



New England Clean Power Link: 100% Hydro

PUBLIC VERSION

Proposal in Response to Request for Proposals for Long Term Contracts for Clean Energy Projects dated March 31, 2017 from Joint Bidders Hydro Renewable Energy Inc. and Champlain VT, LLC d/b/a TDI New England

July 27, 2017

July 27, 2017

Department of Energy Resources
c/o Judith Judson
Commissioner
Massachusetts Department of Energy Resources
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Boston, MA 02114

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Independent Evaluator
c/o Paul Gromer
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Boston, MA 02109

Re: **PUBLIC VERSION** of Proposal in Response to Request for Proposals for Long-Term Contracts for Clean Energy Projects dated March 31, 2017
(hereinafter, the RFP)

To Each of the Recipients identified in Appendix H of the RFP:

Hydro Renewable Energy Inc. (“**HRE**”), an affiliate of Hydro-Québec and Champlain VT, LLC d/b/a TDI New England (“**TDI-NE**”) (collectively the “**Joint Bidders**”) hereby submit a joint Proposal, as described in more detail below, for Clean Energy Generation from Incremental Hydropower Generation via a Long Term Contract with a Transmission Project as described in RFP Section 2.2.1.3(iv) (the “**Proposal**”).

This **public and non-confidential version** of the Joint Bidders’ Proposal provided herewith redacts this confidential information and may be publicly disclosed.

As described in the Proposal, the Joints Bidders’ *New England Clean Power Link: 100% Hydro* provides the Commonwealth of Massachusetts with clean, firm energy delivered to the New England Control Area by experienced project developers. This integrated Proposal,

designed to help the Commonwealth of Massachusetts achieve its renewable energy and greenhouse gas reduction goals, proposes the following.

- A twenty (20) year Power Purchase Agreement for Clean Energy Generation and Environmental Attributes from Incremental Hydroelectric Generation located in the Province of Québec, Canada, provided by HRE's parent corporation, Hydro-Québec.
- A twenty (20) year Transmission Agreement wherein TDI-NE will construct and operate the New England Clean Power Link Project, a Transmission Project to deliver hydro energy from Canada to the New England Control Area via a 1000-MW high-voltage direct-current buried cable.

Pursuant to Section 1.10 of the RFP, the non-refundable bid fee for the Proposal is \$100,000. TDI-NE is submitting the bid fee for the Proposals on behalf of the Joint Bidders.

As part of the Proposal, and pursuant to Section 1.8 and Appendix D of the RFP, the Joint Bidders have each provided a Certification and Authorization certifying their respective knowledge pertaining to the matters set forth in Appendix D to the RFP, Certification and Authorization.

On behalf of HRE and TDI-NE, we thank you for giving us the opportunity to respond to the RFP, and we look forward to developing a mutually rewarding partnership. Please forward any questions you may have to the appropriate Joint Bidder at the contact information listed in Section 1 of the Proposal.

Sincerely,

Hydro Renewable Energy Inc.

By: 

Name: Richard Cacchione
Title: Chairman of the Board and
President

Champlain VT, LLC d/b/a
TDI New England

By: 

Name: Donald Jessome
Title: Chief Executive Officer

Proposal Certification and authorization (Appendix D)

A proposal will be considered incomplete unless all required signatures are provided.

The undersigned certifies that he or she is an authorized officer or other authorized representative of the Bidder, and further certifies that: (1) the Bidder has reviewed this RFP and all attachments and has investigated and informed itself with respect to all matters pertinent to this RFP and its proposal; (2) the Bidder's proposal is submitted in compliance with all applicable federal, state and local laws and regulations, including antitrust and anti-corruption laws; (3) the Bidder is bidding independently and that it has no knowledge of the substance of any proposal being submitted by another party in response to this RFP other than a response submitted by the bidder's affiliate of for a project where the Bidder is also a project proponent or participant, and notice of each such affiliated bid or project must be disclosed in writing with each of the Bidder's and affiliated bidder's proposal; (4) the Bidder has no knowledge of any confidential information associated with development of the RFP; (5) the Bidder's proposal has not been developed utilizing knowledge of any non-public information associated with the development of the RFP; (6) the Bidder has not obtained any confidential bidding-related information directly or indirectly from any of the Distribution Companies, in preparation of its bid; and (7) except as disclosed by the Bidder in the relevant portions of its response, the Bidder is not an Affiliated Company of any Massachusetts investor-owned electric Distribution Company and no Distribution Company which is seeking proposals pursuant to the RFP has a financial or voting interest, controlling or otherwise in the bidder or the bidder's proposed project.

Violation of any of the above requirements may be reported to the appropriate government authorities and shall disqualify the Bidder from the RFP process.

The undersigned further certifies that the prices, terms and conditions of the Bidder's proposal are valid and shall remain open for at least 270 days from the submission date.

The undersigned further certifies that he or she has personally examined and is familiar with the information submitted in this proposal and all appendices thereto, and based on reasonable investigation, including inquiry of the individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of the undersigned's knowledge and belief.

The undersigned understands that a false statement or failure to disclose material information in the submitted proposal may be punishable as a criminal offense under applicable law. The undersigned further certifies that that this proposal is on complete and accurate forms as provided without alteration of the text. The undersigned further understands and agrees to the provisions of this RFP related to confidential information, and consents to the limited exchange and sharing of confidential information related to the Bidder's proposal as described in this RFP, including with members of the Evaluation Team, the Independent Evaluator, ISO-NE, or and adjacent Control Area personnel.**[SIGNATURES ON FOLLOWING PAGE]**

New England Clean Power Link : 100% Hydro

Project Title as Submitted to the Distribution Companies

Hydro Renewable Energy Inc.

Bidder or Bidder's Authorized Representative



Richard Cacchione

Chairman of the Board & President

Title

26 July 2017

Date

NOTICE OF PROPOSALS IN WHICH BIDDER IS A PROJECT PROPONENT/PARTICIPANT:

- *Northern Pass: 100% Hydro*
- *Northern Pass: Hydro + Wind*
- *New England Clean Energy Connect: 100% Hydro*
- *New England Clean Energy Connect: Hydro + Wind*
- *New England Clean Power Link: Hydro + Wind*

APPENDIX D

CERTIFICATION AND AUTHORIZATION

A proposal will be considered incomplete unless all required signatures are provided

The undersigned certifies that he or she is an authorized officer or other authorized representative of the Bidder, and further certifies that:

(1) the Bidder has reviewed this RFP and all attachments and has investigated and informed itself with respect to all matters pertinent to this RFP and its proposal; (2) the Bidder's proposal is submitted in compliance with all applicable federal, state and local laws and regulations, including antitrust and anti-corruption laws; (3) the Bidder is bidding independently and that it has no knowledge of the substance of any proposal being submitted by another party in response to this RFP other than a response submitted by the bidder's affiliate of for a project where the Bidder is also a project proponent or participant, and notice of each such affiliated bid or project must be disclosed in writing with each of the Bidder's and affiliated bidder's proposal; (4) the Bidder has no knowledge of any confidential information associated with development of the RFP; (5) the Bidder's proposal has not been developed utilizing knowledge of any non-public information associated with the development of the RFP; (6) the Bidder has not obtained any confidential bidding-related information directly or indirectly from any of the Distribution Companies, in preparation of its bid; and (7) except as disclosed by the Bidder in the relevant portions of its response, the Bidder is not an Affiliated Company of any Massachusetts investor-owned electric Distribution Company and no Distribution Company which is seeking proposals pursuant to the RFP has a financial or voting interest, controlling or otherwise in the bidder or the bidder's proposed project.

Violation of any of the above requirements may be reported to the appropriate government authorities and shall disqualify the Bidder from the RFP process.

The undersigned further certifies that the prices, terms and conditions of the Bidder's proposal are valid and shall remain open for at least 180 days from the submission date.

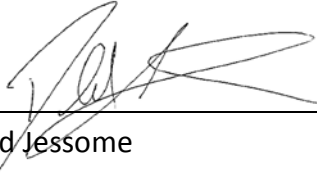
The undersigned further certifies that he or she has personally examined and is familiar with the information submitted in this proposal and all appendices thereto, and based on reasonable investigation, including inquiry of the individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of the undersigned's knowledge and belief.

The undersigned understands that a false statement or failure to disclose material information in the submitted proposal may be punishable as a criminal offense under applicable law. The undersigned further certifies that that this proposal is on complete and accurate forms as provided without alteration of the text. The undersigned further understands and agrees to the provisions of this RFP related to confidential information, and consents to the limited exchange and sharing of confidential information

related to the Bidder's proposal as described in this RFP, including with members of the Evaluation Team, the Independent Evaluator, ISO-NE, or and adjacent Control Area personnel.

Champlain VT, LLC d/b/a TDI New England

Bidder or Bidder's Authorized Representative



Donald Jessome

New England Clean Power Link: 100% Hydro

Project Title(s) as Submitted to the Evaluation Team

Chief Executive Officer

July, 26, 2017

Title

Date

NOTICE OF PROPOSALS IN WHICH BIDDER IS A PROJECT PROPONENT/PARTICIPANT:

- *New England Clean Power Link: Hydro + Wind*

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New England Clean Power Link: 100% Hydro Bid

List of Abbreviations, Acronyms and Document/Entity Names

Acronym/Abbreviation	Full Name/Definition
2020 CECP	2015 Update of the Clean Energy and Climate Plan for 2020
AC	Alternating Current
AESC 2015 Report	Avoided Energy Supply Costs in New England: 2015 Report
BAPE	<i>Bureau d'audiences publiques sur l'environnement</i> . BAPE is a government agency which provides recommendations to the MDDELCC in respect to the environmental assessment process.
BCP VII	Blackstone Capital Partners VII L.P.
BEP II	Blackstone Energy Partners II L.P.
BHE	Bangor Hydro Electric Co.
Bid or <i>NECPL: 100% Hydro Bid</i>	The Joint Proposal of HQ and TDI-NE to the Massachusetts 83D RFP
Blackstone	The Blackstone Group, L.P.
CAN	Canadian
CEII	Critical Energy Infrastructure Information
CHPE	Champlain Hudson Power Express Project
CLF	Conservation Law Foundation
CMI	Caldwell Marine International
CNIIS	Capacity Network Import Interconnection Service
COD	Commercial Operation Date
Community Action	Community Action of the Franklin, Hampshire, and North Quabbin Regions
CPG	Section 248 Certificate of Public Good, Vermont Public Utility Commission
CPPD	Certification, Project and Pricing Data
DC	Direct Current
Distribution Companies	Fitchburg Gas & Electric Light Company d/b/a Unitil, Massachusetts Electric company and Nantucket Electric Company d.b.a National Grid, NSTAR Electric Company and Western Massachusetts Electric Company d/b/a Eversource
DOER	Massachusetts Department of Energy Resources
ECA	Export Credit Agency
EDCs	Electrical Distribution Companies (see Distribution Companies)
EIS	Environmental Impact Statement
EPC	Engineering Procurement Construction
EPSC	Erosion Prevention and Sediment Control
ETU	Elective Transmission Upgrades
FCA	Forward Capacity Auction

Table of Acronyms, Abbreviations and Document/Entity Names

Acronym/Abbreviation	Full Name/Definition
FEIS	Final Environmental Impact Statement
FERC	United States Federal Energy Regulatory Commission
Fitch	Fitch Ratings
FPA	Federal Power Act
GA	General Arrangement
GHG	Greenhouse Gas
GIS	The NEPOOL Generation Information System
GM	General Manager
GMP	Green Mountain Power Corporation
HDD	Horizontal Directional Drilling
HQ	Hydro-Québec
HQEM	HQ Energy Marketing Inc.
HQ Hydropower Resources	Refers to Hydro-Québec Production's fleet of 62 hydropower generating stations
HQT or HQ TransÉnergie	Hydro-Québec TransÉnergie
HQUS	HQ Energy Services (U.S.) Inc.
HRE	Hydro Renewable Energy Inc, an affiliate of Hydro-Québec
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
IA	Interconnection Agreement
IGBT	Insulated Gate Bipolar Transistor
INDC Permit	Individual Construction Stormwater Discharge Permit
IPCC	Intergovernmental Panel on Climate Change
IPP	Independent Power Producers
ISO	Independent System Operator
ISO-NE	ISO New England Inc.
km	Kilometre
kV	Kilovolt
LB LEP	Lake Bomoseen Lake Encroachment Individual Permit
LC LEP	Lake Champlain Lake Encroachment Individual Permit
Lead Market Participant	Is the Lead Market Participant as defined in the ISO-NE market
LTSA	Long-Term Service Agreement
m	Metre
M	Million
MA DPU	Massachusetts Department of Public Utilities

Table of Acronyms, Abbreviations and Document/Entity Names

Acronym/Abbreviation	Full Name/Definition
Moody's	Moody's Investor Service
MW	Megawatts
MWh	Megawatt-hour
NAR	North American Renewables Registry
NECPL	New England Clean Power Link Project
NECPL: 100% Hydro Bid	The Joint Proposal of HQ and TDI-NE to the Massachusetts 83D RFP
NEPOOL	New England Power Pool
NEPOOL-GIS	New England Power Pool Generation Information System
O&M	Operation and Maintenance
OATI/OASIS	Ongoing System Impact Study
OATT	Open Access Transmission Tariff
OEM	Original Equipment Manufacturer
OIA	Overlapping Impact Analysis
OIS	Optional Interconnection Study
Operational Stormwater Permit	Authorization to Discharge under VT DEC General Permit 3-9015
PTF	Pool Transmission Facilities
PM	Preventative Maintenance
Proposal	The Joint Proposal of HQ and TDI-NE to the Massachusetts 83D RFP. Also referred to as Bid or <i>NECPL: 100% Hydro Bid</i>
Policy Statement	FERC's Policy Statement <i>Allocation of Capacity on New Merchant Transmission Projects and New Cost-Based, Participant-Funded Transmission Projects</i>
PPA	Power Purchase Agreement
RC	Reliability Committee
RCM	Regional County Municipality. An amalgamation of municipalities responsible of land use planning and regional development.
REC	Renewable Energy Credits or Renewable Energy Certificates
Régie de l'énergie	The economic regulation body of the Gouvernement du Québec for the energy sector
RFP	The Request for Proposals For Long-Term Contracts for Clean Energy Projects Issued March 31, 2017
RGGI	Regional Greenhouse Gas Initiative
ROW(s)	Right-Of-Way(s)
RPS	Renewable Portfolio Standard
RTO	Regional Transmission Organization
S&P	Standard and Poor's
SAP	Vermont Stream Alteration Permit
SFHA	Special Flood Hazard Areas

Table of Acronyms, Abbreviations and Document/Entity Names

Acronym/Abbreviation	Full Name/Definition
SIS	System Impact Study
SocGen	Société Générale
TDI	Transmission Developers Inc., an affiliate of TDI-NE
TDI-NE	Champlain VT, LLC d/b/a TDI-New England
TSA or TRA	Transmission Service Agreement or Transmission Rights Agreement
TWh	Terawatt-hour
US	United States
U.S. ACOE or USACOE	U.S. Army Corps of Engineers
U.S. DOD	U.S. Department of Defense
U.S. DOE	U.S. Department of Energy
U.S. EPA	U.S. Environmental Protection Agency
U.S. Transmission Provider	Champlain VT, LLC d/b/a TDI New England
UT	Unorganized Territory
VELCO	Vermont Electric Power Company
VSC	Voltage Source Converter
VT ANR	Vermont Agency of Natural Resources
VT DEC	Vermont Department of Environmental Conservation
VT DPS	Vermont Department of Public Service
VT F&W	Vermont Department of Fish and Wildlife
VT PUC (formerly VT PSB)	Vermont Public Utility Commission (f/k/a as Vermont Public Service Board).
VT Takings Permit	Threatened & Endangered Species Takings Permit #EH-2016-02
VTrans	Vermont Agency of Transportation
VWP	Vermont Individual Wetland Permit
WQC or 401 WQC	Water Quality Certification
XLPE	Cross Linked Polyethylene Cables

Section 1 | Certification, Project and Pricing Data

The Certification, Project and Pricing Data (“CPPD”) document is a Microsoft Excel workbook that is provided on the website at www.MACleanEnergy.com. The CPPD must be submitted as a working Microsoft Excel file. Parties may also submit a signed PDF in addition to the working Microsoft Excel file. The CPPD document has six parts, listed below. If the bidder provides information in other sections of its proposal that conflicts with the information provided in the CPPD, the CPPD shall be considered to contain the governing and binding information for both the evaluation and any resulting contract offer. The bidder may provide up to five different offers on terms and/or pricing (e.g., 10 year and 15 year) for the same facility, which should be submitted on a single CPPD. All bids must include the appropriate bid fees as described in the body of the RFP in section 1.10 or the bid will be considered not eligible for consideration.

1.1 Hydro-Québec

See CPPD form, attached as **Confidential Appendix 1.HQ**.

1.2 TDI-NE – NECPL

The CPPD form generally does not apply to the NECPL. TDI-NE has completed those sections that do apply. See **Appendix 1.TDI-NE.1**. See also Section 14 and 15 for pricing data.

Section 2 | Executive Summary

The bidder is required to provide an executive summary of the project proposal that includes a complete description of the proposed generation and/or transmission bid, the proposed contract term and pricing schedule, and other factors the bidder deems to be important.

NEW ENGLAND CLEAN POWER LINK



LAKE CHAMPLAIN



MONTPELIER



BOSTON

A POWERFUL HYDRO PARTNERSHIP FOR MASSACHUSETTS



TDI New England

A **Blackstone** Portfolio Company



IMPRESSIVE BENEFITS FOR MASSACHUSETTS

The NECPL will deliver
\$20 billion
to the Commonwealth
over 20 years.

Developed by
financially **STRONG**,
EXPERIENCED
PARTNERS



TDI New England

A Blackstone Portfolio Company

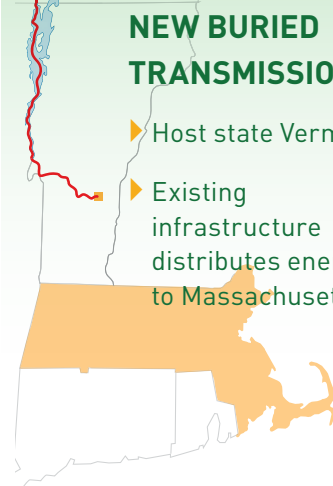


A fixed-price
bid that **PROTECTS**
Massachusetts
RATEPAYERS



The most
VIABLE AND ONLY
NEW BURIED
TRANSMISSION

- ▶ Host state Vermont
- ▶ Existing infrastructure distributes energy to Massachusetts



Strong support from host state Vermont

Project will be buried in Lake Champlain and along existing rights of way, greatly reducing community and environmental impact



Guy Charlton
Chairman of
Board of Selectmen,
Town of Benson



Frank Heald
Municipal Manager,
Town of Ludlow



Watch the New England Clean
Power Link Project Video



Sharon Combes
Combes Family Inn,
Ludlow



Chris Sabick
Archaeological Director,
Lake Champlain
Maritime Museum

**HELPS MEET
MASSACHUSETTS'
GLOBAL WARMING
SOLUTIONS ACT
mandate**

Achieves 24% of
Massachusetts' 2020
target for CO₂ reductions

**Dramatically
REDUCES
GREENHOUSE
EMISSIONS**

Millions of tons of CO₂
emissions reduction annually

**ONLY FULLY
PERMITTED PROJECT
IN NEW ENGLAND**
with complete site
control, buried along
existing rights-of-way





“As the host state for this project, Vermont is proud of the role it will play delivering new, clean energy to Massachusetts and other neighbors throughout New England.”

