

**Central Hudson Gas & Electric Solar Summit  
March 9, 2017**



# **NY Solar Map and Portal Smart DG Hub**

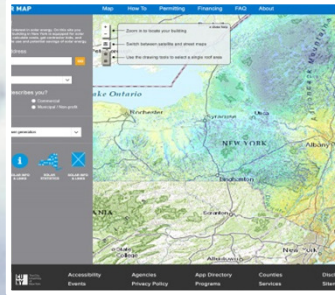
**Laurie Reilly  
Communications  
Sustainable CUNY  
City University of New York**

# Sustainable CUNY Focus Areas



## Solar Infrastructure

- Permitting
- Zoning
- Grid Analysis
- Policy Support
- Installer Roundtable



## Mapping the Way

- One stop Portal
- Solar Maps
- Data Analytics
- Roadmaps



## Accessing Solar

- Group Purchasing
- Community Shared Solar
- Education
- NY Solar Summit

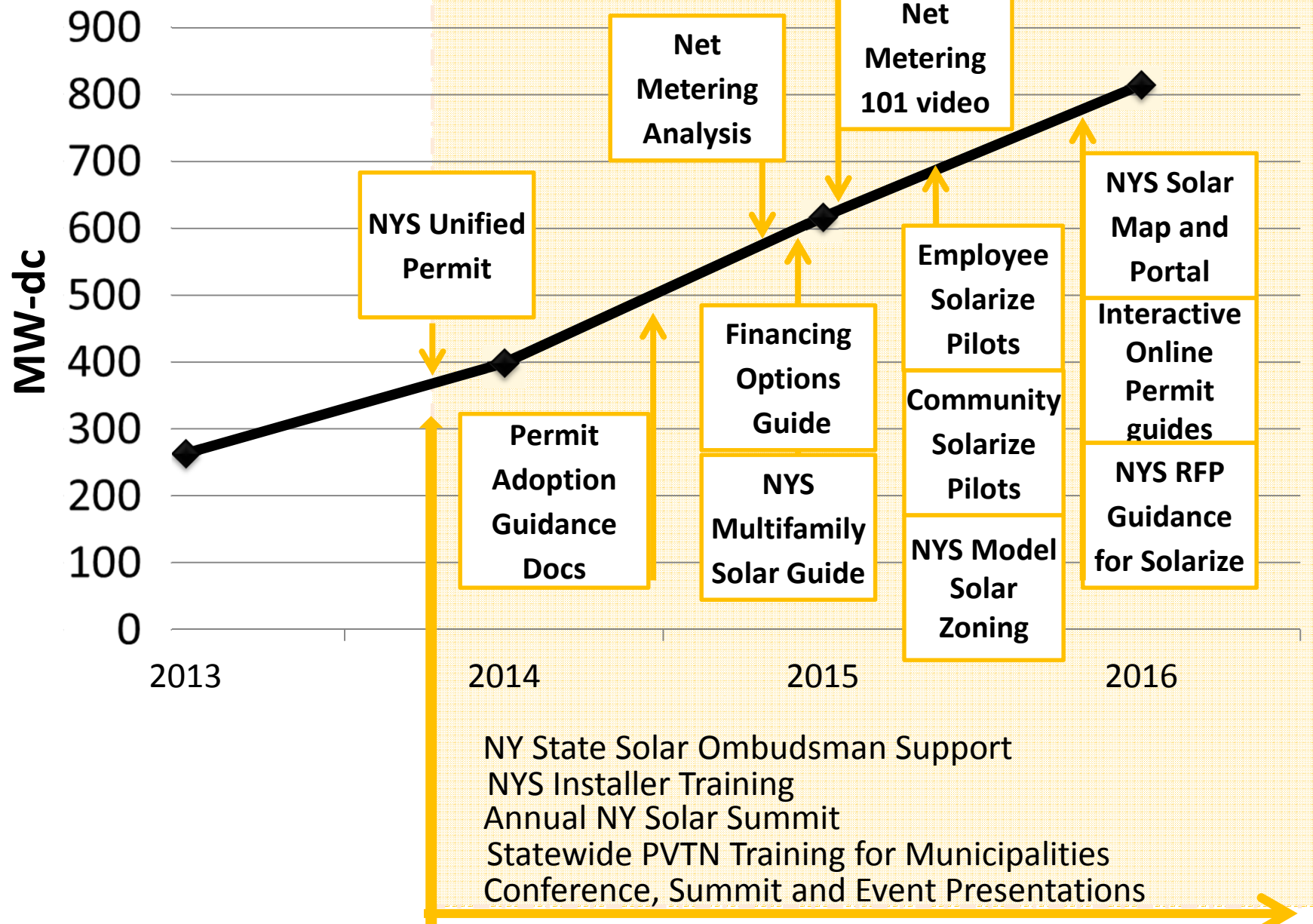


## Resiliency

- Smart DG Hub
- Solar-plus-storage
- Critical Facility Support

# NYS Solar Growth

## DOE RSC II Actions



# NY Solar Map and Portal



## Find Your Solar Potential

→ Enter your address

or jump to

New York State

Which best describes you?

