

Jumpstarting Combined Heat and Power Initiatives in the US

NY's efforts to promote CHP for grid resiliency and reliability

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Overview

- CHP Background and Funding Opportunities
- Sandy Impact
- Resiliency
 - Distributed Generation
 - Microgrids
 - CHP
 - Utility Systems

Combined Heat and Power (CHP)

Purpose

Accelerate/expand strong CHP installations and enhance:

- Resiliency
- Reliability
- Energy Efficiency
- Environmental Impact
- Energy Security
- Energy Cost Savings

Combined Heat and Power (CHP)

Incentives Budget (2011 – 2015)

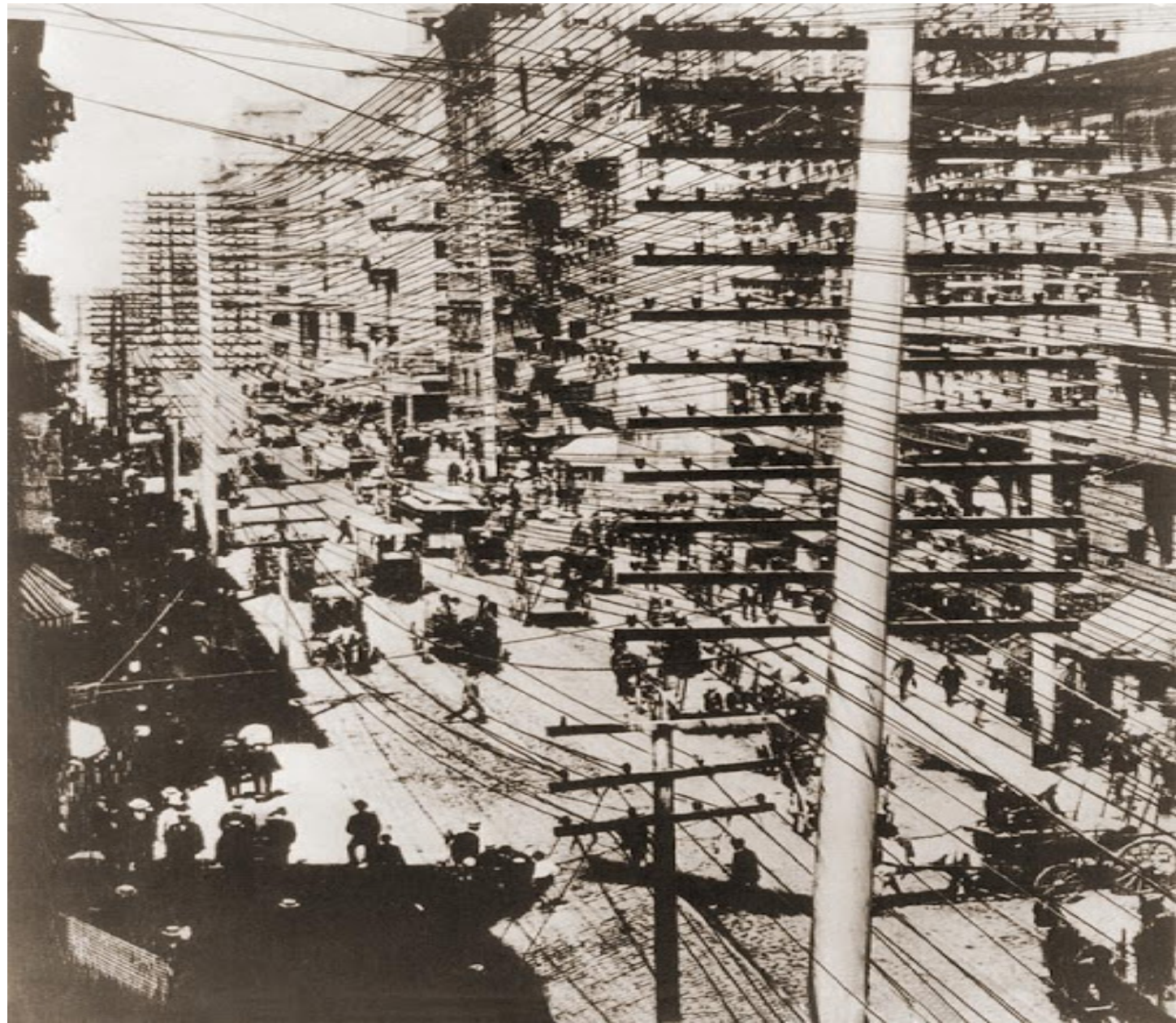
PON 2568 CHP Acceleration	less than 1.3 MW	\$60 Million*
PON 2701 CHP Performance	greater than 1.3 MW	\$40 Million**
Total	All Sizes	\$100 Million

