



# National Disaster Resilience Competition (NDRC)

*Building Resilient Energy Systems*

July 30, 2015



# Disclaimer

- This presentation is intended to provide communities and states with the tools and information to help in climate resilience planning and activities.
- Information presented in this webinar is independent of the Notice of Funding Availability (NOFA) for the National Disaster Resilience Competition (NDRC). While we expect that this information will be useful to interested communities and eligible applicants, *it should not be construed as the definitive word on any singular approach to resilience.*
- No NOFA NDRC questions will answered during this presentation.
- All NOFA NDRC questions should be sent to:  
[resilientrecovery@hud.gov](mailto:resilientrecovery@hud.gov)

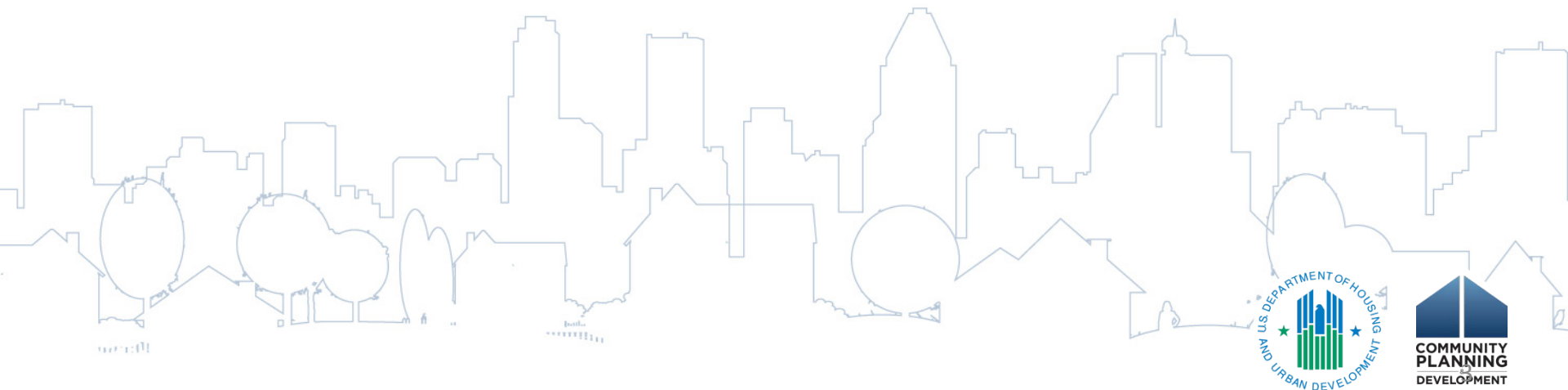
# Presenters

## HUD Office of Economic Resilience

- Allison Heck
- Crystal Bergemann

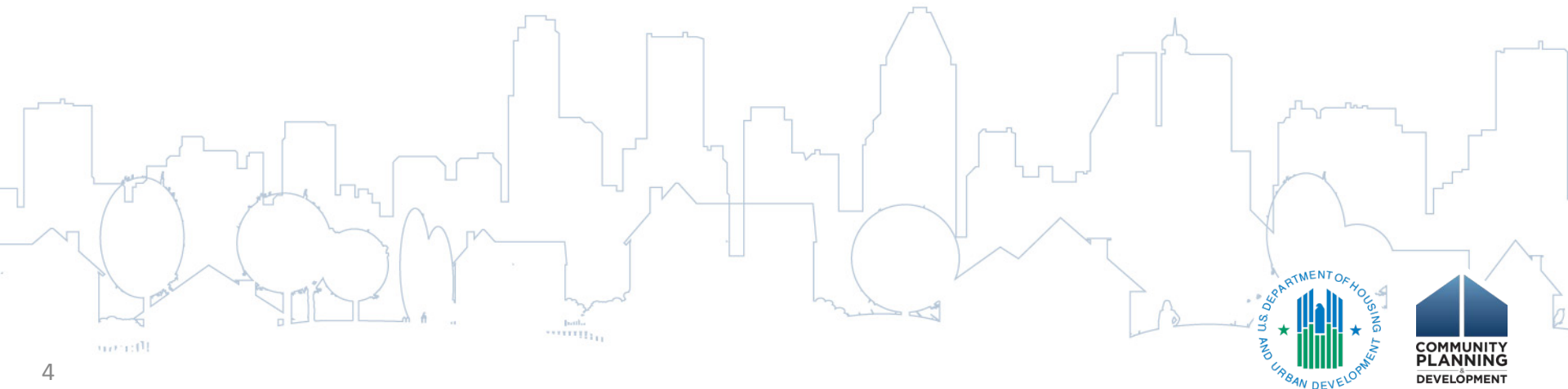
## Clean Energy Group

- Lewis Milford
- Seth Mullendore



# Agenda

1. NDRC Overview and timeline
2. Renew300, HUD's Renewable Energy Target
3. Building Resilient Energy Systems-Clean Energy Group
4. Questions



# NDRC Overview

- The National Disaster Resilience Competition (NDRC) makes available nearly \$1 billion to communities that have been impacted by natural disasters **between 2011-2013**.
- The competition encourages communities to not only consider how they can recover from a past disaster but also how to avoid future disaster losses...**to be more Resilient**
- Applicants need to link or “tie-back” their proposals to the disaster from which they are recovering, as well as demonstrate how they are reducing future risks and advancing broader community development goals within their target geographic area(s).

