

Getting Ahead of the Curve:

Connecticut's First-in-the-Nation Statewide Microgrid Program



Connecticut Department of
ENERGY & ENVIRONMENTAL PROTECTION

Where we are coming from



Gov. Dannel Malloy

- Connecticut has been hard hit with severe weather in past three years
  - 2010 snowstorms
  - Tropical Storm Irene
  - Freak October snowstorm
  - Superstorm Sandy
  - Blizzard of 2013
- Storms have left hundreds of thousands without power for long periods of time, in some cases in excess of 10 days

Impacts from severe weather

- Storms have resulted in large-scale devastation
- Threat to safety and security of residents
- Disruptions to everyday rhythms of 21st century life







Predictable outcome

- Residents express frustration
- Policymakers scramble for ideas
- Somebody trots out a study on the cost of undergrounding power lines

> *"The most recent report in 2007 estimated the cost of placing the state's 1,330 miles of 345 kilovolt transmission line underground and maintaining it would be $27.8 million a mile compared to $6.8 million for the same length of overhead line."—CTPost.com*

- Clamor dies down quickly

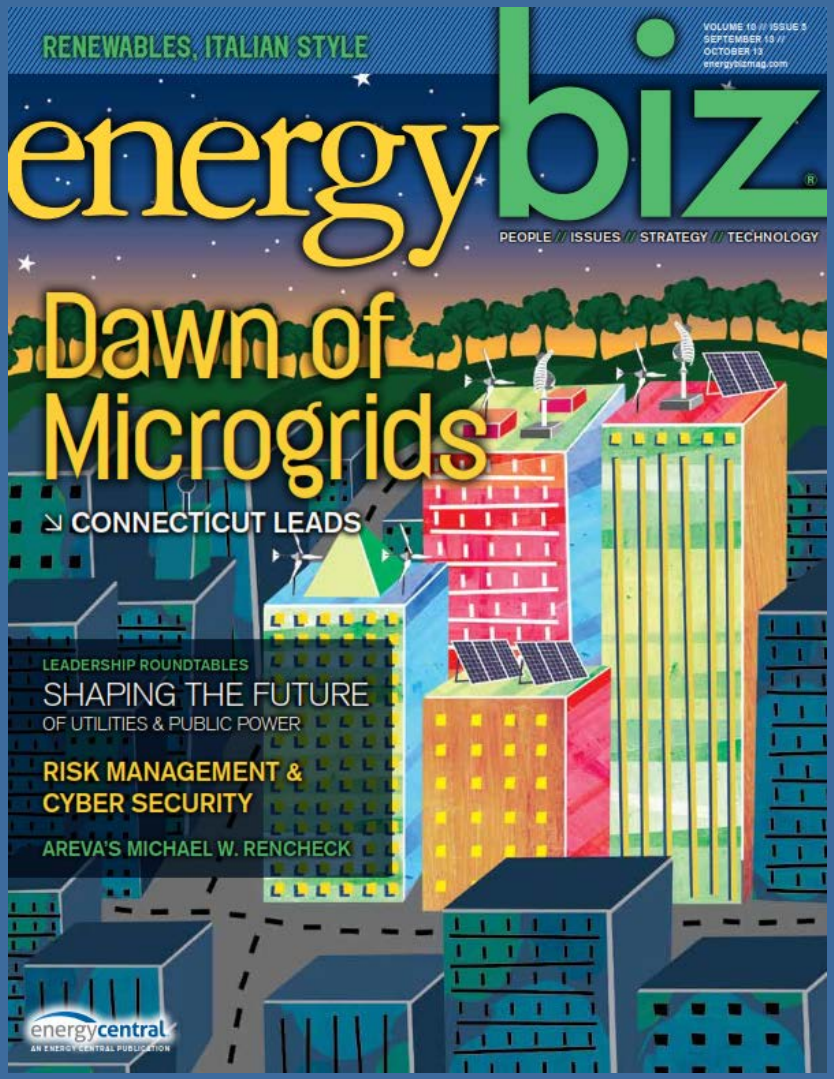
A fresh approach in Connecticut

- Governor Dannel Malloy wanted to do something different
- Worked with Connecticut legislature to design a “microgrid” program
- Program provides enhanced levels of safety and quality of life for Connecticut residents in large-scale outage situations



Creation of microgrids across the state

- Severe weather events becoming new normal
- Threats facing the state become more multi-dimensional (weather, terrorism, cyber-attacks, etc.)
- Microgrids are a way to allow critical facilities to function even when all else fails



Vision for microgrids in Connecticut

- Microgrids will provide critical services to residents
  - Generating electricity with cleaner, 24/7 operational power sources
    - Natural gas turbines with combined heat and power, fuel cells, solar panels, etc.
  - Engineered to “island” from the grid when the larger grid is de-energized
  - Built in a cost-effective manner
  - Contribute to public good by islanding critical facilities
  - Connects more than one critical facility to reliable distributed generation resources



What is a critical facility?

- Hospital
- Police station
- Fire station
- Water treatment plant
- Sewage treatment plant
- Public shelter
- Correctional facility
- Municipal center
- Telecommunications equipment
- Gas station
- Pharmacy
- Grocery Store
- Etc.





