



NY-Sun PV Trainers Network

NY Unified Solar Permit and Municipal Solar

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NY-Sun PV Trainers Network



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

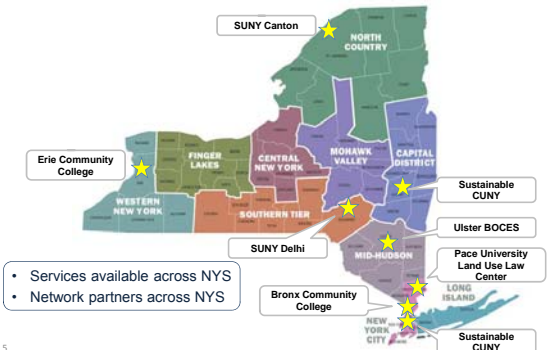


Supporting Organizations



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Program Covers Entire State



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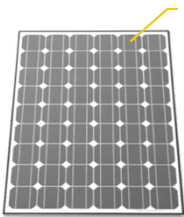
Agenda

1. Solar Technology Background
2. The New York Solar Market
3. Local Solar Policy 101
4. **Streamlined Solar Permitting**
5. Incentives for Solar in New York State
6. Financing Municipal Solar
7. Municipal Solar Procurement Process
8. Resources

Solar Technology Background

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Some Basic Terminology

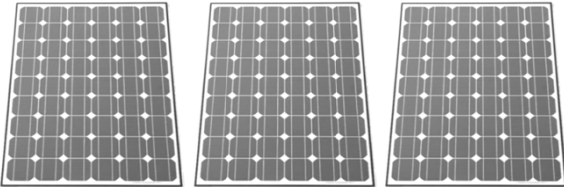


Cell

Panel / Module

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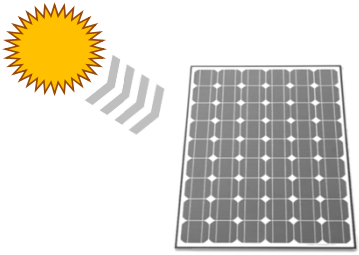
Some Basic Terminology



Array

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Some Basic Terminology




Production
Kilowatt-hour (kWh)

Capacity / Power
kilowatt (kW)

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System Components

The Grid Tied Solar Electric System




Solar Panels
Sunlight creates DC Electricity

Inverter
Changes DC Power to AC
(AC Power used in Home)


Net Metering
Excess (Unused) power turns
your meter backward and
travels back into the grid.
Utility issues credits for power
produced.

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Scale




Residence
5-10 kW



Factory
1 MW+



Office
50 – 500 kW



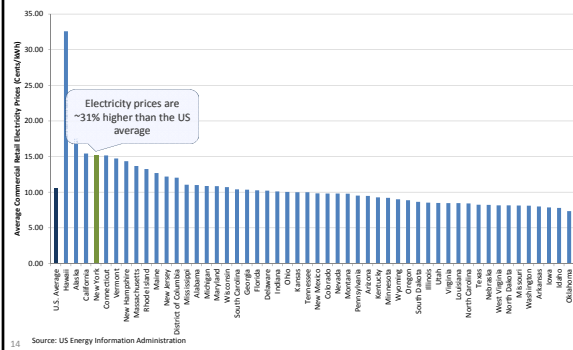
Utility
2 MW+

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The New York Solar Market

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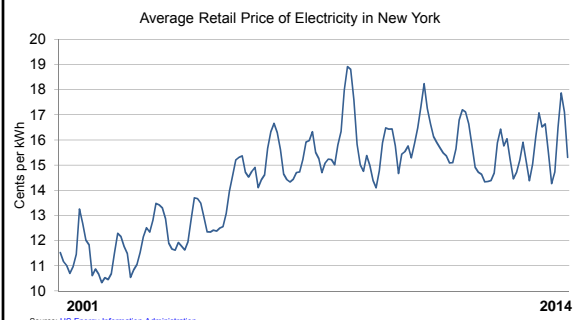
High Energy Prices in NY



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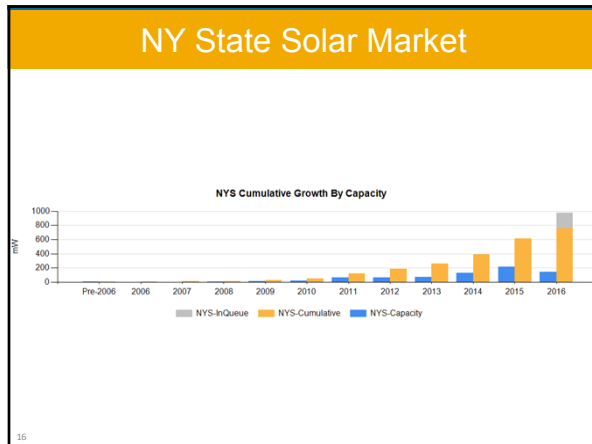
Source: US Energy Information Administration

