FORCE: Fundy Ocean Research Centre for Energy

The technology

A tidal generation research and development centre on the Bay of Fundy.

Four proponents will test underwater electricity-generating turbines known as TISECs (tidal in-stream energy conversion devices) in the Minas Passage area of the Bay of Fundy. The FORCE project provides the link between generation and the provincial distribution grid.

The project involves laying four subsea cables from the underwater test site to a terrestrial substation and monitoring centre on land near Parrsboro, Nova Scotia. The terrestrial site includes an observation facility and visitor exhibit.

IT International Telecom Inc., which has a marine terminal in Halifax Harbour, will manage the project, overseeing cable testing and transportation to the site through to final installation of the cables from the shore to their subsea berths.

The cables and accessories will be manufactured by Prysmian Cables & Systems at its submarine cable facility in Italy.

The objective of FORCE is to have 5 MW of renewable power being fed into the provincial grid by 2013 and 15 MW by 2016. The facility currently being installed will have a capacity of 64 MW.

Specifications:

• Each 34.5 kV subsea cable has the capacity for 16 MW and is designed to allow adding more tidal devices in the future

• Total capacity of all four cables: 64 MW (up to 64 devices, assuming 1 MW capacity each, providing enough power for more than 20,000 homes)

• Total length of cable: 11 km

• Designated undersea test area: 1.5 km^2

• Estimated potential extractable energy from Minas Passage: 300 MW

Environmental Benefits

If tidal technology proves to be safe and viable, it can contribute substantially to reducing GHG emissions through displacement of fossil-fuel-generated electricity, by at least 3 tonnes annually per megawatt.

Applications

Knowledge gained and equipment proved at the FORCE facility will be applicable wherever potential exists to generate electricity in similar high-current, high-volume, and physically challenging situations.

Advantages

International Telecom's contract will provide up to 100 local jobs locally. Paul Kravis, vice president of the company, says, "This is more than a local contract. This is a world-class project in a site that is as challenging as they come. Our team works all over the world installing high-tech cable – from Alaska to Argentina to New York – so it's great to put those skills and experience to work right here in our own backyard."

Participants

Participants include Nova Scotia Power (with OpenHydro), ALSTOM (with Clean Current), Minas Basin Pulp and Power (with Marine Current Turbines), and Atlantis Resources Corporation (with Lockheed Martin and Irving Shipbuilding). Funding partners include the Government of Canada Clean Energy Fund, the Government of Nova Scotia, Encana Corporation, and ACOA. Minas Basin Pulp and Power is the facility design and construction partner.