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Superstorm Sandy was the deadliest and most destructive hurricane of the 2012 Atlantic hurricane season. According to the National Hurricane Center, it was directly responsible for at least 147 deaths in the Northeast United States, Canada and the Caribbean. Sandy made landfall on October 29, 2012 and left a trail of destruction in its wake. The storm flooded numerous roads and tunnels, blocked transportation corridors and deposited extensive debris along the way. Tidal surges over 12 ft. above normal created catastrophic damage. Around 60,000 residents of New York City public housing were affected by the storm.

“We have 33 developments that were severely impacted,” said Joy Sinderbrand, vice president of the Recovery to Resiliency program at the New York City Housing Authority (NYCHA). “Some had 4 ft.-high piles of sand strewn across parking lots, cars were knocked out of place, compactors destroyed, basements filled entirely with water and in some cases first floor apartments also filled with water.”

Sinderbrand said some people were without electricity for three weeks or more, meaning they lost access to elevators, heat, hot water and ultimately peace of mind. “Following that NYCHA did work on an emergency basis,” she said. “Over 90%, or over 300 developments, had some kind of damage. The efforts to get these buildings back online were done with as much urgency as possible.” Sinderbrand said they brought in temporary generators and boilers to help with the problem, but she said that was not a long-term solution.

To help the relief efforts, NYCHA sought funding from the Federal Emergency Management Agency (FEMA) for permanent repairs and infrastructure upgrades that would help ensure the safety of New York City residents. FEMA ultimately awarded NYCHA a $3.2 billion grant for their Recovery to Resiliency plan. “NYCHA fought tooth and nail for every dollar,” said Sinderbrand. “The $3.2 billion from FEMA is the largest single grant of its kind in history.”

The grant is to help make a variety of repairs and infrastructure improvements to NYCHA’s public housing facilities to mitigate the variety of issues a natural disaster can bring. It includes the installation of more than 300 Generac Industrial Power natural-gas-fueled emergency power generators at 33 public housing complexes throughout the city. “Having natural gas generators really went hand in hand with our experience after Superstorm Sandy,” said Sinderbrand. “Natural gas turned out to be the best resilient energy source. In addition, it aligned with the agency’s mission to reduce oil dependency and the pollution that comes with oil use.” Sinderbrand said the continuous fuel supply available through underground piping was specified to not only reduce refueling costs, but also ensure each site’s fueling infrastructure...
would not be compromised by future flooding events.

A project this size requires key partnerships. NYCHA teamed up with Navillus Contracting, Lakhani & Jordan Engineers, Kanta Electric and Generac Industrial Dealer Central (IDC) Huntington Power Equipment.

Huntington Power won NYCHA’s bid to procure backup generators with its proposal of 327 Generac Industrial Power natural-gas-fueled generators for the application, citing how easy it is to work with compared to diesel fuel and its environmental friendliness.

“Diesel fuel requires constant maintenance to be considered a reliable fuel source, and refueling during an extended outage can be challenging,” said Keenan Nolan, sales engineer, Huntington Power. “During Superstorm Sandy, New York City experienced power outages for as long as 15 days. Natural gas generator owners ran with no issues while diesel clients quickly ran out of fuel, or the fuel was unreliable and they shut down and had no power.”

A challenge for the project has been that every building is different. “NYCHA has buildings of all different sizes,” said Harshad Lakhani, president, Lakhani & Jordan Engineers. “Some are seven stories and some are 24 stories. Some have 100 apartments while some have over 200. Since we were working on multiple sites with dozens of different buildings, we needed to specify generators ranging from 200 kW to 1000 kW.”

Lakhani said Generac was able to meet all the requirements they needed. “Generac was the most favorable when it came to size, service and obviously the bottom line dollars,” he said. “Generac has a superb program to size the generator for one individual building or multiple buildings, and we absolutely received all of the help and everything we needed to make sure that our building documents were complete.”

Generac Industrial Power and Huntington Power worked to meet substantially lower sound levels of select application sites. Rooftop and raised pad installations were specified to keep all units above the new floodplain levels, minimize footprint requirements and avoid disturbing residents during generator operation. “You are 100% guaranteeing no interaction with the water,” said Vasilios Mastoras, product manager, Navillus Contracting. “You want to install all of your mechanical systems in the highest elevations you can, and to meet code it needs to be higher than the flood plain. If the water comes, they won’t be underwater. Nothing will rot, deteriorate, or fail.”

To further ensure that NYCHA’s diverse needs and the complexities of each application site were met, contractors involved in the project laid out plans for a number of applications featuring single-generator as well as paralleled generator solutions. Generac’s Modular Power Systems (MPS) eliminated the need for third-party switchgear previously required by traditional paralleling systems.

“We design each project individually, and we needed paralleling systems when we needed larger generators,” said Lakhani. “We paired two 500 kW generators to produce 1000 kW of power.” These MPS solutions were selected to manage the noteworthy task of meeting natural gas fuel pressure requirements at 7 in. of water column while bringing as much as 1000 kW online in less than 10 seconds during a power outage.

Once the requirements of each site were identified, contractors and Generac Industrial Power staff worked to produce specialized solutions incorporating a variety of unique features. These included vibration isolators, multiple breakers and U.S Environmental Protection Agency (EPA)-certified engines to support nonemergency operation capabilities if local demand response programs are initiated. Demand response will provide NYCHA with a byproduct revenue stream. “The utilities pay NYCHA when there is a need for buildings to come off the grid,” said Sinderbrand. “That money will fund the maintenance of these generators and will allow NYCHA to continue with the safety program.”

During the project, Generac has proven to be a valued team player. “Whenever we have a question or a need, Huntington Power and Generac are right there to help.
us,” said Paras Kapadia, project manager, Kanta Electric. Lakhani said his firm would absolutely work with Generac and Huntington Power again. “We are actually specifying Generac on other projects as we speak,” he said. “We know the product very well, we know the staff very well and we have the majority of the information that we need already at our fingertips.”

The first generator installations took place on Aug. 2, 2017 at the Ocean Bay Apartments in Far Rockaway, NY. This particular site employs seven individual natural gas gen-sets ranging from 200 to 350 kW. NYCHA said all 33 developments should be completed by 2022.

“Businesses in New York City can be more prepared for natural disasters by investing and hardening their building’s infrastructure,” said Nolan. “NYCHA is on the forefront of this, and the next time a superstorm hits, NYCHA public housing developments will be well prepared to withstand the extended outage.”

Thanks to FEMA’s funding and the collaborative efforts of NYCHA, Generac Industrial Power and Huntington Power Equipment, these flexible and innovative solutions are helping NYCHA not only replace its pre-existing infrastructure, but also increase New York City’s resiliency one apartment complex at a time.

“This is about really having the infrastructure in place so that our residents know that if there is an emergency, a natural disaster, that they will be safe,” said Sinderbrand. “They will be safe to come back to their homes and they will have access to their homes, and that is something we can’t put a price on.”