



# TDI New England

A Blackstone Portfolio Company

TO: Town and Regional Planning Commissions and Town Selectboards Entitled to Notice Pursuant to Public Service Board Rule 5.402(C) (See Attachment A)

CC: Other Interested Entities (See Attachment A)

RE: Proposed New England Clean Power Link Project  
45-Day Notice of Section 248 Petition to be filed with VT Public Service Board

DATE: October 17, 2014

Dear Planning Commissioners and Selectboard Members,

Champlain VT, LLC, d/b/a TDI-New England (TDI-NE) is pleased to submit this pre-application 45 Day Notice concerning the proposed New England Clean Power Link project (NECPL or Project). NECPL is a proposed HVDC electric transmission line that will run from the Canadian border at Alburgh, Vermont to Ludlow, Vermont along underwater and underground routes. NECPL will transmit up to 1,000 megawatts (MW) of electricity that will be generated by renewable energy sources in Canada, and will be delivered to Vermont and the New England electric grid.<sup>1</sup> NECPL will provide a number of significant benefits -- lower electricity costs in the region, reduced air emissions, creation of Vermont jobs and new tax revenues in Vermont, and diversifying the fuel supply in New England -- all while respecting Vermont's natural beauty by installing the line underground and underwater.

This 45 day notice, as required under 30 V.S.A. § 248(f) and Vermont Public Service Board (PSB) Rule 5.402(A), is being sent to the municipal and regional planning commissions and municipal legislative bodies in the municipalities in which the NECPL will be located. In addition, courtesy copies are being sent to other interested entities, as listed in *Attachment A – List of 45 Day Notice Recipients*. Included with this letter are the following attachments:

- A -- List of 45 Day Notice Recipients
- B -- Project Location Map and Route Maps
- C -- Project Construction Typicals
- D -- Preliminary Aesthetics Assessment
- E -- Summary of Environmental Studies and Permits

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<sup>1</sup> The New England electric grid is operated by Independent System Operator-New England (ISO-New England).

## **I. Project Overview**

The NECPL will consist of the construction, operation, and maintenance of a high-voltage direct current (HVDC) electric power transmission system in Vermont that will have both aquatic (underwater) and overland (underground) segments. See *Attachment B -- Location Map and Route Maps*. The proposed underwater portions of the transmission line, approximately 98 miles in length, will be buried to a target depth of 3-4 feet in the bed of Lake Champlain except at water depths of greater than 150 feet where the cables will be placed on the bottom. The overland portions of the transmission line, approximately 56 miles in length, will be buried approximately four feet underground within existing public (State and town) rights-of-way (ROWs).<sup>2</sup> Very short sections of the route at the Lake Champlain entry and exit points, as well as at the converter site in Ludlow, will be located on private land that is owned or controlled by TDI-NE.

The transmission line will connect to the transmission system in the Province of Québec, Canada and transmit electric power to a proposed converter station in the Town of Ludlow, Vermont.<sup>3</sup> The Ludlow converter station will convert the electrical power from direct current (DC) to alternating current (AC) and then connect to the 345 kV Coolidge Substation in Cavendish, Vermont that is owned and operated by the Vermont Electric Power Company (VELCO).

The transmission line will be a HVDC design, comprised of two cables – one positively charged and the other negatively charged – and will be solid dielectric and thus contain no fluids or gases. Figures depicting typical cross sections for the aquatic and overland cables are provided in Attachment C. The nominal operating voltage of the line will be approximately 300 to 320 kV, and will be capable of delivering 1,000 megawatts (MW) of electricity.

## **II. Project Description and Construction Plans**

Routing maps for the Project are provided in Attachment B.

### Transmission line: Pre-Lake Route

From the U.S.-Canada border the transmission line will be installed underground within a town road in Alburgh for approximately 0.5 miles, and then underground through TDI-NE-owned land where it will enter Lake Champlain.