Governor Phil Scott, Vermont

Project overview

TDI-New England (TDI-NE) and Hydro-Québec (HQ) are pleased to provide this proposal, which offers firm deliveries of 1,000 MW of incremental hydroelectric generation imported from the Hydro-Québec system. We will accomplish this via the buried New England Clean Power Link (NECPL) at fixed prices through a 20-year Power Purchase Agreement (HQ PPA) and Transmission Service Agreement (TDI-NE TSA) with the Commonwealth's Distribution Companies.

This mature, viable project is well supported by Vermont and New England, and is poised to deliver reliable, base-load clean energy to the Commonwealth. The NECPL will provide significant economic and environmental benefits to Massachusetts' ratepayers for decades.

Hydro-Québec operates a generating fleet with over 36,000 MW of installed hydro capacity. In order to import hydropower from Hydro-Québec's system, a new 194-mile HVDC line interconnection between Québec and ISO New England (ISO-NE) is required. Importantly, the NECPL is the only fully permitted project in New England that can cost effectively achieve the Commonwealth's climate change goals.

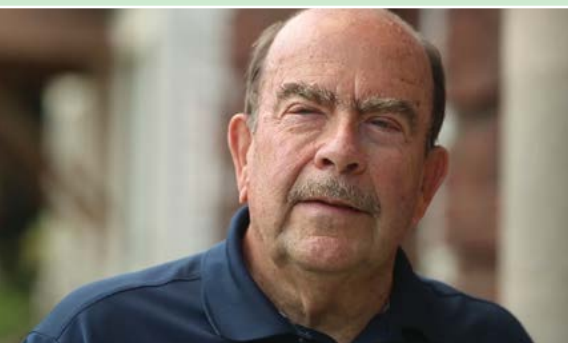
The energy for this project will tie into and be transported to the border via Québec's robust transmission system. The Québec portion of this line will be constructed and operated by Hydro-Québec TransÉnergie (HQT) in Québec.

The NECPL will connect with the HQT system at the U.S.-Canada border in Alburgh, Vermont, and then travel along the bottom of Lake Champlain for approximately 97 miles. An additional 57 miles of the line will be buried beneath existing public road rights-of-way and will connect to TDI-NE's proposed converter station in Ludlow, Vermont. At this new station, the electrical power will be converted from direct current (DC) to alternating current (AC), and then flow to the unconstrained Coolidge Substation in Ludlow, Vermont. The Coolidge Substation is owned by the Vermont Electric Power Company (VELCO).

The permitted 154-mile NECPL HVDC buried transmission line will be constructed and operated by TDI-NE in Vermont under the proposed terms of the TDI-NE TSA.

Once constructed, the NECPL transmission line will be capable of transmitting 1,000 megawatts (MW) of clean electricity around the clock.





“Everything TDI-NE has done in terms of getting the project prepared for construction has been absolutely by the book. Everything has been done, in my mind, as well as you could possibly do it.”

Frank Heald
Town of Ludlow, VT

A partnership to power the future of Massachusetts

The NECPL and Hydro-Québec are the ideal partners for ensuring that Massachusetts can achieve its energy diversity goals by providing a source of clean, reliable, firm, base-load power for the next 20 years. The benefits of this partnership include:

- ▶ Hydro-Québec’s ability to generate reliable, base-load, large-scale hydropower and the immediate availability of this energy without building new generation facilities
- ▶ The only fully permitted project in New England, the NECPL is a cost-effective HVDC line ready for construction
- ▶ Solid financial backing from both TDI-NE and Hydro-Québec

Minimum risk, maximum reward for Massachusetts

This proposal offers a viable, low-cost clean energy generation delivery project with limited risk for the following reasons:

1. The partners are offering a stable and predictable fixed-price bid to protect Massachusetts ratepayers.
2. There is no construction risk related to the generation resources, as they are already in service. In addition, TDI-NE is taking on all of the construction risk in building the NECPL.
3. The Commonwealth’s citizens will receive impressive energy, environmental and economic benefits. This includes \$20 million in funding to assist an estimated 2,500 low-income households.
4. The NECPL is fully permitted, has full site control and is well supported.

A viable transmission line

The NECPL is viable and construction-ready, having obtained all necessary permits including a Presidential Permit from the U.S. Department of Energy (December 2016), a Certificate of Public Good from the Vermont Public Service Board (January 2016), and a wetlands permit from the Army Corps of Engineers (January 2016). The project also enjoys very broad support across Vermont state and local government, as well as from businesses and homeowners.



**US Army Corps
of Engineers®**



Firm energy from proven partners

Hydro-Québec has been a market participant in the New England Power Pool (NEPOOL) and the ISO-NE markets for decades, and has provided New England with a significant source of clean energy on a non-firm basis. This proposal represents an opportunity for Massachusetts to take the next step forward in securing additional large-scale, clean energy generation from Hydro-Québec on a firm basis imported over a new interconnection. NECPL is owned by Blackstone, an alternative asset management leader with over \$368 billion currently under management. Blackstone is the preeminent global leader in the development and construction of energy infrastructure, having invested over \$30 billion in energy infrastructure assets globally. Blackstone will provide all the equity required for financing and Societe Generale will secure the debt financing, in their role as Financial Advisor to the project. Multiple large banks have confirmed their strong interest in providing debt for the project.

The NECPL HVDC system will be manufactured and constructed by a consortium comprised of ABB and NKT, as well as Quanta Services, for a fixed price. TDI-NE has obtained ISO-NE approval and completed the I.39 process. ISO-NE has identified certain upgrades required on the New England transmission system as a result of the project. These upgrade costs are well understood by TDI-NE and are incorporated into the fixed-price bid. The NECPL will be operated by ISO-NE and TDI-NE, and maintenance services will be completed by ABB and VELCO under long-term agreements.

This proposal is fully responsive to the RFP and provides the following benefits:

Significant Benefits to Massachusetts over 20 Years.

THE ESTIMATED TOTAL BENEFIT FROM THE NECPL IS **\$20 BILLION**

- ▶ Energy, Capacity and Gas Savings: \$16 billion
- ▶ Economic and Environmental Benefits: \$4 billion





2008 MASSACHUSETTS GLOBAL WARMING SOLUTIONS ACT

CLEAN ENERGY THAT CAN HELP MASSACHUSETTS MEET ITS GWSA MANDATE

- ▶ Contributes 24% to achieving Massachusetts' economy-wide 2020 GWSA mandate.
- ▶ On a life-cycle basis, HQ's energy has the same GHG emission profile as wind energy.

RELIABLE, FLEXIBLE AND CONTROLLABLE SYSTEM POWER

- ▶ Hydro-Québec operates 61 hydroelectric generating stations that are fully interconnected through the company's high-voltage transmission system.
- ▶ This system power will be delivered over the NECPL, a dedicated high-voltage direct-current line. This supply will be fully dispatchable by ISO-NE, as if it were reliable base-load generation located within New England.

BASE-LOAD ENERGY THAT CAN FIRM UP AND UNLOCK INTERMITTENT ENERGY SOURCES, AND PROVIDE A HEDGE TO NATURAL GAS GENERATION

- ▶ This proposal will decrease the Massachusetts power sector's natural gas usage by 11%, which will reduce natural gas costs to the Commonwealth's ratepayers by \$900 million and provide additional electricity cost savings over the term of the contracts.
- ▶ HQ's significant storage capacity can respond instantly to changes in demand, including during peak periods.
- ▶ Dispatchable, continuous, and predictable, hydropower is the best renewable generation resource that can support the ongoing development of intermittent resources such as solar and wind power.

PROVEN ABILITY TO DELIVER EVEN DURING QUÉBEC'S WINTER PEAK PERIODS

- ▶ Hydro-Québec is fully capable of delivering a firm 1,000 MW every hour of the year, including during Québec's peak period in winter, over the life of the project for the full 20 years of the PPA. Even during the winter peak periods in Québec, Hydro-Québec has consistently maintained non-firm delivery volumes into New England that are well above its contractual obligations. During its winter peak in 2014–2015 and 2015–2016, Hydro-Québec delivered, on average, over 1,600 MW/hour during peak hours into New England. As for the 2016–2017 winter peak, average deliveries into New England were even higher: on average over 1,900 MW/hour. For all years in question, volumes were well above supply obligations.
- ▶ If the NECPL had been operating during the polar vortex of January 2014, it would have saved Massachusetts ratepayers an estimated \$200 million.





“They really asked us to think about what would be beneficial to people who are struggling to pay their utility bills.”

*Clare Higgins,
Community Action of the
Franklin, Hampshire, and
Northern Quabbin Regions*

ECONOMIC BENEFITS TO THE COMMONWEALTH

- ▶ NECPL will support the creation of more than 1,100 long-term jobs and create an estimated \$7 billion in economic output in Massachusetts.
- ▶ In partnership with Community Action, a nonprofit located in Western Massachusetts, the NECPL will provide \$20 million in funding that will assist an estimated 2,500 low-income households with energy retrofits.

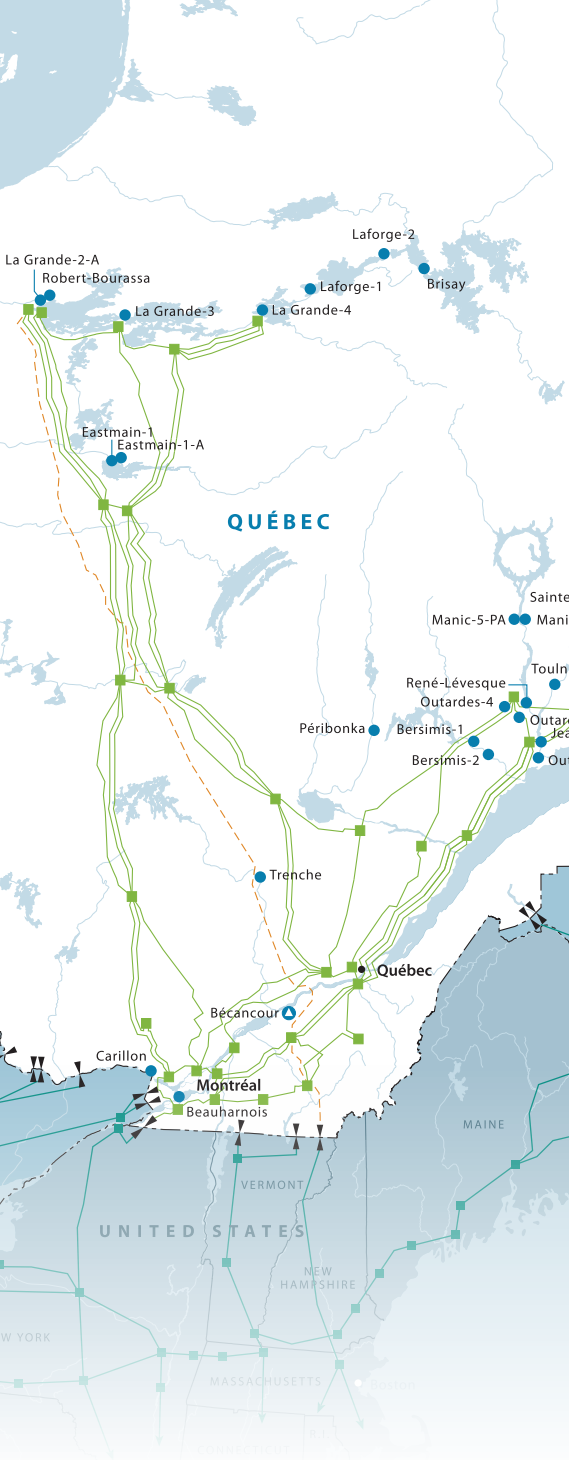
ENERGY SECURITY AND A ROBUST TRANSMISSION SYSTEM

- ▶ Hydro-Québec’s 27 large reservoirs are managed on a multiannual basis with sufficient energy reserves to offset water inflow fluctuations.
- ▶ Hydro-Québec operates its system to the most stringent reliability standards, in accordance with the criteria of the NERC and the Northeast Power Coordinating Council (NPCC).
- ▶ The HVDC line in Vermont will be buried, providing protection from natural disasters.

SOLID FINANCIAL BACKING AND EXPERIENCE

- ▶ As a state-owned corporation, Hydro-Québec has the ability to finance the construction of the Québec portion of the new interconnection through the strength of its balance sheet and the issuance of debentures and notes guaranteed by the Québec government. This financial strength assures Hydro-Québec’s ability to maintain its facilities throughout the entire term of the HQ PPA.
- ▶ The engineering and construction quality of Hydro-Québec’s generating fleet has been a model for the industry for 50 years. Hydro-Québec makes substantial investments to maintain and upgrade its facilities. In 2016, C\$344 million was invested in the retrofitting and refurbishment of generating stations and associated structures. In 2016, Hydro-Québec TransÉnergie invested C\$1.8 billion in its transmission facilities. The HQ hydropower resources are secure and reliable because of the flexibility and quality of Hydro-Québec’s generation, transmission, and distribution facilities.
- ▶ The NECPL is owned and backed by Blackstone, one of the largest asset managers in the world. Blackstone has provided all development funding to date and is prepared to provide 100% of the required equity. Blackstone is a world-class energy infrastructure developer. Over the past decade, the organization has financed and developed over \$30 billion of energy infrastructure assets. This includes close to 6,000 MW of power generation assets. Debt funding will be arranged by Societe Generale and sourced from multiple large banks that have demonstrated a strong interest. Blackstone’s track record of securing financing is well recognized by the investment community.
- ▶ The NECPL equipment will be manufactured and constructed by two of the leading HVDC companies in the world, ABB/NKT and Quanta. VELCO and ABB will provide long-term maintenance services.





Proposal highlights

The partnership between TDI-New England and Hydro-Québec makes this proposal extremely favorable compared to other clean-energy resources for the following reasons:

► **SECTION 3: ENHANCED RELIABILITY WITH MINIMAL OUTAGES.** Hydro-Québec has structured the HQ PPA supporting this proposal in a manner that leverages the strengths of its existing hydroelectric generation fleet as a system. Thus, the HQ hydropower resources effectively have no operating constraints. Similarly, the project's transmission facilities in both Vermont and Québec will be constructed according to industry standards and will be maintained in compliance with NERC, NPCC, and ISO-NE system protocols to maximize the project's ability to deliver clean energy at the full 1,000 MW transfer capability every hour on a firm basis. The NECPL will be a buried HVDC system that provides extraordinary operational flexibility for ISO-NE.

► **SECTION 4: A SECURE ENERGY RESOURCE AND DELIVERY PLAN.** Hydro-Québec's system is a diverse portfolio of run-of-river and reservoir generation units located in geographically diverse areas. Hydro-Québec's reservoir system can withstand several years of dry conditions.

► **SECTION 5: STRONG FINANCIAL ABILITY.** Hydro-Québec can generate financing through the strength of its balance sheets and issuance of debt, and Hydro-Québec's debt is guaranteed by the government of Québec. Hydro-Québec's credit ratings are among the highest for regulated public utilities, and it has a track record of completing hundreds of large capital projects over the past decade. TDI-NE is owned by Blackstone, which has \$368 billion in assets under management. Blackstone has committed to providing all the required equity for NECPL's financing. Societe Generale, one of the leading financing banks for transmission lines, is the project's financial advisor and will arrange for the debt portion of the financing. Blackstone's track record of securing financing is well recognized by the investment community.

► **SECTION 6: FULL SITE CONTROL AND INTERCONNECTION STUDIES COMPLETED.** The NECPL has 100% site control from the U.S./Canada border to the interconnection point in Ludlow, Vermont. There are no disputes over this site control, and TDI-NE enjoys strong partnerships with the towns and State of Vermont, which welcome the project. The NECPL has received its I.39 authorization, which confirms the project can reliably interconnect into the ISO-NE system. Importantly, the NECPL is the only fully permitted project in New England that can cost effectively achieve the Commonwealth's climate change goals.

► **SECTIONS 7: LOW ENVIRONMENTAL IMPACTS AND TREMENDOUS SUPPORT.** The project is fully compliant with Massachusetts' desire to site transmission in a low-impact manner along existing infrastructure. NECPL is fully permitted and has minimal appeal risk that could delay COD, since it was developed in a manner that respects the local communities and environment. Vermonters across the state publicly endorse the project and fully support Massachusetts' effort to procure clean energy through the NECPL.





1,100 JOBS

*Once operational,
the NECPL will create
more than 1,100
long-term jobs in the
Commonwealth of
Massachusetts.*

► **SECTION 8: ADVANCED ENGINEERING AND PROCUREMENT.** The HQ hydropower resources are already in service and require no further procurement. The HVDC converter terminal and DC cable technologies proposed to be used in the transmission projects are widely used in the industry and have a strong track record of exceptional reliability. ABB and NKT have provided a fixed-price bid to manufacture and warranty the HVDC system and will install the 97-mile lake portion of the project. Quanta Services has also provided a fixed-price bid to install the overland portion.

► **SECTION 9: EXTENSIVE OPERATIONS AND MAINTENANCE EXPERIENCE.** Hydro-Québec has a strong record of operating and maintaining generation and transmission systems with billions of dollars in capital assets. The company is committed to maintaining the generation and transmission assets that are necessary to this proposal in accordance with the highest industry standards. TDI-NE will partner with VELCO and ABB to conduct maintenance activities; ISO-NE will assume operational control of the project. TDI-NE and Blackstone will draw on their internal team's formidable experience operating large energy projects to ensure the project meets its reliability guarantees.

► **SECTION 10: CRITICAL PATH SCHEDULE.** The project's critical path schedule is achievable and on track to commence construction shortly after approval of the proposed HQ PPA and TDI-NE TSA.

► **SECTION 11: ORGANIZATIONAL EXPERIENCE IN LARGE-SCALE ENERGY DEVELOPMENT.** Hydro-Québec's development team has built more than 4,500 MW of new installed capacity since 2003. TDI-NE's development team, Blackstone and partners ABB/NKT and Quanta have built thousands of megawatts of operating energy projects in the past decade. Blackstone has invested over \$30 billion in global energy infrastructure assets and is recognized as world-class energy infrastructure developer.

► **SECTION 12: A GIANT LEAP FORWARD IN GREENHOUSE GAS EMISSION REDUCTIONS.** The HQ hydropower resources will deliver a minimum of 8.3 TWh of clean energy generation and reduce millions of tons of CO₂ emissions annually. This resource is the best and most cost-effective solution at the large scale necessary to help Massachusetts achieve the greatest progress in hitting the Global Warming Solutions Act's emissions reduction targets along with enhanced system reliability and firm deliveries to mitigate price volatility to customers.

