The NY-Sun Initiative
Solar Powering New York

NY-Sun PV Trainers Network

Intro to Solar Policy
(Abridged Version)

Slides Prepared by the

NY-Sun PV Trainers Network

Presenters: Adam Schnell and Justin Strachan

NY-Sun Initiative

- 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

Statewide Goal of 3 GW

$961 Million Total Budget

Stimulate the Market Place

Reduce Soft Costs

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

About the PV Trainers Network

Lead Organizations

MEISTER CONSULTANTS GROUP

CUNY

ENTECH Engineering INCORPORATED

Supporting Organizations

LAND USE LAW CENTER
PACE LAW SCHOOL

BRONX COMMUNITY COLLEGE

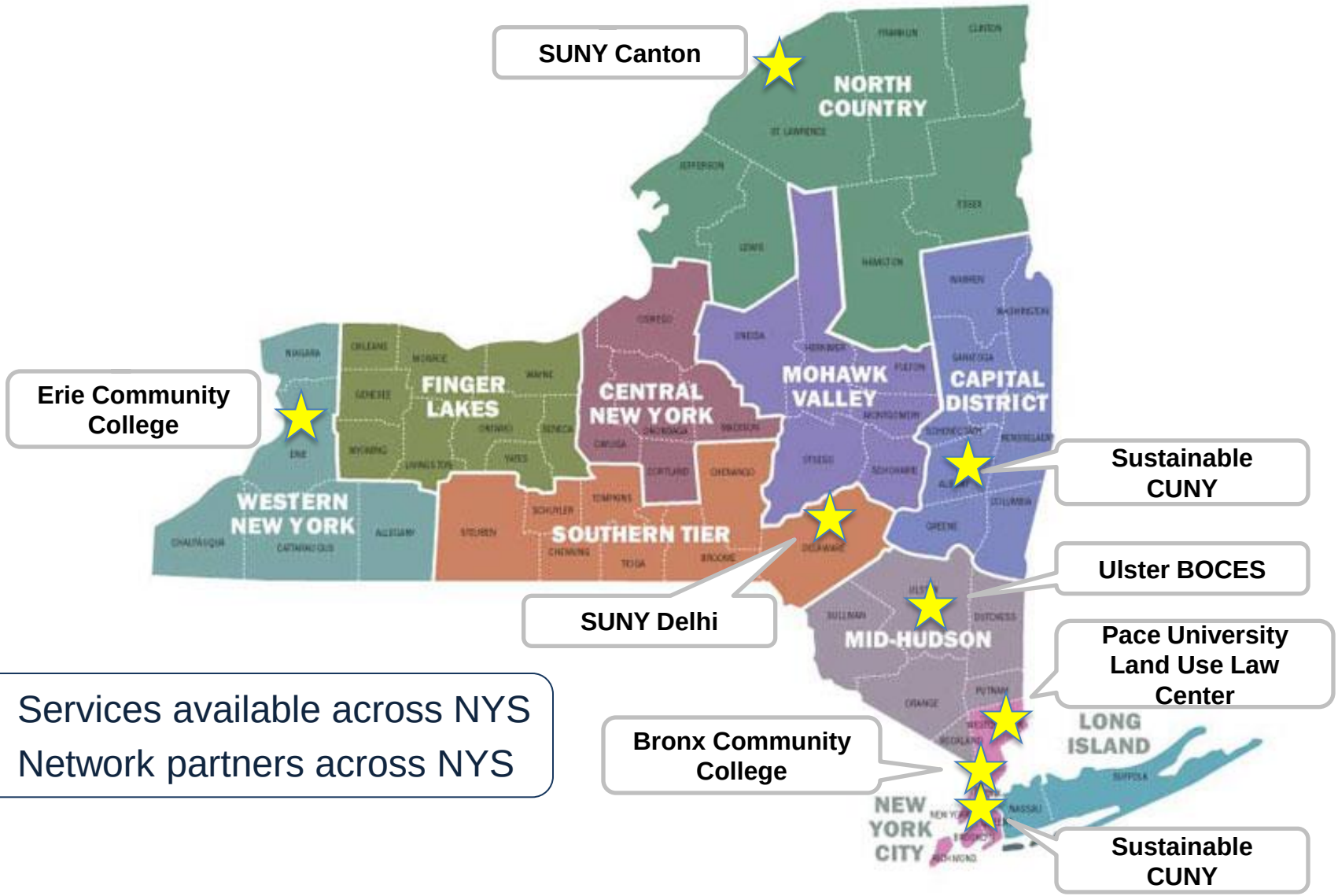
Delhi
STATE UNIVERSITY of NEW YORK

SUNY CANTON

Shared Vision
Shared Commitment
Shared Success
ULSTER BOCES
Board of Cooperative Educational Services

SUNY ecc Workforce DEVELOPMENT

Program Covers Entire State



- Services available across NYS
- Network partners across NYS

PV Trainers Network Services Offered

Intro to Solar Policy

- In-Depth Trainings
- One-on-one Assistance
- Resources

Visit: https://training.ny-sun.ny.gov/trainings

PV Trainers Network Services Offered

Trainings targeting specific audiences to help them quickly get up to speed on key solar issues

In-Depth Trainings

Intro to Solar Policy

One-on-one Assistance

Resources

Visit: https://training.ny-sun.ny.gov/trainings

PV Trainers Network Services Offered

Intro to Solar Policy

Targeted assistance through ask the expert portal:

- Municipal procurement processes
- Solar ordinance adoption
- Remote troubleshooting

In-Depth Trainings

One-on-one Assistance

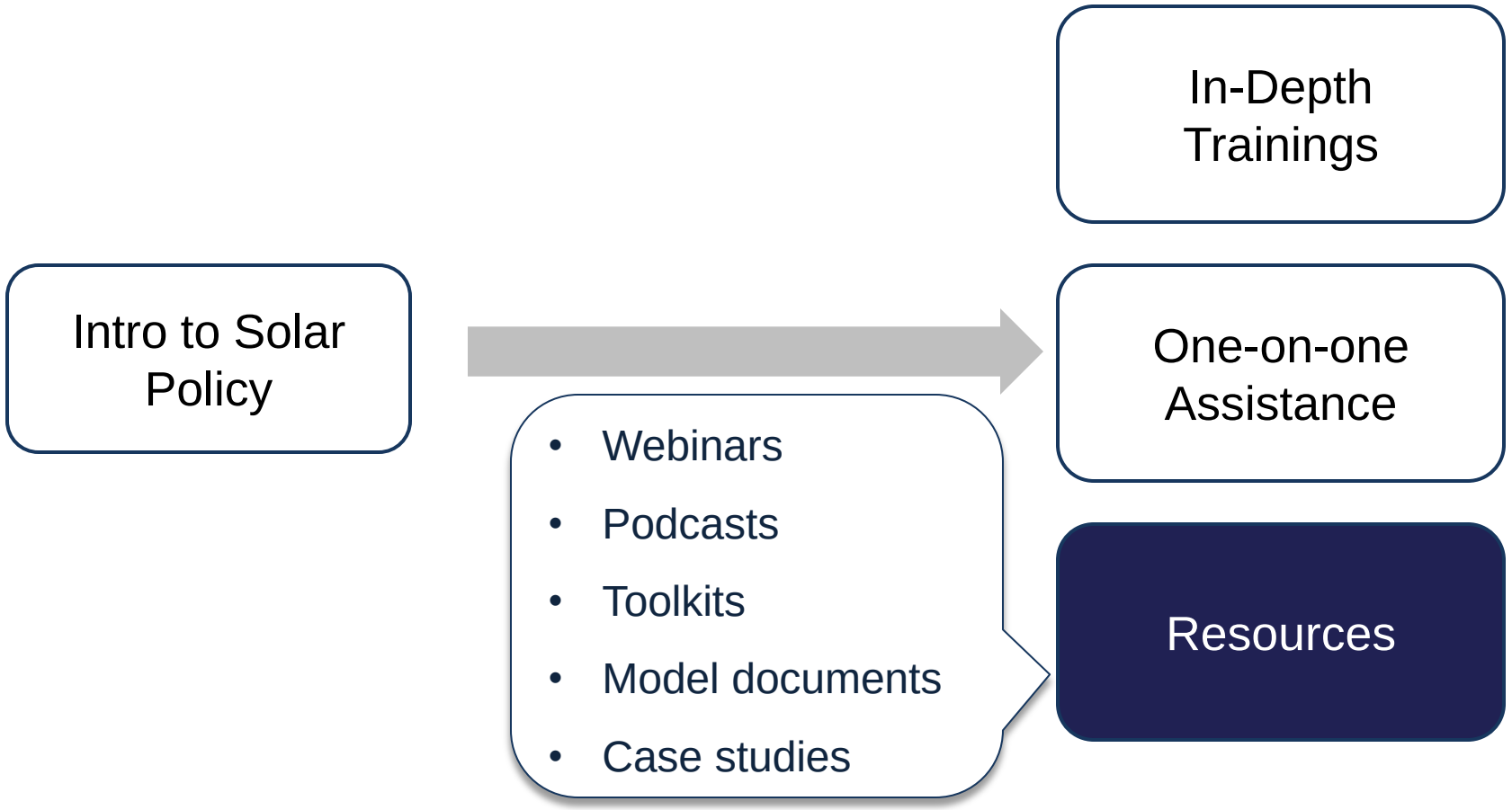
Resources

Visit: https://training.ny-sun.ny.gov/technical-assistance/ask-the-expert

Sample In-Depth Training Topics

Audience	Workshop
Code Officials & Inspectors	Solar PV Permitting and Inspection Methods
First Responders	Safety and Fire Considerations for Solar PV
Plan Examiners, Engineers & Architects	Solar PV for Engineers and Architects
Administrators	Introduction to Solarize: Stimulating Local Solar Market Growth
	Expanding Commercial Solar with a PACE Program
Code Officials & Plan Examiners	Streamlining Solar Permitting
Planners	Land Use Permitting for Solar
	Zoning for Solar Energy

PV Trainers Network Services Offered



Visit: https://training.ny-sun.ny.gov/resources-5

Agenda

1. **Introduction to Solar PV & an Intro to Solar Soft Costs**
2. Federal, State, and Utility Policy Drivers
3. Making your Community Solar Ready
4. Developing Solar Policy For Your Community

Introduction to Solar: Technology

Solar Photovoltaic (PV)

