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. _____

PREFILED DIRECT TESTIMONY OF TODD SINGER

ON BEHALF OF CHAMPLAIN VT, LLC

December 8, 2014

Summary:

Mr. Singer provides testimony regarding 30 V.S.A. § 248 (b)(4), Economic Benefit to the State. Specifically, Mr. Singer provides TDI's estimate of the costs of constructing and operating the Project, of the jobs created due to the Project, and on tax and other payments to the State of Vermont as a result of the Project.

Exhibit Number	Name of Exhibit
TDI-TS-1	Resume
TDI-TS-2	Summary of Construction and Operating Costs
TDI-TS-3	Summary of Taxes and Other Required Payments
TDI-TS-4	Summary of Vermont Economic Benefits

Q1. Please state your name, occupation, and business address.

A1. Response: Todd J. Singer, Senior Vice President – Project Development & Finance, TDI-USA Holdings Corp. d/b/a Transmission Developers, Inc. ("TDI"). My business mailing address is 600 Broadway, Albany, NY 12207.

Q2. What is your connection to TDI New England and the New England Clean Power Link Project ("NECPL")?

A2. Response: I am an employee of an affiliate of Champlain VT, LLC d/b/a TDI New England ("TDI-NE"), the developer of the New England Clean Power Link Project (the "NECPL" or "Project"). I have worked on the development of the NECPL since its inception in September 2013. I am responsible for all of the financial analyses performed for the NECPL.

Q3. Please describe your qualifications and experience.

A3. Response: Since June 2010, as an employee of TDI, I have worked on the development of the Champlain Hudson Power Express Project ("CHPE"), a transmission line project that would serve the New York City market. I am responsible for all of the financial analyses performed for both CHPE and the NECPL.

Prior to joining TDI, I spent over a decade on Wall Street as an investment banker, primarily at Morgan Stanley, and have a broad range of capital markets and mergers and acquisitions experience. I have closed $97.6 billion of capital markets financings across the entire capital structure (e.g., secured debt, unsecured debt, convertible debt, equity) and $3.6 billion in mergers and acquisitions transactions. Approximately $23.5 billion of the capital

markets financings were for energy-related companies with the balance associated with real estate, consumer credit, technology, and other industries.

In addition, following my career on Wall Street, I had my own strategic consulting practice where I advised a wind energy storage company as well as the Natural Resources Defense Council. Prior to my career on Wall Street, I also held finance-related positions with Price Waterhouse and Time Warner.

I received my Masters in Business Administration with a Concentration in Finance from the Columbia University Graduate School of Business, and a Bachelor of Science in Business Administration from Bucknell University.

My resume is attached as *Exhibit (Exh.) TDI-TS-1*.

Q4. Have you previously testified before the Public Service Board or in other judicial or administrative proceedings?

A4. Response: No.

Q5. What is the purpose of your testimony?

A5. Response: My testimony concerns the Project's compliance with 30 V.S.A. § 248(b)(4), Economic Benefit to the State. Specifically, I provide TDI's estimate of the direct costs of constructing and operating the Project, Project-related employment, and tax and other payments to the State of Vermont as a result of the Project.

Q6. What work have you performed on the NECPL related to section 248(b)(4), economic benefit to the state and its ratepayers?

A6. Response: There are numerous economic benefits enabled by NECPL that will benefit the State and its ratepayers. I have been responsible for calculating and tracking all of the various economic benefits with the occasional assistance of other experts. As also discussed in the prefiled direct testimony of Jessome/Martin/Bagnato, the list of direct economic benefits to the state and its ratepayers is as follows:

Public Good Benefits

- Lake Champlain Phosphorous Cleanup Fund;
- Lake Champlain Enhancement/Restoration Trust Fund;
- VT Ratepayer Relief (through VELCO);
- Clean Energy Development Fund;

Taxes & Other Required State/Municipal Payments

- Vermont education and municipal property taxes;
- Vermont corporate income taxes;
- Vermont sales taxes;
- Right of way lease payments;

Economic Growth from Construction & Operations

- Direct labor and non-labor spend during construction; and
- Direct labor and non-labor spend during commercial operations.

In addition, I have provided many of the key inputs to Kavet, Rockler & Associates, LLC ("Kavet Rockler") and Levitan & Associates ("Levitan") for use in their economic analyses (see Response below).

