



**NY Power  
Authority**

# **Empire State Plaza CHP and Microgrid**

## **Project Overview**

**February 8, 2018**

# Project Goals

1. Upgrade Emergency Power System
2. Reduce Air and Greenhouse Emissions
3. Increase Energy Reliability and Flexibility for Empire State Plaza
4. Reduce Energy Costs



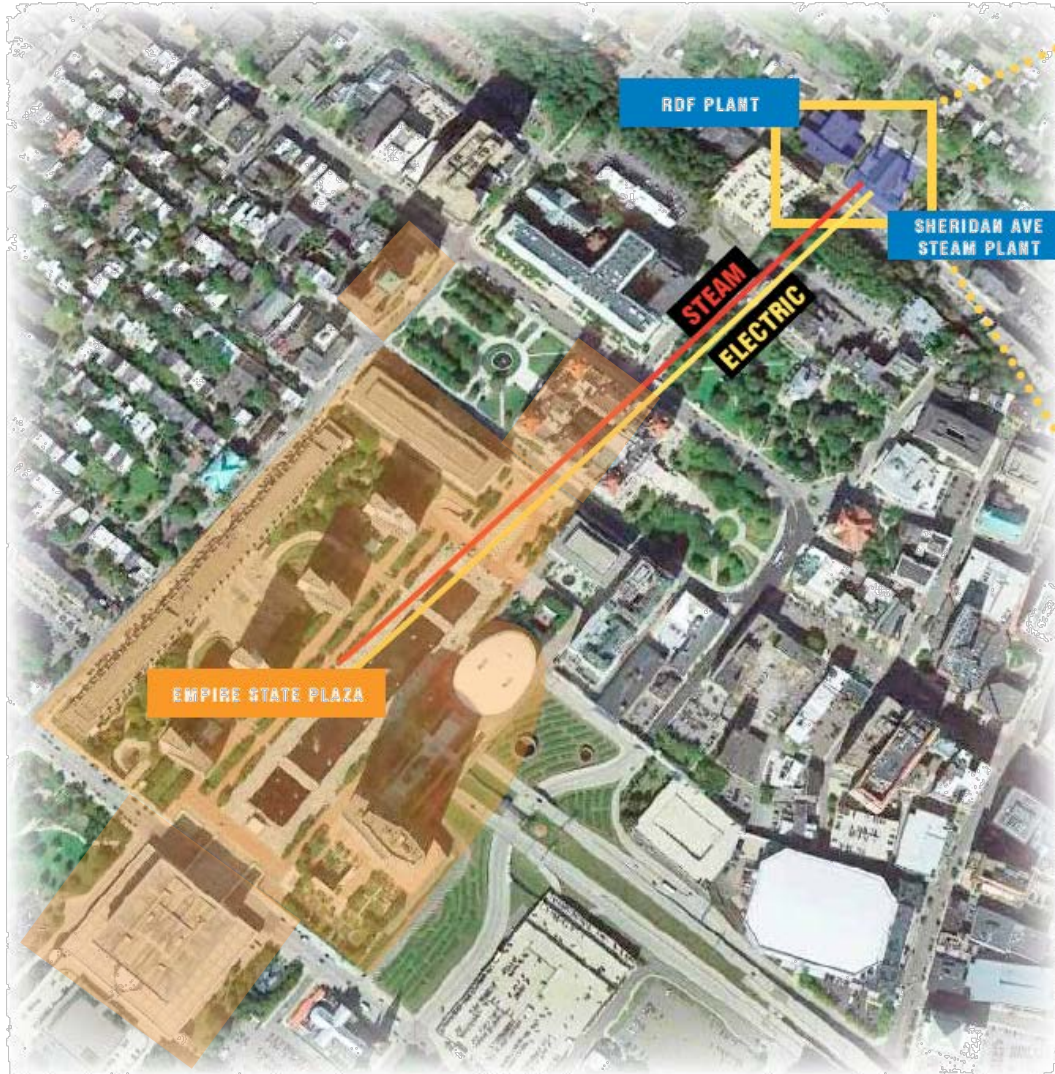
# Current Sheridan Avenue Steam Plant

- 1911 Plant Currently Operating with 6 Boilers (Right)
  - Primarily Fueled by Natural Gas with Heating Oil for Back-up
- Refuse Derived Fuel (RDF or ANSWERS) Plant Shutdown and Decommissioned in 1994 (Left)
  - Refuse Incineration Equipment Rendered In-Operable





