

Smart DG Hub Activities and Beyond

NY Solar Summit

June 20, 2016



At Sustainable CUNY for 1 year leave of absence from NREL

Types of projects I have been involved with (NREL)

- Holistic energy planning and road mapping (NZEI + microgrid)
- Energy modeling (GSA, USFS, NPS) and min LCC Net Zero
- Implementation support (MW's of PV, MWh of EE, kW of ESS)

Market changing work with organizations across NYS (SCUNY)

- Sharing ideas (WG + Content Generation)
- Educating stakeholders (Fact Sheets + Roundtables)
- Bridging wide range of objectives to find common ground (Partner Organizations, Listening to Industry)



Smart DG Hub Goals

Objective

A more resilient distributed energy system in NYC, with a path for expansion across the state and country

Develop Platform

Engage Stakeholders

Create Strategic Pathways

Increase Deployment of Resilient PV Systems





Public
Service
Commission



NEW YORK
STATE OF
OPPORTUNITY.

NYSERDA



NEW YORK BATTERY
AND ENERGY STORAGE
TECHNOLOGY CONSORTIUM



What have we done?

Resources Developed - nysolarmap.com/resources/reports/

- Hardware Fact Sheet
- Finance Fact Sheet
- NYC Solar + Storage Cost Survey
- Retrofit and Storage Ready Fact Sheet (NEW)

Energy Storage Systems Permitting and Interconnection Guide

DEPARTMENT OF BUILDINGS BATTERY CHECKLIST

Appendix A – Required Supporting Documentation

Provide the following information electronically. Each numbered section below must be included under a separate electronic folder. Provide a separate document with a descriptive name or subfolder for each bulleted item listed under each heading. A hardcopy of the required information may also be provided in a 3-ring binder.



1. Project Information

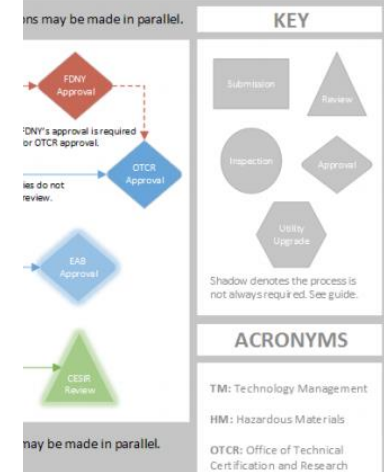
- Location/Address
- Building Owner
- Statement that project meets Con Ed/NYSERDA technical requirements for approved incentive program
- Building Permit - Provide NYC DOB Job# (If no building permit is required then applicant (PE/RA) should provide a statement regarding work to be performed, i.e., no alteration to building, no changes to egress or C of O)
- Electrical Permit – Provide NYC DOB Job#

2. Battery Properties and Characteristics

- Description of chemistry (include a schematic showing how the battery works)

DOB's Const	
Construction Permit	Construction (Section 28) have been Note: Cons
Required Submission Documents	Forms to s PW1 PW3 TR1 TR8 Asb Arch servi C40i Forms to s PW2

Interconnection Process for NYC





What are we currently doing?



Resources Under Development

- Smart Grid Communications Fact Sheet
- Resilient PV Roadmap
- Policy Guidelines
- Resilient PV Calculator
- Resilient Solar Layers on the NY Solar Map

Resilient PV Report



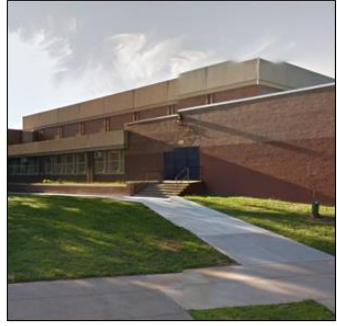
New York Solar Smart DG Hub-Resilient Solar Project

Economic and Resiliency Impact of PV and Storage on New York Critical Infrastructure

Kate Anderson, Kari Burman, Travis Simpkins
National Renewable Energy Laboratory

Erica Helson, Lars Lisell
City University New York

Resilient PV Report



School



Fire Station



NYCHA

Evaluated Scenarios

1. PV + Storage (sized for economics)
2. PV + Storage (sized for outage)
3. Hybrid (sized for outage)
4. Generator (sized for outage)

All sites were analyzed with and without a resiliency value

Resilient PV Report



Finding: PV+Storage is NPV positive for systems at each site

School		
PV+Storage Sized for Economic Savings		
	Without Resiliency	With Resiliency
PV Size (kW-DC)	50	50
Battery Size (kWh)	74	74
Battery Size (kW)	35	35
Net Present Value	\$51,560	\$58,650

