

Electrical Retrofit Aids in Hurricane Response

FEMA-1551-DR-FL (Hurricane Ivan) 2004

Pensacola, Fla.—When the lights go out, seemingly small things take on a much larger significance. In a major power outage the ability to simply plug in a generator without having to hotwire it into an electrical panel saves valuable minutes and hours – especially when quickly connecting power will prevent damage to homes from sewer backup.

Over the course of four years the Emerald Coast Utilities Authority (ECUA) based in Pensacola has been retrofitting its sanitary sewer lift stations with electrical connections for portable generators. So far, 300 of the 332 lift stations have been retrofitted and the utility agency plans to finish the remaining within the next year.

Because the retrofit helps reduce damages in a disaster, a portion of the cost was eligible for a grant provided by the Department of Homeland Security’s Federal Emergency Management Agency, under the Hazard Mitigation Grant Program (HMGP) managed by the Florida Department of Community Affairs. The HMGP grant funded retrofitting 41 lift stations with a transfer switch and an electrical receptacle connection, along with flood-proofing 26 electrical panels located in low-lying areas. The rest was funded by ECUA.



ECUA Electrical Supervisor Alfred A. Spencer displays a lift station electrical box. Pulling down the safety switch on the side of the box:

- (A) transfers the power load from the power company wiring to the power receptacle below*
- (B) where a portable generator would be plugged into in the event of a power outage.*

pumps or rewire the lift station electric panels to connect portable generators. To streamline the process, ECUA electricians placed power cable connector receptacles – plug-ins for the generators – on the above-ground electrical systems.

William Ellis, Utility Maintenance Manager for Emerald Coast Utilities Authority, estimates from past experience that power outages lasting 24 hours at just one lift station can result in a sewer backup costing up to \$5,000 in damages.

With a loss of power, the lift stations that pump waste from lower to higher elevations for eventual delivery into the wastewater treatment plant stop working. The sewer lines that carry sewage away from homes to the lift station may instead backup effluence into homes. Residents returning to hurricane-damaged or flooded homes will then find an additional, and possibly contaminated, mess to cleanup.

When responding to past power outages ECUA staff would hook-up portable pumps loaded onto trucks to bypass lift station

They installed transfer switches to make it easy to transfer power from the power company line to the portable generator. In the event of a power failure, ECUA workers can now easily plug in a generator and pull down the switch – without having to rewire the electrical panels to connect the portable generators. Likewise they can easily unplug and transfer a generator to another lift station in need of power.

“If you get the generator in there quick enough, you can do it before the tank fills in the lift station and it’s business as usual,” said Utility Equipment Supervisor Wayne Lister.

Electrical Supervisor Alfred A. Spencer explained that the old method of hardwiring the generator was more dangerous and took much more time. “Workers have to get inside the box, work with the wires to hook up the generator, then put it all back when you move the generators.”

ECUA uses a sophisticated communication system to monitor lift station activity to prevent sewer backups. Workers monitoring the system know immediately when there is a power failure at any one of the 320 lift stations in service. When storms approach bringing the possibility of a loss of power, workers are at the ready to put the generators into service.

“Ivan was a great teacher,” said Spencer. “The system was put to the test.”

ECUA staff learned where to strategically stage generators so as to bring them first to critical facilities and main hub lift stations. With experience, they figured the most efficient ways to move generators between lift stations. To promote better communication when responding to a power outage, the two areas that handle the mechanical side of the lift stations and the electrical side merged into the same unit and are housed in the same facility.

When Dennis hit and the lights went out, staff at ECUA’s emergency control center directed generators to the affected areas. The majority of lift stations had a receptacle in place and within a matter of a few minutes the generator was hooked up. “Our response time to Dennis (as compared to Ivan) was cut way down,” said Lister.

City and county officials interested in funding sources for projects to make their facilities safer, stronger and more storm resistant may obtain online information regarding the Hazard Mitigation Grant Program at <http://www.fema.gov/fima/hmgp>, or by calling FEMA Publications at 1-800-480-2520, Ext. 4. Examples of “Best Practices” and “Case Studies” are available from the FEMA Mitigation Division at <http://www.fema.gov/fima/bp.shtm>. Information about FEMA’s Flood Mitigation Assistance Program is available at <http://www.fema.gov/fima/mitgrant.shtm>.

Project Facts

State: *Florida*

County: *Escambia*

Hazard: *Hurricane*

Year: *2004 - 2005*

Funding: *HMGP*

Project Type: *Mitigation*

Cost: *\$100,043*

Losses Avoided: *\$5,000 per lift station for each 24-hour outage*