# Current State of Empire State Plaza Energy Infrastructure



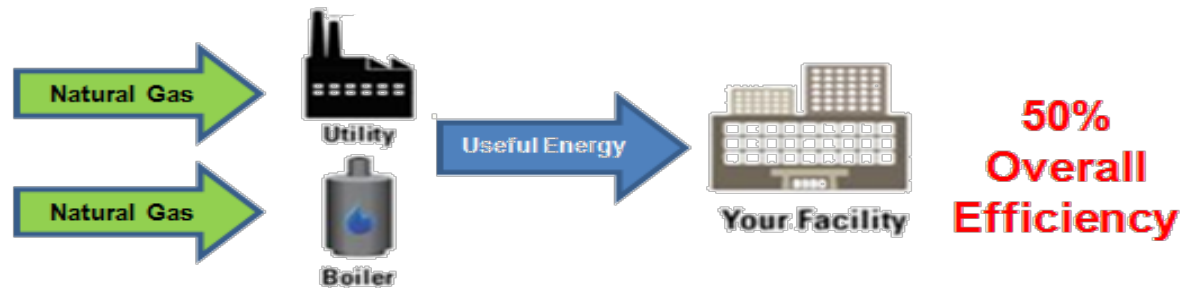
- Electricity Supplied by National Grid
- Gas Fired Boilers at Sheridan Ave Steam Plant Provide Steam for Heating and Cooling
- Emergency Power Provided by 1970 Vintage Diesel Generators Located at Sheridan Ave
- A 3/8 mile Tunnel Transmits Steam and Emergency Power to Plaza from the Steam Plant

# Solutions Considered

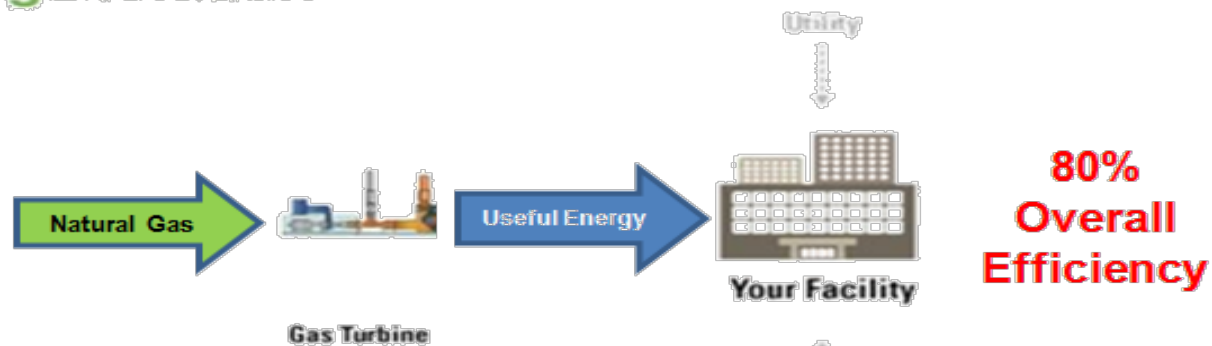
- Solar Photovoltaic
  - Not Enough Roof Space or Appropriate Acreage in Albany
  - No Heat
- Solar Thermal
  - Can't Generate Steam
  - Not Enough Roof Space
  - No Electricity
- Geothermal
  - Can't Generate Steam
  - Drilling Wells in Urban Area is a Disruptive Process
- Wind Power
  - Hard to Site in Urban Area
  - Safety Issues
  - Not Enough Wind

