NEW YORK STATE OF OPPORTUNITY. | NYSERDA

ON-SITE POWER EXPO

Featuring Combined Heat and Power (CHP), Solar PV, and Energy Storage

On-Site Power Expo Partners

Batteries/Fuel Cells:
New York Battery and Energy Storage Technology Consortium - NY-BEST

Solar PV:
New York Solar Energy Industries Association - NYSEIA
Solar Energy Industries Association - SEIA

Combined Heat and Power (CHP):
Northeast Clean Heat and Power Initiative - NECHPI
CHP Association
World Alliance for Decentralized Energy - WADE
International District Energy Association - IDEA

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

On-Site Power Expo Partners

Government:
U.S. Department of Energy
U.S. Environmental Protection Agency
NYS Department of Public Service
NYC Department of Buildings
NYC Retrofit Accelerator

Utilities:
Con Edison
National Grid
New York Power Authority
Long Island Power Authority / PSEG-Long Island

Finance:
NY Green Bank
NYC Energy Efficiency Corporation - NYCEEC

Clean Energy Implementation Support:
Sustainable CUNY
Pace Energy and Climate Center

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

NYSERDA Advice

On-Site Power Systems can positively impact your triple-bottom-line

- ***Financial*** - Energy cost savings
- ***Sustainability*** - Reduced carbon footprint
- ***Reliability*** - Some configurations can provide power during a utility grid outage

When considering an On-Site Power System, it is good to also consider Energy Efficiency

- Energy Efficiency is the first, best investment (upgrade to better lighting, better motors, better insulation, better appliances, etc.)
- Fulfilling your needs by using energy more efficiently will minimize the size and installation cost of an On-Site Power System

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

NYSERDA Advice

An Individual Technology can deliver a successful On-Site Power solution

- ***Solar PV*** - Photovoltaics
- ***Energy Storage*** - Batteries
- ***Combined Heat and Power (CHP)*** - Also known as Cogeneration

A Hybrid (integrated, multi-technology) On-Site Power System can offer extra value in some cases, such as

- Solar + Storage provides firm production despite periodic cloudiness
- CHP + Solar + Storage provides robust resiliency and economically vibrant flexibility

Choose from an ample cadre of competent solution providers

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

NYSEIA PV Slides

December 8th, 2016

What is NYSEIA?

Founded in 1994, the New York Solar Energy Industries Association (NYSEIA) is the only statewide membership and trade association dedicated solely to advancing solar energy use in New York State. NYSEIA proudly represents 300 plus businesses across 338 locations in New York State that employ over 4,200 individuals throughout the entire solar value chain. Lead by a diverse Board of Directors, NYSEIA strives to achieve significant, long-term and sustainable growth of solar energy adoption in New York State.

NYSEIA
New York Solar Energy Industries Association

How does Solar PV work?

