

Great Neck Water Pollution District

Government/Municipal

The Challenge

Located on the shores of Manhasset Bay in Great Neck, New York, the Great Neck Water Pollution Control District serves 25,000 Long Island residents and treats roughly 3.2 million gallons of wastewater every day. A progressive and business-minded organization, the district's leadership decided to take bold steps to upgrade the facility's digester equipment while implementing a super-efficient, waste-to-energy, onsite power system.

With this \$15 million, multi-year project, the facility was not only able to generate nearly half its total energy use, but it reduced costs and added an innovative revenue stream that made the project even more cost effective and environmentally beneficial.

The Solution

Starting with an upgrade to the facility's three anaerobic digesters, the system design included the addition of two C65 microturbines installed in 2014 and a third C65 added in 2018. One of the key components that made the project highly efficient and cost-effective was the addition of a new on-site grease-receiving station, whereby haulers throughout the region collect and deliver grease generated by area restaurants and other sources. The co-digestion of the grease in combination with the site's solid waste stream makes for higher volume and better quality biogas that fuels the microturbines.



We'll have copious amounts of electricity on site, including 100% of our heat in winter, from waste gas. It basically is like having a free gas pump for your car."

— Chris Murphy, Plant Superintendent
Great Neck Water Pollution District

Power Profile

Customer

Great Neck Water Pollution District

Location

Great Neck, New York

Commissioned

2014-2020

Fuel

Methane Gas

Technologies

- 3 C65 ICHP Microturbines

Capstone Green Energy

Distributor

RSP Systems



**Smarter Energy
for a Cleaner Future**



Three C65 microturbines are capable of generating 195 kW covering more than half of the site's total energy use.

Now, with the upgrade and the system fully completed, the microturbines generate 195 kW—which covers more than half of the site's total energy use. The microturbines also provide 100% of the heat needed to operate the digesters as well as space heating for several buildings.

The ambitious plan required careful planning and coordination in order to ensure residents experienced no disruption in service, and the semi-residential neighborhood was not negatively impacted by odor and noise.

The Results

To help offset the project cost, the district tapped into a \$10.5-million grant through New York's Transformative Investment Program. The work also received \$500,000 in financial support from the New York State Economic Development Council in 2016.

In 2019, the district's average monthly electric bill was reduced by over \$40,000, and they had saved approximately \$529,000 in utility fees. Such savings, along with the added income from tipping fees at the grease station, didn't just benefit the district, it reduced costs for ratepayers.

The environmental benefits of the new system are substantial. Beyond high energy efficiency and offsetting grid power, there is the application of methane as a fuel rather than flaring it off, which is typically how excess gas is handled at wastewater treatment facilities. Further, the construction of the grease-receiving station solved two problems: 1. A shortage of such stations in the area and 2. A closed-loop system that uses the grease as a fuel rather than disposing it.

Capstone C65 ICHP Microturbine



A C65 provides up to 65kW of electrical power while the UL-Certified C65 ICHP provides up to an additional 150kW of thermal power for CHP and CCHP applications.