# NDRC Overview - Timeline

## Phase 1

[Framing Unmet Recovery Needs, Vulnerabilities,  
and Community Development Objectives]



60 DAYS  
(~2 MONTHS)

PHASE 1  
REVIEW  
PERIOD

## Phase 2

[From Framing to Implementation]

PHASE 1  
WINNERS  
ANNOUNCED  
6/22/2015

120 DAYS  
(~4 MONTHS)

PHASE 2  
APPLICATION  
DEADLINE  
10/27/2015

PHASE 2  
REVIEW  
PERIOD

60 DAYS  
(~2 MONTHS)

PHASE 2  
WINNERS  
ANNOUNCED  
January 2016\*

*\*Note: These dates are tentative and subject to change at HUD's discretion*





# Renew300: HUD's Federal Renewable Energy Target



In 2 years, 50 grantees, including 17 Public Housing Authorities (PHAs), have made a voluntary pledge to install renewable energy technologies on-site at their properties, exceeding the original 100MW goal.

More than 185MW worth of solar photovoltaic systems, solar thermal systems, geothermal systems, and combined heat & power systems are installed or planned – enough to power over 30,000 homes and counting



# HUD/DOE

## Community and Shared Solar Partnership



**4,000%**

increase in the number of shared solar projects since 2008.



**172 MW**

of shared solar were connected to the grid as of April 2015. That's enough to power **28,000** average American homes.



**32-49%**

of the distributed PV market in 2020 has the potential to be shared solar.

<http://energy.gov/eere/solarpoweringamerica/national-community-solar-partnership>





# HUD/DOE Community and Shared Solar Partnership, Continued

- Serves low and moderate Income (LMI) households in collaboration with HUD, DOE, EPA and key representatives from solar companies, non-profit organizations, state and community leaders, and financial institutions.
- Mission to expand access to community and shared solar while utilizing the technical expertise of the Energy Department and its national laboratories.



# Community Solar Working Groups

1. Best practices at the state level
2. Federal and state resources
3. Financing and business models
4. Customer acquisition for low and moderate income projects
5. Multifamily housing

Goal is to identify best practices and successes, and identify and address common barriers

National workshop to be held Fall 2015 in Washington, DC

For more information, contact [solar@ee.doe.gov](mailto:solar@ee.doe.gov) or [renewables@hud.gov](mailto:renewables@hud.gov)