Electricity

Residential
Commercial

Solar Hot Water

Hot Water
Space Heating

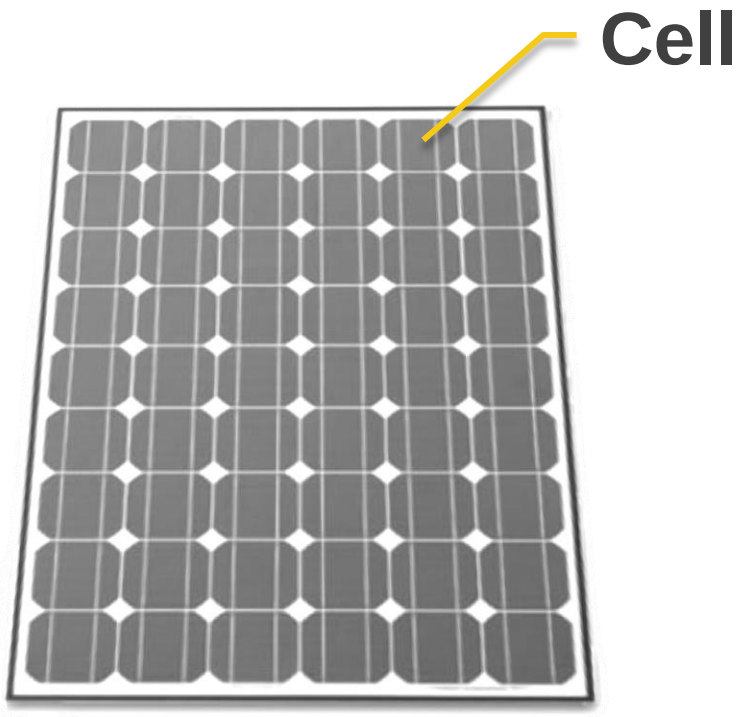
Residential
Commercial

Concentrated Solar Power

Electricity

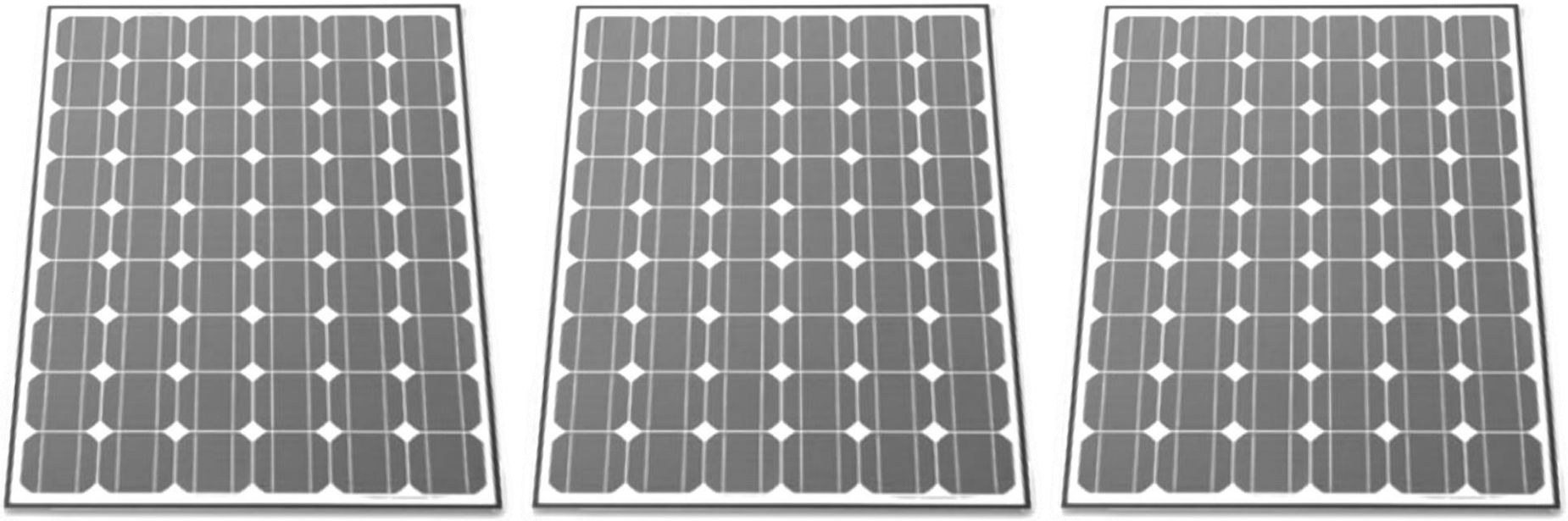
Commercial

Some Basic Terminology



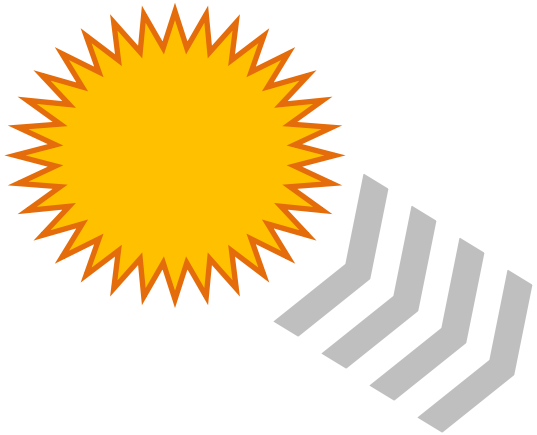
Panel / Module

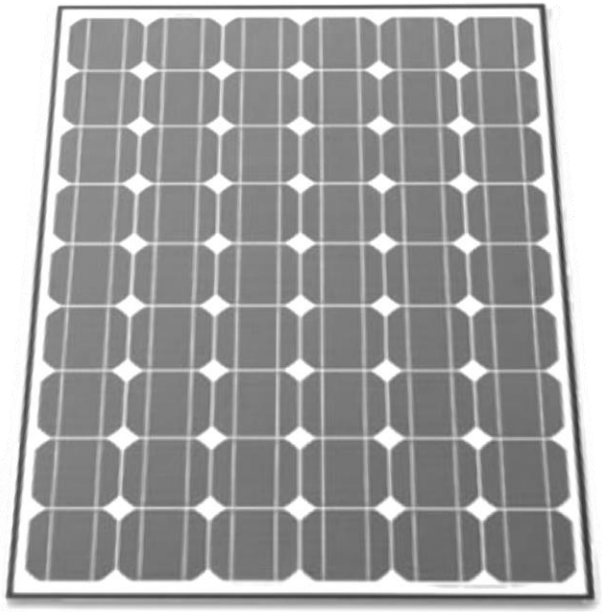
Some Basic Terminology



Array

Some Basic Terminology





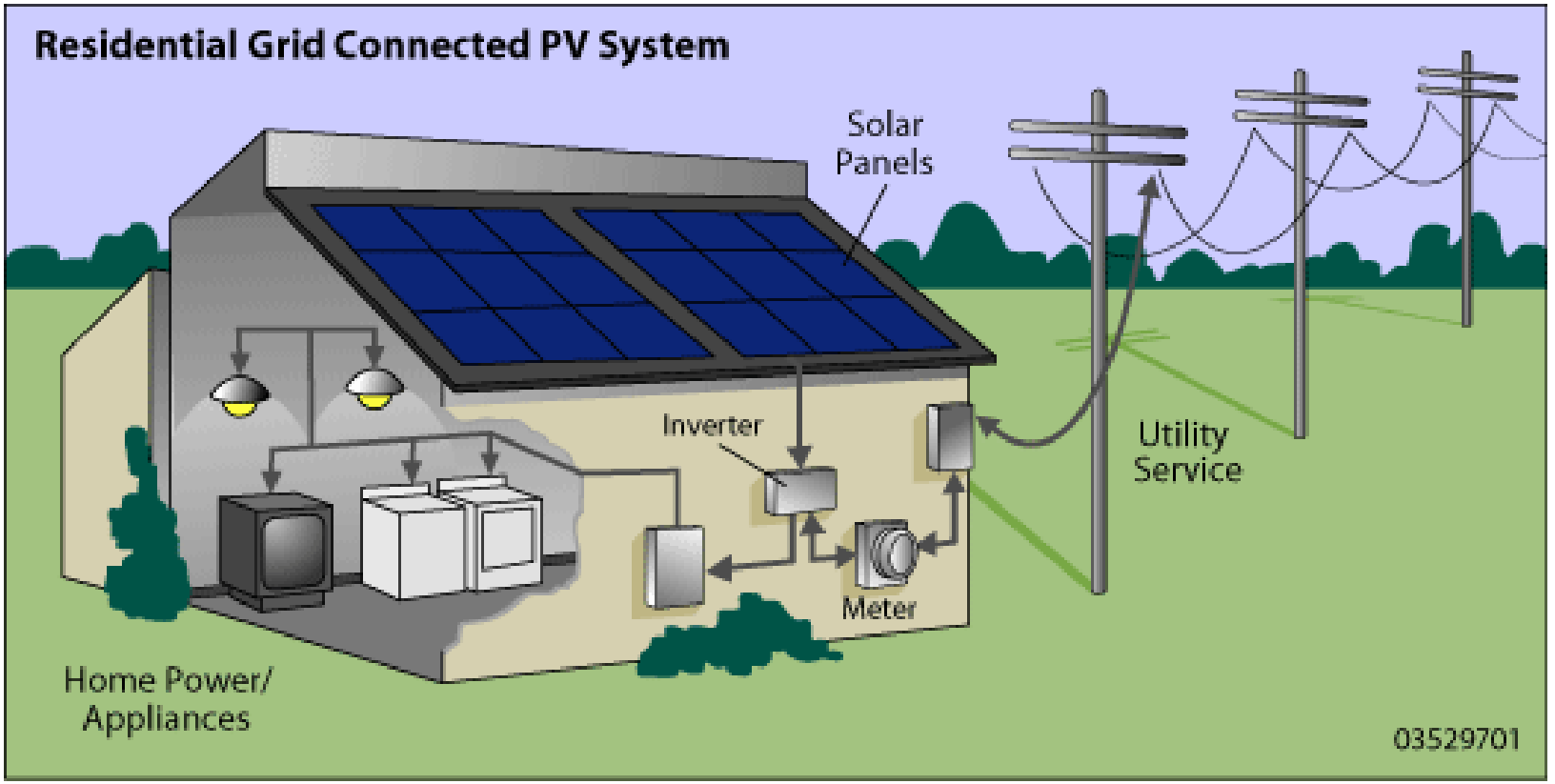
Capacity / Power

kilowatt (kW)

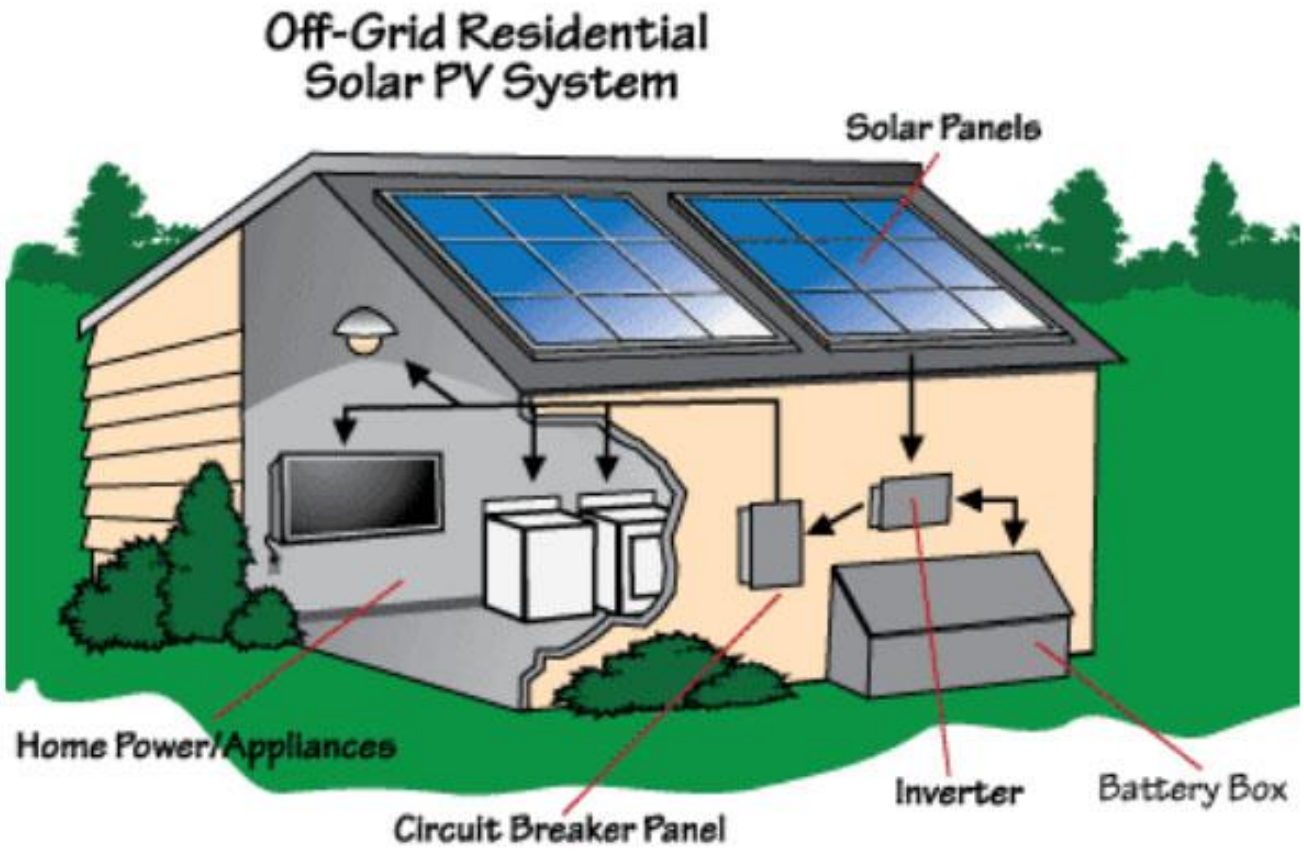
Production

Kilowatt-hour (kWh)

