

BUILDINGENERGY NYC

OCTOBER 12, 2017 • TKP NY CONFERENCE CENTER • NESEA.ORG/BENYC17

Conference + Trade Show of the Northeast Sustainable Energy Association (NESEA)

Micro Cogeneration (mCHP) Systems: Increasing Efficiency and Reducing Emissions

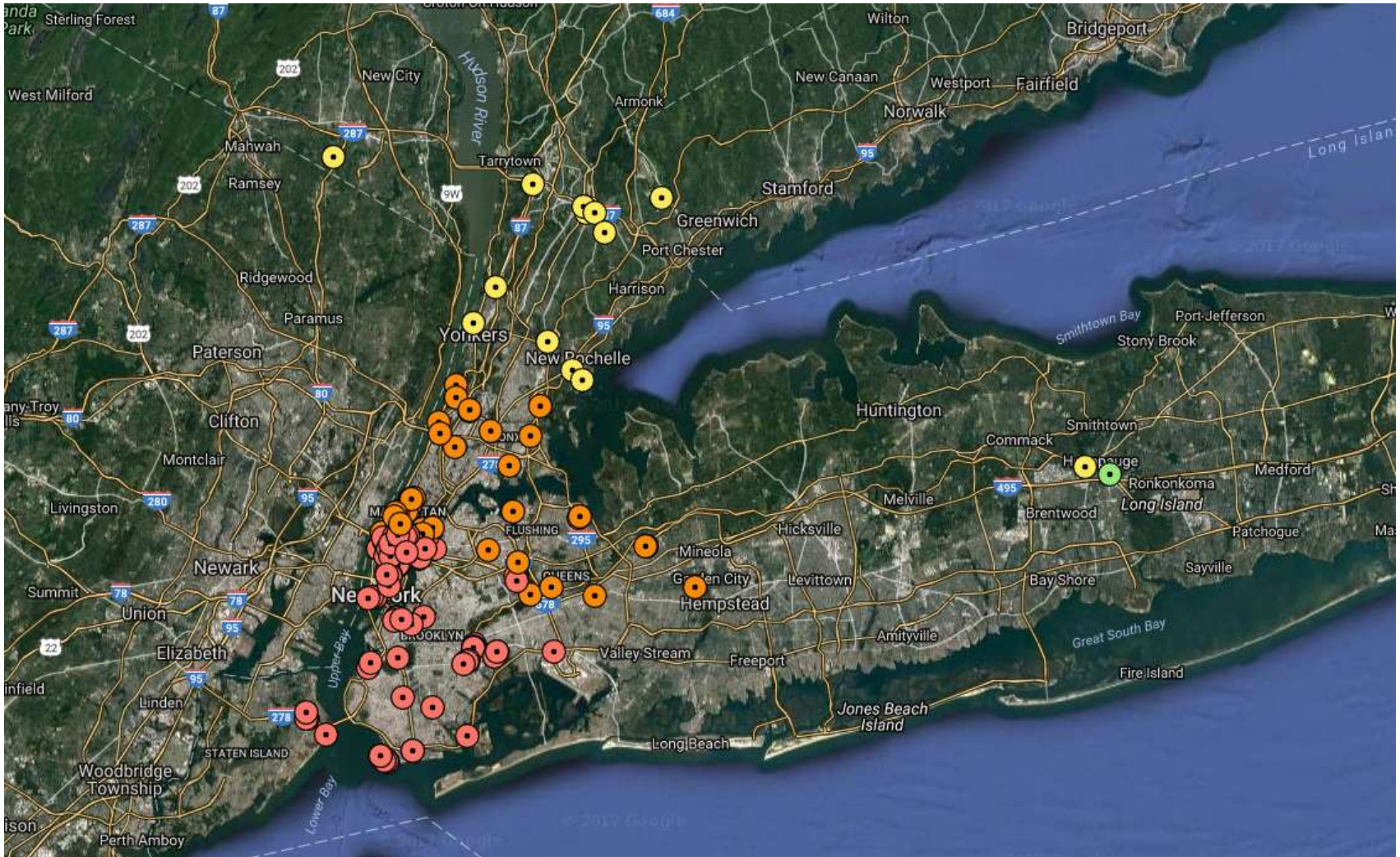
CHP MARKET TRENDS IN NEW YORK: IS MICRO CHP NEXT?



