



An AVANGRID Company

# Congress Street Substation Flood Mitigation Project

## PROJECT OVERVIEW

The Congress Substation Floodwall is one of four ongoing flood mitigation projects designed to protect critical United Illuminating (UI) transmission assets against the risk of flooding and damage as a result of severe weather events. The other three projects are: New Pequonnock Substation Rebuild Project, Bridgeport, currently in construction; Singer Substation Flood Mitigation Project, Bridgeport; and Grand Ave/Mill River Substation Flood Mitigation Project, New Haven, which are both in the engineering phase.

## PROJECT FACTS

Municipalities:	Congress Street, Bridgeport, CT
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## TIMETABLE

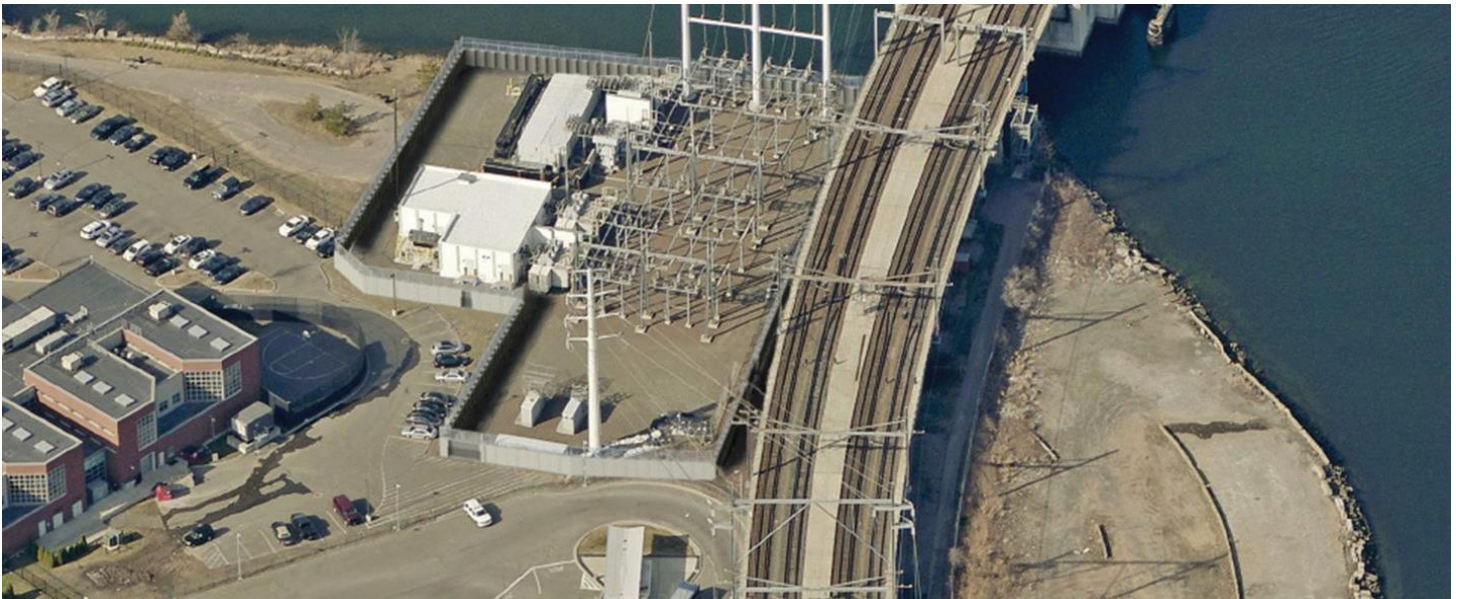
Start of Construction:	Q4 2022
Completion/In-Service Date:	Q3 2024

## PROJECT PURPOSE AND NEED

Severe floodings that have occurred over the recent years along with revisions to Federal Emergency Management Agency (FEMA) flood maps have necessitated UI to take action to evaluate the risk and potential impact of a single 100-year coastal flooding event on its coastal substations and develop mitigating solution alternatives.

The Congress Street Substation is one of the substations being “at-risk”. The Base Flood Elevation (BFE) at the Congress Street Substation is elevation 12.0 feet and this station is at risk as all critical equipment elevations are below the BFE (or FEMA 1% annual chance flood level).

Due to its location adjacent to the Pequonnock River and in proximity to Bridgeport Harbor/Long Island Sound, on several occasions Congress Street Substation has been affected by coastal storms. For example, during Tropical Storm Irene (August 2011), water rose rapidly to 1–2 feet above the yard elevation, flooding the 115kV motor operators and requiring the de-energization of the substation to avoid a catastrophic failure.



During Superstorm Sandy (October 2012), when flood waters encroached to within inches of the control room floor, again UI preemptively de-energized the substation due to the risk of equipment failure and long-term recovery issues. The purpose of the project is to build a flood protection system that will mitigate the risk of damage to the substation equipment from similar weather events in the future.

### PROJECT SCOPE

To mitigate the risk, UI is installing a perimeter flood wall system, which includes a driven steel sheet pile flood wall around the perimeter of the substation and sluice gates. The steel sheet piles are driven to a depth required for wall stability and to limit flood water seepage beneath the walls. The top of the steel sheet piles will be installed to the Design Flood Elevation (DFE) level and cantilever out of the ground also acting as the perimeter flood wall. This extended portion of the steel sheet pile above grade will retain the flood water from entering the substation. The exterior side of the sheet pile walls will be faced with cast-in-place concrete and capped with a continuous perimeter concrete beam along the top of the wall to support security fencing and lighting. In addition to the wall and gates, the design includes a storm water system to discharge runoff from the site by gravity under normal (no flooding) conditions.

A system of flap and sluice gates will be utilized to prevent back flow into the substation and to divert the runoff to the pump station during the flood events.

The substation is waterfront, which required the installation of a cofferdam and a trestle platform on the Pequonnock River to provide access to the heavy machinery and equipment. The flood project is ongoing while the substation remains fully operational and continues feeding customers.

### BENEFITS TO THE REGION

Congress Street Substation is a 115 kilovolt (kV) / 13.8kV air-insulated substation that taps two 115kV transmission lines between UI's New Pequonnock and Baird Substations, and supports a network of distribution circuits.

The project will improve the reliability and resiliency of the Connecticut electric grid by providing protection from outages due to coastal and riverine flooding or storm damage and ensure uninterrupted power supply to approximately 35,000 residential and industrial customers it serves across Fairfield County, including the City of Bridgeport's downtown distribution network.



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