System Components



System Components



Scale

Residence
5-10 kW

Factory
1 MW+

Office
50 – 500 kW

Utility
2 MW+

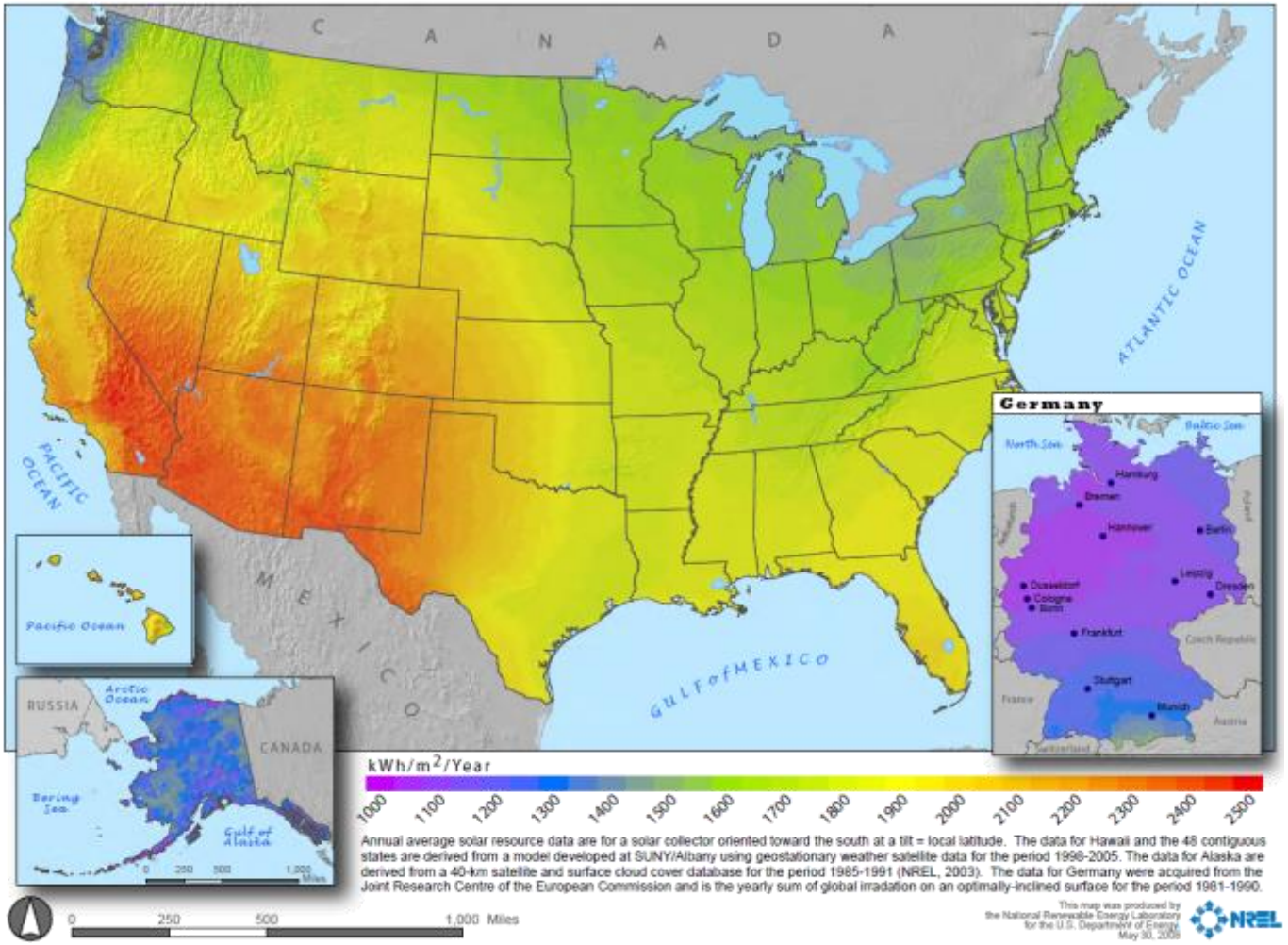
System Types

Roof Mount

Ground Mount

Parking Canopy

Not Enough Sun in NY?