energy & resource
solutions



CHP IN NEW YORK



NEW YORK MARKET TRENDS

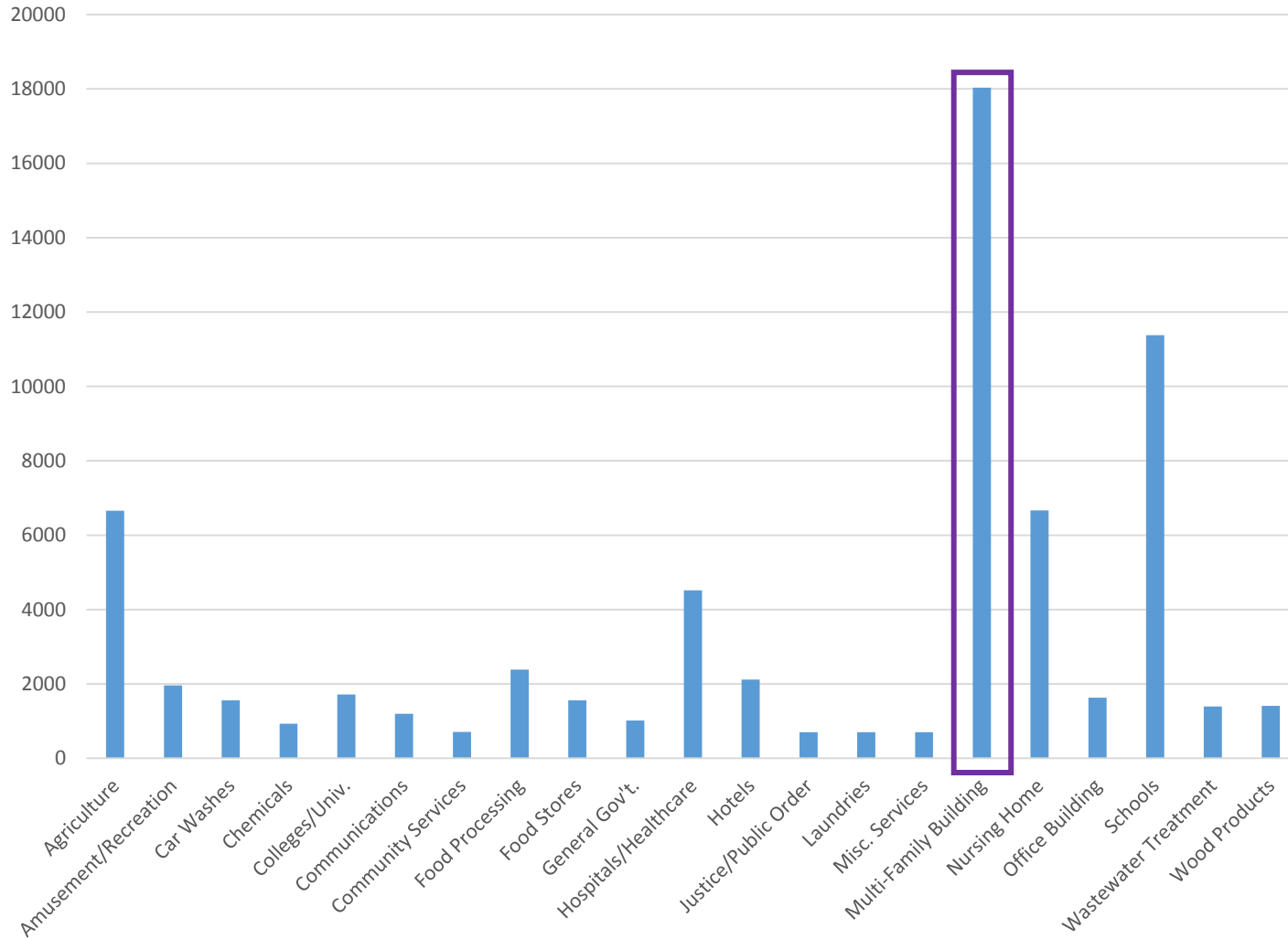


- ❑ Transition from large industrial users to smaller facilities
- ❑ Multifamily, hotels, etc. gaining traction
- ❑ Smaller, packaged systems filling this niche
- ❑ Benefits include energy cost savings, enhanced resiliency, system-wide GHG emissions reductions