# Building Resilient Energy Systems

Hosted by The U.S. Department of Housing and  
Urban Development

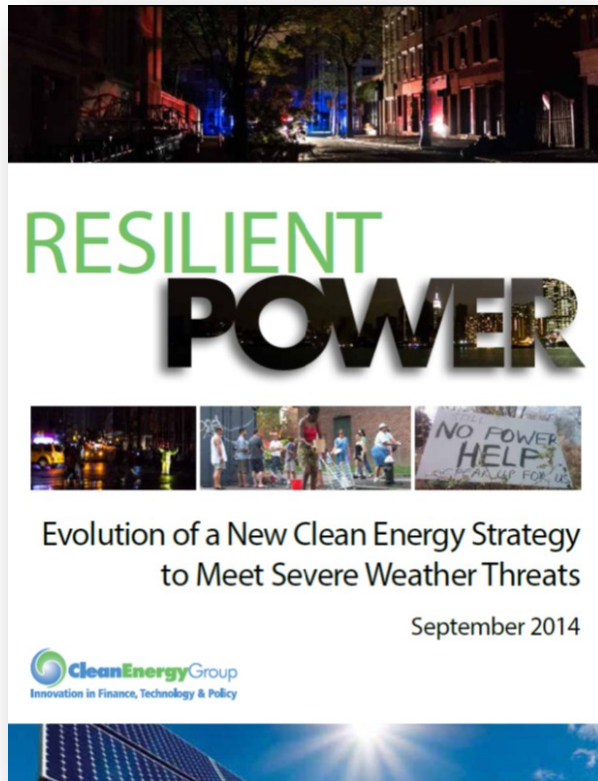
July 30, 2015

Lewis Milford  
President  
Clean Energy Group

Seth Mullendore  
Project Director  
Clean Energy Group



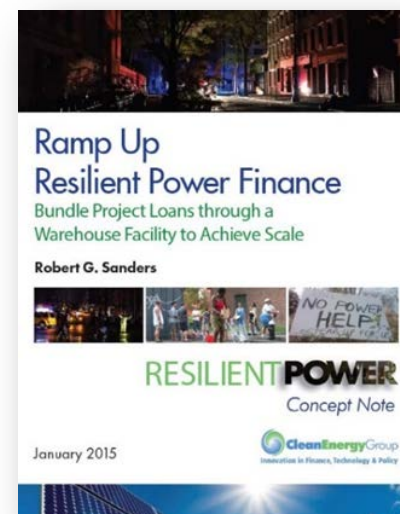
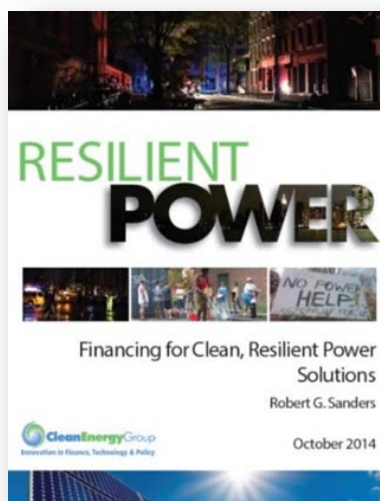
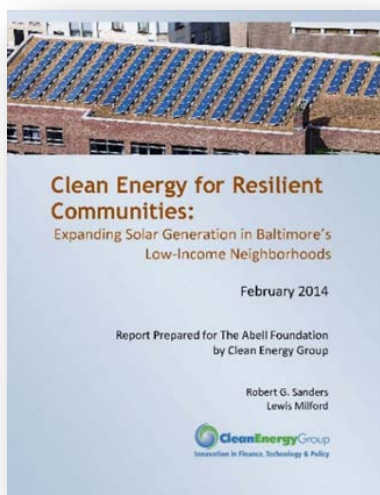
# Who We Are



**SURDNA FOUNDATION**  
*Fostering sustainable communities in the United States*

# Resilient Power Project

- Increase public/private investment in clean, resilient power systems
- Engage city officials to develop resilient power policies/programs
- Protect low-income and vulnerable communities
- Focus on affordable housing and critical public facilities
- Advocate for state and federal supportive policies and programs
- Technical assistance for pre-development costs to help agencies/project developers get deals done
- See [www.resilient-power.org](http://www.resilient-power.org) for reports, newsletters, webinar recordings





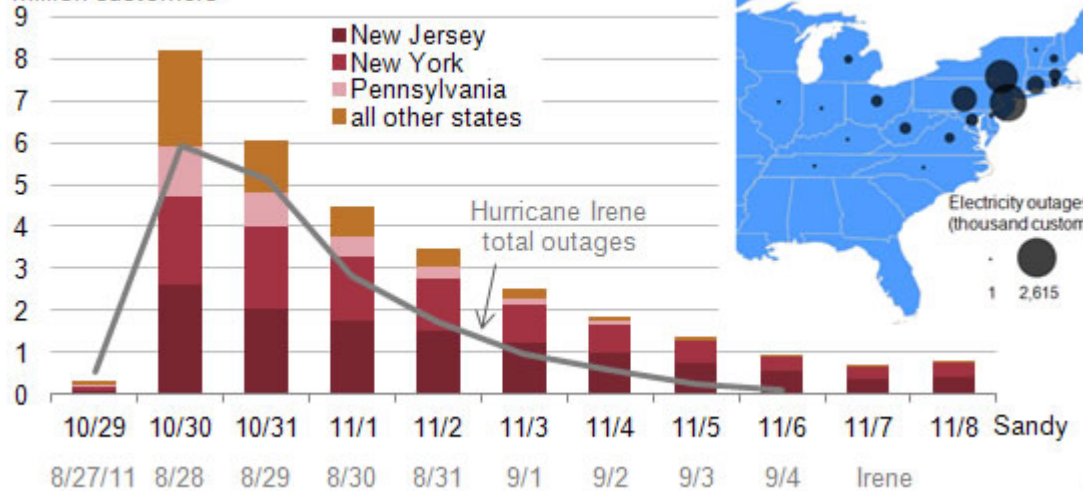
# Sandy and Power

“Extensive power outages during Sandy affected millions of residents and resulted in substantial economic loss to communities. Despite the size and power of Hurricane Sandy, this was not inevitable: resilient energy solutions could have helped limit power outages.”

*Hurricane Sandy Rebuilding Strategy:  
Stronger Communities, A Resilient Region (Aug. 2013)*

“The fact that the NYU hospital is dark but Goldman Sachs is well-lit is everything that’s wrong with this country.”

