

NYSERDA CHP Programs: Lessons Learned, Challenges and Future Plans

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History

- NYSERDA's 1st CHP Demonstration Program was issued in 2001
- Currently finishing up our 9th solicitation
- Over 97 projects, 56 are currently operating (144 MW, \$70M NYSERDA + \$316M others)
- Overall NYSERDA CHP: 127 projects, 70 operational (193 MW, \$94M NYSERDA + \$411M others)

Operating data available at:
<http://chp.nyserda.org>



DG/CHP Integrated Data System

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Welcome to the NYSERDA web-based DG/CHP data system. This system includes monitored performance data and operational statistics for NYSERDA's Distributed Generation (DG)/Combined Heat and Power (CHP) demonstration projects.

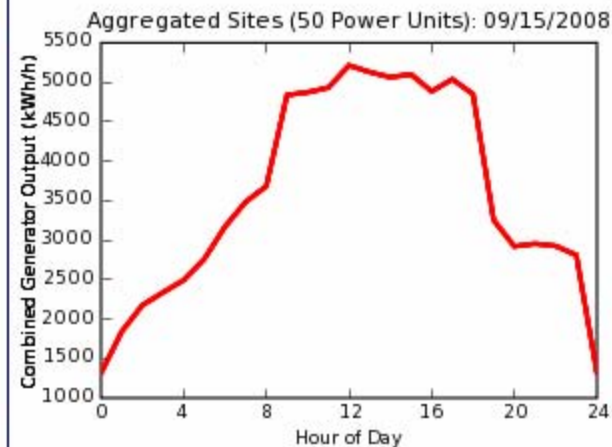
The integrated database includes the following:

- Monitored Hourly Performance Data
- Operational Reliability and Availability Data
- Characteristics of Each Facility and its Equipment

DG/CHP systems offer the potential to reduce operating costs for end users as well as to improve reliability of the electric distribution and transmission system. NYSERDA's objective is to accelerate the deployment of these technologies in the market to create benefits for the state of New York. To accelerate market acceptance, NYSERDA is supporting efforts to demonstrated DG/CHP systems that show the economic, technical, and environmental benefits of these systems in a variety of commercial, institutional, and industrial applications. This database provides access to the measured performance and reliability data collected on NYSERDA's demonstration sites.

The Monitored Hourly Performance Data portion of the database allows users to view, plot, analyze, and compare performance data from one or several different DG/CHP sites in the NYSERDA portfolio. It allows DG/CHP operators at NYSERDA sites to enter and update information about their system. The

Monitored Power Generation Yesterday



Information Currently in the Database

Facilities:	98
Power Units:	271
Power Units With Monitored Data:	102

Results from Monitoring Yesterday

Power Units Monitored:	50
Energy Generated:	88043.0 kWh
Peak Power Generated:	5440.5 kW

[Click Here](#) for a complete summary

Information as of 09/16/2008 at 9:28 AM



NEW YORK STATE



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DG/CHP Integrated Data System

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The facilities shown below are currently in the database. Click on a column heading to re-sort by that column. Click on a facility name to view details about that facility. [Click Here](#) to see a map showing all of the facilities.

Filter the listing:

<u>Facility</u>	<u>Category</u>	<u>Developer</u>	<u>Primary Fuel</u>	<u>Units</u>	<u>Installed Capacity</u>	<u>Commission</u>	<u>Monitoring</u>
<u>10 West 66th Street Corp.</u> New York, NY	Multi-Family Residence	DSM Engineering	Natural Gas	1	70 kW	07/01/2004	11/17/2005 - current
<u>230 Park Avenue</u> New York, NY	Office Building	Office Power	Natural Gas	16	960 kW		-
<u>26th Ward Water Pollution Control Plant</u> Brooklyn, NY	Wastewater Treatment	New York Power Authority	Digester Gas	2	400 kW	07/31/2003	-
<u>4C Foods</u> Brooklyn, NY	Food Processing	Energy Concepts	Natural Gas	3	450 kW	06/24/2004	05/22/2005 - current
<u>A.A. Dairy</u> Candor, NY	Dairy Farm	RCM Digesters	Digester Gas	1	130 kW	02/01/2000	04/25/2005 - current
<u>Allenwaite Farms</u> Schadticoke, NY	Dairy Farm		Digester Gas	1	140 kW		-