- Residential
- Commercial
- Installer
- Municipal / Non-profit

Available map layers

Installed Capacity

> Add your system to the map



Solar Statistics



Calculator In Your Area

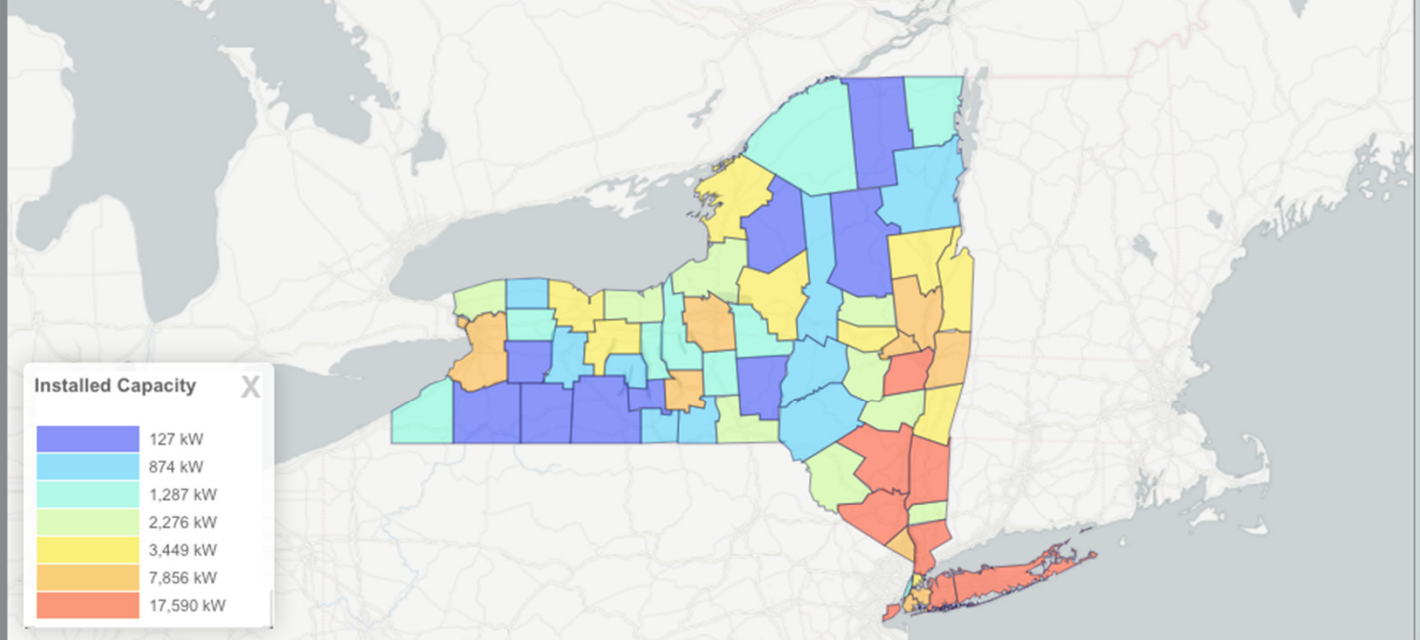


Advanced Tools



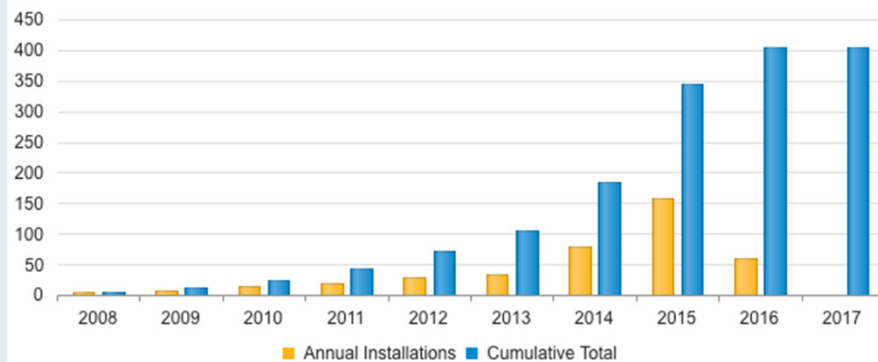
### Installed Capacity

127 kW
874 kW
1,287 kW
2,276 kW
3,449 kW
7,856 kW
17,590 kW

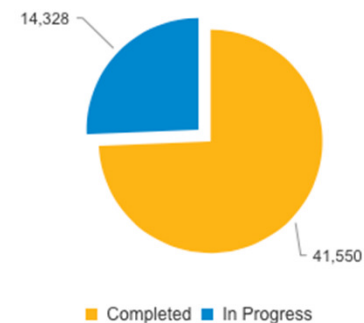


## Solar Statistics for New York State

Installed Solar Power Generation Capacity (Megawatts)