+7,090

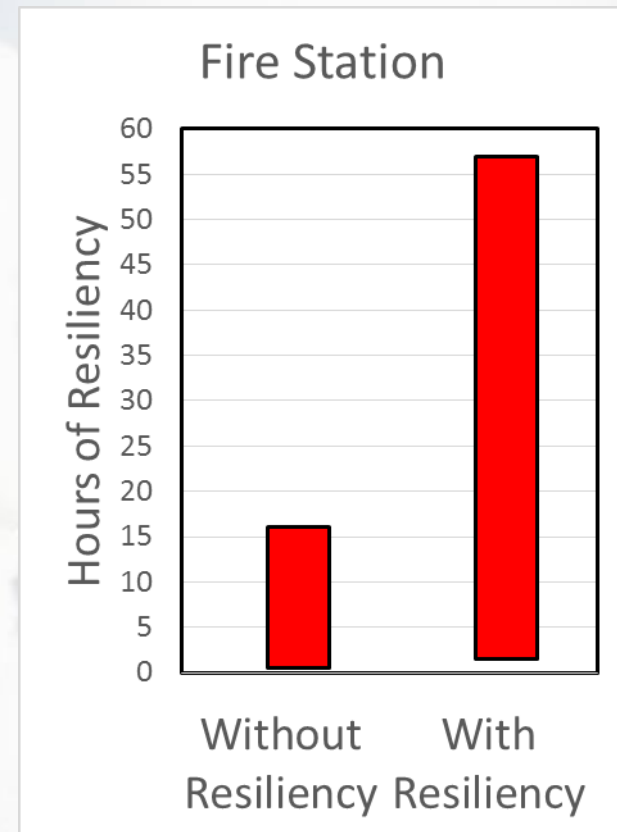
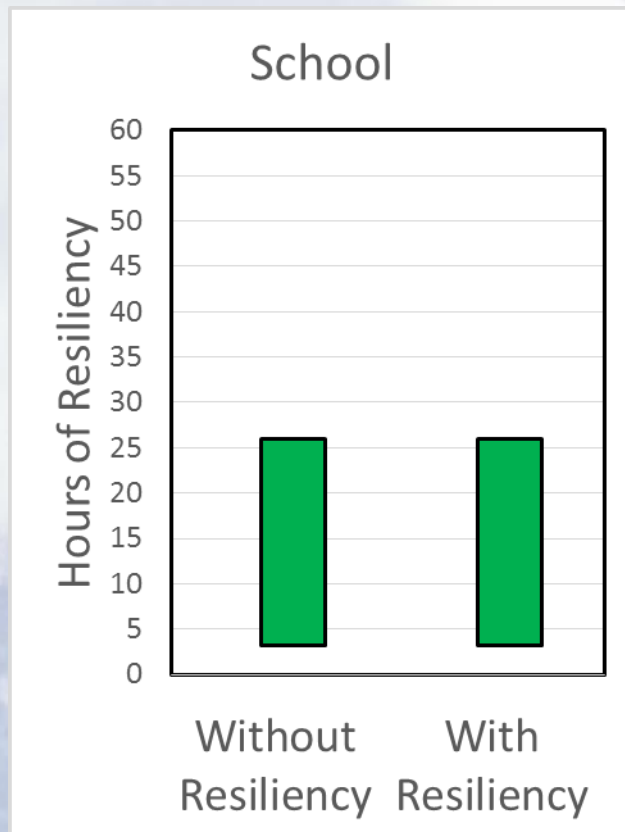
Fire Station		
	Without Resiliency	With Resiliency
PV Size (kW-DC)	10	10
Battery Size (kWh)	43	213
Battery Size (kW)	16	31
Net Present Value	\$22,365	\$324,250

+301,885

Resilient PV Report



Finding: Adding storage to PV improves economics and gives “free resiliency”





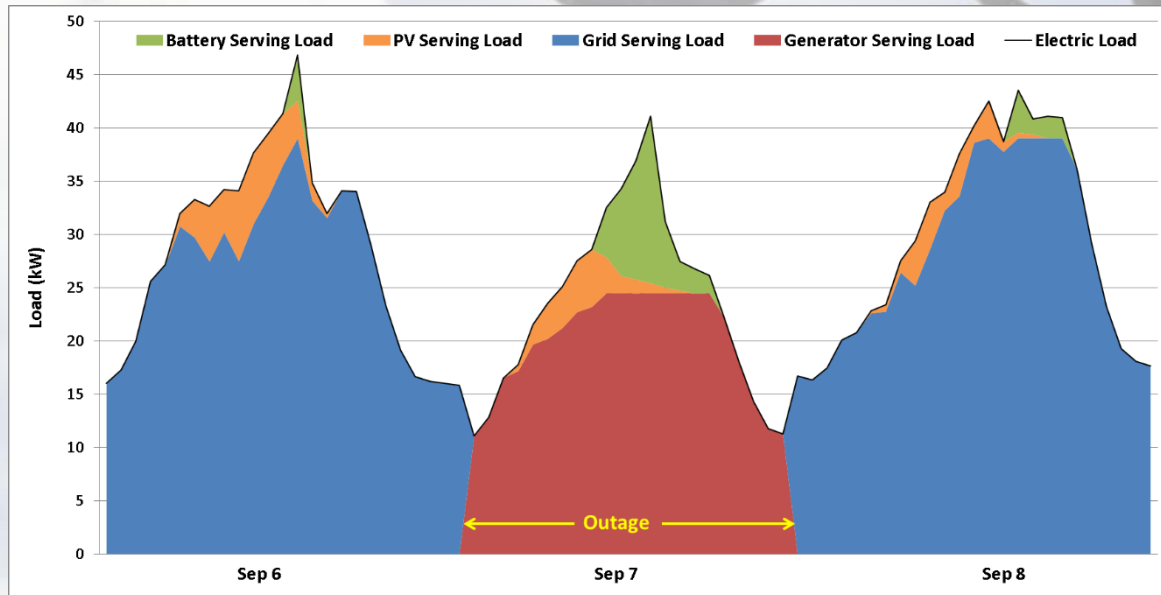
Resilient PV Report

Fire Station

Most Cost Effective Option for Outage Coverage

	Short outage; without resiliency	Long outage; without resiliency	Short outage; with resiliency	Long outage; with resiliency
PV+Storage NPV	-\$12,070	-\$256,158	\$10,149	\$93,118
Hybrid NPV	\$0	-\$1,679	\$25,384	\$344,848
Generator Only NPV	-\$51,713	-\$51,713	-\$19,964	\$296,380

Finding: Hybrid and PV+Storage systems are better than stand alone generators



Thank You



Please reach out with questions/ideas:

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