* \$60 million = \$20 million via SBC4 T&MD + \$40 million via IPEC

** \$40 million is via SBC4 T&MD

Combined Heat and Power (CHP)

- USEPA CHP Webinar
<http://www.epa.gov/chp/events/webinars.html>
- www.nyserda.org



Hurricane Sandy



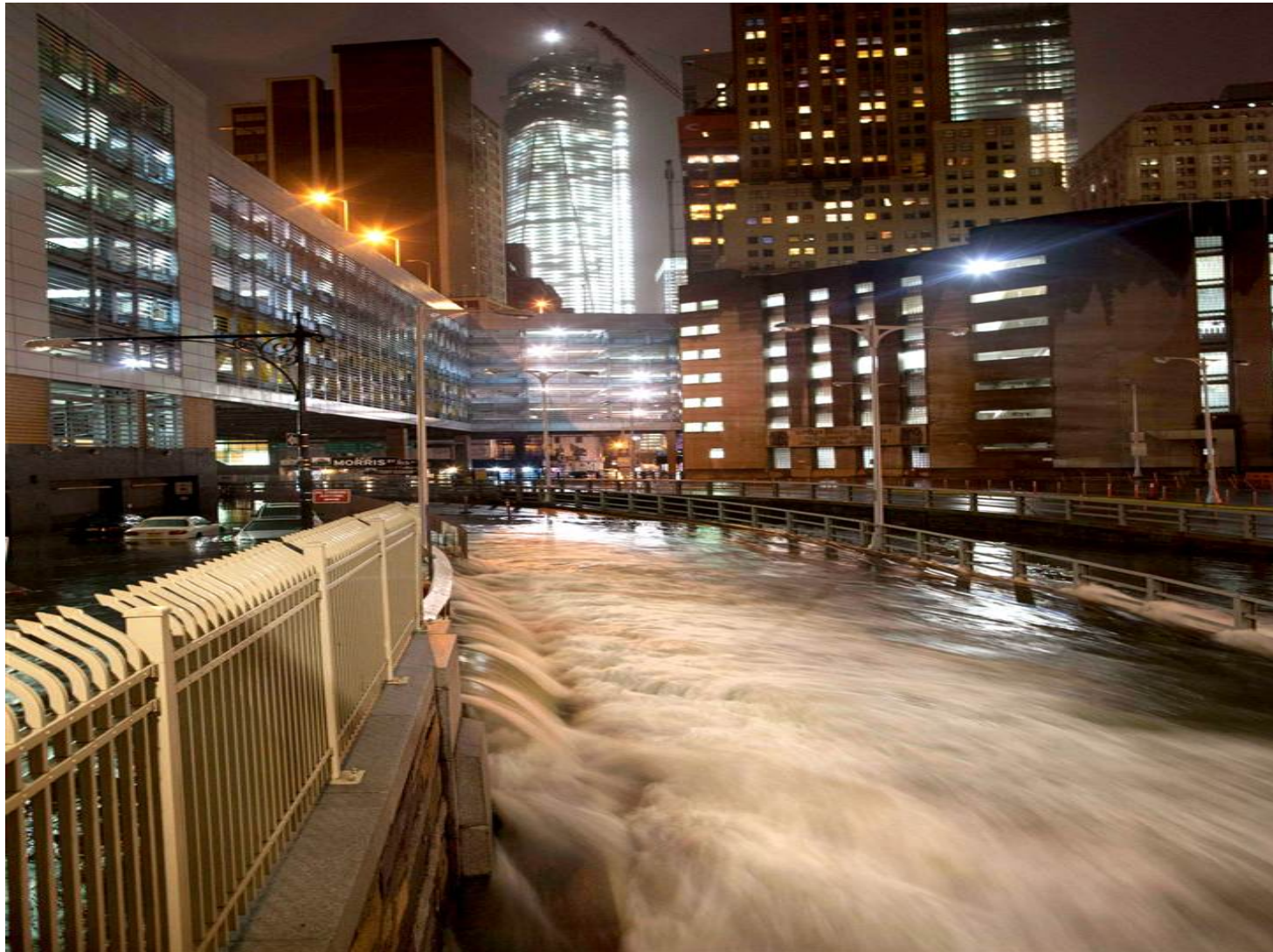
Rockaway Beach, Queens 10/31/12

<http://share.banoosh.com/2012/11/11/long-island-residents-in-new-york-protest-against-power-outage/#!/prettyPhoto-20719/0/>



