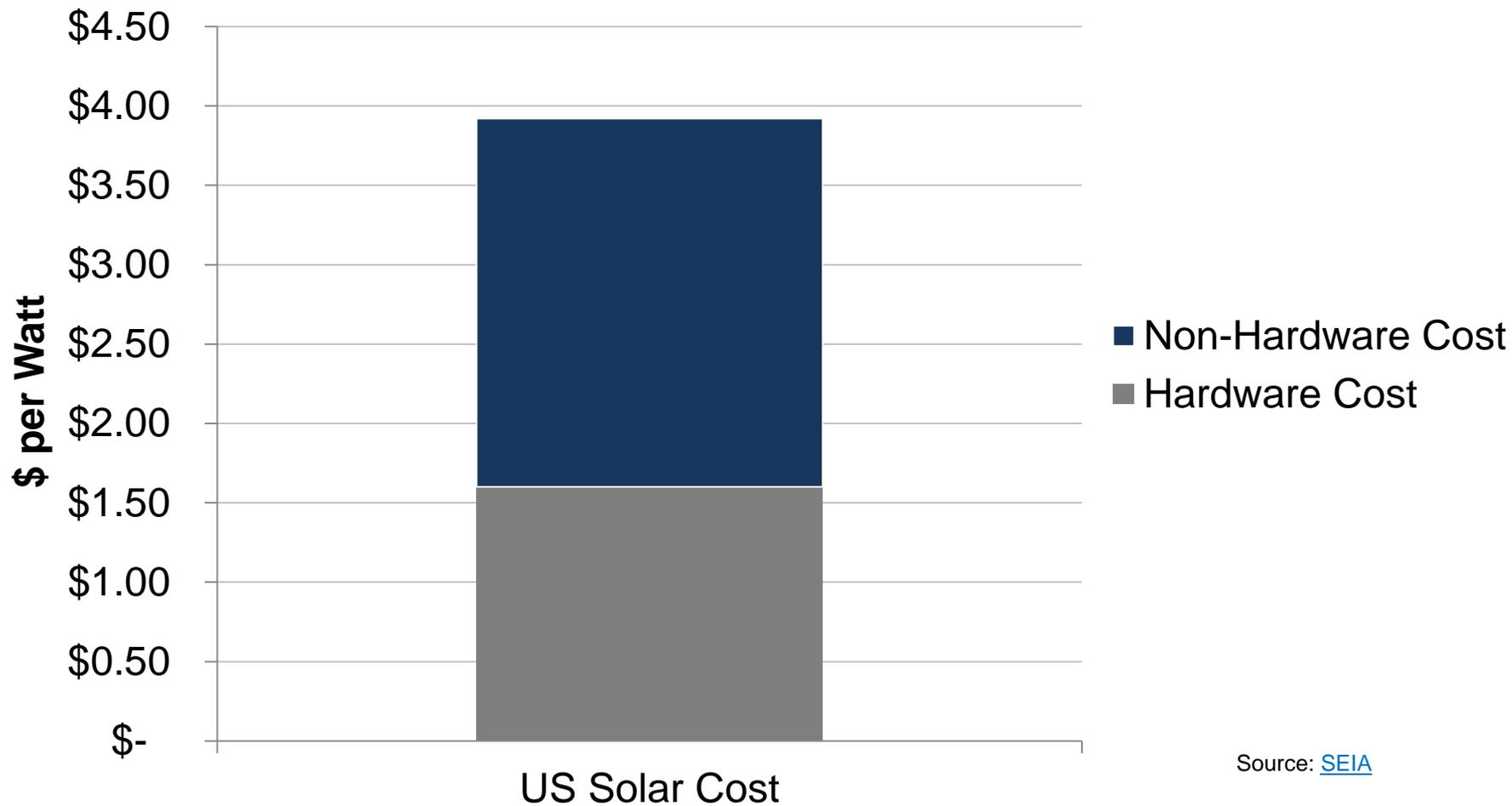
To enable policymakers to replicate successful solar practices that reduce soft costs and expand local adoption of solar energy.

# US Solar Costs



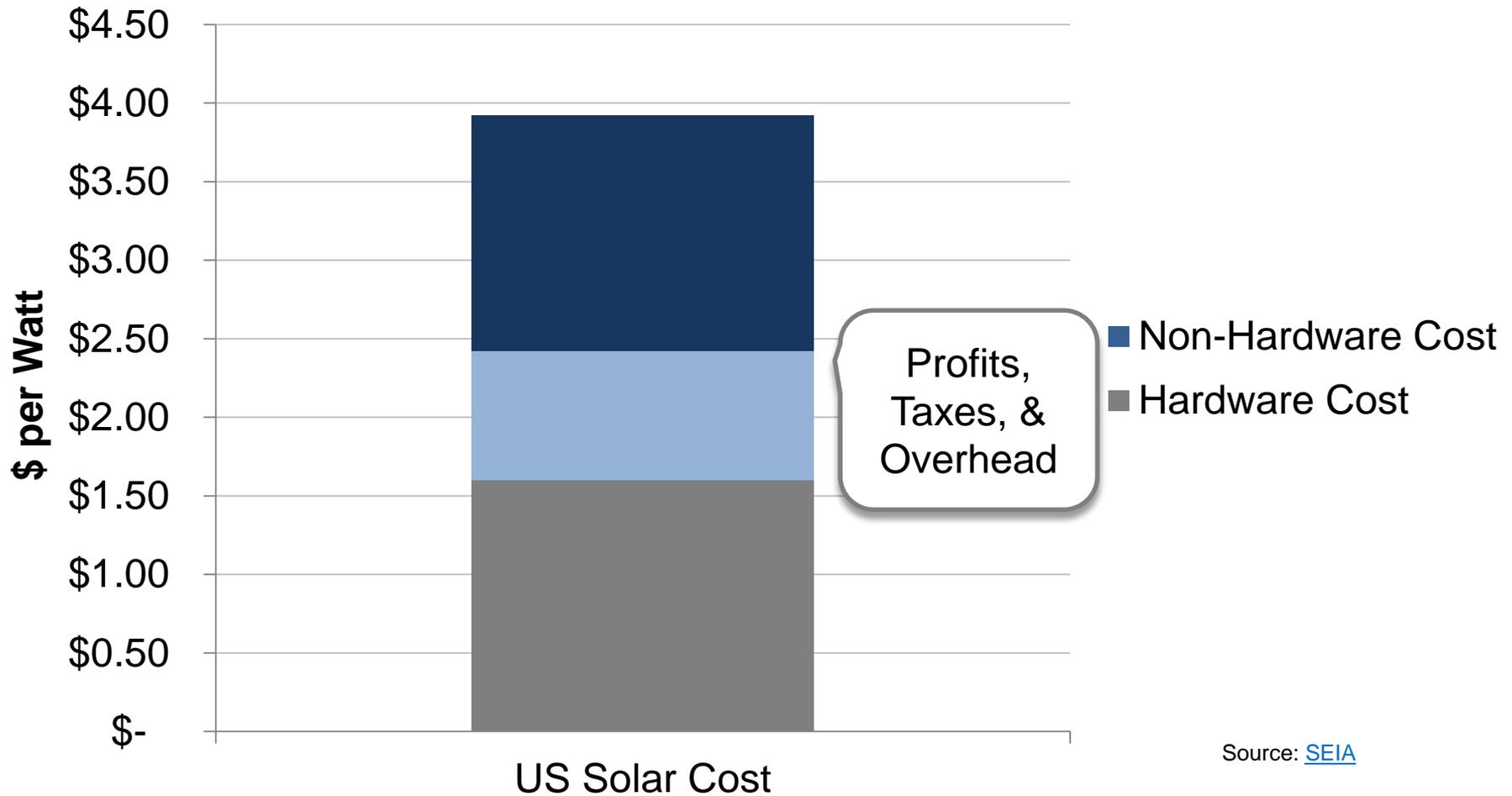
Source: Market Analysis [SEIA](#)

# US Solar Costs



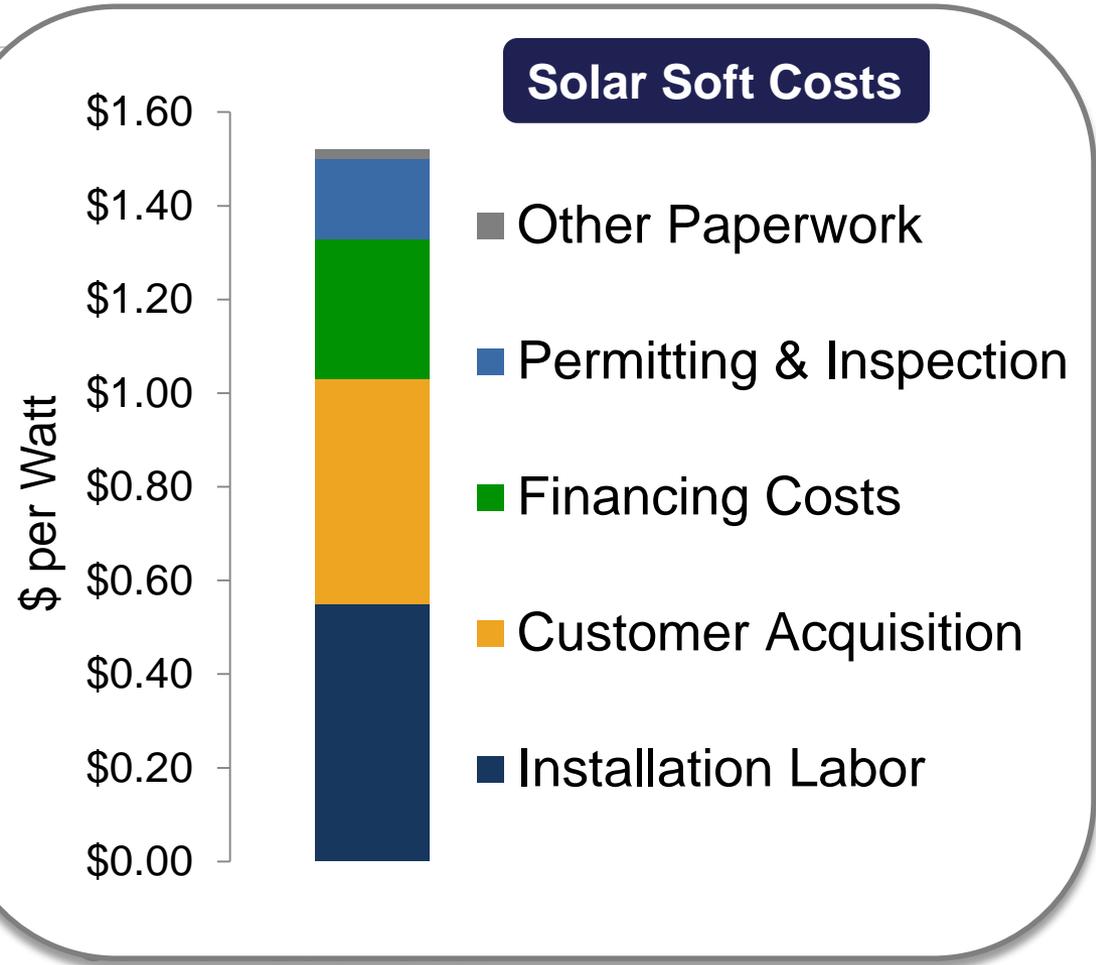
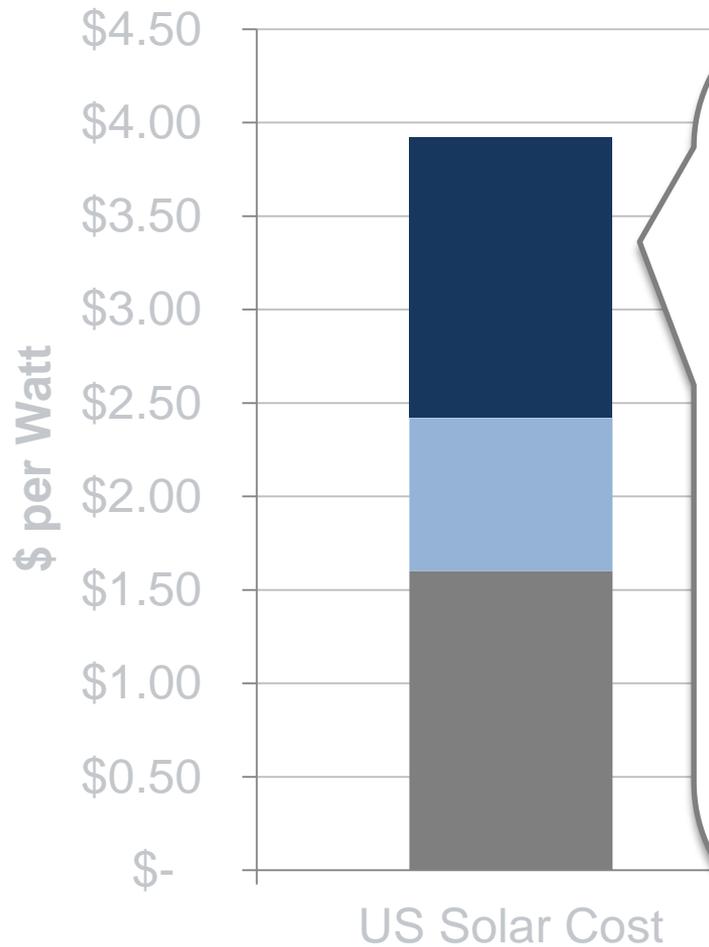
Source: [SEIA](#)

# US Solar Costs



Source: [SEIA](#)

# US Solar Costs



# Solar Technologies



**Solar Photovoltaic (PV)**



**Solar Hot Water**



**Concentrated Solar Power**

# Solar Technologies



**Solar Photovoltaic (PV)**

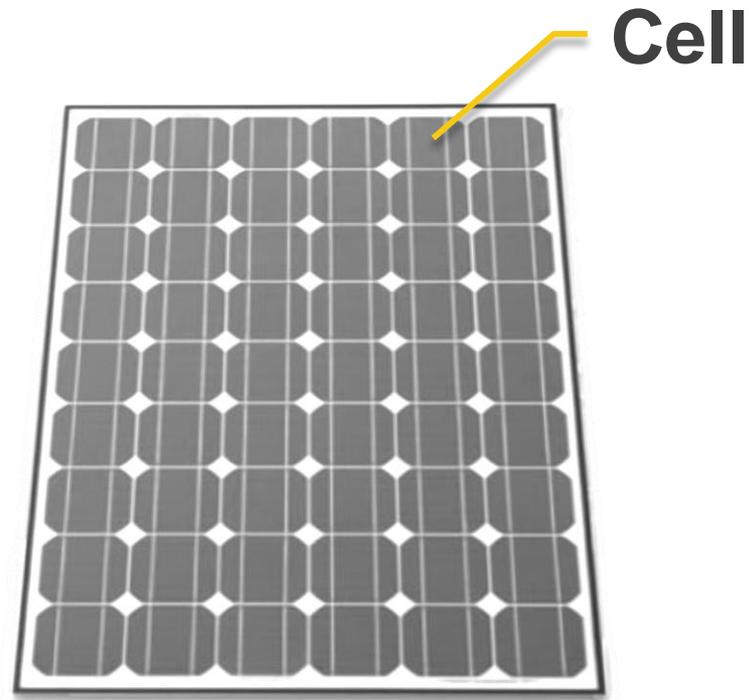


**Solar Hot Water**



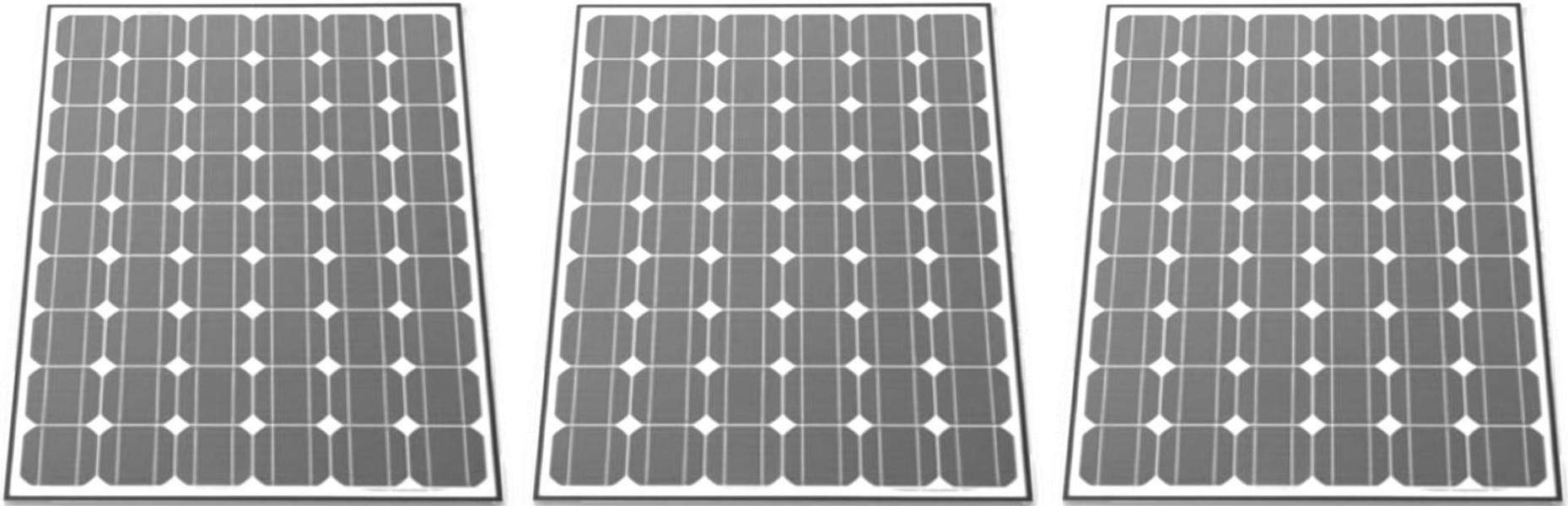
**Concentrated Solar Power**

# Some Basic Terminology



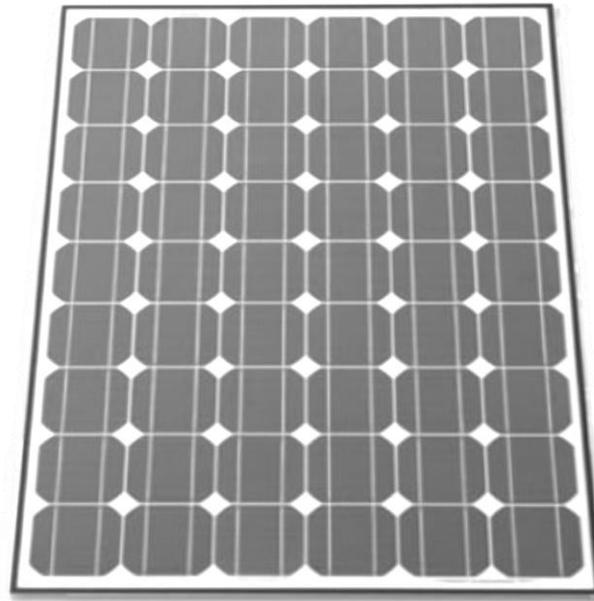
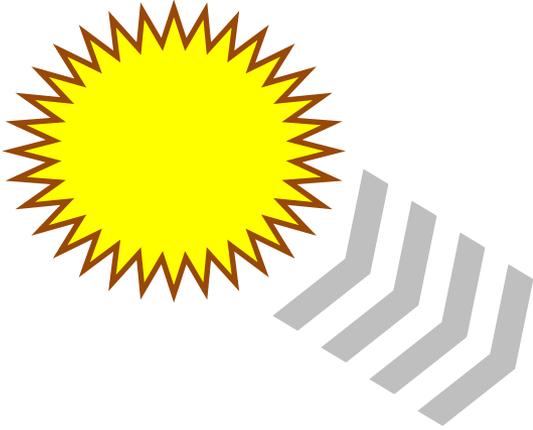
**Panel / Module**

