# Fuel Cells at Supermarkets: NYSERDA's Perspective



Scott Larsen,
Project Manager
On-Site Power Team



#### NYSERDA Programs to Install Fuel Cells

- Distributed Generation as Combined Heat and Power
  - 14 Fuel Cell as CHP Systems Installed Since 2002
- Renewable Portfolio Standard (RPS) Customer Sited Tier (CST)Fuel Cell Program
  - \$21.6 Million through 2015
  - 1 Large Fuel Cell System and 23 Small Fuel Cell Systems Since 2007



#### Benefits of Fuel Cells

- Efficient Means of Electric Generation (~40-50%)
- High Quality By-Product Heat for CCHP
  - Can Approach 90% Efficiency when used in CCHP Applications
- Very Low Emissions
- Quiet Operation
- Low Maintenance/High Availability
- Reliable



#### Fuel Cells at Supermarkets

- Thermal and Electric Load Profiles
  - Coincident Thermal and Electric Loads
  - Year Round Thermal and Electric Loads
- Good Potential for Replication
- Capable of Operating During a Grid Outage
  - Permits Nearly Full Operation
  - More Reliable than Traditional Back-up Generators
- Essential Part of our Critical Infrastructure



### Fuel Cells as Reliable Back-up Power

Fuel cell systems that run every day are more reliable in an emergency than a system that only runs when you need it.



### August 2003 Blackout

- Half of NYC's 58 hospitals suffered backup power failures. (New York Times 8/16/03)
- Generator failures at Verizon office caused 9-1-1 call gaps. (Daily News 8/17/03)
- Montefiore Medical Center (NYC) site down for 5 minutes, then fully operational throughout the blackout using their CHP system
- South Oaks Hospital (Amityville) Seamless transfer to CHP only



#### Critical Infrastructure

Those systems and assets essential to the functioning of society and the economy.



NY State Office of Emergency Management <a href="http://www.semo.state.ny.us/">http://www.semo.state.ny.us/</a>



# Critical Infrastructure That Could Benefit from Installing Fuel Cells as CHP

- Healthcare Hospitals, clinics, nursing homes
- Wastewater treatment plants
- Public safety 911 call centers, jails/prisons, Fire/EMS
- Transportation centers (airports)
- Communications/data centers
- Facilities of refuge
  - College campuses, high schools
  - Hotels w/ kitchens and laundries, conference centers
- Food distribution including cold storage and supermarkets



## Supermarkets are Considered Critical Infrastructure in NY

- Continued Operation during a Grid Outage or Natural Disaster
  - Ensures a Reliable Food Supply
  - Can Ensure a Reliable Supply of Drinking Water and Personal Care Products
  - Helps Maintain the Health and Safety of the Local Population
  - Protects Against Costly Food Spoilage



### NYSERDA Fuel Cell Program Essential Public Services

- Emergency Services
  - Fire
  - Police
  - Ambulance/Emergency Medical Services
- Health Care Services
  - Hospitals
- Communication Services
- Food Distribution/Retail
- Fuel Distribution/Retail



Scott Larsen, PhD Ed Kear, PE

Project Manager, Senior Project Manager,

On-Site Power Team On-Site Power Team Leader

NYSERDA NYSERDA

17 Columbia Circle 17 Columbia Circle

Albany, NY 12203 Albany, NY 12203

(518) 862-1090 (ext. 3208) (518) 862-1090 (ext. 3269)

<u>lsl@nyserda.org</u> <u>ebk@nyserda.org</u>