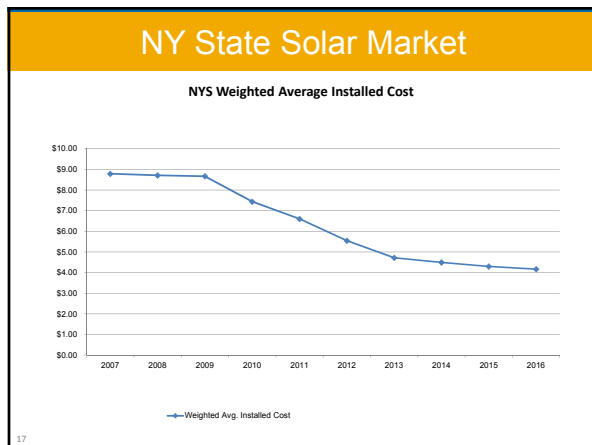
Volatile Electricity Prices

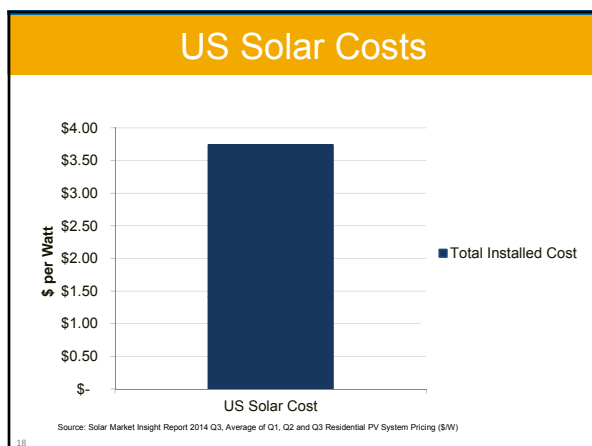


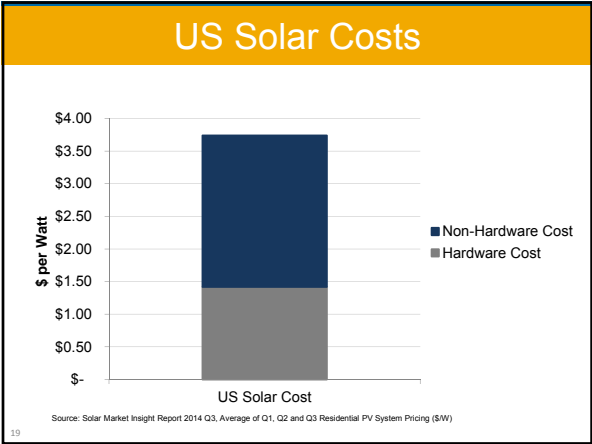
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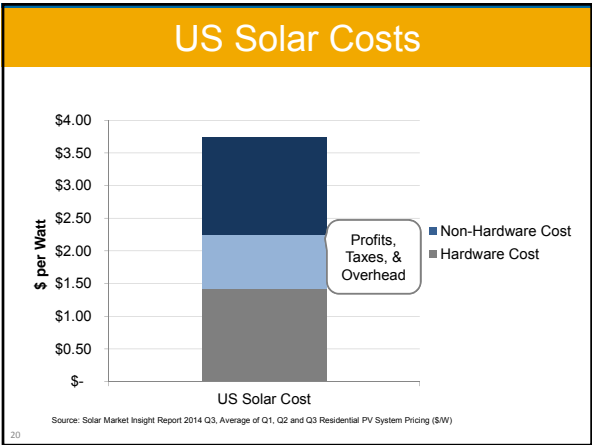
Source: US Energy Information Administration

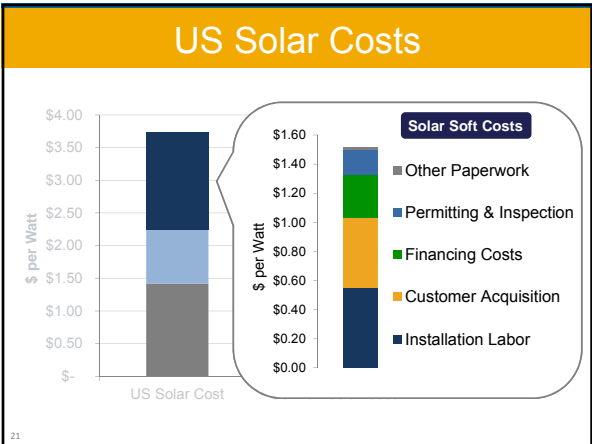












Local Solar Policy 101

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Local Barriers to Solar Development

1,550+ local jurisdictions in NY
With permitting and land use authority

Opportunity to streamline local land use regulation for solar PV systems
Standard, small-scale PV systems