# Some Basic Terminology



**Array**

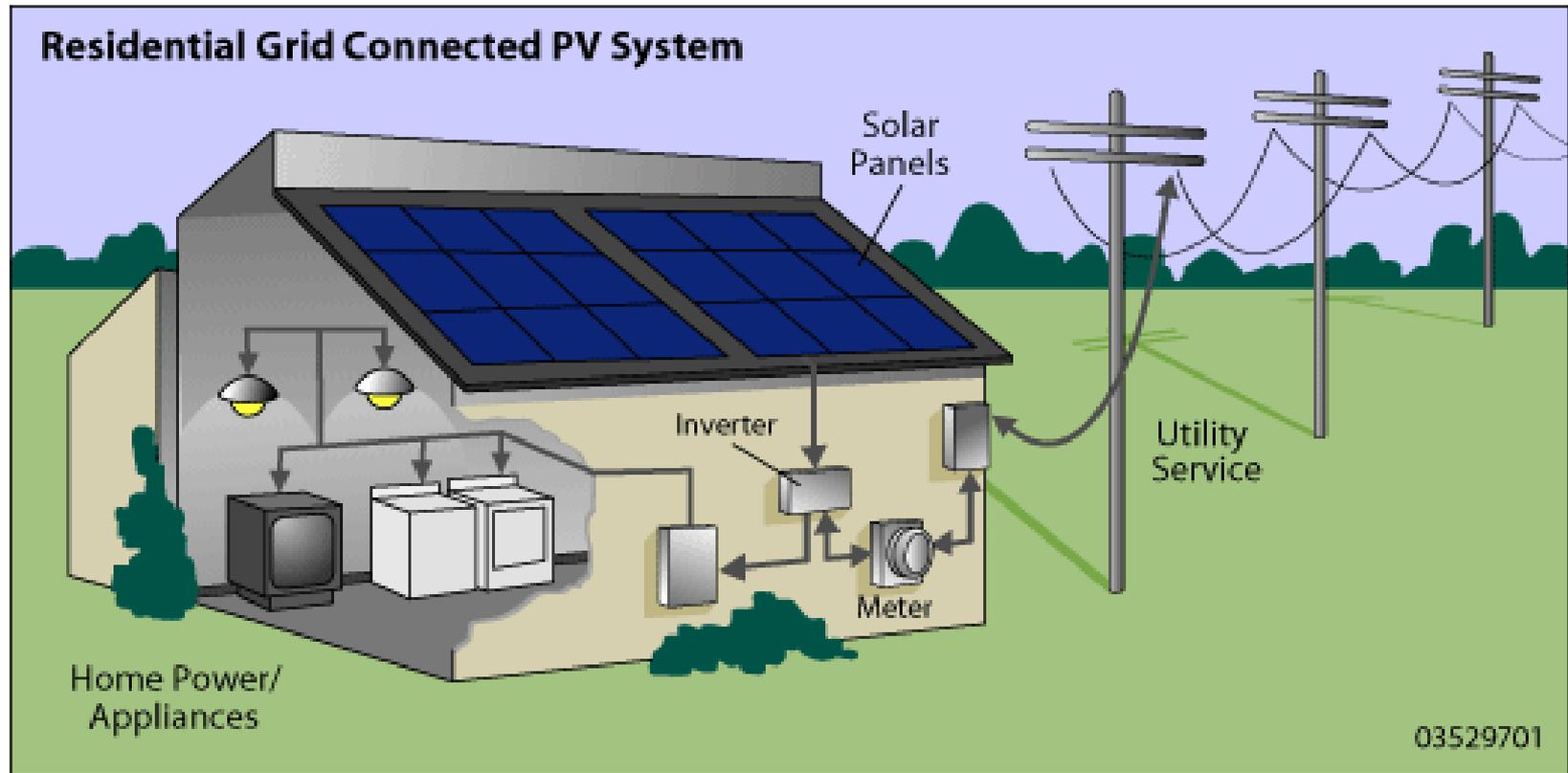
# Some Basic Terminology



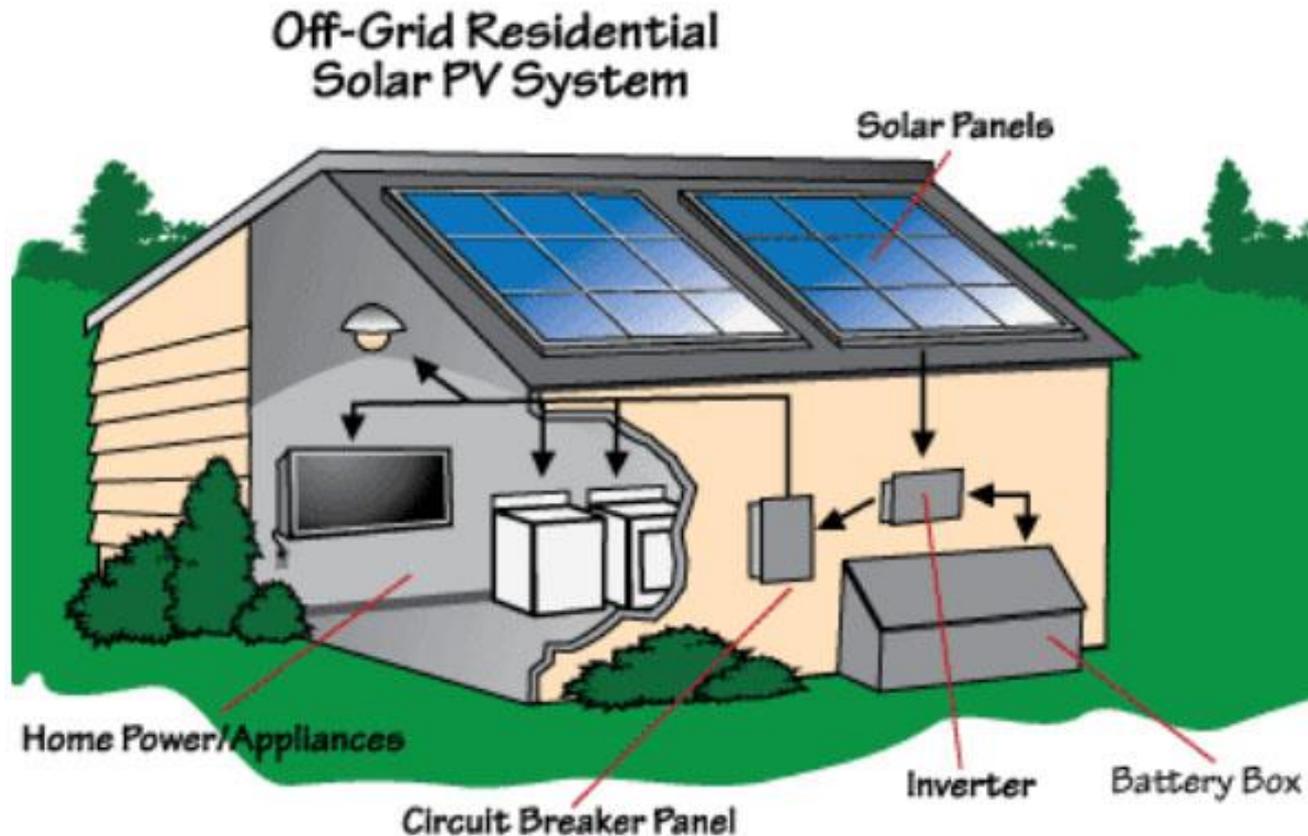
**Capacity / Power**  
*kilowatt (kW)*

**Production**  
*Kilowatt-hour (kWh)*

# System Components



# System Components



# Scale



**Residence**  
5-10 kW



**Factory**  
1 MW+



**Office**  
50 – 500 kW



**Utility**  
2 MW+

# System Types

## Roof Mount



## Ground Mount



## Parking Canopy



# Ownership Options for Solar

Direct  
Ownership

Third-Party  
Ownership

# Direct Ownership



# Direct Ownership

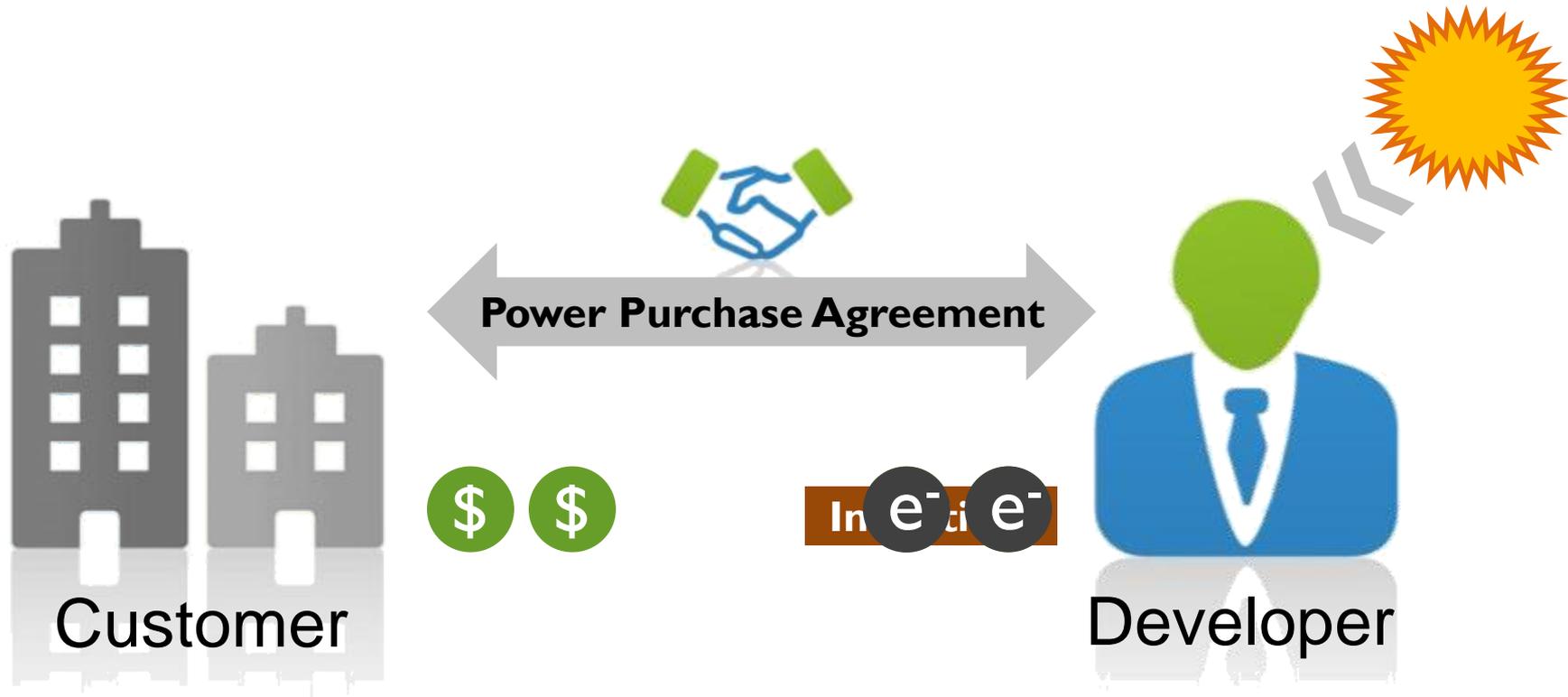
## Cost

- Installed cost
- Maintenance
- Customer bears risk

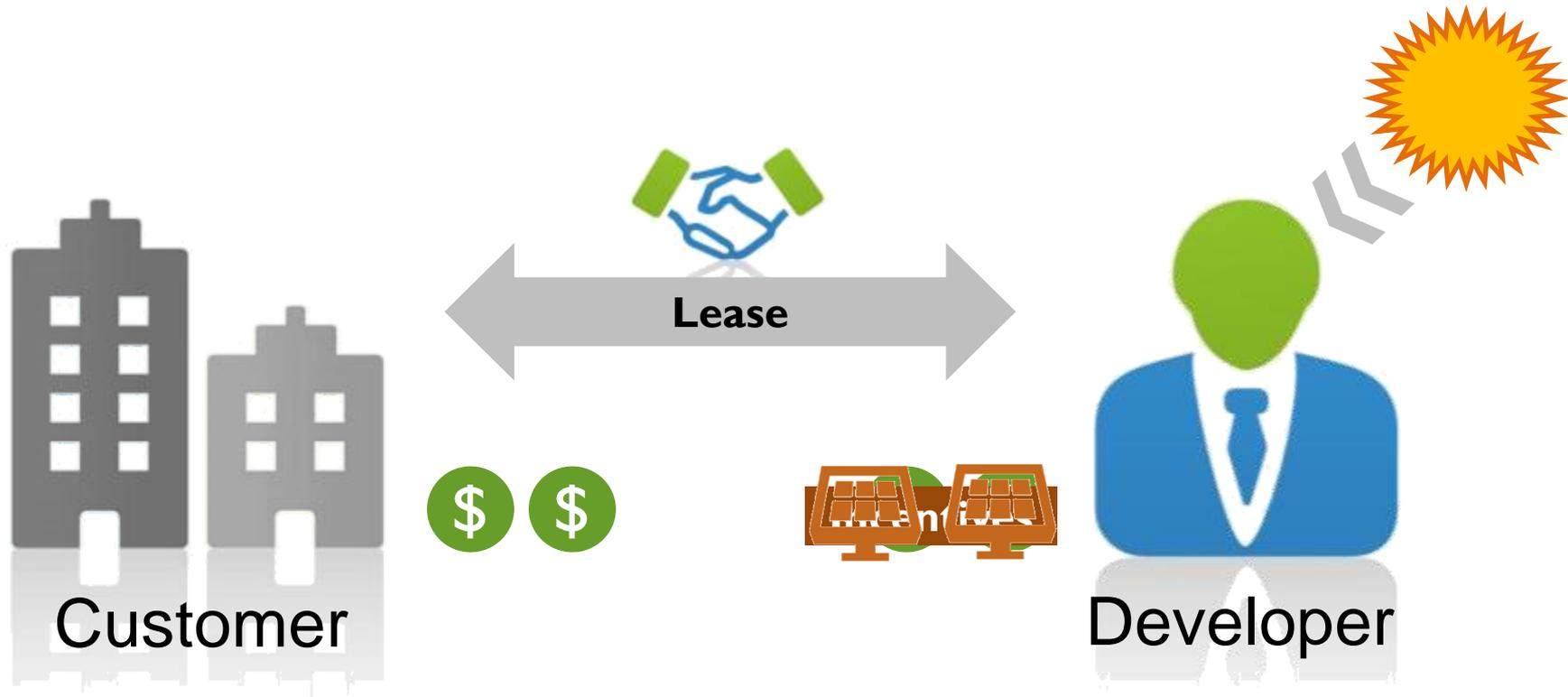
## Benefit

- + Avoided energy cost
- + Excess generation
- + Direct incentive

# Third Party Ownership



# Third Party Ownership



# Third Party Ownership

## Cost

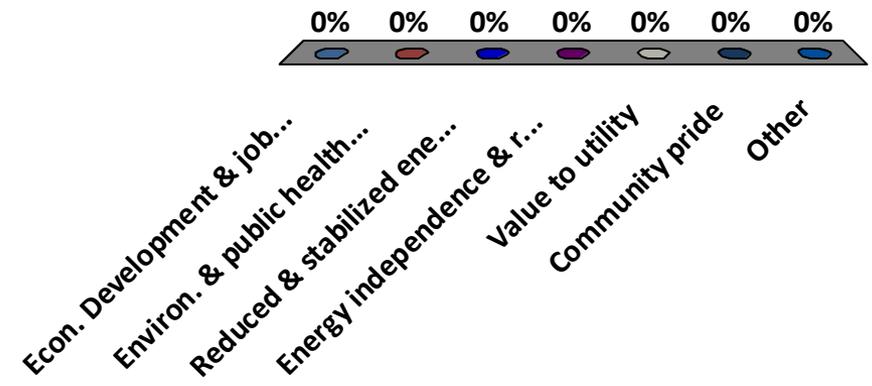
- Investor needs higher ROI
- Must be addressed when selling home

## Benefit

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

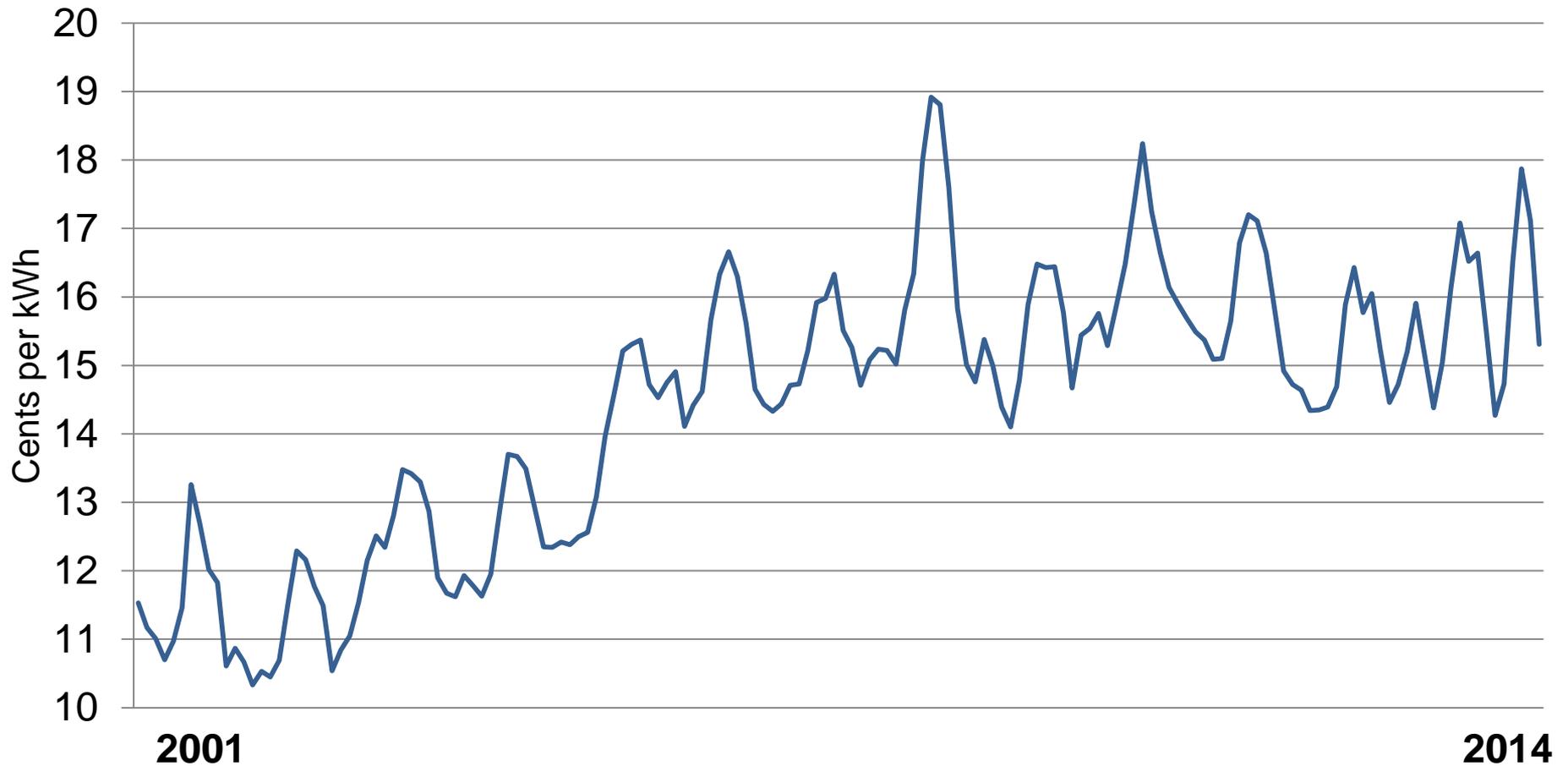
# What are the top 3 benefits solar can bring to your community?

- A. Econ. Development & job creation
- B. Environ. & public health benefits
- C. Reduced & stabilized energy costs
- D. Energy independence & resilience
- E. Value to utility
- F. Community pride
- G. Other



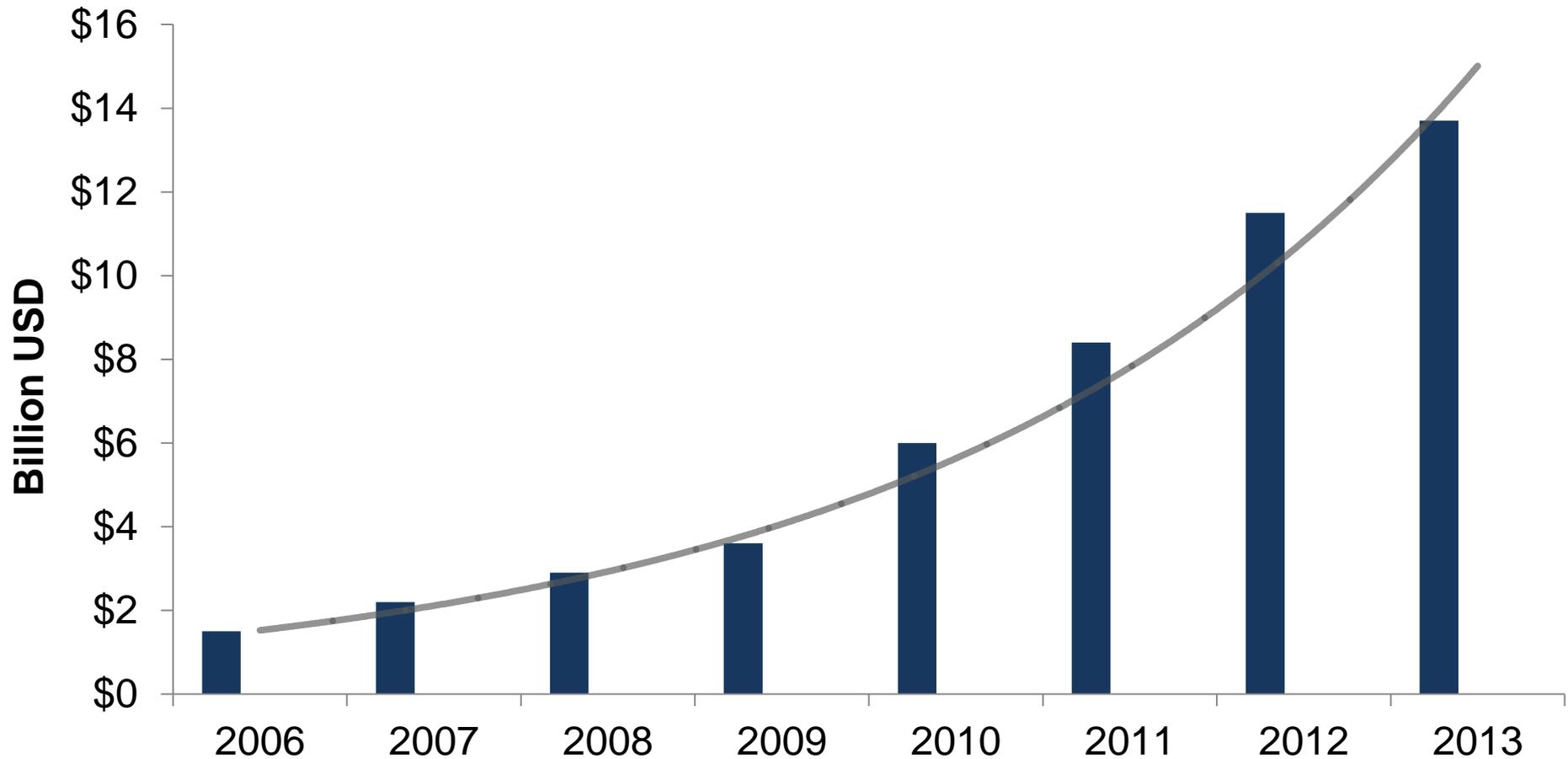
# Mitigate Energy Price Risk

Average Retail Price of Electricity in New York



Source: [US Energy Information Administration](#)

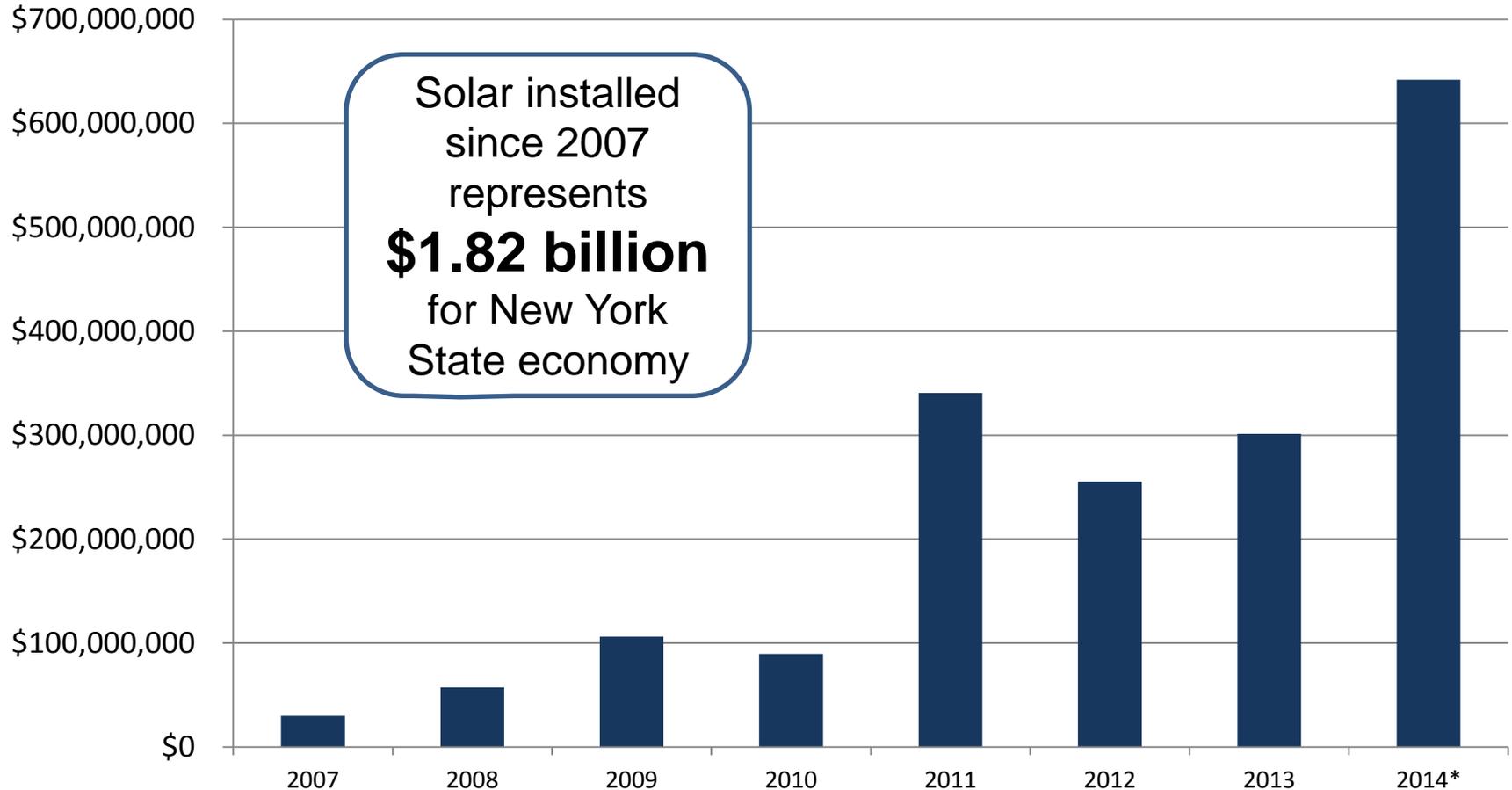
# US Solar Market Value



Source: SEIA/GTM Research – [2009/2010/2011/2012/2013 Year in Review Report](#)

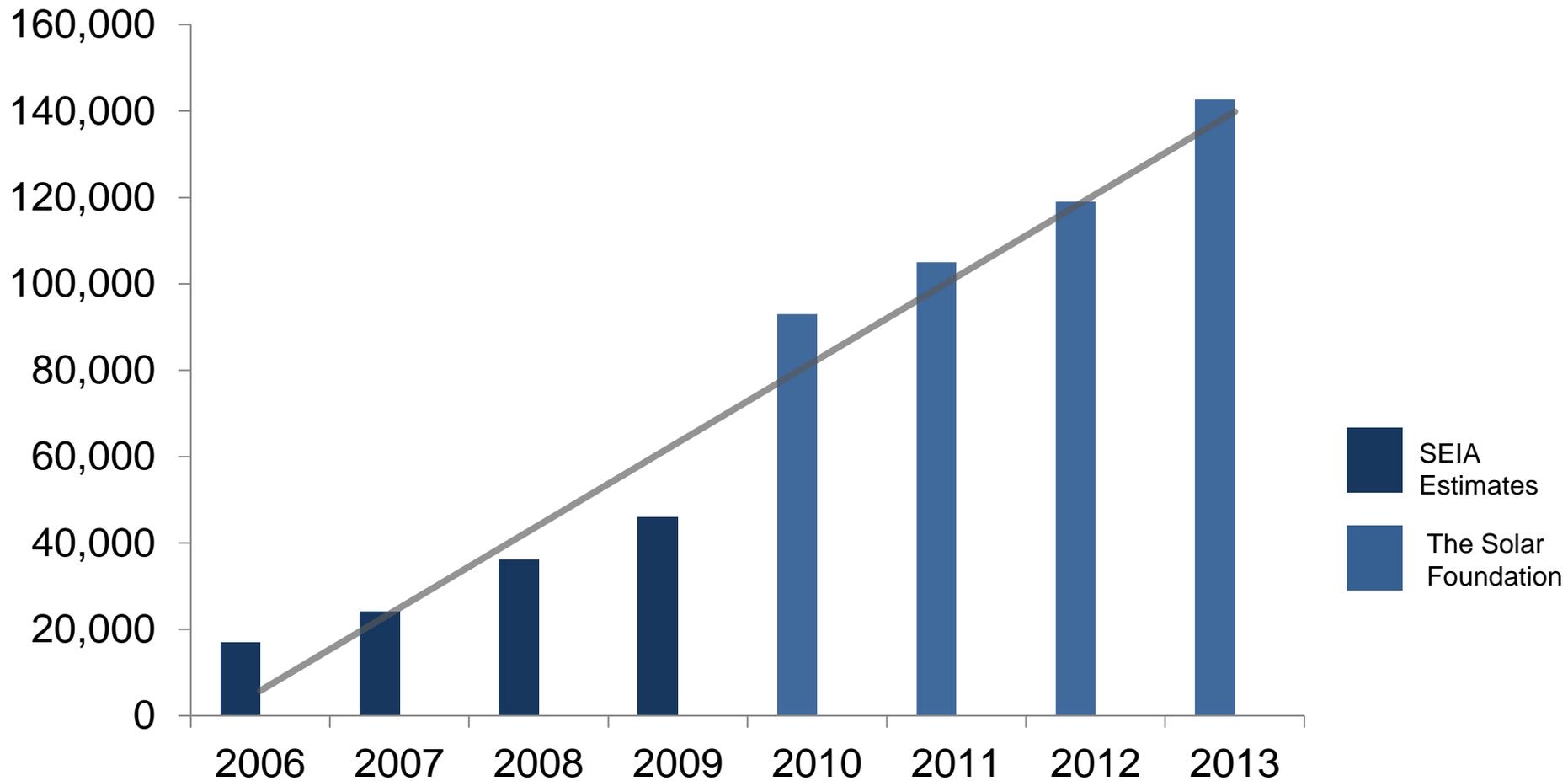
# Value of Installed Solar in NY by Year

Value of Installed Solar by Year



\* 2014 figures through 9/1/2014 based on CUNY Pyramid, NYSERDA and LIPA data

# Solar Job Growth in the US



Source: SEIA Estimates (2006-2009), The Solar Foundation's National Solar Jobs Census 2010 (2010), The Solar Foundation's National Solar Jobs Census 2013 (2011-2013).