NEW YORK MARKET TRENDS



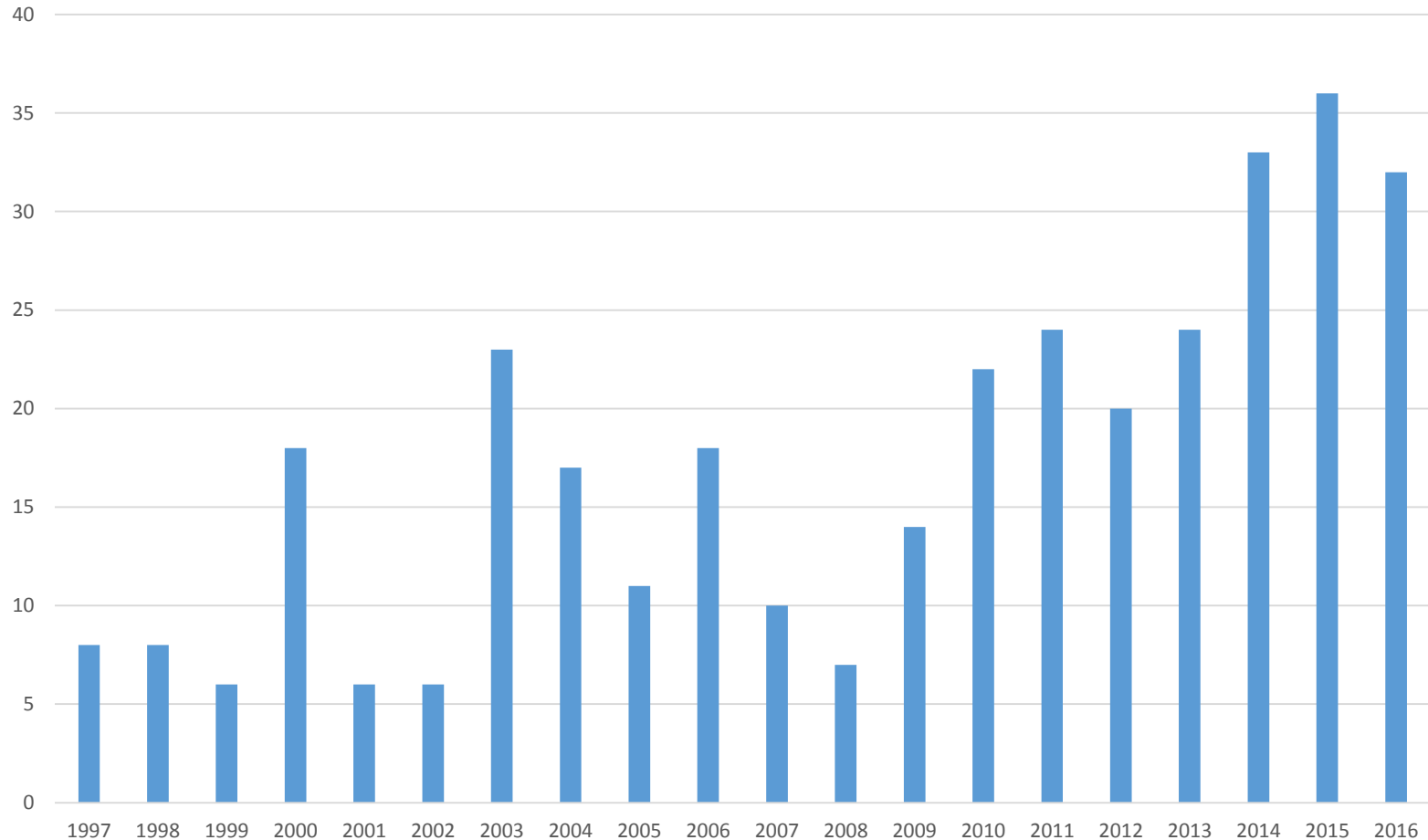
NY State CHP Systems <500 kW Total Capacity by Facility Type