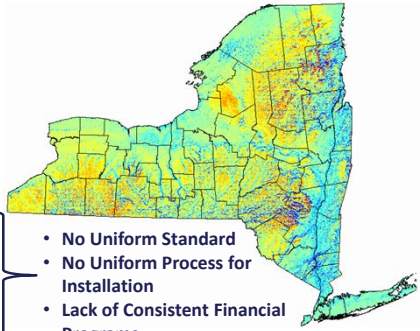
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Addressing Solar Barriers in the Planning Process

- Add a solar energy component to the comprehensive plan
- Adopt a special solar energy policy or plan to guide the reform of land use regulations
- Adopt a Model Resolution Supporting Implementation of Solar Energy Program

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NY State Solar Market Challenge



62 Counties
62 Cities
932 Towns
556 Villages

- No Uniform Standard
- No Uniform Process for Installation
- Lack of Consistent Financial Programs

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Addressing Solar in the Zoning Code

Section	Topics to Address
Definitions	Define technologies
Applicability	Principal vs. accessory use/structure
Dimensional Standards	<div style="display: flex; justify-content: space-between;"> <div> <ul style="list-style-type: none"> Height Size </div> <div> <ul style="list-style-type: none"> Setbacks Lot coverage </div> </div>
Design Standards	<div style="display: flex; justify-content: space-between;"> <div> <ul style="list-style-type: none"> Signage Disconnect </div> <div> <ul style="list-style-type: none"> Screening Fencing </div> </div>

Source: American Planning Association

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Planning and Zoning Resources



Land Use Planning for Solar Energy

Best practices for solar planning for public officials and engaged citizens in NY



Zoning for Solar Energy: Resource Guide

Provides guidance on amending zoning and other land use regulations to permit the development of solar energy systems in their jurisdictions.

Available at: <https://training.ny-sun.ny.gov/resources>

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Solarize Group Purchasing

"Solar. Simple. Together."

How it works:

- A six to nine month campaign where a community group partners with one or multiple preferred solar installers
- The community group promotes solar installation within the community and builds interest from high-quality leads
- The installer(s) provides special pricing to participants from the community
- A campaign deadline encourages commitment

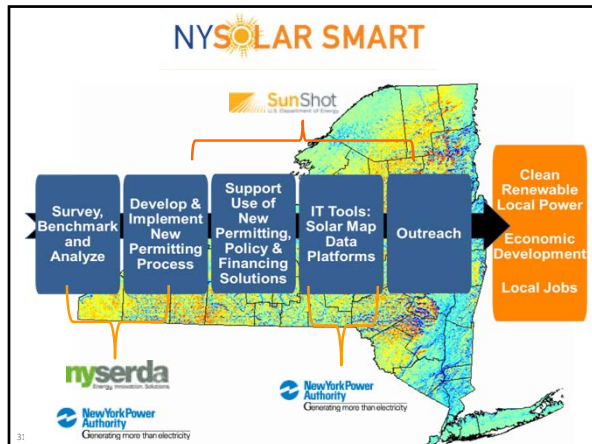





New York: Reforming the Energy Vision

<p>NY 2030 Energy Goals</p> <p>40% Reduction in GHG emission from 1990 levels</p> <p>50% Generation of electricity from RE sources</p> <p>23% Decrease in energy consumption in buildings from 2012 levels</p>	<p>Reforming the Energy Vision (REV)</p> <ul style="list-style-type: none"> • Massive state-wide planning process reach 2030 goals • Rewriting the rules of the electric power sector to encourage distributed energy • Allowing for more coordination among distributed resources • Funding technology demonstration projects across the state
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Streamlined Solar Permitting



NYS Unified Solar Permit

Developing the NYS Unified Solar Permit

through

A Collaborative and Informed Process

NY Solar Smart Survey

In 2013 the NYSolar Smart program conducted a survey of policies and processes related to solar in municipalities across New York State.

Survey

- 93 jurisdictions benchmarked the solar process
- 61 jurisdictions and 8 utilities responded

Results: Permitting and Review

- 100% require building permit
- 75% require electrical permit
- 60% require planning, zoning, or architectural review board review for residential solar installations
- 50% interest in implementing expedited solar permitting process

U.S. Department of Energy SunShot Initiative



A national collaborative effort to make solar energy cost-competitive with other forms of electricity by the end of the decade

Since the SunShot Initiative was announced in February 2011, the Solar Office has funded more than 150 projects in the following areas:

Photovoltaics (PV)

Concentrating solar power (CSP)

Balance of systems costs

Systems integration

64 % of the total residential installed system price

- Customer Acquisition
- Financing & Contracting
- Permitting & Inspection
- Interconnection
- Installation & Performance
- Operations & Maintenance

Aspects of the Unified Solar Permit

- Standardized permit for simple systems that are 25kW* or smaller
- Based on Long Island's form and Solar ABCs
- Solar-specific permit form that uses plans and diagrams required by NYSERDA and/or utility
- Asks for property information, as well as information on equipment and mounting system
- Checklist to ensure that systems fall within certain parameters and comply with local and state codes

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Benefits of Adopting the Unified Solar Permit