Consolidated Edison trucks are submerged on 14th Street near the Con Ed power plant in New York. 10/29/12

<http://bigstory.ap.org/article/coned-prepped-big-storm-got-even-bigger-1>



Brooklyn Battery Tunnel, NYC, published 11/2/12

<http://www.nydailynews.com/news/hurricane-sandy-gallery-1.1195831?pmSlide=2>



Red Hook, 10/29/12

<http://www.businessinsider.com/flooding-in-red-hook-brooklyn-2012-10>

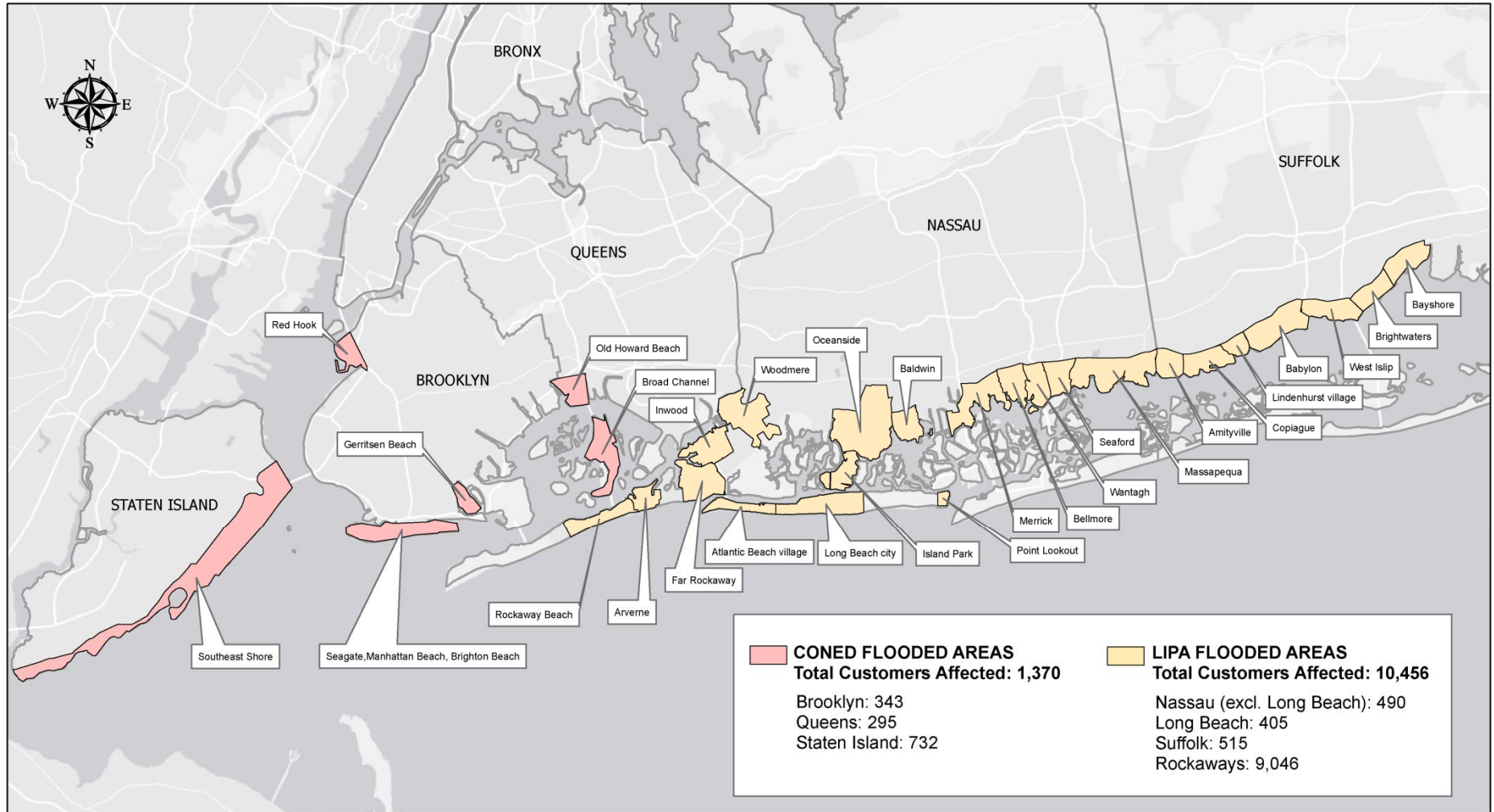
Peak Outage Levels and Duration of Restoration, by Company