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Grenadier Realty - AAF Sea Rise 1

3405 Neptune Ave
Brooklyn, NY 11224

[Map It](#)

Category: Multi-Family Residence

SIC: 65 - Real Estate

ISO Zone: J - New York City

Electric Utility: Consolidated Edison

Gas Utility: KeySpan East

Primary Fuel: Natural Gas

Number of Power Units: 2

Total Installed Capacity: 120 kW

DG/CHP Developed by DSM Engineering

Unit	Installation	Fuel	Prime Mover	Heat Recovery	Use	Technology Group	Installed Capacity (kW)
1	04/02/2004	Natural Gas	Reciprocating Engine	Hot Water	Domestic Hot Water	100-800 Reciprocating Engine (Lean Burn)	60
2	04/02/2004	Natural Gas	Reciprocating Engine	Hot Water	Domestic Hot Water	100-800 Reciprocating Engine (Lean Burn)	60

Facility Details

[Show Complete Details](#)

[Sea Rise 1&2 CHP Site Fact Sheet](#)

Facility Documentation

[Grenadier Realty 3405 Neptune NYSEDA CHP Details](#)

[Sea Rise Online Database Notes](#)

Project Webpages

Online Monitored Data Reports

[Monitored Data - Plots and Graphs](#)

[Monitored Data - Download \(CSV file\)](#)

[Utility Rate Calculation](#)

[Monitored Data Quality](#)

Standardized Monitored Data Reports

[Generator, Facility, and Meter Power](#)

[Generator Status, Gas Use, and Heat Recovery](#)



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[Report Selection](#) -> [Site Selection](#) -> Report Details
 Monitored Data Plot

Facilities Included:

Grenadier Realty - AAF Sea Rise 1 - Brooklyn, NY

Select the details for the report.