Q7. Have you relied on the work of any outside entities concerning your analyses?

A7. Response: Yes. With respect to property taxes, the Vermont Department of Taxes ("VTax") has provided key input as to the recommended methodology to calculate property taxes for NECPL. At the recommendation of VTax, TDI-NE has worked with Vermont Electric Power Company ("VELCO") to ascertain the appropriate assumptions to use for the property tax calculation with respect to electric transmission facilities.

For the construction job estimates and associated worker compensation, Gene Martin, TDI's President and Chief Operating Officer, has provided that information. The job-related information provided pertains to jobs sourced by Vermonters, other states in New England, and elsewhere.

Direct labor and non-labor spend during the construction period have been derived based on discussions TDI has had with the potential engineering, procurement and construction ("EPC") contractor for the CHPE project.

Q8. Have you provided Project information to other experts in support of their section 248 testimony and if so, what?

A8. Response: Yes. I have provided Project information to Kavet Rockler and Levitan. For Kavet Rockler, the information I provided was TDI's estimate of the direct dollar spend and jobs associated with both the construction and operating periods of the NECPL. For Levitan, I provided the capacity factor assumption based on prior discussions TDI and TDI-NE have had with potential shippers on the Project.

Q9. What are the anticipated costs for constructing and operating the NECPL?

A9. Response: The total costs related to constructing the Project are currently estimated to equal approximately $1,184,500,000. A summary breakdown of this amount is included in table 2a in *Exh. TDI-TS-2*.

The initial year operating costs for the Project are currently estimated to equal approximately $29,900,000. A summary breakdown of this amount is included in table 2b in *Exh. TDI-TS-2*.

Q10. What is the NECPL's anticipated effect on new direct employment and how did you derive these employment figures?

A10. Response: On a direct basis, the Project will have a positive effect on employment during both the construction and commercial operations periods. During construction, approximately half of the jobs will be sourced by both Vermonters and others throughout the rest of New England. The construction jobs in Vermont will average approximately 140 jobs per year and will increase to over 200 jobs at the peak of construction. Construction jobs sourced in the rest of New England will average approximately 40 jobs per year and will increase to over 75 jobs at the peak of construction.

The HVDC industry is a highly specialized area of the overall electric transmission marketplace. HVDC projects have always been built at significant scale generally connecting very large discrete loads utilizing submarine cables with a very specialized and mobile project based workforce. Manufacturers have increasingly brought technical skills internally to minimize risk and ensure technical capacity for global assignments. This technical requirement combined with the schedule and logistics requirements of a $1.2 billion project

necessitates importing outside capabilities. Field technical support, owner's engineer, terrestrial and submarine splicers, HDD and Jack and Bore specialty contractors, and Converter Station and valve hall installers are expected to be primarily sourced outside of Vermont. TDI-NE will seek local labor to support civil, field engineering, building erection, specialty contractors such as blasting and start up and commissioning, general labor for plating, traffic management, and logistics support. TDI-NE will be assembling bid packages focused on the various needs of the NECPL Project and expects vigorous participation by the local VT construction and engineering community. It is important to note, however, that regardless of where the jobs are sourced from, all of the day-to-day work associated with the construction jobs will occur within the State of Vermont.

To develop the construction job estimates, I relied upon TDI-NE's President and COO, Gene Martin, who has over 30 years of direct construction experience in the energy sector. In addition to his own construction experience in both the sector and the region, Gene relied upon input from the Project's potential EPC contractor and other external engineering consultants.

Specifically, the Project activities expected to be sourced partially or completely by Vermonters during construction are as follows:

- Underground cable installation;
- Underground route preparation and horizontal directional drilling ("HDDs");
- Converter Station site preparation (sourced 100% by Vermonters);
- Converter Station building erection (sourced 100% by Vermonters);
- Converter Station house electrical equipment installation;
- Converter Station substation installation;

- Pre-construction survey (sourced 100% by Vermonters);
- Local engineering support (sourced 100% by Vermonters);
- Submarine HDDs;
- Startup and testing; and
- Miscellaneous subcontracting.
- During construction, there will also be a group of TDI-NE management and supervisory employees based in Vermont that will be focused on Project management, field supervision and inspection, quality, safety, and the administration of the Project.