Source: National Renewable Energy Laboratory

Ownership Options for Solar

Direct Ownership

Third-Party Ownership

Direct Ownership

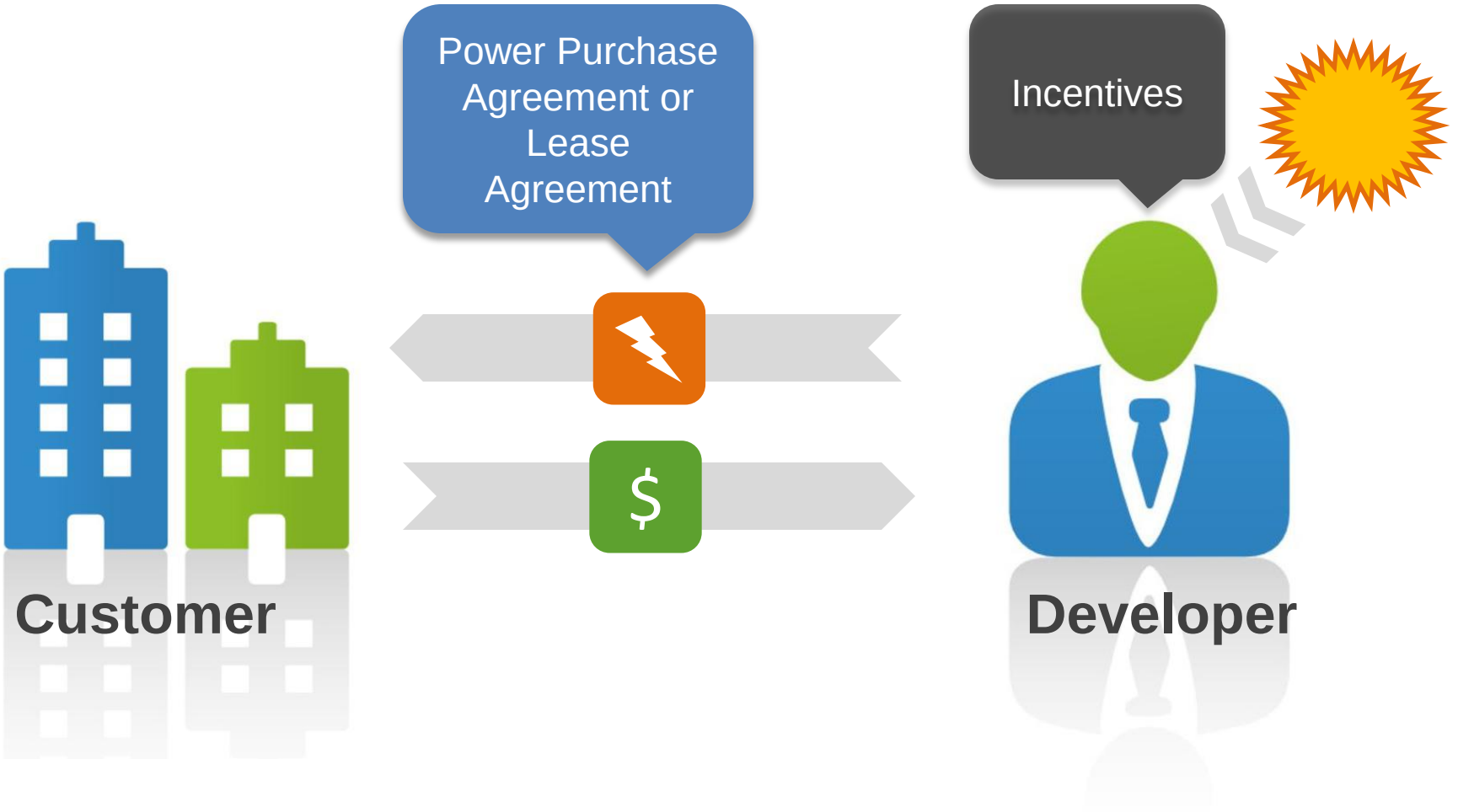
Cost

- Installed cost
- Maintenance
- Customer bears risk

Benefit

+ Avoided energy cost
+ Excess generation
+ Direct incentive

Third Party Ownership



Third Party Ownership

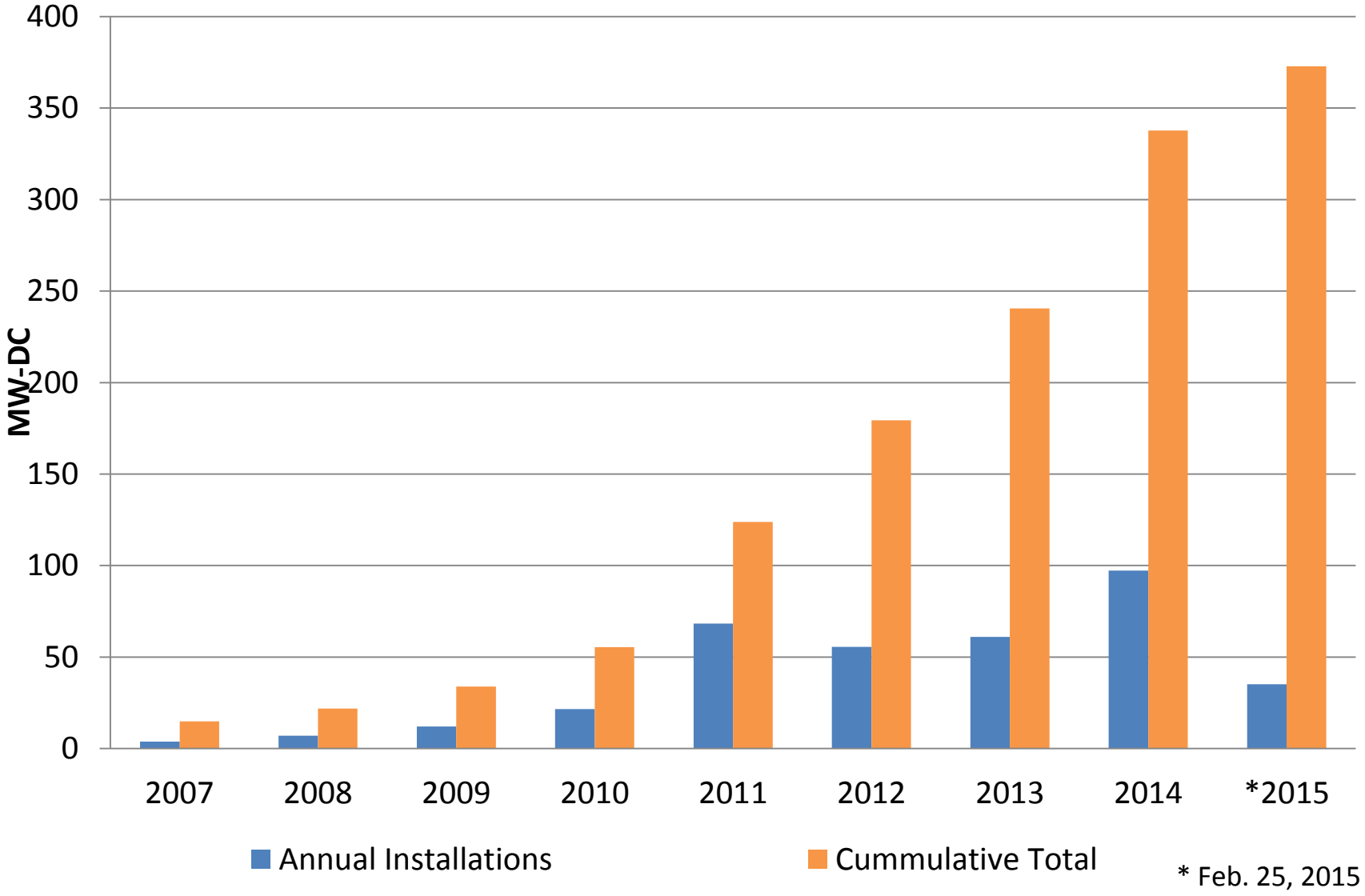
Cost

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

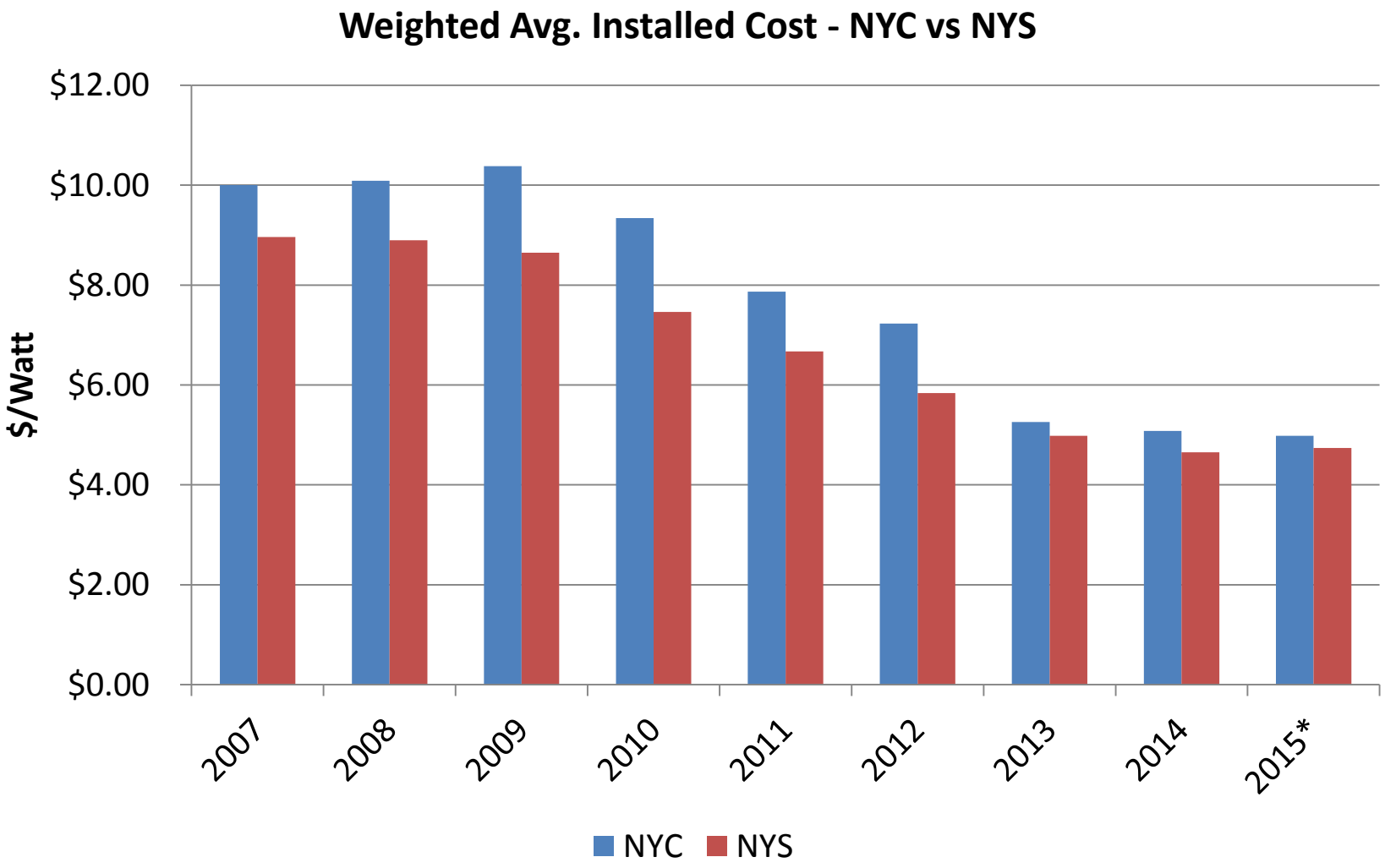
Benefit

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

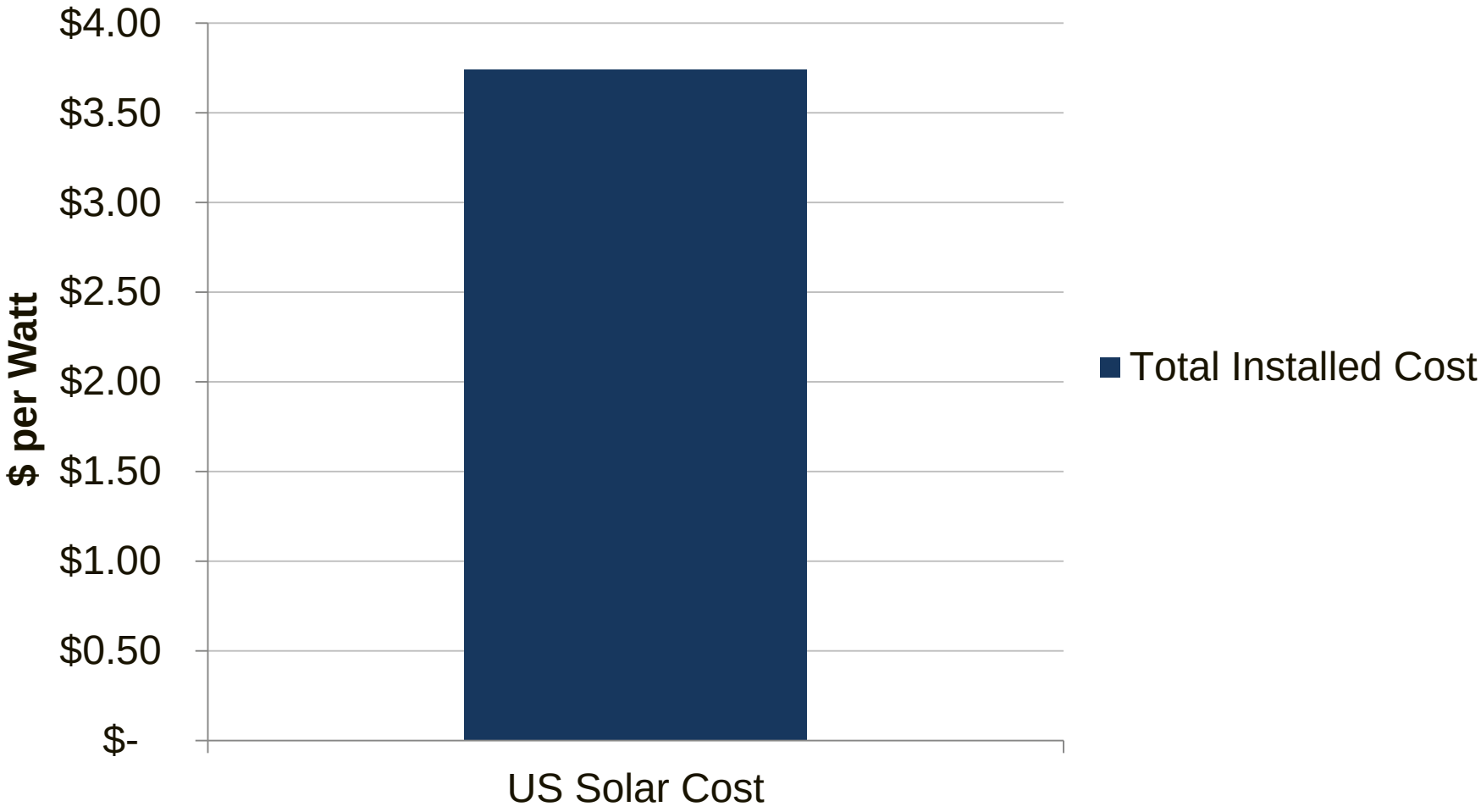
NY State Solar Market



NY Weighted Avg Installed Cost

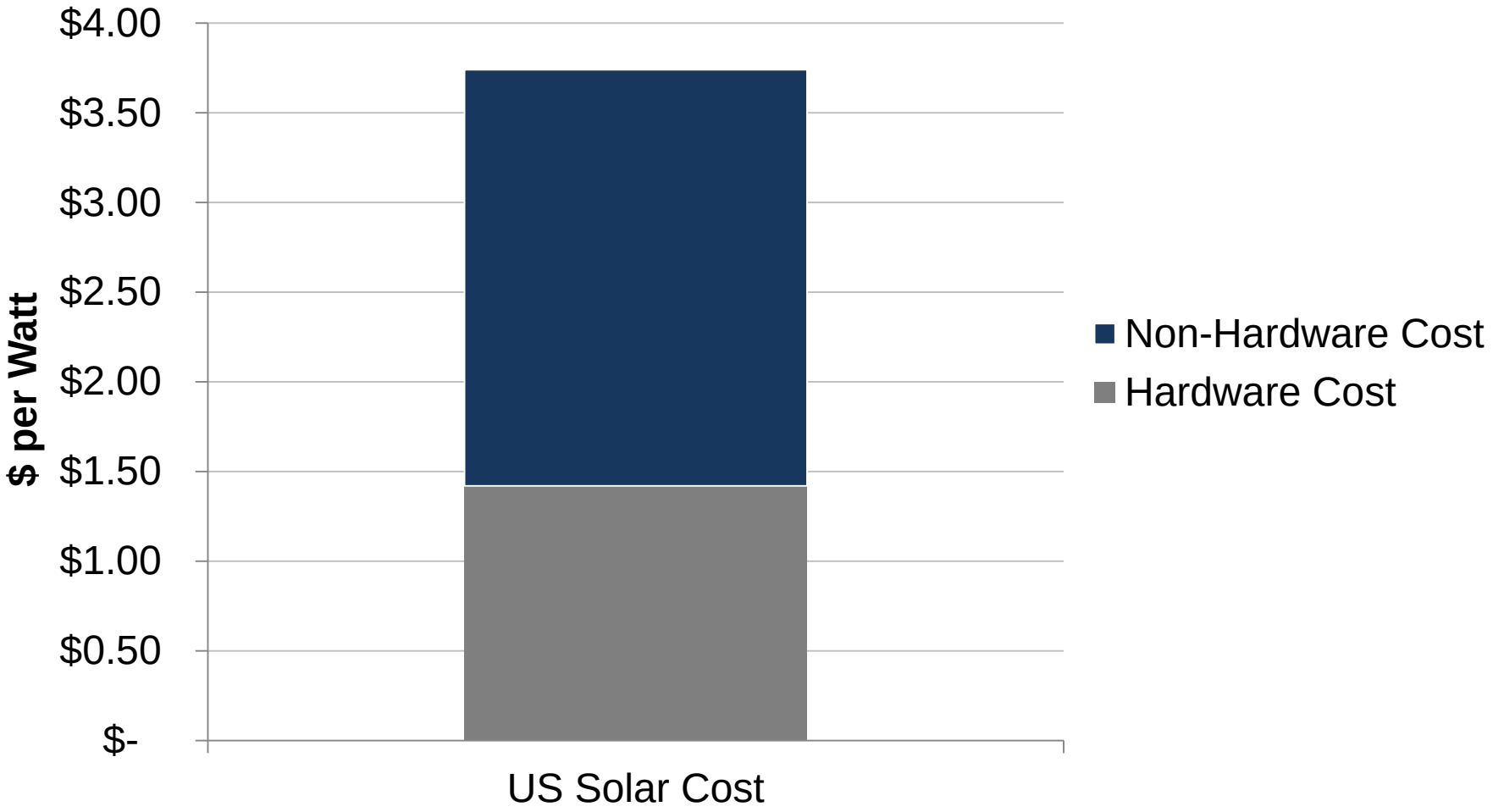


US Solar Costs



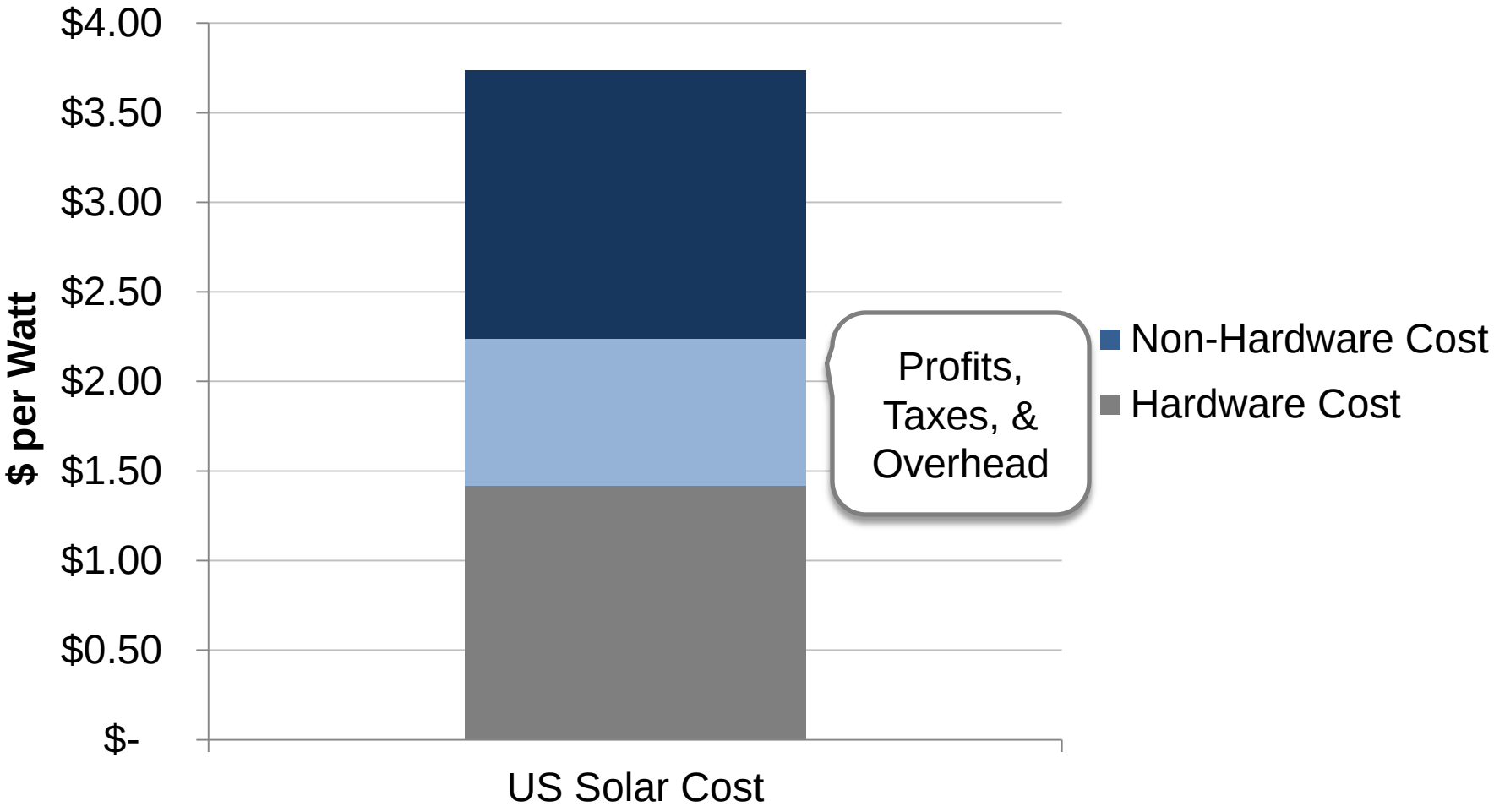
Source: Solar Market Insight Report 2014 Q3, Average of Q1, Q2 and Q3 Residential PV System Pricing ($/W)

US Solar Costs



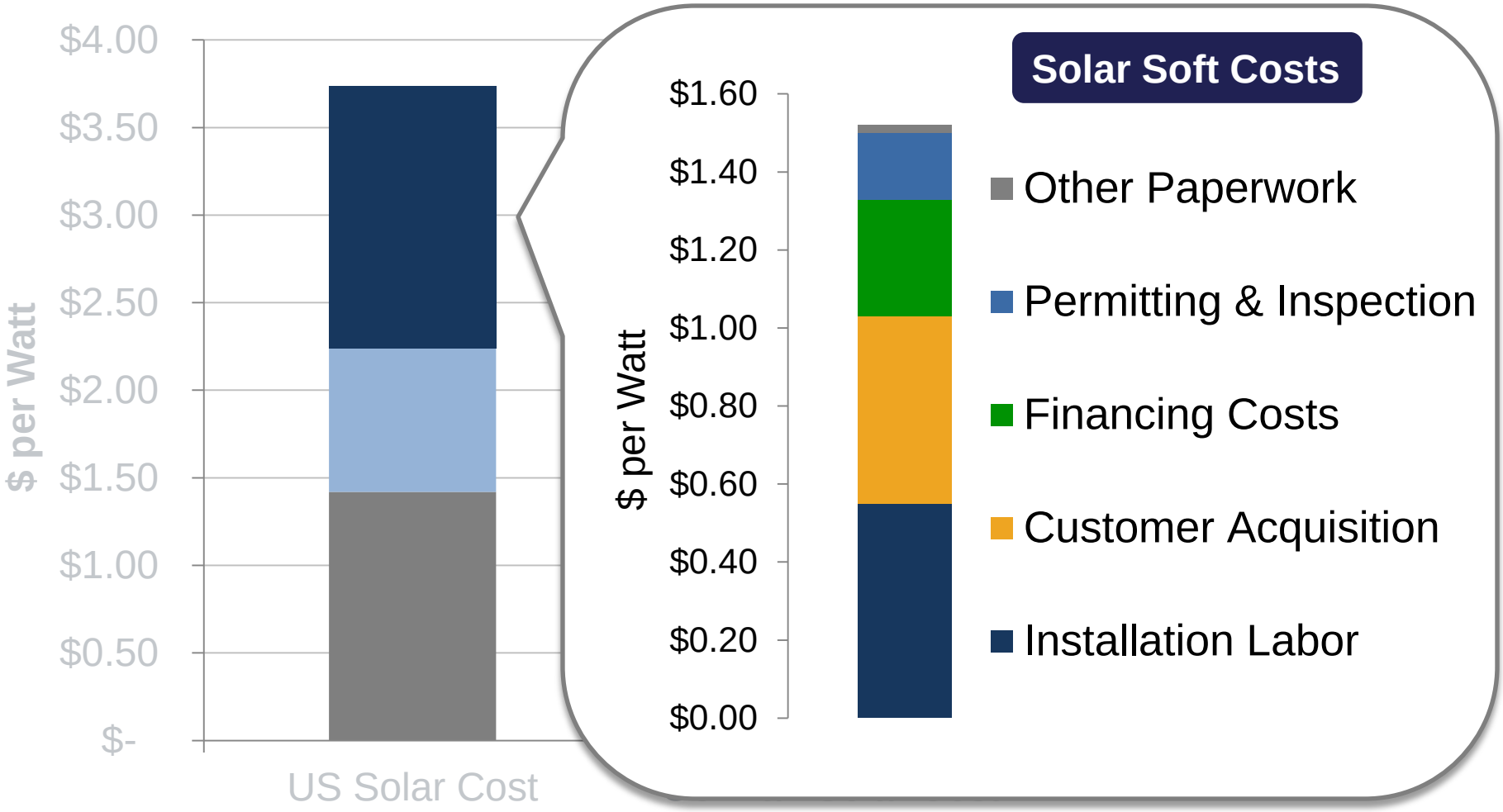
Source: Solar Energy Industry Association

US Solar Costs



Source: Solar Energy Industry Association

US Solar Costs



Agenda

1. Introduction to Solar PV & an Intro to Solar Soft Costs

2. **Federal, State, and Utility Policy Drivers**

3. Making your Community Solar Ready

4. Developing Solar Policy For Your Community

Policies & Incentives

Federal

- Investment Tax Credit

State & Utility

- Solar Tax Credit
- NY-Sun Incentive Program
- Net Metering

Local

- Planning & Zoning
- Permitting
- Market Development
- Financing

Policies & Incentives

Federal

- Investment Tax Credit

State & Utility

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- Net Metering

Local

- Planning & Zoning
- Permitting
- Market Development
- Financing

Investment Tax Credit

Type: Tax Credit

Eligibility: For-Profit Organization, Homeowner

Value: 30% of the installation

Term: Expires Dec. 31 2016 (for commercial it drops to 10%)

Policies & Incentives

Federal

Investment Tax Credit

State & Utility

Solar Tax Credit

NY-Sun Incentive Program

Net Metering

Local

Planning & Zoning

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:

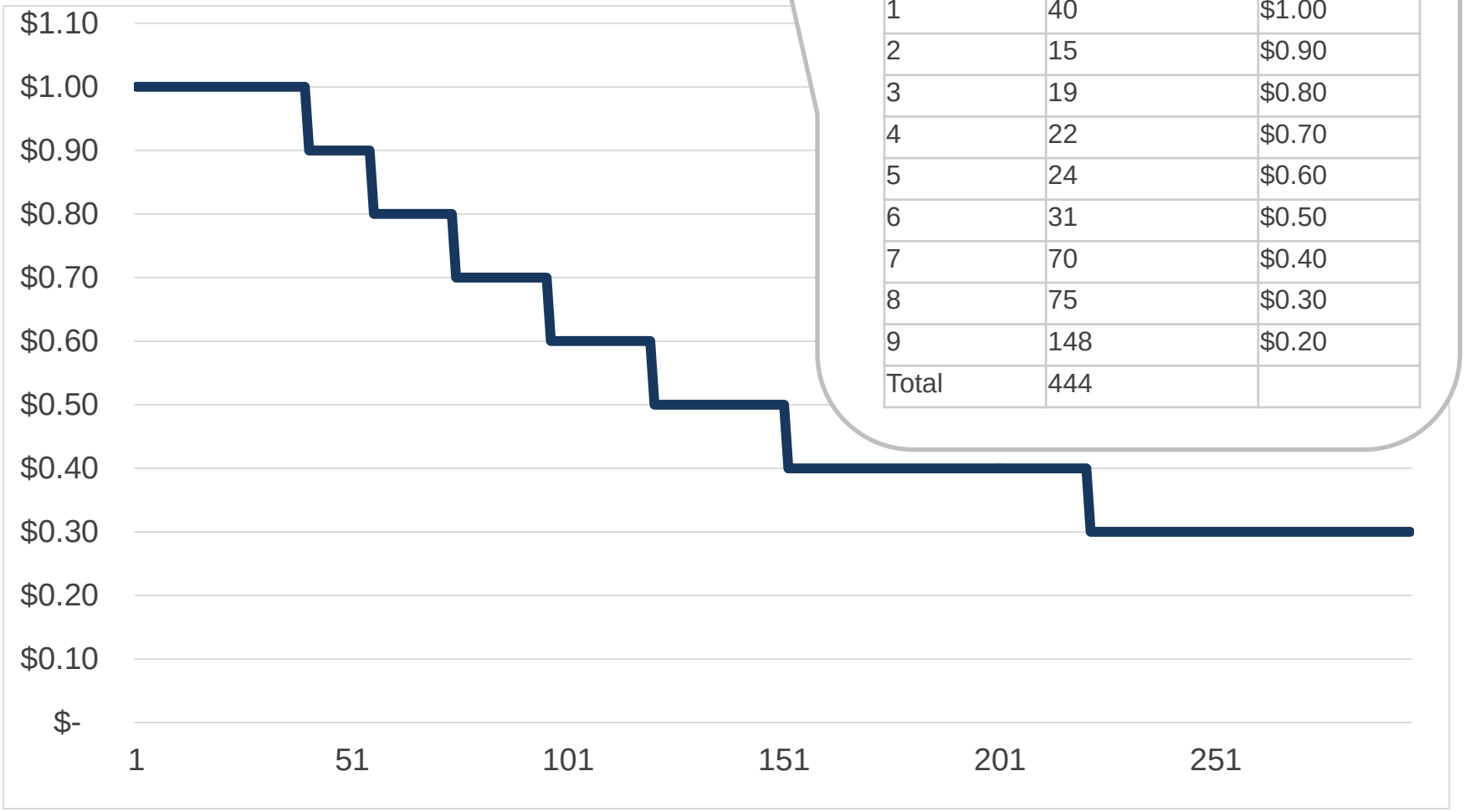
- Residential: up to 25 kW
- Small Non-residential: up to 200 kW
- Large Non-residential: > 200 kW (available 2015)

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

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

Net Metering

- Allows customers generating electricity from Solar PV to send extra electricity not being used onsite back into the electric grid in exchange for net metering credits on their utility bill.
- These net metering credits can be used to offset future electricity use.

Remote Net Metering

- Allows eligible non-residential customers to apply their net metering credits to offset the electricity usage of other properties they own or lease thereby reducing electricity costs
- Eligible properties must be:
  - Under the same customer account name
  - Within the same utility
  - Within the same NYISO zone

Agenda

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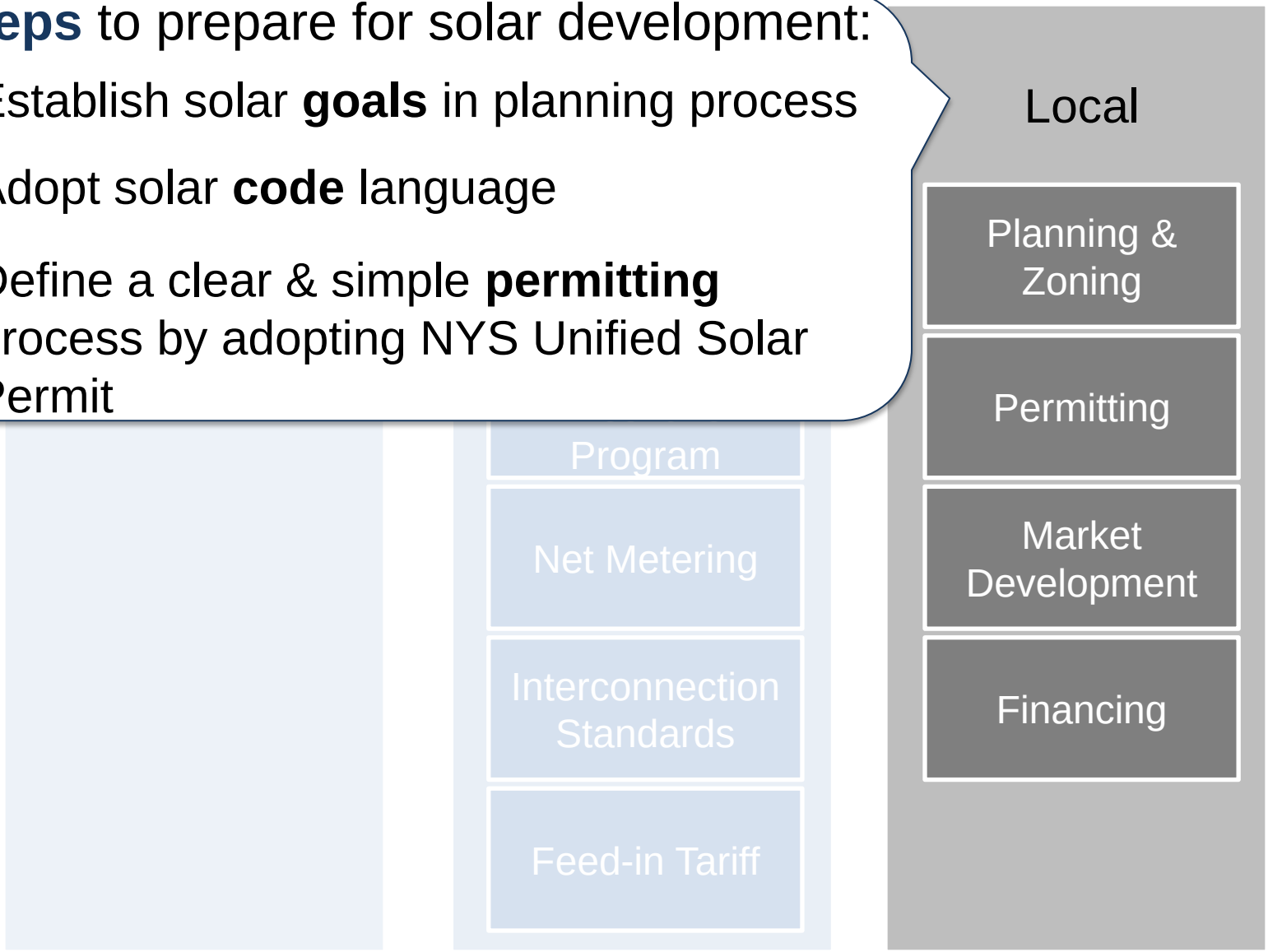
3. **Making your Community Solar Ready**
4. Developing Solar Policy For Your Community

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



Planning Process

Goal Setting

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

Set Solar Specific Goals

- 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?

Integrate Solar Goals in Plans

Communitywide Comprehensive Plan

Neighborhood Plans

Corridor Plans

Special District Plans

Green Infrastructure Plans

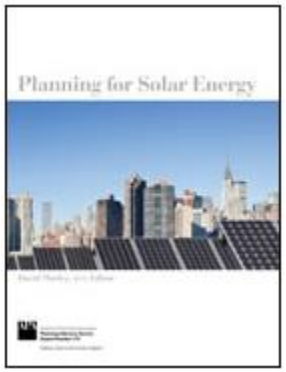
Energy Plan

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

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

2 Update Code Zoning Code Framework

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

Source: American Planning Association

Zoning Code-Small Scale

Small Solar:

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

Zoning Code-Large Scale

Large Solar:

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

Zoning Code Historic Districts

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

Solar Ready Construction:

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

Solar Ready Construction

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

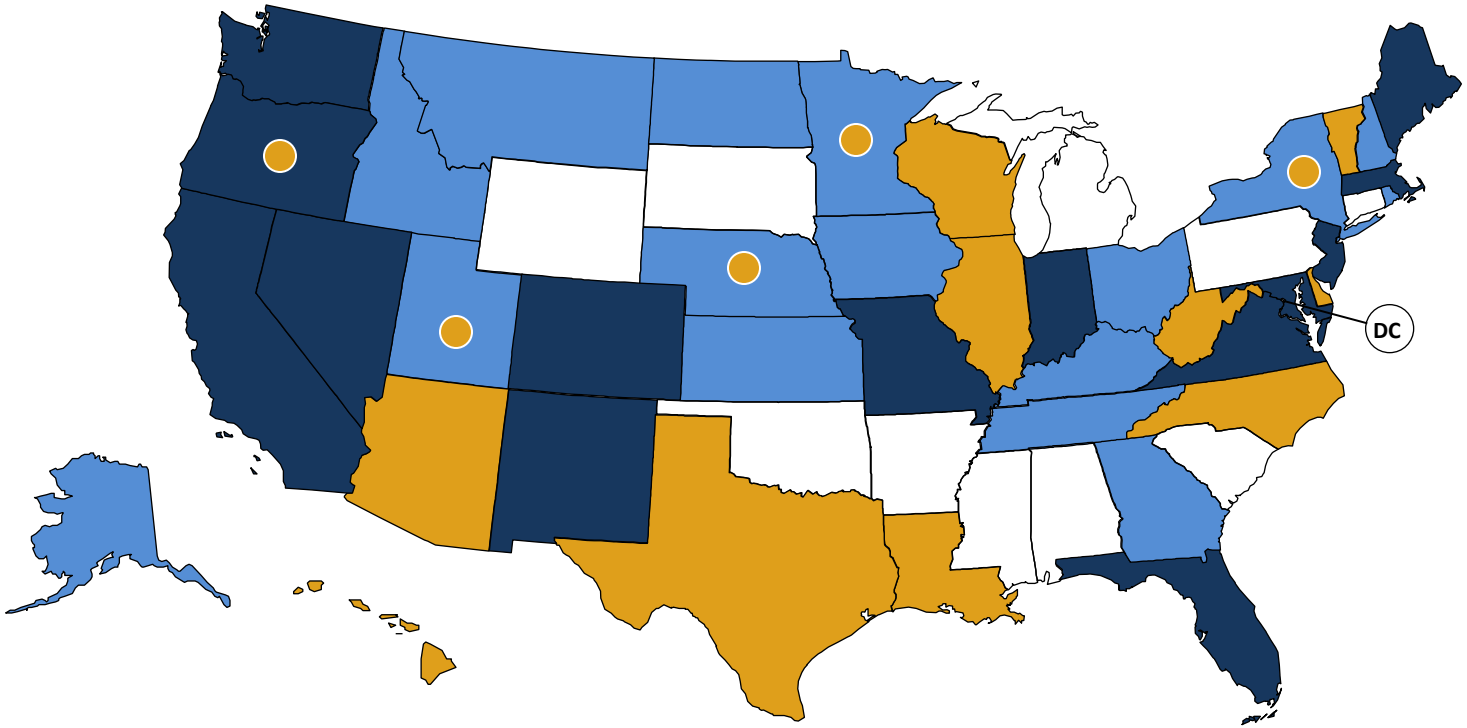
NREL: Solar Ready Buildings Guide- Contains a checklist for municipalities

