

**STATE OF VERMONT  
PUBLIC SERVICE BOARD**

Petition of Champlain VT, LLC d/b/a TDI New England )  
for a Certificate of Public Good, pursuant to 30 V.S.A. §248, )  
authorizing the installation and operation of a high voltage )  
direct current (HVDC) underwater and underground electric )  
transmission line with a capacity of 1,000 MW, a converter )  
station, and other associated facilities, to be located in Lake )  
Champlain and in the Counties of Grand Isle, Chittenden, )  
Addison, Rutland, and Windsor, Vermont, and to be known )  
as the New England Clean Power Link Project (“NECPL”) )

Docket No. 8400

**SUPPLEMENTAL PREFILED DIRECT TESTIMONY OF  
SEAN MURPHY**

**ON BEHALF OF CHAMPLAIN VT, LLC**

August 26, 2015

Summary:

Mr. Murphy’s supplemental testimony provides an update on several issues covered in his original testimony, including routing, construction windows, management plans, public water supplies, and waste disposal.

| <b>Exhibit Number</b> | <b>Superseded Exhibit<br/>(if applicable)</b> | <b>Name of Exhibit</b>        |
|-----------------------|---|-------------------------------|
| TDI-SM-2(Rev.)        | SM-2  | Aquatic Invasive Species Plan |
| TDI-SM-6              | N/A   | Water Quality Monitoring Plan |
| TDI-SM-7              | N/A   | Thermal Monitoring Plan       |

1 **Q. Please state your name, occupation and business address.**

2 Response: My name is Sean Murphy and I am the Office Practice Leader for Planning,  
3 Permitting and Licensing for the Augusta, Maine office of TRC Environmental Corporation  
4 (“TRC”) located at 14 Gabriel Drive, Augusta, Maine.

5  
6 **Q. Have you previously filed testimony in this proceeding?**

7 Response: Yes, I submitted prefiled direct testimony on behalf of Champlain VT, LLC  
8 d/b/a TDI New England (“TDI-NE”) concerning the New England Clean Power Link  
9 (“NECPL”) Project on December 8, 2014.

10

11 **Q. What is the purpose of your supplemental testimony?**

12 Response: The purpose of my testimony is to provide an update on several issues discussed  
13 in my earlier testimony, including routing, construction windows, management plans, public  
14 water supplies, and waste disposal.

15

16 **Q. TDI-NE has entered into a number of agreements with parties to this Docket. Have**  
17 **you reviewed these agreements with respect to any issues that were within the scope of your**  
18 **original prefiled testimony?**

19 Response: Yes, I have reviewed the Stipulation between TDI-NE and the Vermont Public  
20 Service Department (“DPS”), the Vermont Agency of Natural Resources (“ANR”), and the  
21 Vermont Division for Historic Preservation (“DHP”), with a primary focus on Attachment  
22 II: Environmental Conditions (*see Exhibit TDI-JMB-19a*) (hereafter “ANR Stipulation  
23 Attach. II”) as this document sets out a number of modifications and/or refinements to the

1 in-lake portion of the project. I have also reviewed the license with the Vermont Fish and  
2 Wildlife Department (“VT FWD”) for the use of the Korean War Veterans Access Area,  
3 which goes towards the installation of the route, and the Stipulation with Vermont Electric  
4 Power Company (“VELCO”), which relates to installation of the cables in the vicinity of the  
5 so-called PV20 project. These are provided as exhibits to the supplemental testimony of  
6 Jessome/Martin/Bagnato (*see Exh. TDI-JMB-26 and JMB-21, respectively*).

7  
8 **Q. As a result of these agreements, do you need to update your prior testimony? If so,  
9 please explain.**

10 Response: Yes. These agreements, individually and collectively, represent further actions by  
11 TDI-NE to avoid, minimize, and/or mitigate potential impacts associated with the portions  
12 of the NECPL that are installed in Lake Champlain, which was the subject of my previous  
13 testimony. Of particular interest are those portions of the agreements that address Project  
14 routing, construction windows, management plans, public water supplies, and waste disposal.