Municipalities

- Show your community is open to solar
- Receive NYSERDA Incentive(s) – counts as a Clean Energy Community *High Impact Action*
- Ease barriers to local economic development

Building Departments

- Increase quality and accuracy of applications from installers
- Ensures safe and well documented installations

Solar Industry

- Simplifies and streamlines permitting
- Increases consistency and transparency
- Ensures a fair, flat fees for small-scale installations

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NYSERDA Solar Permit Incentives

Currently NYSERDA provides incentives to Municipalities for adopting either the:

Long Island Unified Solar Permit Initiative
Launched in 2009

NYS Unified Solar Permit
*Launched in 2013
(Revised in 2016)*

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Jurisdictional Adopters - NYSUSP

Albany	Cobleskill	Gowanda	Officially Adopted (118)
Aurora	Cortlandt	Granby	
Baldwinsville	Corton-on-Hudson	Hamilton	
Bedford (Town)	Denning	Hardenburgh	
Berkshire	DeRuyter	Horseheads	
Bethel (Town)	Dewitt	Ilion	
Bethlehem	Dobbs Ferry	Ira	
Blenheim	East Syracuse	Lacona	
Brockport	Enfield	Lafayette	
Busti	Fabius	Lebanon	
Camden	Fenner	Lenox	
Camden (Village)	Fenton	Lincoln	
Caledonia	Florence	Liverpool	
Cattaraugus	Franklin	Malone	
Canandaigua	Fulton	Mamaroneck	
Canastota (Village)	Gardiner	Manlius	
Cazenovia	Genoa	Marcellus	
Chatham	Georgetown	Marlborough	
Clifton Park	Gilboa	Milan	
Clinton	Goshen	Milo	

Jurisdictional Adopters - NYSUSP (cont'd)

Minetto	Paris (Town)	Skaneateles (Town)	Officially Adopted (118)
Minoa (Village)	Parish (Town)	Somers	
Montezuma	Parish (Village)	Sylvan Beach	
Morrisville	Pompey	Troy	
Mount Kisco	Port Byron	Tully	
Nassau	Pulaski	Union Springs	
Nelson	Redfield	Warwick (Town)	
New Paltz (Town)	Red Hook (Town)	Warwick (Village)	
New Paltz (Village)	Red Hook (Village)	Weedsport	
Newark Valley	Rhinebeck	White Plains	
Newfield	Richmond	Whitehall	
Norfolk	Rochester	Williamson	
Nyack	Rome	Woodstock	
Ogdensburg	Roseboom	Yonkers	
Olive	Rosendale	Fayetteville	
Oneida	Sandy Creek	Knox	
Orwell	Schenectady	Lake George	
Oswego	Scipio	Saratoga Springs	
Otto	Scotia		
Owasco	Sennett		

Jurisdictional Adopters – LI USP

Babylon (Town)	Mastic Beach
Babylon (Village)	Oyster Bay Cove
Brookhaven	Port Jefferson
East Hampton	Riverhead
Garden City	Shelter Island
Great Neck Plaza	Smithtown
Hempstead	Southampton
Huntington	Southold
Islandia	Stewart Manor
Islip	Upper Brookville
Long Beach	Westhampton Beach
Manorhaven	Westhampton Dunes

Officially
Adopted (24)

Procedure for Adoption

- Review Permit with local building dept (i.e. Engineering and Planning Dept)
- After review, add application fee (if applicable) and municipal logo to permit
 - Add municipality's contact information, web site, etc. on application form and attachment
 - Determine reasonable fees and review timelines based on responsible department's capabilities and input into relevant sections on application form and attachments
- Officially adopt the Unified Solar Permit and post online (pdf)
- Your jurisdiction may begin accepting applications and associated documents for solar installations at its own discretion

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Incentives

Closing Date - Sep 30th, 2019

- **PON 2721, Category 1:** NYSERDA's Streamlined Permitting PV Incentive (Open Enrollment), previously administered by Cleaner, Greener Communities (CGC)
- **PON 3298:** Clean Energy Communities (CEC) Program (Rolling Applications – First Come, First Serve)

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PON 2721: Streamlined Permitting

- Incentive funds available for adopting the NYS Unified Solar Permit within Category 1
 - Population \leq 30,000 residents: Award maximum (\$2,500)
 - Population $>$ 30,000 residents: Award maximum (\$5,000)
- Applications will be accepted until 4:00 PM Eastern Time on September 30th, 2019, until funds are exhausted, or until the solicitation is revised by NYSERDA, whichever comes first.

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PON 3298: Clean Energy Communities

- Incentive funds available for adopting 4 of 10 *High Impact Actions*
 - Population $<$ 40,000 residents: Award maximum (\$100,000 in Tier 1 and \$50,000 in Tier 2)
 - Population \geq 40,000 residents: Award maximum (\$250,000 in Tier 1 and \$150,000 in Tier 2)
- Applications will be accepted until 4:00 PM Eastern Time on September 30th, 2019, until funds are exhausted, or until the solicitation is revised by NYSERDA, whichever comes first.