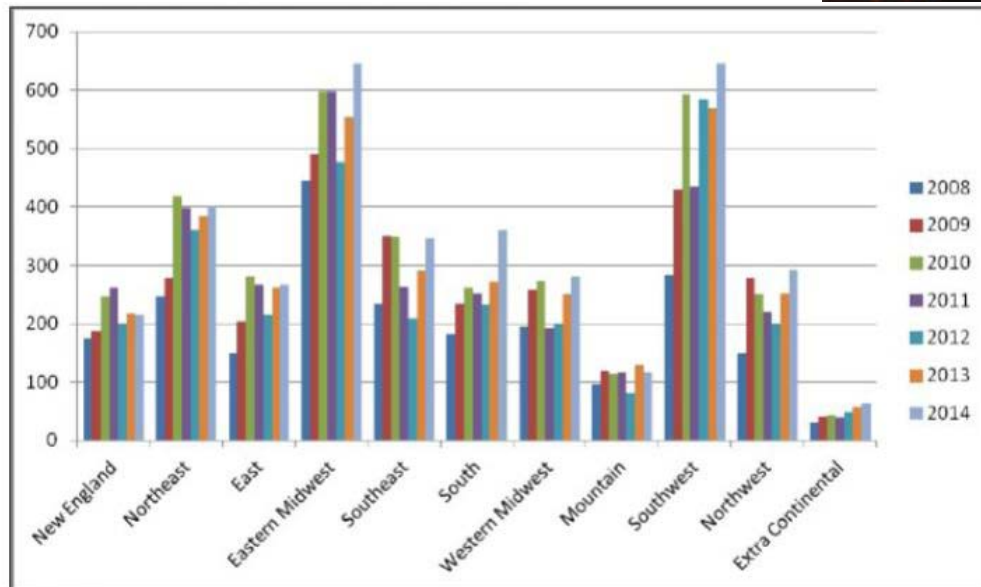
Hurricane Sandy power outages  
million customers



# Power Outages & Severe Weather



Reported Power Outages by Region (2008-2014)



# Extreme Weather Disproportionately Hurts Vulnerable & Low-Income Communities



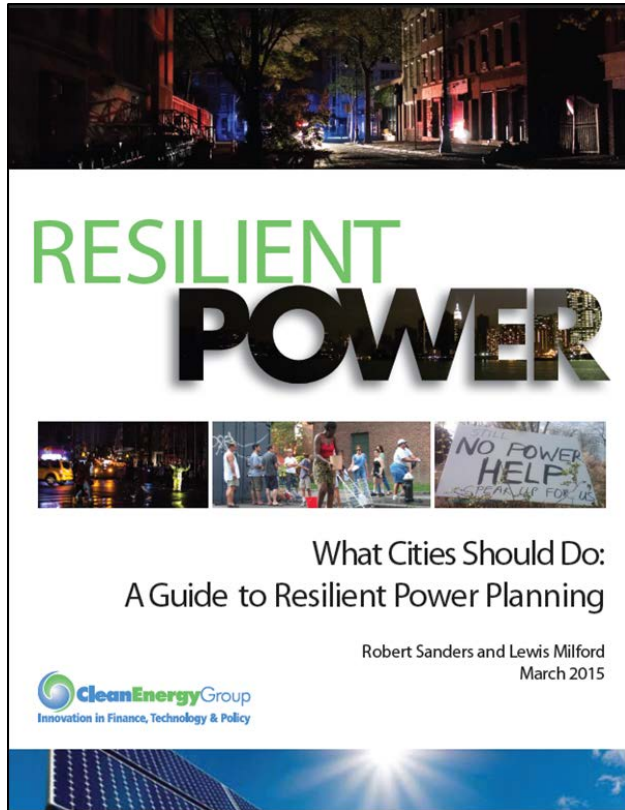
- Extreme weather events harms low-income, elderly and disabled populations disproportionately
- Flooded counties had households at 14% below US median income.
- Drought & heat waves affected counties with households at 5% below US median income.



- **Hurricane Sandy:** 110 US fatalities and \$42+ billion in property damage - costliest U.S. hurricane.
- 600,000 people live in 6 low-lying, mostly NY minority communities of South Bronx, Newtown Creek, Brooklyn Navy Yard, Red Hook, Sunset Park & Staten Island.
- In Red Hook (Brooklyn), the borough's largest housing project, 4,000 of the 6,000 residents had no heat or water for over a week after the storm.
- No backup generators at senior centers.



# Resilient Power Inequality



*When it comes to reliable energy technologies to protect against power outages, there is a disparity between the haves and the have-nots.*