15  
16 **Q. Since your initial testimony and exhibits were submitted, have there been other  
17 changes to the NECPL’s underwater route or the expected installation methods for the  
18 Project within Lake Champlain? If so, please explain.**

19 Response: Yes, as further described below:

20 Fish and Wildlife Access Area in Alburgh

21 At the time of my initial testimony, the transition for the cable route from TDI-NE’s  
22 property in the Town of Alburgh into Lake Champlain was proposed as a single horizontal  
23 directional drill (“HDD”), followed by a diver lay installation for approximately one mile

1           (*see Exh. TDI-JMB-4*). As TDI-NE has obtained the license with the VT FWD, the  
2           proposed project entrance route now involves an approximate 0.6-mile HDD from the VT  
3           FWD Korean War Veterans Access Area (“Access Area”) off of US Route 2 in Alburgh in a  
4           northeastern direction to the property owned by TDI-NE, with a setback of at least 200 feet  
5           from the shoreline of the lake (*see Exh. TDI-JMB-4 (Rev.), sheet L1*). A manhole and  
6           fiber optic hand hole will be constructed on the Access Area for cable splicing and future  
7           access. A second HDD will extend from the manhole area approximately 0.2 miles under  
8           the Lake in a southwesterly direction to an exit point in the Lake that is, to the extent  
9           practical, outside of normal navigational routes to limit construction-related inconveniences  
10          to mariners. The cables will then be installed in a north-to-south direction using either a  
11          divers-lay installation in very shallow water (e.g. less than 20 feet) or shear plow. The use of  
12          two HDDs will result in a reduction of the distance in which the diver-lay installation  
13          method will be needed in this portion of the lake.

#### 14          Fish Hatchery Water Intake

15                 The Project routing has also been modified in the vicinity of the “deep water intake”  
16          of the Grand Isle Consolidated Water District (“District”), which is discussed in my initial  
17          testimony. While the District could operate exclusively using their shallow intake during  
18          construction, the deep intake supplies water to the ANR’s Ed Weed Fish Culture Station  
19          (“Fish Hatchery”) almost continuously during the year. Based on concerns regarding the  
20          potential for turbidity during construction of the Project to impact the operation of the Fish  
21          Hatchery, TDI-NE has agreed (ANR Stipulation Attach. II, paragraph 10) to adjust the  
22          route of the cables between MP 24.3 and MP 25 so that the cables will be located a  
23          minimum of 300 feet to the west of the deep water intake (as shown in *Exh. TDI-JMB-*

1        *4(Rev.) sheet L5*). Furthermore, the cables will not be placed over the deep water intake,  
2        nor placed over the pipe between the deep water intake and the shoreline to the east.

3        Rocky Reefs and Shoals

4                In my initial testimony's discussion of the route siting process, I noted that the cables  
5        had been re-routed in the Main Lake to avoid rocky reefs and shoals identified by VT FWD  
6        biologists where the water depth ranged from 10 to 40 feet. As provided under the ANR  
7        Stipulation Attach. II (paragraph 8), TDI-NE has committed that, where concrete mats are  
8        utilized to cover cable that is placed on the floor of Lake Champlain, TDI-NE will avoid  
9        spawning reefs and shoals unless the ANR either determines that rerouting around these  
10       features would result in greater impacts to other environmental resources or agrees that it is  
11       infeasible due to water depths, geological conditions, or proximity to the New  
12       York/Vermont border, the Vermont shoreline, or archaeological resources. The ANR  
13       Stipulation Attach. II (paragraph 8) also identifies the specific spawning reefs and shoals that  
14       ANR requested and that TDI-NE has agreed to avoid entirely: Motte Reef, Middle Reef,  
15       Sister Shoal (NOAA Chart 14781); Hogback Reef and Colchester Reef and Shoals (NOAA  
16       Chart 14782); and Saxton Reef, Quaker Smith Reef, Sloop I, Scotch Bonnet, and Rock I  
17       (NOAA Chart 14783).

