Market Segment: Municipality

POWER PROFILE

Customer: City of Linden, New Jersey, USA

Location:
Linden, New Jersey, USA

Customer Business Issue:
Standby power for outages as well as flexibility for peak shaving

Solution:
Cat® C27 diesel generator set using dual-fuel technology

Cat® Dealer:
Foley Power Systems

After Superstorm Sandy knocked out power for more than 10 days, officials from the City of Linden, New Jersey, worked with local Cat® dealer Foley Power Systems to install a new backup generator set.

POWER NEED

Years after Superstorm Sandy devastated the East Coast of the U.S. in the fall of 2012, many cities and towns are still dealing with the fallout. For the City of Linden, New Jersey– a municipality about 20 miles southwest of Manhattan with a population of more than 40,000—the storm underlined the need for a new source of emergency power.

"Immediately after Sandy hit, we were down for the better part of two weeks," said Al MacDonald, director of public property and community services for the City of Linden. "We were 100 percent without grid power."

Linden's city hall building houses numerous important municipal functions, including the 911 dispatch center and most of the servers for the city's computer system.

The city hall relied on a generator set from the 1970s to maintain power in the weeks following the storm. It soon became clear that the power need was too much for the aging generator set, requiring the use of several smaller rental generator sets to help support the load.

"It was obvious that city hall had a generator issue because of its age and what it lacked in power," MacDonald noted. "We've had interruptions in the past, and fortunately we were pretty lucky with that old generator. We didn't lose the critical systems like 911 dispatch and our computer system, but everything else pretty much came to a standstill at city hall."

SOLUTION

Realizing an upgrade was long overdue, city officials worked with Cat dealer Foley Power Systems in 2016 to install a Cat C27 diesel generator set equipped with dual-fuel technology to help provide the robust backup and emergency power the building needed.

Generator sets that use dual-fuel technology extend run times and mitigate refueling issues by operating on a mixture of diesel and natural gas. In fact, a large percentage of the diesel fuel can be substituted with pipeline natural gas, providing at least twice the amount of run time from a stored volume of diesel fuel. This allows users to reduce the amount of fuel stored on-site.

"We felt that it would be economically advantageous to have a generator using dual-fuel technology with the capability to provide power during emergency utility outages, as well as for non-emergency purposes," MacDonald said. "Our environmental consultant, Greener By Design, advised us that a dual-fuel generator with emissions controls would provide flexibility to participate in non-emergency energy market applications such as demand response, as well as mitigate risks related to diesel fuel delivery that had been an issue in the past."

Because Linden intends to use the generator set in emergency and non-emergency modes, the municipality also needed to install emissions exhaust reduction equipment to comply with environmental regulations. The team mounted a selective catalytic reduction (SCR) aftertreatment system on the roof of the generator set's outdoor enclosure to meet these requirements.

To help mitigate noise from the generator set both inside city hall and in the nearby residential neighborhood, it was surrounded by a sound-attenuated enclosure built to exceed local noise ordinances.

City officials also took advantage of two programs to help reduce the costs of installing and maintaining the new generator set. First, they reduced bidding time by using a cooperative purchasing program available through the National Joint Powers Alliance (NJPA), which is now known as Sourcewell. This member-owned cooperative establishes and provides nationally leveraged and competitively solicited purchasing contracts from industry-leading vendors to help government, education, and non-profit organizations save time and money on the negotiation process.

"The bidding is already done for you, so you know that you're getting the best price for the piece of equipment that you spec out," MacDonald said. "So not only did we get the best price, we got exactly what we specified."

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Second, the city signed a Customer Support Agreement (CSA) with Foley Power Systems for ongoing maintenance and service on the generator set.

"For a piece of equipment this critical to the continued operation of vital city systems and departments, it would have been foolish for us to not go with a maintenance agreement," MacDonald explained. "Foley has been on top of the entire project from front to back. We're more than pleased with how the whole project has been handled."

RESULTS

"During events like Sandy when the city was down for 10 days, a dual-fuel system equipped with a multi-day tank of diesel fuel could have provided the city with full-time emergency power without having to fill the diesel fuel more than once," said Scott Yappen, director of business development with Foley Power Systems. "So this dual-fuel solution should keep the City of Linden run ready for decades to come."

Using the generator set for other non-emergency applications like demand response will also help relieve stress on the utility grid during times of peak consumption, such as hot summer days. When a demand reduction request is signaled, city officials can adjust power demand by postponing some tasks with large power demands or use the new generator set for peak shaving.

"Our research showed other facilities that have done a similar setup have offset their costs tremendously over a long period of time," MacDonald said. "By participating in the energy market programs during times of peak usage, we anticipate recovering our cost over the long term."

For more information, please visit cat.com/powergeneration

The Cat® C27 diesel generator set equipped with dual-fuel technology is surrounded by a soundattenuated enclosure to help reduce noise inside the city hall building and the surrounding residential neighborhood.

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