Starting Date: 08/2006 ▼

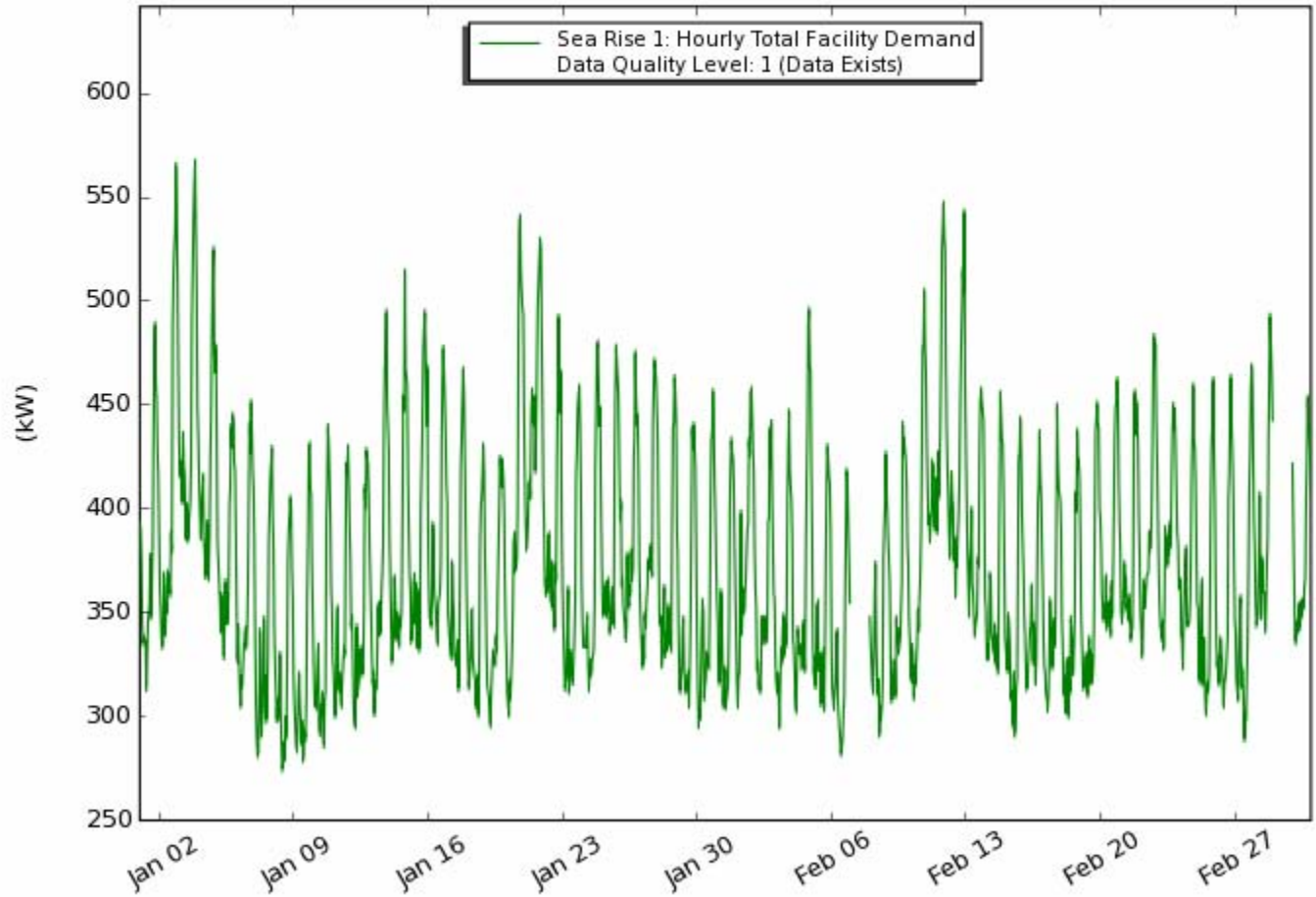
Ending Date: 09/2008 ▼

Data Channel: Total Facility Demand (kW) ▼

Plot Type:

- DG/CHP Generator Output (kWh)
- DG/CHP Generator Output Demand (kW)
- DG/CHP Generator Gas Input (cf)
- Total Facility Purchased Energy (kWh)
- Total Facility Purchased Demand (kW)
- Other Facility Gas Use (cf)
- Total Facility Energy (kWh)
- Total Facility Demand (kW)**
- Useful Heat Recovery (MBtu)
- Unused Heat Recovery (MBtu)
- Status/Runtime of DG/CHP Generator (h)
- Ambient Temperature (degrees F)
- Total CHP Efficiency (%)
- Electrical Efficiency (%)
- Two Points: Generator and Facility Energy (kWh)
- Two Points: Generator and Facility Demand (kW)

Sea Rise 1: 01/01/2008 - 03/01/2008



NYSERDA CHP Programs

- Energy Efficient Power Systems (PON 1200)
 - New technology development
- Distributed Generation as Combined Heat and Power (PON 1241)
 - Single and multi-site CHP demonstrations
 - Competitively selected, milestone payments
- Existing Facilities Program (PON 1219)
 - Performance based program
 - First-come-first-served, performance payments
- RPS-ADG (PON 1146)
- RPS-Fuel Cell (PON 1150)
- Multifamily Building Performance Program (MPP)

DG/CHP Demonstration Program

- Program is intended to support the permanent installation of clean, efficient CHP systems
- Most technologies and fuels are eligible
 - (ADG fueled systems and commercially available fuel cells are **not** eligible)
- There are no size limits
- All sectors (industrial, commercial, institutional, multifamily, single-family residential) are eligible

DG/CHP Program

- Single-site demonstrations
 - Up to \$2,000,000
 - Up to 30-50% of total project costs including CHP system and thermal system(s)
- Multi-site demonstrations
 - Up to \$4,000,000/project, \$1,000,000/site
 - Up to 30-50% of total project costs including CHP system and thermal system(s)
 - Sites must have similar load profiles and use similar CHP systems, and all site must be under common control
 - Pilot site then rollout sites