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<sup>2</sup> The only potential areas where underground burial may not occur is at two stream/river crossings in Ludlow where the cables may be placed in conduit and attached to a bridge or culvert headwall.

<sup>3</sup> Note that the interconnection to the Quebec transmission system and other development activities within Canada are not part of this Vermont application.

### Transmission line: Lake Route

The transmission line will enter Lake Champlain using a construction technique known as horizontal directional drill (HDD) to minimize impacts to the Lake and shoreline.<sup>4</sup> The line will be installed beneath the lake bed on the Vermont side of Lake Champlain for a distance of approximately 98 miles, to the Town of Benson. In locations where the water depth is greater than 150 feet, the transmission line will be placed on top of the lake bed.

The cable will be buried in the lake bottom using either a water-jet plow or a shear plow. The water-jetting process uses jets of pressurized lake water to “fluidize” the sediments to create a trench. The water-jet plow is fitted with hydraulic pressure nozzles that create a downward and backward flow within the trench, allowing the transmission cables to settle into the trench under its own weight before the sediments settle back into the trench.

In the southern portion of Lake Champlain, where sediment stiffness is low and the waterway is narrow, a shear plow installation will be used. For this installation technique, the plow is tethered to a surface support vessel, which tows the plow along the lakebed. A diagram depicting these processes is provided in Attachment C.

Burial depths within the lake bed may vary in response to site-specific factors such as the presence of existing infrastructure or bedrock. Where the transmission cables would cross existing utility infrastructure such as a pipeline or another cable, they will be laid over the existing utility and protective coverings such as articulated concrete mats will be installed over the cable crossing. Coordination with utility owners will occur and standard utility crossing procedures will be employed to prevent damage to pre-existing utilities. Where bedrock is near the surface and burial is not practicable, protective coverings such as concrete mats will be installed to protect the cables. A representative schematic of such protection measures is provided in Attachment C.

### Transmission line – Land route

From the Lake Champlain exit point in Benson, the transmission line will be buried in public road rights-of-way or private property controlled by TDI-NE for approximately 56 miles, as follows:

- TDI-NE land to Benson town roads east to VT Route 22A (4.4 miles)
- VT Route 22A south to US Route 4 in Fair Haven (~8.1 miles)
- US Route 4 east to US Route 7 in Rutland (~17.2 miles)
- US Route 7 south to VT Route 103 in North Clarendon (~2.6 miles)
- VT Route 103 south/southeast to VT Route 100 in Ludlow (~17.8 miles)

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<sup>4</sup> HDD is a directional boring, trenchless method of installing underground utilities in a shallow arc along a prescribed path by using a surface-launched drilling rig, with minimal impact on the surrounding area.

- VT Route 100 north to Ludlow town roads (~0.8 miles)
- Ludlow town roads to the proposed converter station (~4.8 miles)
- Converter station to VELCO Coolidge substation (~ 0.3 miles)

As with the transmission line segment in Alburgh, the cables will be located below ground along existing public road ROWs from Benson to the converter station in Ludlow.<sup>5</sup> Manhole covers placed at ground level may be required in locations where the cable is placed in a duct system or where access to cables splices is needed.

Typically the two cables will be laid side-by-side (approx. 12 to 36 inches apart) in a trench approximately 4 to 5 feet deep. Subsequent to laying the cables in the open trench, the trenches will be backfilled with native materials, if appropriate, or low thermal resistivity material, such as well-graded sand to fine gravel, stone dust, or crushed stone. A protective cover will be placed directly above the low thermal resistive backfill material and marker tape placed above the cover. A typical overland trench cross section is shown in Attachment C. In certain areas that present particular engineering or environmental challenges, HDD will be utilized in lieu of trenching.

The general sequence for installing the underground transmission cables along the road ROWs will be as follows: (i) survey work, initial clearing/mowing operations (if necessary) and installation of erosion prevention and sediment control (EPSC) measures; (ii) trench excavation; (iii) cable installation; (iv) backfilling; and (v) restoration and revegetation.