18       VELCO PV-20 Line

19                In the TDI-NE-VELCO Stipulation (*Exhibit TDI-JMB-21*), TDI-NE has agreed  
20       to certain conditions related to the PV20 Project, which consists of seven existing electric  
21       transmission cables that cross Lake Champlain to link the electric grids of the States of  
22       Vermont and New York. VELCO is currently planning for the removal and replacement of  
23       PV-20. These considerations include consultation and coordination regarding the crossing

1 of the NECPL and the PV20 project, constructing the NECPL in a manner that allows the  
2 safe and efficient removal and replacement of the existing PV20, and assurances that TDI-  
3 NE will construct, maintain, repair, and operate its project in accordance with Good Utility  
4 Practice.

5 Draft Final Design Plans

6 The routing in the lake is at approximately the 20% design level and will likely be  
7 subject to adjustments following more detailed engineering work necessary for the final  
8 construction-level plans. After a CPG is issued by the PSB, TDI-NE has committed to  
9 provide the ANR with draft final design plans and to identify and assess any new potential  
10 impacts to natural resources that are associated with any routing changes (ANR Stipulation  
11 Attach. II, paragraph 22). TDI-NE and ANR will then consult on these proposed route  
12 changes prior to the submission of the final design plans to the Vermont Public Service  
13 Board, evaluating the identified potential impacts against routing constraints (e.g. proximity  
14 to the VT shoreline, the NY border, shallow water, geological conditions, and archaeological  
15 resources).

16  
17 **Q. Have there been any changes to the measures identified in your prior testimony that**  
18 **will be used to limit the Project's potential impact on the natural environmental during**  
19 **installation in the Lake? If so, please explain.**

20 Response: Yes. As a result of the Stipulation with ANR and explained in more detail below,  
21 TDI-NE has modified its seasonal construction windows for both route clearing and cable  
22 installation. In addition, TDI-NE has agreed to certain conditions related to its Lake  
23 Champlain Construction Phase Water Quality Monitoring Program, Overall Oil and

1 Hazardous Materials Spill Prevention and Contingency Plan, and Aquatic Invasive Species  
2 Management and Control Plan.

3 Construction Schedule in Lake Champlain

4 In my pre-filed testimony, I stated that the proposed construction windows for route  
5 clearing and cable installation were May 1 through September 15 in the northern portion of  
6 the lake (MP 0.5 to 74) and September 15 through December 31 in the southern section  
7 (MP 74 to 98), with the proviso that TDI-NE was open to reasonable modifications to these  
8 timeframes. Based on consultation with the ANR, TDI-NE has now agreed to conduct  
9 route clearing and installation activities in Lake Champlain between MP 1 and MP 74 from  
10 June 1 to October 1 and between MP 74 and MP 98 from June 1 to December 31 (ANR  
11 Stipulation Attach. II, paragraph 9). This installation schedule does not apply to the land-to-  
12 lake HDD activities, provided that: a) the HDD activities are conducted in a manner that  
13 prevents the introduction of sediments into, or creation of turbidity within, the Lake beyond  
14 the immediate vicinity of the in-water HDD entry point, and b) the in-water HDD activities  
15 do not occur before May 1 or after October 1 in the northern portion of the Lake.

16 Lake Champlain Construction Phase Water Quality Monitoring Program

17 In my pre-filed testimony, it was stated that water quality monitoring would occur  
18 during cable installation activities. TDI-NE has since agreed to prepare, in consultation with  
19 ANR, a document entitled “Lake Champlain Construction Phase Water Quality Monitoring  
20 Program” (“Program”), which will describe the water quality monitoring that will occur  
21 during both route clearing and cable installation (ANR Stipulation Attach. II, paragraph 32).  
22 The Program will include, at a minimum: a) identification of approved sampling and  
23 analytical equipment and methodologies for each method of cable installation in different

1 locations of the lake (recognizing that different installation methods may have different  
2 potential impacts); b) timing and frequency of sampling including real time monitoring for  
3 suitably measured water quality constituents; c) target chemicals and substances for  
4 sampling; sample documentation and reporting requirements; d) water quality action  
5 thresholds (based on maintaining water quality and applicable Vermont Water Quality  
6 Standard criteria); and e) corrective action requirements. The corrective action requirements  
7 may contain a suite of actions including, but not limited to: slowing the pace of route  
8 clearing or cable installation, modifying equipment or techniques utilized and/or pausing  
9 work. The Program will be submitted for ANR's review and approval and the final version  
10 will be incorporated as a condition into TDI-NE's Vermont Lake Encroachment Permit and  
11 401 Water Quality Certification. A draft of this Program has been prepared for ANR review  
12 and is provided as a new exhibit as *Exhibit TDI-SM-6*. TDI-NE will also submit a "Lake  
13 Champlain Construction Phase Quality Assurance Project Plan" at least 160 days prior to in-  
14 lake construction that is consistent with the Program.