Company	Peak Outage Level	Start of Event	Time of Peak	Time of Majority Restoration (< 1,000 customers remaining)	Duration of Majority Restoration
NGrid	37,588	10/29 @ 1330	10/29 @ 2130	10/31 @ 1530	2 days, 2 hours
RGE	26,580	10/29 @ 1430	10/30 @ 0730	11/02 @ 1930	4 days, 5 hours
CHGE	83,551	10/29 @ 1030	10/30 @ 0300	11/04 @ 0330	5 days, 17 hours
NYSEG	116,069	10/29 @ 1030	10/30 @ 1530	11/08 @ 1330	10 days, 3 hours
ORU	145,716	10/29 @ 1300	10/30 @ 2100	11/09 @ 1900	11 days, 6 hours
ConEd	824,991	10/29 @ 0700	10/30 @ 1730	11/12 @ 1200	14 days, ~5 hours
LIPA	950,943	10/29 @ 0630	10/30 @ 1600	11/15 @ 1200	17 days, ~6 hours
Statewide	2,109,877	10/29 @ 0630	10/30 @ 1700		
	<i>2,185,438 Sum of peaks</i>				

Company	Time of Full Restoration (< 100 customers remaining)	Duration of Full Restoration
NGrid	10/31 @ 2130	2 days, 8 hours
RGE	11/03 @ 1730	5 days, 3 hours
CHGE	11/04 @ 1930	6 days, 9 hours
NYSEG	11/08 @ 2100	10 days, 11 hours
ORU	11/10 @ 1500	12 days, 2 hours
ConEd	11/12 @ 1200	14 days, ~5 hours
LIPA	11/15 @ 1200	17 days, ~6 hours

Note: Flood affected customers are not included in this analysis.

FLOODED AREAS WITH CUSTOMERS THAT CANNOT BE RESTORED AS OF 11/29/2012 09:00 AM



Distributed Generation Models

- Backup Generation
- Campus Model
- Virtual net metering; Con Edison Campus model
- 2100 Commission Report
- And part of a bigger, more fully integrated, utility and customer system

DG and Resiliency

- How to fully integrate
 - Ideally the best of both worlds
 - Island
 - Grid support
 - Ancillary Services??
- Ultimately preferable to be fully integrated with the utility system
 - Benefits of the Grid
 - More resilient and reliable
- Need to protect the integrity of the utility system and the customer's equipment
 - NY Standardized interconnection requirements
 - How to strengthen the grid through microgrids

Policy Issues

- How do we make DG cost effective
 - Gas prices are low; incentives are high
 - It's hard to quantify the benefits of resiliency in terms of dollars
 - Societal Benefits
 - How do we measure performance
 - How do we deal with stand by rates
- Are certain costs socialized – e.g., protecting critical services

So what's the future for DG?

- It's not the late 1800's version of power systems
- Likely is now only a vision
 - An evolution
 - Technology is a key