# Agenda

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# Solar Jobs in NY

*There are approximately*

**415 solar companies**

*that employ*

**5,000 people**

# Quick Facts on NY Solar Market

**# 8** in solar installations in 2014<sup>1</sup>

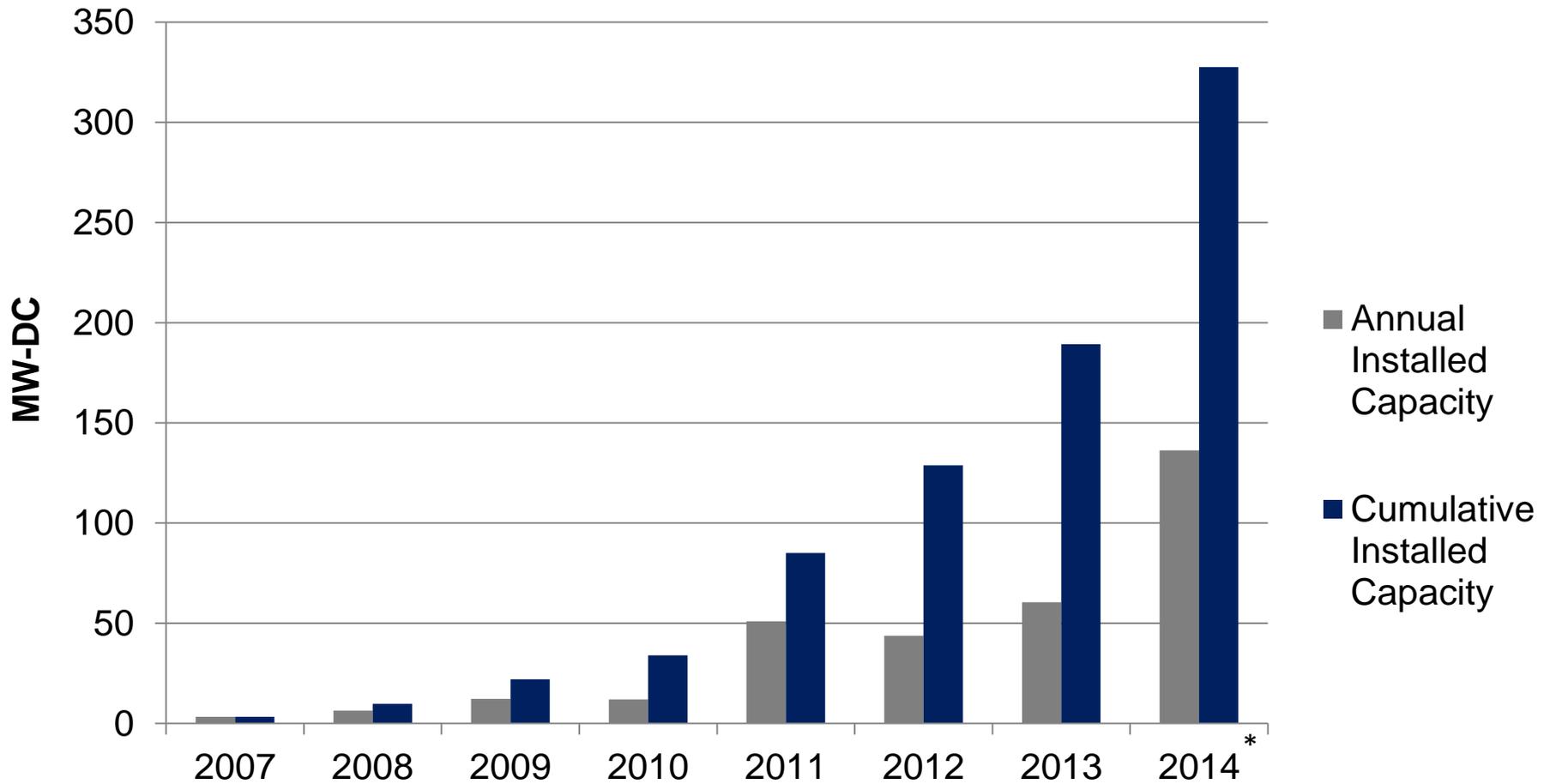
**# 5** in solar jobs across US<sup>2</sup>

**5,000** solar jobs<sup>2</sup>

**328 MW** has been installed or is under contract since start of NY-Sun Initiative<sup>3</sup>

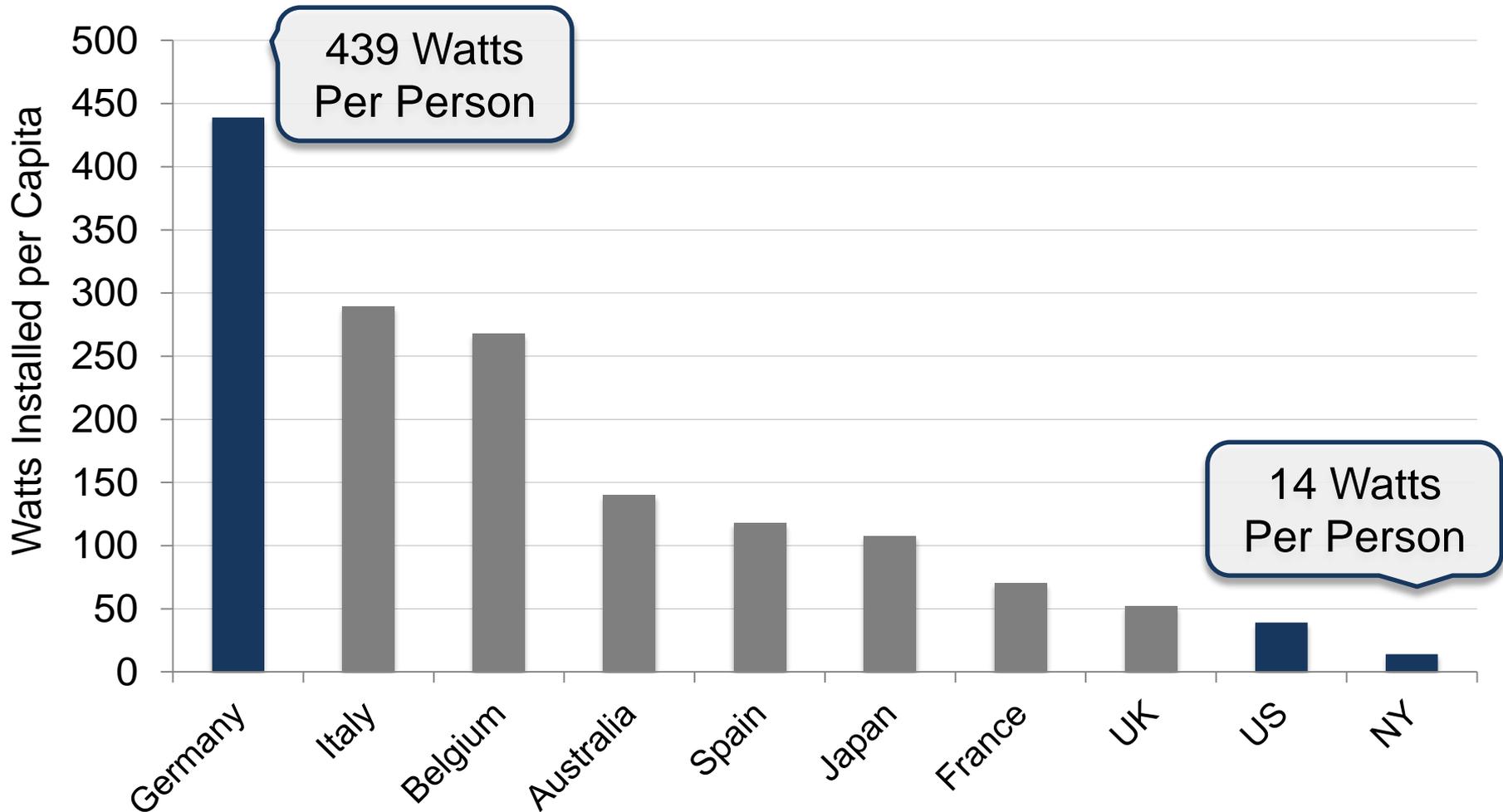
Source: 1. SEIA; 2. The Solar Foundation; 3. NYSERDA, LIPA Incentive Data, LI Solar Farm, NYPA & Con Edison

# NY State Solar Market



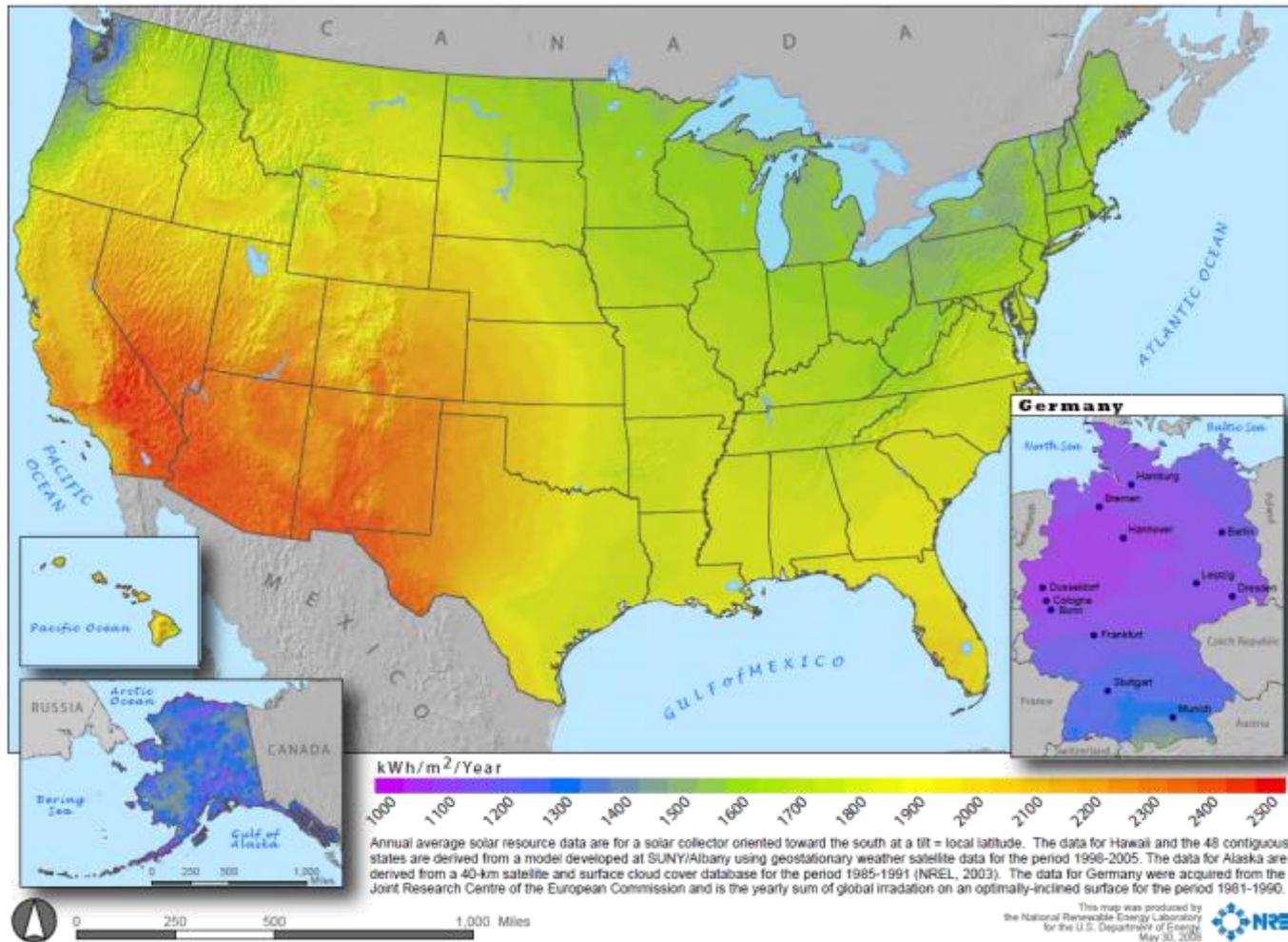
\* 2014 figures through 9/1/2014 based on CUNY Pyramid, NYSERDA and LIPA data

# Installed Capacity per Capita (2013)



Source: Ren 21. Renewables 2014: Global Status Report. <http://www.ren21.net/ren21activities/globalstatusreport.aspx>; World Bank. Data: Population. <http://data.worldbank.org/indicator/SP.POP.TOTL>; Sherwood, L. International Renewable Energy Council. U.S. Solar Market Trends Report: 2013: <http://www.irecusa.org/publications/>; US Census Bureau <http://www.census.gov/popest/data/state/totals/2013/index.html>

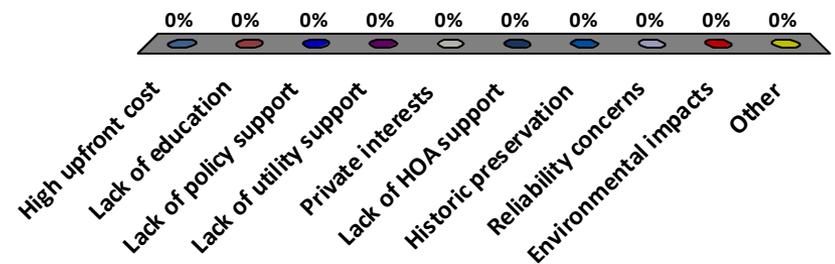
# Solar Resource in US & Germany



Source: National Renewable Energy Laboratory

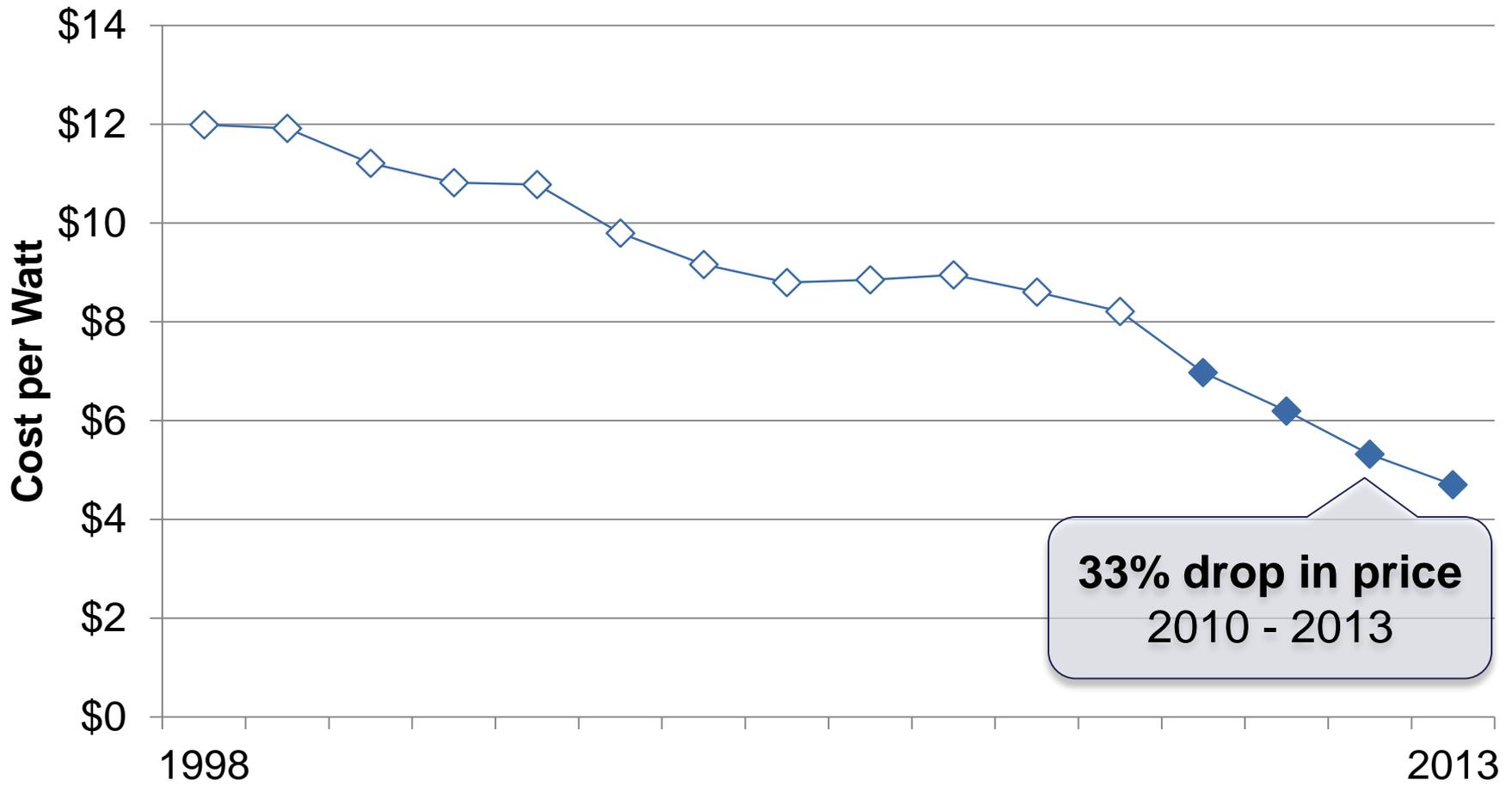
# What are the top 3 barriers to solar in your community?

- 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 impacts
- J. Other



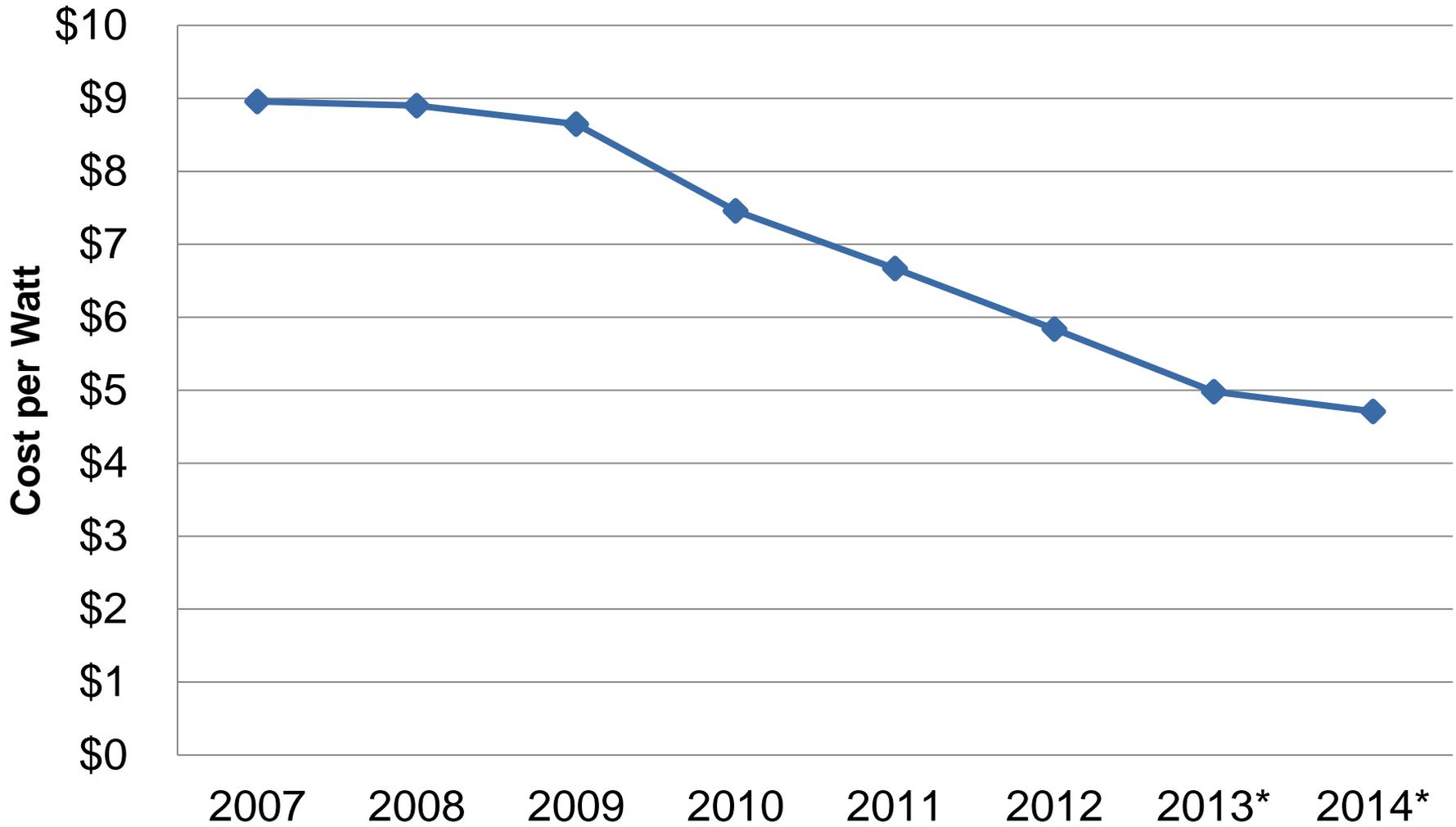
# US Residential Solar PV Cost

## US Average Installed Cost for Behind-the-Meter PV



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

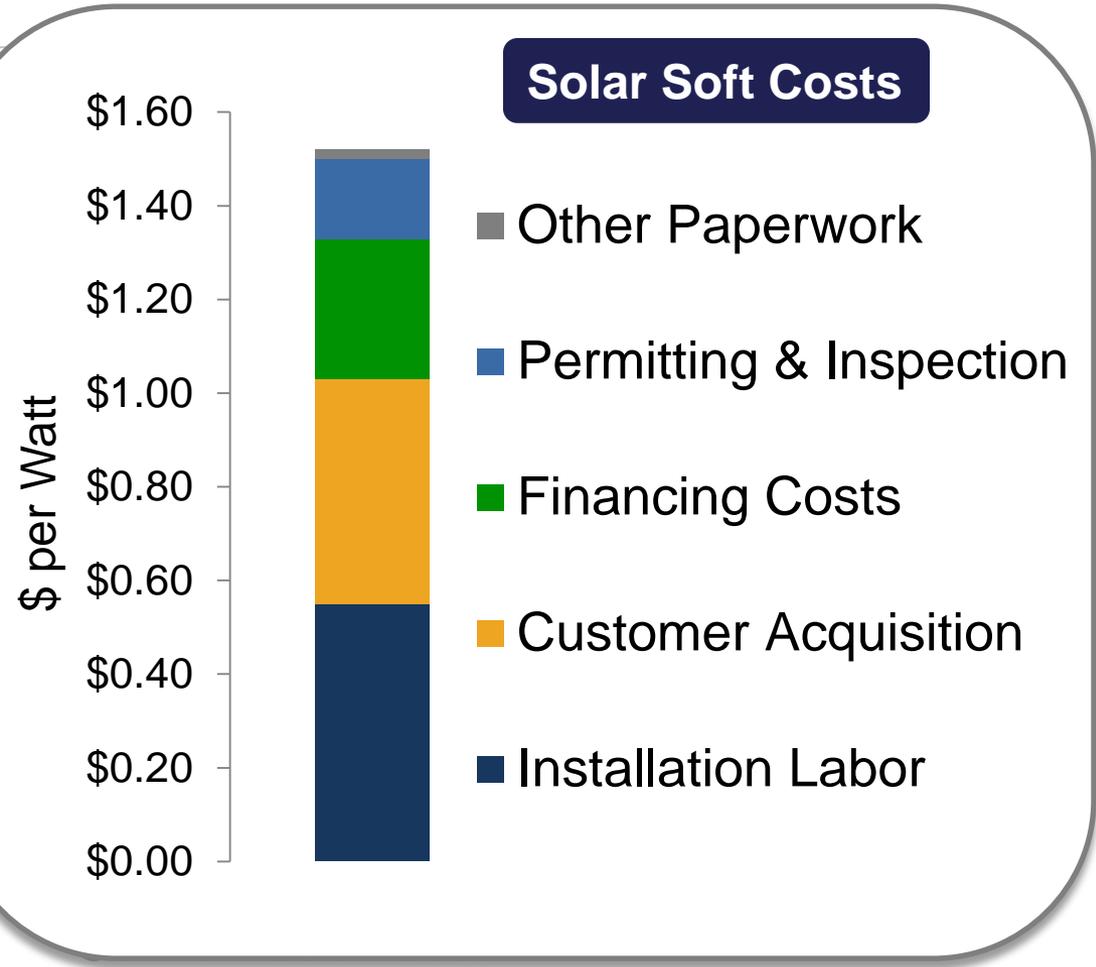
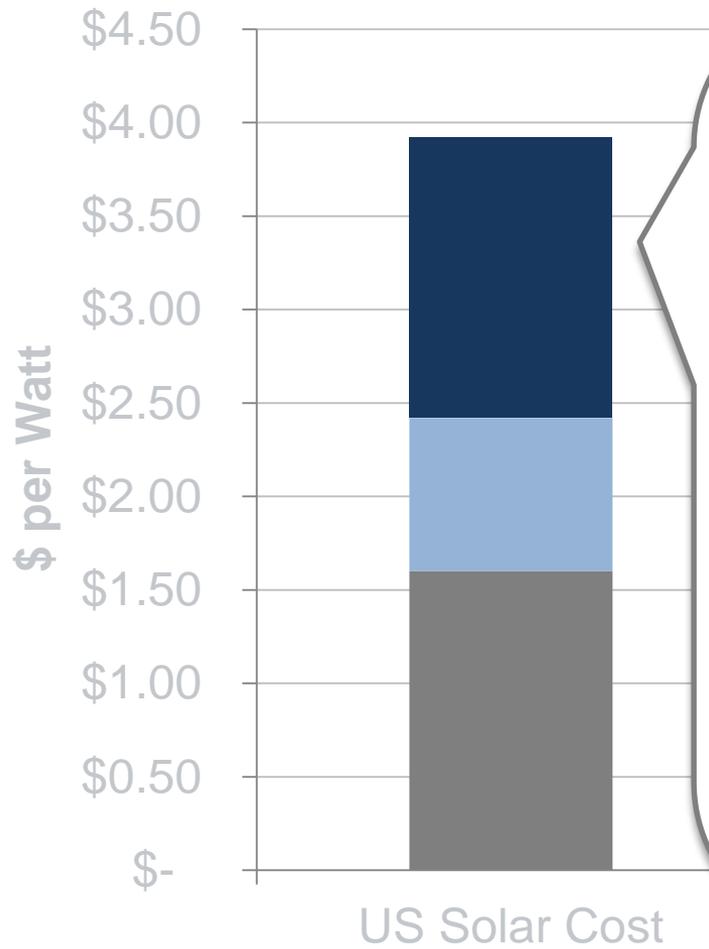
# NY Weighted Avg Installed Cost



\* 2013 figures through 11/7/2013; 2014 estimate based on NYSERDA and LIPA data through May 2014