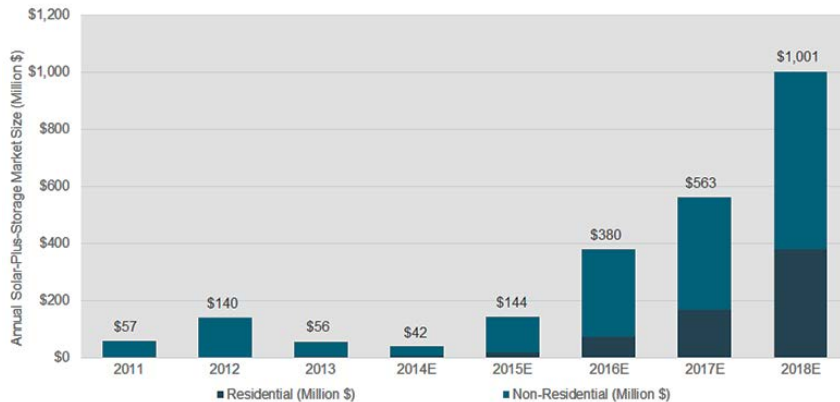
*Call it “resilient power inequality.”*

<http://www.cleangroup.org/assets/2015/Resilient-Cities.pdf>

# Solar+ Storage New Major Market Trend—Finance Industry

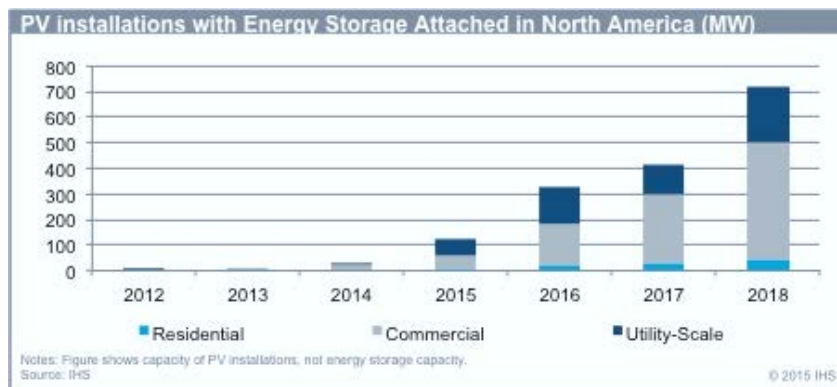
*“In 2014, a chorus of analyses from major financial institutions—including Bank of America, Barclays, Citigroup, Fitch Ratings, Goldman Sachs, Morgan Stanley, and UBS—found that solar-plus-battery systems pose a real and present threat to traditional utility business models.”*

<https://cleantechnica.com/2015/04/16/solar-plus-storage-is-coming-to-ders-says-finance-industry/>



## US Solar-Plus-Storage Market to Surpass \$1 Billion by 2018

<http://www.greentechmedia.com/articles/read/US-Solar-Plus-Storage-Market-to-Surpass-1-Billion-by-2018>



## IHS: 9% of solar PV systems will have attached storage in 2018

<http://www.utilitydive.com/news/ihs-9-of-solar-pv-systems-will-have-attached-storage-in-2018/375636/>