First round results

Project	Facilities	Generation	Grant Value
UConn Depot Campus/Storrs	Campus Buildings	400 kW fuel cell, 6.6 kW PV	$2,144,234
City of Bridgeport-City Hall/Bridgeport	City hall, Police Station, Senior Center	(3) 600 kW natural gas microturbines	$2,975,000
Wesleyan/Middletown	Campus, Athletic Center (Public Shelter)	(1) 2.4 MW and (1) 676 kW Natural Gas Combined Heat and Power Reciprocating Engine	$693,819
University of Hartford-St. Francis/Hartford	Dorms, Campus Center, Operation Building	(2) 1.9 MW diesel (existing), 250 kW diesel, 150 kW diesel	$2,270,333
SUBASE/Groton	Various Buildings and Piers	5 MW cogen turbine, 1.5 MW diesel	$3,000,000
Town of Windham/Windham	2 Schools (Various Public Purposes)	(2) 130 kW natural gas, 250 kW solar, 200 kWh battery; (2) kW diesel,	$639,950
Town of Woodbridge/Woodbridge	Police Stations, Fire Station, Department of Public Works, Town Hall, High School, Library	1.6 MW natural gas, 400 kW fuel cell	$3,000,000
City of Hartford-Parkville Cluster/Hartford	School, Senior Center, Library, Supermarket, Gas station	600 kW natural gas	$2,063,000
Town of Fairfield-Public Safety/Fairfield	Police Station, Emergency Operations Center, Cell Tower, Fire Headquarters, Shelter	50 kw natural gas recip engine, 250 kW natural gas recip engine, 27 kW PV, 20 kW PV	$1,167,659

Lessons from first round



- Perceived strengths
  - Strong executive champion (Governor Malloy)
  - Rigorous evaluation process
  - Full service support from CT Microgrids team

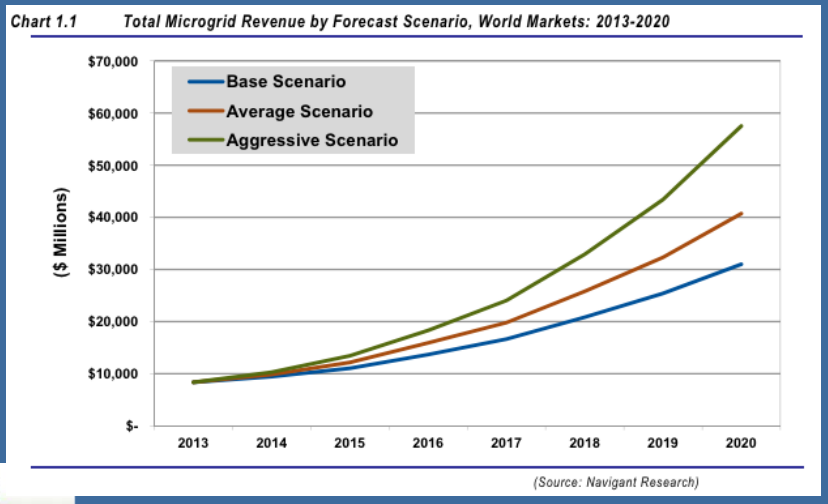
- Opportunities to improve
  - Need to make program more accessible for municipalities
  - Financing support for distributed generation resources

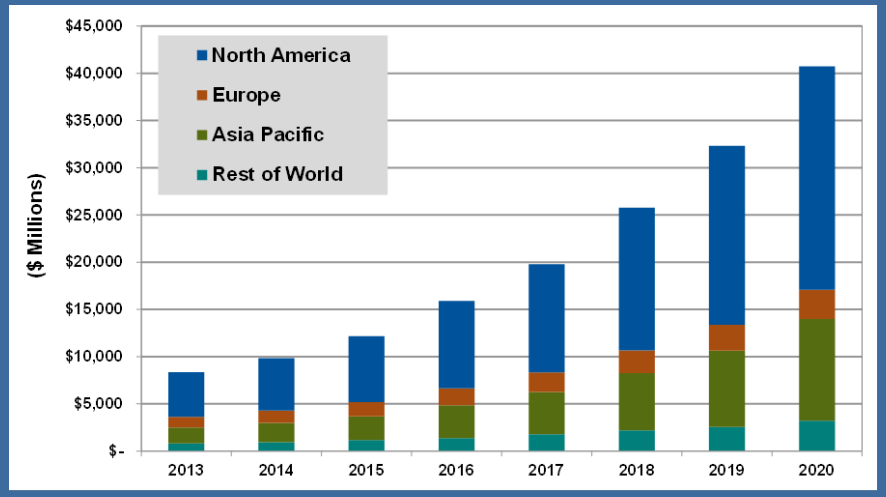
Microgrid Program – Round 2

- Governor has authorized an additional $30m for the program in his budget, which was passed by the legislature
- Second round of microgrids program launched at the end of October 2013
  - Refined procedure
  - Financing program in conjunction with nation's first "Green Bank"
  - More technical support for municipalities

Preparing for the future

- Connecticut's first-in-the-nation statewide microgrid program is critical piece of larger resiliency strategy
- Power outages are inevitable, but program provides enhanced safety and quality of life for residents in an outage situation
- Program fits in with Governor's larger vision for cheaper, cleaner, and more reliable energy future for Connecticut
- In line with "portfolio approach" that encourages deployment of distributed generation





Thanks for listening

Contact Information:

Alex Kragie

Deputy Chief of Staff

Connecticut Department of Energy and Environmental Protection

(860) 424-3000

Alex.kragie@ct.gov

Veronica Szczerkowski

Microgrid Program Coordinator

Connecticut Department of Energy and Environmental Protection

(860) 827-2890

Veronica.szczerkowski@ct.gov

Link to Microgrid Program information:

http://goo.gl/rV7PPY