# Solution- Combine Heat & Power (CHP) “Cogeneration” & Microgrid

## Traditional Generation



## Cogeneration

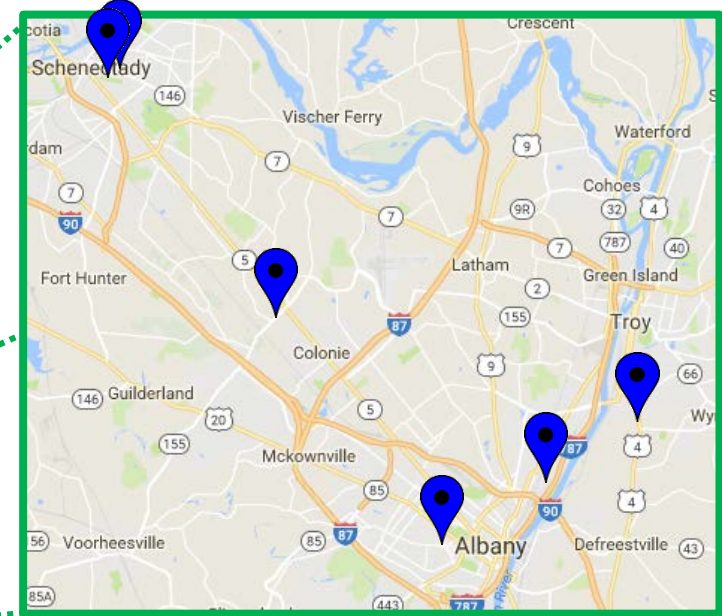
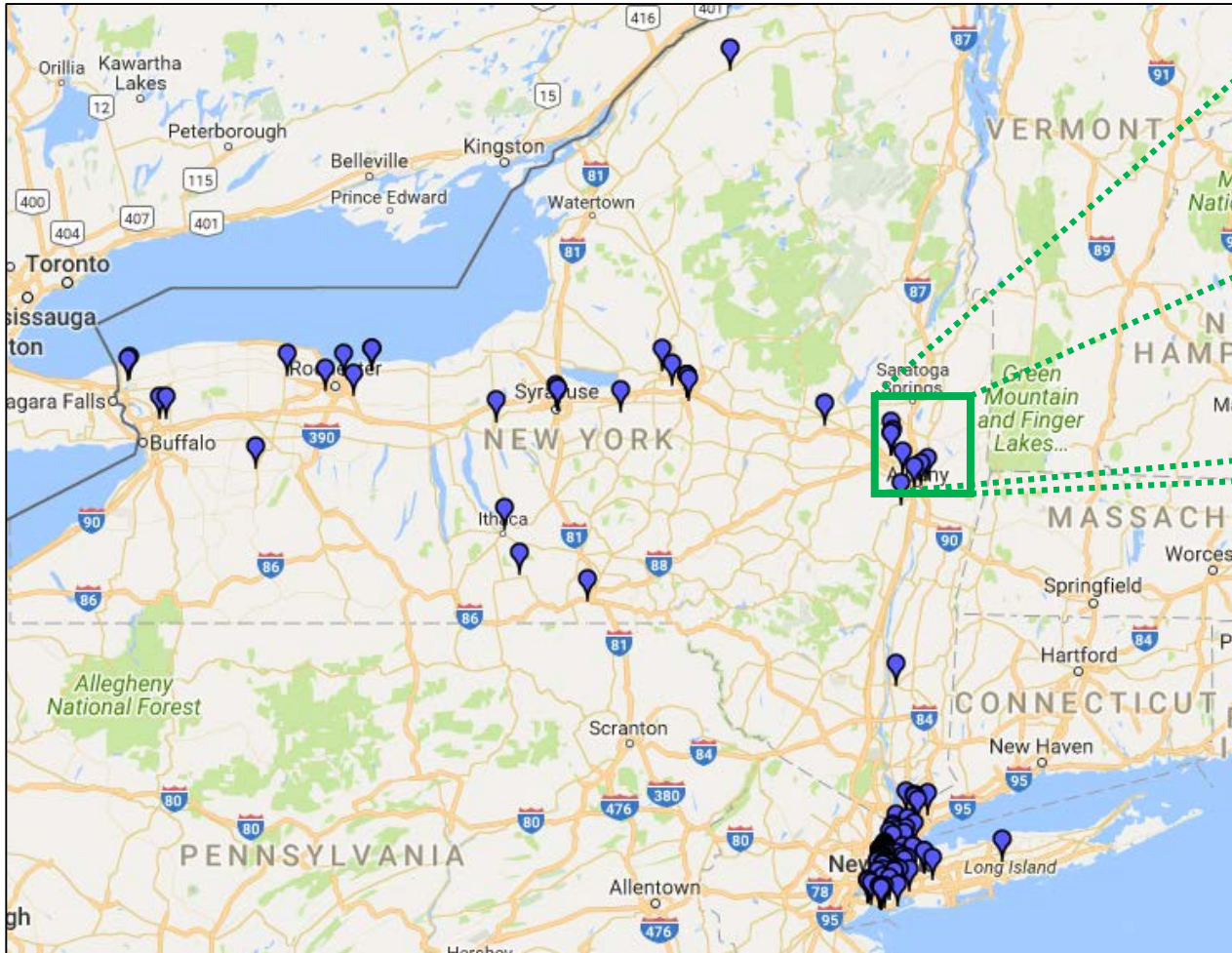