Solar Access Laws

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

2 Update Code Solar Access Laws



Solar Easements Provision

Solar Rights Provision

Solar Easements and Solar Rights Provisions

Local option to create solar rights provision

Source: DSIRE

Zoning Code Resources

Model Small-Scale Solar Siting Ordinance

Columbia Law School

web.law.columbia.edu

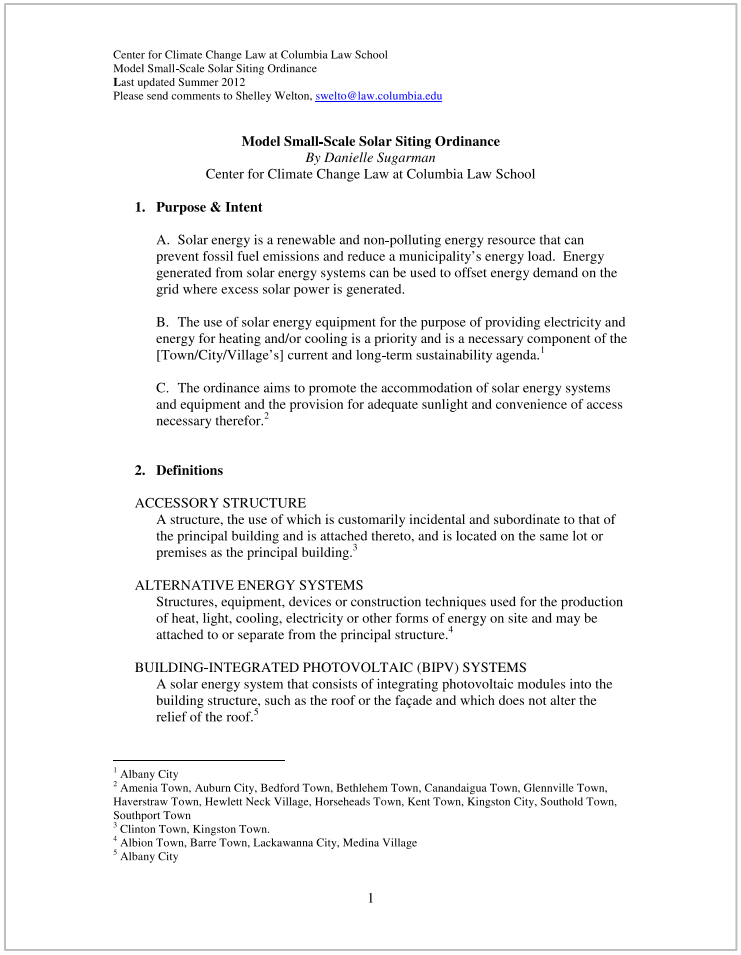
Department of Energy

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

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.[1]

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.[2]

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.[3]

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.[4]

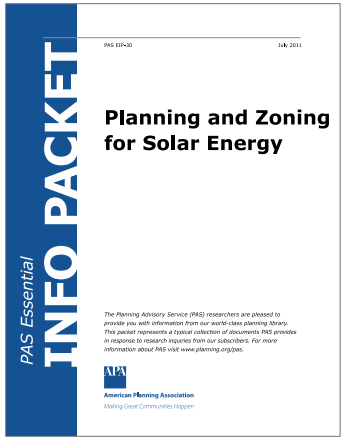
BUILDING-INTEGRATED PHOTOVOLTAIC (BIPV) SYSTEMS
A solar energy system that consists of integrating photovoltaic modules into the building structure, such as the roof or the façade and which does not alter the relief of the roof.[5]

[1] Albany City
[2] 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
[3] Clinton Town, Kingston Town.
[4] Albion Town, Barre Town, Lackawanna City, Medina Village
[5] Albany City

1

2 Update Code

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

In-Depth Workshop

Zoning for Solar (Available 2015)

One-on-One Assistance

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

Market Challenges

1,550+ local jurisdictions in NY

with unique permitting requirements

Source: NREL

Review Process

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

3 Simplify Permit NYS Unified Solar Permit

For simple small-scale installations

Based on industry standards

Defined review timeline

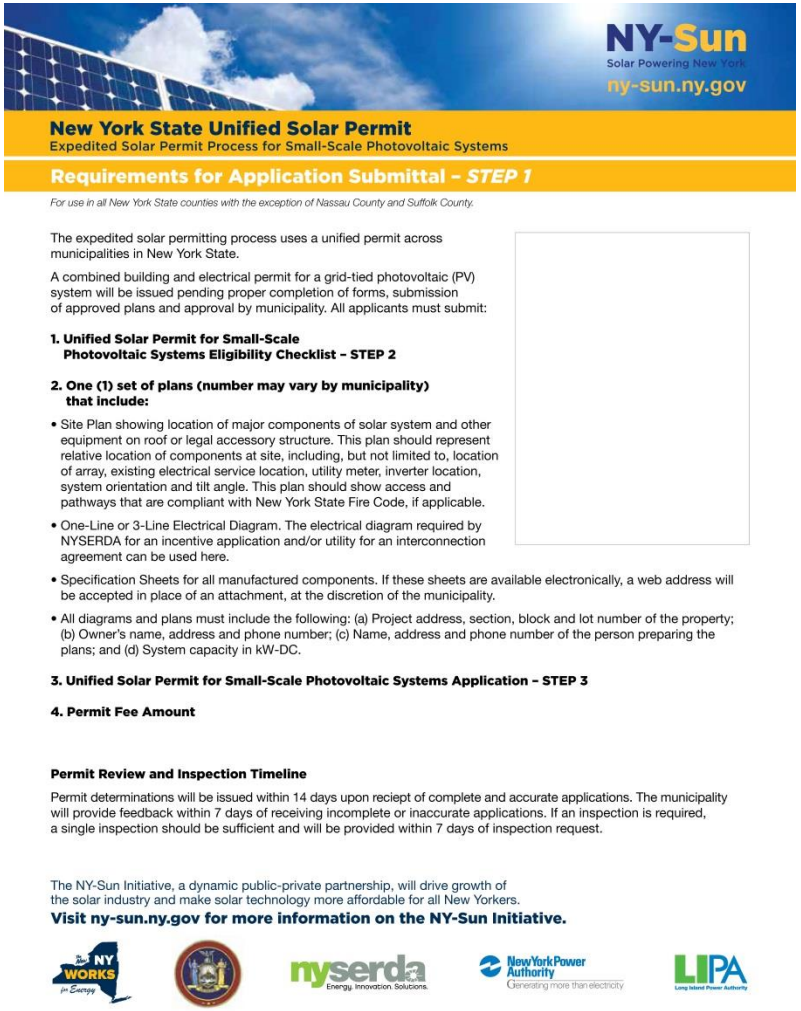
Defined permit fee

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)



NY-Sun
Solar Powering New York
ny-sun.ny.gov

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 reciept 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 for more information on the NY-Sun Initiative.

3 Simplify Permit 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

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

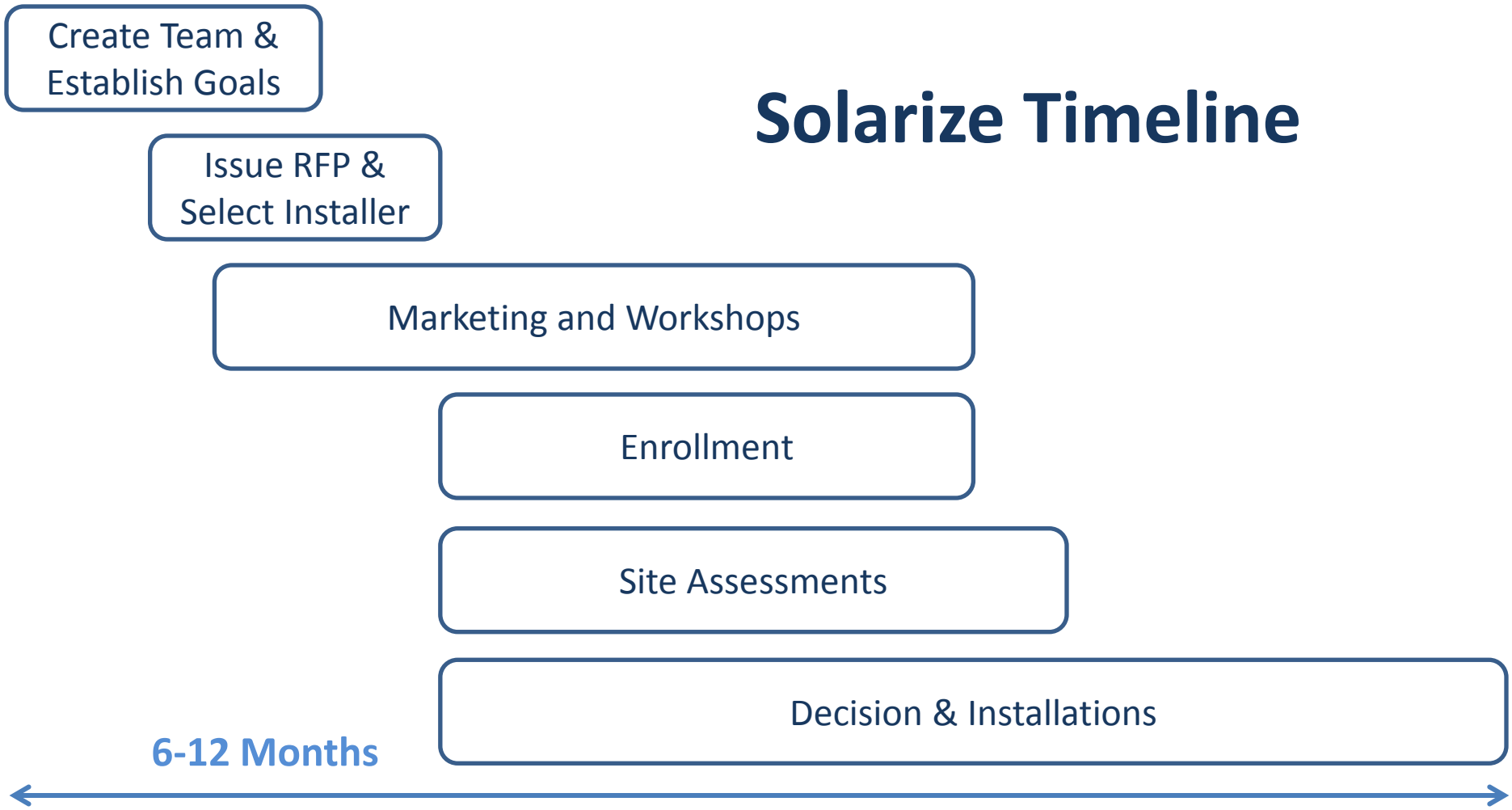
Agenda

1. Introduction to Solar PV & an Intro to Solar Soft Costs
2. Federal, State, and Utility Policy Drivers
3. Making your Community Solar Ready
4. **Programs to Grow Your Solar Market**

What is Solarize?