Standard excavation equipment will be used to dig the trench (e.g., excavators, backhoes, loaders, etc.). Typical cable segment lengths range from 0.1 to 0.5 miles and each will be attached together in a jointing pit. Any excavated soils will be temporarily stockpiled adjacent to the worksite or transported off site if onsite storage is not possible. Where soil is stockpiled on site, it will be temporarily stabilized with EPSC measures. The width of the temporary construction areas will be approximately 20 feet to 50 feet or more depending on existing constraints and the width of the right of way.

Once construction is complete along the overland route, an approximately 12-foot-wide area along the transmission line route will be kept clear of deep-rooted trees for the life of the Project.

#### Temporary storage areas and work areas

Temporary staging areas to support overland installation activities will be located in proximity to the roads in areas that require minimal alterations (i.e., flat fields). Additional workspace may also be required at HDD staging areas. If additional workspace outside the road ROW is required, previously disturbed areas or undeveloped areas will be utilized where feasible in

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<sup>5</sup> For a limited section of the route TDI-NE is evaluating the use of a railroad ROW in lieu of VT Route 103. See Attachment B – Route maps.

order to minimize impacts. Landowner consent will be obtained prior to any excursions on private property. All temporary storage areas or workspaces areas will be re-graded and re-vegetated as required upon completion of their use.

### Converter Station

The converter station in Ludlow will convert the DC electrical power to AC. It will be a voltage source converter with a “compact type” design.<sup>6</sup> The total post-construction site area (i.e., building and associated areas and equipment) will be approximately 4 to 5 acres. The total amount of land to be cleared for construction may be somewhat larger due to required grading. The station’s converter building will have a footprint of approximately 165 feet by 325 feet (1.2 acres) and a height of approximately 50 feet. The entire station will be surrounded by a fence.

The converter station will be designed to minimize visual impacts to the local environment and surroundings. The indoor design of the converter station will limit the need for exterior switchyards and will reduce audible sound. It is anticipated that transformers, cooling equipment, and power line carrier filters will be the major equipment installed outside of the building. The converter station will be powered by electricity taken directly from the proposed NECPL Project transmission line. A representation of a typical converter station is provided in Attachment C.

From the converter station, a 345 kV (AC) transmission line will be installed underground within a duct bank for approximately 0.3 miles to connect the converter station with the VELCO Coolidge Substation along the Cavendish/Ludlow border.

## **III. Transport of Equipment and Materials**

### Lake Route

For the in-water portion of the Project, transport of the transmission cables will occur via a supply barge or the vessel used to lay the cables. Other equipment, materials, and supplies will be transported to the work site by resupply barges. The land-based support facility for supplying transmission cable will likely be located at an existing port with heavy lift facilities, such as the Port of Albany, New York. From the Port of Albany, vessels will transit the New York State canal system to access Lake Champlain. A small (approximately 60,000 square feet) temporary storage area on land might also be required to support installation of the cables in Lake Champlain. If this storage area is needed, it is anticipated that an existing commercial marine facility within Vermont or New York with docking and storage space can be utilized.

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<sup>6</sup> For further information on voltage source converter technology, see [http://www05.abb.com/global/scot/scot221.nsf/veritydisplay/65a1b7673f405632c1256fda003b4d44/\\$file/vsc%20transmission%20technologies.pdf](http://www05.abb.com/global/scot/scot221.nsf/veritydisplay/65a1b7673f405632c1256fda003b4d44/$file/vsc%20transmission%20technologies.pdf).

The vessels and barges installing the cables will result in a short term increase in vessel traffic on Lake Champlain. Approximately ½ to 3 miles of transmission cables will be installed per day in the Lake. Water-dependent activities -- boating, angling, water sports or commercial sightseeing -- will be able to continue on the lake during installation activities, by transiting around the localized work site or using a different area of Lake Champlain. All transmission cable installation activities will be scheduled to avoid or minimize impacts, and will be closely coordinated with commercial ferry operators, the U.S. Army Corps of Engineers, the U.S. Coast Guard, harbor masters, local lake organizations, marinas, and other local, state, and Federal agencies as necessary. An Aquatic Safety and Communications Plan will be provided to the Coast Guard.