Status of Solar Projects



# Informative Map Layers



## Find Your Solar Potential

→ Enter your address

or jump to

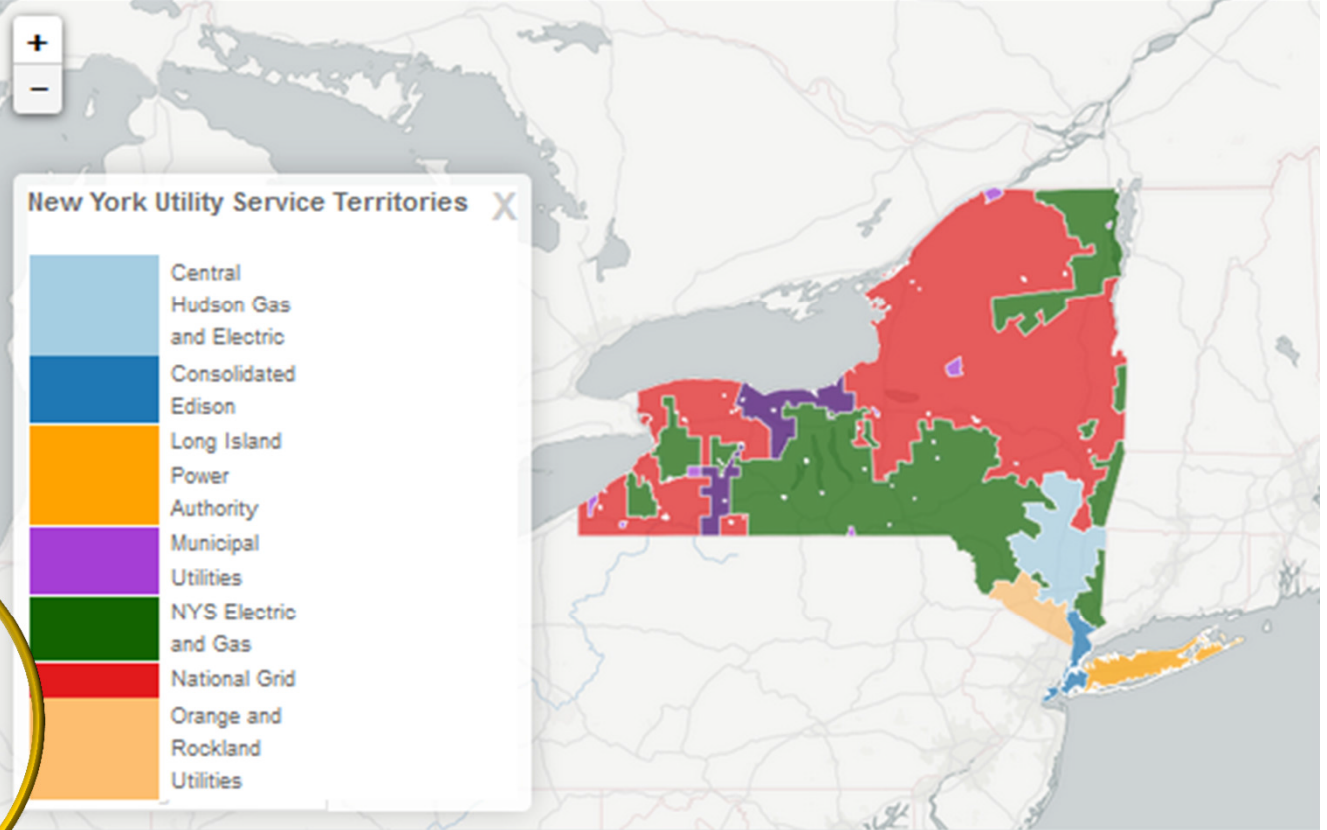
New York State

Which best describes you?

- Residential    Commercial  
 Installer    Municipal / Non-profit

Available map layers

- New York Utility Service Territories
- INSTALLING SOLAR
- New York Utility Service Territories**
- Solarize Group Purchasing Programs
- Unified Solar Permit Map
- Commercial/Industrial Incentives
- Small Commercial Incentive
- NYC Government Solar Installations



Installed Solar Power Generation Capacity (Megawatts)



Status of Solar Projects



# NYC, Westchester County LiDAR



**NY SOLAR MAP** [Going Solar](#) · [Installing Solar](#) · [Financing Solar](#) · [Solar+Storage](#) · [Resources](#) · [NYC Solar](#) · [About](#) · [Help](#)

**Street View**  
Enter your address  
  
or jump to

Which best describes you?  
 Residential  Commercial  
 Installer  Municipal / Non-profit

