NOVA SCOTIA POWER INC.

Facilities Study for IR#507
Establishing a 12.47 kV Distribution System Interconnection for a new 1.95 MW Tidal Powered Generating Facility at Digby Gut, Digby County, Nova Scotia

Prepared by: Arthur Burrill, P.Eng.
July 9, 2015
T&D System Planning and Optimization Dept.

Executive Summary

This study outlines the requirements to establish a 12.47 kV distribution system connection for a 1.95 MW tidal powered generating facility turbines (IR 507) to feeder 77V-303 supplied by Conway Substation to be located on four floating platforms at Digby Gut, Digby Country, NS.
NSPI is responsible for supplying and installing the 12.47 kV additions and the telecommunications system required. NSPI will also review the Protection and Control design at the Interconnection Customer's (IC's) Digby Gut Tidal Generating Facility as it pertains to the interconnection to the distribution system but not the IC's supply side.

Recloser R77V-303 at Conway Substation will protect the 12.47 kV line, 77V-303, between 77V- Conway Substation and the Tidal Power Project Substation. A new recloser will also be installed on the tap off Bayview Shore Road, the Point-of-Interconnection (POI), to the Tidal Site to protect the primary metering equipment and the line up to and not including the V-331 switch, the Point-of-Change-of-Ownership (PCO). It will also provide backup protection to the NSPI system from faults on the IC owned 12.5kV system.

Adding a new 12.47 kV line terminal requires NSPI to arrange for customer easements, tree trimming, constructing of the single phase to three distribution line upgrade using #2/0 AASC along the 6.4km of Lighthouse Road and Bayview Shore Road from Culloden Rd to the line tap to the Tidal Plant. On the line tap to the tidal site, NSPI will install 5 poles (2 NSPI owned and 3 IC owned) for the NSPI recloser/antenna, NSPI metering tank, IC gang switch, IC grounding transformers and IC fuses/cable dip. The acquisition and clearing of the right of way for the line extension past the POI up to the PCO and all work and construction of a suitable roadway along this line extension is the responsibility of the customer and not in the scope of NSPI portion of this project.

NSPI's communications will be installed to link the Tidal site to the existing Lansdowne Radio Site and network links will be used to provide the communications to the Energy Control Center (415 H- Ragged Lake) for SCADA.

The estimated cost of this project is $873,802. The estimated cost of the NSPI owned telecommunication system is $89,991. The combined cost estimate for the line upgrades, additions and telecommunications is $963,793. All prices exclude tax.

The expected In-Service date for IR 507 is May 31, 2017.