# Solar and Storage: The Energy Transition

ENERGY

## Clean Energy Revolution Is Ahead of Schedule

106 APR 8, 2015 8:00 AM EDT

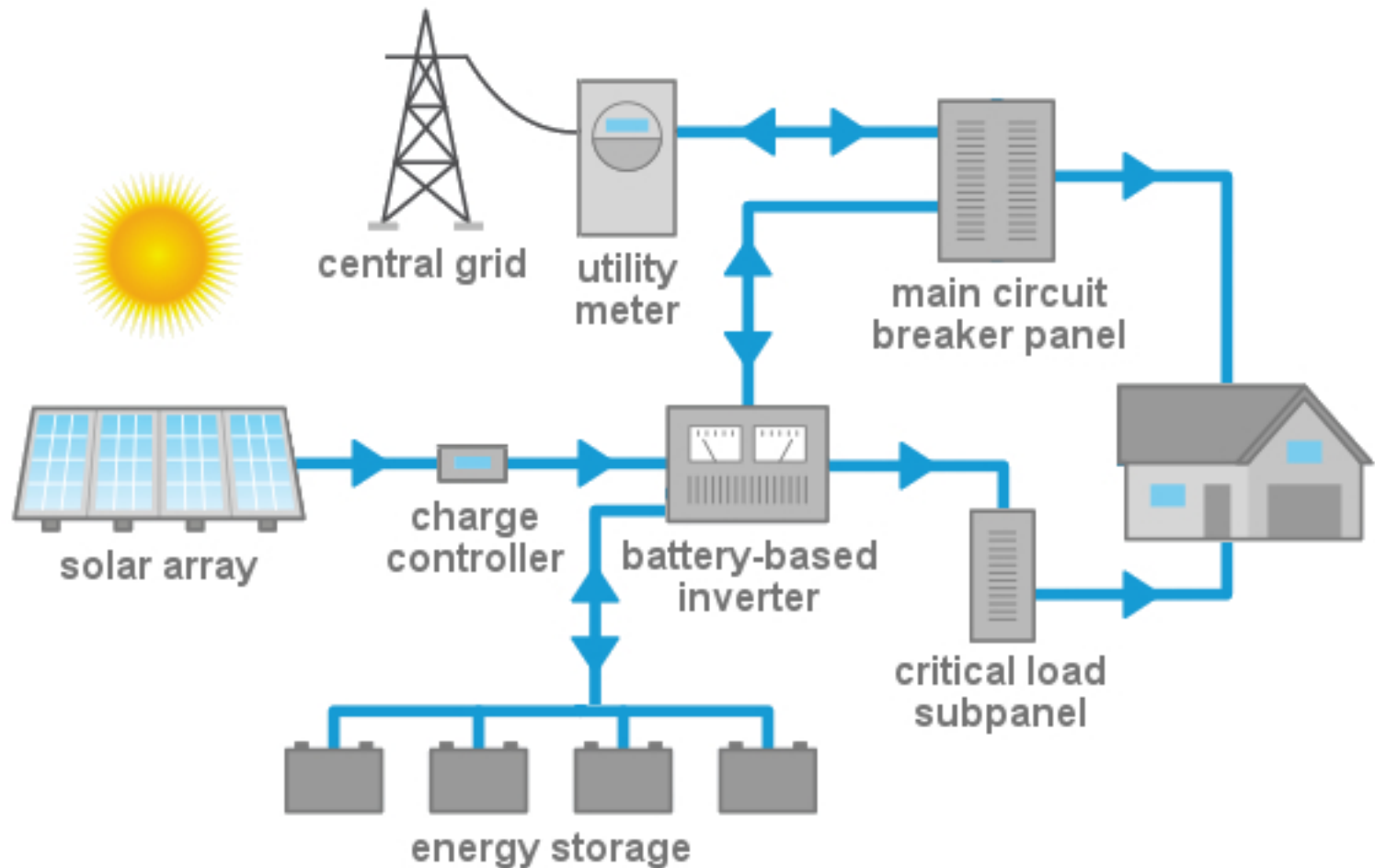
By Noah Smith

BloombergView

*Solar-plus-batteries are set to begin a dramatic transformation of human civilization. The transformation has already begun, but will really pick up steam during the next decade. That is great news, because cheap energy powers our economy, and because clean energy will help stop climate change.*

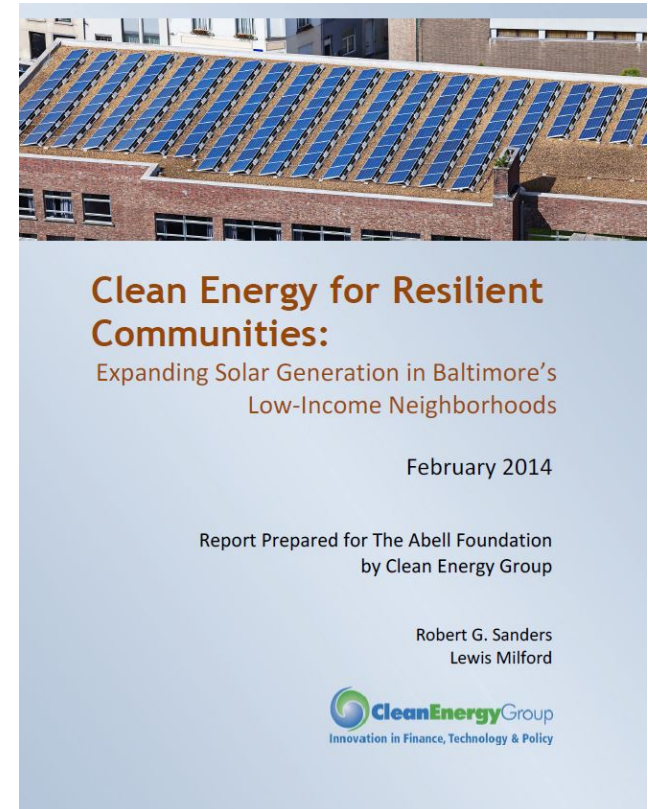
<http://www.bloomberqview.com/articles/2015-04-08/clean-energy-revolution-is-way-ahead-of-schedule>

# How Resilient Solar + Storage Works



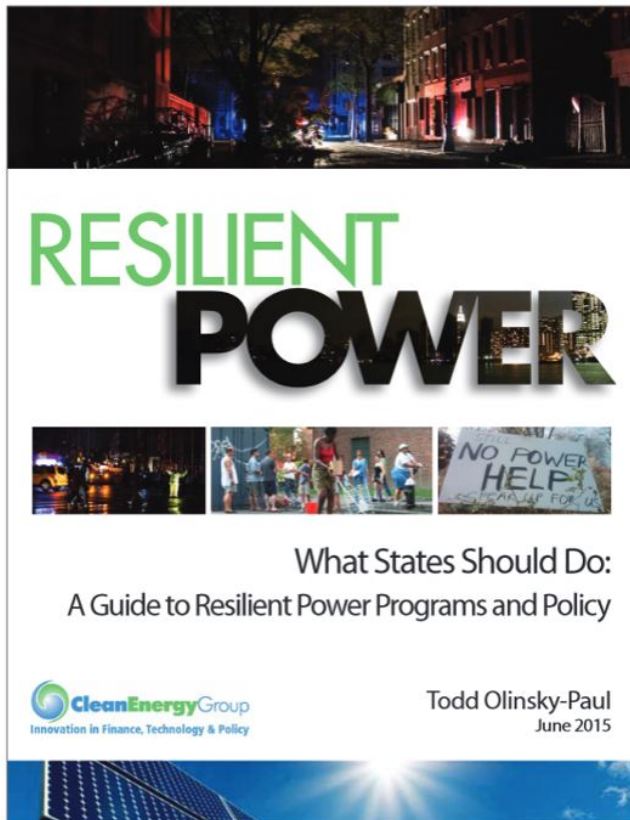
# Resilient Cities – What Should Cities Do?