NYSEIA
New York Solar Energy Industries Association

System Types

Roof Mount

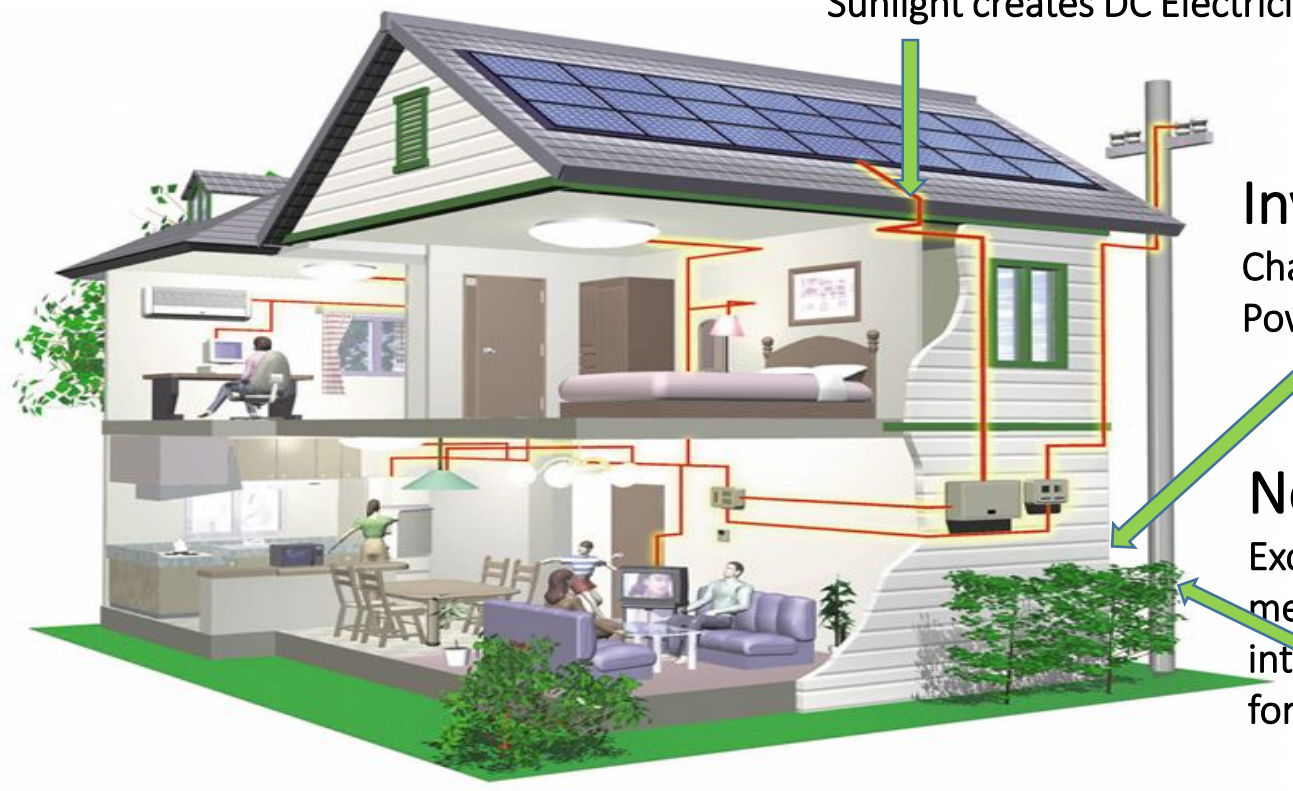
Ground Mount

Parking Canopy

NYSEIA
New York Solar Energy Industries Association

System Components

The Grid Tied Solar Electric System



Solar Panels

Sunlight creates DC Electricity

Inverter

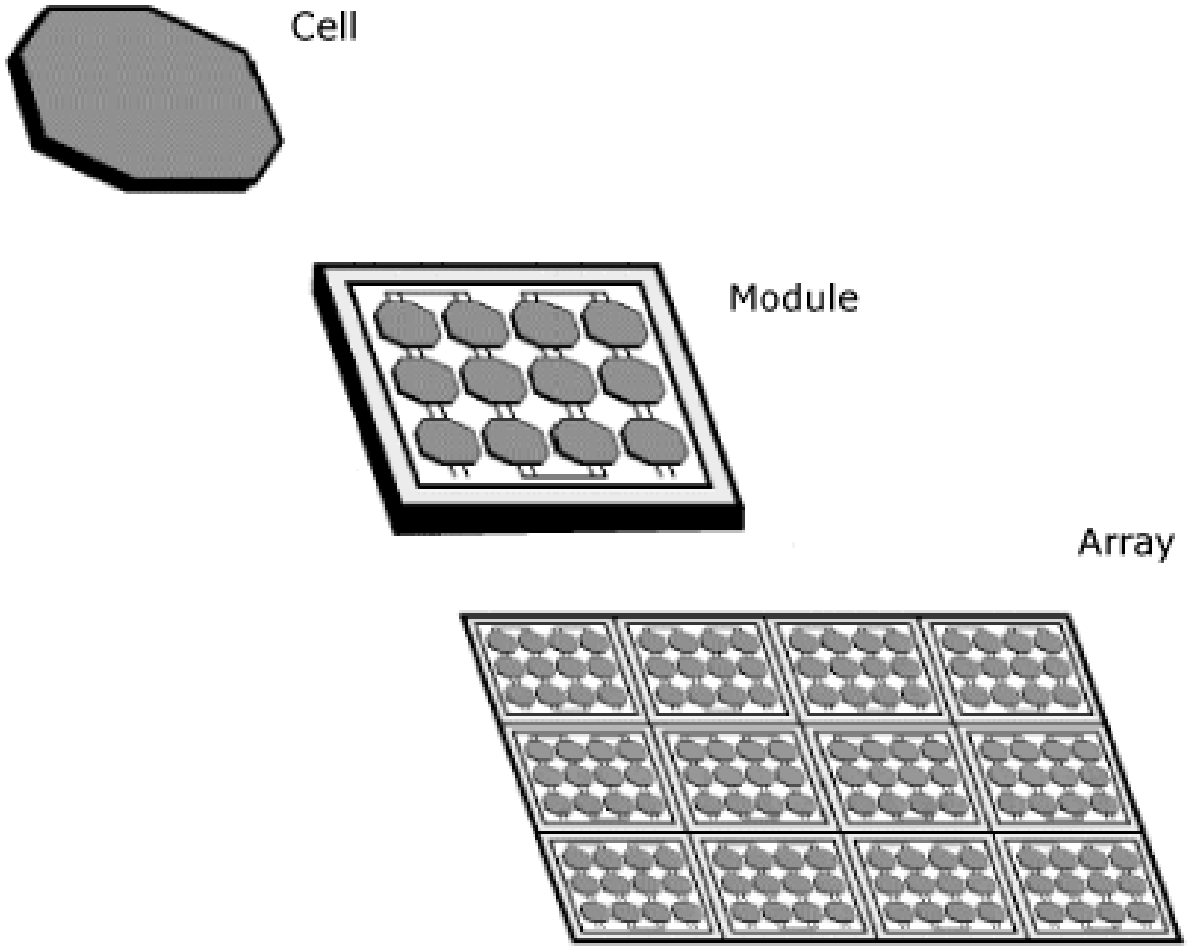
Changes DC Power to AC (AC Power used in Home)

Net Metering

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

NYSEIA
New York Solar Energy Industries Association

PV System Components



PV cells - Electricity is generated by PV cells, the smallest unit of a PV system.

Modules - PV cells are wired together to form modules, or panels, which are usually a sealed unit of convenient size for handling.

Arrays – Groups of panels or modules make up an array.

NYSEIA
New York Solar Energy Industries Association

Why choose Solar PV ?

The sun is an indispensable source of energy, one that can be easily harnessed to meet your power needs. Solar power enables you to take control of your power bills, maintain independence from fluctuating electricity prices, and live and work in a more environmentally friendly way.

As power prices continue to track upwards and the initial upfront cost of solar is steadily decreasing, installing Solar PV will make an immediate and noticeable impact on your monthly power bill.

NYSEIA
New York Solar Energy Industries Association

Things to consider

What are your current energy needs?

- Consider your current electric bill and any energy-saving measures you currently employ.

What are your anticipated future energy needs?