Available map layers

**Calculator** **In Your Area** **Solar Statistics** **Advanced Tools**

**Solar Potential Calculator**

**1. Solar System Assumptions**

Building / User Type	<input type="text" value="Commercial"/>
System Size (kW DC)	<input type="text" value="34.93"/>
Average monthly electricity cost	<input type="text" value="\$3,990.00"/>
Default \$ / Watt System Cost	<input type="text" value="\$4.30"/>
Financing Type	<input type="text" value="Cash"/>

\* financing options can change your required upfront cost (see below) to adjust payment type.  
[+ Open Advanced Assumptions](#)

**2. Output**

**6 Warburton Ave, Yonkers**

Optimal System Size (kW DC)	34.93
<i>(2,376 square feet out of 2,376 usable square feet)</i>	
Payback Period	8 years
Annual Savings	\$8,811
Net Cost After Incentives & Taxes	\$56,937

[+ Open Cost Details](#)

**Assumptions**   **Charts**   [More Charts <<>>](#)

Years	Cumulative Net Cash Flow
0	\$0
1	-\$10,000
2	\$0
3	\$10,000
4	\$20,000
5	\$30,000
6	\$40,000
7	\$50,000
8	\$60,000
9	\$70,000
10	\$80,000
11	\$90,000
12	\$100,000
13	\$110,000
14	\$120,000
15	\$130,000
16	\$140,000
17	\$150,000
18	\$160,000
19	\$170,000
20	\$180,000
21	\$190,000
22	\$200,000
23	\$210,000
24	\$220,000
25	\$230,000

# State-wide 'Draw Solar' Feature



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## Find Your Solar Potential





→ Enter your address

or jump to


Which best describes you?  
 Residential  Commercial  
 Installer  Municipal / Non-profit

Available map layers

> Add your system to the map



Solar Statistics   **Calculator** In Your Area   Advanced Tools



## Solar Potential Calculator

### 1. Solar System Assumptions

Building / User Type ⓘ

### 2. Output

Optimal System Size (kW DC) 6.97

(697 square feet out of 697 usable square feet)

[.Previous](#)

Char

# Solar Calculator



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## Solar Potential Calculator

### 1. Solar System Assumptions

Building / User Type *i*

Approx. Monthly Electric Bill *i*

Financing Type *i*

\* financing options can change you (below) to adjust payment type.

[+ Open Advanced Assumptions](#)

### 2. Output

20 456 Main Street

Optimal System Size (kW DC) 6.97  
*(697 square feet out of 697 usable square feet)*

Payback Period 8 years

Annual Savings \$2,505

Out-of-Pocket Cost \$27,941

Net Cost After Incentives & Taxes \$15,809

[GET A QUOTE](#) [DOWNLOAD REPORT](#)

[- Close Cost Details](#)

#### Cost Breakdown

Sticker Price of Solar System (Before Incentives) <i>i</i>	\$32,123
Out-of-Pocket Cost <i>i</i>	\$27,941
Inverter Replacement Cost <i>i</i>	\$2,091
Operations and Maintenance Costs <i>i</i>	\$0

#### Incentives

NY-Sun Incentive <i>i</i>	\$4,182
Federal Investment Tax Credit <i>i</i>	\$8,382
New York State Tax Credit <i>i</i>	\$5,000
Accelerated Depreciation (MACRS) <i>i</i>	\$0
NYC Property Tax Abatement <i>i</i>	\$0

#### Taxes

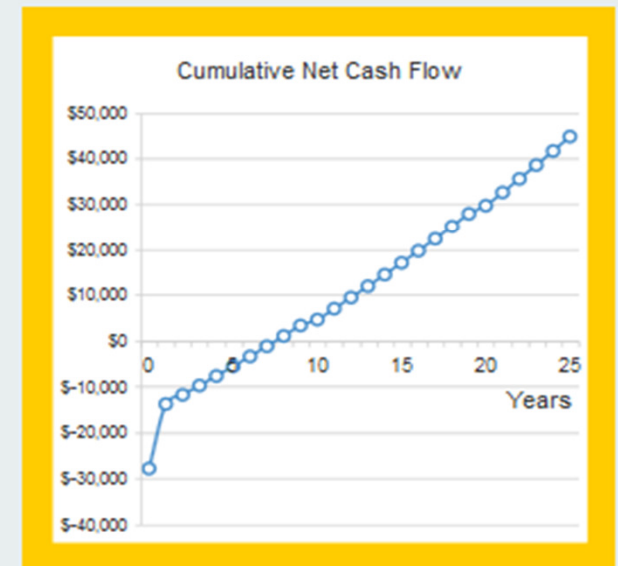
Federal Taxes Due on State Incentives/Credits <i>i</i>	\$1,250
Federal Taxes Due on City Incentives/Credits <i>i</i>	\$0

#### Financial Metrics

### Charts

[<<Previous](#)

[Next>>](#)



[+ Open Financing and System Details](#)



# Solar Connect



NY SOLAR MAP

Going Solar ·

Installing Solar ·

Financing Solar ·

Solar+Storage

Resources ·

NYC Solar ·

About ·

Help

Which best describes you?

