



# Millennium Hilton New York Downtown

## 500-kW CHP System



Millennium Hilton Hotel, Church Street

COURTESY OF NYCEEC

### Quick Facts

**LOCATION:** Manhattan, New York

**MARKET SECTOR:** Hotel

**FACILITY SIZE:** 383,000 sq. ft. with 569 rooms

**EQUIPMENT:** 2 x 250kW Stowell Distributed Power CHP units

**FUEL:** Natural gas

**USE OF THERMAL ENERGY:** Space heating and cooling, domestic hot water

**CHP TOTAL EFFICIENCY:** 80%

**ENVIRONMENTAL BENEFITS:** 32% GHG reduction, equivalent to taking 4,400 cars off the road

**YEARLY ENERGY SAVINGS:** 34%

**CHP IN OPERATION SINCE:** 2014

**NOTE:** PPA agreement and NYCEEC financing allowed for CHP investment with a non-debt solution, no upfront capital costs

## Project Overview

The Millennium Hilton is a high-rise hotel in Lower Manhattan, NY. Built in 1991, the building encompasses 383,000 square feet with 569 rooms. Millennium Hilton sought to improve their building systems at a low cost. Through this goal, Millennium Hotel successfully worked with Convergen Energy and NYCEEC to supplement NYSERDA incentives with a non-debt solution to installing a new CHP system. In deciding to procure a CHP system, the Millennium Hilton had several key objectives in mind:

- Incur no *incremental* upfront initial capital costs for the CHP system
- Use a non-debt mechanism to increase energy efficiency and upgrade building systems
- Achieve significant cost savings with the CHP investment
- Improve building comfort, performance and ensure greater resiliency of operations

To meet these resiliency, efficiency, and cost-reduction goals, with minimum impact on their own capital structure, the building owners selected a power purchase agreement (PPA) for acquisition of the CHP system. With financing from NYC Energy Efficiency Corporation (NYCEEC), the Millennium Hilton entered a PPA with Convergen Energy for the 500kW CHP system. This non-debt solution allowed Millennium Hilton to acquire the benefits of CHP with no up-front costs while maintaining lower, more stabilized energy prices.

## CHP Equipment & Operation

The Millennium Hilton has two 250kW Stowell Distributed Power (SDP) CHP units that deliver electric power, space heating, cooling and pre-heat the hot water. The CHP units are owned by Convergen Energy and operated by Powergen Development Group.

Through the utilization of jacket water and exhaust heat recovery, the Powergen CHP Units provide the building with thermal energy and deliver 84% total CHP system efficiency. The heat is transferred to building loads by a hot water heat recovery loop. The hot water recovery loop provides hot water to an absorption chiller for space cooling, three heat exchangers for domestic hot water, and a heat exchanger to the building's hot water space heating system.

Powergen Development Group furnishes a long-term operations and maintenance contract at the Millennium, and provides system graphics and analytic software to facilitate monitoring of the performance of the new CHP plant. They installed a server-based communication system to track usage, monitors trends, and archive energy consumption at the hotel.



**Stowell Distributed Power CHP Unit**

COURTESY OF Stowell Distributed Power, Inc.

## Power-Purchase Agreement and NYCEEC Financing

NYCEEC's knowledge and expertise was central to structuring a financing strategy that was tailored for the needs of the hotel. NYCEEC provided a \$2.4 million loan to fund the power purchase agreement with Greenwood Energy, taking into account the cash flow variations and timing of NYSERDA incentives that would affect the capital needs and payback of the project. Because of the terms and conditions of the PPA, the Millennium Hilton successfully installed the CHP system and related energy measures without incurring additional debt.

To facilitate additional energy savings improvements, NYCEEC sponsored a detailed energy audit for the hotel. This audit ensured the site's early compliance with Local Law 87: Energy Audits and Benchmarking and the correct sizing of the CHP system inclusive of economically advantageous energy efficiency upgrades.

*"This expansion of Convergen Energy's operations in clean and efficient power generation for the hotel sector is blazing a trail for the industry in North America, where alternative power generation is beginning to make a real breakthrough.... We look forward to partnering with the facilities and utilizing various microgrid technologies to make them more sustainable, environmentally friendly, and energy-secure... -Steve Brooks, VP Convergen Energy"*

## For More Information

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