DG/CHP Program

- Clean – 1.6 lbs. NO_x/MWh
- Efficient – Overall annual fuel conversion efficiency of 60% minimum (HHV)
- CHP system must be capable of grid independent operation during periods of grid outage
- 4 year performance data reporting requirement (payments are **not** based on performance)

DG/CHP Program

- Completed proposals must be submitted by published due dates
- Competitive project selection process
- Milestone payment structure – 98% of award is paid by the time the system is commissioned

Existing Facilities Program

- CHP is a component of a larger program intended to reduce summer-peak demand and annual electric consumption
- CHP systems using natural gas fueled internal combustion engine and gas turbines are eligible (microturbines are **not** eligible)
- CHP systems smaller than 250 kW are **not** eligible
- Commercial, industrial and institutional sites are eligible (multifamily and single-family residences are **not** eligible)

Existing Facilities Program

- Up to \$2,000,000 per project
- Up to 50% of total project cost for installation of the CHP system (thermal system costs are **not** included)
- Incentive based on reduction in summer-peak demand (kW) and annual electric generation (kWh)
 - Upstate - \$600/kW + \$.10/kWh
 - Con Ed - \$750/kW + \$.10/kWh

Existing Facilities Program

- Clean – 1.6 lbs. NO_x/MWh
- Efficient – Overall annual fuel conversion efficiency of 60% minimum (HHV)
- Must achieve at least 60% of the agreed upon summer-peak demand reduction
- 2 year performance data reporting requirement (payments **are** based on performance)

Existing Facilities Program

- First-come-first-served application process
 - Facility or Contractor submits an Application and an Energy Analysis (EA)
 - NYSERDA reviews Application and EA
 - Site visit
 - Applicant revises EA
 - NYSERDA approves EA and issues Purchase Order
 - NYSERDA and Applicant create an M&V Plan
 - Applicant builds project
 - NYSERDA consultant connects CHP System to the Data Integrator (chp.nyserda.org)
 - NYSERDA consultant conducts NOx testing

Existing Facilities Program

- Payments based on performance
 - Up to 40% upon system commissioning
 - Up to 30% after Year 1 based on performance
 - Remaining incentive after Year 2 based on performance
- Data supplied to Data Integrator (chp.nyserda.org) will be used to determine performance payments

NYSERDA CHP Programs

DG/CHP Program

- Up to \$2M (\$4M multi-site)
- 30-50% of project cost
- Project cost includes thermal systems
- Award based on total project cost
- All fuels (except ADG)
- All technologies (except some FC)
- No size limits
- 4 year data reporting
- Best-effort milestone payments

Existing Facilities Program

- Up to \$2M
- Up to 50% of project cost
- Project cost does not include thermal systems
- Incentive based on peak reduction and electric generation
- Natural Gas only
- ICE and large gas turbines only
- Systems \geq 250 kW only
- 2 year reporting
- Performance based payments

Lessons Learned

- Policy
 - Electric tariff design impacts CHP adoption
 - Lack of interconnection rules can slow/hinder CHP installation
 - Be watchful for shenanigans
 - A meter aggregation policy may increase CHP opportunities

Lessons Learned

- Technology
 - Pre-packaged systems are generally more cost effective than site assembled systems (smaller sizes)
 - CHP systems have improved over time
 - Continuous data monitoring requires effort to do it right
 - Although it can add cost, there is almost always a way to design the CHP system to operate during a grid outage

Lessons Learned

- Programmatic
 - The market is not growing as fast as we had thought
 - One-off installations will not advance the market fast enough
 - The development of pre-packaged, pre-engineered systems may advance the market faster
 - Being able to operate during grid outages is a must

Challenges

- Getting the interest of building owners/ decision makers
- Energy prices / spark spread
- Explaining stand-by tariffs
- Getting proposers to follow instructions
- Recommissioning studies

Future

- Both the CHP Demo and Performance programs will continue
- The ADG and Fuel Cell programs will also likely continue
- Continued emphasis on pre-packages systems, multi-site projects
- Developing programs targeting micro-CHP and “Facilities of Refuge”
- A redesigned recommissioning study program
- Stimulus package?

www.nyserda.org

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