- Residential  Commercial  
 Installer  Municipal / Non-profit

Available map layers

Installed Capacity

> Add your system to the map



Solar Potential Calculator

## Solar Potential Calculator

### 1. Solar System Assumptions

Building / User Type

Approx. Monthly Electric Bill

Financing Type

RESET

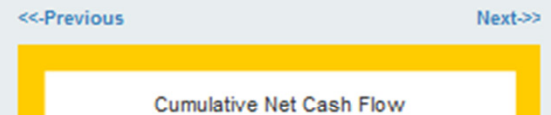
\* financing options can change your re below) to adjust payment type.

+ Open Advanced Assumptions

### 2. Output

106-57 55 STREET, Queens  
Optimal System Size (kW DC) 4.69  
(469 square feet out of 469 usable square feet)

### Charts



### I want to

#### Find a Solar Installer

- See installers who are participating in the NY Solar Map system to install solar in your area.  
 See installers who have installed solar in your area.

#### Filter Solar Installers by (optional):

- Type of Project  All  Residential and Small Commercial  Large Commercial
- Type of Solar  All  Solar PV  Solar PV with Battery Storage  Solar Hot Water (Thermal)

Show a List of Installers

# In Your Area



**NY SOLAR MAP**   Going Solar · Installing Solar · Financing Solar · Solar+Storage   Resources · NYC Solar · About · Help

### Find Your Solar Potential

→ Enter your address

Southampton, NY, USA

or jump to

Southampton

Which best describes you?

Residential    Commercial

Installer    Municipal / Non-profit

Available map layers

None

> Add your system to the map

Solar Statistics   Calculator   **In Your Area**   Advanced Tools

## In Your Area - Southampton

### Solarize Southampton II

A community organized solar effort led by the Town of Southampton's Department of Municipal Works. In close partnership with the Town's Sustainability Committee, the community hosted a successful round of Solarize in 2015. The 2016 iteration of the campaign will focus on bringing affordable solar to all residents and business owners.



Christine Fetten. Director of Municipal Works. Email: cfetten@southamptontownny.gov

# NY Solar Map- Portal



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Select the 'Going Solar' resource that fit your needs



HOMEOWNERS



BUSINESSES



CO-OPS / CONDOS



RENTERS / INVESTORS



CONTRACTORS



MUNICIPALITIES

# NY Solar Map- Portal



**NY SOLAR MAP** [Going Solar](#) · [Installing Solar](#) · [Financing Solar](#) · [Solar+Storage](#) · [Resources](#) · [NYC Solar](#) · [About](#) · [Help](#)

## CONTRACTORS & INSTALLER

Please see [Installing Solar](#) for information on Permitting, Interconnection, Zoning and Net-metering. Solar Ombudsmen conduct Solar Installer Workshops around New York State where installers can learn area specific best practices from building departments, utilities, finance programs and the New York State Energy Research Development Authority (NYSERDA).

### Solar Installer Roundtables

Sustainable CUNY convenes a NYC and NYS Installer Roundtable, a forum for exchanging information, workshop opportunities, RFP and RFI notices, and industry updates. If you would like to join the NYC and/or NYS Installer Roundtable, please send a request with your solar company email to [nysolar@cuny.edu](mailto:nysolar@cuny.edu)

### Resources

Sustainable CUNY has worked with numerous partners to develop and publish a multitude of resources including permit forms, reports, plans, surveys, FAQ's, check-lists, analytics and more to assist the solar industry in the NY State market. Significant financial and technical support to prepare these documents have been provided by: the U.S. Department of Energy, the NY-Sun Initiative, NYSERDA, the New York Power Authority, Con Edison, the National Renewable Energy Laboratory, the NYC Department of Buildings and the City University of New York. [Reports and More](#)



INSTALLING SOLAR IN NEWYORK CITY



SOLAR CONNECT



INSTALLER WORKSHOPS

# NY Solar Map- Portal



NY SOLAR MAP

Going Solar

Installing Solar

Financing Solar

Solar+Storage

Resources

NYC Solar

About

Help



NEW YORK SOLAR PERMITS

## Solar Permitting Guide

- 1-Are you applying for the
  - 2-Is your system size over
  - 3-Would you like to apply
- Yes  No
- Yes  No
- Yes  No