#### Land Route and Converter Station

While some of the roads along the route are primarily used for thru-traffic, other roads have residences adjoining the ROW. Installation of the transmission line and the presence of construction work areas and equipment will result in temporary disturbances to surrounding land uses during the construction period, including lane closures and other traffic management measures. At any given location, the active construction zone will last for approximately four days.

The construction schedule will be developed to minimize inconvenience to the travelling public and surrounding residences to the extent practicable. TDI-NE will provide timely information to affected residents regarding construction activities and coordinate with the Vermont Agency of Transportation (VTrans) and local officials. Impacts will be minimized by installing construction signs and use of barriers in accordance with applicable State of Vermont highway regulations and design standards. Restoration of the roadway ROW, driveways, and landscaped areas will be designed in consultation with VTrans, municipal officials, and adjacent landowners.

Construction at the converter station is anticipated to be on-going for approximately 18 months. Construction worker vehicles and material deliveries will access the site through local roads. The number of construction-related vehicles in the immediate area at any one location is anticipated to be greater than currently experienced, but deliveries will be coordinated with municipal officials to minimize impacts on traffic flow and the surrounding community.

TDI-NE anticipates that all construction equipment and materials, and all converter station equipment, can be transported to the project locations on local and state roads without requiring special road modifications. Oversized and/or over-dimension loads are anticipated for certain loads such as transformers, building materials, and some cable reels.

#### **IV. Benefits of the Project**

NECPL, in transmitting hydropower or other renewable energy from Canada, will provide a number of discrete benefits to Vermont and New England:

### Economic

- Reduces electricity costs in Vermont and the New England region by importing cost-competitive hydropower
- Creates hundreds of jobs during the construction period (2+ years)
- Creates hundreds of jobs during the operation period (40 years) due to operating requirements and jobs created due to lower energy prices
- Generates millions of dollars per year in property tax, sales tax, and income tax revenue to Vermont and host towns for the life of the project (estimated 40 years)
- Generates lease payments to the State of Vermont for use of the rights-of-way
- Creates a Vermont benefit fund to assist with projects that are important to Vermonters
- NECPL will be privately-financed

### Environmental

- Supports the goals of the New England states to import low-cost, renewable energy
- Reduces greenhouse gas emissions by replacing electricity generated by fossil fuels
- Establishes a Public Benefits Plan and Fund that will support Lake Champlain cleanup efforts, in-state renewable energy programs, and other statewide initiatives
- Does not require overhead transmission lines

### Electric System

- Enhances the region's fuel diversity by bringing hydroelectric power to New England
- Strengthens and diversifies the Vermont electric grid; fills the transmission space that will become available due to the impending retirement of Vermont Yankee and other New England plants
- Buried infrastructure will protect the line from natural disasters

- Utilizes smart grid technology and will have "Black Start" capability that can quickly restart the electric grid in case of a blackout

#### V. Preliminary Assessment of Aesthetic Impacts

TDI-NE has retained Michael Buscher of T. J. Boyle Associates to assess the potential visual impacts of the Project based upon Section 248(b)(5) and Public Service Board precedent applying the so-called *Quebec Test*. See *Attachment D*. In short, the assessment found:

- The underground and underwater cables will not be visible after installation.
- There will be minimal above-ground infrastructure associated with the transmission cables, limited to at-grade manhole covers, and the attachment of the cables to a bridge or culvert headwall at two river/stream crossings.
- Cleared areas associated with construction, while altered from their present condition, will be re-seeded and re-vegetated after construction. There will be a permanent cleared area over the cables of approximately 12 feet. Temporary construction activities and ROW clearing are not expected to cause undue adverse aesthetic impacts.
- The converter station will be minimally visible from off-site locations due to intervening vegetation, topography, and a setback over 300 feet from the closest public road. Given the selection of a well-screened site and use of supplemental landscaping if needed, there will not be undue adverse visual impacts under the *Quebec Test*.