- Disaster preparedness planning: evaluates vulnerabilities
- Few cities assess risks & mitigation strategies re: grid outages for critical public & community facilities
- None has developed citywide resilient power strategy
- Finance solar+storage systems with little or no upfront costs
- Cities must invest in resilient power



<http://www.cleangroup.org/assets/Uploads/2014-Files/Clean-Energy-for-Resilient-Communities-Report-Feb2014.pdf>

# What States Should Do: A Guide to Resilient Power Programs and Policy



Read the report at  
<http://bit.ly/ResilientStates>

**First comprehensive look at the emerging resilient power movement in the Northeast:**

- \$400 million in new state-managed funds
- 90+ critical facilities – including emergency shelters, wastewater treatment plants, firehouses and other first responder facilities
- Moving from demonstration projects to market-based solutions
- Best practices and policy recommendations

# Financing Resilient Power



## Ramp Up Resilient Power Finance

Bundle Project Loans through a  
Warehouse Facility to Achieve Scale

Robert G. Sanders



## RESILIENTPOWER

Concept Note

January 2015



- ***Project & Company Financing:*** How are projects financed now, where are sources of expansion capital?
- ***Commercial & Green Banks:*** How to provide debt in emerging tech markets?
- ***Foundation Roles:*** Program support, PRIs & endowment asset allocation
- ***State and Local Support:*** Incentives & credit enhancement reduce project risk
- ***Warehouse Credit Facility:*** Rolling up transactions to get to scale
- **Goal:** To calibrate a development finance strategy to the reality of early stage market – without leaving low-income & vulnerable populations behind



# Public Support for Solar+Storage

## Public Investments:

- **Connecticut DEEP: \$48 Million**
- **New Jersey BPU: \$200 Million** Energy Resilience Bank and **\$10 Million** Energy Storage Program
- **Massachusetts DOER: \$40 Million** Community Clean Energy Resiliency  
**New York NYSEDA: \$40 Million** NY Prize microgrids, **\$66 Million** CHP

**TOTAL: >\$400 million in new NE state funds alone in last 18 months**



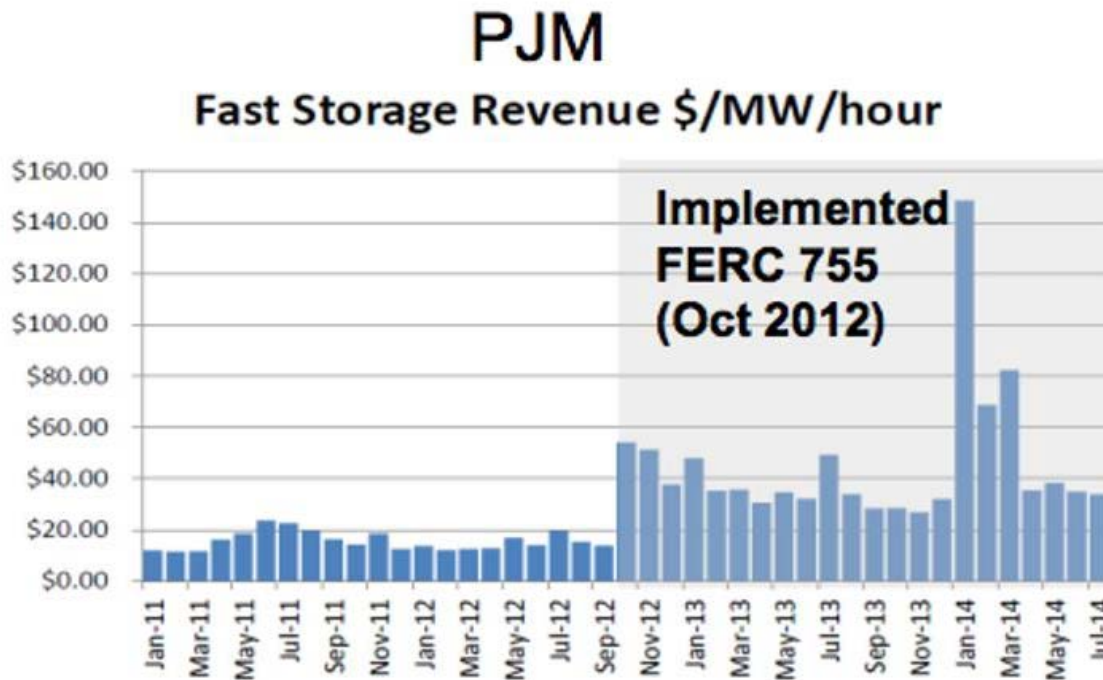
## Resilient Solar+Storage Projects to Date:

- **New Jersey BPU: \$3 million** for 13 solar+storage projects at schools, wastewater treatment plants. **Total : \$12 million**; State investment for round two: **\$6 million**
- **Massachusetts DOER: \$26 million** for 21 municipal projects, including 31 solar+storage projects at schools, wastewater plants, first responders. **Total project investment: ~\$52 million**
- **Vermont** Solar+storage microgrid. **Total project investment: \$12.5 million**

**TOTAL: ~\$76.5 million in solar+storage projects over the past 6 months\***

*\*Results do not include California*

# Solar+Storage: The Economic Case



- Frequency regulation market participation can reduce payback period for solar+storage projects in PJM territory to 4 years
- Resilient energy storage being provided by third party storage companies at little to no cost to developer

# Other Half of the Bill – Demand Charges

## Your electricity charges

These charges are for the electricity you used (supply) and getting that electricity to you (delivery). Rates are based on a 30 day period. When your billing period is more or less than 30 days, we prorate your bill accordingly.