15 Overall Oil and Hazardous Materials Spill Prevention and Contingency Plan

16 The installation of the aquatic portion of the transmission line will require the  
17 transport, handling, use, and onsite storage of hazardous materials and petroleum products,  
18 primarily associated with the operation of the vessels. As part of its Lake Encroachment  
19 Permit application to the ANR, TDI-NE submitted an "Overall Oil and Hazardous  
20 Materials Spill Prevention and Contingency Plan" (*see Exhibit TDI-JAN-14f, Appendix*  
21 *3d*). TDI-NE has agreed to revise, as needed, this previously-submitted document to  
22 address construction activities in the lake prior to construction (ANR Stipulation Attach. II,  
23 paragraph 33.g.).

1       Aquatic Invasive Species Management and Control Plan

2               My initial pre-filed testimony included Aquatic Invasive Species Management and  
3       Control Plan, which described the specific protocols to be taken during the construction,  
4       operation and maintenance of the Project to manage aquatic invasive species (“AIS”) (*see*  
5       *Exh. TDI-SM-2*). Based on comments received from the ANR, TDI-NE has agreed to  
6       update this document to address how vessels that have been delayed one month or longer  
7       will be inspected and, as appropriate, cleaned, and how bilge water will be released from  
8       such vessels so as to avoid the transport of AIS (ANR Stipulation Attach. II, paragraph  
9       33.c.). A revised version of the plan has been provided to the ANR (*see Exhibit TDI-SM-*  
10       *2(Rev.)*). TDI-NE anticipates that Aquatic Invasive Species Management and Control Plan  
11       will be finalized as part of the ANR’s review of their Lake Encroachment Permit application.  
12       Additionally, TDI-NE has agreed to provide the ANR for its review and approval a listing of  
13       the specific chemicals (including MSDS sheets and product information) and amounts of  
14       those chemicals that will be used to clean the outside of its vessels to prevent the spread of  
15       aquatic invasive species at least 90 days prior to any vessel commencing transit to Lake  
16       Champlain (ANR Stipulation Attach. II, paragraph 33.c.).

17       Lakeshore Bank Stabilization Project

18               As discussed in my previous testimony, the use of HDDs for the water-to-land  
19       transitions of the transmission line avoids impacts to shorelines and nearshore habitats.  
20       Notwithstanding the complete avoidance of such impacts, TDI-NE has agreed, as part of a  
21       suite of public benefits that it will provide for this Project, to develop a detailed assessment  
22       of the current condition of the bank on the parcel of land in Benson where the cables will  
23       exit the Lake and to consult with the ANR to develop a restoration and long-term

1 maintenance plan for this area that will reestablish bank stability and shoreline habitat (ANR  
2 Stipulation Attach. II, paragraph 23). This plan will be presented to the ANR at least 90  
3 days prior to commencement of construction.  
4

5 **Q. With respect to operations of the Project, has any additional work been planned to**  
6 **evaluate the Project's potential impacts on the aquatic natural environment since your initial**  
7 **testimony? If so, please explain.**

8 Response: Yes. As described in the initial pre-filed direct testimony of Dr. William Bailey of  
9 Exponent, modeling was completed to quantify the likely thermal impacts associated with  
10 the operation of the transmission system. His testimony indicated that, based on the  
11 calculated thermal values, ambient conditions, and an assessment of likely biological  
12 responses, the operation of the transmission line would not be expected to have an undue  
13 adverse impact to aquatic resources over the lifespan of the Project. Under the ANR  
14 Stipulation Attach. II (paragraph 33.d), TDI-NE has agreed to develop a post-construction  
15 thermal monitoring plan for review and approval by the ANR. In order to initiate this  
16 discussion, TDI-NE developed a document entitled "Conceptual Operational Monitoring  
17 Study of Temperature Changes Associated with NECPL," which is provided as *Exhibit-*  
18 *TDI-SM-7*.