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PON 3298: Clean Energy Communities

- *High Impact Actions* (at least two actions must be completed after August 1, 2016)
 - Benchmarking
 - Clean Energy Upgrades
 - LED Street Lights
 - Clean Fleets
 - Solarize
 - Unified Solar Permit
 - Energy Code Enforcement Training
 - Climate Smart Communities Certification
 - Community Choice Aggregation
 - Energize NY Finance

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Applying for Incentive Funds

- Streamlined Permitting Incentive (PON 2721)
 - In order to be considered for incentives, the local jurisdiction must first adopt the permit.
 - Jurisdiction must provide proof that NYS Streamlined Unified Solar Permit was adopted. This proof can be:
 - a copy of the resolution or law
 - a letter from the building or planning department supervisor that clearly states the permit is being used, OR
 - a copy of a permit that has been completed, signed, and accepted by the local jurisdiction.
 - It is likely that the jurisdiction will personalize the form -- add the local logo, address, fee amounts, and other local requirements.
 - File along with the Consolidated Funding Application (CFA)

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Applying for Incentive Funds

- Clean Energy Communities Program (PON 3298)
 - Complete four of 10 designated *High Impact Actions* and submit required documentation of completion for each chosen *Action*
 - Recommended to submit documentation in stages as each *Action* is completed
 - When Unified Solar Permit is adopted, documentation of completion may be:
 - Copy of the notification of eligibility email from NYSERDA indicating jurisdiction is eligible to receive Streamlined Permitting PV Incentive
 - OR**
 - Copy of [NYSERDA's official list](#) of communities that have adopted the Unified Solar Permit showing applying jurisdiction is listed.
- (Municipalities who have previously received CGC PON 3106, Cat 2 funding are not eligible for CEC funding, but may still receive CEC designation)

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Next Steps!

- Download the NYS Unified Solar Permit
<https://www.nyserdanyc.gov/-/media/NYSun/files/Unified-Residential-SolarPV-Permitting-application.docx>
- Make the appropriate alterations
- Place the permit form online - with directions
- Enjoy the benefits of streamlined permitting
- (Optional)- Apply for Incentive funding under PON 2721, and adopt three additional *High Impact Actions* and apply for CEC funding under PON 3298

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NYSUSP Case Study: City of Yonkers

Permit Adopted: July 2014

Average 2015 residential price for Westchester County: \$4.51/W

Installations increased by 79% after permit adoption

Permit approval time remained constant

	# of Installations	Permit approval timeline	% of Installations	Capacity (kW)	Price (\$/W)
Before Adoption (07/2009 – 07/2014)	106	>10 days (2013)	39	665.95	\$4.67
After Adoption (07/2014 – 03/2016)	168	>10 days (2016)	61	1,076.44	\$4.34
Total	274	>10 days	100	1,742.39	\$4.47 (avg)

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Source: NYSERDA

Resources

Unified Solar Permit:

[NY-Sun Solar Guidebook for Local Governments](#)

[CEC Unified Solar Permit toolkit](#)

CEC Program:

[Program Overview](#)

Contact: cec@nyserda.ny.gov

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Incentives for Solar in New York State

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Investment Tax Credit

Type: Tax Credit

Eligibility: For-Profit Organization, Homeowner

Value: 30% of the installation cost

Availability: Extended through 2022

(declines to 26% in 2020, and 22% in 2021)

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NYS 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

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NY-Sun "MW Block" Incentive

Type: Cash incentive

Structure: Incentive offer declines as program grows

Separate Incentives for:

- Residential Customers (*up to 25 kW*)
- Small Non-Residential Customers (*up to 200 kW*)
- Large Non-Residential Customers (*200 – 200 kW*)

Program progress tracked separately by region

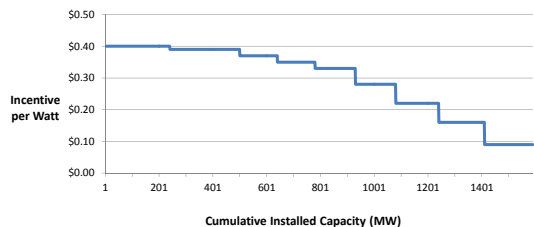
For Large (>200 kW) projects, 20% adder for projects located on constrained distribution circuits

Availability: Dec 29, 2023 or until funds run out

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NY-Sun “MW Block” Incentive

Non-NYC Commercial MW Block Incentive
Projects larger than 200 kW, volumetric crediting

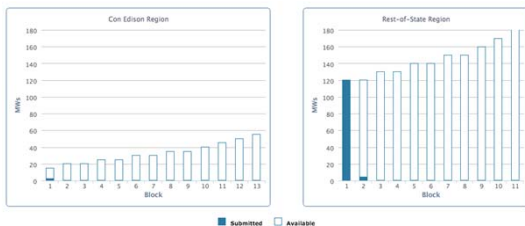


Incentives decline as program capacity fills
1,590 MW of capacity available outside of ConEd territory
Opened May 4, 2015

