Making the Microgrid-Utility Relationship Work

GI Energy: IDEA Microgrid Knowledge 2017

Presenters

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Today's Topics

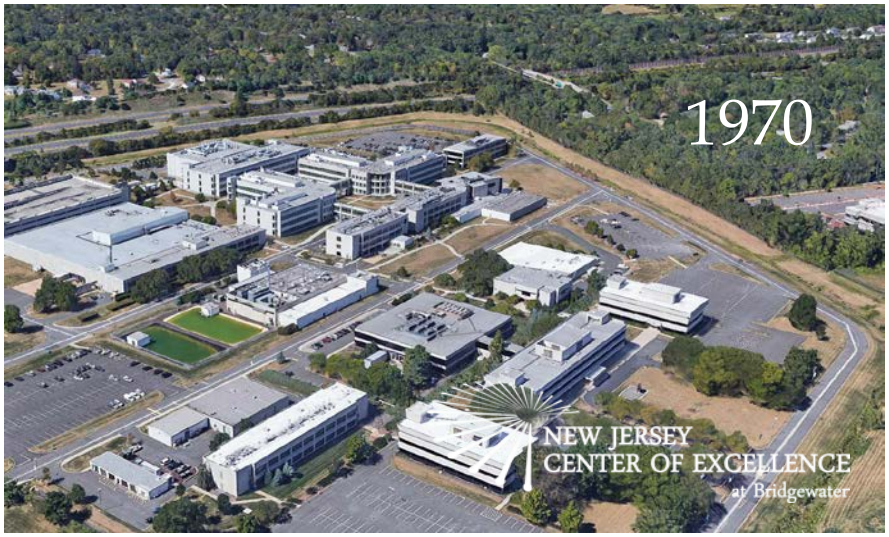
- Microgrid Backdrop: "Utility Always Wins"
- Lest We Forget Our History
- The Utility-Microgrid Nexus in 21st Century
- Case Studies
- Discussion & Questions

Utility-Microgrid Development Backdrop

“The utility always wins.”

(But so can communities & developers.)

Lest We Forget Our History



21st Century Microgrids Are Supposed to Be Utility Enhancers

Infrastructure?
Suprastructure?
Mesostructure?

Staying within the Billing Envelope

Build a whole new grid layer?
But keep existing grid?
And reduce overall costs?

Heroic
Vs.
Business As Usual

Crashing Across Utility Silos

"Utility of the Future"
Distributed Generation
Metering
IT/Security
Rate Engineering
Interconnection

Software-Driven?
Hardware-Driven?
Human-Driven?

Make Use of Institutional Knowledge

NYSOLAR SMART DG Hub

The Energy Storage Systems Permitting and Interconnection Process Guide For New York City

Rev: 12/9/15

conEdison

Distributed Generation Guide

Version 2 / November 2013

California ISO

Distributed Energy Resource Provider Participation Guide with Checklist

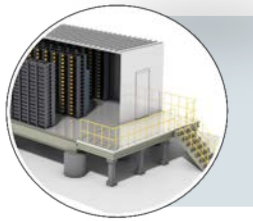
Version 1.0
August 26, 2016

Case Studies

Parkville Microgrid, Hartford, CT (Eversource)

Hunters Point, San Francisco, CA (SFPUC)