► **SECTION 13: SIGNIFICANT BENEFITS TO THE COMMONWEALTH.** The NECPL will provide significant benefits to the Commonwealth of Massachusetts, including lower energy costs for commercial and residential ratepayers, cleaner air, a significant number of new jobs, and a new source of funding for low-income ratepayers.

► **SECTION 14: FIXED-PRICE BID.** TDI-NE is pleased to submit a fixed-priced bid for the NECPL that will insulate the Commonwealth's ratepayers from potential cost overruns.

► **SECTION 15: COMPLIANT TRANSMISSION SERVICES AGREEMENT.** TDI-NE has provided a draft TSA that is fully compliant with the RFP directives.





“They’re showing how big energy infrastructure can be done the right way.”

*Ian Bowles,
Massachusetts Secretary
of Energy and Environmental
Affairs, 2007–2011*

Bid structure



TDI New England

A Blackstone Portfolio Company

- ▶ 1,000 MW transmission line
- ▶ 96.5% minimum availability
- ▶ FERC regulated

TRANSMISSION SERVICES AGREEMENT

TSA with MA Utilities

- ▶ 20-year contract
- ▶ Firm transmission rights
- ▶ Approved by FERC



Hydro Québec

- ▶ Québec 1,000 MW interconnection
- ▶ Commitment to guaranteed deliveries, including peak periods
- ▶ Existing hydro resources

POWER PURCHASE AGREEMENT (8.3 TWh)

PPA with MA Utilities

- ▶ 20-year contract
- ▶ Firm delivery of a minimum of 8.3 TWh hydropower annually
- ▶ Approved by MA DPU
- ▶ Environmental attributes



TDI New England

A Blackstone Portfolio Company



Hydro Québec

Please see ***Appendix 2.TDI-NE*** for the NECPL Video.

Section 3 | Operational Parameters

Sub-section 3.1	Maintenance Outage Requirements
<i>Specify partial and complete planned outage requirements in weeks or days for all generation facilities and transmission facilities. Also, list the number of months required for the cycle to repeat (e.g., list time interval of minor and major overhauls, and the duration of overhauls).</i>	

3.1.1 Hydro-Québec

3.1.1.1 Hydro-Québec – Hydropower Resources

N/A. The request for information about the planned outage requirements and maintenance cycles of the HQ Hydropower Resources supporting this Proposal is not applicable, because the Firm Service Hydroelectric Generation to be delivered will be supported by Hydro-Québec's system as a whole. The maintenance of any particular generation unit will not affect the availability of the Firm Service Hydroelectric Generation.

Hydro-Québec's current generation fleet consists of 61 hydroelectric generation stations with an installed capacity of 36,000 MW, which will be managed as a portfolio to provide Firm Service Hydroelectric Generation. The size of the portfolio available to support this Proposal greatly exceeds the 1,000 MW of Firm Service Hydroelectric Generation offered in this Proposal. [REDACTED]

[REDACTED] Because of the number and variety of units in the portfolio, Hydro-Québec has a large degree of flexibility in managing their output. The available resources will be more than sufficient to provide the contracted amount of Firm Service Hydroelectric Generation at all times and will not be subject to the planned outage of any specific unit within the system. The availability of the HQ Hydropower Resources depends only upon the availability of the transmission facilities as discussed below.

3.1.1.2 Hydro-Québec – Québec Line

Once they have been constructed and placed in service, the Québec Line and the NECPL Line will have the same operational characteristics as any other transmission facility. Thus, the maintenance schedule of the Québec Line will be conducted in accordance with Hydro-Québec TransÉnergie's internal maintenance practices, which have been developed based on decades of experience in managing its entire transmission system. The maintenance schedule of the Québec Line will also be coordinated with TDI-NE.

Ordinary line maintenance activities will not require the Québec Line to be taken offline. In the rare case that a planned outage is necessary, as described in Section 9.1, all planned outages will be scheduled in compliance with all applicable requirements of ISO-NE. Planned outages will also be scheduled to coincide with the annual maintenance schedule of the converters, as prescribed by the converter vendors. Maintenance of the converters will require no more than 6 days during

which the HVDC system will be unavailable.

The Québec converter station will require routine, preventative maintenance to ensure efficient operation and to minimize the chance for an unplanned outage. A single planned annual outage is required to perform this maintenance. This annual service outage is approximately 6 consecutive days (6x 24 hours) annually to service the converter station. The service at the HQT Converter Station and NECPL Converter Station will be coordinated between TDI-NE and HQT and will be performed concurrently. The schedule for system maintenance will be coordinated with ISO-NE several months in advance and will be planned to occur in the shoulder months (i.e. September – November and April – May) when ISO-NE and HQT loads are lightest.

Maintenance tasks for the underground transmission line will be preventive and will not require any de-energizing of the link. Tasks that require de-energizing will be planned simultaneously with converter station maintenance work without leading to any additional delay.

Therefore, the monthly adjustment factors as a percentage of expected production reflecting planned maintenance outages for both the U.S. Line and the Québec Line are estimated as follows:

Figure 3.1.1.2 – HQ Québec Line Availability Factors

	October	May	Other Months
Year 1	0.81	0.77	1.00
Subsequent Years	0.81	1.00	1.00

The transmission line and associated facilities will use standard and highly reliable equipment that has a long and proven track record in the industry. Based on industry data, we estimate an equivalent forced outage rate for the 20-year term of the HQ PPA to be 0.6%. This rate comprises forced outages for the Québec Line and for the Converter station at La Citière.

3.1.2 TDI-NE – NECPL

The NECPL transmission line and converter station will require routine, preventative maintenance that will be similar to HQT's plan described above. TDI-NE's approach ensures efficient operation and minimizes the chance for a forced outage. A single planned annual outage is required to perform maintenance on the NECPL Converter Station. This service outage is approximately 5 days and will occur in off-peak periods. The next maintenance cycle will commence approximately 12 months after the completion of an annual service. The service at the HQ Converter Station and NECPL Converter Station will be coordinated between TDI-NE and HQ and will be performed concurrently. The schedule for system maintenance will be coordinated with ISO-NE several months in advance and will be planned to occur in the shoulder

months (i.e. September – November or April – May) when ISO-NE loads are lightest. There are no planned maintenance activities on the transmission line that would require an outage.

Sub-section 3.2	Operating Constraints
<i>Specify all the expected operating constraints and operational restrictions for the project (i.e., limits on the number of hours a unit may be operated per year or unit of time). If the bid includes firm deliveries, list the anticipated situations and frequency of interruptions of transmission sources which would affect power deliveries.</i>	

3.2.1 Hydro-Québec

3.2.1.1 Hydro-Québec – Hydropower Resources

N/A. The request for information about expected operating constraints and operational restrictions of the hydroelectric generation resources supporting this Proposal is not applicable, because the Firm Service Hydroelectric Generation to be delivered will be supported by Hydro-Québec's system as whole. Any constraint or restriction on the operation of any particular generation unit will not affect the availability of the Firm Service Hydroelectric Generation.

The size of the portfolio available to support this Proposal greatly exceeds the 1,000 MW of Firm Service Hydroelectric Generation offered in this proposal. [REDACTED]

[REDACTED] Because of the number and variety of units in the portfolio, Hydro-Québec has a large degree of flexibility in managing their output. The available resources will be more than sufficient to provide the contracted amount of Firm Service Hydroelectric Generation at all times and will not be subject to operating constraints of any specific unit within the system.

Given the seasonal patterns of demand and water supply, management of the upstream and downstream water levels of power stations for the annual and multi-year management of reservoirs is the main factor for modulating production at the various sites. The typical operating parameters of individual power stations are subject to a number of operational rules or constraints that relate to matters such as the water levels to be met or to the requirements of fish upstream and downstream of the plants. Nevertheless, as discussed above, the performance of individual units is not relevant to the availability of the Firm Service Hydroelectric Generation from the HQ Hydropower Resources as a whole.

3.2.1.2 Hydro-Québec – Québec Line

The expected operating constraints and restrictions of the Project are no different than that of any other transmission line. The only anticipated interruptions will be those for routine and periodic maintenance on schedules that are similar to those of other transmission facilities, including the converters, which will result in the equivalent forced outage rates as discussed in Section 3.1. Based on exigent operational conditions in the ISO-NE bulk power system unrelated to the HVDC Line, ISO-NE may determine that deliveries at the 1000 MW level cannot be scheduled. Such an operational constraint, although highly unlikely and unanticipated, could happen on an occasion

and, therefore, could lower the amount of energy delivered during the period of the constraint to an amount less than 1000 MW. No other event or circumstance other than a Force Majeure event can reduce or eliminate delivery obligations.

Transfer capability reductions in the Québec Line and the NECPL transmission line are not cumulative or additive. For example, if the Québec Line had a 50 MW reduction and the US Line had a 100 MW reduction, the result would be a 100 MW reduction, resulting in a 900 MW delivery.

3.2.2 TDI-NE – NECPL

In addition to the approximately five days of annual outages required for Converter Station maintenance, the HVDC system manufacturer's, ABB/NKT will guarantee at least a high level availability of the HVDC converter station in Vermont. . Finally, in the highly unlikely event of a mechanical disruption or other event leading to a fault on the HVDC cables, a system outage would be required to locate and repair the damaged section of the cable. In sum, the planned maintenance outages and the low expected forced outage rates for the Vermont converter station and the HVDC cable combine to ensure that the Project will be available to transmit energy at least [REDACTED] of the time.

Sub-section 3.3	Reliability
<i>Describe how the proposal would provide enhanced electricity reliability to Massachusetts, including its impact on transmission constraints.</i>	

3.3.1 Hydro-Québec

3.3.1.1 Hydro-Québec – Hydropower Resources

The portfolio of supply that supports the HQ Hydropower Resources will provide an inherently reliable source of electricity that is not subject to the performance of any specific hydroelectric generation unit. The Hydro-Québec system is robust due to its size and geographic diversity. The hydroelectric generation resources are located across the entire province. Moreover, unlike wind or solar resources, hydroelectric generation resources can operate even in extreme weather conditions, making the generation from the HQ Hydropower Resources and its delivery particularly reliable.



3.3.1.2 Hydro-Québec – Québec Line

The Québec portion of the transmission line will connect with the NECPL project at the border and will meet all reliability criteria required by the NPCC and NERC. With respect to providing enhanced electricity reliability to Massachusetts, see Section 3.3.2 below.

3.3.2 TDI-NE – NECPL

With Hydro-Québec’s ability to contractually commit to firm energy deliveries, the *NECPL: 100% Hydro Bid* will provide enhanced electric and natural gas reliability within the Commonwealth of Massachusetts by adding a highly reliable, fully dispatchable, and extremely flexible baseload energy and capacity resource to New England’s electricity supply. As discussed in more detail in Section 2 of the PA Consulting Report (***Confidential Appendix 3.3.TDI-NE.1***), the *NECPL: 100% Hydro Bid*’s significant reliability benefits arise from the following factors:

1. **The diverse and very large pool of clean generation resources that can deliver energy over the NECPL and decrease natural gas usage.** In essence, the NECPL injects 1,000 MW of clean energy into New England from the vast (approximately 36,000 MW) pool of hydroelectric power plants controlled by Hydro-Québec. This influx of incremental clean energy is expected to decrease the electricity sector’s natural gas usage by 11%, which will lower wholesale natural gas costs for the Commonwealth’s residential, commercial, and industrial ratepayers

by an average of \$40 million per year and provide a clean, baseload alternative to natural gas power plants. See **Confidential Appendix 3.3.TDI-NE.1** p. 6.

2. **The high reliability of the NECPL's technology and its robust interconnection to the New England transmission system.** The NECPL's fully buried transmission cables and HVDC technology (*i.e.*, its industry standard VSC, technology) allows for very low scheduled and forced outage rates. Additionally, the robust interconnection point selected for the NECPL (the 345 Coolidge kV substation in Vermont) has two existing 345 kV circuits extending from the substation to load centers in New England. The NECPL has been exhaustively studied by ISO-NE, and the proposed interconnection has been approved, with well-defined system upgrades to further reinforce reliable energy deliveries (see Section 6).
3. **The ability of clean energy suppliers in Québec to contractually commit to energy deliveries when needed under a Capacity Supply Obligation.** As mentioned above, Hydro-Québec, in collaboration with TDI-NE, will actively participate in the New England Forward Capacity Market, with the goal of clearing the NECPL's full capacity as soon as FCA 14. Up to 1,000 MW of import capacity from the NECPL could be qualified for the FCM with minimal incremental transmission upgrades in the U.S. beyond those identified in the Interconnection Agreement issued by ISO-NE.
4. **The full dispatchability and extraordinary operating flexibility of the NECPL.** Energy from the NECPL will be available 'on demand' at times of system need and in the quantities required by the system, in contrast to non-firmed intermittent renewable energy power plants whose output is inherently uncontrollable. As discussed in the PA Consulting Report, this dispatchability combined with the ability to operate at a very high capacity factor would allow the *NECPL: 100% Hydro Bid* to replace existing fossil-fueled power plants more effectively than intermittent power plants.

Additionally, the NECPL will have unmatched operational flexibility. The NECPL's HVDC system can be designed to automatically adjust its power dispatch within a few hundred milliseconds in response to events in the AC system (*e.g.*, tripping of a critical line), which reduces the risk of overloading other lines in the AC system and causing cascading outages. The HVDC control can be programmed to accommodate several such dispatch levels.

The VSC technology used by the NECPL will allow the delivery of any amount of clean energy between zero MW and 1,000 MW, while the NECPL's maximum ramp rate (the speed at which output can be modified to match the needs of the New England electricity system) is 99 MW per minute. In contrast, intermittent power plants have little ability to control their output, meaning it is difficult to modify their output in response to changing system needs. The VSC technology used by the NECPL can also provide a simultaneous injection/absorption of

reactive power up to +/- 400 MVAR at PF 1.0 in the inverter mode, which can provide essential grid stabilization services for New England.

Thus, the NECPL provides much greater support in maintaining the reliability of the New England bulk power system than other clean energy options.

5. **The significant contribution that the *NECPL: 100% Hydro Bid* will provide in reducing winter electricity price spikes in the Commonwealth.** The *NECPL: 100% Hydro Bid* is a low-production cost baseload power resource that can provide up to 1,000 MW of firm clean energy capacity in the winter, displacing more costly natural gas-fired generation on the ISO-NE grid. By displacing natural gas-fired generation, the *NECPL: 100% Hydro Bid* decreases the need for natural gas to contribute to ISO-NE's winter electric reliability requirements. Moreover, by displacing natural gas-fired generation on the system, the *NECPL: 100% Hydro Bid* both increases the remaining pool of natural gas available to New England as a whole and reduces the overall cost of natural gas for the region by reducing demand for natural gas. If the *NECPL: 100% Hydro Bid* were operational during the Polar Vortex in January 2014, it would have saved Massachusetts ratepayers nearly \$200 million in wholesale electricity costs.

Likewise, the *NECPL: 100% Hydro Bid* provides important reliability benefits during the summer months. First, Massachusetts would need more installed wind and solar compared to hydro (and wind firmed by hydro) to meet the same level of reliability. Due to their intermittent nature, capacity from wind and solar power plants is "derated" in ISO-NE's planning process, such that nearly 3,000 MW of solar capacity would need to be built to equate to the *NECPL: 100% Hydro Bid*'s firm capacity. Second, intermittent power plants with weather-dependent output require additional ancillary services to maintain the same level of operational reliability as firm power. The NECPL will deliver 1,000 MW of firm yet flexible baseload power and can help provide these ancillary services to the market.

6. **Extent to which the proposed project for Clean Energy Generation is to be paired with energy storage systems.**

TDI-NE and GMP have collaborated on exploring energy storage systems as an alternative to reconductoring to mitigate minor potential overloads on the GMP 34.5 and 46 kV subtransmission system that could be caused by NECPL. GMP's technical consultant, RLC completed an analysis that focused on upgrades that would mitigate potential overloads in southwestern Vermont along the "Southern Loop." RLC concluded, that "*N-1 subtransmission network branch overloads on GMP's Southern Loop (that are attributable in whole or in part to NECPL) can be economically remediated by strategically located and dispatched battery-based energy storage facilities.*" More specifically, approximately 42 miles of line reconductoring

could be alleviated with the installation of 25 MW of batteries at two existing GMP substations. GMP has received indicative pricing from battery manufacturers and completed an analysis of the feasibility of installing batteries at these locations. Based on information gathered to date, GMP has concluded that storage systems can be an economic alternative to reconductoring in this part of their system.

Based on this analysis, GMP is also exploring options to expand the capacity of these storage systems, which would provide additional benefits to the New England grid in the form of new resources that could provide operating reserves, frequency regulation and mitigate peak loads. TDI-NE and GMP are committed to further refining this storage option, as it is an innovative solution to overloads that would provide ancillary benefits to the ISO-NE system and would significantly reduce impacts to the environment and communities compared to reconductoring. TDI-NE envisions that this innovative solution could be an example to be followed by other utilities to mitigate minor overloads in a more efficient manner with lower community and environmental impacts. This initiative is consistent with the goals of Governor Baker as announced on June 30, 2017 related to the importance of energy storage technologies.

Sub-section 3.4	Moderation of System Peak Load
<p><i>Describe how the proposal would contribute to moderating system peak load requirements and provide the following information:</i></p> <p><i>i) Estimated average output for each summer period (June- September) from 1:00 - 6:00 pm</i></p> <p><i>ii) Estimated average output for each winter period (October-May) from 5:00 – 7:00 pm</i></p>	

3.4.1 Hydro-Québec

3.4.1.1 Hydro-Québec – Hydropower Resources

This Proposal moderates system peak load requirements, because it commits a substantial delivery of energy (1,000 MW) during all hours of the year and maintains those deliveries during the peak hours. The HQ Hydropower Resources will reliably deliver electricity during the peak hours, as deliveries will remain constant and will not be subject to variations of any specific generating unit. Further, these firm delivery quantities will be guaranteed by contract, including during the Hydro Québec system winter peaks.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

3.4.1.2 Hydro-Québec – Québec Line

n/a. See Section 3.4.1.1.

3.4.2 TDI-NE – NECPL

Please refer to HQ’s response in section 3.4.1.1 above.

¹ An annual maintenance outage of 6 days is planned in October of each year.