TDI-NE's Section 248 Petition will include a formal assessment from its expert consultants regarding the Project's aesthetic impact and any proposed mitigation measures.

#### VI. Preliminary Assessment of Other Project Impacts

TDI-NE has assembled an experienced team of environmental, engineering, and energy consultants to assist in the design of the Project. The team has worked closely with the Vermont Agency of Natural Resources and the VTtrans to determine what background information is necessary in order to design the project so as to avoid and/or minimize impacts to sensitive environmental resources. Based on their assessment of the existing conditions as well as the proposed construction and operation technologies, the Project has been designed so that it will not cause undue adverse impacts to environmental resources or public health and safety. Preliminary assessments of site conditions relative to Project plans indicate that:

- Within the Project footprint, no outstanding resource waters, or critical wildlife habitat are known to exist or have been discovered during project-related studies.



- The final layout will be designed to avoid and/or minimize impacts to wetlands and streams to the extent practical. TDI-NE will obtain state and federal permits for the placement of the trenching of electrical lines into regulated wetlands or their buffers.
- Construction of the Project is not anticipated to adversely affect any federal or state listed threatened or endangered species, rare species, or significant natural communities.
- Limited conversion of forested habitat and forested wetlands is anticipated due to the need to prevent deep-rooted plants from growing over the transmission cables.
- The Project will have only temporary, non-significant impacts on surrounding land uses and on water-based uses of Lake Champlain during construction.
- The Project will comply with water quality standards within Lake Champlain during construction and operation. Increases in turbidity due to disturbance of the lake bed during cable installation will be localized and short-term.
- A construction phase stormwater discharge permit will be required for the overland portion of project; an operational phase stormwater discharge permit will be required only for the converter site in Ludlow.
- The Project is expected to reduce greenhouse gas emissions by displacing other energy sources in the region that rely on fossil fuels.
- The NECPL is not expected to have an adverse effect on historic architectural resources. While archaeological investigations are ongoing, construction will be designed to avoid, minimize, and/or mitigate impacts to any significant sites that are identified.
- The Project will require no new municipal services and will not pose undue burdens on municipal fire, police, or water/sewer services as the converter station equipment is similar to that at the existing Coolidge Substation. The Project will not impact the ability of municipalities to provide municipal or educational services.

## **VII. Assessment of Alternatives**

TDI-NE evaluated various alternatives in relation to the NECPL's overall purpose, with respect to environmental impacts, engineering constraints, costs, and other considerations. Several distinct components were evaluated:

Interconnection to an Existing VELCO substation. As part of its initial system screening studies, TDI-NE considered three existing substations as their point of interconnect into the New England

grid. The study concluded that the New Haven 345-kV Substation and West Rutland 345 kV Substation were not practical due to insufficient capacity on the existing transmission lines. In contrast, the 345 kV Coolidge Substation is expected to have adequate capacity to accept the NECPL's input.

Transmission Line Route. TDI-NE considered a number of factors in developing potential routing alternatives:

- Located entirely within the State of Vermont or New England;
- Built and operated safely;
- Minimize environmental impacts along the route;
- Minimize impact on the communities along the route (e.g., incompatible land uses; extent and duration of impacts on residents and businesses);
- Minimize challenges to construction that could jeopardize the project (e.g., unreasonably difficult construction; extraordinary technical effort to overcome site conditions); and
- Not be unreasonably expensive.

TDI-NE identified a number of routing alternatives which would connect the power source in Canada with the proposed converter station site and ultimately VELCO's Coolidge Substation. TDI-NE's preferred route represents the combination of alternatives that were determined to represent the lowest natural resource impacts when the Project's proposed design and installation methods are considered as well as known risks associated with the utilization of existing corridors.