Source: NYSERDA Clean Power Estimator and LIPA data

# US Solar Costs



# Challenge: Installation Time



**USA**

**60+ days**

From inception to completion



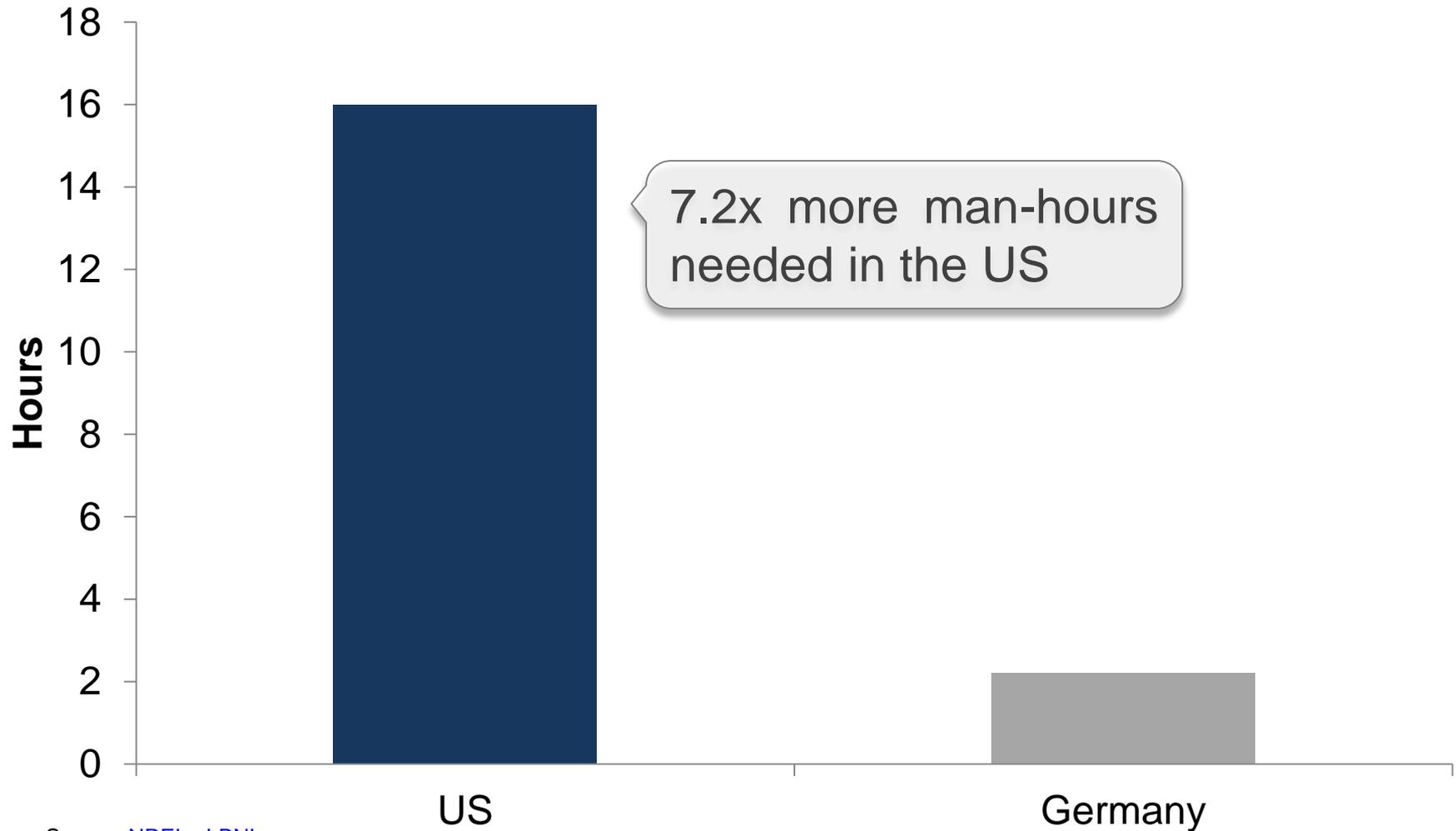
**Germany**

**8 days**

From inception to completion

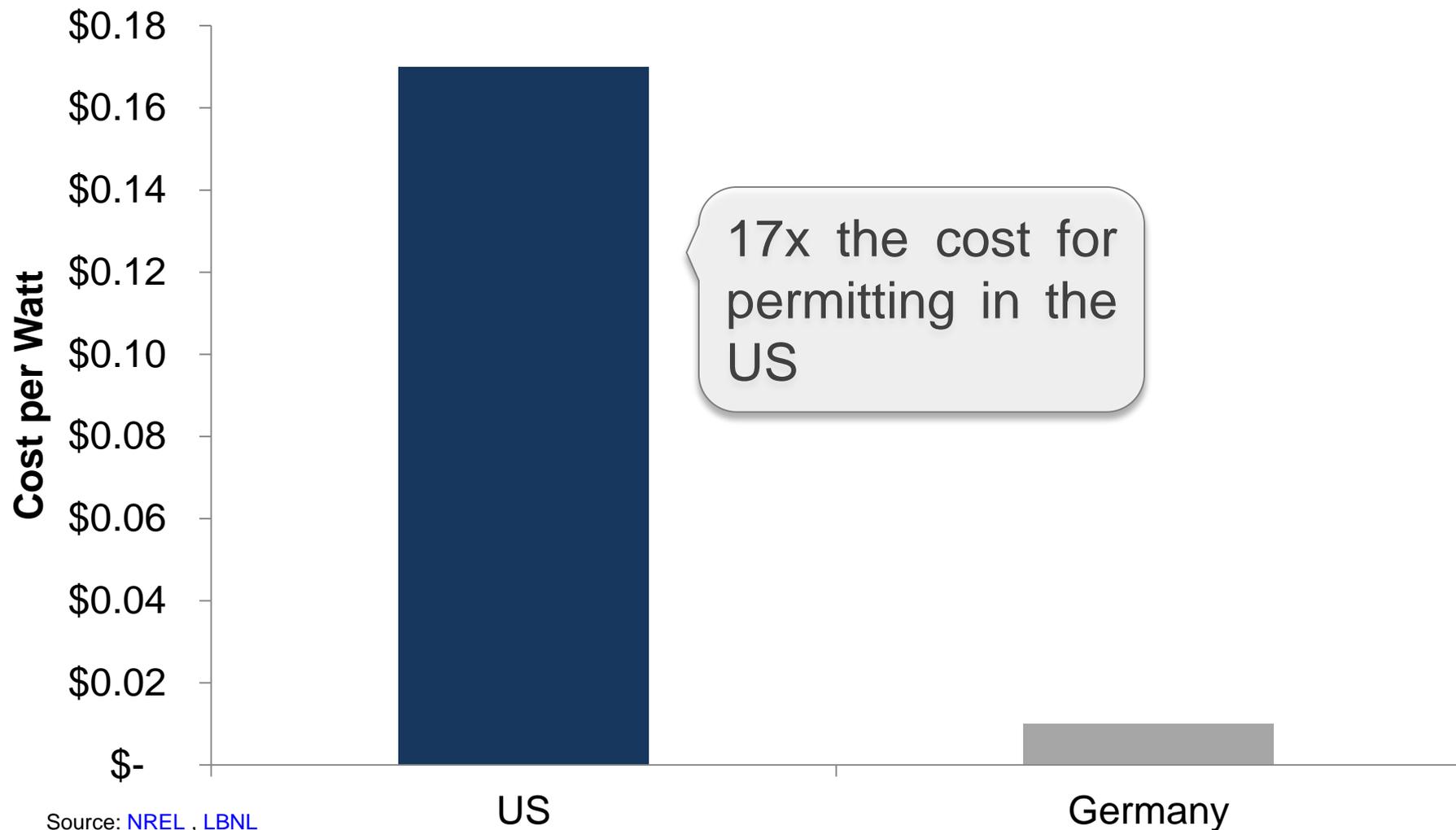
Source: US: [Clean Power Finance](#), 2012;  
Germany: Photon Magazine, 2013

# Time to Permit an Installation



Source: [NREL](#) , [LBNL](#)

# Cost to Permit a Solar Installation



Source: [NREL](#), [LBNL](#)

# Germany's Success

Consistency and Transparency

through a

Standardized Processes

# Why We Are Here

## Workshop Goal:

To enable policymakers to replicate successful solar practices that reduce soft costs and expand local adoption of solar energy.

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2. State of the NY Solar Market & Intro to Solar Soft Costs
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# Policies & Incentives

## Federal

Investment Tax Credit

Accelerated Depreciation

## State & Utility

Solar Tax Credit

NY-Sun Incentive Program

Net Metering

Interconnection Standards

Feed-in Tariff

## Local

Planning & Zoning

Permitting

Market Development

Financing

# Policies & Incentives

## Federal

Investment Tax  
Credit

Accelerated  
Depreciation

## State & Utility

Solar Tax Credit

NY-Sun  
Incentive  
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Development

Financing

# Investment Tax Credit

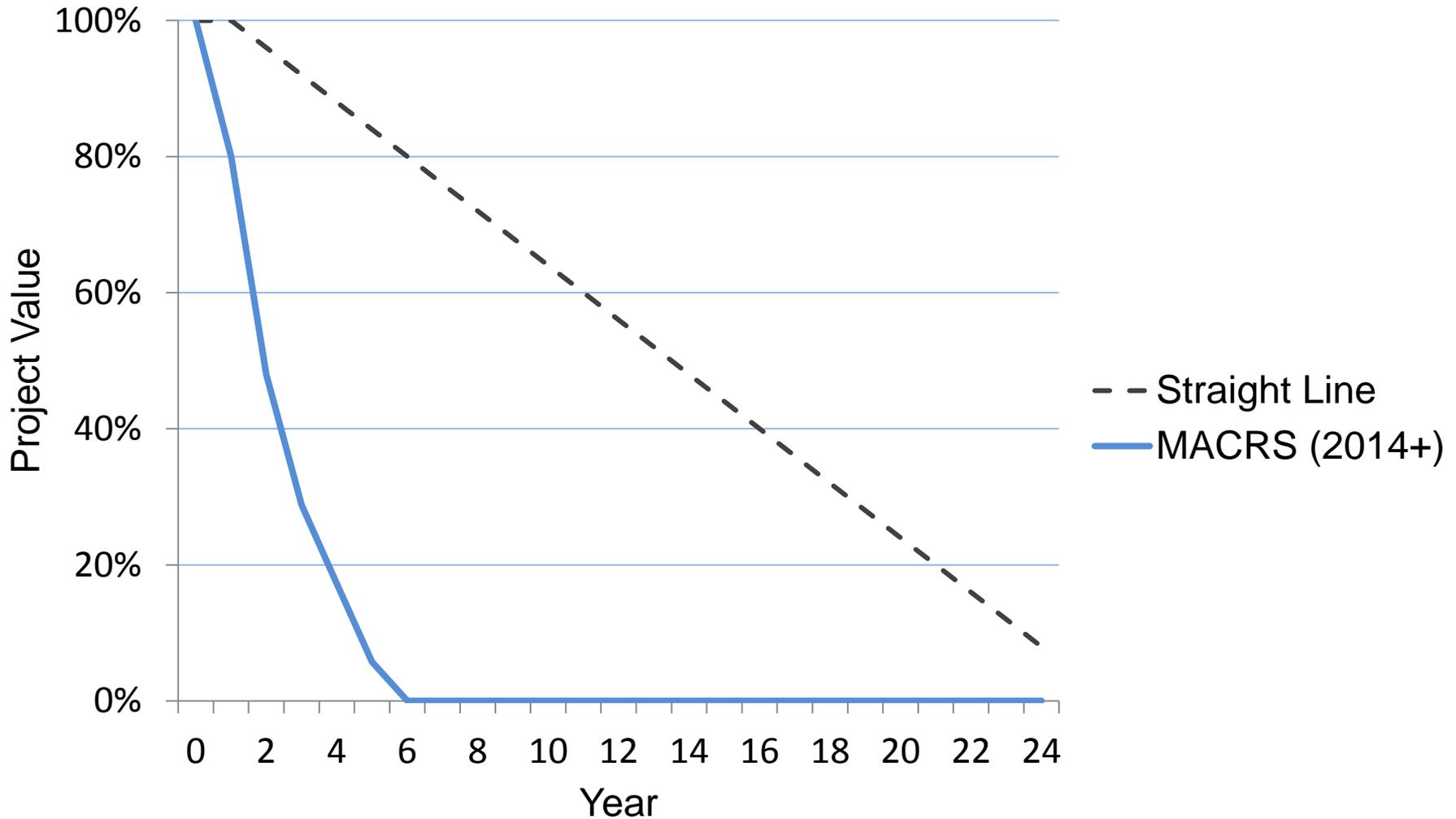
**Type:** Tax Credit

**Eligibility:** For-Profit Organization, Homeowner

**Value:** 30% of the installation cost

**Availability:** Through 2016

# Accelerated Depreciation (MACRS)



# USDA Rural Energy for America Program

Eligible to agricultural producers and rural small businesses in rural America.

- Renewable energy grant – 25% of project cost
  - Minimum of \$2,500, Maximum of \$500,000
- Energy efficiency grant – 25% of project cost
  - Minimum of \$1,500, Maximum of \$250,000
- Loan Guarantees of 75% of project cost up to \$25 million

[Find out more here: http://www.rurdev.usda.gov/bcp\\_reap.html](http://www.rurdev.usda.gov/bcp_reap.html)

# Policies & Incentives

## Federal

Investment Tax Credit

Accelerated Depreciation

## State & Utility

Solar Tax Credit

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Interconnection Standards

Feed-in Tariff

## Local

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Permitting

Market Development

Financing

# Residential Solar Tax Credit

**Type:** Tax Credit

**Eligibility:**

- Homeowner: 25kW
- Condo association or cooperatives: 50 kW

**Value:** 25% of the system cost or \$5,000

# NY-Sun Incentive Program: MW Block

**Type:** Cash incentive

## Structure & Eligibility

Three Regions:

- Con Edison (New York City and South Westchester)
- Long Island
- Upstate (the rest of New York State)

Three Sectors:

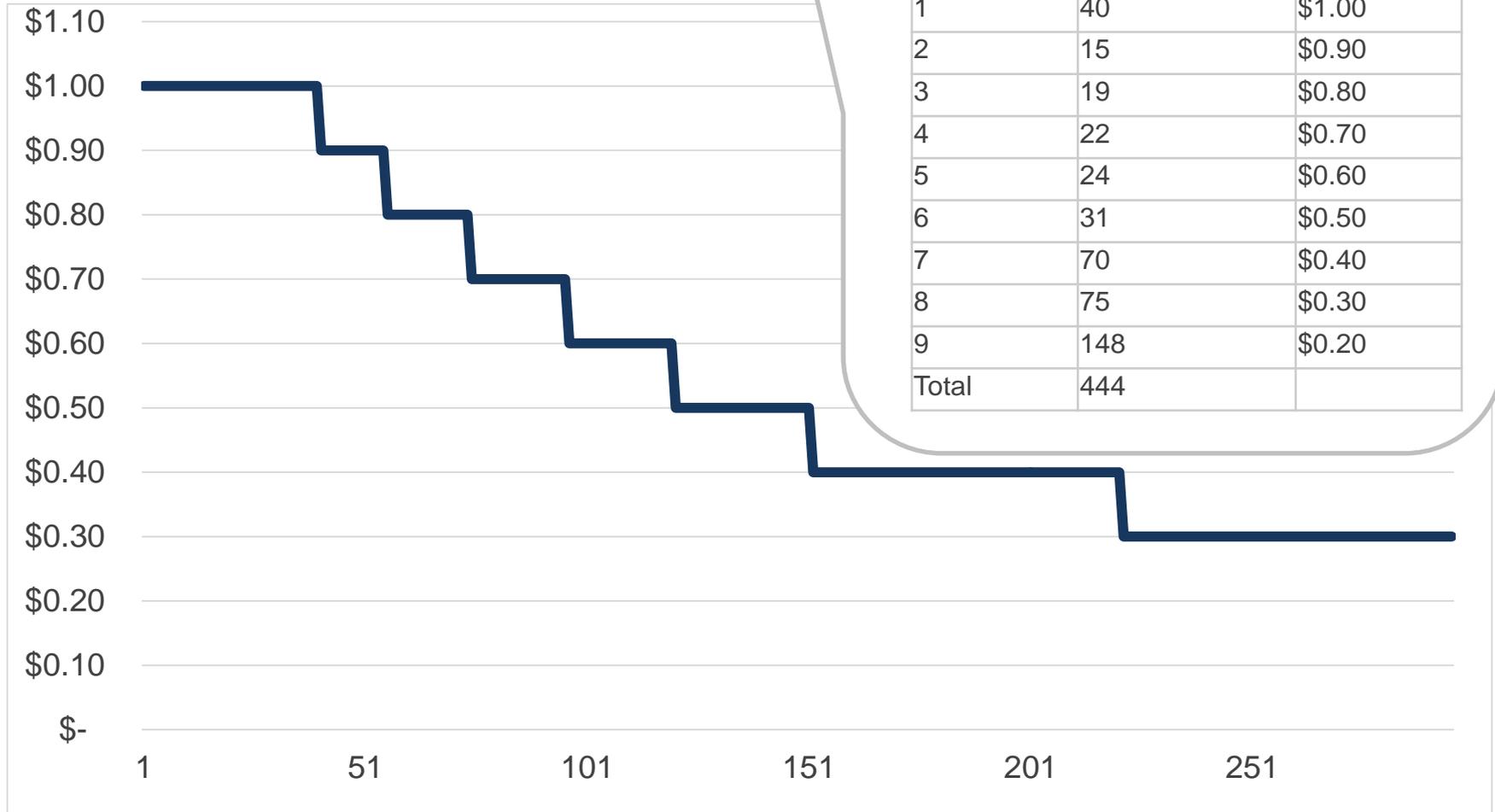
- Residential: up to 25 kW
- Small Non-residential: up to 200 kW
- Large Non-residential: > 200 kW (available 2015)

**Value:** Determined by declining megawatt blocks

**Availability:** Dec 29, 2023 or until funds run out

# NY-Sun Incentive Program: MW Block

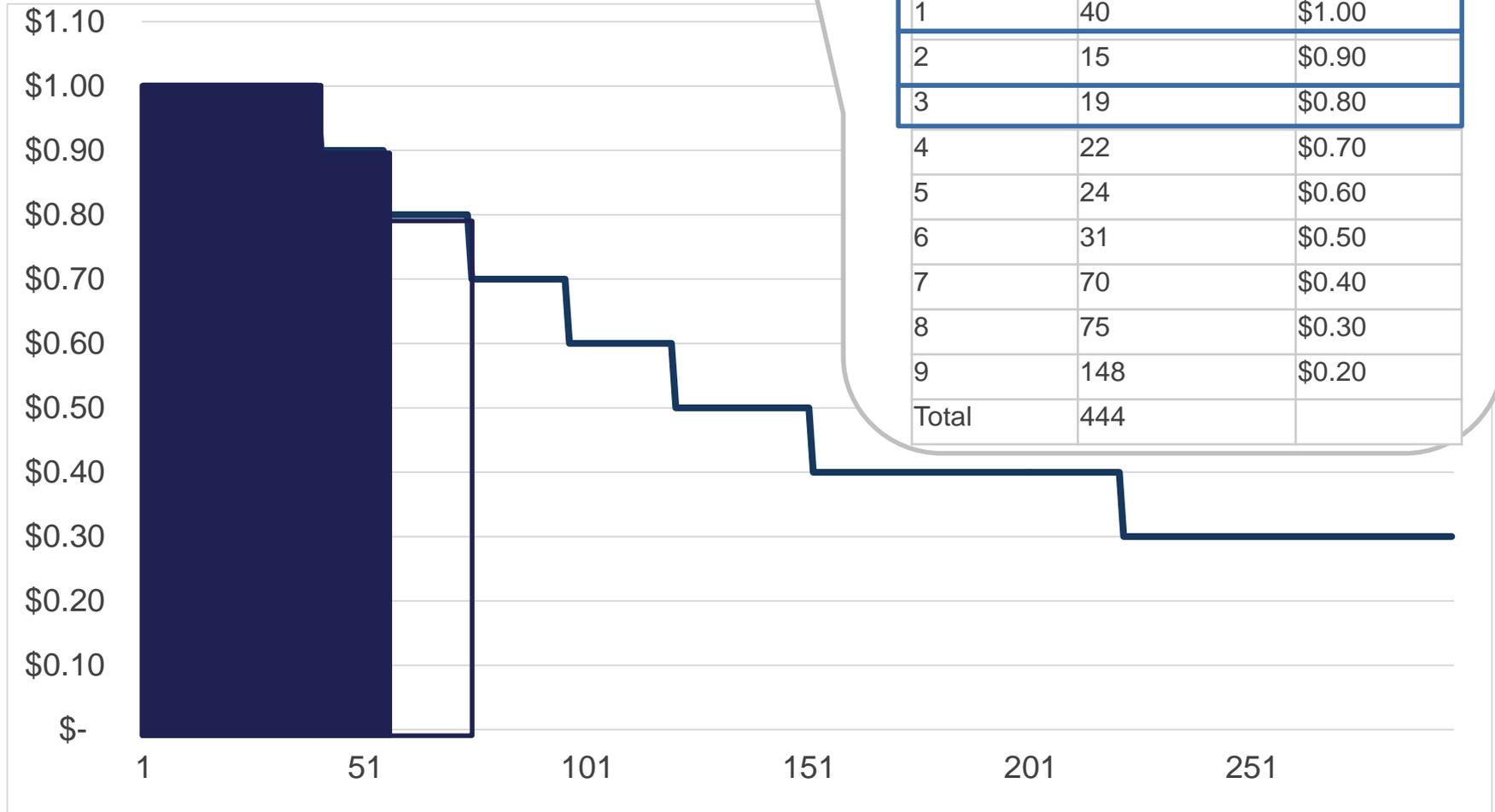
## Upstate Residential MW Block Incentive



BLOCK	MEGAWATTS	INCENTIVE/WATT
1	40	\$1.00
2	15	\$0.90
3	19	\$0.80
4	22	\$0.70
5	24	\$0.60
6	31	\$0.50
7	70	\$0.40
8	75	\$0.30
9	148	\$0.20
Total	444	

# NY-Sun Incentive Program: MW Block

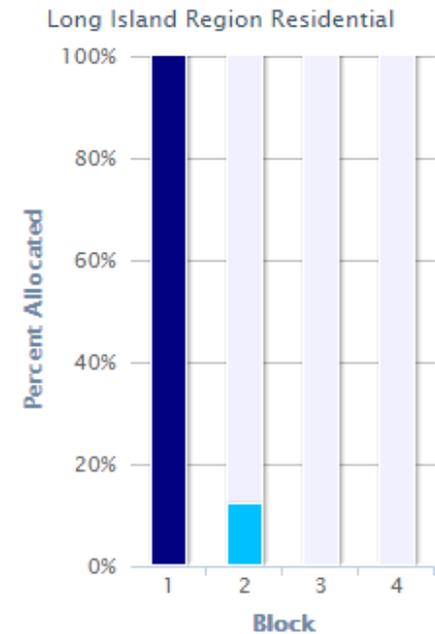
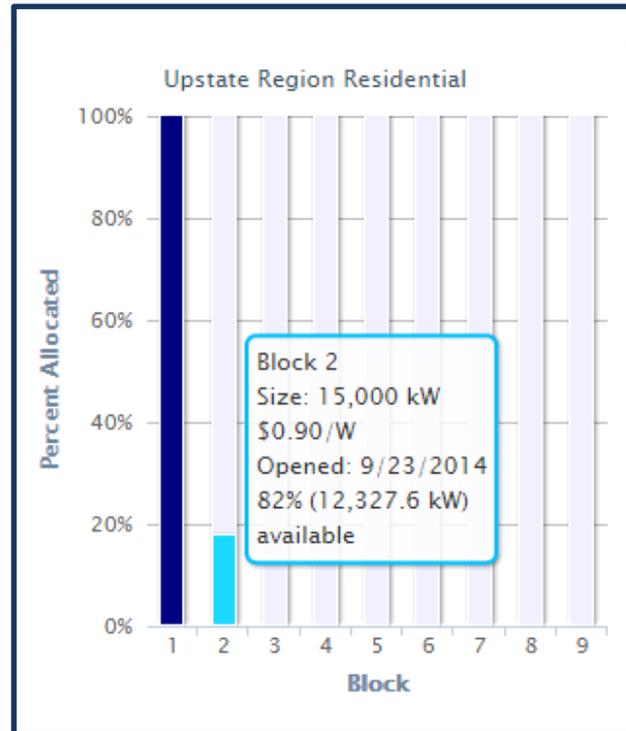
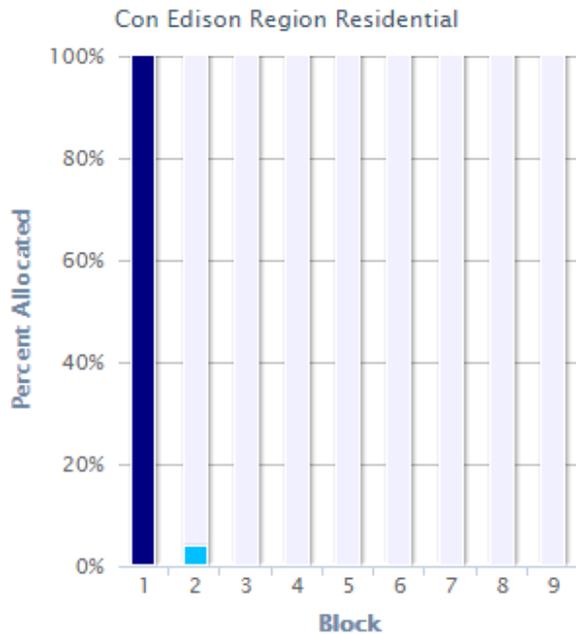
## Upstate Residential MW Block Incentive



# NY-Sun Incentive Program

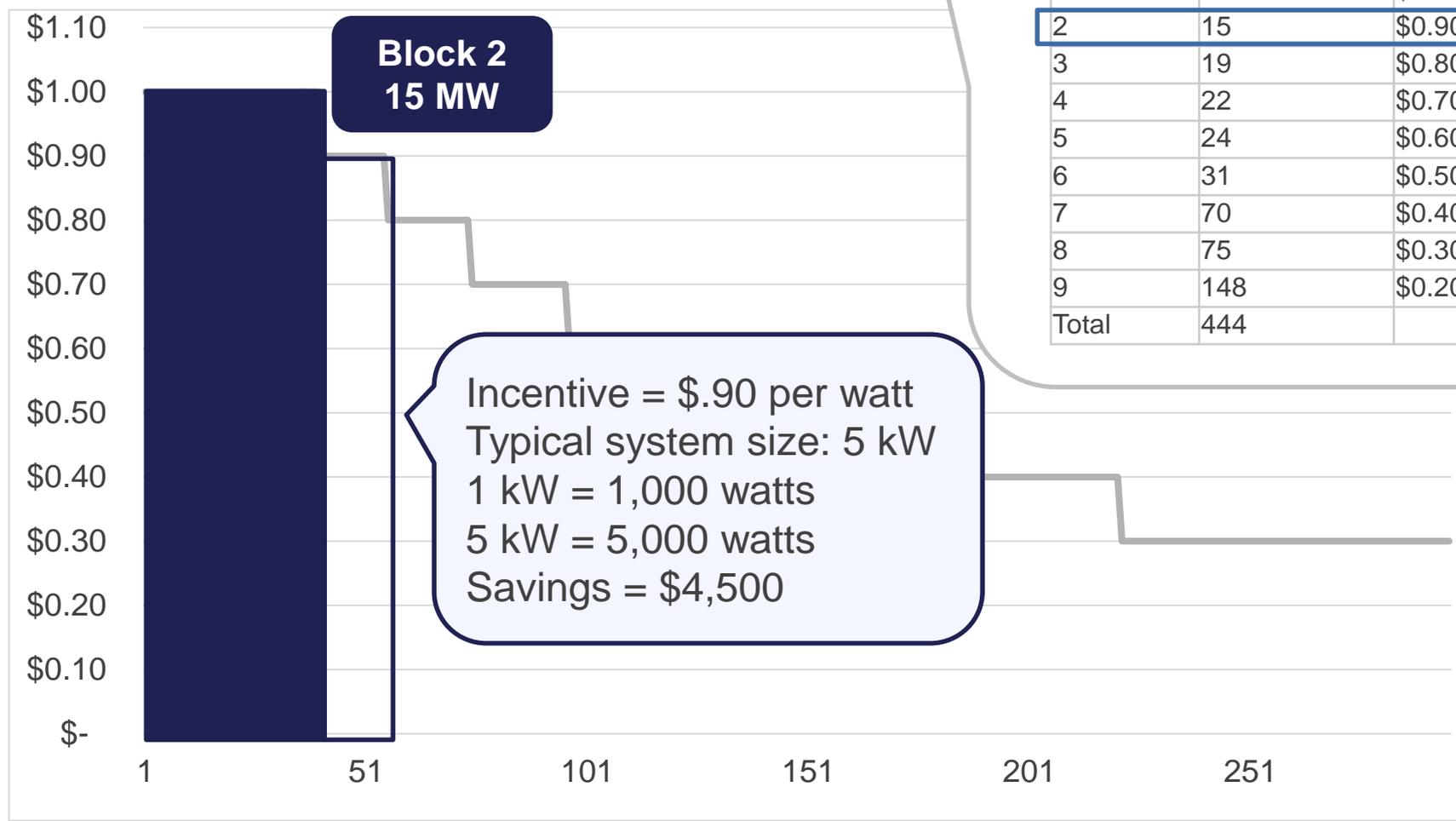


Refresh



# NY-Sun Incentive Program: MW Block

## Upstate Residential MW Block Incentive



# NY-Sun Incentive Program

Series of low-interest loan options

Green Jobs, Green New York -  
NYSERDA:

- On-bill recovery loans
- Residential smart energy loan
- Small commercial participation loan

For more information:

[www.nyserda.ny.gov](http://www.nyserda.ny.gov)

# Net Metering

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

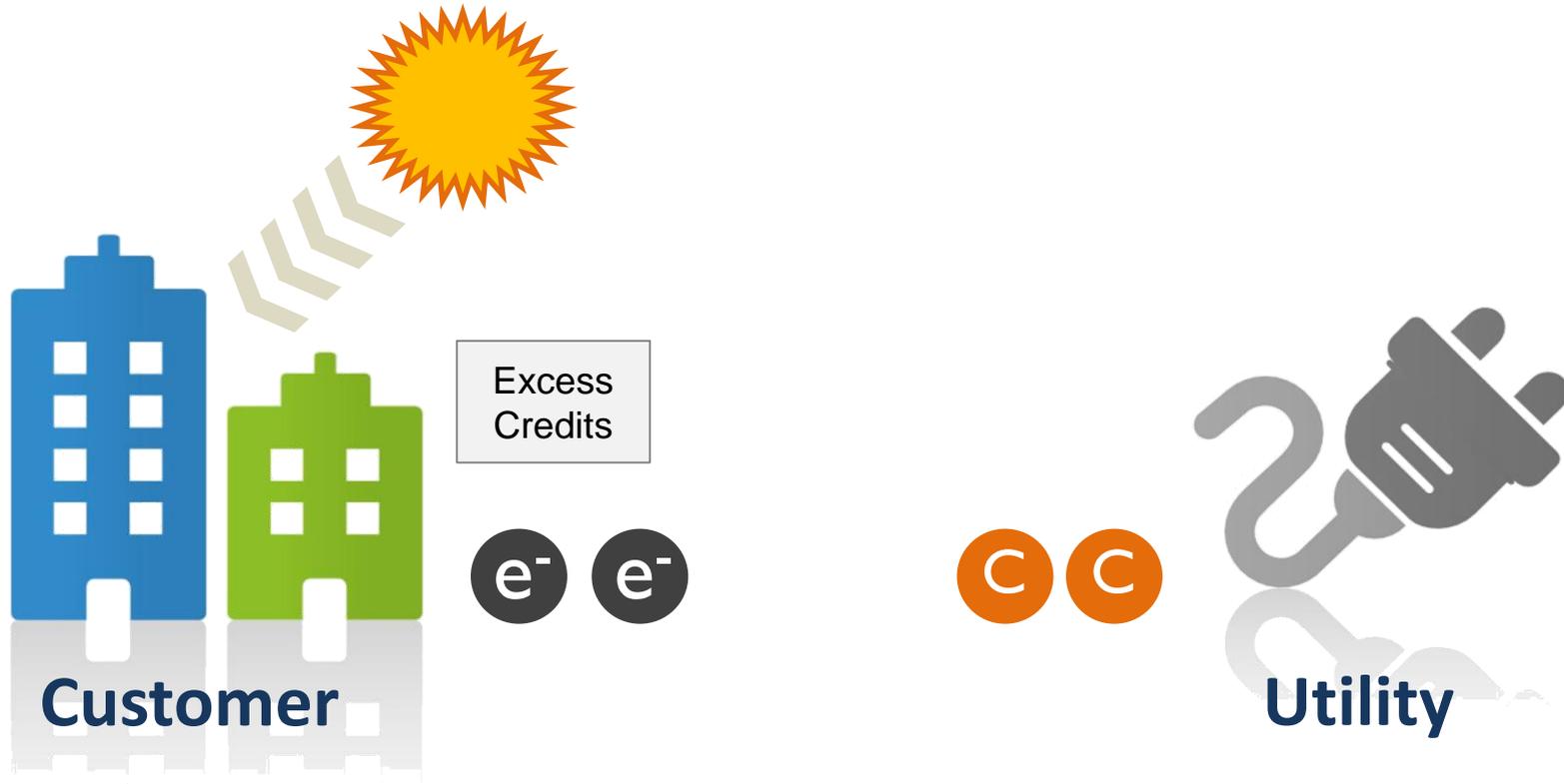
# Net Metering

*Morning*



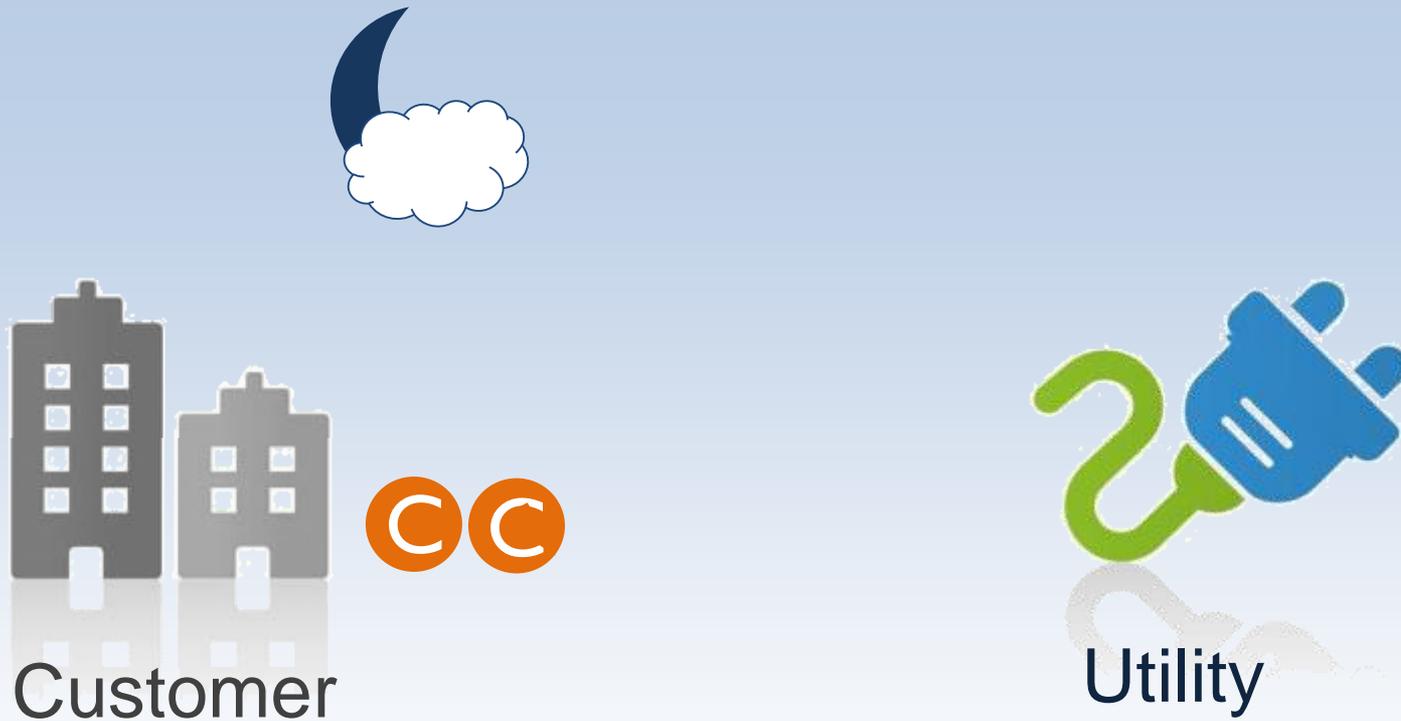
# Net Metering

*Afternoon*



# Net Metering

*Night*



Solar credits can cover up to 100% of the customer's load

# Net Metering in New York



## Utilities

Investor Owned Utilities



## Aggregate Limit

3% of your utility's  
2005 peak load



## System Capacity Limit

25 kW residential  
2 MW non-residential



## Credit Value

Retail Rate



## Reconciliation

After 1 year  
Avoided Cost of Power Rate

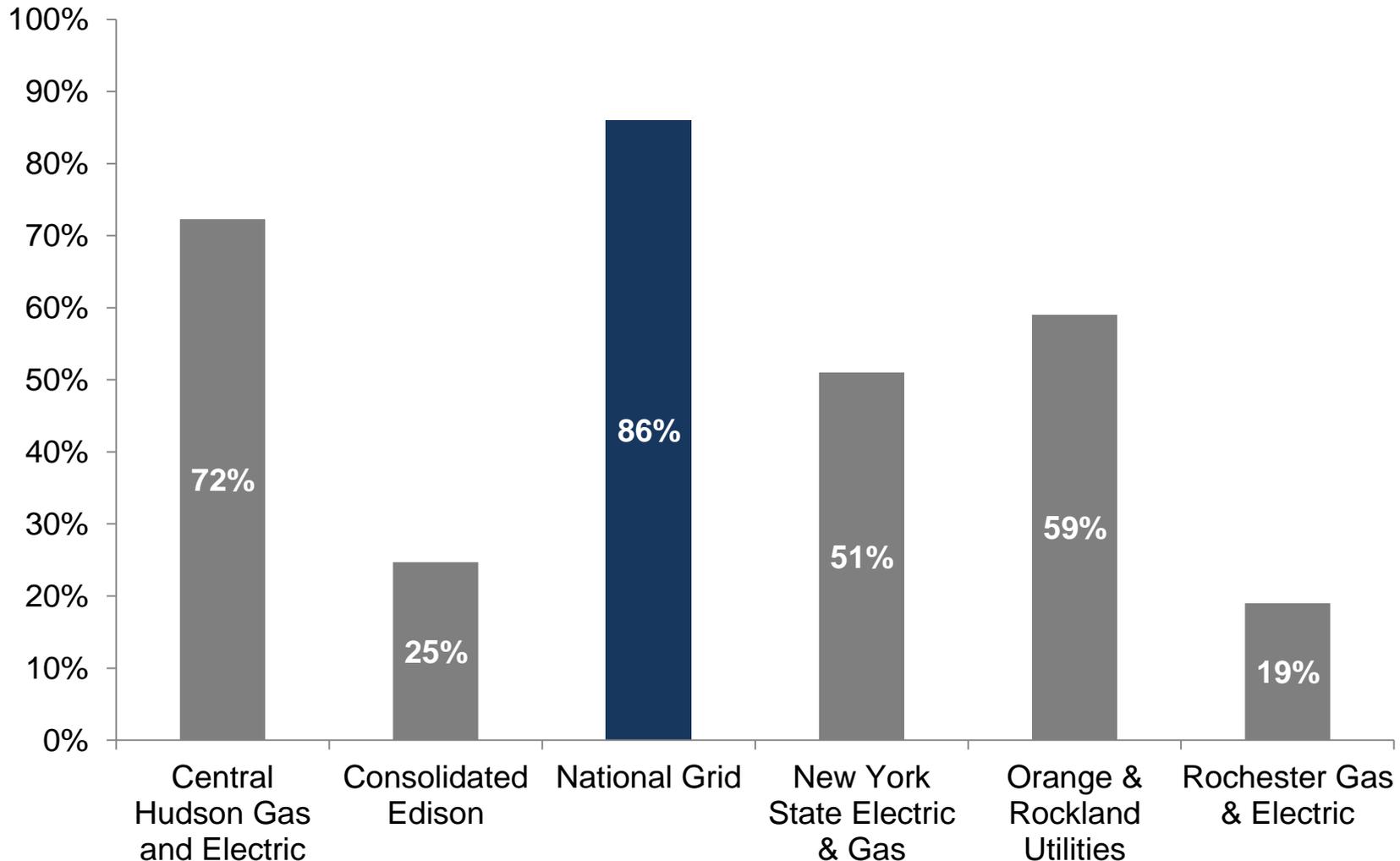
# Example Net Metering Bill with Credit

July Reading (Actual)		56351	
June Reading (Actual)		-56,451	
Total Usage KWh 32 Days		-100	Credit
<b>Net Metering Summary</b>			
Prior Credit	-50		
Actual Metered Kwh	-100		
New Cumulative Credit	-150		
Billed KWH	0		
Anniversary Month	April	<b>Annual Reconciliation Month</b>	
<b>Delivery Charges</b>			
Basic Service Charge		19.47	<b>Cannot be offset with solar</b>
First	0 KWH @ 0.XXX	0	
Energy Cost Adj	0 KWH @ 0.XXX	0	
SBC/RPS Chg	0 KWH @ 0.XXX	0	
Government surcharges		0.5	
<b>Total Delivery Charges</b>		<b>19.97</b>	
<b>Current Electric Charges</b>		<b>19.97</b>	<b>Amount Due</b>

Prices vary

# Net Metering Capacity Tracker

*Data reported as of June 30, 2014 by the Public Service Commission*



# Net Metering

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

Source: [IREC](#)

# Remote Net Metering



- Farms and non-residential sites
- No direct connection necessary
- Must be the account holder for the multiple accounts
- Must be within same utility service territory and reasonably close to one another.
- Customer must own or lease the property on which the facilities are located.

Google Earth

# Remote Net Metering in New York

## Remote Net metering

- Currently legal
- Multiple accounts, but same account holder
- Farms and non-residential properties
- Same service utility and reasonably close to each other

## Virtual Net Metering

- Waiting legislative action
- Multiple accounts, but different account holders
- Typically permissible on both residential and non-residential properties
- Same service utility and reasonably close to each other

# Interconnection

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

# Interconnection in New York



## **Technologies**

All DG renewables



## **Utilities**

Investor Owned Utilities



## **System Capacity Limit**

25 kW simplified app.

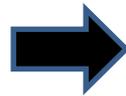
2 MW limit

# Net Metering & Interconnection NYSolar Smart

## U.S. Department of Energy SunShot Initiative Rooftop Solar Challenge II

### **Net Metering & Interconnection Working Group**

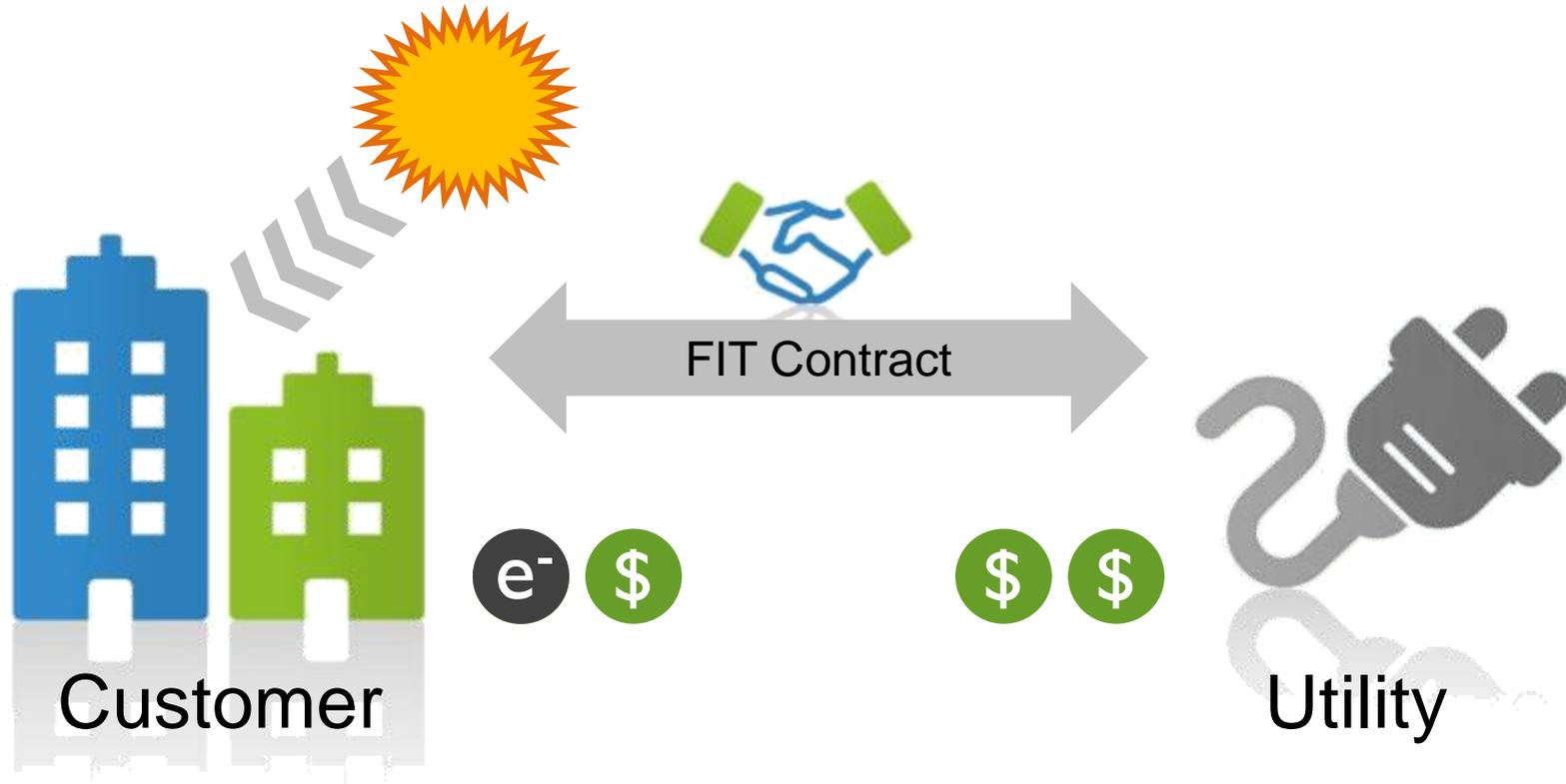
- CUNY
- Con Edison
- Central Hudson
- National Grid
- PSEG- LI
- NYPA
- NYSEG



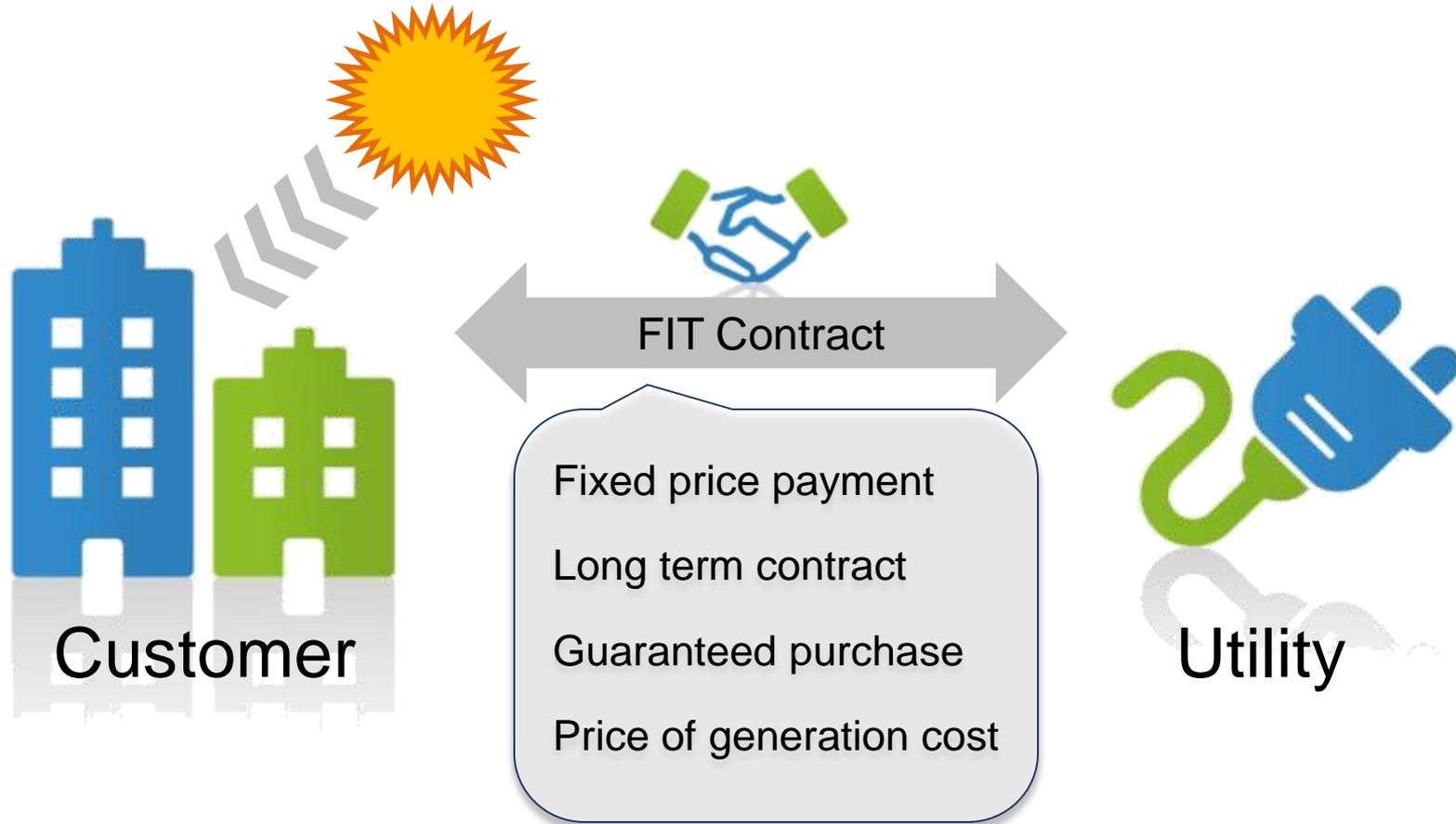
### **Working Group Deliverables**

- ✓ NYS Net Metering FAQ
- ✓ NYS Net Metering Analysis & Capacity Tracker
- ✓ NY Grid Operators Meeting
- ✓ Drafting guidelines to shared solar on multifamily buildings

# Feed-in Tariff



# Feed-in Tariff



# Potential Savings

<b>Clean Power Estimator<sup>1</sup></b>	
<b>Assumptions</b>	
System Size	4 kW
System Cost	\$20,000
<b>Incentives</b>	
NYSERDA MW Block Program (Block 2)	\$3,600
Federal PV Tax Credit (Res)	\$6,000
NY PV Tax Credit	\$4,100
<b>Total Savings</b>	<b>\$13,700</b>
<b>Total System Cost After Incentives</b>	<b>\$6,300</b>

To learn more visit: <http://ny-sun.ny.gov/Get-Solar/Clean-Power-Estimator.aspx>

<sup>1</sup> Assumptions are based on clean power estimator data. For a full understanding of potential savings for your individual household or business, contact a NYSERDA certified contractor

# Agenda

1. Putting Solar Energy on the Local Policy Agenda
2. State of the NY Solar Market & Intro to Solar Soft Costs
3. Federal, State, and Utility Policy Drivers
4. *Break*
5. Making your Community Solar Ready
6. *Break*
7. Programs to Grow Your Solar Market
8. Developing Solar Policy For Your Community
9. Next Steps

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# Policies & Incentives

## 3 Steps to prepare for solar development:

1. Establish solar **goals** in planning process
2. Adopt solar **code** language
3. Define a clear & simple **permitting** process by adopting NYS Unified Solar Permit

Depreciation

Program

Net Metering

Interconnection  
Standards

Feed-in Tariff

Local

Planning &  
Zoning

Permitting

Market  
Development

Financing

## Goal Setting

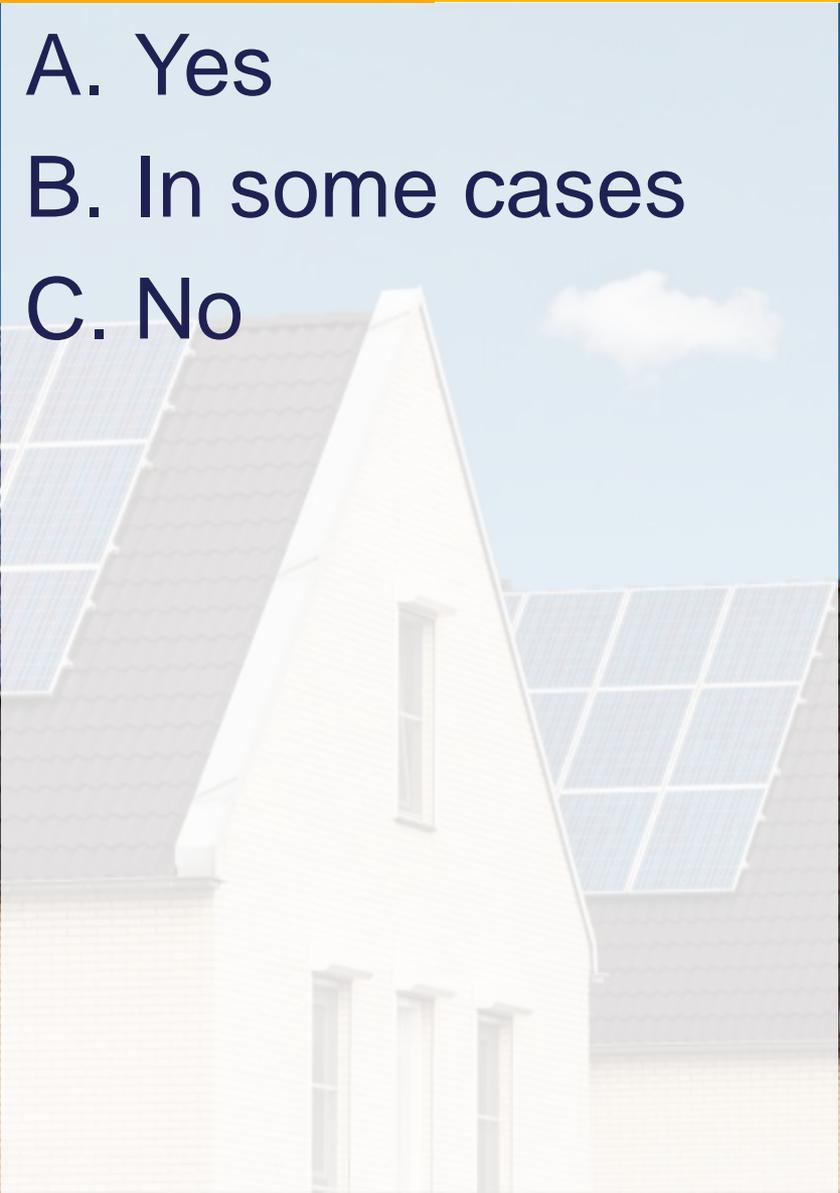
How does a local government define what types of solar installations are right for their community?

- How closely does solar help meet existing community goals?
- What scales and contexts are appropriate?
- How much development is possible within the appropriate scales and contexts?