Sub-section 3.5	Development Stage of Facility
	<p><i>Describe whether the project is in operation, in construction or in the development phase.</i></p> <p><i>(a) If in operation, when did the project achieve commercial operation?</i></p> <p><i>(b) If in construction, when did construction commence and what are the projected dates for initial testing and commercial operation.</i></p> <p><i>(c) If the project is partly in one development stage and partly in another, please explain in detail the status of the project.</i></p> <p><i>If the proposed project is an expansion, repowering, environmental investment or other modification of an existing Facility, please describe the project in detail, the total cost and cost on a \$/kW basis specifying the existing project and the proposed expansion, repowering or other modification. Indicate any incremental or decremental capacity.</i></p>

3.5.1 Hydro-Québec

3.5.1.1. Hydro-Québec – Hydropower Resources

The HQ Hydropower Resources are a portfolio of hydroelectric generation units that comprise the current Hydro-Québec system resources in commercial operation. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

3.5.1.2 Hydro-Québec – Québec Line

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

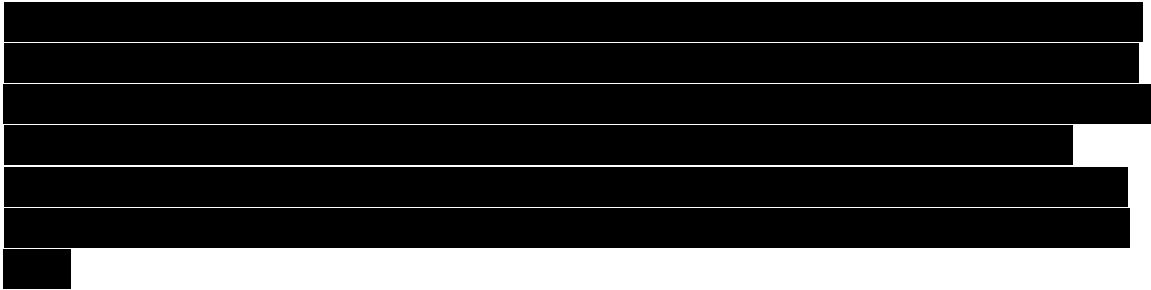
[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]



3.5.2 TDI-NE – NECPL

The NECPL has completed the development stage and is now in the pre-construction phase, having achieved the following significant development milestones:

- The NECPL preliminary design is completed and fully permitted (see Sections 7, 8);
- The NECPL is well supported in Vermont and New England (see Section 7);
- There is no pending litigation with respect to permits and limited permit appeal risk (see Sections 5, 7);
- TDI-NE has regulatory approval and/or property rights on all land required to construct the NECPL (see Section 6);
- The ISO-NE interconnection studies are completed (see Section 6);
- The cost and scope of electric system upgrades are identified in the System Impact Study on the U.S. AC system (see Section 6);
- TDI-NE and Hydro-Québec have reached an agreement in principle to ship a minimum of 8.3 TWh/annually over the line (see Sections 8, 14);
- TDI-NE has reached agreement in principle with the HVDC manufacturer (ABB/NKT Cables) and the EPC contractors -- ABB/NKT and Quanta Services (see Section 8);
- The EPC contractors have provided a firm construction price (see Section 14); and
- TDI-NE has reached agreements in principle with VELCO and ABB/NKT on the Operations and Maintenance Program Plans (See Section 9).

The NECPL has a discrete set of standard regulatory conditions that must be satisfied prior to project construction. See **Appendix 3.5.TDI-NE**. Construction of NECPL will commence after completion of the pre-construction conditions and the execution and approval of a long-term Transmission Services Agreement by the MA DPU which will result in financing of the NECPL.²

² The exact details of what events trigger construction is detailed in the Draft TSA contained in Section 15.

Section 4 | Energy Resource and Delivery Plan

Sub-section 4.1	Energy Resource Plan
<i>For Eligible Facilities, the bidder is required to provide an energy resource or fuel supply plan for its proposed project, including supporting documentation. The fuel supply/energy resource profile information should be consistent with the type of technology/resource option proposed and the term proposed. The information requested is organized according to the type of project or energy resource. Bidders should respond to all information requests which are relevant to the bid in a timely manner.</i>	

4.1.1 Hydro-Québec

[REDACTED]

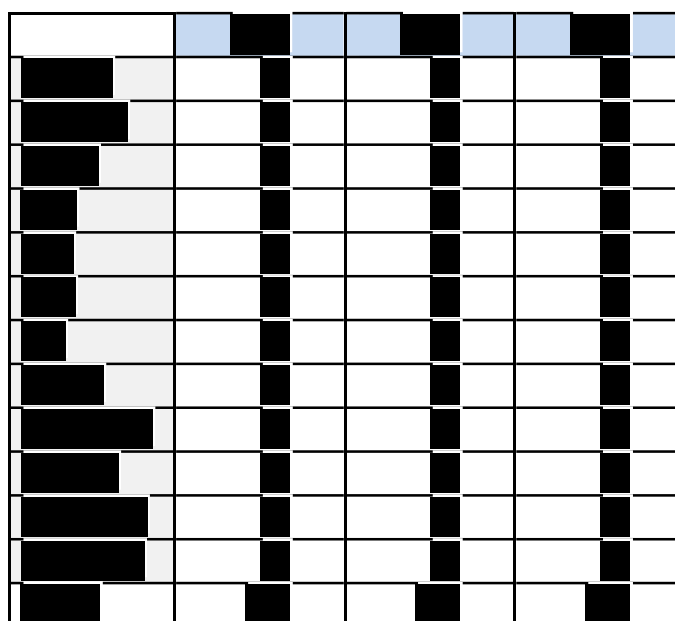
[REDACTED]

[REDACTED]

4.1.1.1 Hydro-Québec – Hydropower Resources

- 1. Describe the project characteristics in terms of water flow (on a monthly basis) and head, and state the assumptions regarding seasonal variations, and a conversion of such flow into megawatts and megawatt-hours.**

The production characteristics of the HQ Hydropower Resources are managed as a highly reliable system portfolio of generation resources that are diverse in number, water resource type, and geographic location. The HQ Hydropower Resources currently consist of a combination of 61 reservoir and run-of-river stations. Energy security of the entire system is ensured through a 27-reservoir system with a multi-annual combined storage capacity. The reservoirs are spread across Québec, thus mitigating regional fluctuations in precipitation in the aggregate.



[REDACTED]
 [REDACTED]
 [REDACTED]
 [REDACTED]
 [REDACTED]
 [REDACTED]
 [REDACTED]

The following link <http://www.hydroquebec.com/generation/centrale-hydroelectrique.html> identifies the type of hydro resource associated with each station as well as the head and watersheds.

2. Provide monthly flow duration curves based upon daily stream flow records.

N/A. As discussed in this Section 4.1, this Proposal offers the generation output of a portfolio of system resources, and because Hydro-Québec maintains its reservoir storage to sustain inflow deficits on a multi-year basis, monthly flow duration curves for any specific generation unit will not affect the generation output of the system as a whole. [REDACTED]

[REDACTED]

3. Identify if the project is run-of-river or has storage capability.

The HQ Hydropower Resources are a combination of reservoir and run-of-river stations. The following link <http://www.hydroquebec.com/generation/centrale-hydroelectrique.html> identifies the type of hydro resource associated with each station.

4. Specify if the project is new, or if the project is an expansion of an existing facility.

Although the HQ Hydropower Resources are existing hydroelectric generating stations, [REDACTED]

[REDACTED]

5. Describe why the generation proposal qualifies as Incremental Hydropower Generation. If the entire project is not new, specify the amount of power provided to or sold into the ISONE market during 2014, 2015, and 2016. Provide information which demonstrates that the resources and transmission capacity described in your proposal are capable of providing an increase in the amount of such power compared to the average power deliveries in ISO-NE over those three years.

The proposed project increases the transfer capability between Québec and New England by constructing a new 1000 MW interconnection which will allow Hydro-Québec to provide Incremental Hydroelectric Generation to Massachusetts.

[REDACTED]

[REDACTED]

[REDACTED]

6. The bidder must disclose in its bid how it proposes to certify that the environmental attributes are included with the energy delivered.

[REDACTED]

4.1.1.2 Hydro-Québec – Québec Line

N/A. Please see Hydro-Québec’s response in Section 4.1.1 above.

4.1.2 TDI-NE – NECPL

This question is not applicable to the NECPL since the NECPL is a transmission line. Please see Hydro-Québec’s response in Section 4.1.1 above.

[REDACTED]

Sub-section 4.2	Clean Energy Generation Delivery Plan
<i>Questions shown in sub-sections below</i>	

4.2.1 Hydro-Québec

4.2.1.1 Hydro-Québec – Hydropower Resources

1. Please provide documentation that any clean energy plan delivery plan that includes hydroelectric generation meets the definition of “Incremental Hydroelectric Generation” as defined in the body of the RFP.

[REDACTED]

2. Please provide an energy delivery plan and profile for the proposed project, including supporting documentation. The energy delivery profile must provide the expected Clean Energy Generation to be Delivered into the ISO-NE market settlement system and permit the Evaluation Team to determine the reasonableness of the projections for purposes of Sections 2.2.1.3 Eligible Bid Categories and 2.2.1.7 Minimum Contract Size of the RFP. Such information should be consistent with the energy resource plan provided above and also considering any and all constraints to physical delivery into ISO-NE.

[REDACTED]

3. Clean Energy Generation for projects containing new Class I eligible resources only must comply with Section 2.2.2.7 of the RFP. They must submit a delivery profile guaranteeing 70% of the energy in their delivery profile for the Winter Peak Period over the course of every Winter Peak Period on the CPPD form in their bidder response package.

Clean Energy Generation for projects containing firm service hydroelectric generation, and Clean Energy from new Class I RPS eligible resources paired with firm service hydroelectric generation must comply with section 2.2.2.7 of the RFP. They will be required to submit a

delivery profile with no Winter Peak Period hour less than 60% of their highest annual single hourly delivery claimed in their annual delivery profile as submitted as a part of their CPPD form in their bidder response package. Bidders will be required to guarantee the submitted delivery profile in all hours during the Winter Peak Period. Bidders should supply any studies performed to support this profile. Bidders should respond to all information requests which are relevant to the bid in a timely manner.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

4.2.1.2 Hydro-Québec – Québec Line

N/A. [REDACTED]

4.2.2 TDI-NE – NECPL

This question is not applicable to the NECPL since the NECPL is a transmission line. Please see Hydro-Québec's response in Section 4.2.1 above.

Sub-section 4.3	REC/Environmental Attribute Delivery Plan
<i>Please provide documentation demonstrating that the project will deliver GIS Certificates representing those RECs or Environmental Attributes. For projects located outside of the ISO-NE control area, describe how the Delivered energy and associated RECs or Environmental Attributes will satisfy NEPOOL-GIS rules for the Delivery of GIS Certificates.</i>	

4.3.1 Hydro-Québec

4.3.1.1 Hydro-Québec – Hydropower Resources

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

⁴ [REDACTED]

[REDACTED]

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4.3.1.2 Hydro-Québec – Québec Line



4.3.2 TDI-NE – NECPL

This question is not applicable to the NECPL since the NECPL is a transmission line. Please see Hydro-Québec's response in Section 4.3.1.1 above.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Section 5 | Financial/Legal

Section Introduction

<i>Bidders are required to demonstrate the financial viability of their proposed project. Bidders should provide the following information:</i>

Sub-section 5.1	Prove contract allows for financing
------------------------	--

<i>Each bidder is required to submit information and documentation that demonstrates that a long term contract resulting from this RFP Process would either permit the bidder to finance its proposal that would otherwise not be financeable, or assist the bidder in obtaining financing of its proposal.</i>

While Hydro-Québec and TDI-NE are very different entities with respect to the source of their financial backing, they both have the ability to raise funds in the capital markets on favorable terms due to the stability of their equity owners. Hydro-Québec is a state-owned corporation with the support of the Government of the Province of Québec. TDI-NE, in contrast, is supported by private sector sources of financing, but its sole equity owner, Blackstone Funds, is the largest private equity firm in the world with \$368 billion in assets under management.

Nevertheless, the *NECPL: 100% Hydro Bid* represents a significant commitment of capital. Therefore, the prospective revenues must be predictable and sufficient to maintain the bidders' financial stability to enable financing of the *NECPL: 100% Hydro Bid*. The stability that can be obtained only through long-term contracts, such as the 20-year HQ PPA and associated transmission service agreements, is essential to reducing the financial risks of the Project and, therefore, to obtaining favorable and viable financing terms.

5.1.1 Hydro-Québec

[REDACTED]

[REDACTED]

5.1.2 TDI-NE – NECPL

Privately-sponsored major infrastructure projects such as the NECPL always involve a combination of invested equity capital and borrowed debt capital, with varying ratios of leverage. Typically, the debt investors look to the project assets as security, and among those assets none will be more important than the predictable and stable revenue stream associated with a long-term agreement that binds a credit-worthy party to a steady payment stream in consideration for use of the assets. Thus, notwithstanding the manifest financial strength of the NECPL sponsors, the HQ PPA and the TDI-NE TSA will be essential elements allowing for the substantial project financing that will be involved here. Such long-term contracts will enable the sponsors to access the credit and capital markets on favorable financing terms and conditions.

A long-term contract is critical in order to allow TDI-NE to procure both the equity and debt financing required to build the Project. TDI-NE is confident that a long-term contract resulting from this RFP process will enable the NECPL to obtain equity and debt financing. TDI-NE has received strong support letters from multiple banks that are eager to provide debt financing for the NECPL at attractive rates and on favorable terms (*See Confidential Appendix 5.1.TDI-NE.1*). However, as evidenced in these letters, a long-term contract with a creditworthy party is essential in order to demonstrate sufficient certainty of future cash flows for lenders. Without a long-term contract in place, the NECPL will not be able to raise adequate levels of debt capital on reasonable terms.

Investment funds affiliated with Blackstone are prepared to provide 100% of the equity capital for the NECPL. However, investment committee approval from Blackstone will be contingent upon raising adequate levels of debt at satisfactory rates and on favorable terms. As previously stated, a long-term contract with a creditworthy party resulting from this RFP process will be key for the NECPL to access the debt capital markets.

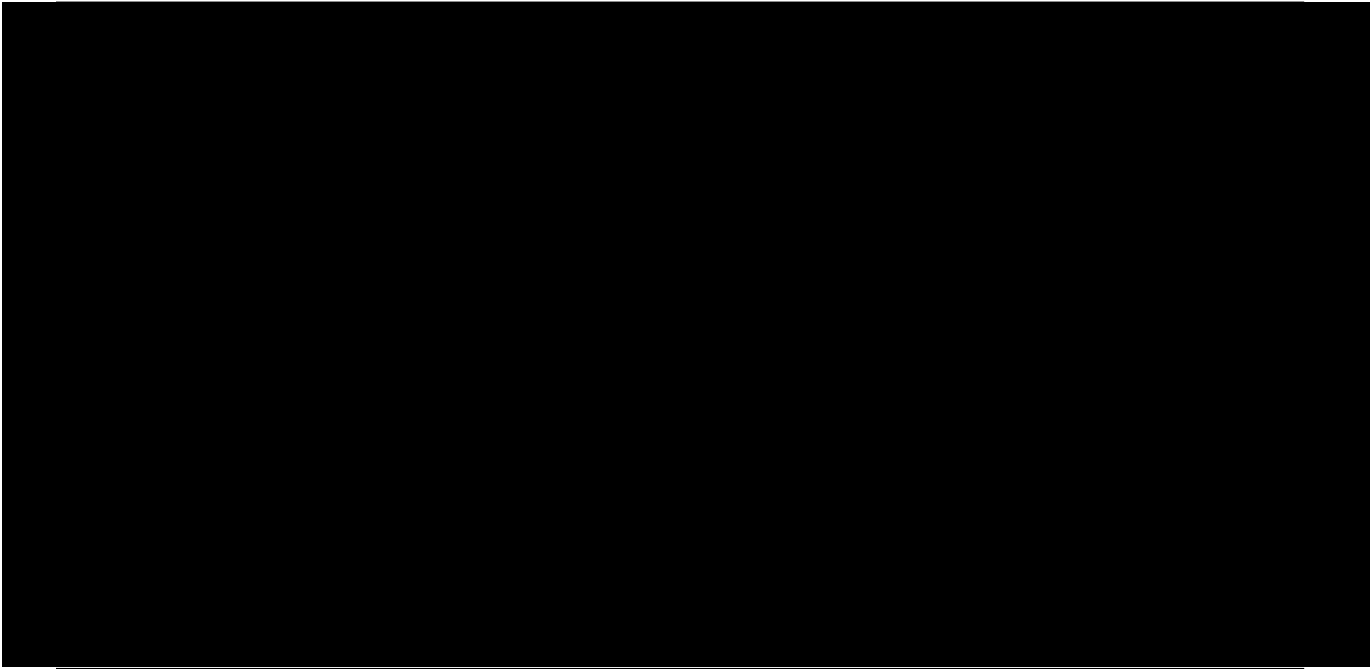
With approximately \$368 billion of assets under management as of March 31, 2017, Blackstone is one of the world's leading investment firms. Founded in 1985 and based in New York, Blackstone employs over 2,200 people in more than 20 offices worldwide, with its portfolio companies employing a further 524,000 people across the globe. Blackstone acquired TDI in 2010 through its affiliate Blackstone Capital Partners.

Potential debt providers include, but are not limited to, [REDACTED]

[REDACTED]
[REDACTED] This is an illustrative list which includes entities that have issued a Letter of Interest in providing debt financing for the NECPL project. In addition to the bank Letters of Interest, the Equity Support Letter and Form of Equity Commitment from Blackstone can be found in *Appendix 5.1.TDI-NE.2*.

Sub-section 5.2	Bid Team Structure
<p><i>Please provide a description of the business entity structure of the bidder's organization from a financial and legal perspective, including all general and limited partners, officers, directors, managers, members and shareholders, involvement of any subsidiaries supporting the project, and the providers of equity and debt during project development.</i></p> <p><i>Provide an organization chart showing the relationship between the equity and debt participants and an explanation of the relationships.</i></p> <p><i>For jointly owned facilities, identify all owners and their respective interests, and document the Bidder's right to submit a binding proposal.</i></p>	

Figure 5.2. provides an organization chart showing the relationship between the equity and debt participants of the *NECPL: 100% Hydro Bid* sponsors.



5.2.1 Hydro-Québec

Hydro-Québec is a long-standing participant in the New England energy market and operates one of the major systems in Canada for the generation, transmission and distribution of electric power.

Hydro-Québec supplies virtually all electric power distributed in Québec, the largest province in Canada in land area and the second largest in population. Hydro-Québec was created in 1944 by the Hydro-Québec Act of the Parliament of Québec and is an agent of Québec. Accordingly, Hydro-

Québec is a government-owned corporation; all of its capital stock is held by the Minister of Finance on behalf of the Government of the Province of Québec.

Hydro-Québec is one of the largest power generators in North America. Its system power is almost exclusively generated by hydroelectric facilities. Hydro-Québec also transmits and distributes electricity. Hydro-Québec has been selling power to the New England energy markets since the 1980s over the existing transmission lines interconnecting the two regions.

[REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]
[REDACTED]

[REDACTED]
[REDACTED]

[REDACTED]
[REDACTED]

Appendix 5.2.HQ contains copies of the actions taken by HRE to participate in this RFP and submission this Proposal.