## Proposed Scope – CHP / Cogeneration Microgrid

- Two 7.9 MW Combustion Gas Turbines
- Heat Recovery Steam Generators with duct burners
- New Emergency Generator and System
- Ability to isolate from grid in power outage



# Combined Heat and Power in New York State

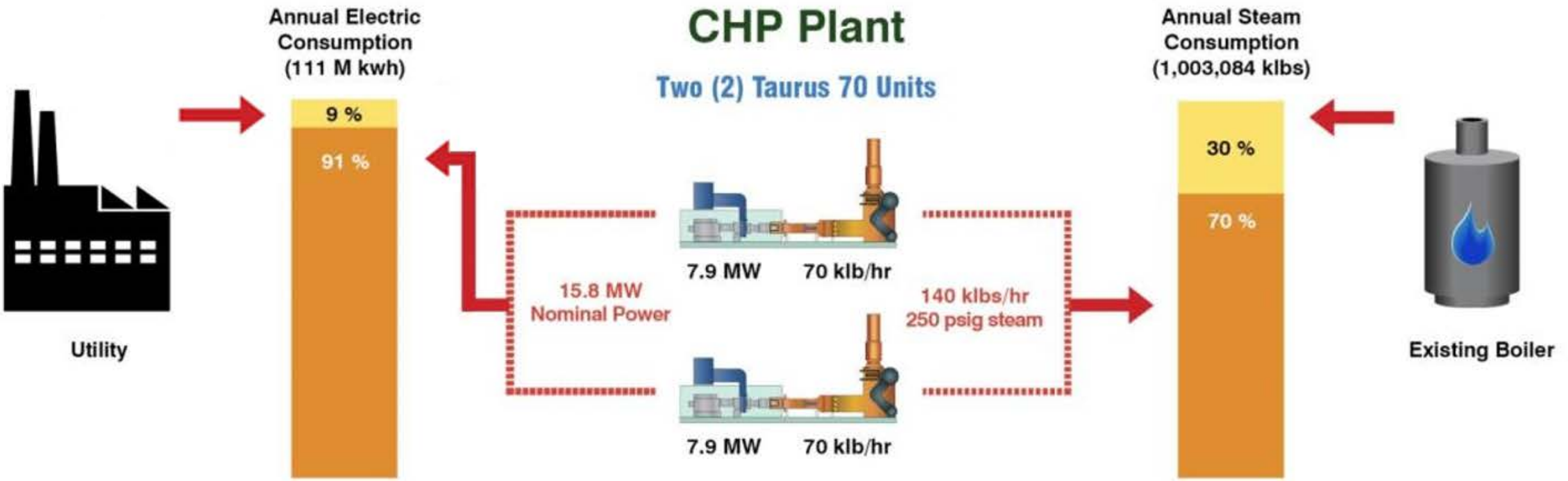


Over 150 Installations in New York State

Installations in Albany Area Include:

- Albany Medical Center
- Union College
- HVCC

# Plant Overview

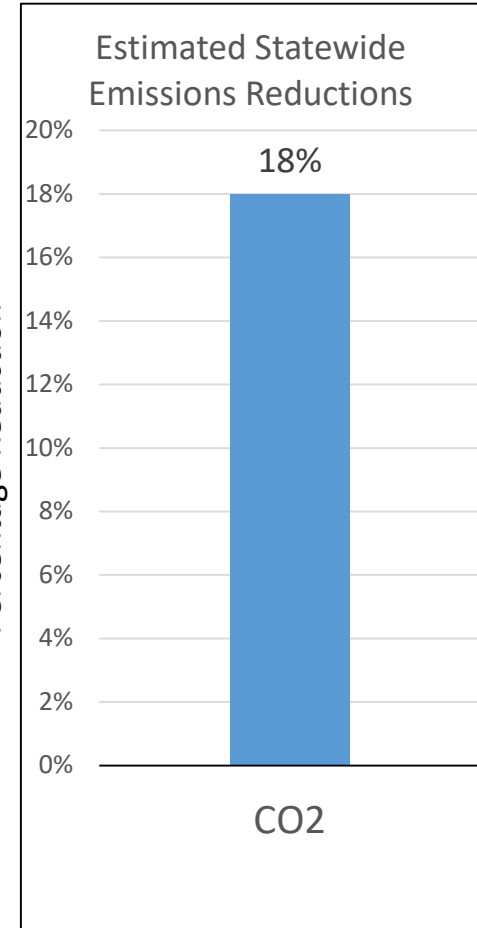
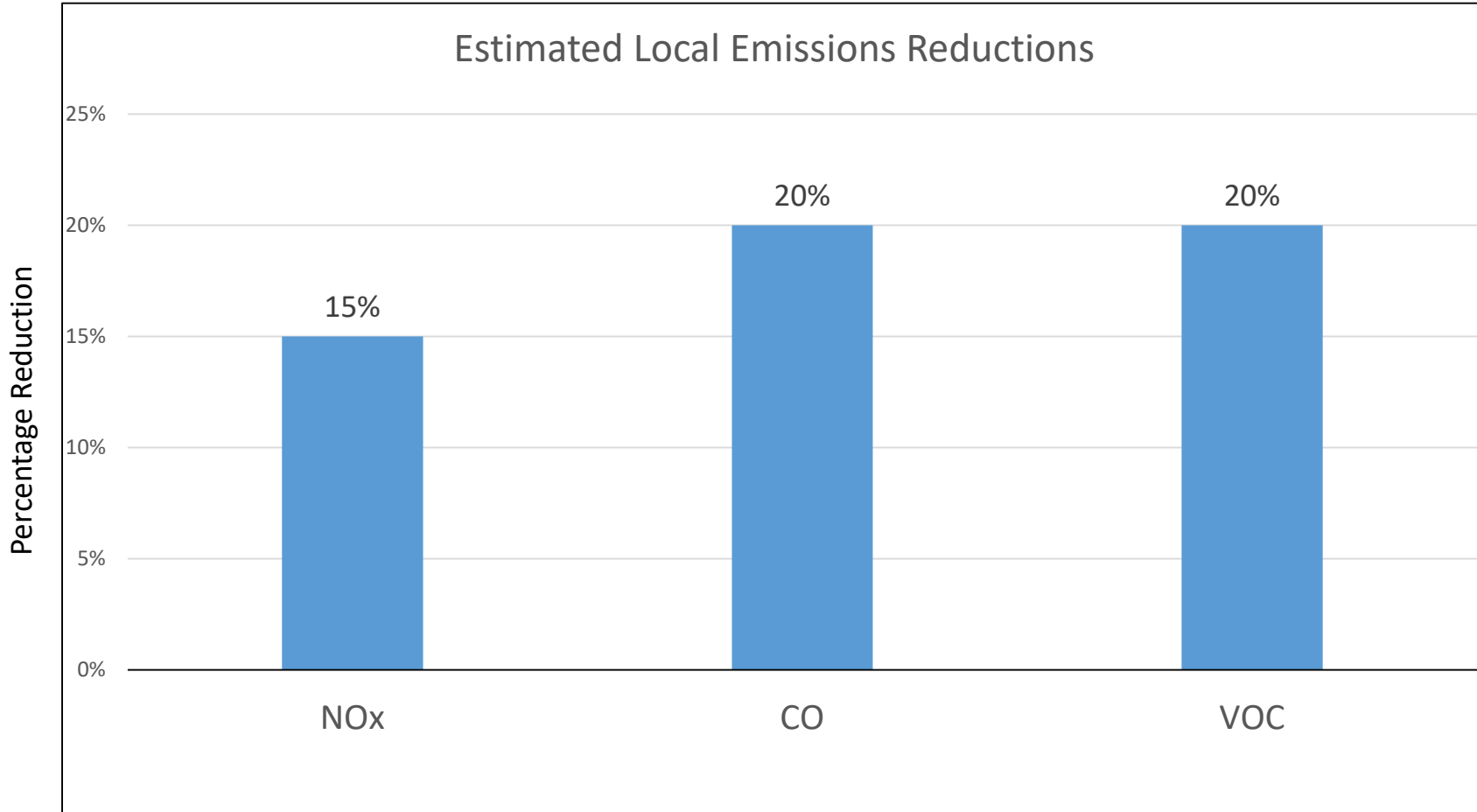