### Electricity you used during this 32 day billing period from Aug 16, 2013 to Sep 17, 2013

Rate: EL9 General Large

We measure your electricity by how many kilowatt hours (KWh) you use. One KWh will light a 100 watt bulb for 10 hours. The meter multiplier is the factor by which the meter difference is multiplied to determine your usage. Demand or kW is the highest amount of electric usage in any half hour during the bill period. Your total electricity use is the sum of the usage from your various meters as shown in the meter detail section of your bill starting on page 3.

<b>Total electricity use</b>	<b>716,800 kWh</b>	<b>1778.88 kW</b>
On peak energy (Mon-Fri 7am - 6pm)	315,457 kWh	
Off peak energy (Mon-Fri 6pm - 6am)	401,343 kWh	
G & T demand (Mon-Fri 8am - 10pm)	1636.80 kW	
Secondary demand (all hours, all days)	1851.36 kW	

### ► Your supply charges

These charges are for the delivery portion of your electricity bill. You will receive a separate bill for your electricity supply. If you have a question about your supply bill, please call SUEZ ENERGY RESOURCES NA, INC. at (888) 232-6206.

### ► Your delivery charges

On peak 315,457 kWh	\$4,531.98
Charge for maintaining the system through which Con Edison delivers electricity to you during on peak hours.	
Off peak 401,343 kWh	\$5,765.86
Charge for maintaining the system through which Con Edison delivers electricity to you during off peak hours.	
G & T demand 1636.8 kW	\$14,456.21
Charge for the electricity delivered to you by Con Edison during the hours of 8am to 6pm Monday through Friday.	

Primary demand 1778.8 kW \$29,390.57  
Charge for the electricity delivered to you by Con Edison during the hours of 8am to 10pm, Monday through Friday.

Secondary demand 1851.3 kW \$32,819.84  
Charge for the electricity delivered to you by Con Edison all hours all days during the billing period.

SBC/RPS charges \$4,085.75  
The System Benefits Charge/Renewable Portfolio Standard charges fund New York State renewable energy, environmental and other related public policy programs.

Meter charges \$80.70  
Charge includes \$47.43 for the meter(s), \$12.50 for meter reading, and \$20.77 for meter maintenance. Some or all the charges may be avoided if you switch to an alternate provider.

Billing and payment processing charge \$1.04  
This charge may be avoided by switching to an energy services company (ESCO).

Temporary NY State Surcharge \$1,183.02  
GRT & other tax surcharges \$2,429.47  
Taxes on Con Edison gross receipts from sale of utility services

Sales tax @ 4.5000% \$4,263.68  
Tax collected on behalf of New York City.

**Total delivery charges \$99,012.12**

**►► Total electricity charges \$99,012.12**

\$30's - \$40's/kW peak demand charges; in CA & NY, 400,000+ C&I accounts monthly bills consist >40% demand

Source: Green Charge Networks

# Resilient Power Projects – Housing



- Technical assistance fund: project grants to design and deploy resilient power systems
- Demonstrate viability of clean energy + storage in affordable housing and assisted living
- Working with housing and solar+storage developers in NYC, Chicago, DC, Newark, Boulder
- Via Verde (Bronx) – 1<sup>st</sup> solar+storage project for resilient power applied to affordable housing



# Resilient Power Projects – Critical Facilities



- Demonstrate viability of clean energy + storage in critical community facilities
  - Community shelters, police and fire stations, hospitals, wastewater treatment
- Working with municipalities to develop resilient power plan for critical facilities
- Municipal solar+storage project planning underway in Baltimore, Salt Lake City, Los Angeles, Duluth, DC



# RESILIENT POWER

A Project of Clean Energy Group

Sign up for the RPP e-Distribution List to get notices of future webinars and the monthly *Resilient Power Project Newsletter*: <http://bit.ly/RPPNews-Sign-UP>

More information about the Resilient Power Project, its reports, webinar recordings, and other resources can be found at [www.resilient-power.org](http://www.resilient-power.org).

# Contact Info

Lewis Milford  
President  
Clean Energy Group  
Email: [Lmilford@cleanegroup.org](mailto:Lmilford@cleanegroup.org)  
Phone: (802) 223-2554

Seth Mullendore  
Project Director  
Clean Energy Group  
Email: [Seth@cleanegroup.org](mailto:Seth@cleanegroup.org)  
Phone: (802) 223-2554



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