5.2.2 TDI-NE – NECPL

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
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[REDACTED]

[REDACTED]

[REDACTED]

Sub-section 5.2* ⁸	Financing Plan
	<p><i>For projects that include new facilities or capital investment, provide a description of the financing plan for the project, including construction and term financing. The financing plan should address the following:</i></p> <ol style="list-style-type: none"> <i>I. Who will finance the project and the related financing mechanism or mechanisms that will be used (i.e. convertible debenture, equity or other) including repayment schedules and conversion features B-9</i> <i>II. The project's existing initial financial structure and projected financial structure</i> <i>III. Expected sources of debt and equity financing</i> <i>IV. Estimated construction costs</i> <i>V. The projected capital structure</i> <i>VI. Describe any agreements, both pre and post commercial operation date, entered into with respect to equity ownership in the proposed project and any other financing arrangement.</i> <p><i>In addition, the financing plan should address the status of the above activities as well as the financing of development and permitting costs. All bidders are required to provide this information.</i></p>

5.2*.1 Hydro-Québec

- i. Who will finance the project and the related financing mechanism or mechanisms that will be used (i.e. convertible debenture, equity or other) including repayment schedules and conversion features*

[REDACTED]

[REDACTED]

- ii. The project's existing initial financial structure and projected financial structure*

[REDACTED]

⁸ The asterisk denotes the second use of a duplicative identification number, here "5.2", in Appendix B to the RFP.

[REDACTED]

[REDACTED]

iii. Expected sources of debt and equity financing

[REDACTED]

iv. Estimated construction costs

[REDACTED]

v. The projected capital structure

[REDACTED]

vi. Describe any agreements, both pre and post commercial operation date, entered into with respect to equity ownership in the proposed project and any other financing arrangement.

[REDACTED]

vii. In addition, the financing plan should address the status of the above activities as well as the financing of development and permitting costs. All bidders are required to provide this information.

Sections 5.3.1 and 5.4.1 provide additional information regarding past financings and the financial strength of each sponsor. Section 5.12.1 also includes financing options being explored by them, which include development and permitting costs.

5.2*.2 TDI-NE – NECPL

Overview

TDI-NE is in a very strong position with respect to financing the Project. Since inception in September 2013, the Project's [REDACTED] of development costs through June 30, 2017 have been 100% funded by Blackstone, which will continue to be the case until construction commences. At that time, Blackstone will fund 100% [REDACTED] in required equity to construct the Project.⁹ TDI-NE also has a commercially viable debt structure that will be utilized to construct the Project. TDI-NE has had conversations with 20+ banks and financial institutions, and there is ample debt capacity in the financial markets at attractive terms should the EDCs execute a long-term Transmission Rights Agreement with TDI-NE. In sum, TDI-NE's Financing Plan and the development activities completed to date enable it to provide a fixed price in the *NECPL: 100% Hydro Bid*, insulating the Commonwealth's ratepayers from any potential cost overruns. Please refer to Sections 14.1 and 14.3 for pricing details.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

- [REDACTED]
- [REDACTED]

[Redacted text block]

[Redacted text block]

[Redacted text block]

[Redacted text block]

Sub-section 5.3	Financing Experience
<p><i>Provide documentation illustrating the experience of the project sponsor in securing financing for projects of similar size and technology. For each project previously financed provide the following information:</i></p> <ul style="list-style-type: none"> <i>I. Project name and location</i> <i>II. Project type and size</i> <i>III. Date of construction and permanent financing</i> <i>IV. Form of debt and equity financing</i> <i>V. Current status of the project</i> 	

5.3.1 Hydro-Québec

Hydro-Québec has financed hundreds of capital projects over the course of its operating history as a state-owned and regulated public utility since 1944. Attachment 5.3.1 provides additional details regarding the recent financing experience of Hydro-Québec with respect to projects of similar size, technology and/or profile.

5.3.2 TDI-NE – NECPL

Blackstone is one of the largest investors in the world. Over the past decade, Blackstone has financed and developed over \$30 billion of energy infrastructure assets (including ~6,000MW of power generation assets) and is a world-class energy infrastructure developer. Blackstone's significant financing experience for projects of similar size and scope is provided below.

[REDACTED]

[REDACTED]

Sub-section 5.4	Financial Strength
<i>For projects that include new facilities or capital investment, provide evidence that the bidder has the financial resources and financial strength to complete and operate the project as planned.</i>	

5.4.1 Hydro-Québec

Hydro-Québec finances its own projects using various corporate sources of financing to meet its financial needs. Hydro-Québec's borrowings consist mainly of debentures and medium-term notes, nearly all of which are guaranteed by the Québec government, which is Hydro-Québec's sole shareholder. Hydro-Québec TransÉnergie, which will construct and own the Canadian transmission facilities constructed for the Project, had fixed transmission assets totaling CA\$21.3 billion on December 31, 2016. Hydro-Québec Production, which owns the HQ Hydropower Resources, is one of the largest power generators in North America, with close to CA\$30.9 billion in property, plant and equipment for generation assets. In 2016, Hydro-Québec's net income was CA\$2.86 billion.

Attachment 5.4.1 includes additional information regarding the financial strength of Hydro-Québec as of December 31, 2016.

5.4.2 TDI-NE – NECPL

The capital to build the NECPL will be procured through a combination of debt and equity financing. TDI-NE will secure legally-binding financial commitments on an upfront basis to provide all the capital it needs throughout its construction phase in order for the Project to achieve commercial operations. As stated previously, Blackstone Funds will provide 100% of the Project Equity. Upon the Project's financial closing, Blackstone's commitment will be secured via a Letter of Credit that will ensure the equity commitment will be funded – either directly by Blackstone Funds or via the Letter of Credit. Given the significant amount of equity capital that Blackstone will have invested on an upfront basis, TDI-NE and Blackstone will be highly incentivized for the Project to achieve commercial operations in an expeditious manner.

Regardless of the eventual structure of the debt financing, the providers of that financing will be contractually bound to provide the debt capital required to build the Project. Upon commencement of the Project's commercial operation, the revenue generated under the TSA as proposed by TDI-NE in this Proposal, will provide adequate cash flow to fund operating expenses, service debt, and pay any applicable taxes.

Sub-section 5.5	Financial Statements
<i>Provide complete copies of the most recent audited financial statement or annual report for each bidder for each of the past three years; including affiliates of the bidder (if audited statements are not available, reviewed or compiled statements are to be provided). Also, provide the credit ratings from Standard & Poor's and Moody's (the senior unsecured long term debt rating or if not available, the corporate rating) of the bidder and any affiliates and partners.</i>	

5.5.1 Hydro-Québec

The current senior unsecured (long term) debt ratings of Hydro-Québec are:

Figure 5.5.1 – Hydro-Québec Debt Ratings

Figure 5.5.1 – Hydro-Québec Debt Ratings Sponsor	S&P	Moody's	Fitch
Hydro-Québec	AA-	Aa2	AA-

Attachment 5.5.1 includes the Annual Reports of Hydro-Québec for the fiscal years ended December 31, 2016, December 31, 2015, and December 31, 2014.

5.5.2 TDI-NE – NECPL

██████████ contains the audited and unaudited financial statements of TDI-NE and TDI for the period ending 2016. The financial statements for Blackstone are also included in **Appendix 5.5.TDI-NE**. It should be noted that the financial statements of TDI are included here because the response to a bidder's question (#69) expands, for this question only, the definition of "Affiliated Company" appearing in section 85 of Chapter 164 of title XXII of the Massachusetts General Laws and incorporated in the RFP's definition section (the "RFP Definition"). It does so by, among other things, adding a fourth category of affiliates, to wit: any entity that is under common control with the specified company. Inasmuch as TDI-NE and TDI are both controlled by Blackstone, the financial statements of TDI are provided. It may be noted that, in the response to Question 5.20*, the relevant federal definition of "affiliate" is relied upon. With these exceptions, all responses involving questions directed at or involving affiliates of TDI-NE comport with the RFP Definition.

TDI-NE does not have a credit rating from Standard & Poor's ("S&P") and Moody's. However, Blackstone does have senior unsecured long-term debt ratings which are as follows:

Figure 5.5.2 – Blackstone Debt Ratings

	S&P	Moody's	Fitch
Blackstone	A+	N/A	A+

Sub-section 5.6	Board of Directors
<i>Please also include a list of the board of directors, officers and trustees for the past three years and any persons who the bidder knows will become officers, board members or trustees.</i>	

5.6.1 Hydro-Québec

HRE's directors and officers for the past three years were as follows:

Figure 5.6.1a. -- HYDRO RENEWABLE ENERGY INC. DIRECTORS, 2014-2017

TERM		NAME
BEGINNING	END	
2010-09-14	2015-05-04	NADEAU, Marie-José
2010-09-14		CACCHIONE, Richard
2010-09-14	2015-05-05	ST-ARNAUD, Sonia
2011-03-11	2014-10-09	LANCTÔT, Maxime
2015-05-05	2017-01-23	DESGAGNÉ, Pierre-Luc
2015-05-05		MARCASSA, Florence
2017-01-25	2017-04-20	LENEY, Stella
2017-05-03		LENEY, Stella

Figure 5.6.1b. -- HYDRO RENEWABLE ENERGY INC. OFFICERS, 2014-2017

TERM		NAME	TITLE
BEGINNING	END		
2010-09-14	2015-05-04	NADEAU, Marie-José	Secretary
2010-09-14	2016-12-23	CORMIER, Ginette	Assistant Secretary
2010-09-14	2015-05-05	ST-ARNAUD, Sonia	Treasurer
2010-09-14		DESNOYERS, Michèle	Assistant Treasurer
2011-08-08	2014-12-12	CACCHIONE, Richard	Chairman
2011-08-08	2014-10-09	LANCTÔT, Maxime	President
2011-09-27	2016-06-08	DEMERS, Steve	General Manager
2012-10-26		CELLUCCI, Sandro	Vice President Legal Affairs and Compliance
2012-10-26	2014-10-09	RACINE, Sylvie	Director Regulatory Affairs and Marketing
2013-02-04	2016-06-08	BERGEVIN, Simon	Assistant General Manager
2014-12-12		CACCHIONE, Richard	President and Chairman
2015-05-05	2017-01-23	DESGAGNÉ, Pierre-Luc	Secretary
2015-05-05		MARCASSA, Florence	Treasurer
2015-05-05		ST-ARNAUD, Sonia	Vice President Project Development and Strategies
2016-06-08		BERGEVIN, Simon	General Manager
2017-01-05	2017-04-20	BROUILLETTE, Louise	Assistant Treasurer

TERM		NAME	TITLE
BEGINNING	END		
2017-01-25	2017-04-20	LENEY, Stella	Secretary
2017-05-03		LENEY, Stella	Secretary
2017-05-03		BROUILLETTE, Louise	Assistant Treasurer
2017-05-03		DAIGNEAULT, Patrice	Assistant Secretary

Currently, Hydro-Québec is not aware of any other individuals who will become officers or board members of Hydro-Québec.

5.6.2 TDI-NE – NECPL

See Section 5.2.2 (as distinguished from Section 5.2*.2) above, Figure 11.4.3 (TDI-NE management chart), and **Appendix 11.4.TDI-NE**. Effectively, TDI-NE's governance is supplied through its relationship with Blackstone. As the NECPL approaches financial close and the commencement of construction, additional officers will be brought into TDI-NE.

Sub-section 5.7	Ability to provide required security
<i>The bidder should demonstrate its ability (and/or the ability of its credit support provider) to provide the required security, including its plan for doing so.</i>	

5.7.1 Hydro-Québec

[REDACTED]

[REDACTED]

5.7.2 TDI-NE – NECPL

[REDACTED]

[REDACTED]

Sub-section 5.8	Credit issues
<i>Provide a description of any current or recent credit issues/ credit rating downgrade events regarding the bidder or affiliate entities raised by rating agencies, banks, or accounting firms.</i>	

5.8.1 Hydro-Québec

Hydro-Québec does not have any current or recent credit issues or rating downgrade events. Hydro-Québec's S&P credit ratings were recently raised to "AA-" from "A+", and they globally have remained stable for the past 5 years. Credit rating agencies, banks, and accounting firms have not raised any issues regarding the company during that period. Hydro-Québec's credit ratings are available in Section 5.5 and on Hydro-Québec's Investor Relations website:

<http://www.hydroquebec.com/investor-relations/about-the-issuer/credit-ratings.html>

Attachment 5.4.1 includes additional information regarding the quality of Hydro-Québec as an issuer as of December 31, 2016.

5.8.2 TDI-NE – NECPL

Since the inception of TDI-NE in September 2013, no credit issues or rating downgrade events have occurred. Blackstone's credit ratings from S&P and Fitch have remained stable since ratings on Blackstone were initiated in 2009. In 2013, Blackstone's S&P credit rating was raised to "A+" from "A" on strong growth and sound financial performance. Blackstone does not have any current or recent credit issues or ratings downgrades to report.

Sub-section 5.9	Role of PTC or ITC in Project
<i>Describe the role of the Federal Production Tax Credit or Investment Tax Credit (or other incentives) on the financing of the project.</i>	

5.9.1 Hydro-Québec

[REDACTED]

5.9.2 TDI-NE – NECPL

TDI-NE and Blackstone will not rely on the Federal Production Tax Credit, Investment Tax Credit, or any other incentives for the financing of the NECPL.

Sub-section 5.10	Pending litigations (project development)
<i>Bidders must disclose any pending (currently or in the past three years) litigation or disputes related to projects developed, owned or managed by Bidder or any of its affiliates in the United States, or related to any energy product sale agreement.</i>	

5.10.1 Hydro-Québec

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

5.10.2 TDI-NE – NECPL

There is no pending litigation or disputes involving TDI-NE or any of its affiliates in the United States related to: projects developed, owned or managed by TDI-NE or any of its affiliates in the United States, or any energy product sale agreement.

Sub-section 5.11	Operating Life / Depreciation Period
<i>What is the expected operating life of the proposed project? What is the depreciation period for all substantial physical aspects of the bid, including generation facilities, transmission lead lines to move power to the grid, transmission proposals, and mandatory and voluntary transmission system upgrades?</i>	

All of the assets involved in this Proposal have a useful life that significantly exceeds the duration of the proposed HQ PPA and associated transmission service agreements.

5.11.1 Hydro-Québec

5.11.1.1 Hydro-Québec – Hydropower Resources

As for the HQ Hydropower Resources, the assets are already built and given their exceptionally long service life, they can be considered as virtually permanent assets. A hydroelectric generating station that is properly maintained and refurbished can have a service life of more than 100 years. (Hydro-Québec has generating stations in its fleet that have been in operation for over 100 years.)

[REDACTED]

5.11.1.2 Hydro-Québec – Québec Line

For the Québec Line, the expected operating life is at least 40 years, and the depreciation period is 40 years.

5.11.2 TDI-NE – NECPL

The expected operating life of the NECPL is at least 40 years. The depreciation period for the NECPL (including the transmission lines, converter station, and mandatory and voluntary transmission system upgrades) is also estimated to be at least 40 years.

Sub-section 5.12	Financing Plan for New Projects
<i>For projects that include new facilities or capital investment, has the bidder already obtained financing, or a commitment of financing, for the project? If financing has not been obtained, explain how obtaining a long-term agreement as proposed will help you in obtaining financing for the proposed project, in obtaining more favorable terms for the financing of the proposed project, or in supporting the future capital investment.</i>	

5.12.1 Hydro-Québec

[REDACTED]

[REDACTED]

[REDACTED]

5.12.2 TDI-NE – NECPL

As explained in Section 5.1.3, the Project requires a long-term TSA to complete financing, which it expects this solicitation will lead to. See also Section 5.2*.2.

Sub-section 5.13	Existing Contracts for Energy or REC
<i>State whether the bidder or its affiliates have executed agreements with respect to energy, RECs and/or capacity for the project (including any agreements that have been terminated) and provide information regarding the associated term and quantities, and whether bidder has been alleged to have defaulted under or breached any such agreement.</i>	

5.13.1 Hydro-Québec

Neither Hydro-Québec nor its affiliates have executed agreements with respect to energy, Renewable Energy Credits (“RECs”), or capacity.

5.13.2 TDI-NE – NECPL

Neither TDI-NE nor its affiliates have executed agreements with respect to energy, Renewable Energy Credits (“RECs”), or capacity for the NECPL as of the submission date of this bid.

Sub-section 5.14	List Affiliates and Joint Ventures
<i>List all of the Bidder's affiliated entities and joint ventures transacting business in the energy sector.</i>	

5.14.1 Hydro-Québec

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

5.14.2 TDI-NE – NECPL

[REDACTED]

[REDACTED]

[REDACTED]

Sub-section 5.15	Bankruptcy
<i>Has Bidder, or any affiliate of Bidder, in the last five years, (a) consented to the appointment of, or was taken in possession by, a receiver, trustee, custodian or liquidator of a substantial part of its assets, (b) filed a bankruptcy petition in any bankruptcy court proceeding, (c) answered, consented or sought relief under any bankruptcy or similar law or failed to obtain a dismissal of an involuntary petition, (d) admitted in writing of its inability to pay its debts when due, (e) made a general assignment for the benefit of creditors, (f) was the subject of an involuntary proceeding seeking to adjudicate that Party bankrupt or insolvent, (g) sought reorganization, arrangement, adjustment, or composition of it or its debt under any law relating to bankruptcy, insolvency or reorganization or relief of debtors?</i>	

5.15.1 Hydro-Québec

In the last five years, neither Hydro-Québec nor any affiliate of Hydro-Québec has:

- a) consented to the appointment of, or was taken in possession by, a receiver, trustee, custodian or liquidator of a substantial part of its assets;
- b) filed a bankruptcy petition in any bankruptcy court proceeding;
- c) answered, consented or sought relief under any bankruptcy or similar law or failed to obtain a dismissal of an involuntary petition;
- d) admitted in writing of its inability to pay its debts when due;
- e) made a general assignment for the benefit of creditors;
- f) was the subject of an involuntary proceeding seeking to adjudicate that Party bankrupt or insolvent; or
- g) sought reorganization, arrangement, adjustment, or composition of it or its debt under any law relating to bankruptcy, insolvency or reorganization or relief of debtors.

5.15.2 TDI-NE – NECPL

In the last five years, neither TDI-NE nor any affiliate of TDI-NE has:

- a) consented to the appointment of, or was taken in possession by, a receiver, trustee, custodian or liquidator of a substantial part of its assets;
- b) filed a bankruptcy petition in any bankruptcy court proceeding;

- c) answered, consented or sought relief under any bankruptcy or similar law or failed to obtain a dismissal of an involuntary petition;
- d) admitted in writing of its inability to pay its debts when due;
- e) made a general assignment for the benefit of creditors;
- f) was the subject of an involuntary proceeding seeking to adjudicate that Party bankrupt or insolvent; or
- g) sought reorganization, arrangement, adjustment, or composition of it or its debt under any law relating to bankruptcy, insolvency or reorganization or relief of debtors.

Sub-section 5.16	Conflicts of Interest
<i>Briefly describe any known conflicts of interest between Bidder or an affiliate of Bidder and any Distribution Company, or any affiliates of the foregoing.</i>	

5.16.1 Hydro-Québec

Hydro-Québec and its affiliates are not aware of any conflict of interest with any of the Distribution Companies or any affiliate of the Distribution Companies.

5.16.2 TDI-NE – NECPL

Neither TDI-NE, nor any affiliate of TDI-NE, are aware of any conflict of interest with the EDCs or any affiliate of the EDCs.

Sub-section 5.17	Litigation, Disputes, Claims (against Distribution Company)
<i>Describe any litigation, disputes, claims or complaints involving the Bidder or an affiliate of Bidder, against any Distribution Company or any affiliate of any Distribution Company.</i>	

5.17.1 Hydro-Québec

Neither Hydro-Québec, nor any affiliate of Hydro-Québec, is involved in any litigation or dispute with the Distribution Companies or any affiliate of the Distribution Companies.