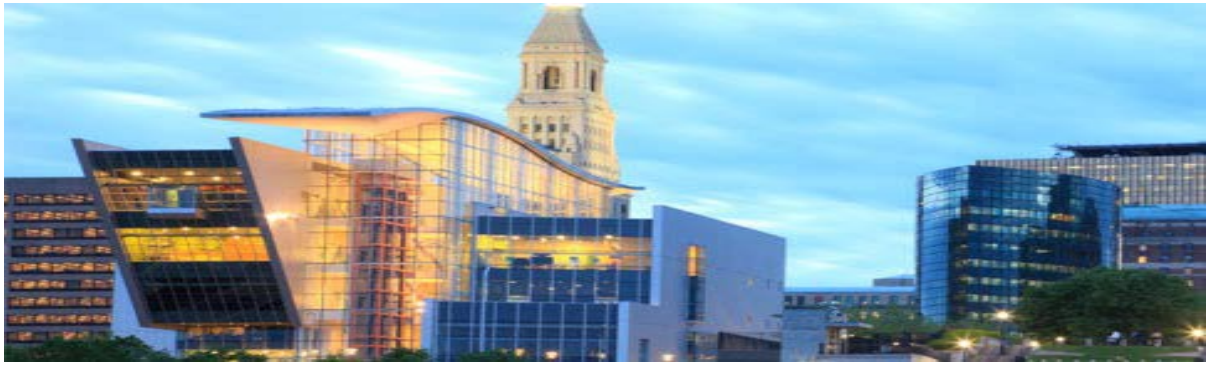
Empire State Building, New York, NY (Con Edison)



Battery REV Demo, New York, NY (Con Edison)

Parkville Microgrid – Hartford, CT (Eversource)

First microgrid Project in CT



Size	800 kW grid parallel / 600 kW microgrid-mode
Power Generation Technology	Bloom Energy Servers (4 ES5 fuel cells x 200 kW) + 1 Uninterruptable Power Module (UPM)
Microgrid Equipment	Switchgear and Cabling
Microgrid Owner	Eversource
Bloom Server Owner	Bloom Energy
Design & Development	Constellation / GI Energy / Van Zelm Engineers
Utilities	Eversource / Connecticut Natural Gas
Interconnection	Parallel grid Connection + Critical Load (microgrid mode)
Customers	Parkville Elementary School, Senior Center, Library – Dwight Branch, C-Town Supermarket

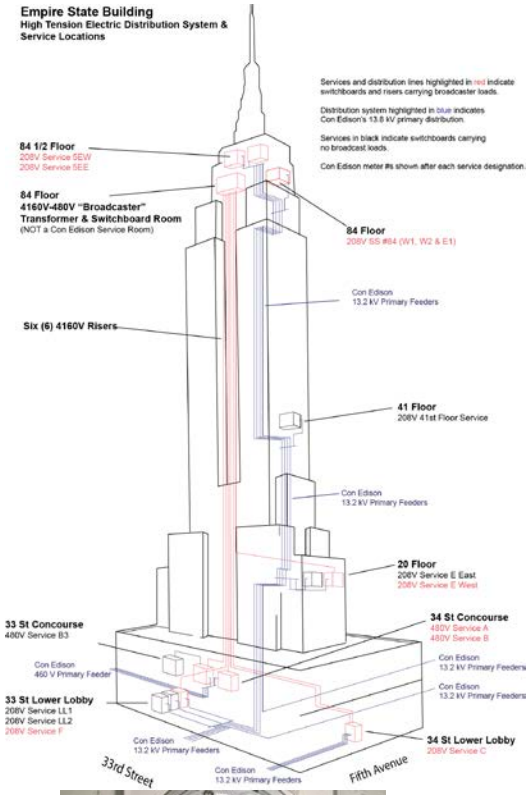
San Francisco Shipyard Redevelopment & ‘Eco-Grid’