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Current NY-Sun Incentives

Large Commercial Installations



Block 1
\$0.63/W

Block 2
\$0.40/W

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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



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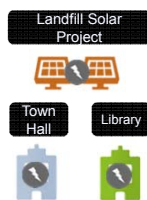
Example Net Metering Bill with Credit

July Reading (Actual)	56,351	
June Reading (Actual)	56,451	
Total Usage KWh 32 Days	-100	Credit
Net Metering Summary		
Prior Credit	-50	
Actual Metered Kwh	-100	
New Cumulative Credit	-150	
Billed KWH	0	
Anniversary Month	April	Annual Reconciliation Month
Delivery Charges		
Basic Service Charge		19.47
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
Total Delivery Charges		19.97
Current Electric Charges		19.97

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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 holder
 - Farms and non-residential
 - Within the same utility
 - Within the same NYISO zone



Net Metering Limits



System Capacity Limit
25 kW residential
2 MW non-residential



Aggregate Limit
6% of each utility's
2005 peak load

Some Utilities (National Grid, Orange & Rockland) have hit the 6% cap and have been directed to continue accepting net metering applications

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Financing Municipal Solar

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Ownership Options for Solar

Direct
Ownership

Third-Party
Ownership

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Third Party Ownership

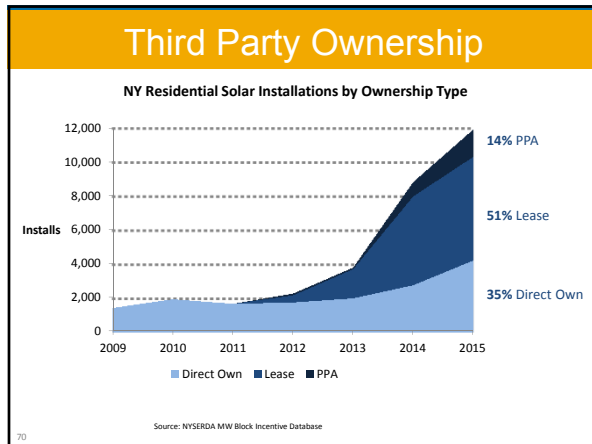
Power Purchase Agreement or Lease Agreement

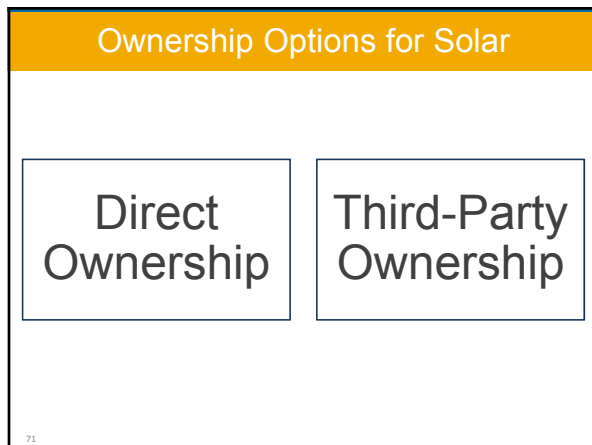
Incentives

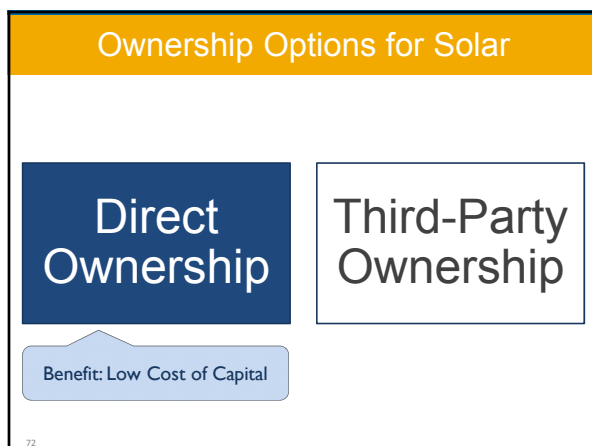
Municipality

Developer

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Ownership Options for Solar

Direct Ownership

Third-Party Ownership

Benefit: 30% Tax Credit

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PPA Pricing Structures

Flat rate

Escalating rate

Discount to retail

The graphs show the Utility Rate (blue line) and Solar Contract Price (orange line) over a 20-year period. The y-axis represents price in dollars, ranging from \$0.00 to \$0.25. The x-axis represents years from 1 to 20.

- Flat rate:** The Solar Contract Price is a constant horizontal line at approximately \$0.15, while the Utility Rate fluctuates between \$0.10 and \$0.20.
- Escalating rate:** The Solar Contract Price starts at approximately \$0.10 and increases linearly to approximately \$0.20 by year 20. The Utility Rate fluctuates between \$0.10 and \$0.20.
- Discount to retail:** The Solar Contract Price starts at approximately \$0.15 and increases linearly to approximately \$0.20 by year 20. The Utility Rate fluctuates between \$0.10 and \$0.20.

