



Case Study

Aclara RF Network System Stands Up to Hurricane Sandy

NYC Department of Environmental Protection, USA

The New York City Department of Environmental Protection (DEP) is the largest public water utility in North America, serving more than 800,000 customers and nine million residents.



“The fact that the DCU design was aimed at almost all MTUs being heard by at least two DCUs resulted in a resilient system that helped us weather the storm,”

Warren Liebold
Director of Metering and Conservation for DEP.

BUSINESS CHALLENGE

Beginning in 2009, DEP installed Aclara's RF network technology across New York City's five boroughs, providing a wireless meter reading solution for the city. The system was completed in 2012, and when Hurricane Sandy struck in October of that year, it was under pressure to perform effectively.

SOLUTION OVERVIEW

The DEP system uses a combination of Aclara RF network meter transmission units (MTUs) and data collector units (DCUs) to read meters and transmit the data back to the utility.

Aclara's RF network MTUs are small, permanently sealed modules that are connected to the DEP's water meters. The MTUs read the meter and forward the meter data on an FCC-licensed wireless channel at customer-specified intervals. These messages are received by several of the DCUs that cover the service area.

The DCUs are placed in strategic locations throughout the five boroughs to provide a complete and redundant network for reliable operation. The DCUs receive, process, and store meter reading information transmitted from the MTUs, and forward the information directly to the utility through Ethernet connections to the city's NYCWiN wireless system.

BUSINESS JUSTIFICATION

Once the storm passed, DEP assessed how the Aclara RF network system had weathered the storm. Of the 350 DCUs in the NYC system, only 12 were damaged primarily due to the loss of power to the DCU. Even with the loss of the DCU, redundancies designed in the Aclara RF network system meant that even if a DCU was out of service, the MTU signal could be picked up by another functioning unit.

As a result of the storm, there was significant personal property damage throughout the city. Some older meters and meters on buildings

that were flooded with seawater were impacted, but the MTUs remained intact and functioning, helped by the factory water-sealed, remote wire connections.

When the situation was assessed, DEP lost contact with approximately 2,000 of its 820,000 MTUs. Many of these were attached to dwellings and properties that were no longer standing. Also, most of the DCUs that lost both electric and backup battery power were overlapping DCUs in the storm area. Some DCUs on the Rockaway peninsula in Queens and in the south shore of Brooklyn experienced these power issues.

The Aclara RF network system not only weathered the storm, serving its primary design function of reading meters, but also helped provide vital information to residents and other city agencies. DCUs transmit on the NYCWiN citywide wireless system for NYC agencies and first responders. The data is sent when there is no emergency communications traffic.

Aclara RF network system data allowed the DEP and other agencies to track approximate evacuation rates from neighborhoods during the storm. The data was analyzed to see areas of zero water usage over a period of time, indicating that the area was evacuated. The DEP also used the data after the storm to help identify apartment buildings without water by again looking at the consumption of water to make these determinations.

The ability to identify large leaks in the system caused by the storm was another major advantage. DEP was able to look at the data and find residences that had an abnormally high rate of water consumption after the storm. That indicated there might be damage to a specific property.