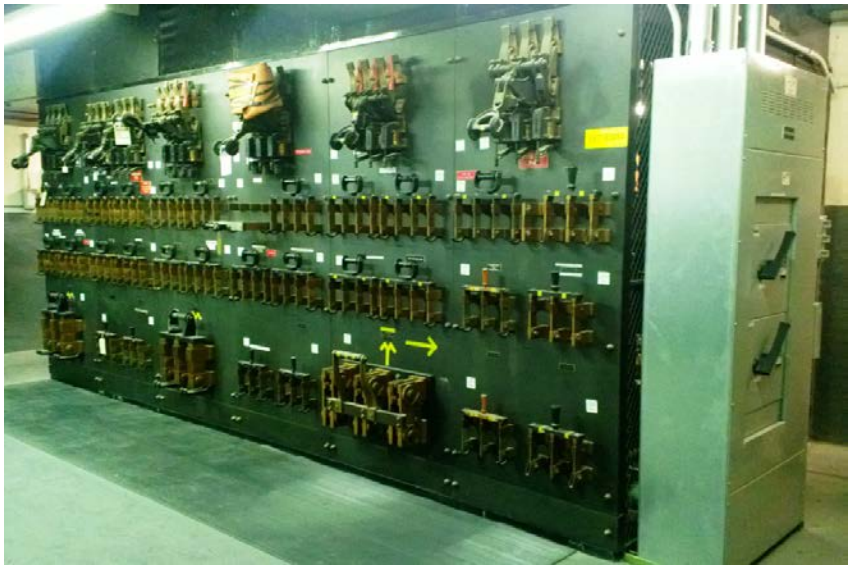
- 8,000,000+ square feet of new development
- New Master Utility Plan designed along with street grid and development blocks
- Third party funded systems: Solar PV & energy storage, geo-exchange HVAC, recycled water, automated waste collection, EV charging and self-sustaining street lights
- Mix of direct-use third party offtake contracts, and partnerships with local municipal utilities

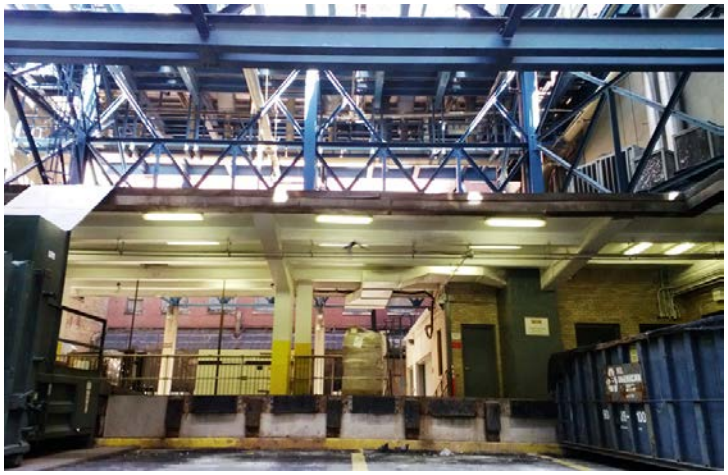
San Francisco Shipyard ‘Eco-Grid’ – Details

- Over 800 acres for residential, commercial & municipal use
- Master planned site under single real estate developer, with GIE as eco-district development partner
- ~450,000 GPD water recycling system
- 10-15MW of rooftop PV planned
- 15,000 ton capacity geothermal heating & cooling system

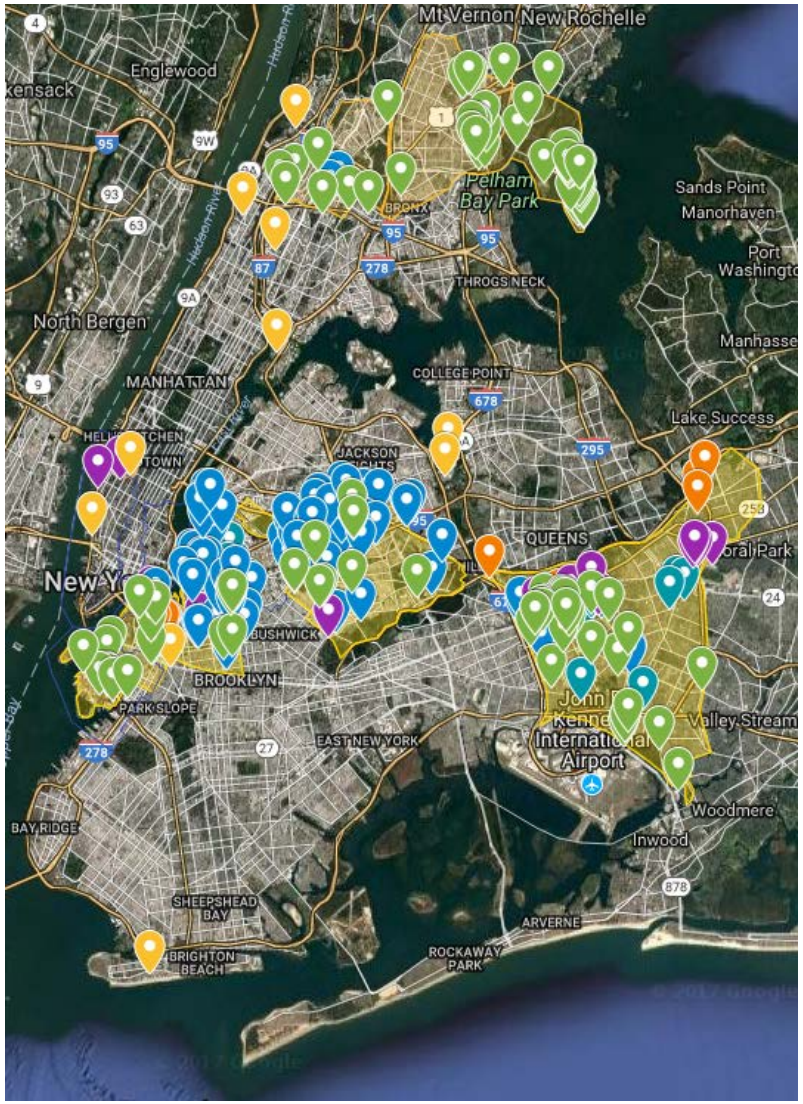
Empire State Building – New York, NY (Con Edison)

