Long beach microgrid projects

Long beach microgrid projects

Schneider Electric has won a $5.2 million contract to provide a microgrid for the ...

This project will create a microgrid at the Port's critical response facility, the JCCC. Key features include photovoltaic energy production, stationary battery energy storage, mobile battery energy storage, and a microgrid controller.

The microgrid design is complete and construction started March 08, 2022. Two of the energy storage battery banks have been assembled. A workforce development study has begun that will identify the workforce needs for supporting a microgrid. The outputs of the study will be used by a community college to develop microgrid training packages. Initial cyber-security development work has explored various system configurations to address operational user needs, real-time system communication requirements, and protective features.

The Port of Long Beach is implementing a zero-emissions future and the Port-wide electrical load is expected to quadruple. Without energy management, the difference between base load and peak load will widen and strain the utility grid. Increased reliance on electricity adds risk to marine terminal operations with electricity cost price uncertainty. In addition, a single point of failure, such as a grid outage, could result in millions of dollars per day of damage to the economy and leave the Port's Joint Command and Control Center (JCCC) emergency response facility reliant on diesel generated emergency electrical power.

This project will create a microgrid at the Port's critical response facility, the JCCC. Key features include photovoltaic energy production, stationary battery energy storage, mobile battery energy storage, and a microgrid controller. Both batteries will provide grid services, such as demand response and peak shaving, during regular operation of the utility grid. During widespread outages or emergencies, the microgrid will support the JCCC, which coordinates response to emergencies. The mobile battery will act to extend the microgrid as a zero-emission generator that can be deployed where needed, such as stormwater pump stations and refrigerated container yards.

The project has several innovations, including the ability to allow for direct DC transfer of energy from the PV system to the battery, significantly improving the efficiency of the stored energy, and testing charge and discharge strategies for the mobile battery to support load reduction during normal operations and providing support power to various distributed critical loads in an emergency.

The Port microgrid will reduce load during normal operations, which will lower the Port energy costs. Smart load management reduces peak power demand on the utility grid, lowering Port electricity bills.

The Port microgrid will add stationary energy storage and demand response capabilities, allowing the Port

JCCC to respond to utility signals and reduce demand during peak periods. Strategic load shaving in response to utility signals improves the reliability of utility grid services, particularly during times of peak demand.

The Port microgrid will provide important ride-through capabilities during a power outage, allowing the Port JCCC to maintain uninterrupted operations as the microgrid switches to islanded mode. Additionally, the solar PV system mitigates against fuel supply risk in an emergency, allowing for long-term all-renewable operations.

Electric Power Research Institute, Inc.

Advanced Power and Energy Program (APEP) - University of California, Irvine

Long Beach Community College District