INTERACTIVE SOLAR PERMITTING GUIDES



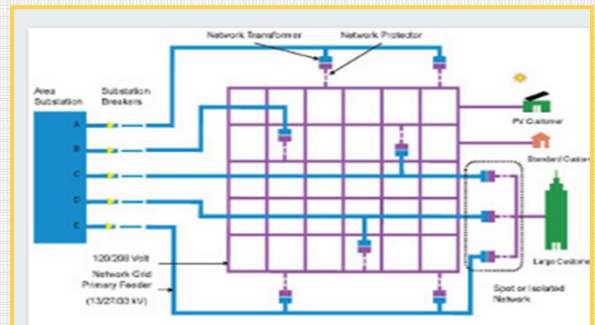
SOLAR PERMIT ADOPTERS



MODEL SOLAR ZONING



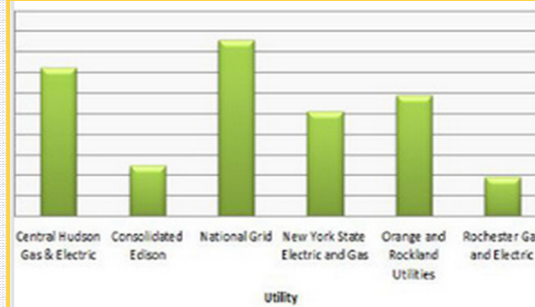
INTERCONNECTION



GRID READY



NET METERING



TRACKING NET METERING

**Hardware Technologies**

**Policy & Legal**







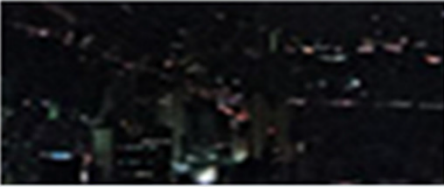

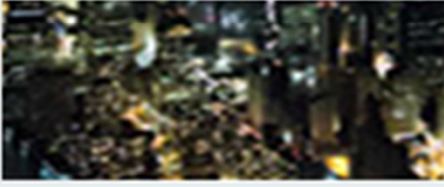
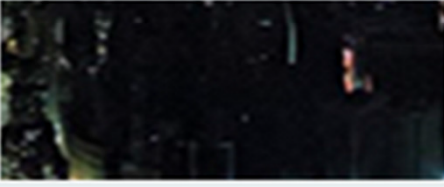
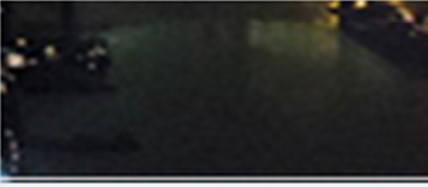
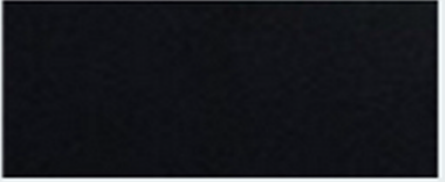

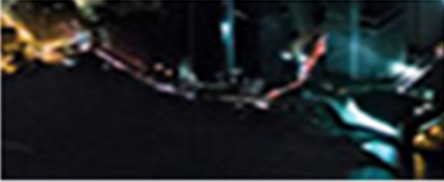
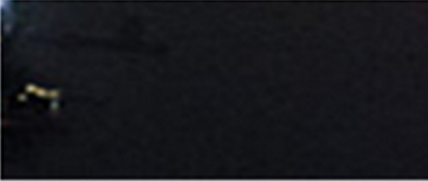
**Smart DG  
Hub**

**Software  
Technologies**

**Economics &  
Finance**

# Smart DG Hub- Resilient Solar Project



<a href="#">NY SOLAR MAP</a> <a href="#">Going Solar</a> · <a href="#">Installing Solar</a> · <a href="#">Financing Solar</a> · <a href="#">Solar+Storage</a> · <a href="#">Resources</a> · <a href="#">NYC Solar</a> · <a href="#">About</a> · <a href="#">Help</a>			
Resources for the Current Process for Installing Solar+Storage			
			
The Energy Storage Systems Permitting and Interconnection Process Guide for New York City	Economics and Finance of Solar+Storage Fact Sheet	Guidance Memo for Including Storage in Community Solarize Programs	NYC Solar+Storage Glossary
Resilient Solar PV Systems Hardware Fact Sheet	Economic and Resiliency Impact of PV and Storage on New York Critical Infrastructure		
Solar+Storage and Microgrid Communications Fact Sheet	Solar and Storage Cost Survey		
Solar+Storage Retrofit Guidelines			
			

# Smart DG Hub- Resilient Solar Project



**NY SOLAR MAP**    Going Solar-    Installing Solar-    Financing Solar-    Solar+Storage    Resources-    NYC Solar-

## Find Your Solar Potential

→ Enter your address

Queens ▾

Which best describes you?

