

# NYSERDA's CHP Programs: A Little History

CHP in New York State  
The Next Generation

June 20, 2012

# NYSERDA CHP Programs

## The major players

- CHP Demonstration Program (2000-2011)
- FlexTech Program (1991-2011)
- CHP in the Existing Facilities Program (2006-2011)

# CHP Demonstration Program

## What was the CHP Demo Program?

- Competitive program
- Site Specific Feasibility Studies (2000-2006)
- Technology Transfer Studies (2000-2009)
- Design and Installation of Full-Scale Systems (2000-2011)

# CHP Demonstration Program

## Program History

- First solicitation issued in 2000 (PON 554). \$2M total available (selected \$4M worth). Statutory and SBCII funds.
- Issued 11 solicitations in all. Last one (PON 2373) ended in October 2011
- Early program had very few requirements. CHP systems had to be “appropriately sized”
- 2003 Started “encouraging” CHP sites to stay connected to the grid, a minimum CHP system FCE or 60% and “clean operation”
- 2004 Required minimum 60% FCE and asked for 15 minute operational data – Started encouraging backup power operation

# CHP Demonstration Program

## More History

- 2005 Established [CHP.NYSERDA.ORG](http://CHP.NYSERDA.ORG) site to receive and present CHP system performance data – 4 year reporting
- 2007 Spun off performance programs for ADG and Fuel Cell
- 2007 Started requiring “grid independent operation during grid outage”, sites must stay grid connected, raised funding cap to \$2M/site
- 2008 Introduced the multi-site “Fleet Program”, started encouraging “prepackaged systems”

# CHP Demonstration Program

## How many projects?

- Selected 308 projects
  - 241 Demonstrations
  - 36 Feasibility studies
  - 31 Technology Transfer studies
- 170 projects still active or completed
  - 123 Demonstrations – 127MW  
(88 Operational/completed)
  - 19 Feasibility studies
  - 26 Technology Transfer studies

# CHP Demonstration Program

## Project Breakdowns - By Sites

- Multifamily/Hospitality - 42
- Healthcare - 16
- Industry - 16
- Schools/Colleges - 16
- Stores/Supermarkets - 10
- WWTF - 8
- Offices - 6
- Entertainment/Recreation - 7
- Farms - 5

# CHP Demonstration Program

## Project Breakdowns - By Technologies

- RICE - 69
- Microturbine - 25
- Fuel Cell - 20
- Biomass Steam Turbine - 2
- Back Pressure Steam Turbine - 3
- Gas Turbine - 3
- Additional Thermal Load - 3
- ORC - 1

# CHP Demonstration Program

## Project Breakdown - By Size

9 kW - 99 kW,	- 12
100 kW - 199 kW,	- 24
200 kW - 299 kW,	- 17
300 kW - 399 kW,	- 8
400 kW - 499 kW,	- 16
500 kW - 999 kW,	- 25
1 MW - 1.9 MW,	- 10
2 MW - 30 MW,	- 9

# CHP Demonstration Program

Where did the money come from?

- Statutory - \$1.3M
- SBC II - \$50M (2001-2006)
- SBC III - \$41M (2006-2011)
- System Wide Program - \$1.3M

# CHP Demonstration Program

Where did the money go?

- Demonstrations - \$87M
  - \$150M in approved projects
- Feasibility Studies \$0.7M
- Technology Transfer Studied - \$3M

# CHP Demonstration Program

## Cayuga County Regional Digester



# CHP Demonstration Program

## Schenectady WWTF



# CHP Demonstration Program

Clarkson University



# CHP Demonstration Program

## Price Chopper Fuel cell



# CHP Demonstration Program

## Cornell University Gas Turbines



# CHP Demonstration Program

## Technology Transfer Studies – Some Examples

- CHP Market Potential For New York State
- Assessment of Industrial On-Site Generation Operational Reliability and Availability
- Multifamily CHP Screening Tool
- CHP in Hospital Applications
- Web-based Data Integrator ([chp.nyserda.org](http://chp.nyserda.org))
- Brownfield Tax Credits: An incentive for siting CHP
- CHP at Facilities of Critical Infrastructure

# CHP Demonstration Program

## Other Accomplishments

- Informed the development of Stand-by Tariffs
- Informed the development of standard interconnect requirements
- Identified Flex-Rate abuse
- Demonstrated “Private Wires”
- Pushed development of systems capable of operating during grid outages
- ACEEE “States Stepping Forward Program Award” (2010)

# CHP Demonstration Program

## Helped Advance

- **CHP in Existing Facilities Program (2006)**
  - “Mature” technologies – performance based
- **RPS-CST ADG to Electricity (2007)**
  - Farm waste/food waste/waste water - performance based
- **RPS-CST Fuel Cell (2007)**
  - Pre-qualified fuel cells – performance based
- **CHP Acceleration Program (PON/RFI 2568)**
  - Pre-qualified “packaged” systems – incentive based

# Energy Efficiency Services

## Programs

- FlexTech
  - Flexible Technical Assistance
- CHP in Existing Facilities
  - Performance-based incentives

# Energy Efficiency Services

## FlexTech

- Recognized as an Exemplary program by ACEEE
- Provides technical assistance to qualify and quantify energy efficiency opportunities

# Energy Efficiency Services

## FlexTech

- 41 Pre-qualified engineering firms
- Independent Service Provider Option –  
Allows site to use own consultant
- 50:50 Cost-Share basis

# Energy Efficiency Services

## FlexTech

- CHP Studies Completed:
  - 87 Studies
- Notable projects
  - NYU
  - 1 Penn
  - New York Presbyterian Hospital