Converter Station Site. TDI-NE evaluated sites for the potential converter station based on the following criteria:

- Sufficient land available for the facility and associated buffers (approximately 10 acres);
- Close proximity to the existing substation to minimize environmental impacts, disruption to surrounding land uses, and costs associated with connection to the converter station;
- Consistency with, and potential impacts on, land uses in proximity to the facility;
- Potential environmental impacts associated with construction of the converter station.

The proposed converter station location offered numerous advantages including proximity to the Coolidge Substation, sufficient acreage to accommodate aesthetic design considerations, visual screening by existing vegetation, distance from residential structures, and the presence of only one small wetland on the site in a location that would not affect the siting of the converter station.

## VIII. Public Outreach Activities

Since announcing the Project in late October, 2013, TDI-NE has made a concerted effort to initiate outreach with interested and potentially impacted stakeholders -- local landowners, town leaders, local businesses, state elected officials, state and federal agencies, Vermont utilities, nonprofit organizations, trade associations, regional commissions, and Vermont citizens. TDI-NE has engaged with hundreds of people in Vermont and New England at more than one hundred meetings or briefings over the past year. All selectboards along the overland segment have been briefed on the Project, six open house informational meetings were held along the overland segment, a Lake Symposium which provided details on the lake segment was held in Burlington, and numerous individual meetings have been held with interested people along the proposed route.

## IX. Section 248 Schedule

TDI-NE intends to file a Section 248 Petition and supporting materials with the PSB soon after the 45-day notice period expires, on or after December 5, 2014. Once the Section 248 Petition is filed, TDI-NE expects to request the Board to schedule any hearings and other necessary steps in the proceedings in time to render a decision within one year. This schedule will allow the Project to be constructed and operational by 2019.

## X. Rights of The Planning Commissions to Comment on Project Plans

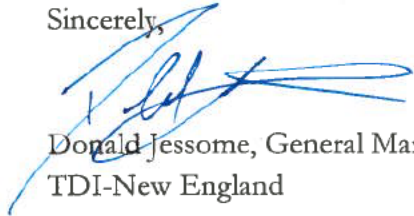
Under state statute — Section 248(f) of Title 30 — the town and regional planning commissions “*shall make recommendations, if any, to the Public Service Board and to the petitioner at least 7 days prior to filing of the petition with the Public Service Board.*” In addition, the planning commissions are entitled to provide revised recommendations “within 45 days of the date on which petitioner has filed a petition with the Board if the petition contains new or more detailed information that was not previously included in the petitioner’s filing with the municipal and regional planning commissions pursuant to Section 248(f).” See Board Rule 5.402(A)(2).

For additional information regarding this process, including your planning commission’s right to participate in the Board proceeding, please refer to the *Citizens’ Guide to the Vermont Public Service Board’s Section 248 Process*, which can be found by navigating to <http://psb.vermont.gov/statutesrulesandguidelines/guidelines> and clicking on the Guide’s link under the heading, *Participation in a Section 248 Proceeding.*”

Thank you for your attention to this matter. We look forward to progressing through the Section 248 process and welcome you input and suggestions to make this a successful project. If you have any questions, wish to discuss the Project, or would like TDI-NE to make a presentation to your commission, please do not hesitate to contact Josh Bagnato at [Josh.Bagnato@chvtllc.com](mailto:Josh.Bagnato@chvtllc.com) or

(802) 885-3890. In addition, we have posted this 45 day notice letter and all attachments on the NECPL website at <http://necplink.com/regulatory-documents.php>.

Sincerely,



Donald Jessome, General Manager  
TDI-New England

Enclosures:

- Attachment A – List of 45 Day Notice Recipients
- Attachment B – Project Location Map and Route Maps
- Attachment C – Construction Typicals
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- Attachment E – Summary of Environmental Studies and Permits