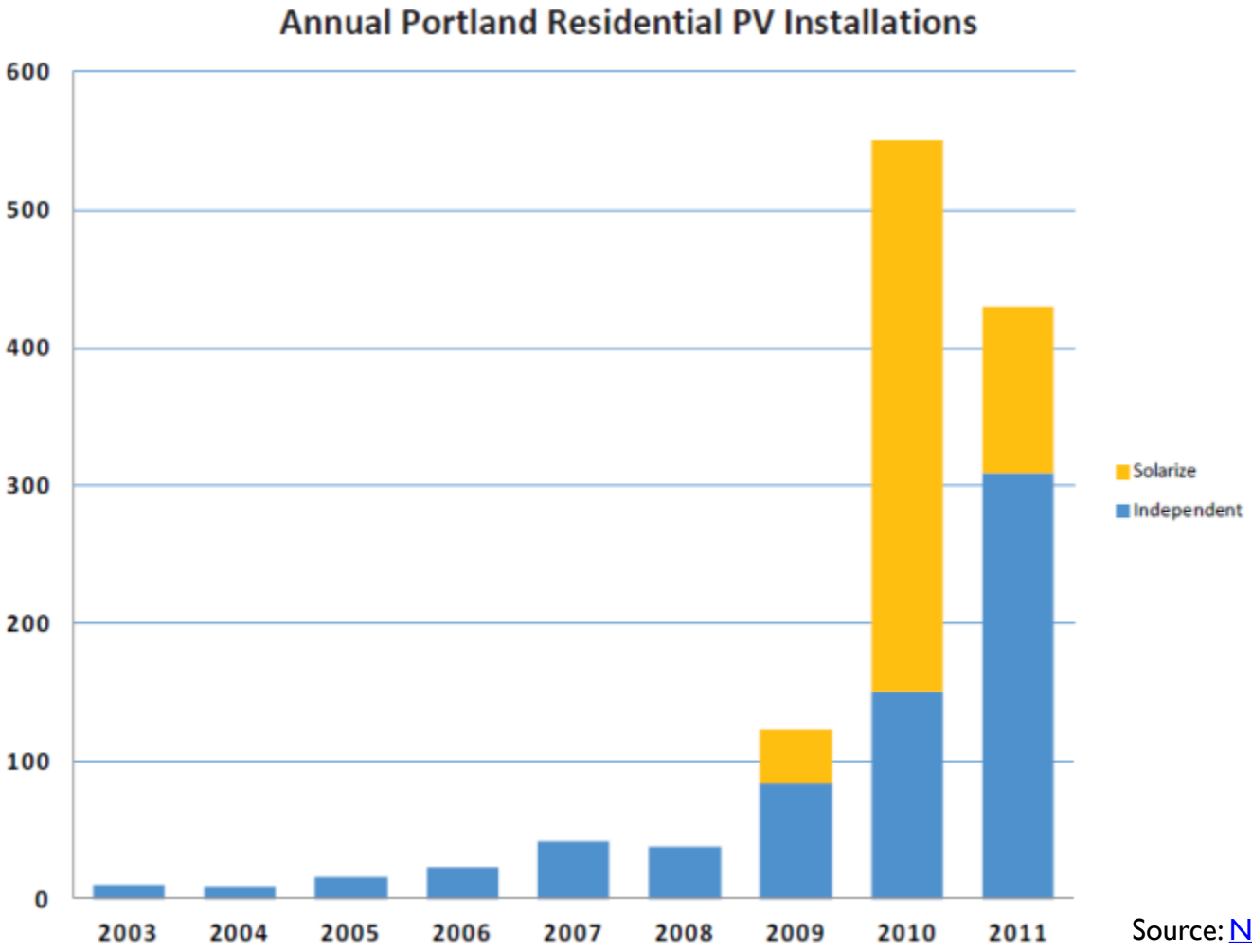
- Group purchasing for residential Solar PV
- Program normally run by community organization or local govt agency
- Addresses:
  - High upfront cost → Group Purchase
  - Complexity → Community Education
  - Customer Inertia → Limited-time offer
- Low implementation cost: $5,000 - $10,000
- Quick turn-around: 9 Months
- Long-term impact: Sustainable ecosystem

Solarize: Process



1 Run Solarize

The Network Effect



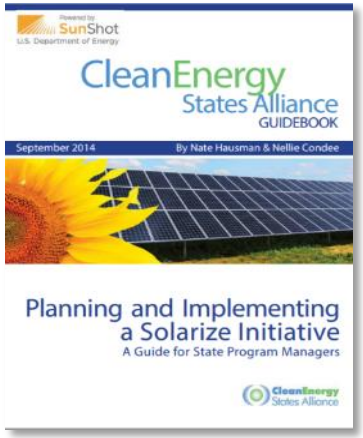
Source: NREL Solarize Guidebook

1 Run Solarize Where to Start

Resource

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

http://www.cesa.org



The Solarize Guidebook

www.nrel.gov

NY-Sun Services

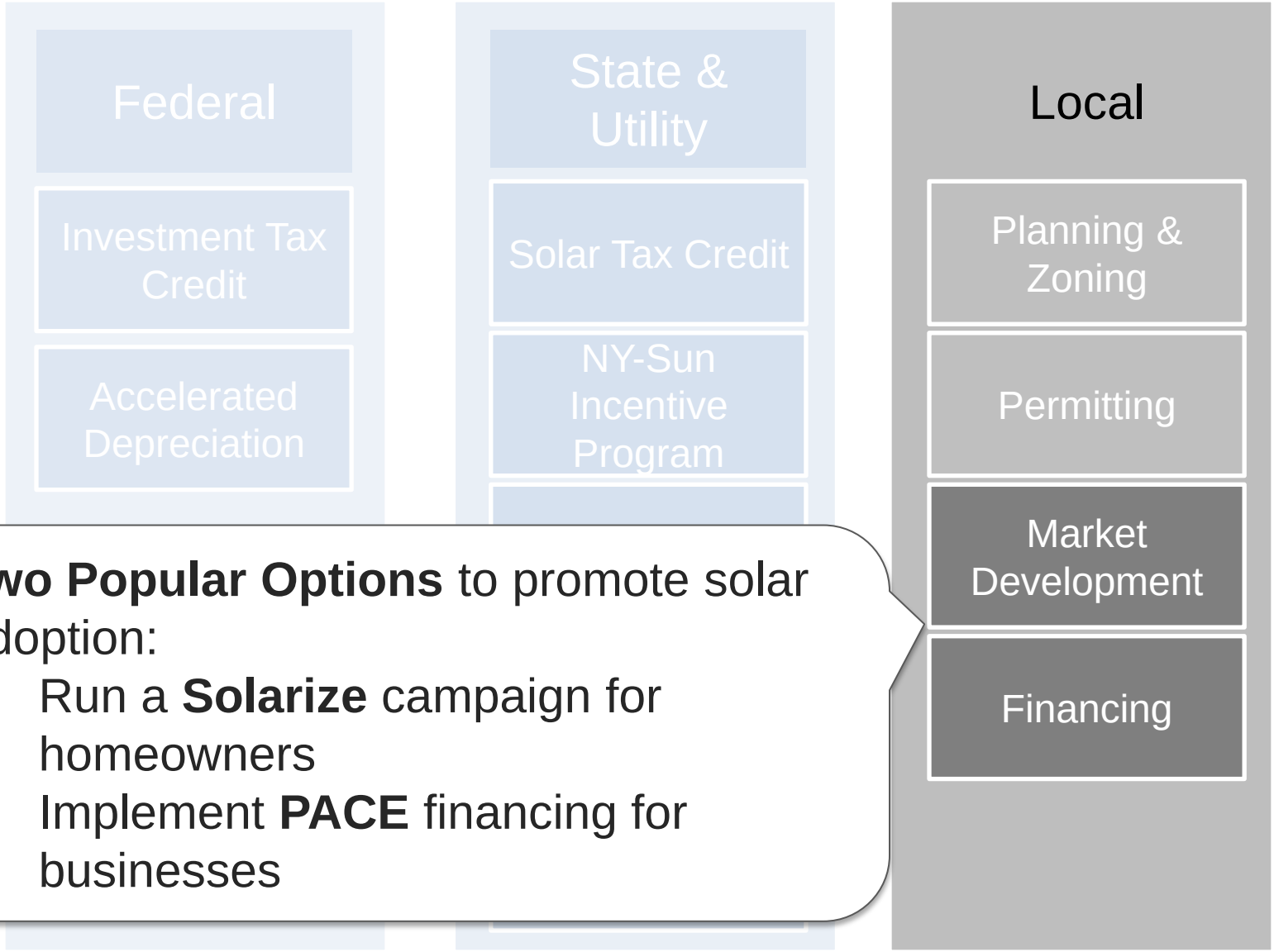
PV Trainers Network

- Workshop: Introduction to Solarize
- https://training.ny-sun.ny.gov/courses-workshops

Community Solar NY

- Funding and support to assist communities with rolling out solarize campaigns
- Visit: http://ny-sun.ny.gov/Get-Solar/Community-Solar

Policies & Incentives



Two Popular Options to promote solar adoption:

1. Run a **Solarize** campaign for homeowners
2. Implement **PACE** financing for businesses

What is PACE?

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.

Enable 2 PACE Commercial PACE in NY

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 property tax charge
- PACE granted senior lien status
- 14 municipalities have signed on
- Improvements must have savings to investment ratio >1
- To participate:
  - Pass the Local Law
  - Sign the Municipal Agreement (IMA)
  - Formally request membership from EIC

Energize NY Finance Model

Energy Improvement Corporation

Energize NY Finance offered to property owner

$

Building within municipal boundaries

$

Special Tax "Charge" payments

Municipal Tax Receiver

$

Pledged Municipal Payments

Bank Trustee For Energy Improvement Corp

$

Bond payments

Bank of America Merrill Lynch

FIRST NIAGARA

$

Bond funds

CAPITAL FLOW

Allows for lower cost of capital

Where to Start

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

NY-Sun PV Trainers Network Services

- Workshop: Expanding Commercial Solar Financing Options with a PACE Program
- https://training.ny-sun.ny.gov/courses-workshops

One-on-One Assistance

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

Want to Learn More?

Target Audience	PV Trainers Network Workshop
Code Officials & Inspectors	Solar PV Permitting and Inspection Methods
First Responders	Safety and Fire Considerations for Solar PV
Plan Examiners, Engineers & Architects	Solar PV for Engineers and Architects
Administrators	Introduction to Solarize: Stimulating Local Solar Market Growth
	Expanding Commercial Solar with a PACE Program
Code Officials & Plan Examiners	Streamlining Solar Permitting
Planners	Land Use Permitting for Solar
	Zoning for Solar Energy

Next Steps: What else can communities do?

- Attend a training
- Host an event
- Request one-on-one assistance

Visit: https://training.ny-sun.ny.gov
Contact us: info@training.ny-sun.ny.gov