# Energy Efficiency Services

## FlexTech Case Study

### Cornell University

Feasibility Study Completed in 2006 by GIE Niagara Engineering Inc., PC

#### Results:

- 2 – 15 MW Gas Turbines
- HRSG
- Significant Emissions Reduction
- Offset Coal Use

#### Savings Results:

kWh Savings: 147,000,000

kW Savings: 27,000

Implementation Cost: \$11,500,000

Cost Savings: \$1,200,000

Simple Payback: 9.5 Years

Study Cost: \$126,000

NYSERDA Contribution: \$ 50,000

# Energy Efficiency Services

## FlexTech Case Study

### Cornell University



# Energy Efficiency Services

## FlexTech Case Study

### New York University Medical Center

Feasibility Study Completed in 2008 by Dylan Associates

#### Results:

- 1 - 7.5 MW Gas Turbine
- HRSG
- Significant Emissions Reduction
- 2 – Dual Fuel Steam Generating Boilers
- New Con Edison High Voltage Feeders

#### Savings Results:

kWh Savings: 51,663,762

kW Savings: 4,287

Implementation Cost:

\$76,675,240

Cost Savings: \$7,690,258

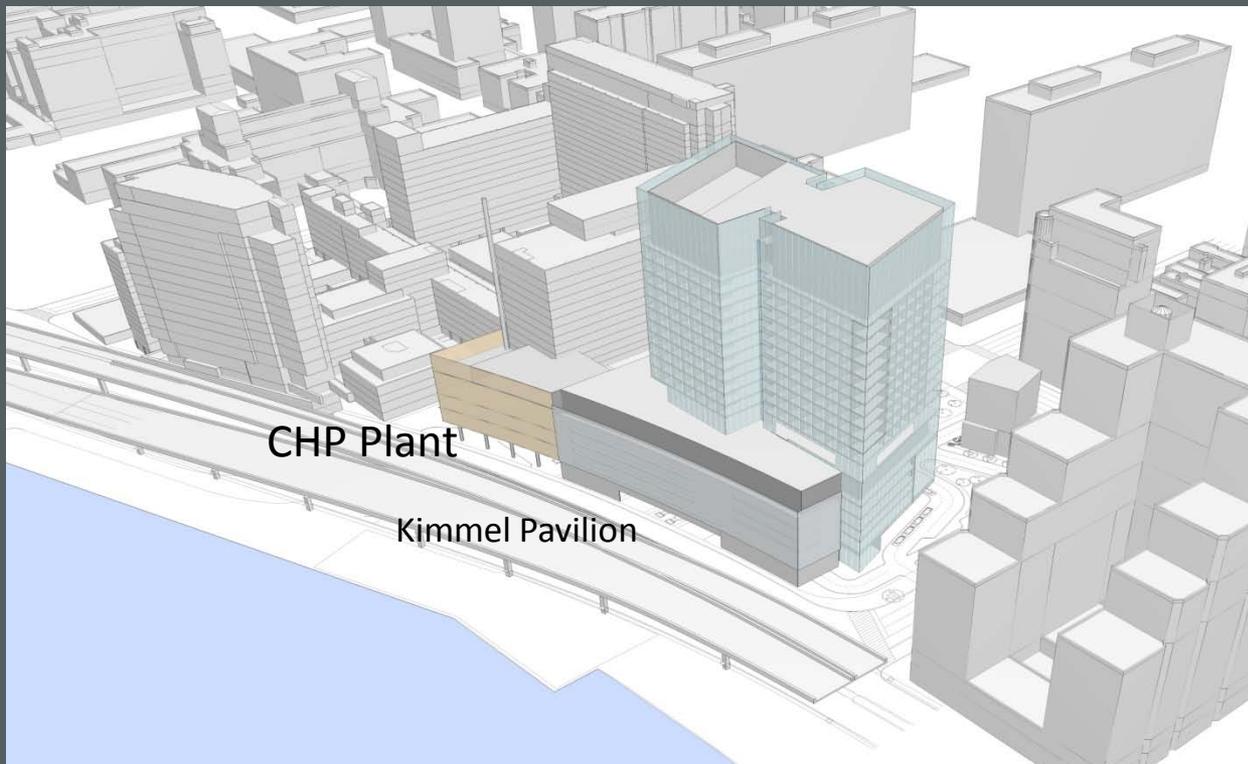
Simple Payback: 9.97 Years

Study Cost: \$179,270

NYSERDA Contribution: \$ 89,635

# FlexTech Case Study

## New York University Medical Center



# Energy Efficiency Services

## CHP in Existing Facilities Program (EFP)

- 2006
  - Component of the Con Edison System Wide Program in Con Edison
  - Offered on an Open Enrollment Basis
  - Performance based payment structure
  - Incentive Cap - \$2 million

# Energy Efficiency Services

## CHP in EFP

- 2008
  - Expanded to all SBC territories
- 2011
  - Program closed in December

# Energy Efficiency Services

## CHP in EFP Innovative Program Features

- Required performance M&V
  - Summer Peak Demand Reduction –KW
  - Annual Energy Generation – KWh
  - Meet or exceeding 60% FCE
  - Emitting less than 1.6lbs/MWh of NOx
- Incentives reduced for non-performance

# Energy Efficiency Services

## CHP in EFP Innovative Program Features

- 2 years of Measurement & Verification
  - Hourly data collected
  - Data used to determine performance
  - Posted on NYSERDA's CHP website
- 3 Onsite emissions testing events

# Energy Efficiency Services

## CHP in EFP

	Projects	Contract kW	Contract kWh
Installed	10	22,300	180,803,300
Contracted	7	15,400	117,441,300
Application	15	12,800	97,269,800
Total	32	50,500	395,514,400

# Please Contact Us

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