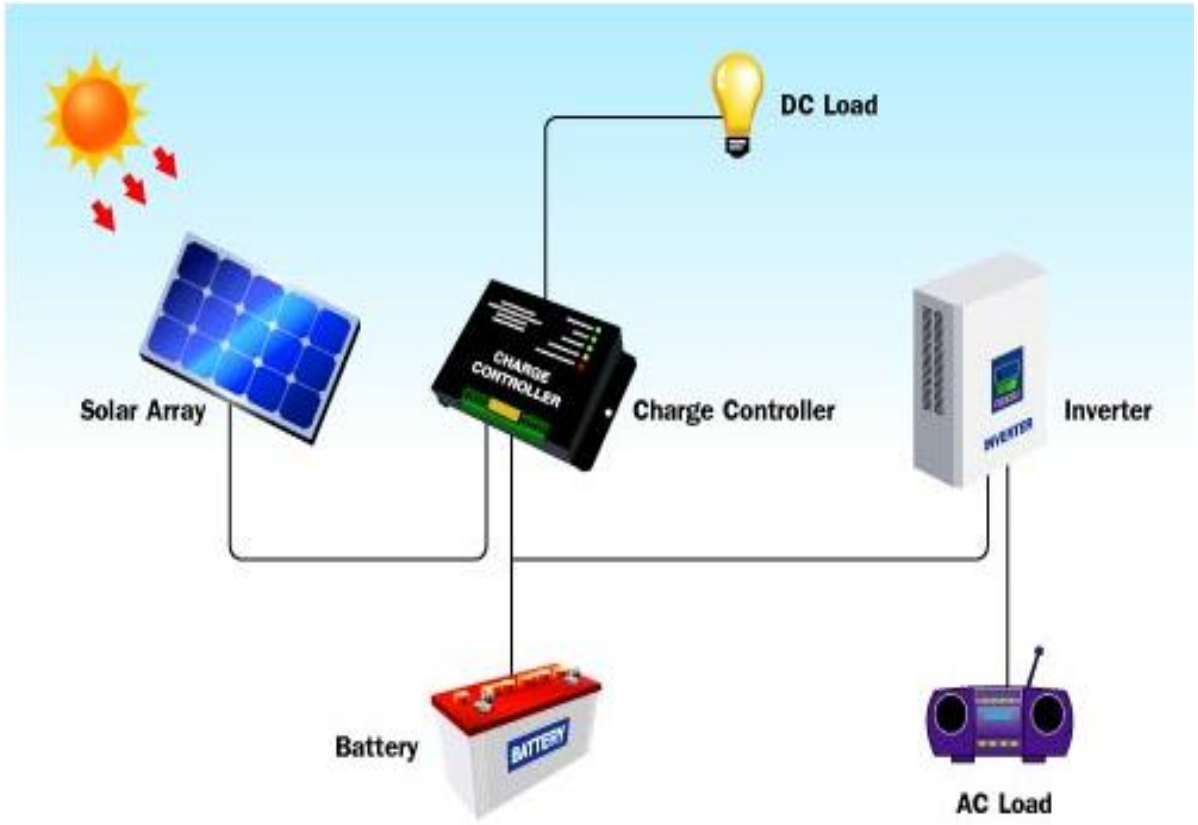
- Think about where your business or building is going. Are you adding staff or remodeling your building? Do you plan on renovating location?

What is your location?

- Solar electric systems work best when installed on a sunny south-facing roof or mounted on the ground in an open location.

NYSEIA
New York Solar Energy Industries Association

What is Net Metering?



- A PV system produces DC-current.
- The DC current goes into an Inverter where it becomes AC current.
- An inverter is connected to your home's or building's electric system, and to your meter.
- You use all electricity needed, while all excess electricity goes into the grid.
- Electricity that goes into the grid is purchased from you by your utility company through Net Metering, usually at retail price.

NYSEIA
New York Solar Energy Industries Association

Introduction to NYS Solar Landscape

Thanks to strong policy leadership, New York ranks among the nation's solar top solar leaders.

Regulators at the New York State Public Service Commission (PSC) are undertaking a "Reforming the Energy Vision" (REV) process to fundamentally rethink its electric system in a way that puts customers and clean energy at its center.

As part of this process, the state has also committed to a long-term NY Sun Initiative that will provide stable incentives to build a self-sustaining solar market. And regulators are building on that Initiative with a Shared Renewables program that will expand solar access to more energy consumers – including low-income families, renters and property owners with shaded roofs.

NYSEIA
New York Solar Energy Industries Association

New York’s Goal: 50% renewables by 2030

- NY Energy Plan: 50% Renewables and 100% Access
- In 2015, Governor Cuomo released the New York State Energy Plan. In the plan, he increased the statewide goal of getting 50% of New York's electricity from renewable sources by 2030.

NYSEIA
New York Solar Energy Industries Association

Reforming the Energy Vision (REV)

REV is changing the way government and utilities work to make clean energy financially beneficial to everyone. And most importantly, REV is putting customers first by designing new initiatives to impact real people and provide individuals and communities with the opportunity to take an active role in achieving the following State energy goals by 2030.