1 Establish  
Goals

# Is solar on residential rooftops desirable in your community?

- A. Yes
- B. In some cases
- C. No



0%

0%

0%

Yes

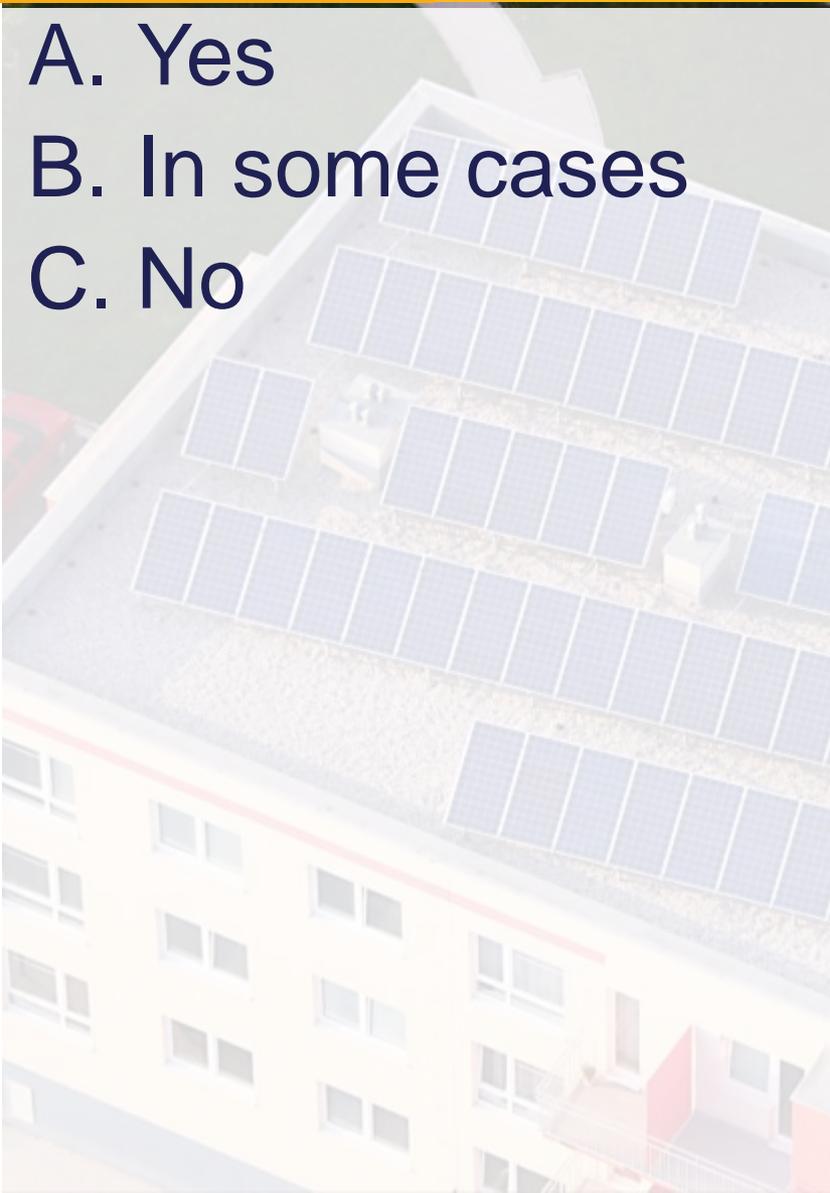
In some cases

No

# 1 Establish Goals

## Is solar on commercial rooftops desirable for your community?

- A. Yes
- B. In some cases
- C. No



1 Establish  
Goals

# Is solar on historic structures desirable for your community?

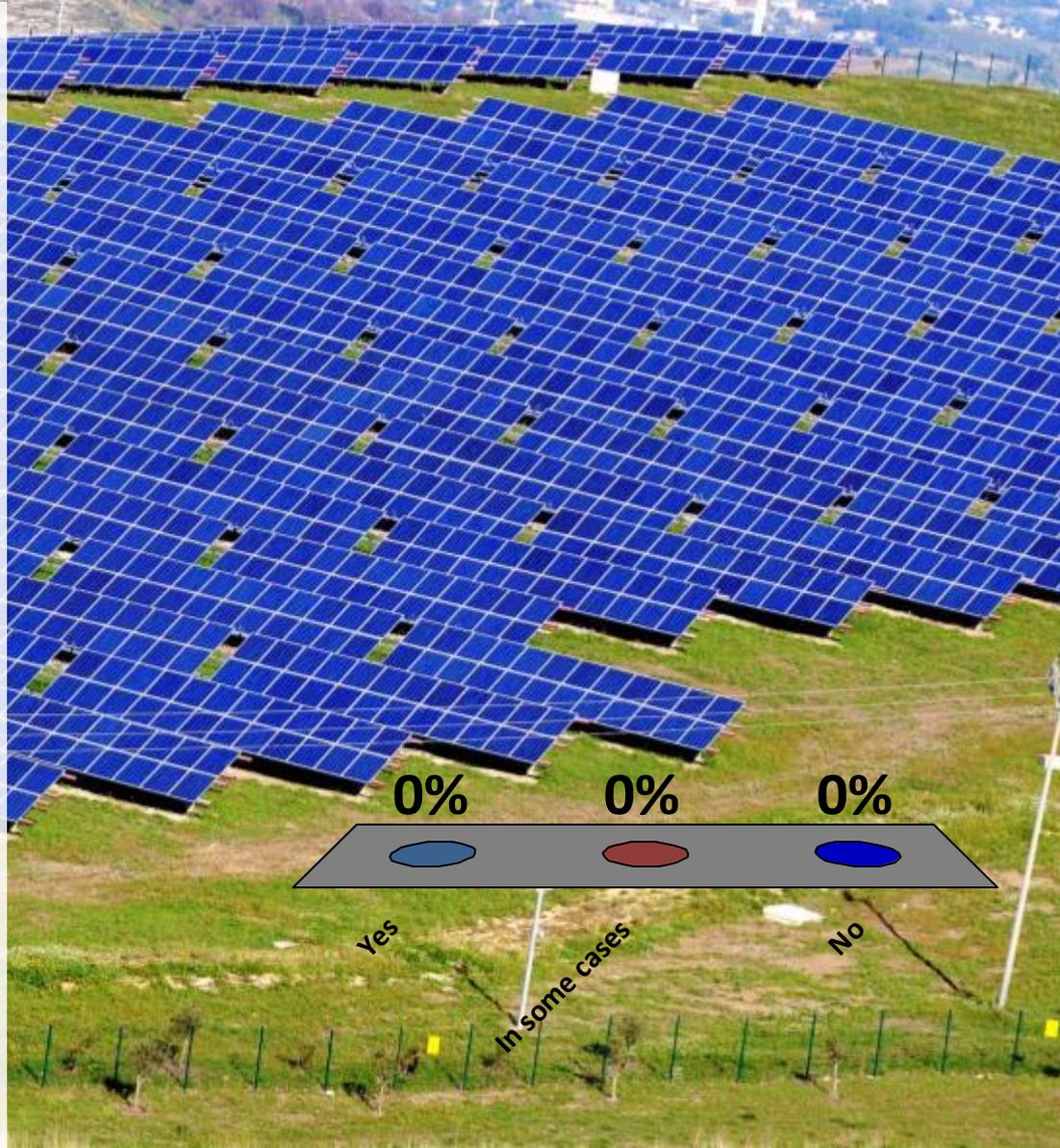
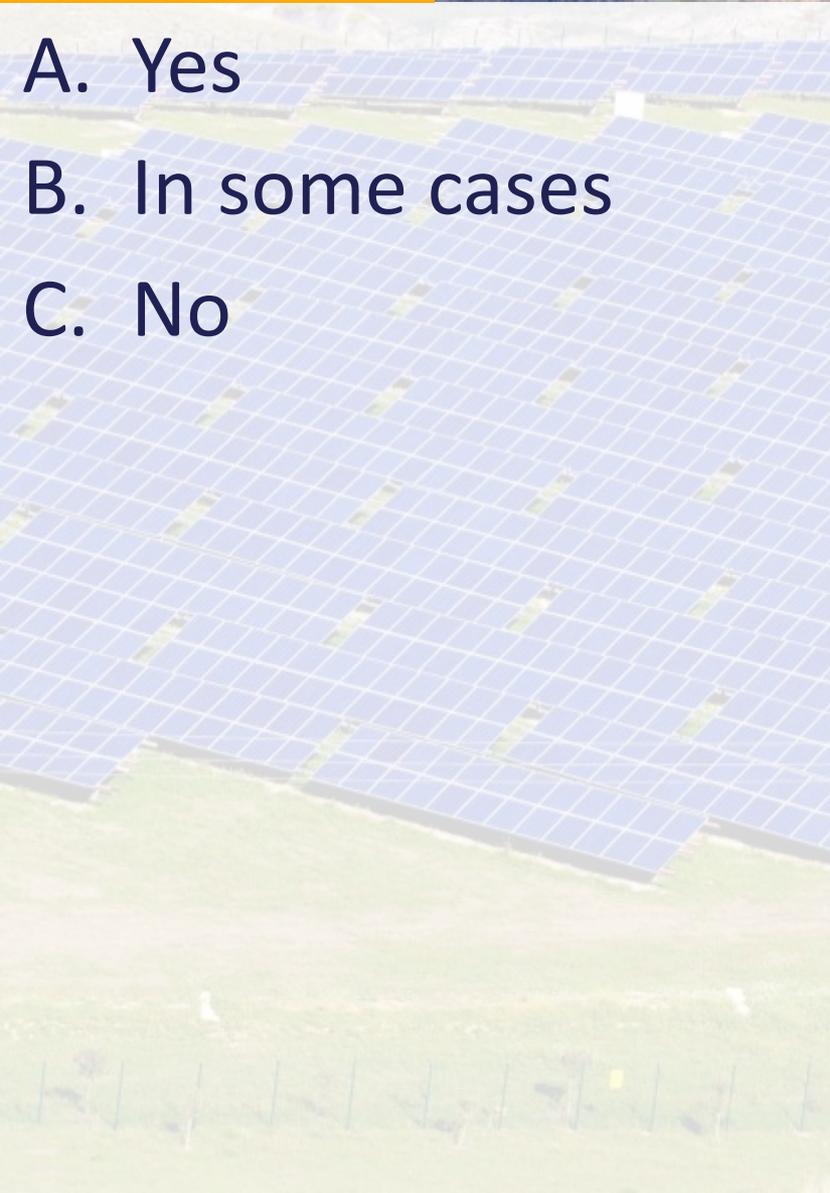
- A. Yes
- B. In some cases
- C. No



1 Establish  
Goals

# Is solar on brownfields desirable for your community?

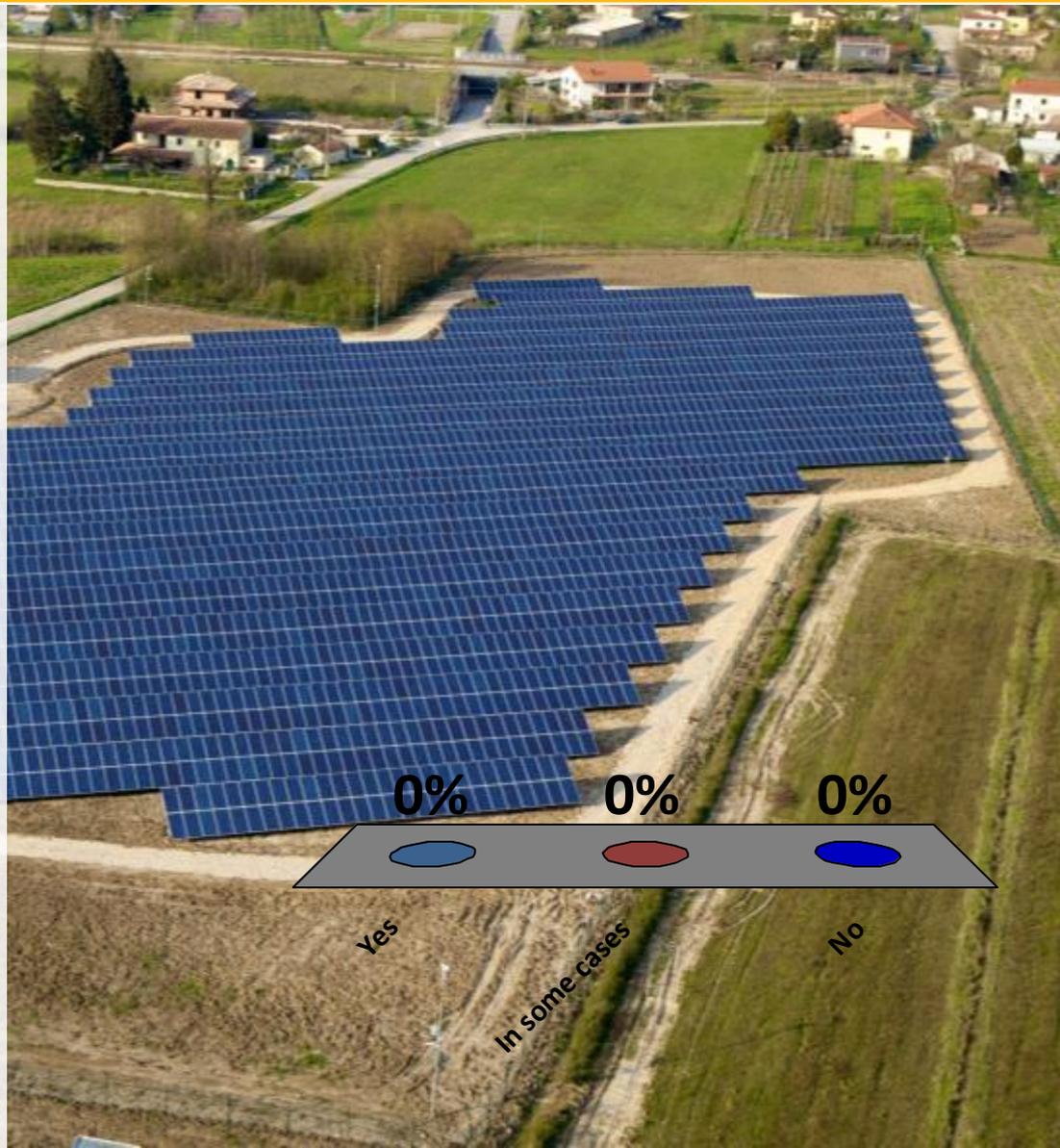
- A. Yes
- B. In some cases
- C. No



1 Establish  
Goals

# Is solar on greenfields desirable for your community?

- A. Yes
- B. In some cases
- C. No



## Communitywide Comprehensive Plan

Neighborhood  
Plans

Corridor Plans

Special  
District Plans

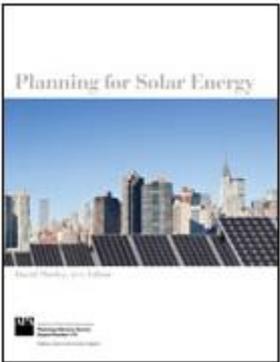
Green  
Infrastructure  
Plans

Energy Plan

Climate Action  
Plan

# Where to Start

**Resource**



## Planning for Solar Energy

Solar planning fundamentals for public officials and engaged citizens

[www.planning.org/research/solar](http://www.planning.org/research/solar)

**In-Depth Workshop**

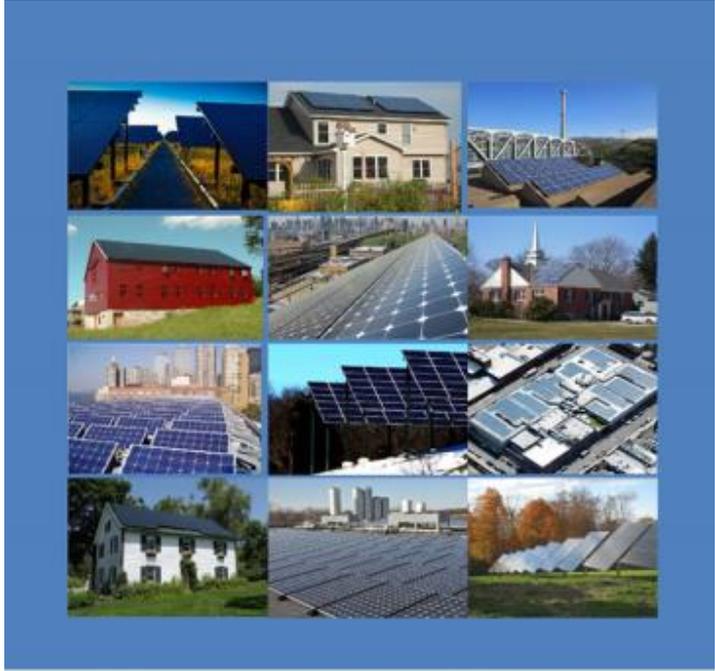
Land Use Planning for Solar Energy

**One-on-One Assistance**

- ✓ Facilitate visioning process
- ✓ Integrate goals into plans
- ✓ Review options for public investment

- Reduced risk of inappropriate development
- Lower internal review costs
- Increased development opportunities
- Greater transparency
- Reduced ambiguity

78% of municipal respondents allow some or all solar installations by right



New York State  
NYSolar Smart Survey

November 2013

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

## Small Solar:

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



## Large Solar:

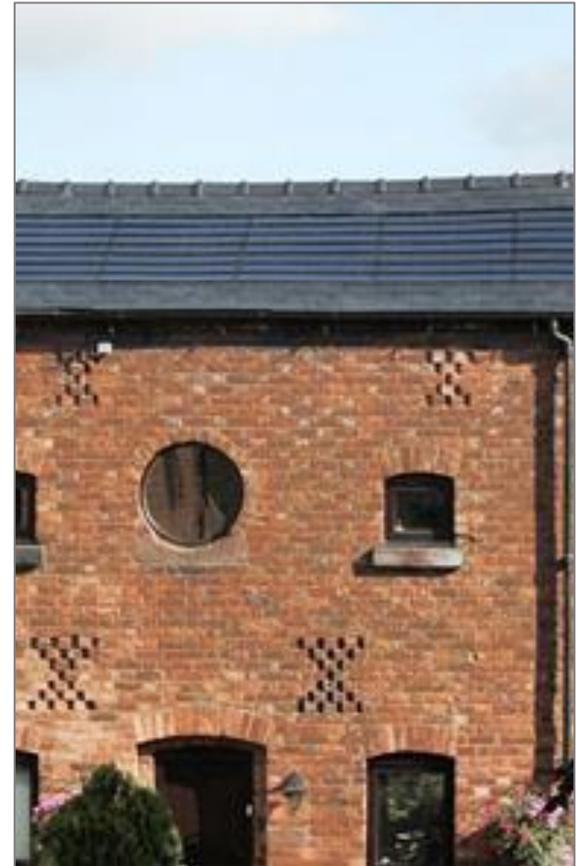
- Allowed for primary use in limited locations
- Requirements:
  - Height limits
  - Lot coverage
  - Setback
  - Fencing and Enclosure



Prevent permanent loss of  
“character defining” features

Possible design requirements

- Ground mounted
- Flat roof with setback
- Panels flush with roof
- Blend color
- Building Integrated PV (BiPV)



Source: SolarCentury



## **Solar Ready Construction:**

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

## Encourage 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

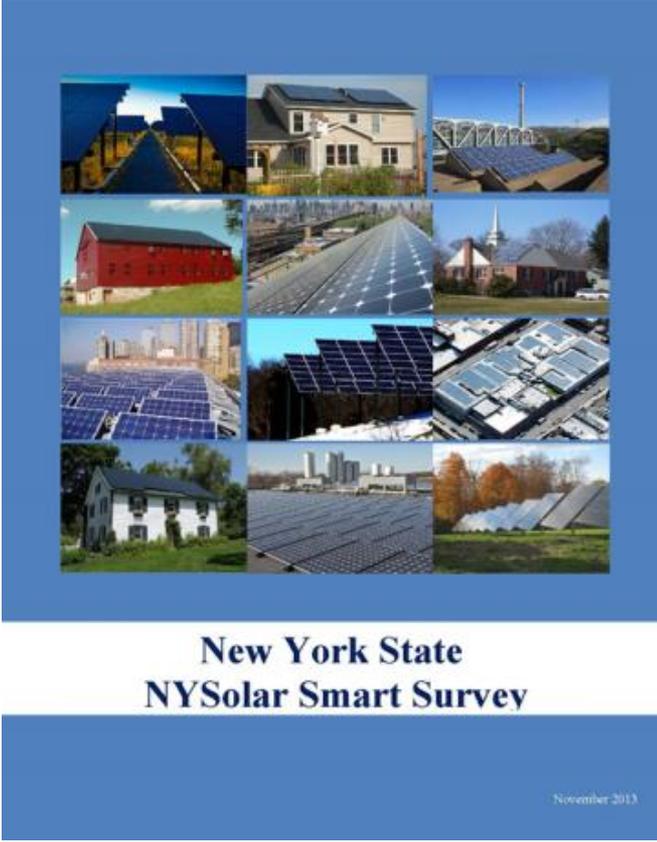
**NREL: Solar Ready Buildings Guide- Contains a checklist for municipalities**

# Example

## **California- Introduced solar-ready roof guidelines effective January 1,2014 (Residential and Commercial)**

- Solar Zone- Area of the roof which is clear of obstruction
- Slope Ratio - roofs with a ratio of rise to run greater than 2:12 have specific orientation guidelines
- Obstruction limitations- Obstructions must be limited, and be located at a distance that does not obstruct the Solar Zone
- Single family residence must have an electrical service panel with a minimum rating of 200 amps and leave space for a double pole circuit breaker

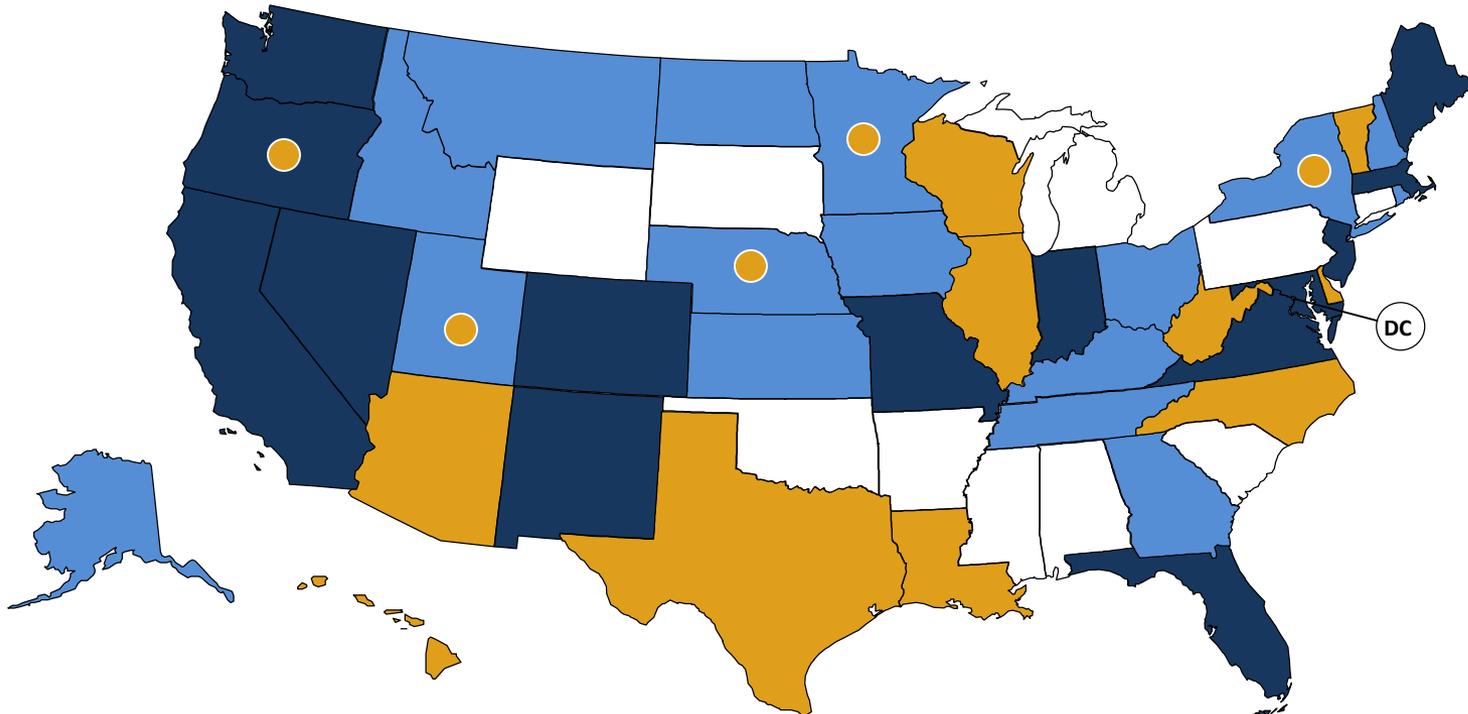
71% of municipal respondents **do not** protect solar access rights



## 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 Laws



Light Blue Solar Easements Provision

Orange Solar Rights Provision

Dark Blue Solar Easements and Solar Rights Provisions

Yellow Circle Local option to create solar rights provision

Source: DSIRE

## Model Small-Scale Solar Siting Ordinance

Columbia Law School  
[web.law.columbia.edu](http://web.law.columbia.edu)

Department of Energy  
Rooftop Solar Challenge II  
NYS Model Solar Zoning Ordinance  
NYSolar Smart  
Release- 2015 TBD

Center for Climate Change Law at Columbia Law School  
Model Small-Scale Solar Siting Ordinance  
Last updated Summer 2012  
Please send comments to Shelley Welton, [swelto@law.columbia.edu](mailto:swelto@law.columbia.edu)

**Model Small-Scale Solar Siting Ordinance**  
*By Danielle Sugarman*  
Center for Climate Change Law at Columbia Law School

### 1. Purpose & Intent

- A. Solar energy is a renewable and non-polluting energy resource that can prevent fossil fuel emissions and reduce a municipality's energy load. Energy generated from solar energy systems can be used to offset energy demand on the grid where excess solar power is generated.
- B. The use of solar energy equipment for the purpose of providing electricity and energy for heating and/or cooling is a priority and is a necessary component of the [Town/City/Village's] current and long-term sustainability agenda.<sup>1</sup>
- C. The ordinance aims to promote the accommodation of solar energy systems and equipment and the provision for adequate sunlight and convenience of access necessary therefor.<sup>2</sup>

### 2. Definitions

#### ACCESSORY STRUCTURE

A structure, the use of which is customarily incidental and subordinate to that of the principal building and is attached thereto, and is located on the same lot or premises as the principal building.<sup>3</sup>

#### ALTERNATIVE ENERGY SYSTEMS

Structures, equipment, devices or construction techniques used for the production of heat, light, cooling, electricity or other forms of energy on site and may be attached to or separate from the principal structure.<sup>4</sup>

#### BUILDING-INTEGRATED PHOTOVOLTAIC (BIPV) SYSTEMS

A solar energy system that consists of integrating photovoltaic modules into the building structure, such as the roof or the façade and which does not alter the relief of the roof.<sup>5</sup>

<sup>1</sup> Albany City

<sup>2</sup> Amenia Town, Auburn City, Bedford Town, Bethlehem Town, Canandaigua Town, Glennville Town, Haverstraw Town, Hewlett Neck Village, Horseheads Town, Kent Town, Kingston City, Southold Town, Southport Town

<sup>3</sup> Clinton Town, Kingston Town.