During commercial operations, the effect on direct employment will be low in comparison to the construction period. The NECPL will support over 20 jobs in Vermont on an annual basis during the 40 year life of the Project. These jobs will include monitoring and control and external service support for both the operations and maintenance activities of the Project and regulatory compliance. As with the construction period, there will also be a small number of TDI-NE employees based in Vermont that will be focused on the ongoing administrative aspects of the Project.

Q11. What taxes and other payment or fees will NECPL make to the State of Vermont or to Vermont municipalities and how did you derive these figures?

A11. Response: There will be a range of payments to both the State of Vermont and Vermont municipalities during the life of the Project. These payments will be in one of the four following categories:

- Vermont education and municipal property taxes

- Vermont corporate income taxes
- Vermont sales taxes
- Right of way lease payments

The total payments to the State of Vermont and Vermont municipalities during the 40 year life of the Project are currently estimated by TDI-NE to be $682,700,000. A summary breakdown of this figure for each of the four categories above is incorporated in table 3a in ***Exh. TDI-TS-3***.

The methodologies for how each of the figures across the four categories are calculated are outlined below.

Property Taxes

TDI-NE currently estimates $301,200,000 in property taxes will be paid during both the construction period and the 40 year life of the Project. These taxes will be paid to the Towns along the terrestrial route even though the majority of the right of ways are owned by the State of Vermont. See table 3b in ***Exh. TDI-TS-3*** for the detailed calculation of property taxes during both construction and commercial operations. The construction period property taxes will be based on work in process as of April 1st of each year, and the operating period property taxes will be based on the completed Project. It is TDI-NE's understanding that the land-based portions of the Project -- the underground transmission cables and the Converter Station -- will be taxable as real property, but that the cables within Lake Champlain are not.

In order to ascertain the property tax obligation during the operating period, TDI-NE has met with VTax staff. VTax has recommended that the best analog in terms of the property tax calculation is to utilize the replacement cost new less depreciation ("RCNLD")

methodology which VELCO uses for its transmission equipment (lines, substations, etc.). Consequently, TDI-NE has used RCNLD to calculate its anticipated property tax obligations during the 40 year life of the Project.

To calculate replacement cost new, VTax recommended the use of the Handy Whitman Index ("Handy Whitman"). Handy Whitman is useful for calculating the current value of historical expenditures. However, it is not useful in calculating the value of future expenditures even further into the future. This shortcoming of Handy Whitman was confirmed in conversations with VELCO. VELCO does not apply the Handy Whitman index on expenditures it anticipates making in the future.

In the initial year of commercial operations, TDI-NE has assumed the replacement cost new is equal to the construction dollars that will have just been spent. However, in subsequent years, because of the limitations of Handy Whitman when applied to future expenditures, TDI-NE has applied a 1.5% annual escalator as a proxy to calculate replacement cost new for operating years two through forty.

The depreciation component of the RCNLD calculation is more straightforward. As recommended by VTax, TDI-NE has utilized the Iowa depreciation curve for 40-year life assets ("Iowa Curve"). The Iowa Curve was supplied to TDI-NE by VELCO and is the same Iowa Curve VELCO uses for its depreciation calculations. In addition, VTax has provided the further guidance that the depreciation percentage cannot be below 30% of the replacement cost new valuation in any year.

For each year of operations, the RCNLD figure is multiplied by a 95% equalization rate. The product of this calculation is the assessed value ("Assessed Value") of the Project in a particular year. The 95% equalization rate is roughly representative of the average

equalization rate (common level of appraisal) for the towns in which the Project is buried underground. The Assessed Value is then multiplied by the weighted average property tax rate ("Weighted Average Tax Rate") for all the towns along the land-based portion of the Project. The product of this calculation is the Project's property tax obligation for a given year. The Weighted Average Tax Rate is equal to 1.80%, and it incorporates both the State Education tax rate and the municipal property tax rate. I should note that the property tax figures included in my testimony are estimates; the actual taxes due in each town will be dependent upon the common level of appraisal, and education and municipal tax rates that are in effect during any given tax year.