- 40% Reduction in GHG emissions from 1990 levels
- 50% Generation of electricity must come from renewable energy sources
- 23% Decrease in energy consumption in buildings from 2012 levels

NYSEIA
New York Solar Energy Industries Association

Clean Energy Standard (CES)

Delivering on New York State's commitment to reduce ratepayer collections, drive economic development, and accelerate the use of clean energy and deployment of energy innovation to modernize New York's electric grid. The Clean Energy Fund will attract more private capital into New York's emerging clean energy economy, reduce the cost of clean energy by accelerating the adoption of energy efficiency in order to reduce load, and promote the adoption of renewable energy. This investment will deliver over $39 billion in customer bill savings over the next decade.

Meeting Governor Cuomo's aggressive commitment that requires 50% of New York State's electricity come from renewable sources by 2030.

NYSEIA
New York Solar Energy Industries Association

NY-Sun Initiative

- Governor Cuomo's $1 Billion initiative to achieve over 3GW of customer-sited solar installations 2014-2023
- Protect the environment and lower energy costs by improving the efficiency and reliability of the electric grid, through solar energy.
- Significantly expand deployment of solar capacity throughout the State
- Transform New York's solar industry to a sustainable, subsidy-free sector; attract private investment; create jobs

NYSEIA
New York Solar Energy Industries Association

NY-Sun Incentive Program: MW Block

Capacity-based cash incentive available to eligible contractors.

Three Regions:

- Con Edison (New York City and South Westchester)
- Long Island
- Upstate (Rest- of-State or ROS)

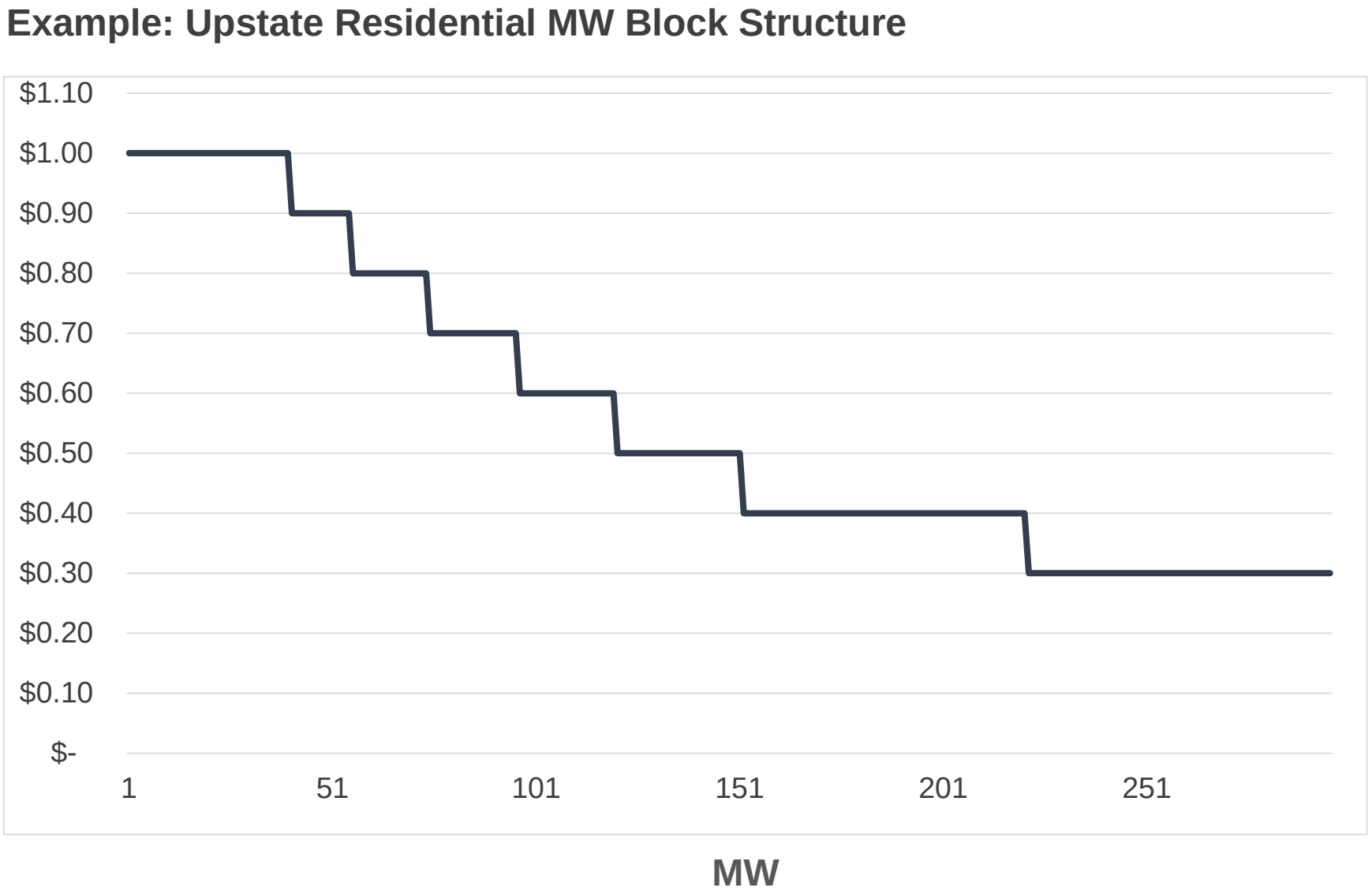
Three Sectors:

- Residential: up to 25 kW
- Small Non-residential: up to 200 kW
- Commercial/Industrial: >200 kW

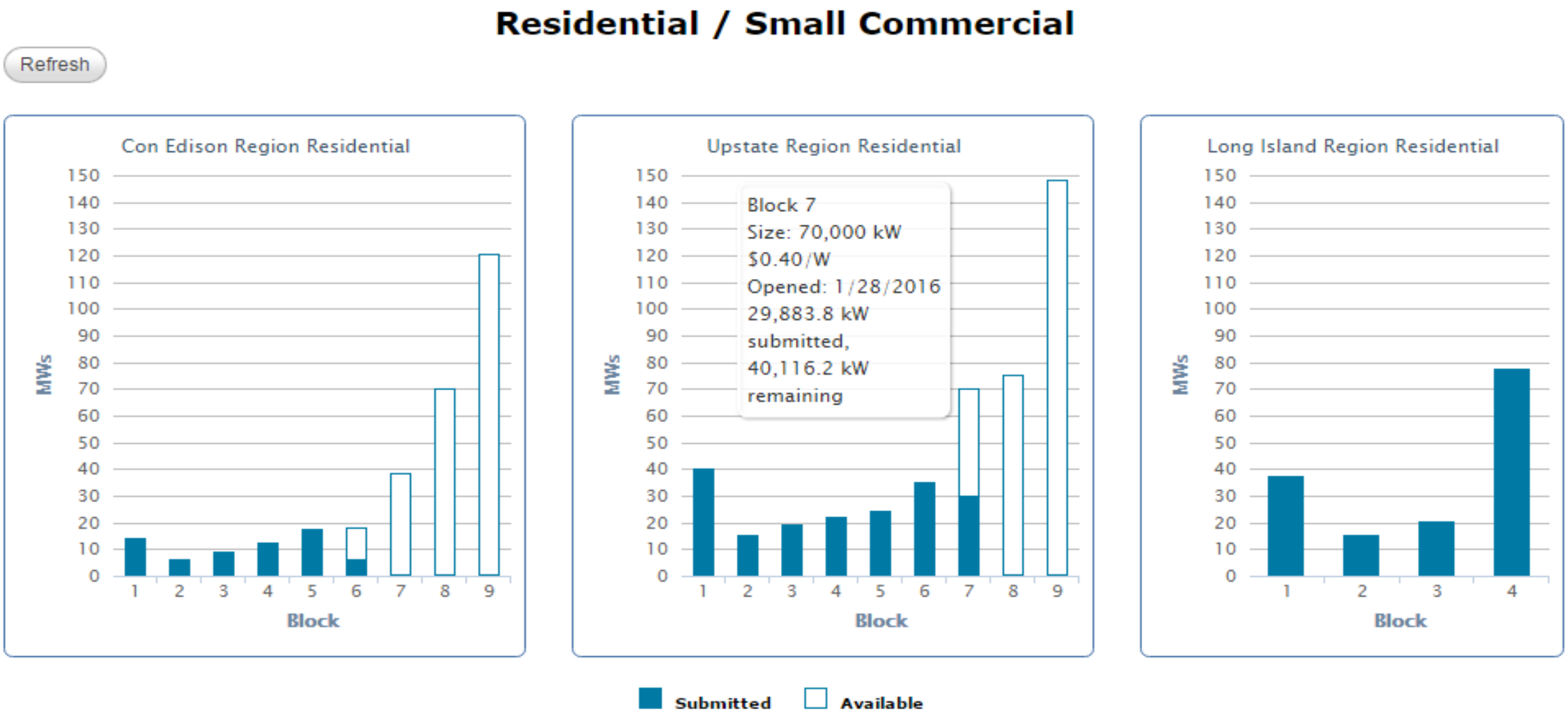
Incentive is available through Dec 29, 2023 or until funds are fully committed.