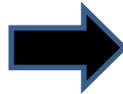
<sup>4</sup> Albion Town, Barre Town, Lackawanna City, Medina Village

<sup>5</sup> Albany City

## U.S. Department of Energy SunShot Initiative Rooftop Solar Challenge II

### Planning & Zoning Working Group Members

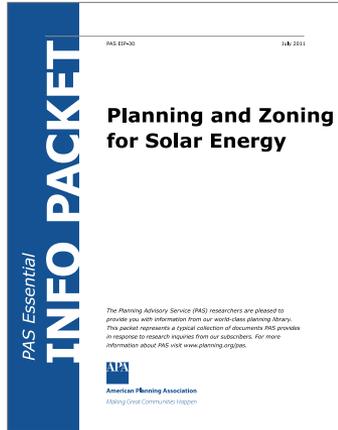
- CUNY
- Pace- Land Use Law Center
- City of Albany
- City of Ithaca
- City of Poughkeepsie
- City of Rochester
- City of Schenectady
- City of Syracuse
- City of White Plains
- Town of Clifton Park
- Town of Hempstead
- Town of South Hampton
- Village of Warwick



### Working Group Deliverables

- ✓ Model Solar Zoning Ordinance
  - Promotes Solar Zoning Best Practices
  - Supports solar friendly language
  - Increases transparency
  - Increases project conformity to local zoning ordinances
- ✓ NYS Solar Ombudsman Support Adoption

## Resource



## Planning and Zoning for Solar Energy

This Essential Info Packet provides guides and model code language to help planners design a regulatory framework for solar in their communities.

[www.planning.org/research/solar](http://www.planning.org/research/solar)

## In-Depth Workshop

**Zoning for Solar (Available 2015)**

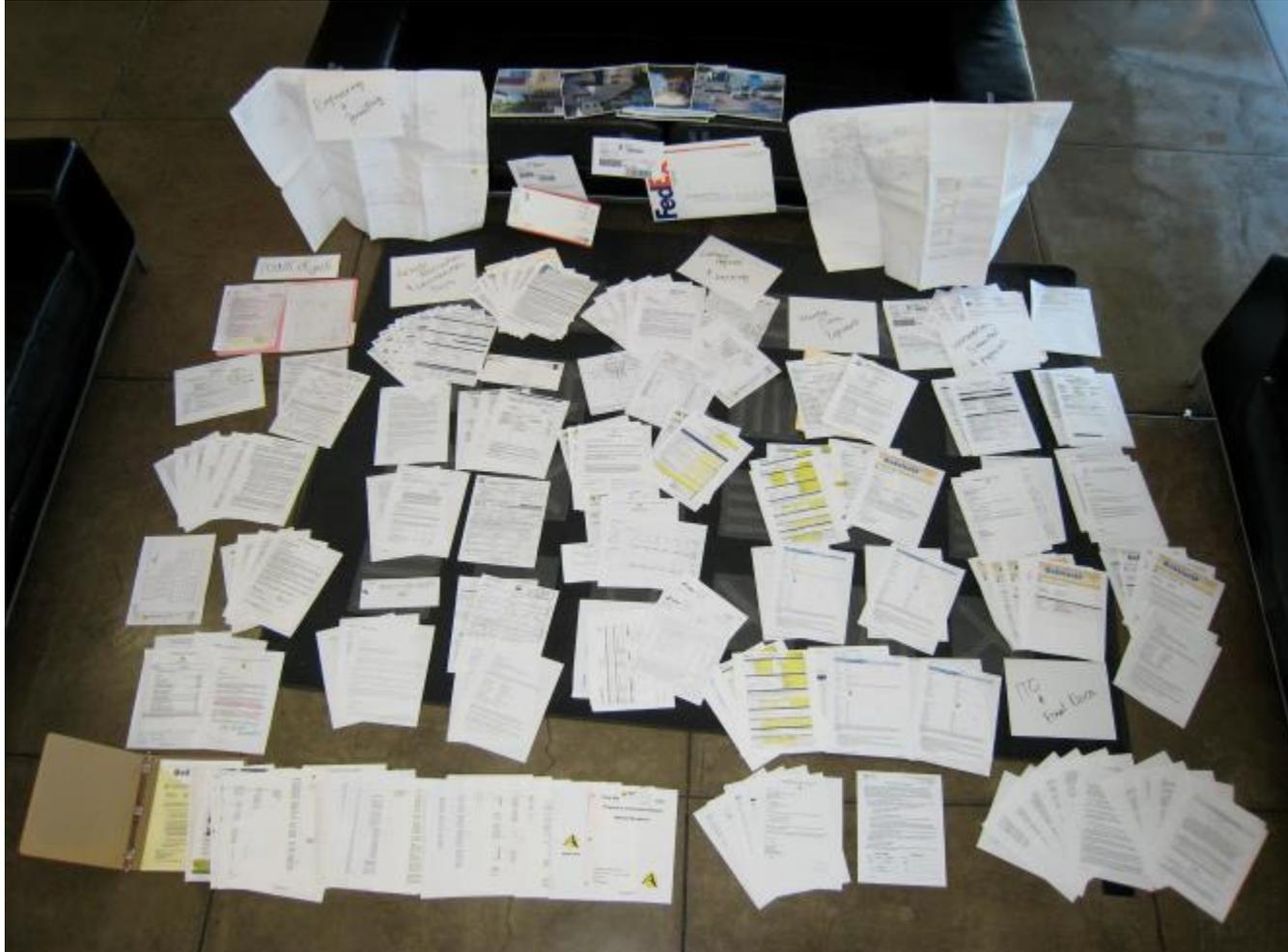
## One-on-One Assistance

- ✓ Define solar goals
- ✓ Analyze existing code
- ✓ Updating code or creating ordinance

**1,550+** local jurisdictions in NY  
with unique permitting requirements

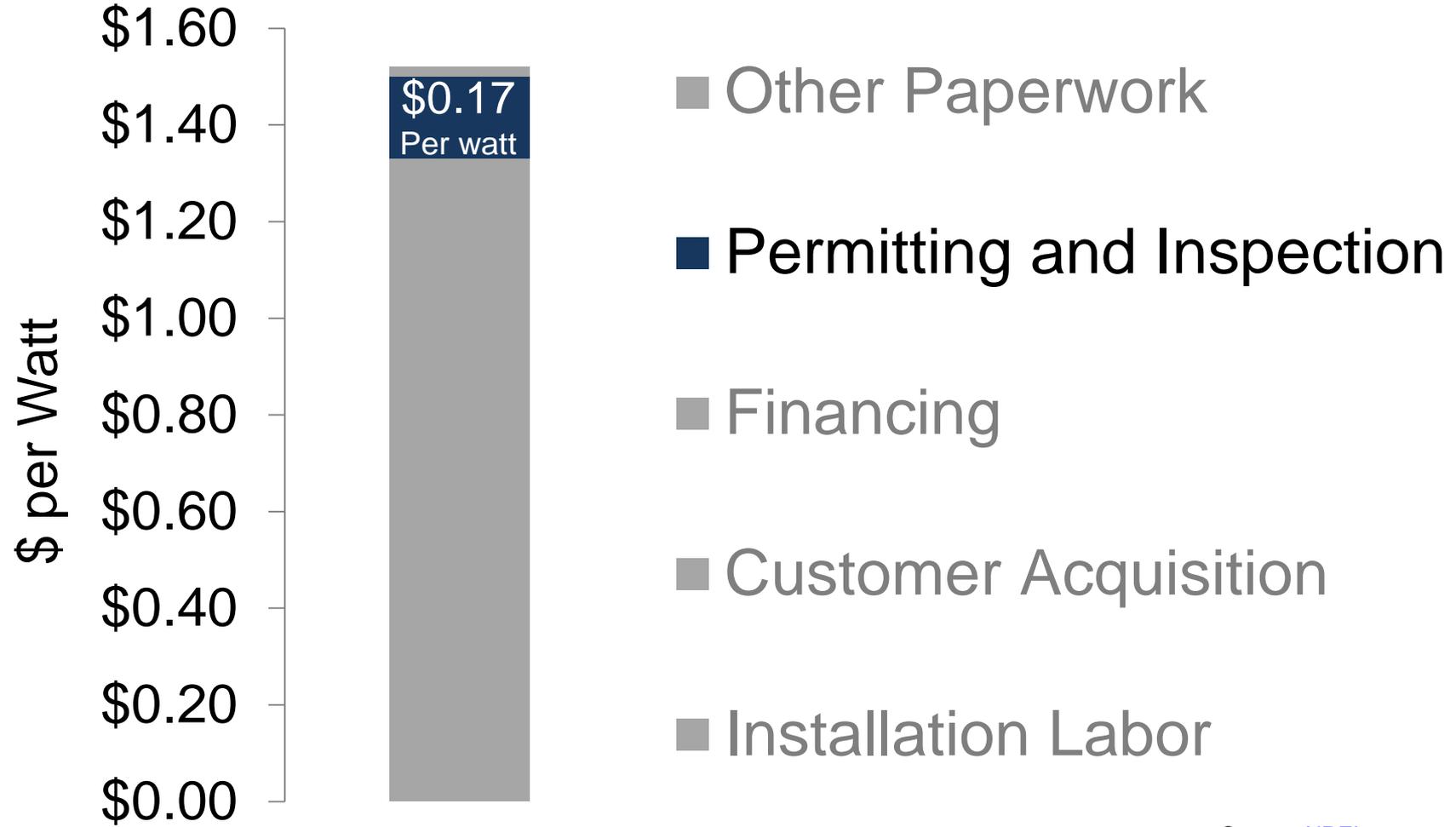
Source: [NREL](#)

# Market Challenges



Source: Forbes

# Solar Soft Costs



Source: [NREL](#)

## *Depth of Review*



### **Expedient**

Within established design parameters

Impacts are well understood

Quick, Easy, Inexpensive

### **Discretionary Review**

Outside of established design parameters

Review necessary to understand impacts

Flexible

For simple small-scale installations

Based on industry standards

Defined review timeline

Defined permit fee

Use of same plans for utility and NYSERDA applications

Developed by CUNY, NYSERDA, NYPA

NYSERDA incentive of \$2,500-5,000 for permit adoption

(Incentives extended until September 30th of 2015)



**New York State Unified Solar Permit**  
Expedited Solar Permit Process for Small-Scale Photovoltaic Systems

**Requirements for Application Submittal - STEP 1**

*For use in all New York State counties with the exception of Nassau County and Suffolk County.*

The expedited solar permitting process uses a unified permit across municipalities in New York State.

A combined building and electrical permit for a grid-tied photovoltaic (PV) system will be issued pending proper completion of forms, submission of approved plans and approval by municipality. All applicants must submit:

- 1. Unified Solar Permit for Small-Scale Photovoltaic Systems Eligibility Checklist - STEP 2**
- 2. One (1) set of plans (number may vary by municipality) that include:**
  - Site Plan showing location of major components of solar system and other equipment on roof or legal accessory structure. This plan should represent relative location of components at site, including, but not limited to, location of array, existing electrical service location, utility meter, inverter location, system orientation and tilt angle. This plan should show access and pathways that are compliant with New York State Fire Code, if applicable.
  - One-Line or 3-Line Electrical Diagram. The electrical diagram required by NYSERDA for an incentive application and/or utility for an interconnection agreement can be used here.
  - Specification Sheets for all manufactured components. If these sheets are available electronically, a web address will be accepted in place of an attachment, at the discretion of the municipality.
  - All diagrams and plans must include the following: (a) Project address, section, block and lot number of the property; (b) Owner's name, address and phone number; (c) Name, address and phone number of the person preparing the plans; and (d) System capacity in kW-DC.
- 3. Unified Solar Permit for Small-Scale Photovoltaic Systems Application - STEP 3**
- 4. Permit Fee Amount**

**Permit Review and Inspection Timeline**

Permit determinations will be issued within 14 days upon receipt of complete and accurate applications. The municipality will provide feedback within 7 days of receiving incomplete or inaccurate applications. If an inspection is required, a single inspection should be sufficient and will be provided within 7 days of inspection request.

The NY-Sun Initiative, a dynamic public-private partnership, will drive growth of the solar industry and make solar technology more affordable for all New Yorkers.  
**Visit [ny-sun.ny.gov](http://ny-sun.ny.gov) for more information on the NY-Sun Initiative.**





**Residential  
Flat Fees**



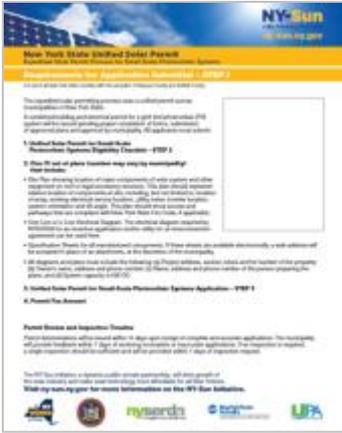
**Commercial  
Fee Calculator**

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

# Where to Start

## Resource

### NY-SUN Unified Solar Permit



The expedited solar permitting process uses a unified permit across municipalities in New York State.

[ny-sun.ny.gov](http://ny-sun.ny.gov)

## In-Depth Workshop

### Adopting the NY Unified Solar Permit

## One-on-One Assistance

- ✓ Review existing permit process
- ✓ Adopt the NY Unified Solar Permit
- ✓ Determining fair permit fees

# Agenda

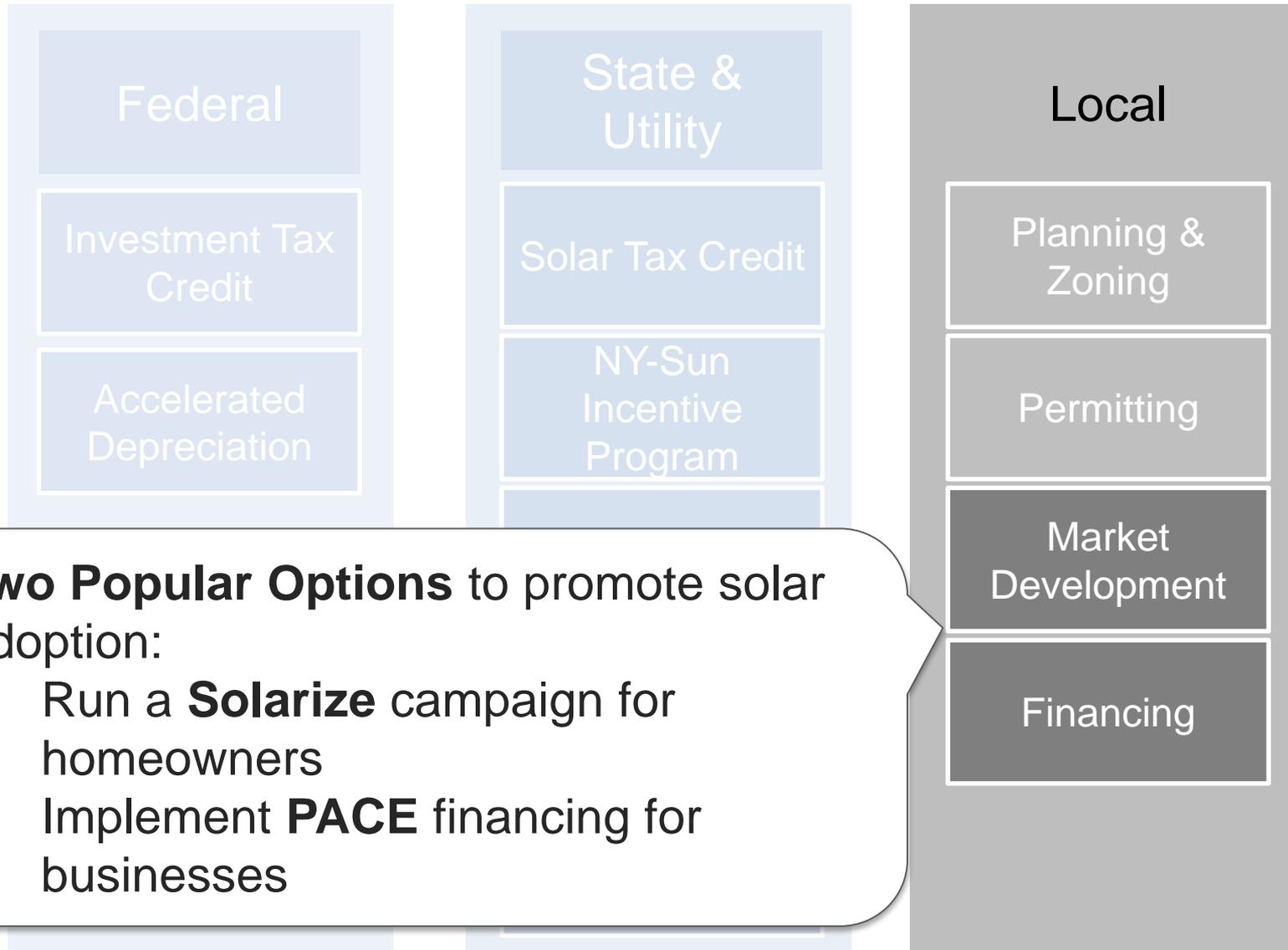
1. Putting Solar Energy on the Local Policy Agenda
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Addressing customer acquisition  
Expanding financing options

# Policies & Incentives



# Customer Acquisition



Source: [NREL](#)

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

Source: [NREL](#)

Group purchasing for residential solar PV



## Barriers

High upfront cost



Complexity



Customer inertia



## Solutions

Group purchase

Community education  
& outreach

Limited-time offer

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

Quick turn-around: 9 Months

Long-term impact: Sustainable ecosystem

Create Team &  
Establish Goals

Issue RFP &  
Select Installer

Marketing and Workshops

Enrollment

Site Assessments

Decision & Installations

6-12 Months

## Solarize Timeline



# Example Solarize Roles

## Lead Organization/Local Gov

- Program Management
- Installer RFP & Contract
- Marketing & Education
- Technical Support

## Community

- Installer Selection
- Local Outreach
- Volunteers
- Solarize Leaders

## Installer

- Tiered Pricing & Financing Options
- Free Site Assessments
- Permitting & Rebate Processing
- Installation

## Residents and Businesses

- Sign Up for Free Assessments
- Talk to Neighbors
- Get Solar
- Lower Energy Bills!

1

Run

Solarize

# Solarize Case Study

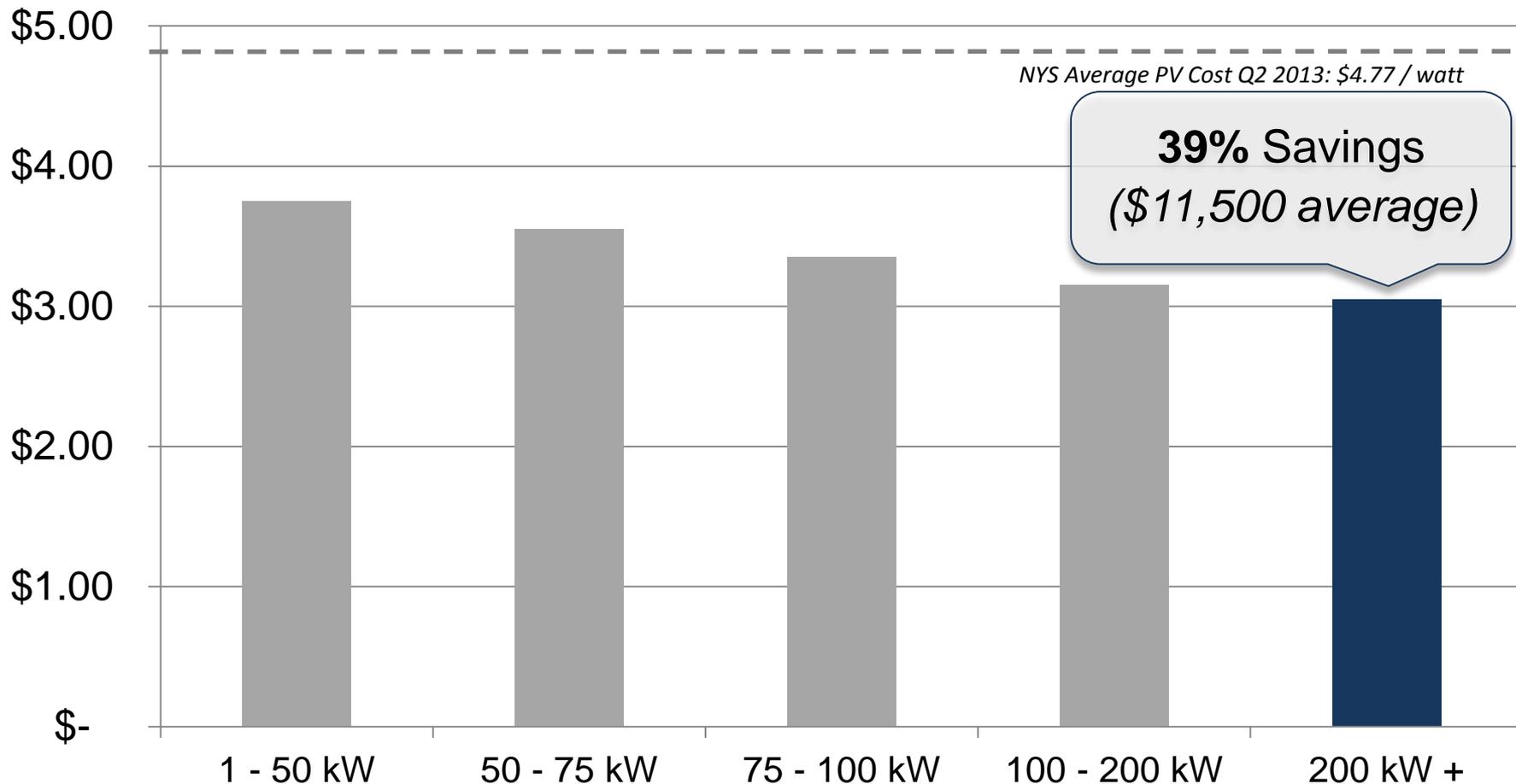


## 3 Towns in **Tompkins County, New York**

Dryden, Caroline, & Danby

Population: 21,000

## Tompkins Group Purchasing Tiers



295 households signed Up

108 new installations totaling 651 kW

36% closure rate

39% reduction in installation costs

A household is  
more likely to adopt solar

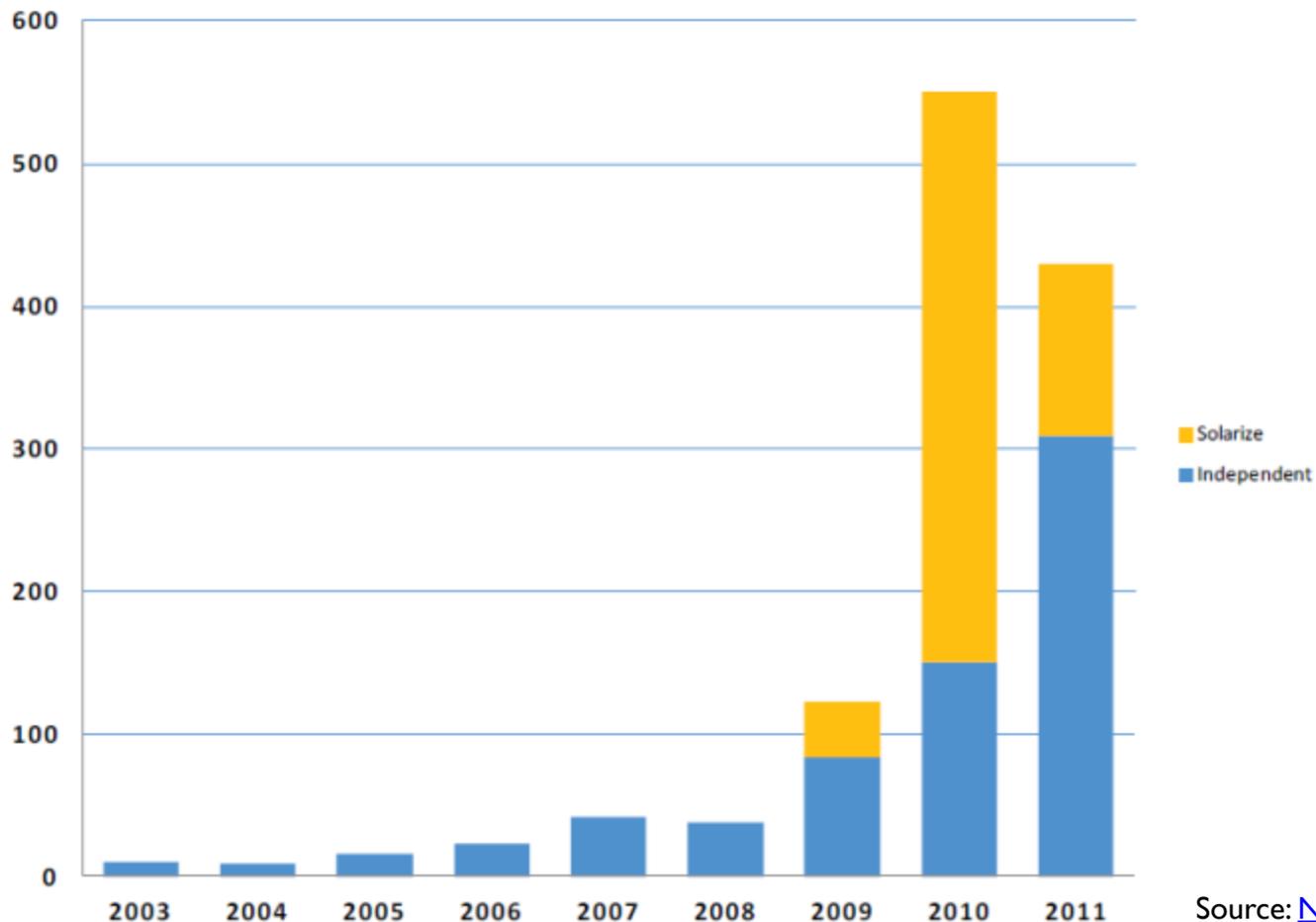
*for*

each additional installation in their zip code

Source: [Yale School of Forestry](#)

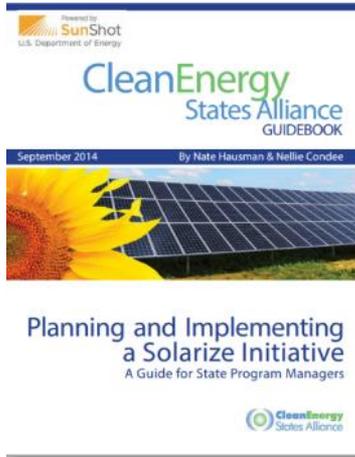
# The Network Effect

Annual Portland Residential PV Installations



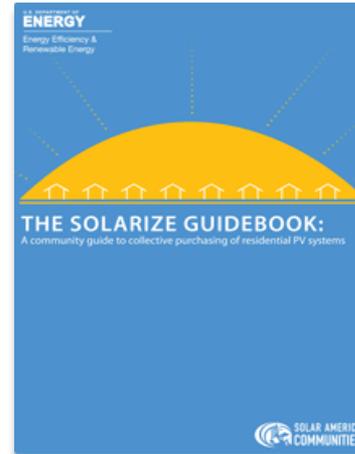
Source: [NREL Solarize Guidebook](#)

# 1 Run Solarize Where to Start



## Planning & Implementing a Solarize Initiative: A Guide for State Program Managers

<http://www.cesa.org/>



## The Solarize Guidebook

[www.nrel.gov](http://www.nrel.gov)

### In-Depth Workshop

Grow Your Solar Market With a Solarize Program

### Technical Assistance

- ✓ Design the program
- ✓ Procure an installer partner
- ✓ Support program administration

## **Property Assessed Clean Energy (PACE)**

Local governments finance the up-front costs of energy improvements to properties, which are repaid through a special assessment on the property owner's tax bill.