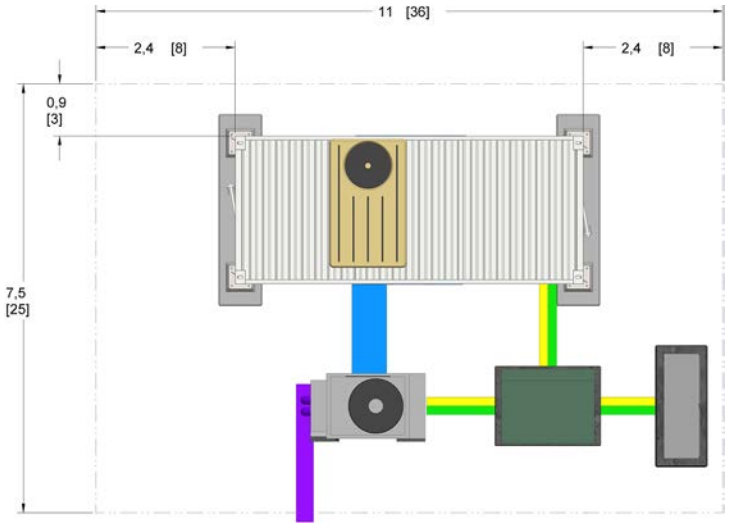


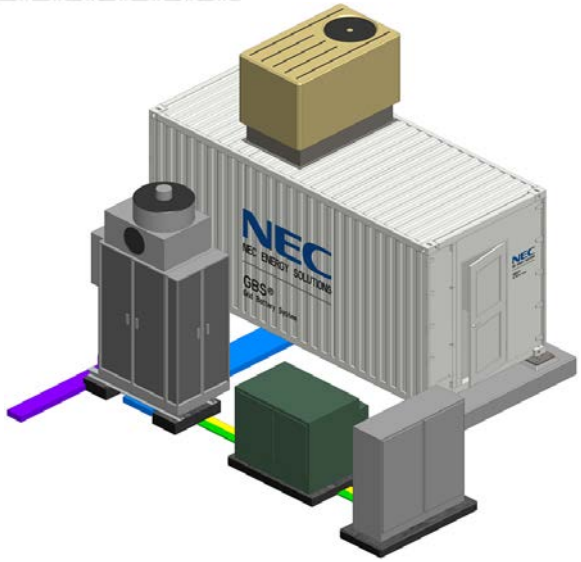




Front-of-the-Meter Battery REV Demo (Con Edison)







Any questions?

Any questions?
What have your microgrid experiences been with utilities?

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