Residential     Commercial

Installer     Municipal / Non-profit

Available map layers

**NYC Installed Energy Storage Systems** ▾

> Add your system to the map

**Solar Statistics**    Calculator In Your Area    Advanced Tools



# Smart DG Hub- Resilient Solar Project



## A Roadmap to Resilient Solar In New York



Develop a sustainable market through better policy



Compensate resilient PV for the services it provides to the grid



Create incentives to value the improved resiliency of sites with resilient PV



Provide education and outreach about resilient PV systems and their benefits to installers and consumers



## Hardware

- Core Components
- AC vs. DC-coupling
- Case Study: Emerging Storage Use Cases
- Case Study: Modeling resilient PV
- Barriers & Solutions
- Practitioner experience

## Policy

- Regional activities and opportunities
- Case Study: MA Peak demand reduction
- Case Study: Con Ed/NYSERDA Support for NYC's Storage Market
- Barriers & Solutions
  - Permitting processes

**NYSOLAR SMART** DG Hub

New York City Resilient Solar Roadmap

March 2017

## Software

- Use cases and applications
- Case Study: Interoperability Retrofits
- Barriers & Solutions
- Customer data availability



## Economics

- Improving the economics
- Survey
- Case Study: Ca/Germany incentives
- Case Study: NYSolar map resiliency calculator
- Barriers & Solutions
- High project costs

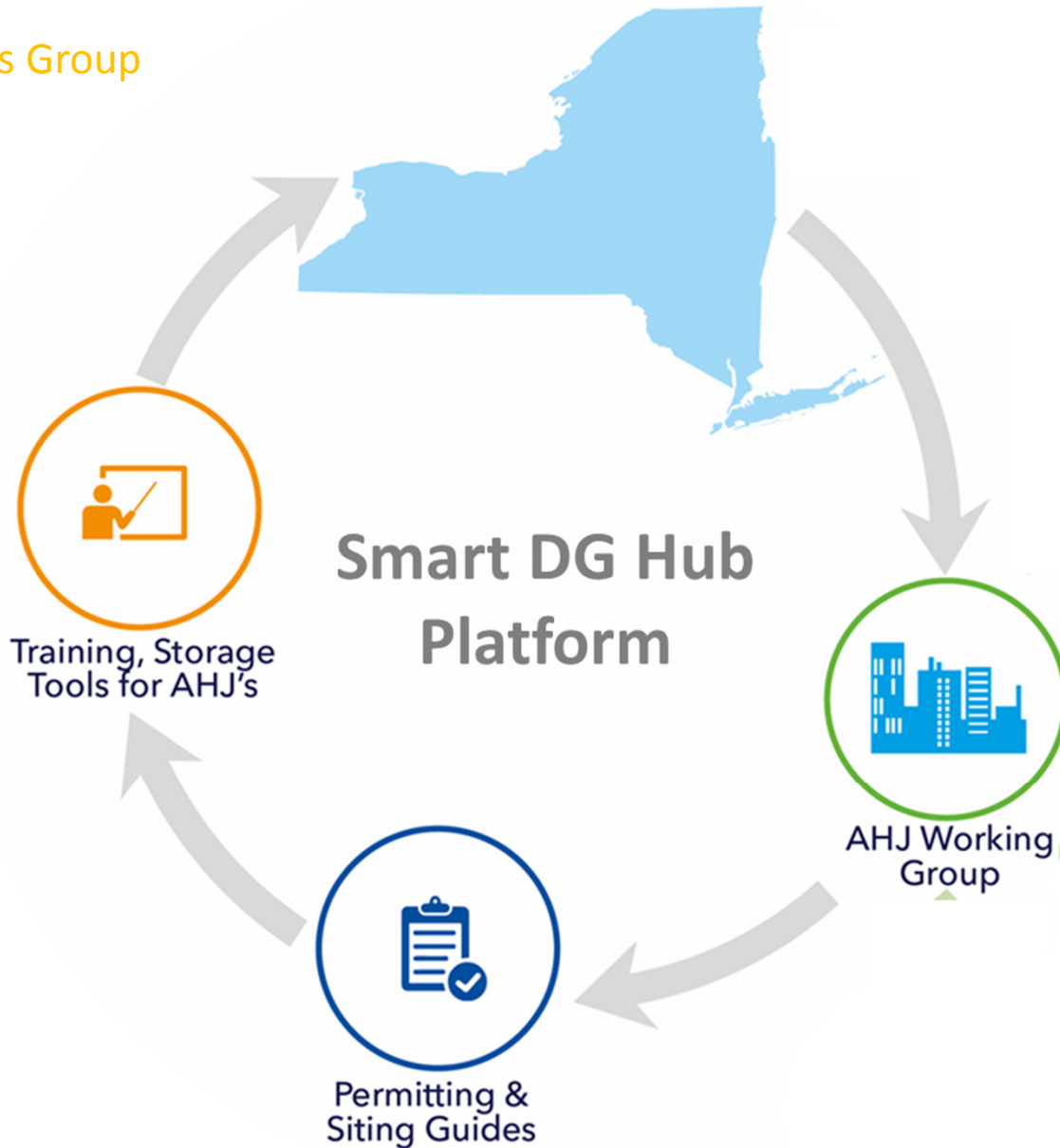
# The Path to Distributed Energy Storage on Demand



