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Crossing land and sea

As the Maritime Link subsea cables come ashore in each province, they will transition from subsea cables installed on the seabed to underground cables that will be buried inland in both Point Aconi and Cape Ray. These underground cables are known as land cables, which will transition to overhead transmission lines.

The land cable was manufactured by Emera NL's contractor Nexans at its Norway facility and prepared for shipping on large reels. It measures 10 kms in total, contained in eight reels, with each reel measuring just over five metres in diameter.

The land cable passed the last phase of a rigorous inspection process and will be shipped from Nexans' Halden, Norway facility, destined to ports in both provinces. Emera NL Marine Team members were on-hand during manufacturing and quality assurance work at the facility, including Olasheni Akanbi, Project Engineer.

"We had full-time inspectors within the Nexans factory, with additional focus during key stages of the land cable manufacturing; Emera NL staff also attended final acceptance testing," says Olasheni.



Members of the Emera NL Marine Team and Nexans representatives stand in front of a land cable reel.



With two HDD boreholes complete at Cape Ray, NL, drilling operations have moved to Point Aconi, NS.

this issue

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- Community investment
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HDD work progressing

The Maritime Link Marine Team recently achieved the safe and successful completion of the two horizontal directional drilling (HDD) boreholes at Cape Ray, NL. The casing has been plugged to help preserve the integrity of the boreholes until the subsea cables are ready to be threaded through in 2017.

"This is a critical milestone for the Project that was completed without incident thanks to the collaborative approach by our drill team and our drilling contractors," says Gerry Brennan, Senior Project Manager with Emera NL.

HDD will help transition the high voltage direct current (HVdc) overhead line to the HVdc subsea cables by creating a protected path through rock (boreholes). The subsea cables are then inserted through the boreholes, which exit on the seafloor and span 170 km across the Cabot Strait. HDD was

chosen to ensure minimal impact to the environment, while preventing disturbance to shorelines and sensitive intertidal areas.

"This is the result of over two years of planning that started with concept selection, preliminary design, procurement, and detailed engineering and execution plans," says Mohamad Saad, Marine Team Lead with Emera NL. "We are very pleased with the result in Cape Ray and are now focusing on the Point Aconi execution."

Point Aconi, NS is the second subsea cable landfall site for the Maritime Link Project. Similar to Cape Ray, two HDD boreholes will be drilled for the cables to emerge from the sea and transition to overhead line. HDD is scheduled to be complete by the end of this summer.

Helping preserve Cape Ray's history

Emera NL recently committed \$10,000 to help the Local Service District of Cape Ray, NL make much-needed repairs to its Lighthouse Museum. Community representatives identified some key renovations such as roof repairs and painting that would help make a difference in preserving the building that houses much of Cape Ray's tangible and truly unique historical artifacts and memories. Other components like wooden decking around the building will undergo repairs as needed to ensure safe access for visitors.

Since construction on the Maritime Link Project began, Emera NL and its contractors have been active in the Cape Ray area. This includes initial planning and environmental assessment work, right-of-way clearing, site preparation, and the recently completed horizontal directional drilling work.

Emera NL strives to be a valued and contributing member of the communities in which we live, work and operate. We are pleased to help Cape Ray in its efforts to preserve and promote its history.



Heidi Kirby with Emera NL (middle) presents a \$10,000 cheque to Bob Anderson, a member of the Cape Ray Community Liaison Committee (left) and Anne Osmond, Chair of the Local Service District of Cape Ray (right).

Newfoundland construction update

Campfire safety

Nova Scotia and Newfoundland and Labrador are popular vacation destinations during the summer. With many campgrounds and hiking trails to explore, tourists and locals enjoy the natural environment that our provinces have to offer. This may include a summer tradition of gathering by an open campfire. If this is part of your vacation plan, take steps to put safety first. Whether you're planning to visit a campground, National or Provincial Park, or have a tent set up in your backyard, be sure to check with the proper authorities before striking the match.