Furthermore, there is no claim or complaint involving Hydro-Québec or its affiliates against the Distribution Companies or any affiliate of the Distribution Companies.

5.17.2 TDI-NE – NECPL

Neither TDI-NE, nor any affiliate of TDI-NE, is involved in any litigation, dispute, claim or complaint against the Distribution Companies or any affiliate of the Distribution Companies.

Sub-section 5.18	Contract litigation (relating to purchase or sale of energy, capacity or RECs)
<i>Describe any litigation, disputes, claims or complaints, or events of default or other failure to satisfy contract obligations, or failure to deliver products, involving Bidder or an affiliate of Bidder, and relating to the purchase or sale of energy, capacity or renewable energy certificates or products.</i>	

5.18.1 Hydro-Québec

In relation to the purchase or sale of energy, capacity, or renewable energy certificates or products, there is no litigation, dispute, claim or complaint, or event of default or other failure to satisfy contract obligations, or failure to deliver products, involving Hydro Renewable Energy Inc.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

5.18.2 TDI-NE – NECPL

Neither TDI-NE, nor any affiliate of TDI-NE, are currently or have been involved in any litigation, disputes, claims or complaints, or events of default or other failure to satisfy contract obligations, or failure to deliver products relating to the purchase or sale of energy, capacity or RECs or products.

Sub-section 5.19	Federal or State Law investigations
<i>Confirm that Bidder, and the directors, employees and agents of Bidder and any affiliate of Bidder are not currently under investigation by any governmental agency and have not in the last four years been convicted or found liable for any act prohibited by State or Federal law in any jurisdiction involving conspiracy, collusion or other impropriety with respect to bidding on any contract, or have been the subject of any debarment action (detail any exceptions).</i>	

5.19.1 Hydro-Québec

[REDACTED], Hydro-Québec and its affiliates, and the directors, employees and agents of Hydro-Québec and any affiliate of Hydro-Québec are not currently under investigation by any governmental agency. Hydro-Québec and its affiliates have not in the last four years been convicted or found liable for any act prohibited by State or Federal law in any jurisdiction involving conspiracy, collusion or other impropriety with respect to bidding on any contract, or have been the subject of any debarment action.

5.19.2 TDI-NE – NECPL

TDI-NE and the directors, employees and agents of TDI-NE and any affiliate of TDI-NE are not currently under investigation by any governmental agency and have not in the last four years been convicted or found liable for any act prohibited by state or federal law in any jurisdiction involving conspiracy, collusion or other impropriety with respect to bidding on any contract, or have been the subject of any debarment action.

Sub-section 5.20	Regulatory Approvals
<i>Identify all regulatory and other approvals needed by Bidder to execute a binding sale agreement.</i>	

5.20.1 Hydro-Québec

[REDACTED]

[REDACTED].

5.20.2 TDI-NE – NECPL

In 2014, the Federal Energy Regulatory Commission (“FERC”) issued an order (“Negotiated Rate Order”) conditionally authorizing TDI-NE to sell transmission rights associated with the NECPL at negotiated rates and to allocate up to 100 percent of the Project’s capacity through an open solicitation. A copy of the FERC order can be found in **Appendix 7.1.TDI-NE**. Pursuant to the Negotiated Rate Order and FERC policy, and upon the conclusion of the capacity allocation process, TDI-NE will submit a filing to FERC under section 205 of the Federal Power Act (“FPA”) to disclose the results of its capacity allocation process. That filing will be noticed and acted upon by FERC under section 205 of the FPA.

On April 14, 2016, the Vermont Public Utility Commission (formerly Public Service Board) issued a Certificate of Public Good to TDI-NE, pursuant to 30 V.S.A. section 231, authorizing TDI-NE to engage in the business of transmitting electricity in the State of Vermont through its ownership and operation of the NECPL. A copy of the PUC order can be found in **Appendix 7.1.TDI-NE**.

Sub-section 5.20*¹¹	FERC Compliance
<i>Describe how the project will conform to FERC’s applicable regulatory requirements, including, but not limited to, FERC requirements relating to allocation of transmission capacity and open access, the justness and reasonableness of rates, the potential for undue preference or discrimination, and affiliate dealings, if any. Describe how your proposed approach is consistent with FERC precedent and ratemaking principles.</i>	

5.20*.1 Hydro-Québec

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

5.20*.2 TDI-NE – NECPL

As described in response 5.20.2, TDI-NE has received conditional authorization from FERC to sell transmission rights on the NECPL at negotiated rates. FERC has established a four-factor analysis to evaluate requests for negotiated rate authority by developers of merchant transmission projects such as the NECPL. Under this four-factor analysis, developers of merchant transmission projects must demonstrate that: (1) negotiated rates will be just and reasonable; (2) there is no potential for undue discrimination; (3) there is no potential for undue preference, including affiliate preference; and (4) the project will meet applicable regional reliability requirements and operate in a coordinated and efficient manner. In the Negotiated Rate Order, FERC determined the Project satisfied this four-factor standard. See **Appendix 7.1.TDI-NE** at pp 5-13.

1. Just and Reasonable Rates

To approve negotiated rates for a merchant transmission project, FERC must find that rates for the proposed project are just and reasonable. In determining whether negotiated rates are just and reasonable, FERC first looks to whether a merchant transmission owner has assumed the full market risk for the cost of constructing the project and whether any “captive” customers would be required to pay the cost of the project. FERC also will consider whether the merchant transmission owner (or an affiliate) already owns transmission facilities in the particular region of the project; whether the merchant transmission owner is capable of erecting any barriers to entry among competitors; and whether the merchant transmission owner would have any incentive to withhold capacity. See

¹¹ The asterisk denotes a second use of the duplicative identification number, here “5.20”, in RFP Appendix B.

Appendix 7.1.TDI-NE at p 5.

TDI-NE has assumed all market risks for the NECPL and there are not, nor will there be, any captive customers. Since there will be no captive customers, no entity will be required to purchase transmission service from TDI-NE, nor will TDI-NE be able to pass on any of the costs associated with the NECPL to captive customers. When the NECPL is completed, TDI-NE will turn over operational control of the line to ISO-NE, which will operate the line under its Open Access Transmission Tariff (“OATT”). This will prevent TDI-NE from acquiring market power or controlling barriers to entry in the ISO-NE market. See **Appendix 7.1.TDI-NE** at pp 5-6.

2. Undue Discrimination

To prevent the exercise of undue discrimination by merchant transmission owners with negotiated rate authority, FERC requires merchant transmission owners to: (1) commit to turn over operational control of the merchant transmission facilities to a regional transmission organization (“RTO”) or independent system operator (“ISO”); and (2) engage in either a formal open season or an open solicitation process consistent with FERC’s Policy Statement *Allocation of Capacity on New Merchant Transmission Projects and New Cost-Based, Participant-Funded Transmission Projects* (“Policy Statement”), and file the results with FERC. Compliance with the Policy Statement’s requirements ensures that the second and third factor of FERC’s negotiated rate authority analysis have been addressed, namely that new transmission capacity has been allocated in a not unduly discriminatory or preferential manner. See **Appendix 7.1.TDI-NE** at pp 6-9.

TDI-NE has committed to turn over operational control of the NECPL to ISO-NE and is conducting an open solicitation process consistent with the requirements of the Policy Statement. In 2015, TDI-NE conducted a 51-day open solicitation seeking expressions of interest from potential transmission customers in the U.S. and Canada. To ensure that the open solicitation process was “not unduly discriminatory or preferential,” TDI-NE retained a third-party independent adviser to serve as the Independent Solicitation Manager for the open solicitation. [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] See **Appendix 7.1.TDI-NE** at pp 9-10.

TDI-NE has committed to make a subsequent filing with FERC pursuant to Section 205 of the FPA seeking FERC approval of its open solicitation process once TDI-NE concludes its allocation of capacity on the NECPL. TDI-NE’s filing will explain its capacity allocation process including, as appropriate, the Massachusetts RFP process, with sufficient detail to demonstrate its capacity allocation was consistent with the Policy Statement and FERC’s open access policies. TDI-NE also

has committed to file, through eTariff, a rate schedule for service under the ISO-NE OATT prior to commencement of service. See **Appendix 7.1.TDI-NE** at p. 10.

In addition to the commitments made concerning the open solicitation process, TDI-NE has committed to FERC to: (1) ensure that books and records for the NECPL will comply with the Uniform System of Accounts in Part 101 of FERC's regulations and will be subject to examination as required in Part 41 of FERC's regulations; (2) file financial statements and reports in accordance with Part 141.14 and 141.15 of FERC's regulations; and (3) employ an independent auditor to audit its books and records. Accordingly, TDI-NE will have no ability to exercise undue discrimination. See **Appendix 7.1.TDI-NE** at p. 10.

3. Undue Preference and Affiliate Concerns

In the context of merchant transmission projects, FERC has found that issues regarding undue preference and affiliate abuse can be adequately addressed if a merchant transmission developer conducts an open solicitation process consistent with the Policy Statement. Further, transmission rights secured on a merchant transmission line after an open solicitation process must be transacted in the secondary market according to the tariff of the RTO or ISO operating the line. See **Appendix 7.1.TDI-NE** at p. 11.

No TDI-NE affiliate participated in the open solicitation and the NECPL will not interconnect with any existing facilities owned by an affiliate of TDI-NE. TDI-NE does not anticipate that any transmission customer initially allocated transmission rights through the open solicitation process will be affiliated with TDI-NE. However, in the event that an affiliate purchases transmission rights through the open solicitation process, TDI-NE has committed to document the facts and circumstances surrounding this allocation of capacity in the subsequent FPA section 205 filing that TDI-NE will make to FERC. Consequently, there will be no opportunity for affiliate abuse. See **Appendix 7.1.TDI-NE** at pp 11-12

TDI-NE also will file electric quarterly reports of its transactions with FERC as required of transmission providers, will comply with any applicable affiliate rules, and will be subject to FERC's Standards of Conduct, should any affiliate take transmission service on the Project. See **Appendix 7.1.TDI-NE** at p. 12.

4. Regional Reliability and Operational Efficiency

To facilitate regional reliability and enhance operational efficiencies, FERC expects merchant transmission developers to turn over operational control of their transmission facilities to an RTO or ISO. Merchant transmission facilities also must comply with all applicable mandatory reliability requirements. See **Appendix 7.1.TDI-NE** at pp 12-13.

TDI-NE has committed to turn over operational control of the Project to ISO-NE and will comply with all applicable reliability requirements. In addition, TDI-NE will—consistent with the requirements of FERC’s Order No. 1000—provide to ISO-NE all required information necessary to inform its regional planning process. See **Appendix 7.1.TDI-NE** at p. 13.

Sub-section 5.21	Distribution Company and Bidders
<p><i>Describe and document any and all direct and indirect affiliations and affiliate relationships, financial or otherwise in the past three years between the bidder and one or more of the Distribution Companies and their affiliates, including all relationships in which one of the Distribution Companies has a financial or voting interest (direct or indirect) in the bidder or the bidder's proposed project. These relationships include:</i></p> <ul style="list-style-type: none"> • <i>Corporate or other joint arrangements, joint ventures, joint operations whether control exists or not;</i> • <i>Minority ownership (50% or less investee);</i> • <i>Joint development agreements;</i> • <i>Operating segments that are consolidated as part of the financial reporting process ;</i> • <i>Related parties with common ownership;</i> • <i>Credit, debenture, and financing arrangements, whether a convertible equity feature is present or not;</i> • <i>Wholly owned subsidiaries; and</i> • <i>Commercial (including real property) relationships with any Distribution Company.</i> 	

5.21.1 Hydro-Québec

There are no direct and indirect affiliations and affiliate relationships, financial or otherwise in the past three years between Hydro-Québec or its affiliates and any of the Distribution Companies or any affiliate of the Distribution Companies.

5.21.2 TDI-NE – NECPL

There are no direct and indirect affiliations and affiliate relationships, financial or otherwise in the past three years between TDI-NE or its affiliates and the Distribution Companies or any affiliate of the Distribution Companies.

Attachment 5.3.1 | Financing Experience

As discussed Section 5 of this Proposal, Hydro-Québec will finance its transmission project with corporate financing sources by managing a combination of internally generated cash flows from operations and short term investments, and issuance of debt, just as it financed the existing HQ Hydropower Resources, rather than through a project finance structure. Hydro-Québec maintains a 30% capitalization rate, although its debt issuances are unconditionally guaranteed by the government. Furthermore, in 2016, about 59% of the investments were self-financed (paid with cash from operations). Between 2005 and 2016, that annual ratio¹² has varied between 41% and 83%.

Hydro-Québec's access to corporate financing is sufficient to fund large scale projects. The tables set forth below present the most recent transmission projects carried out by Hydro-Québec TransÉnergie as well as the investments made by Hydro-Québec Production from 2005 through 2016.

Project	Description	Amount*	In Service Dates
1. Integration of the Romaine Complex.	Construction of four segments of new transmission to interconnect 1550 MW hydroelectric complex at La Romaine: Romaine-2 – Arnaud: 163 miles Romaine-1 – Romaine-2: 17 miles Romaine-4 – Montagnais: 109 miles Romaine-3 – Romaine-4: 20 miles Also includes 4 switchyards, a switching substation at 735 kV, and transmission system upgrades.	\$1,842 million	2014-2020
2. Integration of contracted wind farms pursuant to Hydro-Québec Distribution's March 2005 request for proposals.	Integration of 14 wind farms totaling 1,936 MW of installed capacity.	\$1,466 million	2011-2015
3. Chamouchouane–Bout-de-l'Île Project	Construction of a new, 249 mile, 735 kV transmission line between Chamouchouane substation in La Doré (Lac-Saint-Jean) and the future 735/120/25-kV Judith-Jasmin substation, in Terrebonne, and moving a section of an existing 735-kV line over 11 miles.	\$1,135 million	2018

¹² Self-financing ratio: Cash flows from operating activities less dividend paid, divided by sum of cash flows from investing activities, excluding net disposal or acquisition of short-term investments, and repayment of long term debt.

Project	Description	Amount*	In Service Dates
4. Outaouais Interconnection	Construction of a new 1,250 MW HVDC interconnection between Hydro-Québec 315 kV network, from a new converter station built by ABB at Chenier, Montréal, to Ontario's Hydro One 230 kV network at a new converter station at the Outaouais substation.	\$662 million	2009-2010
5. Integration of contracted wind farms pursuant to Hydro-Québec Distribution's February 2003 request for proposals.	Integration in the Gaspésie region of 8 wind farms totaling 990 MW of installed capacity.	\$598 million	2006-2012

* In Canadian dollars. Amount approved by the Régie de l'énergie du Québec.

HQ Production Investments in generation assets for the years 2005 through 2016
(in millions of Canadian dollars):

	Development	Maintenance	Total
2005	1,334	446	1,780
2006	1,174	441	1,615
2007	1,404	403	1,807
2008	1,403	491	1,894
2009	1,422	644	2,066
2010	1,234	666	1,900
2011	951	516	1,467
2012	951	560	1,511
2013	965	416	1,381
2014	887	326	1,213
2015	663	294	957
2016	562	344	906
Total	12,950	5,547	18,497

Attachment 5.4.1 | Financial strength of Hydro-Québec as of December 31, 2016

Hydro-Québec's cue card 2016-2017 can be found at:

http://www.hydroquebec.com/publications/en/docs/cue-card/infocarte_2016-2017.pdf

HYDRO-QUÉBEC: A QUALITY INVESTMENT

Security	Debt Characteristics as at December 31, 2016	Credit Ratings as at December 31, 2016			
Unconditional guarantee by the Québec government on most of Hydro-Québec's debt (debentures, medium-term notes, commercial paper)	Average term: 17 years		Long-term debt	Commercial paper	Outlook/Trend
	Fixed rate ⁹ : 84.2%	Moody's	Aa2	P-1	Stable
	Floating rate ⁹ : 15.8%	Standard & Poor's	A+	A-1+	N/A ¹⁰
	Breakdown by repayment currency ⁹ : C\$ 100% US\$ 0%	Fitch Ratings	AA-	F1+	Stable
		DBRS	A (high)	R-1 (middle)	Stable

9. Including derivatives. Derivatives consist of swaps and forward contracts traded for long-term risk management related to debt. Breakdown by currency at time of issue is 78.9% in C\$ and 21.1% in US\$.

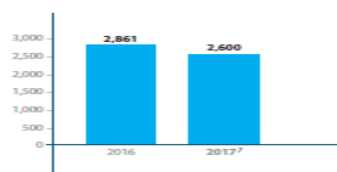
10. Standard & Poor's does not provide an outlook for Hydro-Québec's credit rating. However, it gave a "stable" outlook to the Québec government, Hydro-Québec's shareholder and guarantor, after upgrading the government's credit rating from A+ to AA- in June 2017.

2016 HIGHLIGHTS

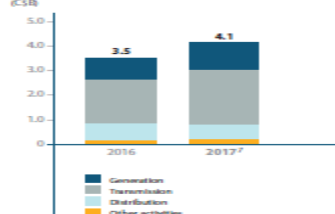
- Net electricity exports reached a historic high of 32.6 TWh, contributing \$803 million to net income.
- Hydro-Québec launched its *Strategic Plan 2016-2020*, which places customers at the heart of its priorities and sets new growth avenues for the company, including the acquisition of assets or stakes outside Québec.
- The company issued \$1.0 billion in fixed-rate medium-term notes at a cost of 1.1%, as well as variable-rate notes for a total amount of \$1.0 billion. Both series will mature in 2019.

2017 FINANCIAL OUTLOOK

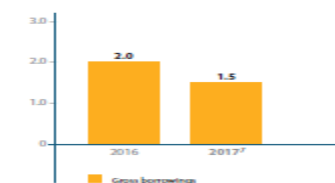
NET INCOME (C\$M)



INVESTMENTS IN PROPERTY, PLANT AND EQUIPMENT AND INTANGIBLE ASSETS⁸ (C\$B)



FINANCING ACTIVITIES⁹ (C\$B)



7. Forecasts.

8. Excluding investments related to new growth avenues.

HYDRO-QUÉBEC: A QUALITY INVESTMENT

Security	Debt Characteristics as at December 31, 2016	Credit Ratings as at December 31, 2016			
Unconditional guarantee by the Québec government on most of Hydro-Québec's debt (debentures, medium-term notes, commercial paper)	Average term: 17 years		Long-term debt	Commercial paper	Outlook/Trend
	Fixed rate ⁹ : 84.2%	Moody's	Aa2	P-1	Stable
	Floating rate ⁹ : 15.8%	Standard & Poor's	A+	A-1+	N/A ¹⁰
	Breakdown by repayment currency ⁹ : C\$ 100% US\$ 0%	Fitch Ratings	AA-	F1+	Stable
		DBRS	A (high)	R-1 (middle)	Stable

9. Including derivatives. Derivatives consist of swaps and forward contracts traded for long-term risk management related to debt. Breakdown by currency at time of issue is 78.9% in C\$ and 21.1% in US\$.