NEW YORK MARKET TRENDS



NY State CHP Systems <500 kW, Installations by Year



NYSERDA's CHP PROGRAM



- ❑ Market transformation
- ❑ <3MW
- ❑ The catalog approach
- ❑ Outreach and technical assistance



MICRO CHP

- ❑ Applications/use cases
- ❑ Barriers to implementation
- ❑ Are there case studies?
- ❑ What are the costs? Savings?
- ❑ Is there a resiliency benefit?

CONTACTS



Gita Subramony

gsubramony@ers-inc.com

212-789-8182 x 292

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DALE DESMARAIS, DIRECTOR OF BUSINESS DEVELOPMENT



mCHP - POINTS OF DISCUSSION

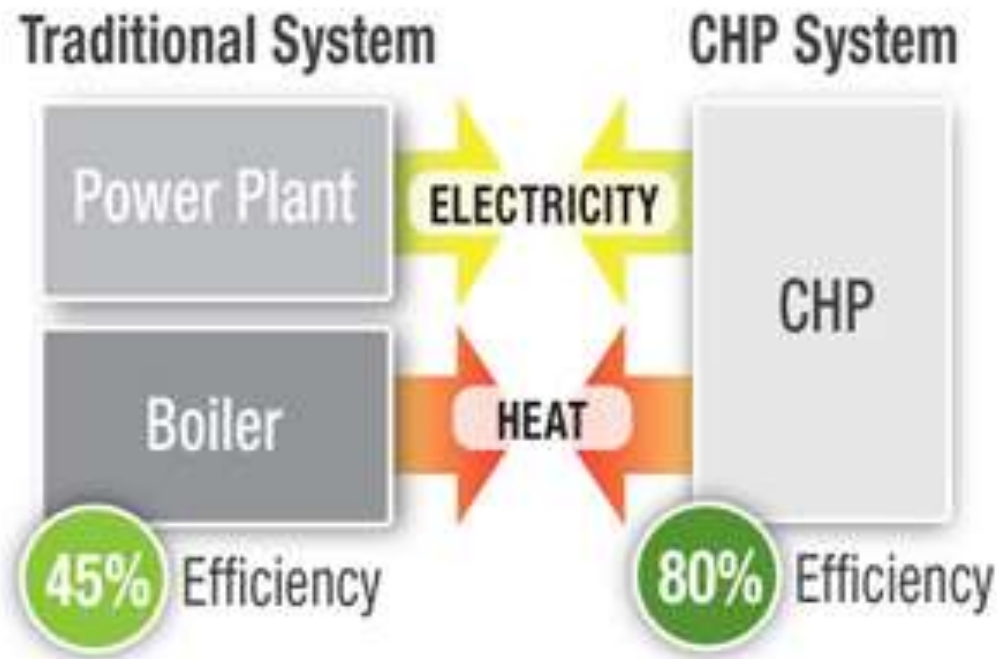
- CHP History
- Importance of right-sizing
- Market Barriers in the US
- Changing Landscape?
- Case Study/Sample Installation



Brief History of CHP

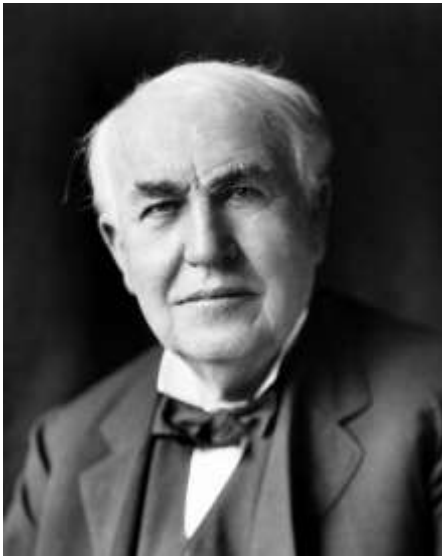
- Defined as two forms of useable energy from one fuel source

CHP Process Flow Diagram



History of CHP (cont.)