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How to Evaluate Energy Savings

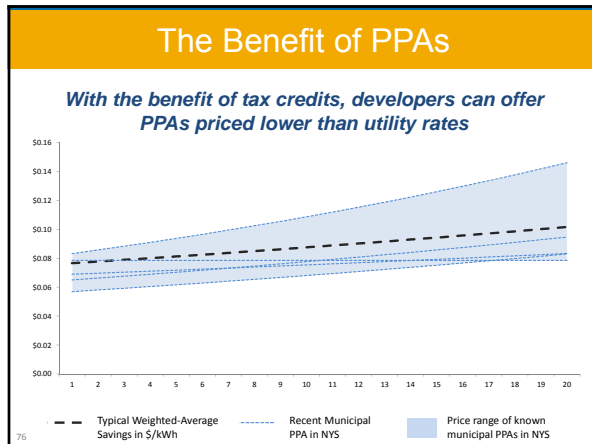
Energy Savings
Understand value of avoided kWh payments to the utility

Demand Savings
Estimate projected reduction in peak energy consumption

Remote Net Metering Credits
Understand value of credits to be allocated to satellite accounts

Compare Value of Energy Savings to the Price of a PPA

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Municipal Solar Procurement Process

Municipal Solar Procurement Process

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PVTN Solar Procurement Toolkit

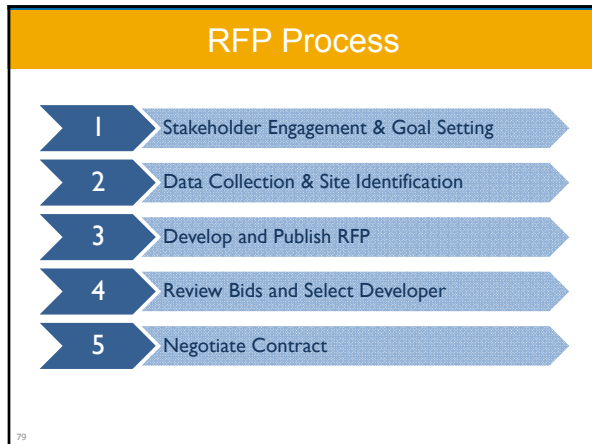
Published December 2015

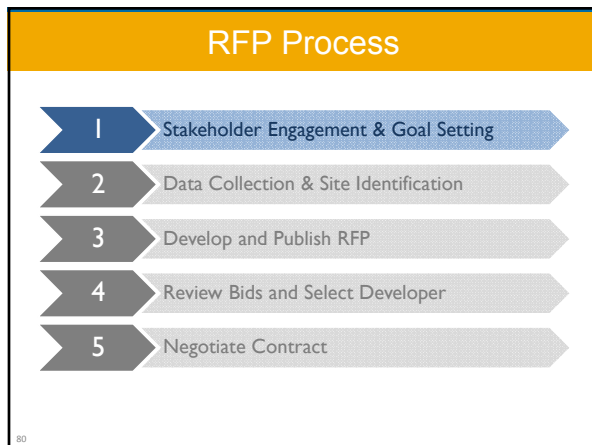
Includes:

- Guidance document for public officials
- Model Request for Proposal
- Model Power Purchase Agreement
- Bid Evaluation Tool

Available at:
training.ny-sun.ny.gov/resources

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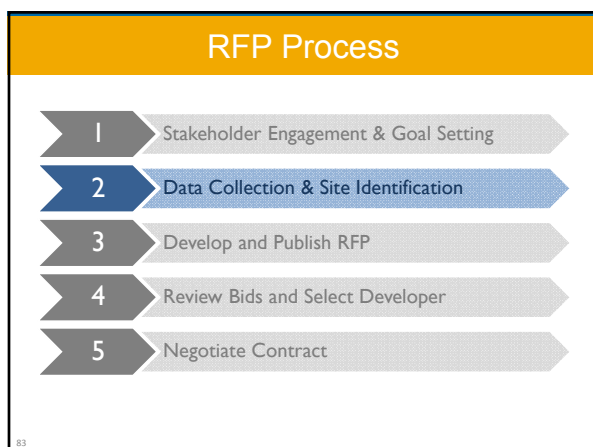
Project Goals

Does your municipality want a project that...

- ... maximizes solar production?
- ... starts small on a pilot basis?
- ... demonstrates leadership to the private sector?
- ... puts landfills or brownfields to use?

Processes of Concern	
Process	Municipal Action
Stakeholder Engagement	Engage with community members & local government officials early on
Interconnection	Engage utility early in development process
Zoning	Review zoning code for solar-related concerns (primary/accessory use, impermeable surface, setbacks, etc.)
Environmental Review	Engage local SEQRA authority

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How Big to Build?
<p>Determine Annual Energy Use</p> <ul style="list-style-type: none"> Average last three years of utility bills <p>Calculate Maximum System Size</p> <ul style="list-style-type: none"> 1 kW in NYS produces ~ 1250 kWh per year <p>Identify Possible Sites</p> <ul style="list-style-type: none"> 1 kW ≈ 100 SqFt 1 MW ≈ 6 acres <p>Consider Your Goals</p>

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What Makes a Good Solar Site?