10. Standard & Poor's does not provide an outlook for Hydro-Québec's credit rating. However, the outlook it has given the Québec government, Hydro-Québec's shareholder and guarantor, went from "stable" to "positive" in 2016.

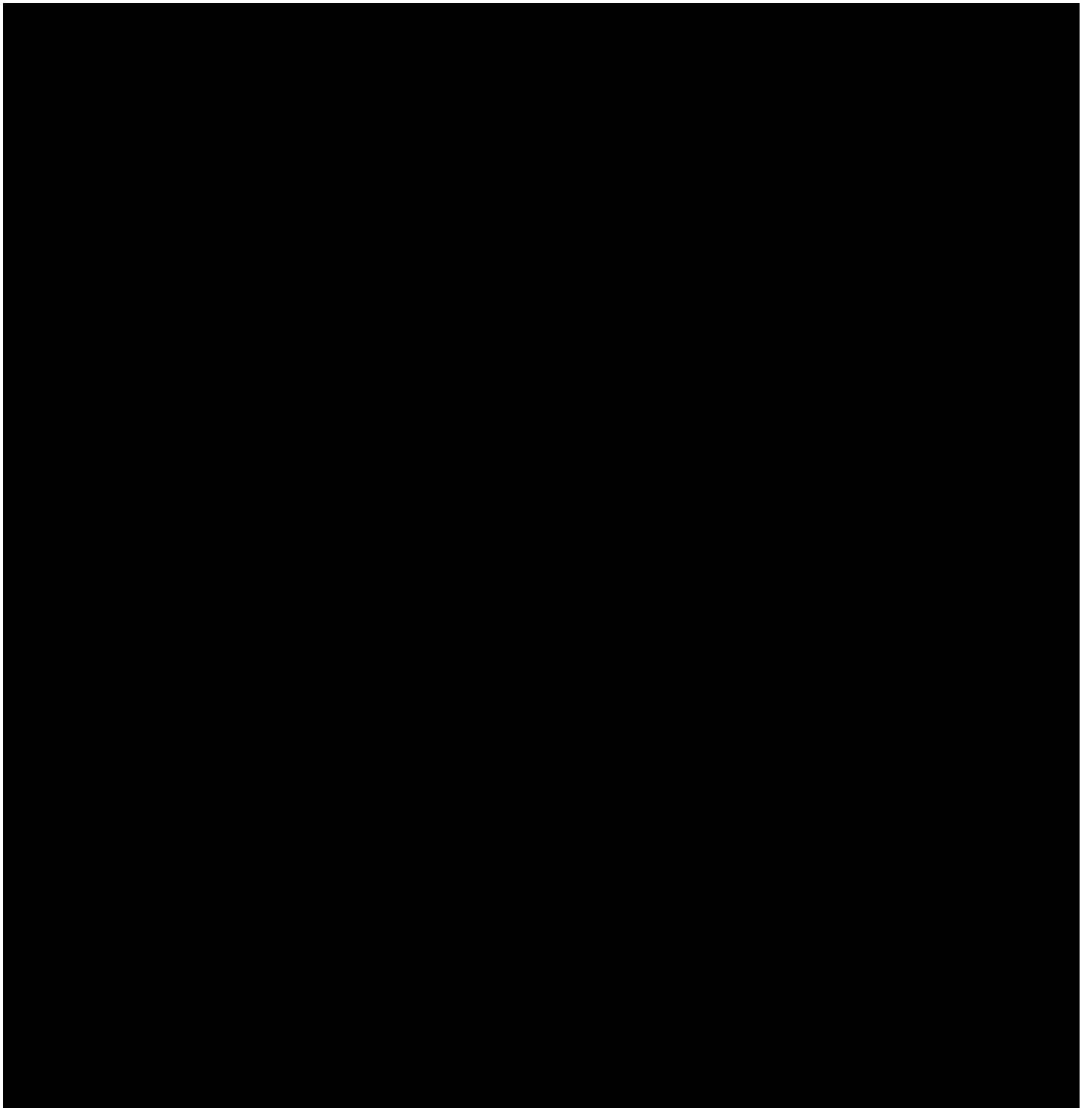
Attachment 5.5.1 | Annual Reports of Project Sponsors

The Annual Reports of Hydro-Québec for the fiscal years ended December 31, 2016, December 31, 2015, and December 31, 2014 can be found at:

December 31, 2016	http://www.hydroquebec.com/publications/en/docs/annual-report/annual-report-2016.pdf
December 31, 2015	http://www.hydroquebec.com/publications/en/docs/annual-report/annual-report-2015.pdf
December 31, 2014	http://www.hydroquebec.com/publications/en/docs/annual-report/annual-report-2014.pdf

Attachment 5.10 | CONFIDENTIAL - Pending litigations (project development)

[REDACTED]



**Attachment 5.18 | Contract litigation (relating to purchase or sale of energy, capacity or
RECs)**

[REDACTED]

Attachment 5.19 | Federal or State Law investigations

[REDACTED]

Section 6 | Siting, Interconnection, and Deliverability

Section Introduction

This section of the proposal addresses project location, siting, real property rights and interconnection issues. Bidders should ensure that the threshold criteria outlined in Section 2.2 of the RFP for generation, transmission proposals, and system upgrades are verified in their responses.

Route Overview



TDI-NE – NECPL: The 154 mile NECPL transmission line will begin at the US/Canadian border in Alburgh, VT and run to its interconnection location in Ludlow, VT. Ninety-seven miles of the NECPL will be submerged in Lake Champlain and 57 miles will be buried within existing road and railroad rights of way. TDI-NE will construct a converter station in Ludlow, VT, the Ludlow Converter Station, adjacent to its interconnection point (VELCO’s Coolidge Substation) to convert DC power to AC power so it can interconnect to the ISO-NE system. See Overview Map below.

Hydro-Québec and TDI-NE will collaborate in operating and maintaining the new HVDC line from the La Citière Converter Station to the Ludlow Converter Station.



Sub-section 6.1	Site Plans
<i>Provide a site plan including a map of the site that clearly identifies the location of the Eligible Facility site and/or Transmission Project route, the assumed right-of-way width, the total acreage for Eligible Facilities, the anticipated interconnection point, and the relationship of the site to other local infrastructure, including transmission facilities, roadways, and water sources. In addition to providing the required map, provide a site layout plan which illustrates the location of all major equipment and facilities on the site.</i>	

6.1.1 Hydro-Québec

6.1.1.1 Hydro-Québec – Hydropower Resources

See **Attachment 6.1.1.1** for a Map of major Hydro-Québec hydroelectric generation facilities.

All of the hydroelectric generation stations and units that comprise the HQ Hydropower Resources are in commercial operation. Therefore, they have already been sited and constructed, and are already fully interconnected to the Hydro-Québec TransÉnergie transmission system within the Québec Control Area.

6.1.1.2 Hydro-Québec – Québec Line

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

6.1.2 TDI-NE – NECPL

Site plan included? Yes ☒ No ☐ If not, please explain: N/A

➤ NECPL Route Map (See Figure 6.1.2.a).

The 154 mile NECPL transmission line will begin at the US/Canadian border in Alburgh, VT and run to its interconnection location in Ludlow, VT. Ninety-seven miles of the NECPL will be submerged in Lake Champlain and 57 miles will be buried within existing road and railroad rights of way.¹³ Due to the linear nature of the NECPL, the site plan/route is divided into three separate segments:

1. Lake Segment: Running 97.3 miles¹⁴ down Lake Champlain from the Canadian/Alburgh, Vermont border to Benson, Vermont.
2. Overland Segment: Running 57 miles across central Vermont from Benson to Ludlow, Vermont.
3. Converter Station: Located in Ludlow, Vermont, it is the Site of the Converter Station and AC interconnection to the Coolidge substation.

Maps/Site Plans are provided below. In addition, the following Appendices provide more detailed information about the NECPL in respect to: the assumed right-of-way (“ROW”) width, the interconnection point, and the relationship of the site to other local infrastructure, including transmission facilities, roadways, and water sources. See **Appendix 6.1.TDI-NE.1 through .5**.¹⁵

- The Lake Segment Plans **Appendix 6.1.TDI-NE.2** provide information on the location of the NECPL in relation to the lake shoreline, and other local infrastructure including transmission facilities, in-lake features and bridges.
- The Overland Segment Plans **Appendix 6.1.TDI-NE.1** provide information on the ROW width and the location of the NECPL cables and interconnection point in relation to other local infrastructure, including transmission facilities, roadways, and water sources (streams, rivers, ponds and lakes).

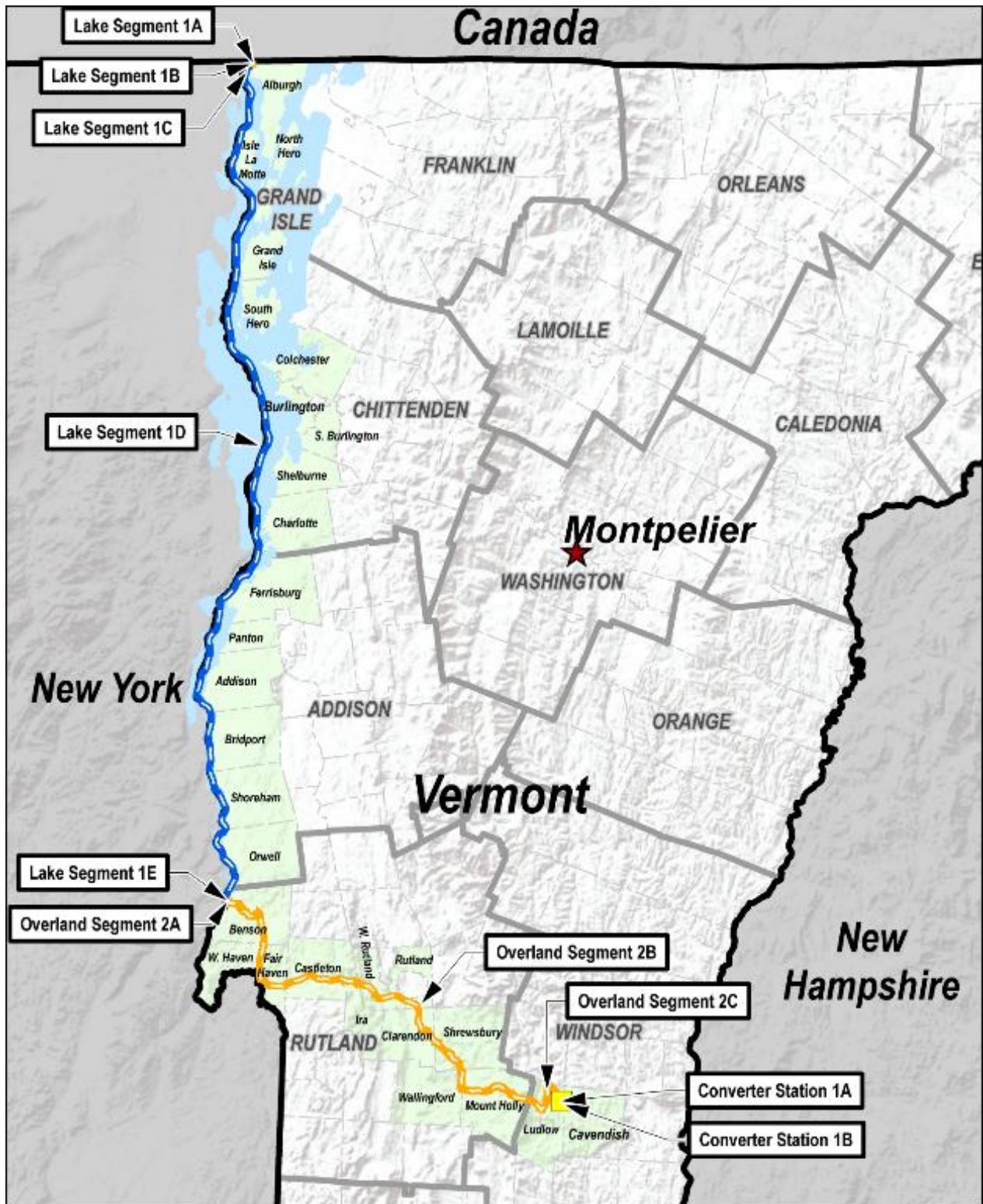
¹³ The approved NECPL route is comprised of approximately 110 acres of permanent acreage and approximately 250 acres of temporary acreage.

¹⁴ Segment distances have been rounded, and thus may not add up to exactly the total distance stated.

¹⁵ TDI-NE will make the “Project Webviewer” available to the EDC evaluation team upon request. The Webviewer is an interactive map application with an aerial photo base that depicts the proposed cable route in relation to all environmental, parcel, infrastructure and other data collected by the Project. The Webviewer allows the user to examine specific segments of the transmission route that they may be interested in.

- The Water Supply Maps **Appendix 6.1.TDI-NE.3** provide information on the location of the NECPL in relation to public water sources located in Lake Champlain.
- The Overland Construction Typicals, Lake and Land (**Appendix 6.1.TDI-NE.4**) provide additional information on ROW width and construction typicals.
- The Converter Station site plans (**Appendix 6.1.TDI-NE.5**) provide information on the Converter Station location, Grading Plan, Elevation Plans and a list of major equipment.

Figure 6.1.2.a – Overall Map of the NECPL



Lake Segment (mile 0 to mile 97.3)

The Lake Segment portion of the NECPL begins on land at the Canadian border in Alburgh, VT and extends 97.3 miles to Benson, VT. The first 0.6 miles is overland (underground) in Alburgh, VT and the remainder of the Lake Segment is within Lake Champlain on the Vermont side.

Lake Segment 1A: Begins at the Canadian Border in Alburgh, VT, with the HVDC cables to be installed for approximately 0.3 miles under Bay Road within the Town of Alburgh's ROW.

Lake Segment 1B: The HVDC cables will be installed on private land owned by TDI-NE that is located on Bay Road, running for approximately 0.3 miles to Lake Champlain. This property will serve as the launch point for horizontal directional drilling (HDD) into the Lake, which will allow for the transition from the land cable to the submarine cable.

Lake Segment 1C: An HDD will extend from the TDI-NE property on Bay Road to the Korean War Veterans Fishing Access Area owned by the State of Vermont, a distance of 0.5 miles. A second HDD will be launched from the Access Area under the Route 2 Bridge into Lake Champlain at milepost 1.3, for a distance of 0.2 miles.

Figure 6.1.2.b – Map of Lake Segments 1A, 1B



Figure 6.1.2.c – Map of Lake Segment 1C



Lake Segment 1D: From milepost 1.3 to milepost 97.3, the HVDC cables will be installed within Lake Champlain via diver lay, jet plow, shear plow or direct lay¹⁶ based on sediment characteristics, depth and regulatory requirements. The anticipated installation techniques to be used are as follows:

Figure 6.1.2.d – Overview of Installation Techniques Within Lake Champlain

Mileposts	Proposed Installation
1.3 – 2.0	Diver Lay
2.0 – 22.0	Jet Plow
22.0 – 73.0	Bottom Lay
66.0 – 74.0	Jet Plow
74.0 – 97.3	Shear Plow

Lake Segment 1E: The cable will exit Lake Champlain via an approximately 0.2 mile HDD to a property (10 acres in size) owned by TDI-NE in Benson, VT.

¹⁶ The diver lay installation technique utilizes divers to install the cable in parts of the Lake where the water level is too shallow for the installation vessel to access. The shear plow technique uses a plow tethered to an installation vessel, which tows the plow along the lakebed and allows for cable installation. The jet plow installation technique utilizes hydraulic pressure nozzles to trench in the transmission cables. The direct lay installation technique does not utilize any submerged equipment, but rather the cables sink to the bottom of the Lake.

Figure 6.1.2.e – Map of Lake Segment 1D

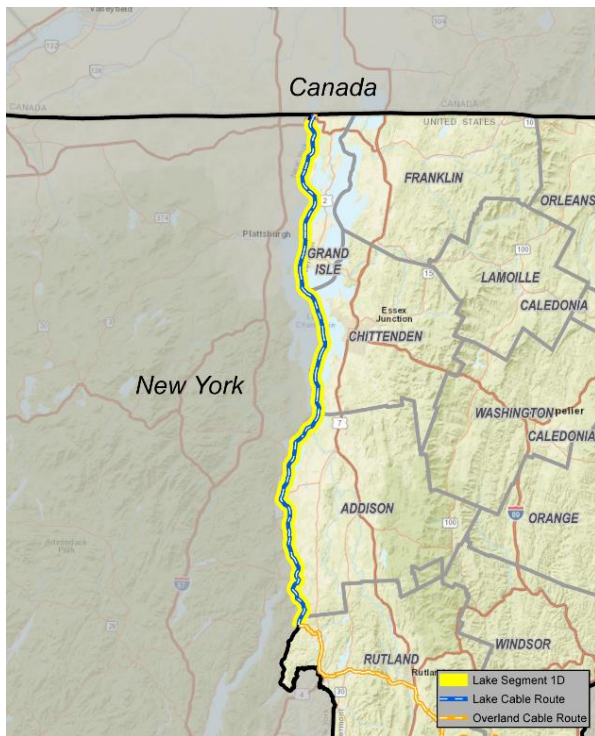


Figure 6.1.2.f – Map of Lake Segment 1E



Overland Segment (mile 97.3 to 153.3)

The Overland Segment extends 56 miles from landfall in Benson, VT to the Converter Station site in Ludlow, VT. 85% of the Overland Segment is within road ROWs owned by the State of Vermont, 7.5% within Town of Benson ROWs (under or alongside roadways) and 7.5% within the Town of Ludlow ROWs (under or alongside roadways). For very short distances the HVDC cables will be installed on private land controlled by TDI-NE in Benson and Ludlow (0.2 miles and 0.5 miles, respectively).

Overland Segment 2A: The HVDC cables will be installed underground within Town of Benson ROWs for 4.3 miles to Vermont Route 22A.

Overland Segment 2B: The HVDC cables will be installed underground within State of Vermont (Agency of Transportation) road or railroad ROWs for 47 miles, as detailed below.

Figure 6.1.2.g – Overview of Overland Segment Route by Distance, ROW, & Town

Distance	Road / Railroad ROW	Town(s)
8.2 miles	State Route 22A	Benson, West Haven, Fairhaven
17.4 miles	State Highway 4	Fairhaven, Castleton, Ira, W. Rutland, Rutland
2.7 miles	State Highway 7	Rutland, Clarendon
14.5 miles	State Route 103	Clarendon, Wallingford, Mount Holly
3.5 miles	State Railroad	Clarendon, Wallingford
0.8 miles	State Route 100	Ludlow

Figure 6.1.2.h – Map of Overland Segment 2A

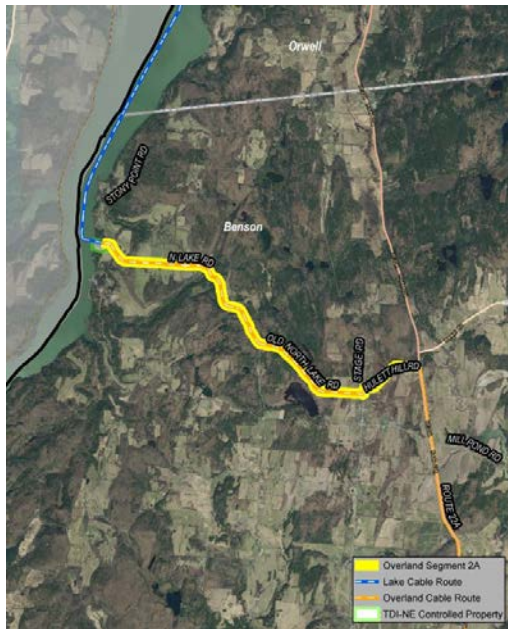


Figure 6.1.2.i – Map of Overland Segment 2B



Converter Station Segment (Mile 153.3 to 154)

Converter Station Segment 1A: The HVDC cables will be installed underground within two properties that TDI-NE owns or will own (4.8 acres and 27 acres in size, respectively), terminating at the Converter Station. The Converter Station site will utilize approximately 10 acres. The AC electrical output from the Converter Station will be transmitted to VELCO's Coolidge 345 kV substation via three 345 kV underground HVAC cables.