## CHP Plant:

- Will operate 95% of the year
- Has capability to run indefinitely in “island mode”
- Will mainly run on natural gas and ultra low sulfur fuel for emergencies



# Empire State Plaza Microgrid Emissions



# Empire State Plaza CHP & Microgrid Project Impacts

## Several CHP / Microgrids Maintained Power and Heat after Sandy

- NYU
- Stony Brook University
- Princeton University
- University Med Center at Princeton, NJ
- Co-op City

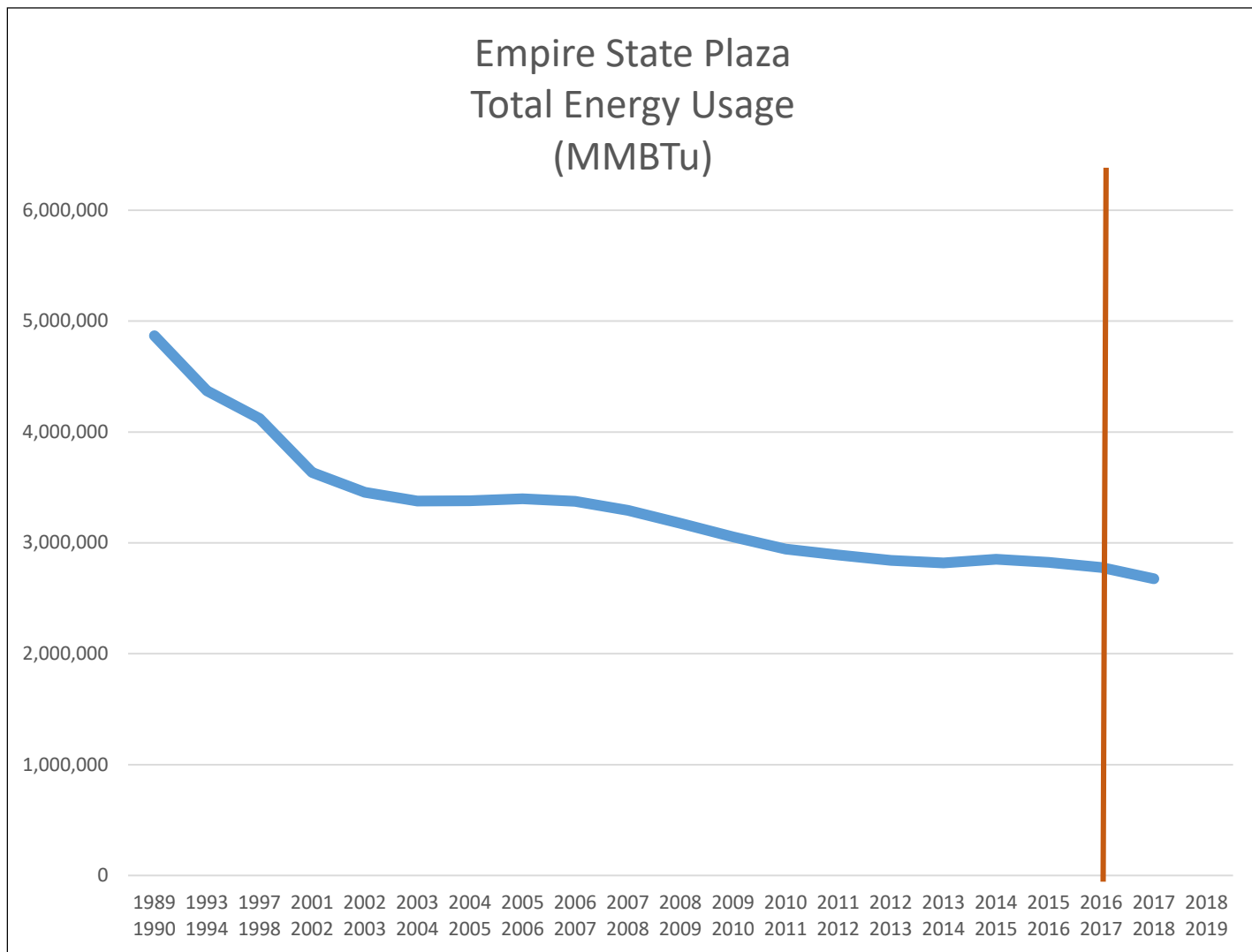


# Empire State Plaza CHP & Microgrid Project Impacts

- ✓ Upgrades and Enhances Emergency Generation System (~\$40M value)
- ✓ Reduces Air and Greenhouse Emissions
  - ✓ Reduce statewide greenhouse gas emissions by roughly 25,600 tons (equivalent of taking 5,000 cars off-road)
  - ✓ The gas turbines will produce less air pollutants than the currently used boilers.
- ✓ Enables ESP to be used for an Emergency Shelter during long term power outage
- ✓ \$3M / year in Energy Savings
- ✓ Create local construction jobs



# Empire State Plaza Efficiency



- Over 40% reduction in Annual Energy Usage for Empire State Plaza Since 1990 Levels
- On-Going Energy Efficiency Projects by OGS and NYPA at all OGS Facilities

**For further information, please contact;  
[PlazaMicrogridInfo@nypa.gov](mailto:PlazaMicrogridInfo@nypa.gov) or visit:  
[www.nypa.gov/EmpireStatePlazaMicrogrid](http://www.nypa.gov/EmpireStatePlazaMicrogrid).**

**Specific inquiries can be addressed to:**

**Stephen Ramsey,**

**Legislative Affairs Manager,**

**New York Power Authority**

**Email: [Stephen.Ramsey@nypa.gov](mailto:Stephen.Ramsey@nypa.gov);**

**Phone: (518) 433-6741.**