Residential  
PACE

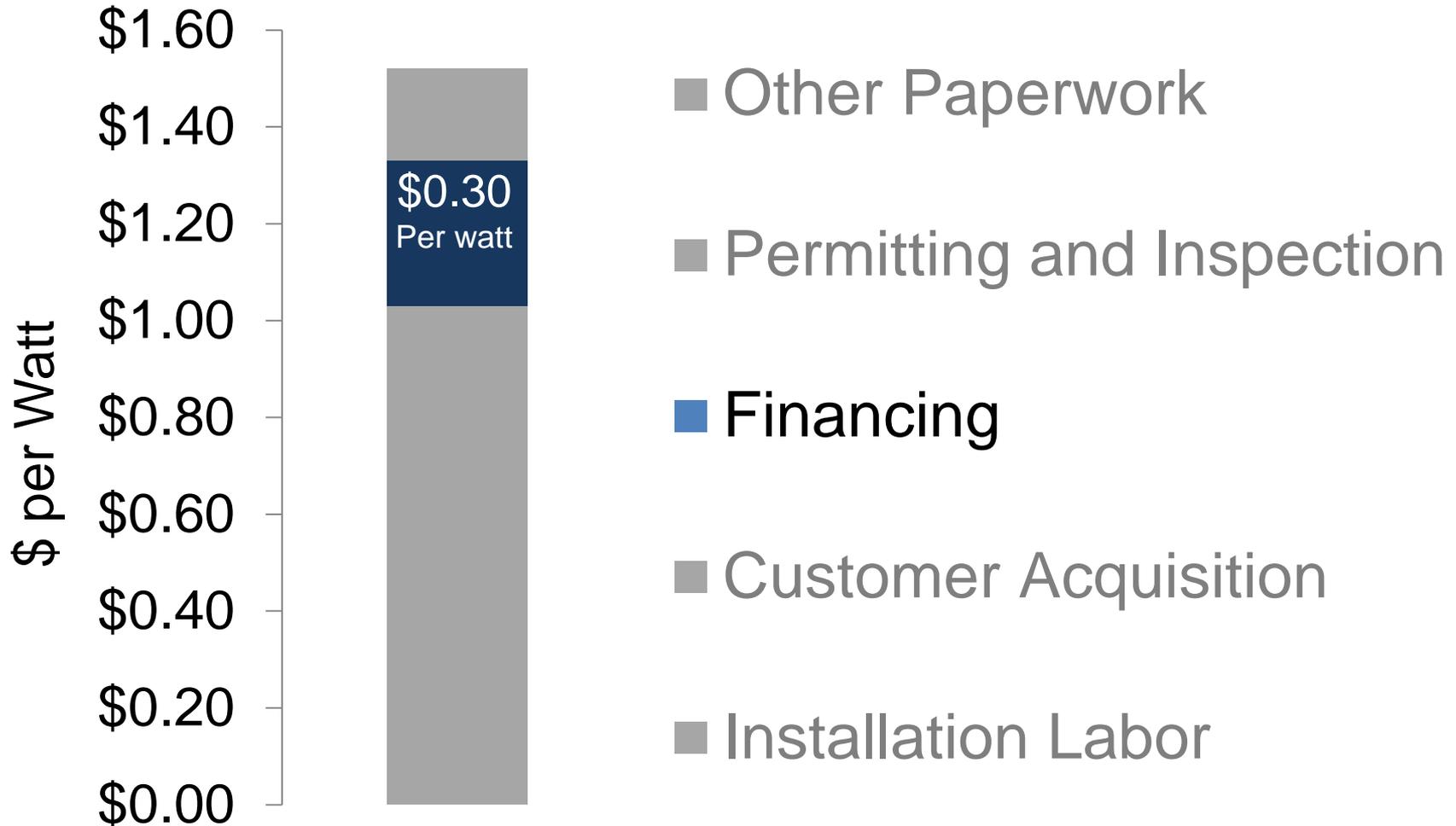


Commercial  
PACE

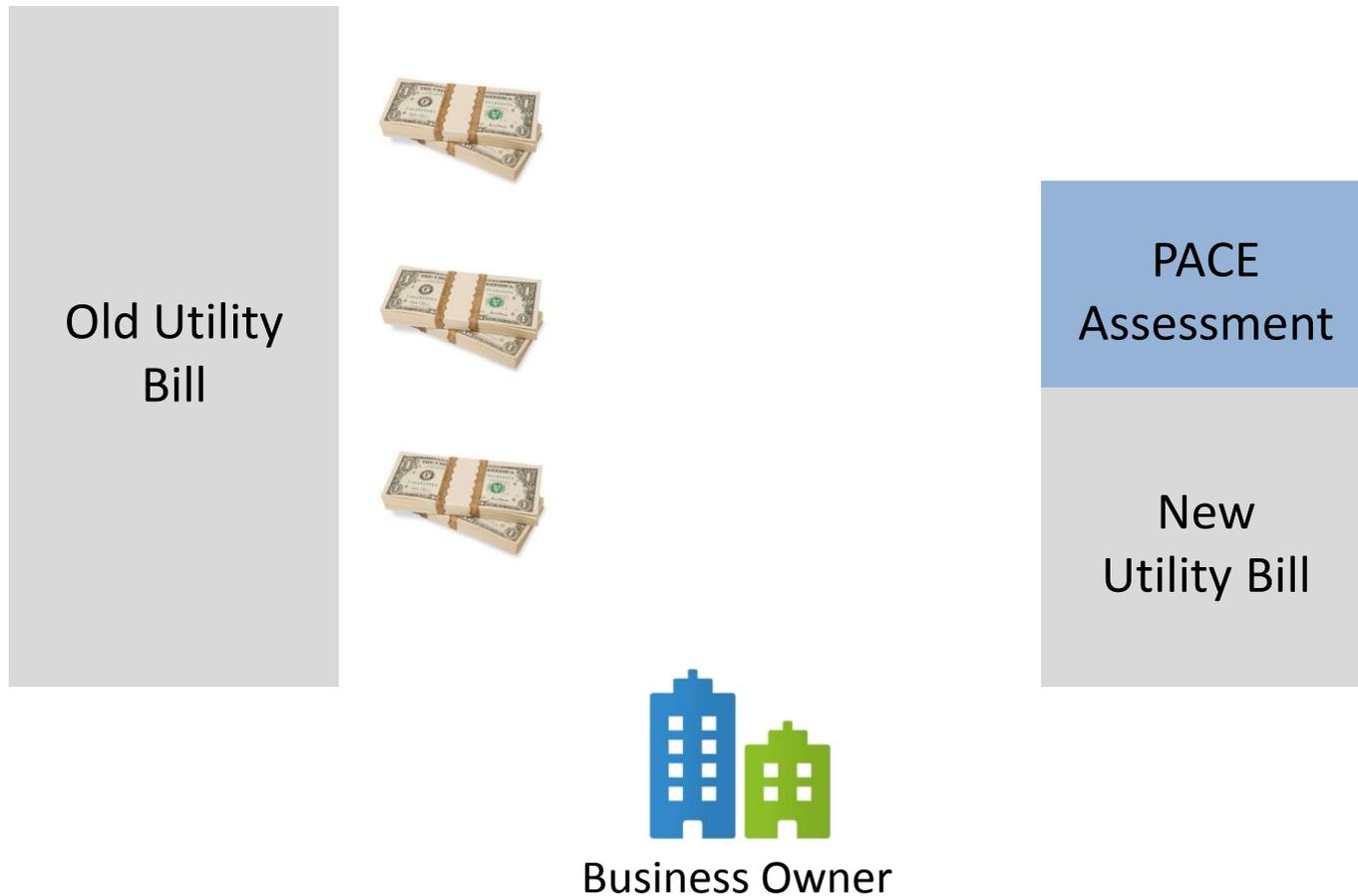
## Advantages Over Conventional Loan:

- No Money Down
- Longer (20 year) term
- Repayment transfers with ownership
- Low interest rates
- Interest is tax deductible
- Lower transaction costs

# PACE Advantages



## Example: Financial Impact of PACE



## Energize NY Commercial Program:

- NY passed enabling legislation in 2009
- Managed by the Energy Improvement Corporation (EIC)
- Offered to commercial properties **in participating municipalities**
- Repayments collected by municipalities via tax charge
- PACE granted senior lien status
- 14 municipalities signed on
- Improvements must have savings to investment ratio >1

# Energize NY Case Study



**System Owner:** Orange County Dairy  
**Installation Type:** Ground Mount  
**Size:** 53 kW  
**Solar Offset:** 105%  
**1<sup>st</sup> Year Savings:** \$16,340  
**Installation:** October 2014  
**System Cost:** \$164,859

## Incentives

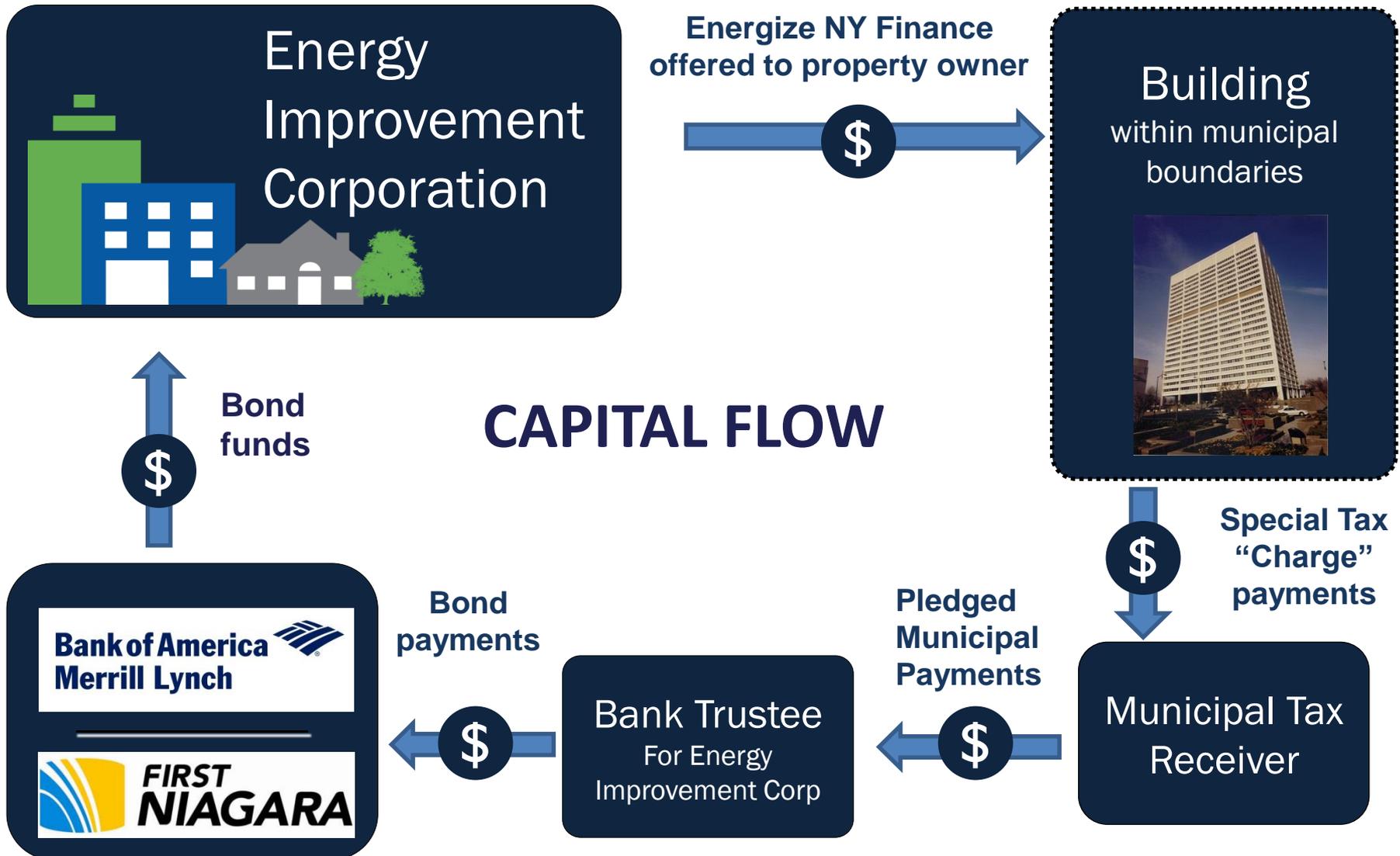
**NYSERDA:** \$ 51,977  
**Federal ITC:** \$ 49,458\*  
**USDA REAP:** \$ 41,215  
**Total** \$142,650

**Net Cost Financed: \$ 71,677**

- **Financed with Energize NY**
- **5-Year Term**
- **Cash Flow Positive**
- **SIR = 2.667**
- **\*ITC Financed**

<b>CASH FLOW &amp; SIR OVER LIFE OF FINANCING</b>	
<b>NPV OF CASH INFLOW</b>	<b>\$191,143</b>
<b>TOTAL ENERGIZE NY FINANCING</b>	<b>\$71,677</b>
<b>SAVINGS-TO-INVESTMENT RATIO</b>	<b>2.667</b>

# Energize NY Finance Model



Allows for lower cost of capital

## How to Participate:

1. Pass the Local Law
2. Sign the Municipal Agreement (IMA)
3. Formally request membership from EIC

## Resource



## Energize NY

Energize NY Finance leverages PACE (Property Assessed Clean Energy) financing to help commercial and non-profit property owners undertake deep energy improvements.

[energizeny.org](http://energizeny.org)

## In-Depth Workshop

Expanding Commercial Solar Financing Options with a PACE Program

## Technical Assistance

- ✓ Establish a PACE district
- ✓ Design a cost-effective program
- ✓ Support program administration

# Other NY-Sun Programs

## Community Solar NY

- K-Solar: provides school districts with tools and expertise to bring solar energy to their facilities
- Solarize: Assist communities with rolling out Solarize programs

To find out more visit: <http://ny-sun.ny.gov/Get-Solar/Community-Solar.aspx>

# Agenda

1. Putting Solar Energy on the Local Policy Agenda
2. State of the NY Solar Market & Intro to Solar Soft Costs
3. Federal, State, and Utility Policy Drivers
4. *Break*
5. Making your Community Solar Ready
6. *Break*
7. Programs to Grow Your Solar Market
8. **Developing Solar Policy For Your Community**
9. Next Steps

# 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 9 – 13** with the others at your table. Discuss strategies for overcoming potential obstacles to implementation.



# Activity: Solar in Your Community

**Part 3:** Share your small group results. Discuss strategies to overcome identified obstacles.



# Agenda

1. Putting Solar Energy on the Local Policy Agenda
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8. Developing Solar Policy For Your Community
9. **Next Steps**

# Upcoming Trainings, Webinars & Podcasts

Subject	Date & Time	Location
Training: Introduction to Solar Policy	Thursday, Oct 16, 8:30am - 12:30pm	Town of Plattsburgh, NY
Training: Introduction to Solar Policy	Friday, Oct 17, 9:00am - 1:00pm	Canton, NY
Webinar: Streamlining the Solar Permitting Process	Tuesday, Oct 28, 12:00pm – 1:00pm	
Podcast: Introduction to Solar Technologies	Available Wednesday, Oct 29	
Training: Introduction to Solar Policy	Wednesday, Nov 05, 1:00pm - 5:00pm	Rochester, NY
Training: Introduction to Solar Policy	Thursday, Nov 06, 1:00pm - 5:00pm	Ithaca, NY
Training: Land Use Planning for Solar Energy	Thursday, Nov 13, 7:00pm-9:00pm	Goshen, NY
Webinar: Enabling Commercial PACE Financing in Your Municipality	Wednesday, Nov 19, Time TBD	
Webinar: Land Use and Policy for Solar	Tuesday, Dec 2, Time TBD	

**For more information visit: <https://training.ny-sun.ny.gov>**

Thank You!

**The NY-Sun Initiative**  
Solar Powering New York



**Contact us:**

info@training.ny-sun.ny.gov

training.ny-sun.ny.gov

# Solar Development

National study found that...

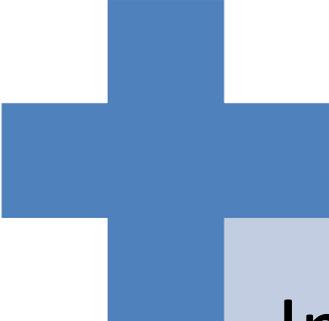
**22-27% of residential roofs  
were suitable for on-site  
solar**

# Community Ownership



“A solar-electric system that provides power and/or financial benefit to multiple community members.”

# What Is Community Solar?



Individuals benefit directly from energy and/or other benefits from system installed in their utility territory



Group purchase program (Solarize)

Crowd-funding (Solar Mosaic)

# Community Solar in the U.S.



# Community Solar Models

- Special-purpose entity
  - Participant-owned
  - Third-party model
- Utility-sponsored or managed



# Models

## Special Purpose Entity (SPE)

- Participant-owned
- Third party

## Utility Sponsored Ownership

# SPE: Participant Ownership

- Private entity or special purpose entity (e.g., LLC) is formed by organizing participants for the purposes of developing a Community Solar project
- Private entity owns or leases property on which the PV system will be installed
- Participants realize a return on investment and benefit from net metering credits generated by the system

# Community: Participant Ownership



**Solar Installation**



# Community: Participant Ownership



**Solar Installation**



# Participant Ownership

## Benefits

- Access to multiple revenue streams
- Opportunity to reduce system costs through multiple incentives

## Drawbacks

- Legally complex
- SEC Regulations
- Sufficient tax appetite
- Incentive and policy availability

# Participant vs. Third Party Ownership

## Participant

- Access to multiple revenue streams
- Tax and SEC complexities
- O&M costs

## Third Party

- Third party handles O&M costs
- Internal tax and legal expertise
- Higher ROI required
- May receive REC credits

# SEC and Tax Policy

Tax

- Passive tax appetite for ITC and MARCS

SEC

- Limits on unaccredited investors for SEC filing exemptions

Local

- Legal and procedural nuances

# Models

## Special Purpose Entity (SPE)

- Participant-owned
- Third party

## Utility Sponsored Ownership

# Utility Sponsored Ownership

- Utility owns or retains a third party to own and manage a PV system on its behalf
- Utility allows its customers to purchase a right to the benefits of the PV system
- No “ownership” by utility customers, but they can benefit from net metering credits or as a “green power” purchase
- Frequently administered by Municipal Utilities

# Community: Utility Model



# Utility Model



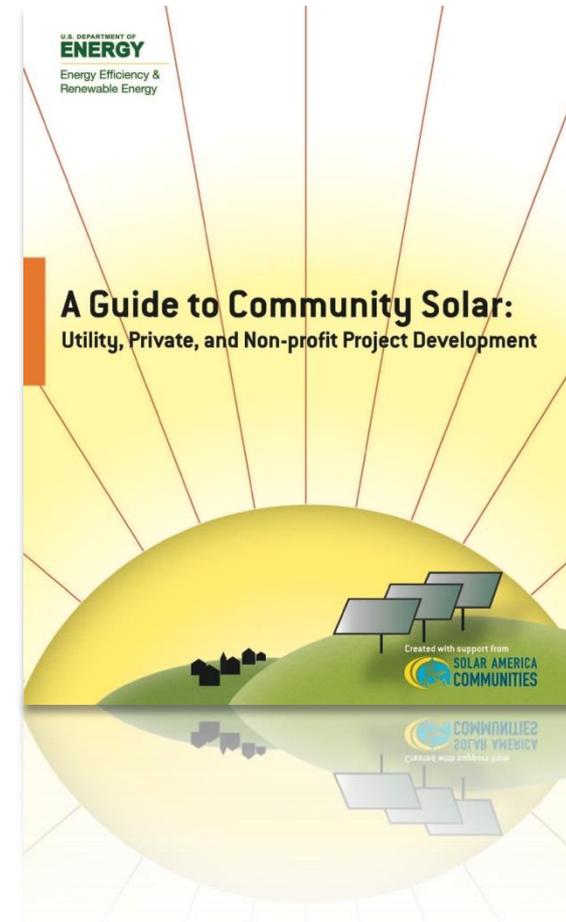
# Community: Resources

## Resource

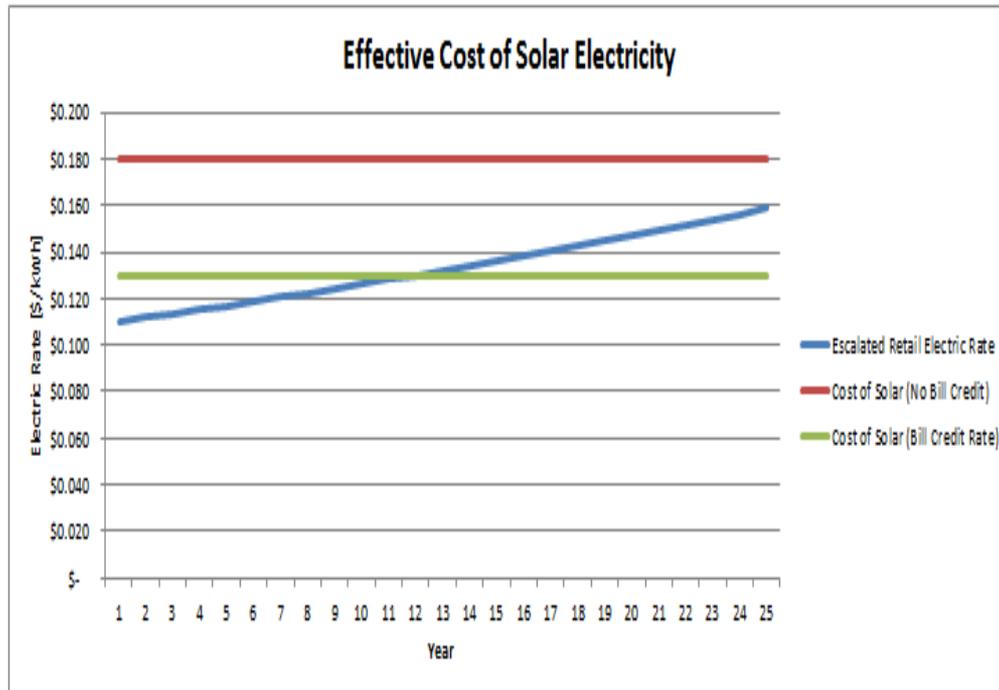
## A Guide to Community Solar

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

[www.nrel.gov](http://www.nrel.gov)

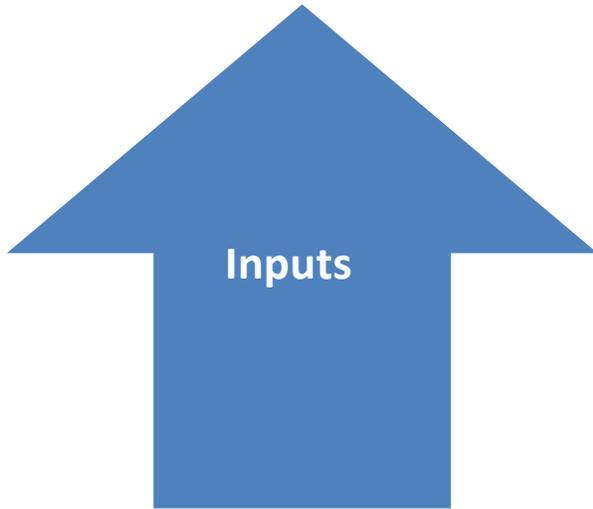


# NREL Community Solar Scenario Tool

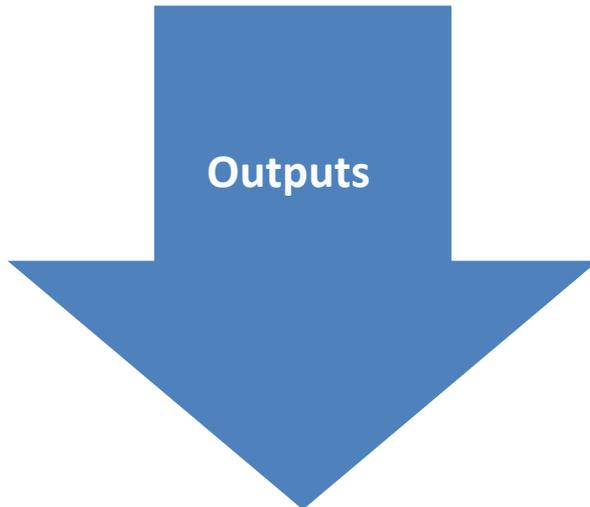


- Spreadsheet model
- Utility and Participant Impacts
- Targeted audience of small utilities
- Nationally applicable
- Utility-sponsored model

# Inputs and Outputs



- Incentives
- Administrative Costs
- System Information
- Geographical Information
- Tax-filing status



- Annual Program Costs
- Subscriber Share Costs/Benefits
- Lifetime System Generation
- Lifetime Electricity Costs

# Decision Support Tool

- Tailored for WA, OR, MT, ID
- Decision support tool
  - Key questions and considerations
  - Considering approaches
- Targeted for local governments or utilities with limited internal expertise
- Online Portal:  
<http://communitysolartool.b-e-f.org/>

The screenshot shows the 'Community Solar Tool' website. The header includes the title 'Community Solar Tool' with the subtitle 'Project planning support', and logos for 'The Resource Innovation Group' and 'Bonneville Environmental Foundation'. The navigation menu contains 'Home', 'Project Basics', 'Costs', 'Revenue', 'Forms & Templates', 'Assumptions & Calculations', 'Glossary', 'FAQ', and 'Calcul'. The 'Project Basics' section is active, displaying a dropdown menu for 'My State is:' set to 'Oregon'. Below this is the 'The System Itself' section with two questions: '1. What size system do you intend to build (estimate if you are not yet certain)?' and '2. Enter installed cost per watt: \$'. Input fields are provided for 'Initial system size' (in kW) and 'installed cost per watt' (in \$/W). A vertical sidebar on the right contains a table of contents with links to 'Oregon', 'Proj. Ann', 'Net Pres', 'Pay Back', 'Return on', 'Costs', 'Startup C', 'Total Sta', 'Total Leg', 'Total Ad', 'Total Ca', 'Revenue', and 'State Inc'.