# Smart DG Hub- Reducing Soft Costs

Sustainable CUNY  
Meister Consultants Group  
DNV-GL

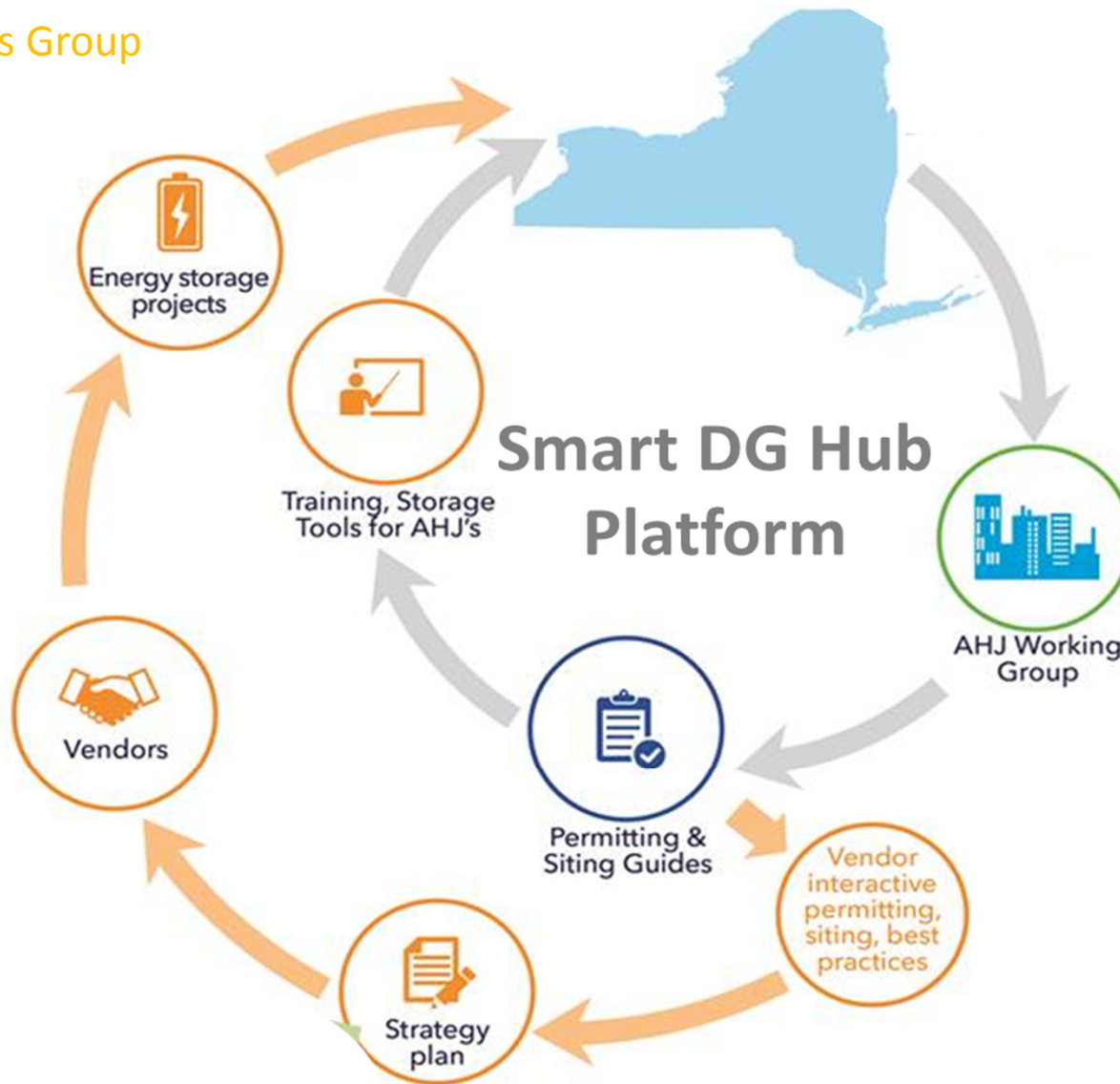
**Assist AHJs** with  
Developing Model  
Storage Siting and  
Permitting Guides



# Smart DG Hub- Reducing Soft Costs



Sustainable CUNY  
Meister Consultants Group  
DNV-GL



**Best Practices  
Guidance for  
Energy Storage  
Vendors**



**NEW YORK**

**SOLAR** + *Storage* **SUMMIT**

June 21, 2017

City University of New York  
John Jay College, NY, NY



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