In addition to the property taxes to be paid during the 40 year life of the Project, TDI-NE estimates there will be approximately $12,000,000 of property taxes paid on construction phase work in process ("CWIP"). Based on discussions with VTax, the construction period property tax figure calculated by TDI-NE is based on CWIP as of April 1st of each year. The property taxes on CWIP for a particular period are calculated by multiplying CWIP by the 95% equalization described above to derive the assessed value for that period. This assessed value is then multiplied by the Weighted Average Tax Rate to calculate the property taxes on CWIP.

TDI-NE recognizes that the property tax calculations will impact 14 separate towns (albeit in a positive way by adding taxable property to the grand lists), and the towns will invariably want to understand the methodology and calculations in more detail. TDI-NE intends to engage in conversations with the towns with the goal of trying to come to a common understanding on the taxation methodology and to provide certainty to both the towns and TDI-NE.

Vermont Corporate Income Taxes

TDI-NE currently estimates $328,300,000 in corporate income taxes will be paid to the State of Vermont during the 40 year life of the Project. The State of Vermont corporate income tax rate of 8.5% is multiplied by the taxable income in a given year to calculate the Vermont corporate income taxes.

This corporate income tax stream accounts for tax loss carryforwards. These tax loss carryforwards result from the timing differences between tax depreciation and book depreciation. The tax depreciation schedule for electricity transmission, as proscribed by the Internal Revenue Service, results in an accelerated depreciation schedule relative to book depreciation. This reduces the Project's taxable income in the first 16 years of commercial operations.

Sales Taxes

TDI-NE currently estimates $31,400,000 in sales taxes will be paid to the State of Vermont during the construction period. Sales taxes are expected to be paid on the equipment purchased by TDI-NE to build the Project ("Sales Tax Components"). Because TDI-NE will take delivery of the Sales Tax Components within the State of Vermont, Vermont sales taxes will apply irrespective of whether the equipment is manufactured within Vermont or not. These components are expected to include the following:

- Underwater transmission cable equipment;
- Underground transmission cable equipment;
- Converter Station equipment;
- Cable and associated equipment related to the HVAC connection between the Ludlow Converter Station and VELCO's Coolidge substation;

- Spare parts;
- Other equipment and supplies purchased as part of the cable installation; and
- Equipment associated with transmission upgrades in the State of Vermont.

The Vermont sales tax rate of 6% ("Sales Tax Rate") has been assumed. To derive the sales taxes to be paid within Vermont, the total value of the Sales Tax Components is multiplied by the Sales Tax Rate. As TDI-NE will take delivery of the Sales Tax Components throughout the three year construction period, sales taxes will be incurred over time and not all at once.

Right of Way Lease Payments

TDI-NE currently estimates $21,900,000 in right of way lease payments will be made to the Vermont Department of Transportation ("VTrans") during the 40 year life of the Project. The right of way lease payments would compensate VTrans for use of the State of Vermont-owned road and railroad right-of-ways ("VTrans Route") that are incorporated in the Project route. To calculate the payment, TDI-NE considered the lease payment VTrans required from Vermont Gas Systems, Inc. ("Vermont Gas"), which TDI-NE understands is for use of a 50 foot wide right-of-way along 7.64 miles of the Chittenden County Circumferential Highway ("CIRC Highway") in Essex. It is TDI-NE's understanding that VTrans charged Vermont Gas $110,000 per year. This amount is equivalent to approximately $14,400 per year on a per mile basis, and $0.05 per year on a per square foot basis.

The VTrans Route is 46.9 miles, and the proposed permanent area required to be free of deep rooted vegetation or "ROW" for the underground portion of the NECPL is 12 feet. If the Vermont Gas $14,400 cost per mile figure is used, the estimated annual lease

payment for the Project would be approximately $675,000. However, on a per square foot basis, if the Vermont Gas figure is used, the estimated annual lease payment would be approximately $162,000.

In TDI-NE's opinion, neither the per mile figure nor the per square foot figure are perfect analogs for the NECPL given the inherent differences between the Project and Vermont Gas. However, they are still instructive. Given the significant overall length of the NECPL's VTrans Route relative to the Vermont Gas route, a per mile figure seems to be more appropriate than a per square foot figure. However, an adjustment should be made to that per mile figure given the significantly narrower permanent area required for NECPL's VTrans Route relative to the permanent ROW of the Vermont Gas route.

Consequently, to devise the annual payment to VTrans, TDI-NE has multiplied the per mile figure by 75% and the per square foot figure by 25% and then added the two outcomes. Doing so generates an annual payment to VTrans of $547,000.

