

Sargent & Lundy Services:

- ❑ Substation Engineering & Design
- ❑ Overhead Transmission & Distribution Design
- ❑ Equipment Specifications and Material Procurement
- ❑ Construction Monitoring & Quality Assurance

The expansion of ComEd's existing 345/138kV Waukegan Substation provided additional capacity as authorized by Independent System Operator, PJM, to increase load flow capability as well as strengthen reliability of the regional transmission system. The expansion of Waukegan Substation, located about 30 miles North of Chicago, is one of ComEd's largest substation projects in the past couple of years.

Waukegan Substation was expanded by installing a new 345kV GIS and replacing the existing 138kV AIS substation with a new larger AIS Substation. This project included the installation of the following equipment:

- Two (of ultimately four) 345/138kV 300-MVA transformer banks
- Seven breakers (14 ultimate) 345kV GIS
- One 138kV Outdoor Steel Box Structure – (28) 138kV breakers, (4) 138-kV 115MVar Capacitor Banks, 14 line positions
- Four 345kV transmission line re-routes
- Fourteen 138kV transmission line re-routes
- Two new relays, controls, and communications buildings for the 345kv and 138kv yards
- Fourteen remote-site substation relay and fiber upgrades

In addition, S&L's scope included the demolition of the existing 138kV substation equipment and modifications to Waukegan Generating Station protection and controls.

The site had some challenging soil conditions with low levels of contamination and pockets that were highly contaminated. Due to the contaminated soils and high water table, a unique foundation solution was utilized, requiring driven displacement piles to support shallow foundations. This foundation

design greatly reduced the amount of excavation required, the need for de-watering of contaminated water and the disposal of contaminated soils.

In addition to engineering, Sargent & Lundy also provide the following planning and construction management services:

- Procurement Support of Major Equipment, Construction Contracts, Minor Materials
- Outage Planning and Sequencing
- Development of Overall Engineering/Construction Schedule
- On-site Construction Management Team providing Material Tracking, QA/QC, Site Logistics, Contractor and ComEd Coordination, Interface with Waukegan Station and Governmental Agencies
- Development of Operating Procedures



Engineering for this project was initiated in April 2012 and completed in March 2014. The first cutover occurred in March 2014 and the final line was placed into service in October 2014.