Is burning allowed?

- Check the daily burn restrictions at novascotia.ca/burnsafe or call 855-564-BURN (2876).
- In NL, call The Forestry and Agrifoods Agency, Forest Services Branch, Legislation and Compliance at 709-637-2039.

ABB shares procurement and employment info online

ABB, one of the largest contractors for the Maritime Link Project, has created a microsite with helpful information for those seeking employment or business opportunities. Updated on a regular basis, it contains job postings as well as material and equipment supply opportunities, a list of pre-qualified subcontractors, details about the contracts awarded by the company so far, and more.

ABB and its subcontractors are eager to connect with qualified local people and businesses to complete their scope of work on the Maritime Link Project. Check out the site at:

<http://new.abb.com/ca/maritime-link>



Cape Ray

Contractor Direct Horizontal Drilling (DHD) recently completed HDD for two boreholes. This process created a protected path through the rock to prepare for insertion of the two HVdc subsea cables in 2017. Cable manufacturing of the first subsea cable is currently underway in Futtsu, Japan. The second subsea cable began manufacturing in Oslo, Norway in late May 2016.

ABB will begin work on the transition site in Cape Ray in late summer of 2016. This work will involve building a compound where the overhead lines transition to the underground land cable. Similar to work that has occurred at Bottom Brook, there will be grounding, fencing, structural construction, and concrete work.



Forty ground rod wells in place at Indian Head site.

Indian Head

Contractor H.J. O'Connell is working to complete the rock breakwater at the Indian Head grounding site. This work began in the fall of 2015, and is scheduled to be complete later this summer. Forty ground rod wells were recently installed in the breakwater, which concludes all in-water work at the Indian Head site. Emera NL is working to procure a contractor to complete the electrical and filter components of the grounding site.

Bottom Brook

Construction began on the converter station and switchyard at Bottom Brook by contractor ABB last fall. All foundations in the HVac switchyard have been installed, with those for the converter yards scheduled to begin installation later this summer. ABB's contractor, Pacer Corporation, began construction of the converter station in June 2016. This steel building is scheduled to be closed in by mid-fall, 2016. Once completed, the converter stations in each province will be similar in size to a two-storey warehouse: 15 m high at peak and about 3600 m².

A number of other contractors are onsite at Bottom Brook

this summer; Dexter Construction will be responsible for HVdc-related heavy civil work onsite, such as construction and installation of foundations for the HVdc switchyard. Also, JSM Electrical is installing steel for the structures in the HVac switchyard.

Granite Canal

ABB will move into Granite Canal in July to commence work on the switchyard, which will connect into Newfoundland and Labrador Hydro's power transmission system at the site. ABB's contractor, Marine Contractors Inc., is scheduled to complete the civil scope of work in this area by late fall.

Transmission line construction

Grounding line: Subcontractor PowerTel continues construction on the grounding line from Bottom Brook to Indian Head and is nearly complete, with the exception of a portion of line near the breakwater. This portion of the work will be completed after the contractor constructing the grounding site has completed its work.

HVdc line: Steel tower assembly has begun and anchors for guyed wires are being installed and tested. Foundations for the steel HVdc structures are being installed for guyed and self-supporting towers. Installation of towers and stringing activities is scheduled to commence later in the summer of 2016.

HVAc line: Over 220 wooden H-frame structures were installed in Segments 1 and 3 by early June. Segment 1 begins at Granite Canal, and Segment 3 is located further west: along the Burgeo Highway to Bottom Brook. The first section of the HVac line in Segment 3 was strung the first week of June. Stringing in Segment 1 commenced in late June 2016. HVac line installation will continue through this summer and into early 2017.

PowerTel is currently constructing a 73-person accommodations facility for workers near the Burgeo Highway. The dormitory portion of the facility is currently onsite for assembly. In late July, PowerTel is scheduled to install a bridge across Victoria River to access Segment 2 of the HVac line. scheduled to install a bridge across Victoria River to access Segment 2 of the HVac line.