1. Ground-mounted sites are flat and accessible
2. Flat roofs are unobstructed by rooftop equipment
3. Pitched roofs are roughly south-facing
4. Sites should be unshaded by trees or buildings
5. Roofs should be in good condition



RFP Process



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NY Procurement Law

Article 9 of the NY State Energy Law

- Local governments able to enter into long-term power purchase agreements
- Governments required to procure contracts through competitive RFP process
- Contract must provide cost savings to local government
- Contract subject to appropriation of funds

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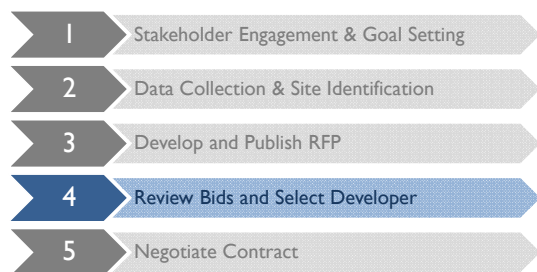
Information to Provide

1. Summary of goals and desired project
2. Detailed description of site
 - Including maps and aerial photography
3. Detailed energy consumption information
 - Both for project site and general municipal load
4. Evaluation Criteria
5. Price proposal template

Information to Request

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Qualifications <ul style="list-style-type: none"> ▪ Company experience ▪ Five references ▪ Team member qualifications 2. Project Details <ul style="list-style-type: none"> ▪ Price proposal ▪ Project timeline ▪ Equipment to use ▪ System size and expected generation | <ol style="list-style-type: none"> 3. Detailed Plans for: <ul style="list-style-type: none"> ▪ Construction ▪ Financing ▪ Measurement and verification ▪ Operations and maintenance ▪ Decommissioning ▪ Environmental Permitting |
|---|--|

RFP Process



Evaluation of Bids

Provide clear evaluation criteria and weights in RFP

Should consider:

- Developer experience and project team
- Price
- Approach to project
- Financial resources
- Optional adders (local labor or materials, curriculum tie-in, etc.)

RFP Process



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Potential Project Timeline

Step	Days From RFP Issuance
Stakeholder Discussions and Data Collection	Pre-RFP
Release RFP	0
RFP Submission Deadline	1-2 months after release
Announcement of Selected Bidder	1-2 weeks after deadline
Contractual Documents Signed	1-6 months after announcement
System Design Completed & NYSERDA Application Submitted	2-6 months after contract
Project Construction Completed	6-18 months after application

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Property Tax Considerations

- What is the status of the RPTL for renewable energy facilities?
- Does the property receive an agricultural land assessment (Ag-Mkts L §305)?
- Does the property receive a forest exemption (RPTL §480-a)?

Consult with your local tax assessor

Sources: Dilworth Paxson. "Amendments to Farmland and Forest Land Assessment Act." Available at: <http://www.dilworthpaxson.com/News/Events/Alerts/?find=55402>
New York State, Department of Taxation and Finance. "Agricultural assessment program - overview." Available at: https://www.tax.ny.gov/research/property/assess/valuation/ag_overview.htm
Homenick, E. Sullivan County Real Property Tax Services. "Solar Arrays and Taxation." https://s3.amazonaws.com/assets.cce.comnet.edu/attachments/12686/SOLAR_ARRAY%20%28%20%29%20.pdf?1452808160https://s3.amazonaws.com/assets.cce.comnet.edu/attachments/12686/SOLAR_ARRAY%20%28%20%29%20.pdf?1452808160

Property Tax Resources

NYS Department of Taxation and Finance. "Assessors Manual, Volume 4, Exemption Administration."

https://www.tax.ny.gov/research/property/assess/manuals/vol4/pt1/sec4_01/sec487.htm

NYSDRDA. "Factsheet: Understanding the Real Property Tax Law Section 487."

https://training.ny-sun.ny.gov/images/PDFs/SUN-GEN-taxlaw487-fs-1-v1_FINAL.PDF

NYS Department of Taxation and Finance. "Recent Questions on the Real Property Tax Law and Solar Energy Systems."

www.tax.ny.gov/pdf/publications/orpts/legal/raq2.pdf?_ga=1.225179802.1031257166.1423842465

Barnes et al. "Property Taxes and Solar PV Systems: Policies, Practices, and Issues." nccleantech.ncsu.edu/wp-content/uploads/Property-Taxes-and-Solar-PV-Systems-2013.pdf

NYSDRDA Wind Energy Toolkit: "Section 7.2, page 30. Property Tax: Exemptions and PILOTS" nyserda.ny.gov/-/media/Files/EERP/Renewables/wind-energy-toolkit.pdf

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Resources

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