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Director Jack Markey

Eaton 9390 delivers needed confidence to county 911

Location:

Frederick, Md.

Segment:

Emergency/911 Services

Problem:

Two aging single-phase UPSs provided neither the reliability nor efficiency and scalability desired by the county.

Solution:

Eaton® 9390 UPS with IBC and IDC, Connectivity, Service

Results:

The Eaton 9390 delivers scalable, efficient and reliable backup for the 9-1-1 center operations, and proved critical during a facility revamp.

Background

Frederick County, MD's Division of Emergency Management is responsible for overseeing the county's 9-1-1 operations — which includes two public safety answering points (PSAPs) — as well as the public safety radio system and emergency management activities. Supporting a population of approximately 240,000 citizens, the organization handles some 400,000 emergency and non-emergency calls per year, as well as coordinates communication between the state police, county sheriff's department, municipal police departments, and thirty-three fire/rescue and emergency medical services stations.

Challenge

In 2010, Frederick County embarked on a three-year capital improvement project to rebuild its public safety radio communications network. As part of that undertaking, both the backup and primary PSAPs had to be taken offline, one at a time, during several months of construction and technology upgrades.

Two aging, inefficient, non-scalable single-phase uninterruptible power systems (UPSs) had reached the end of life in the organization's backup PSAP, which was tasked with serving as the primary PSAP during the cutover of the new digital radio system. Rather than attempt to revamp the existing power protection solution, “We chose to look to the future for a clean, efficient, scalable UPS,” explains the division's director, Jack Markey.

A robust solution was needed to safeguard the broad range of equipment within the PSAP, including PCs, public safety radio consoles and 9-1-1 phone systems at each of 14 individual operator/dispatch stations. In addition, the new UPS also needed to support the site's computer aided dispatch equipment, lighting and networking gear. “Basically, everything we need to operate the public safety answering system,” Markey reports.

But first and foremost, the new unit had to keep communications flowing during the revamp of the radio communications network. Equating the cutover of the project to being “like removing parts from an airplane while it's flying,” Markey says the county required ultimate reliability and availability in a new unit.

“When we uninstalled everything at our backup center, we knew our primary center was good and reliable,” Markey recalls. “But when we moved into our backup center and had to take the primary offline, we knew there was no life boat for us. We had to have system integrity and be very confident in that.”



Powering Business Worldwide

Solution

Responding to the call was the Eaton 9390 UPS. With a double-conversion, online design that offers the highest level of protection available, the new unit safeguards the 9-1-1 center equipment against the most common power problems, including outages, sags, surges, spikes, brownouts, line noise, frequency variation, switching transients and harmonic distortion.

"Our previous units weren't double conversion, so we were subject to all kind of variations and used to see power spikes and things flickering that we no longer experience," Markey reveals. "That was another reason we chose the 9390. We wanted to know we had clean power coming to our PCs and appropriate buffering against power anomalies. The UPSs we had in the past didn't handle that the way this unit does."

Delivering an industry-leading combination of power performance, battery management, scalable architecture, flexibility, power density, and warranty and service, the 9390 is designed to meet the current and future power protection requirements of large-system applications like the 9-1-1 center.

The unit also delivers unmatched power performance with a high efficiency rating of 94 percent and output power factor of .90 — an advantage that not only lowers the total cost of ownership by reducing the amount of power to support protected loads, but also results in less heat, which in turn decreases facility cooling costs.

Those benefits have not gone unnoticed by Frederick County, which deployed the unit in its electronics room. "It's taken a huge heat load off of that area," Markey confirms. "We've seen a noticeable drop in temperature while we've increased the load being supported by the UPS. Before we had to have supplementary air conditioning and it still was just barely keeping up."

"We've gone from a much less efficient unit that generated a lot of heat to a UPS with more than 90 percent efficiency," Markey continues. "We're using a lot less energy and we feel really good about that."

Although Frederick County initially deployed the 9390 configured as a 20 kVA unit, the scalability of the 9390 was one of the model's key selling points for the organization. With the ability to expand up to 160 kVA, the UPS enables modules to be added for additional capacity or redundancy, with the option of achieving N+1, N+2 or greater redundancy.

"Right now the 20 kVA size suits our needs, but part of the rebuild here was planned for future needs and to be able to do it in a modular way instead of having to gut everything and start over," Markey explains. "We really liked the ability to grow based on the basic 9390 hardware."

And while the 9390 is big on protection and capacity, it also boasts the smallest footprint of any UPS in its class—up to 50 percent smaller than competitors. "We needed to fit a lot of capacity into a small space," Markey says.

While Frederick County has been impressed by the wide variety of features and benefits afforded by the 9390, ultimately, the unit's success would be measured by its ability to keep all systems operational during the PSAP remodeling process. "We needed to have absolute confidence that this unit was going to be ready to go, because while it was at the backup center, we had no backup," Markey emphasizes.

The 9390 did not disappoint — responding to the call for high availability even through some of Mother Nature's harshest trials, such as Hurricane Sandy. "We were 100 percent relying on the 9390 and its ability to do its part while we confronted some severe storms," Markey says. "We had Hurricane Sandy and other events happen while we were in our backup center and had the primary center partially disassembled."

The county ensures the ongoing health of the unit with a service plan that includes regularly scheduled preventive maintenance visits. "For something that we expect high integrity out of, we need to have the maintenance to make sure it's there when we need it to be and performing at its best," says Markey.

Furthermore, monitoring of the PSAP site is accomplished with the ConnectUPS Web SNMP Adapter, as well as a Relay Interface Adapter.

Along with the UPS, Frederick County opted to deploy an integrated battery cabinet (IBC), which features a variable battery bus that accommodates 384 to 480V configurations so battery capacity can be matched to a customer's exact runtime requirements. For the 9-1-1 center, that translates to four hours of runtime when the UPS is fully loaded.

The county also installed an Eaton integrated distribution cabinet (IDC), which provides pay-as-you-grow scalability with customized options for maintenance bypass, transformers, panel boards, distribution breakers and other electronics.

"It gives us the ability to make changes around us and going forward, have everything be an integrated package," Markey explains. "We really wanted to maximize the floor space in the electronics room and by putting the IDC there, it left us set up to know where everything is going to be located going forward. We wanted to centralize everything within a modular environment, and now it's all set up for that."

More than a dozen Eaton 9170+ UPSs also support the county's remote tower sites, protecting radio communication systems.

"We're very happy with the choice we made and Eaton's history of standing behind their product," Markey sums up. "We made a great choice with the 9390, and it's going to serve us for many years to come."

Results

With the 9390 in place, Frederick County 9-1-1 is now able to:

- Ensure high availability and uptime to its primary 9-1-1 center
- Easily expand its power protection solution with the unit's scalability
- Achieve high efficiency with reduced heat and energy usage
- Gain robust capacity while preserving valuable space with the unit's small footprint
- Seamlessly monitor and manage the solution with connectivity cards
- Maintain the ongoing health of the unit with an Eaton service plan

Learn how the Eaton 9390 can help you
at Eaton.com/9390.

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