NYSEIA
New York Solar Energy Industries Association

NY-Sun Incentive Program: MW Block

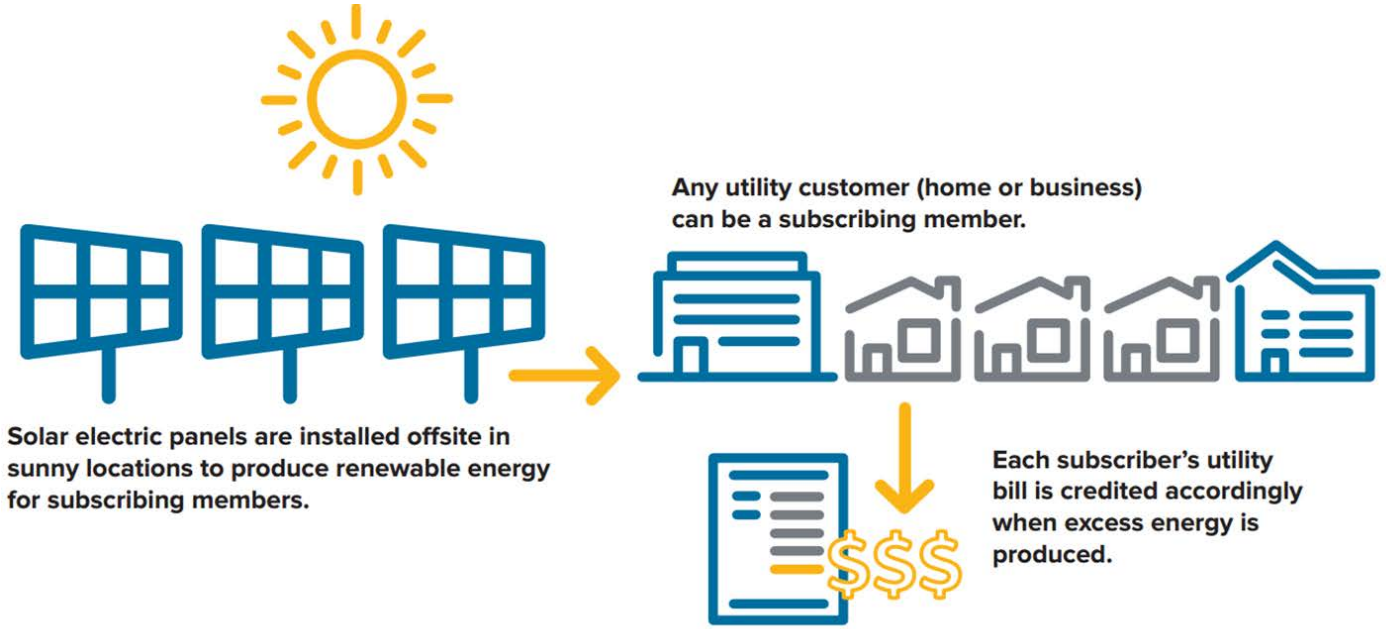


NY-Sun Incentive Program



Shared Solar

- Allows a single large installation to credit production to many remote off takers
  - 60% minimum proportionate share of output for members less than 25 kW
  - 40% maximum proportionate share of output for members greater than 25 kW
- Projects can interconnect statewide as of May 1, 2016
- Net metering structure
- Makes solar accessible to many more New Yorkers



NYSEIA
New York Solar Energy Industries Association

Solar Facts

There are currently more than **611 solar companies** at work throughout the value chain in New York, **employing 8,250 people.**

- 74 manufacturers
- 26 manufacturing facilities,
- 174 contractor/installers
- 47 project developers,
- 33 distributors
- 283 other solar activities including financing, engineering and legal support.

Solar Facts

- There are currently more than **611 solar companies**[1] at work throughout the value chain in New York, **employing 8,250 people**[2] **.**
- In 2015, New York installed **242 MW of solar electric capacity**, ranking it seventh nationally[3]. Installed solar capacity in New York has grown by 65% over the last year.
- In 2015, **$733 million was invested on solar installations** in New York. This represents a 63% increase over the previous year, and is expected to grow again this year.

NYSEIA
New York Solar Energy Industries Association

Solar Facts

- The **802 MW of solar energy currently installed** in New York ranks the state seventh in the country in installed solar capacity. There is enough solar energy installed in the state to **power 136,000 homes.**
- Over the next five years, New York is expected to install **3,007 MW of solar electric capacity**, ranking the state fifth over that time span. This amount is more than 6 times the amount of solar installed over the last five years.
- Installed **solar PV system prices in the U.S. have dropped steadily**- by 12% from last year and 66% from 2010

NYSEIA
New York Solar Energy Industries Association

Tools

Find a NY-Sun participating contractor