Q12. Please describe the "public good" benefits that will flow from the NECPL and how have you estimated those benefits?

A12. Response: In recognition of Vermont serving as the host to the NECPL, TDI-NE is proposing a number of actions that will provide significant Public Good benefits for Vermonters. These Public Good Benefits are described below and in ***Exh. TDI-TS-4***, and are also discussed in the prefiled direct testimony of Jessome/Martin/Bagnato.

Lake Champlain Phosphorous Cleanup

TDI-NE will contribute funds towards phosphorous cleanup efforts in Lake Champlain. Recognizing Vermonters' desire for near term action, at the Project's financial close[1] (currently estimated to be in Q2 2016), TDI-NE will contribute $1,000,000 for Phosphorous Cleanup, and upon the Project's commercial operations date (currently estimated to be in Q2 2019), an additional $1,000,000. TDI-NE will thereafter contribute $2,000,000 per year during the 40 year life of the Project. The funds attributable to Phosphorous Cleanup would thus amount to $82,000,000 in total.

Lake Champlain Enhancement/Restoration Trust Fund

TDI-NE will establish a Lake Champlain Enhancement/Restoration Trust Fund (the "Trust"), the sole focus of which will be to fund projects and studies that enhance and restore habitat in Lake Champlain and that enhance recreational opportunities. TDI-NE will contribute $1,000,000 per year to the Trust during the 40 year life of the Project, amounting to $40,000,000 in total.

Vermont Ratepayer Rebate

TDI-NE will provide a rebate to Vermont retail electric ratepayers via an agreement with VELCO. In the initial year of commercial operations, TDI-NE will pay VELCO $2,500,000. This amount will escalate by 1.5% per year for the remaining 39 year life of the Project, for a total of $135,700,000 over the life of the Project.

Clean Energy Development Fund

TDI-NE will make contributions to Vermont's Clean Energy Development Fund (the "CEDF") in order to fund development of renewables in the State. TDI-NE will contribute

[1] Financial close will occur when TDI-NE closes on the debt and equity financing arrangements required to build the NECPL. Financial close is synonymous with the commencement of the construction period.

$1,000,000 per year to the CEDF during the 40 year life of the Project, for a total of $40,000,000 over the life of the Project.

Q13. What is the total direct economic effect that the NECPL will have in Vermont which accounts for all of the categories and figures you discuss above?

A13. Response: The direct economic impact of the Project in the State of Vermont during the construction and commercial operations periods for the categories discussed in my testimony is estimated to be approximately $1,474,300,000. A summary breakdown of this figure is included in ***Exh. TDI-TS-4***.

The items included in this figure are as follows:

Public Good Benefits

- Lake Champlain Phosphorous Cleanup Fund
- Lake Champlain Enhancement/Restoration Trust Fund
- VT Ratepayer Relief (through VELCO)
- Clean Energy Development Fund

Taxes & Other Required State/Municipal Payments

- Vermont education and municipal property taxes
- Vermont corporate income taxes
- Vermont sales taxes
- Right of way lease payments

Economic Growth from Construction & Operations

- Direct construction period spend by TDI-NE in Vermont
    - Labor spend

- Non-labor spend
- Direct operations period spend by TDI-NE in Vermont
  - Labor spend
  - Non-labor spend

Items not included in this figure are as follows:

- GDP impact during construction and during commercial operations
  (see Tom Kavet's prefiled testimony)
- Impact on energy prices in Vermont
  (see Seth Parker's prefiled testimony)
- Impact on capacity prices in Vermont
  (see Seth Parker's prefiled testimony)
- Reduction in CO_2 emissions and other environmental benefits
  (see Seth Parker's prefiled testimony)
- Development period spend within the State of Vermont
- Opportunity to provide telecommunications fiber to VTrans along certain roads
- Road and other improvements associated with the Project's underground cable installation such as, replacements of culverts, improvement of stormwater ditches along roads and revegetation of a severely eroded bank along Lake Champlain
- Transmission upgrades within Vermont that may be required by ISO-New England

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Q14. Given your responses above, will the Project have a positive economic benefit on the State and its ratepayers?

A14. Response: Yes.

Q15. Does this conclude your testimony at this time?

A15. Response: Yes.