Critical Supply – E.C. Drury School

Background

An original “non-functional” system existed and ESAC utilized existing field wiring to minimize costing. The facility has numerous unit substations with essential and non-essential loads. The emergency generator impacts essential loading and add or subtracts non-essential loads with automatic management, monitoring frequency with capacity. The project has resulted in a reliable system with strategic power supply prioritization to ensure residents' and staff safety.

Approach and Methodology

The EPLU is in the main power house and is supplied from a switchgear DC battery bank. This monitors emergency generator frequency, voltage, and loading, and interfaces with 4.16kV breakers transfer scheme with distribution circuits. Upon a loss of normal power, the existing transfer scheme starts the emergency generator, and is frequency and voltage supervised prior to loading. To ensure minimal impact loading, each 4.16kV feeder is closed, which in turn permits load pickup to subside prior to next feeder energization and all non-essential loads tripped off. Pending current emergency power loading, non-essential circuits are added or subtracted as per designated priorities.

Key Challenges

We encountered challenges in field research and checks, including main 4.16kV switchgear to defining existing system for EPLU design. The available field wiring was defined, and design interface rework was performed. Upgrading occurred while the facility was occupied and in-service, requiring scheduling to be done in a way to minimize interruptions. Additionally, ESAC ensured EPLU system reliability for transfer to emergency power with no overload conditions including under frequency and overcurrent trips.

Ongoing Support

Hardware failures have resulted in further upgrades (i.e. replacing IOC relays and analog/transducer metering to digital protection relays). ESAC assists facility staff with operational understanding, offers ongoing technical support and system service.