- https://www.nyserda.ny.gov/All-Programs/Programs/NY-Sun/Customers/Guide-to-Evaluate-and-Install-Solar/Residential-Installers

NY-Sun PV Trainers Network

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

NY Green Bank

- http://greenbank.ny.gov/

Sustainable CUNY Multifamily Solar Guide

- http://www.cuny.edu/about/resources/sustainability/solar-america/installer-resources/Multifamily_Resources_Final_Final.pdf

NYC Shared Solar Portal

- http://nysolarize.com/

NYSEIA
New York Solar Energy Industries Association

New York Solar Policy Resources

- The Vote Solar Initative - Vote Solar works to foster economic opportunity, promote energy security, and fight climate change by making solar energy a mainstream renewable resource.
- New York State Energy Research & Development Authority - Find a wide variety of information on state government energy programs, research, policy, projects, energy-saving strategies and energy-related statistics
- New York State Public Service Commission - Learn about the governing body that regulates the electricity rates and services of New York public utilities
- New York State Assembly - Track pending legislation affecting solar energy, locate and contact individual legislators, and stay up to date on current legislative issues in New York
- DSIRE incentives database - New York - Search a public clearinghouse for specific solar energy incentives in New York and across the United States
- U.S. Energy Information Administration - New York State Profile - Explore official energy statistics, including data on electricity supply and demand, from the U.S. government

NYSEIA
New York Solar Energy Industries Association

New York State Interconnection Ombudsmen

- Provide ombudsperson services to improve coordination between DG applicants and utilities:

    - NYSERDA – Houtan Moaveni
      518-862-1090 x3016
      Houtan.Moaveni@nyserda.ny.gov

    - DPS – Liz Grisaru
      518 486-2653
      Elizabeth.Grisaru@dps.ny.gov

NYSEIA
New York Solar Energy Industries Association

Contacts

nyseia.org

Mary Bartlett

- mary@nyseia.org
- (518) 588 - 5898

Valessa Souter Kline

- valessa@nyseia.org
- (215) 756 - 5200