Work continues along the HVac line near the Burgeo Highway in Newfoundland.

Nova Scotia construction update

Point Aconi

HDD work at Point Aconi is well underway, as Direct Horizontal Drilling continues work on the completion of two boreholes. These boreholes will allow the subsea cable to transition from sea to land. Once complete, the boreholes will be capped to maintain their integrity as they wait to receive the subsea cables. Contractor Nexans will deliver the cables on a special cable-laying vessel, scheduled to arrive in the spring of 2017. The cables will cross the Cabot Strait from Cape Ray, NL to Point Aconi, NS next summer.



HDD equipment was transported to Point Aconi in early June 2016.

Woodbine

ABB continues to oversee the work of its contractor Joneljim during construction at the HVac yard at Woodbine. Foundations and conduit installation continues in preparation for upgrades to the existing substation required to support the Maritime Link.

Pacer, a contractor of ABB, has mobilized to the site, preparing for construction of the converter building and HVdc yard work. The metal frame for the building will be installed in the coming weeks, with construction continuing into 2017. The three-story structure will house the converter station components.

Woodbine is now home to the Maritime Link's auto transformer, which recently shipped from contractor ABB's manufacturing facility in Spain and arrived at Sydney harbour. It is considered one of the most vital components of the Maritime Link transmission and joins its sister unit at Woodbine as the two largest transformers in Nova Scotia.

Big Lorraine

The contract for construction of the grounding site at Big Lorraine has been awarded to Zutphen Contractors. Work will continue throughout the summer, beginning with extension of the access road to the shoreline. Work will consist primarily of dredging near shore, infilling with permeable material, blasting subsea bedrock, and construction of a rock breakwater.

Transmission line construction

Grounding line: Installation of wooden poles continues near the Main-à-Dieu Highway. Construction of the grounding line is nearing completion, with 600 of 697 installed as of mid-June, and conductor stringing well advanced.

HVdc line: Work on the HVdc transmission line continues with the construction of steel towers between Woodbine and Point Aconi. Subcontractor Logan Drilling is installing and testing anchors for the guyed towers. This testing will verify the anchor's ability to withstand loads from the tower prior to installation. Once complete, the transmission line will include a total of 164 steel towers in Nova Scotia.

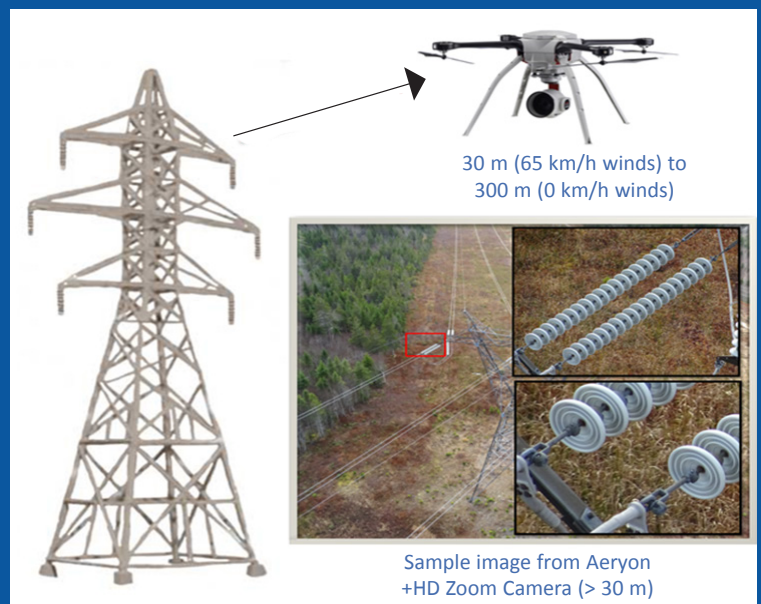
Emera NL looks at the big picture

Unoccupied Aerial Vehicle (UAV) – is the formal name of what is often called a 'drone'. Besides taking quality overhead photos and videos, UAVs are becoming a valuable resource during construction of bridges, buildings, and yes, powerlines.