- The CHP concept was first applied in 1882 at Thomas Edison's Pearl Street Station, the first central power plant in the United States.
- The plant provided electricity and steam to a section of downtown New York.



History of CHP (cont.)

- The passage of the Public Utility Regulatory Policies Act of 1978 (PURPA) ushered in the modern CHP era. This law included a provision that legalized the sale of non-utility-generated electricity to the grid, which helped increase the use of CHP.



History of CHP (cont.)

- Combined heat and power (CHP) installations have been becoming steadily more popular as awareness and education about the technology has been growing over the last 40+ years. State & utility incentives have also helped facilitate new projects.



History of CHP (cont.)

- With the economic recovery and relatively low natural gas prices, we have seen interest in CHP increasing, particularly where the added benefit of electric reliability is valued.
- Another trend expected to encourage CHP in future years is increased demand for emissions reductions, especially with the EPA's Clean Power Plan.

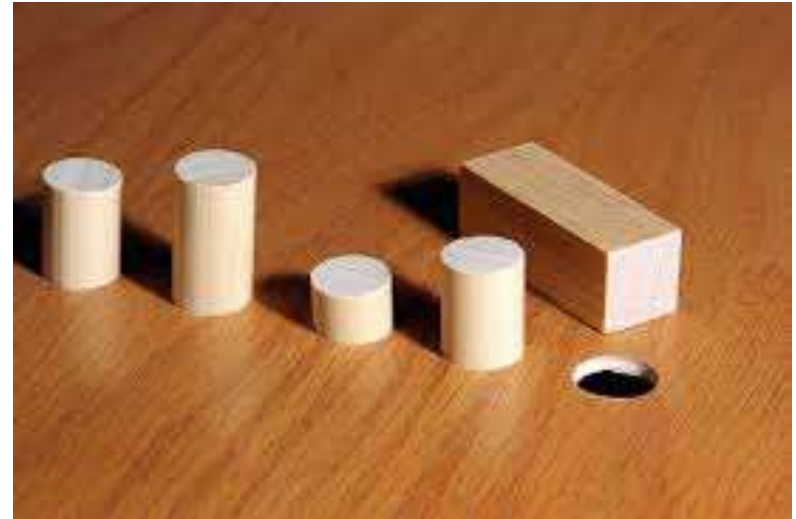


Source: A brief history of CHP development in the United States – ACEEE – American Council for an Energy Efficient Economy

Right Sizing Is Critical to CHP Success

- It is critical to use as much of the heat as possible in any given CHP application.

- Highest Efficiency
- Maximum Savings (usually)
- Most CO2 Reduction



- Best approach is to size the system to follow the BASE THERMAL LOAD.

(There are reasons to break from this approach based purely on economics.)



Tecogen=IT[®]