19  
20 **Q. Have there been any changes to the manner in which accidental discharges will be**  
21 **addressed for the Lake portion of the Project described in your initial testimony? If so,**  
22 **please explain.**

1        Response: Yes. As discussed above, TDI-NE previously submitted to the ANR as part of  
2        its Lake Encroachment Permit application an “Overall Oil and Hazardous Materials Spill  
3        Prevention and Contingency Plan” (*see Exhibit TDI-JAN-14f, Appendix 3d*). Under the  
4        ANR Stipulation Attach. II (paragraph 33.g.), TDI-NE has now agreed to revise, as needed,  
5        this previously-submitted document to address construction activities in the lake prior to  
6        construction.

7                TDI-NE also submitted as part of its application for a Lake Encroachment permit  
8        an “HDD Inadvertent Return Contingency Plan” to address the potential for drilling fluid  
9        losses (*see Exhibit TDI-JAN-14f, Appendix 3c*). Under the ANR Stipulation Attach. II  
10       (paragraph 33.e.), TDI-NE has agreed to supplement its HDD Inadvertent Return  
11       Contingency Plan with an Area Specific Plan that will describe the specific protections and  
12       actions that will occur for each HDD installation, including those involving lake-to-land  
13       transitions. The revised plan will be submitted prior to construction, as part of the Lake  
14       Encroachment permit process. In addition to submitting this supplement to the ANR, TDI-  
15       NE will also provide Material Safety Data Sheets and product information for all drilling  
16       fluids that will be used for water-to-land HDD installation in the lake (ANR Stipulation  
17       Attach. II, paragraph 33.f).

18  
19        **Q.     In light of these changes, has your conclusion that the construction and operation of**  
20        **the Project will meet all applicable state regulations with respect to waste disposal changed?**

21        Response: No, my conclusion that the Project will meet applicable health and environmental  
22        conservation department regulations regarding the disposal of waste remains unchanged.

23

1 **Q. Have there been any changes to the measures you identified in your previous**  
2 **testimony that will be taken to limit the Project's potential impact on existing water supplies**  
3 **in Lake Champlain? If so, please explain.**

4 Response: Yes. In the ANR Stipulation Attach. II, paragraphs 10-13, TDI-NE has agreed  
5 to a number of measures designed to limit the potential impacts on the previously described  
6 "deep water intake" that provides water to the Grand Isle Consolidated Water District and  
7 the VT FWD Fish Hatchery. Between MP 24.3 and MP 25, there will be no pre-installation  
8 route clearing and the cables will be bottom-laid in order to reduce the potential for  
9 increased turbidity caused by sediment resuspension (ANR Stipulation Attach. II, paragraph  
10 10). The cable routing has also been changed so that they are at least 300 feet to the west of  
11 the deep water intake. In the unlikely event that pre-installation route clearing and/or  
12 trenching of the aquatic cable is needed in this portion of the route, then the cables will be  
13 sited an additional 100 feet away from the deep water intake for a total buffer of 400 feet  
14 from the deep water intake (ANR Stipulation Attach. II, paragraph 11).

15 TDI-NE will provide 3 weeks' notice to the Fish Hatchery manager in advance of  
16 any pre-installation or installation activities between MP 24.3 and MP 25 (ANR Stipulation  
17 Attach. II, paragraph 13). This notice will include the range of dates in which work will be  
18 completed as well as contact information for a TDI-NE representative overseeing in-lake  
19 construction activities in this segment of the route. As work commences, TDI-NE will  
20 provide the Station manager with daily updates on the progress and status of the work on  
21 this segment as it proceeds.