Emera NL is using UAV technology to monitor site activity during construction of the Maritime Link. It is an investment that allows detailed progress monitoring at Project sites in Newfoundland and Nova Scotia. When construction is complete, the UAV will be a valuable resource in line maintenance, assisting with inspections in those hard-to-reach areas.

"The Maritime Link Project is now at a point where there is substantial construction activity over a large geographical area," says Peter Horne, Emera NL's GIS/UAV Supervisor. "Most of the tower line construction is taking place in remote locations. UAVs provide a tool for increasing the team's knowledge of these construction sites in a safe manner. The data from UAV helps to bring the field to the office."

The UAV will provide safe and cost-effective support for conducting tower inspections, for example, in some cases, the UAV may reduce the need to climb or use boom trucks to reach towers for inspections.



Emera NL recognizes contractors for commitment to workplace diversity

Emera NL recently recognized several of its contractors at events in Newfoundland and Labrador and Nova Scotia for their commitment to workplace diversity and inclusion during the construction of the Maritime Link Project. Contractors, including locally-owned companies in both provinces, were recognized as fostering a more diverse and inclusive work environment for traditionally underrepresented groups.

Through the Maritime Link Project's Diversity Plan, Emera NL identified the significant role contractors would play in promoting workplace diversity. Since 2011, Emera NL has worked closely with contractors to ensure a clear understanding of Emera NL's diversity and inclusion goals and to identify ways to work together to achieve success.

"Throughout 2015, these companies made significant efforts to ensure diversity and inclusion at all of our worksites," said Rick Janega, President and CEO, Emera NL. "These events provide us with an opportunity to recognize each contractor's contribution and say thank you for their continued efforts."

In 2015, eleven contractors working in Nova Scotia and on the island of Newfoundland were

particularly noted for their dedication to diversity on the Maritime Link Project and for the strides they have taken to help ensure inclusion in the workplace.

Contractors recognized include:

- ABB
- AllNorth Consultants
- C.J. MacLellan & Associates
- DORA Construction
- East Coast Catering
- H.J. O'Connell Construction Ltd.
- Joneljim Concrete Construction Ltd.
- Major's Logging Ltd.
- Marine Contractors Inc.
- PowerTel Utilities Contractors
- R. MacLean Forestry

Traditionally underrepresented groups in the construction industry include: women, Aboriginal Persons, persons with disabilities and visible minorities. Each contractor working on the Project is required to follow the terms outlined in both the Diversity Plan and Benefits Agreement, as well



Emera NL Team and contractors at a Diversity Celebration event in NL.



Contractors recognized at Emera NL's Diversity Celebration event in NS.

as submitting their own diversity plan for their work component. Emera NL continues to work closely with all its contractors to ensure equal opportunity for underrepresented groups on the Maritime Link Project.

Staying electrically grounded at Big Lorraine

Zutphen Contractors recently started work at Big Lorraine grounding site in Cape Breton. Connected to the Woodbine HVdc converter station via an overhead grounding line, Big Lorraine is one of two grounding site locations on the Project. Work at the second grounding site, located at Indian Head, NL is well underway and scheduled for completion later this summer.

Construction of the Nova Scotia grounding site will continue throughout the summer beginning with extension of the access road to the shoreline. Next steps will include dredging near shore, infilling with permeable material, blasting subsea bedrock, and constructing a rock breakwater. The breakwater will provide a coastal defense, reducing the impact of weather and longshore drift on the grounding site.

Once the breakwater is complete, grounding wells will be installed below the surface for effective electrical grounding to the sea water once the Maritime Link is operational.



Members of the Emera NL Team and Zutphen Contractors visit Big Lorraine site before construction.

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