Advanced Modular CHP
Systems



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250+ rooms



150 – 250
Rooms



80 – 150
rooms



Large Home,
Small
Commercial,
10-80 rooms

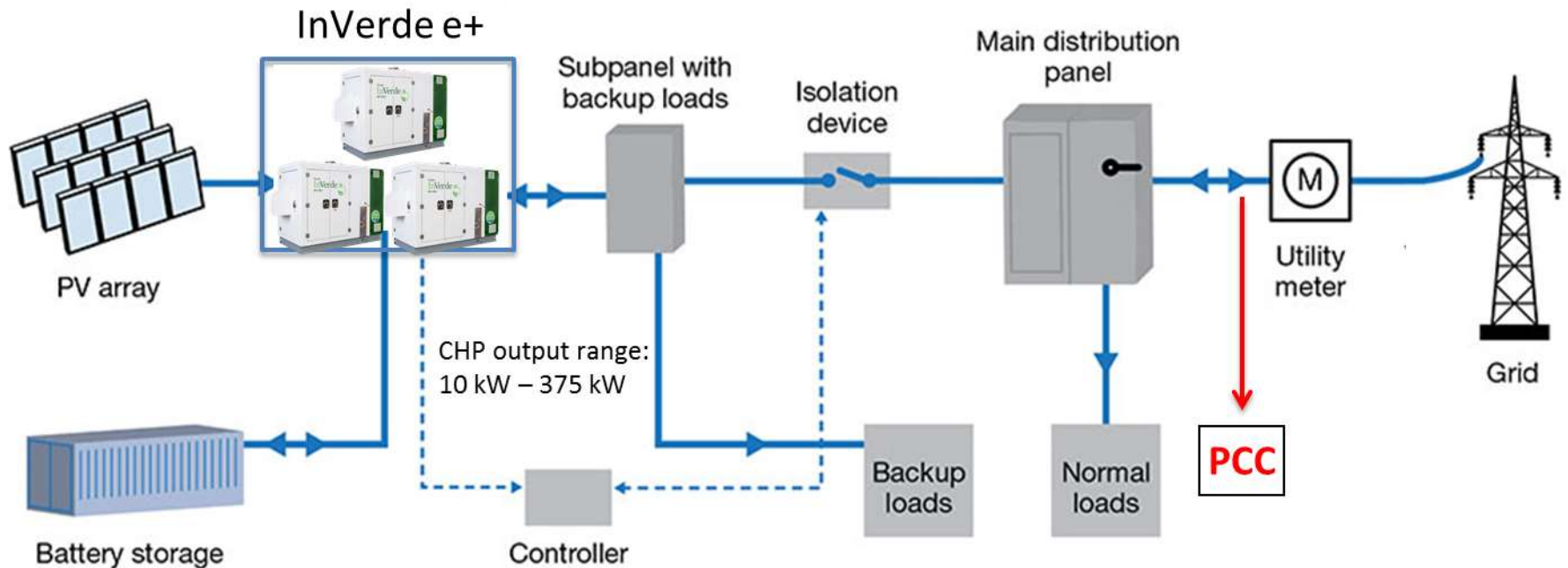


Market Barriers in the U.S.

- Awareness and Acceptance
 - UK, Asia, Germany are years ahead of the U.S. (Thousands more mCHP)
- Scalability (Cost per kW)
 - Smaller sizes \$4000 - \$6000+/kW Installed
- Patience & Experience are key
 - Engineering Understanding
 - Design Specifications
 - Install Resources
 - Maintenance Plan is a must
- State Incentives have just begun including smaller systems (many states still do not)
- Trust



Changing Landscape of Energy



- Hybrid Solutions – CHP is often included in Microgrid projects with Solar & B.S.
- CHP is becoming a more widely used and adopted technology
- Those who have done larger CHP projects are more open to a smaller solution
- Electric tariffs are putting more emphasis on DEMAND charges (Time of Use)
- Seasoned CHP providers are finding ways to lower the cost of equipment and installation. As a result, mCHP project economics are improving

TURNKEY LIGHT – PREPACKAGED SYSTEMS

- Tecogen design ensure quality control & operation.
- Allow for a quick and easy installation.
- Customer can use preferred contractor & contractor can bring in leads.
- Skids are fully assembled with factory quality control.
- Integration skids can be serviced by Tecogen as well as the units themselves.
- Protects investment as run time is more achievable.
- Allows customers the option of adding BOP maintenance to the CHP service contract



Sample Installation

- 260 Herkimer, Brooklyn, NY
 - Annual run time target: 7,224 hrs
 - 138 unit apartment building
 - One 35kW CHP System
 - Installed by Tecogen
 - Start-up: 2017
 - ConEd/BQDM \$\$\$
 - NYSERDA \$\$\$
 - 96% of DHW load
 - ROI 2.8 years
 - Total Annual Savings: \$45,909



Questions?



Company Information

Tecogen Inc.
45 First Avenue
Waltham, MA 02451
Dale.Desmarais@Tecogen.com
413-315-1778 Mobile
www.tecogen.com