22 The TDI-NE representative will be accessible by cell phone and by email, and have  
23 the authority to slow down, or halt, cable bottom-laying, pre-installation route clearing, or

1 any other cable installation activities should turbidity levels be experienced at the Fish  
2 Hatchery that pose a risk to the Station's operations (ANR Stipulation Attach. II, paragraph  
3 12.a.).

4 When construction activities are being undertaken between MP 24.3 and MP 25,  
5 TDI-NE will monitor weather forecasts and weather events for the purpose of anticipating  
6 seiche events that are likely to cause turbidity entrainment into the deep water intake (ANR  
7 Stipulation Attach. II, paragraph 12.b.). The previously described final Lake Champlain  
8 Construction Phase Water Quality Monitoring Program will include specific measures for  
9 monitoring and corrective actions to address exceedances of an action threshold to be  
10 developed by ANR, in consultation with TDI-NE, between these mileposts.

11 TDI-NE has further agreed that should any project activities between MP 24.3 and  
12 MP 25 result in an increase in turbidity levels at the Ed Weed Fish Culture Station, whether  
13 alone or in conjunction with a seiche event, such that there is resultant fish mortality at the  
14 Fish Hatchery, TDI-NE will compensate the ANR at the rate of \$20.51 per pound of fish  
15 lost as a result of TDI-NE's actions up to a maximum of 48,000 pounds of fish (\$948,480)  
16 (ANR Stipulation Attach. II, paragraph 12.c.).

17  
18 **Q. Do these changes affect your previous conclusion that the Project will not have an  
19 undue adverse impact on the use of existing water supplies in Lake Champlain?**

20 Response: No, my conclusion that the Project will not have an undue adverse impact  
21 remains the same as the expected impacts are the same or potentially less with the addition  
22 of these conditions.

23

1 **Q. Have there been any changes to the potential impacts, if any, of constructing the**  
2 **aquatic portion of the Project on public health and safety or transportation systems? If so,**  
3 **please explain.**

4 Response: Yes. In my pre-filed testimony, I stated that barges would be necessary to  
5 transport lakebed debris recovered during the pre-installation route clearing. ANR has  
6 indicated that their preference would be for woody debris, trees, stumps, historical sawn  
7 logs, and rock and boulders encountered during route clearing activities or installation be left  
8 in Lake Champlain. Under the ANR Stipulation Attach. II (paragraph 21), TDI-NE will  
9 consult with ANR to develop a plan to ensure that these materials are placed back in the  
10 Lake but outside of the installation corridor and any sensitive habitats identified by ANR in  
11 advance of construction. TDI-NE will provide the plan to ANR for review and approval at  
12 least 90 days prior to commencing route clearing activities. In addition, as discussed above,  
13 TDI-NE has agreed that no pre-installation clearing will be done along MP 24.3 to MP 25.  
14 As a result of these agreements, there will likely be an overall decrease in vessels operating  
15 on the lake during pre-construction clearing activities.

16

17 **Q. Do these changes affect your previous conclusion that the Project will not have an**  
18 **undue adverse impact on public health and safety relative to Lake Champlain or cause**  
19 **unreasonable congestion or unsafe conditions with respect to transportation systems within**  
20 **the Lake?**

21 Response: No, my conclusion that the Project will not have an undue adverse impact on  
22 public health and safety or cause unreasonable congestion or unsafe conditions with respect

1 to the transportation systems within Lake Champlain remains the same with the acceptance  
2 of these conditions by TDI-NE.

3

4 **Q. Have there been any changes in the measures TDI-NE will take to protect public**  
5 **investments and use of Lake Champlain?**

6 Response: Yes. My earlier testimony noted that TDI-NE proposed to establish a Lake  
7 Champlain Phosphorous Cleanup and Lake Champlain Trust Fund to support efforts to  
8 improve the lake environment. Under the ANR Stipulation (section 3), the funds have been  
9 modified in a number of respects. The specific details are described in the supplemental  
10 testimony of Jessome/Martin/Bagnato. In addition, under TDI-NE's license to use the  
11 Korean Veteran's Fish Access in Alburgh, it will provide \$350,000 for a new boat ramp.

12

13 **Q. Does this conclude your testimony at this time?**

14 Response: Yes, it does.