

BRIGHTON 500/230-kV SUBSTATION EXPANSION PROJECT



Sargent & Lundy Services:

- ❑ Substation Physical Design
- ❑ Protection and Control Engineering
- ❑ Structural Engineering
- ❑ Material and Equipment Specifications

Pepco
Washington, DC

The expansion of Pepco's 500/230-kV Brighton substation provided additional capacity as authorized by Independent System Operator, PJM, to increase load flow capability as well as help strengthen reliability of the regional transmission system. The expansion of the Brighton Substation, located about 30 miles southwest of Baltimore, was Pepco's largest open-air substation project in 15 years.

of engineering challenges. This was particularly true for the protection, control and communication design. This was one of Pepco's first applications of the specific microprocessor-based relays and the available space in the existing panels would not accommodate the new relays in the preferred arrangement. Another challenge was conforming existing drawings with actual conditions at the site.

The project expanded the facility by doubling the transformation capacity with the additions of the following:

Engineering for this project was initiated in June 2007 and completed in October 2008. The first construction packages were issued by Sargent & Lundy in March of 2008. The complete expansion was placed in service in 2009.

- The second (of ultimately four) 500/230-kV 1,000-MVA transformer banks.
- Two 500-kV circuit breakers.
- Six 230-kV circuit breakers.
- Two 230-kV double breaker bays.
- The relays, controls, and communications for the new equipment.
- Two A-frame dead end structures and their overhead conductors.

Pepco is a subsidiary of PHI (Pepco Holdings, Inc.) and delivers electric service to Maryland and District of Columbia customers. Other PHI companies include Delmarva Power, Atlantic City Electric, and Conectiv Energy.

In addition, S&L's scope included replacement of all existing relays with new microprocessor-based relays.

Integrating the new equipment into an older substation presented a number



Brighton Substation Prior to Expansion