Converter Station Segment 1B: The HVAC cables will be installed for approximately 0.3 miles underneath the Converter Station access road and then for approximately 0.3 miles underneath a Town of Ludlow road ROW and then for less than 0.1 miles underneath VELCO property until they reach the Coolidge Substation. The cables will emerge from the ground at a riser pole located outside the substation fence. This riser pole will serve as the point of demarcation between TDI-NE and VELCO. The NECPL will interconnect to the ISO-NE system at the Coolidge Substation via a new breaker to be installed by VELCO within its substation.

Figure 6.1.2.j – Map of Converter Station Segment 1A, 1B



Sub-section 6.2	Site Control
<p><i>Identify any real property rights (e.g., fee-owned parcels, rights-of-way, development rights or easements or leases) that provide the right to use the Eligible Facility site and/or Transmission Project route, including, for Eligible Facilities, and any rights of way needed for interconnection.</i></p> <p><i>i. Does the project have a right to use the Eligible Facility site and/or Transmission Project route for the entire proposed term of the PPA or tariff (e.g., by virtue of ownership or land development rights obtained from the owner)?</i></p> <p><i>ii. If so, please detail the Bidder's rights to control the Eligible Facility site and/or Transmission Project route control.</i></p> <p><i>iii. Describe the status of acquisition of real property rights, any options in place for the exercise of these rights and describe the plan for securing the necessary real property rights, including the proposed timeline. Include these plans and the timeline in the overall project timeline.</i></p> <p><i>iv. Identify any joint use of existing or proposed real property rights.</i></p>	

6.2.1 Hydro-Québec – Hydropower Resources

All of the hydroelectric generation stations and units that comprise the HQ Hydropower Resources are in commercial operation and, therefore, they have already been sited and constructed, and are already fully interconnected to the Hydro-Québec TransÉnergie transmission system within the Québec Control Area. Hydro-Québec owns or controls all of the real property rights necessary for full site use and operation of the existing HQ Hydropower Resources during the term of the proposed HQ PPA, and will not need to acquire any additional real property rights as a result of this Proposal.

6.2.1.2 Hydro-Québec – Québec Line

- i. *Does the project have a right to use the Eligible Facility site and/or Transmission Project route for the entire proposed term of the PPA or tariff (e.g., by virtue of ownership or land development rights obtained from the owner)?*

Yes ☒ No ☐ If not, please explain: N/A

Hydro-Québec has the ability to acquire, in the normal course of the siting and permitting process, site control over the property needed for the Québec Line.

- ii. *If so, please detail the Bidder's rights to control the Eligible Facility site and/or Transmission Project route control.*

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

iii. *Describe the status of acquisition of real property rights, any options in place for the exercise of these rights and describe the plan for securing the necessary real property rights, including the proposed timeline. Include these plans and the timeline in the overall project timeline.*

[REDACTED]

iv. *Identify any joint use of existing or proposed real property rights*

[REDACTED]

6.2.2 TDI-NE – NECPL

Information with respect to real property rights is set forth in detail in Section 6.2.2.ii below.

i. *Does the project have a right to use the Eligible Facility site and/or Transmission Project route for the entire proposed term of the PPA or tariff (e.g., by virtue of ownership or land development rights obtained from the owner)?*

As set forth in detail below, TDI-NE’s property-related rights enable it to use the entire Transmission Project route (including the Converter Station site) for a minimum period of 40 years.

ii. *If so, please detail the Bidder’s rights to control the Eligible Facility site and/or Transmission Project route control.*

TDI-NE obtained the rights to install the cables and build the Converter Station for the NECPL through the following land purchase, easements, town agreements, permits, and/ or lease/option agreements:

Lake Segment Property Rights¹⁷

¹⁷ Lake Champlain is a “public trust” water of the State, and thus a private property right or interest (an easement, for example) is not granted by the State to a private entity but rather permitted uses are governed by state permits. This does not apply to the overland portions of the Lake Segment.

Lake Segment 1A (overland portion): The cables will be installed within the Alburgh Town ROW as allowed by the TDI-NE/Alburgh Host Town Agreement. (**Appendix 6.2.TDI-NE.1:** Alburgh Host Town Agreement, Paragraph 1a-f, 06/02/2015). The Agreement has no fixed term or expiration date on TDI-NE's use of the ROW.

Lake Segment 1B (overland portion): The property (land and structure) adjacent to the Lake at 55 Bay Road, Alburgh, VT is owned in fee simple by TDI-NE. (**Appendix 6.2.TDI-NE.2:** 55 Bay Road Deed).

Lake Segment 1C: TDI-NE has been granted a License by the Vermont Department of Fish and Wildlife ("VT F&W") for use of the Vermont Korean War Veterans Access Area in Alburgh, VT. The VT F&W Access License has a term of 10 years, with an automatic renewal provision for three, 10 year renewals, for a total of 40 years. (**Appendix 6.2.TDI-NE.3:** VT F&W License_03/17/2015).

Lake Segment 1D: TDI-NE is authorized to install the NECPL along the entire proposed route, including the Lake segment, by virtue of the Section 248 Certificate of Public Good ("CPG") issued by the Vermont Public Utility Commission (formerly Public Service Board) ("VT PUC"). The CPG has no fixed term or expiration date. (See **Appendix 7.1.TDI-NE.** Additional approvals of the Lake Segment are provided in the Lake Encroachment Permit issued by the Vermont Agency of Natural Resources and the Section 404 and 10 Permits issued by the US Army Corps of Engineers. (See Section 7.1 and **Appendix 7.1.TDI-NE**).

Lake Segment 1F: The property adjacent to Lake Champlain at 148 Stoney Point Road, Benson, VT is owned in fee simple by TDI-NE. (**Appendix 6.2.TDI-NE.4:** 148 Stoney Point Road Deed).

Overland Segment Property Rights

Overland Segment 2A: The cables will be installed within the Town of Benson ROW as allowed by the TDI-NE/Benson Host Town Agreement. (**Appendix 6.2.TDI-NE.1:** Benson Host Town Agreement_06/201/2015). The Agreement has no fixed term or expiration date on TDI-NE's use of the ROW.

Overland Segment 2B: The cables will be installed within the State of Vermont, Agency of Transportation road or railroad ROW as allowed by the VTrans/TDI-NE Lease Option Agreement, which includes a form Lease with a term of 40 years plus an option for a 9.5 year extension, and by the VTrans Section 1111 permit. See **Appendix 6.2.TDI-NE.5.**

Overland Segment 2C: The cables will be installed within the Town of Ludlow ROW as allowed by the TDI-NE/Ludlow Host Town Agreement. (**Appendix 6.2.TDI-NE.1:** Ludlow Host Town

Agreement_7/02/2015). The Agreement has no fixed term or expiration date on TDI-NE's use of the ROW.

Converter Station Segment Property Rights

Converter Station 1A: The termination of the NECPL's HVDC cables and the Converter Station will be installed on two properties in Ludlow, VT: (i) TDI-NE owns the property at 27 Nelson Road in fee simple, and (ii) TDI-NE has executed an Option Agreement to purchase a portion of the "██████ Property." TDI-NE has already received subdivision approval from the Town of Ludlow to subdivide approximately 27 acres from the 46.7 acre ██████ Property. (**Appendix 6.2.TDI-NE.7:** 27 Nelson Road Deed, ██████ Option Agreement, Ludlow Subdivision Approval).

Converter Station 1B: The HVAC cables will be installed within the Ludlow town road ROW as allowed by the TDI-NE/Ludlow Host Town Agreement (See **Appendix 6.2.TDI-NE.1**). The Agreement has no fixed term or expiration date on TDI-NE's use of the ROW.

Converter Station 1C: The NECPL will interconnect to the ISO-NE system at the Coolidge Substation, which is owned by VELCO. VELCO has confirmed via an engineering analysis that the Coolidge substation has the technical capability and space available for this interconnection. The NECPL will cross VELCO property for less than 0.1 miles to the Coolidge Substation as allowed by an easement granted by VELCO (see **Appendix 6.2.TDI-NE.6**).

iii. Describe the status of acquisition of real property rights, any options in place for the exercise of these rights and describe the plan for securing the necessary real property rights, including the proposed timeline. Include these plans and the timeline in the overall project timeline.

As set forth above, TDI-NE has obtained all property rights required to construct and operate the Project for a period of at least 40 years either by option or purchase of property. TDI-NE will exercise the VTrans lease option agreement and the ██████ parcel purchase option agreement upon the NECPL's financial close. (See Sub-sections 6.1.2.B.2 and C.1 respectively).

iv. Identify any joint use of existing or proposed real property rights.

The Town and State ROWs to be utilized by the NECPL are public rights of ways that are also used for roads, railroads and other public and private utilities. TDI-NE's use of these ROWs will be fully compatible with their existing uses and has been authorized by the affected towns and State of Vermont as set forth in Section 6.2.2.ii above. Other than the host town agreement, and VTrans lease, there are no other required conveyances of real property rights required for TDI-NE to utilize these ROWs.

In addition to the Town and State ROWs, the sections of the Project pass through or go under: (i) Lake Champlain, a public body of water; (ii) the Vermont Korean War Veterans Access Area, a publicly-owned fishing access area; and (iii) Lake Bomoseen, a public body of water. These areas are used by members the public for boating, fishing and other forms of recreation and commerce, and by public and private utilities (electric, water, wastewater). There are no conveyances of real property rights required for TDI-NE's use of these areas. TDI-NE's right to utilize sections of Lake Champlain is granted by virtue of the Section 248 Certificate of Public Good and the Lake Champlain Encroachment Permit (See Section 6.2.2.ii.A.4 and **Appendix 7.1.TDI-NE**. TDI-NE's right to pass beneath the Vermont Korean War Veterans Access Area is granted by virtue of the VT F&W Access License (See Section 6.2.2.ii.A.3 and **Appendix 6.2.TDI-NE.3**). TDI-NE's right to pass beneath Lake Bomoseen is granted by virtue of the Section 248 Certificate of Public Good and Lake Bomoseen Encroachment Permit. (See Section 7 and **Appendix 7.1.TDI-NE**).

The sections of the Overland Segment owned by TDI-NE in Alburgh, Benson, and Ludlow have historically been used for residential purposes. There is no conflict between the proposed use of these properties by NECPL and the continued use of these properties for residential purposes.

Sub-section 6.3	Zoning and Permitting
<i>Provide evidence that the Eligible Facility site and/or Transmission Project route is properly zoned or permitted. If the Eligible Facility site and/or Transmission Project route is not currently zoned or permitted properly, identify present and required zoning and/or land use designations and permits and provide a permitting plan and timeline to secure the necessary approvals.</i>	

6.3.1 Hydro-Québec

6.3.1.1 Hydro-Québec – Hydropower Resources

All the hydroelectric generation stations and units that comprise the HQ Hydropower Resources are in operation and, therefore, have already been sited and constructed, and are already fully interconnected to the Hydro-Québec TransÉnergie transmission system within the Québec Control Area. No further zoning or permitting is required as a result of this Proposal.

6.3.1.2 Hydro-Québec – Québec Line

Detail the zoning and permitting issues:

Since Hydro-Québec acts as an agent for the Province of Québec, no local zoning approvals are required for the construction and operation of its facilities. As the EIS is developed, the permitting and land use issues will be identified and addressed through the processes discussed in Section 7. The issues presented typically involve the same types of issues addressed in a U.S. siting proceeding, and may include, where applicable, the economic justification for the project, consistency with local municipal land use plans, the use of land in agricultural zones for non-agricultural uses, mitigation of impacts on flora and fauna, forests, and wetlands, the human landscape, visual impacts, and economic development.

Permitting plan and timeline:

[REDACTED]

[REDACTED]

6.3.2 TDI-NE – NECPL

All sections of the NECPL have been properly permitted. A list of the state, local, and federal permits and approvals are set forth in Section 7.1.2.

With respect to zoning requirements under Vermont law, municipal zoning regulations and ordinances do not apply to electric transmission projects regulated under Section 248 of Title 30 of the Vermont Statutes. See 24 V.S.A. § 4413(b). Likewise, such projects do not require a State of Vermont statewide land use permit under Vermont’s “Act 250” law. See 10 V.S.A. § 6001(3)(D)(ii). Accordingly, because all federal, state and local permitting for the NECPL is complete, no permitting plan is required.

Sub-section 6.4	Surrounding Area
<i>Provide a description of the area surrounding the Eligible Facility site and/or Transmission Project route, including a description of the local zoning, flood plain information, existing land use and setting (woodlands, grasslands, agriculture, other).</i>	

6.4.1 Hydro-Québec

6.4.1.1 Hydro-Québec – Hydropower Resources

All the hydroelectric generation stations and units that comprise the HQ Hydropower Resources are in operation and, therefore, have already been sited and constructed, and are already fully interconnected to the Hydro-Québec TransÉnergie transmission system within the Québec Control Area. There will be no environmental impacts from siting hydroelectric generation as a result of this Proposal.

6.4.1.2 Hydro-Québec – Québec Line

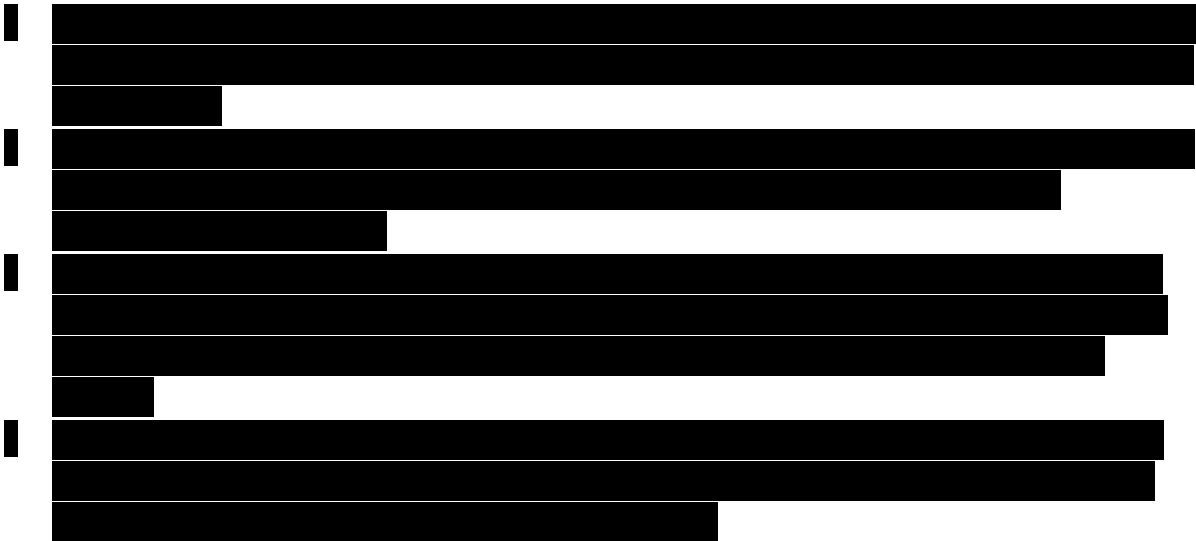
[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]



6.4.2 TDI-NE – NECPL

The table below provides an overview of areas surrounding the NECPL route and Converter Station:

Figure 6.4.2.a – Summary of Areas Surrounding the NECPL

Segment	Local Zoning	Flood Plain	Land Use	Setting
Lake Segment	Not applicable	Yes	Lake and Rural / Residential	Lake
Overland Segment	Not applicable	Yes (scattered)	Transportation Corridors, Rural / Residential	Agricultural, Woodlands
Converter Station	Not applicable	No	Forestry, Residential	Woodland

Detailed descriptions of the areas surrounding the NECPL by Segment are set forth below. As noted in Section 6.3.2 above, the NECPL, as an electric transmission project, is exclusively governed by state law and is not subject to local zoning requirements. However, town and regional plans, which are advisory in nature, were given “due consideration” by the Vermont Public Service Board in the Section 248 permitting process as required by statute. A discussion of town and regional planning documents for the entire route can be found in (*Appendix 7.3.TDI-NE.4* (Exhibit. D)).

Lake Segment: The first 0.5 miles of the Lake Segment is overland within a rural residential area in the Town of Alburgh, VT.

The cables will be installed within the Vermont portion of Lake Champlain running 97.3 miles from Alburgh to Benson, VT. Lake Champlain is the sixth largest freshwater lake in the United States. It flows north from Whitehall, NY across the U.S.-Canadian border to its outlet at the Richelieu River in Québec. For much of its length, Lake Champlain defines the state border between Vermont and

New York, with the two states having jurisdiction over their respective portions of the Lake. The Lake's watershed is bound to the east by the Connecticut River basin and to the southwest by the Hudson River basin, which is connected to Lake Champlain by the Champlain Canal.

Vermont municipal zoning does not apply to the Vermont portion of Lake Champlain where the NECPL cables will be located, as it is exclusively governed by the State's Section 248 permitting process and is a public trust waters of the State. Use of Lake Champlain is regulated and authorized by state and federal agencies. For additional information on the Lake Segment, see **Appendix 7.1.TDI-NE**, Lake Champlain Segment_ Section 3.1_ US DOE FEIS_ October 2015 and **Appendix 6.1.TDI-NE.2**.

Overland Segment: Land uses along the 57 mile Overland Segment are mostly comprised of maintained local and state roadway and railroad corridors. Mowed fields, agricultural lands, hardwood and mixed hardwood/coniferous forests, interspersed with other natural and disturbed vegetation communities border these corridors. A few residential and commercial areas border these transportation corridors. There are scattered floodplains along the route, particularly along VT Route 103. These floodplains as well as other natural resource are detailed in the natural resource report included in the evidentiary record of the VT PUC proceeding **Appendix 6.4.TDI-NE.1**.

As stated above, local zoning does not apply to the Overland Segment since the NECPL received a Section 248 CPG.

For additional information on the Overland Segment, see **Appendix 6.1.TDI-NE.2**, and Overland Segment_ Section 3.2_ US DOE FEIS_ October 2015.

Converter Station: The Converter Station will be located within a mature white pine forest, adjacent to an existing house that TDI-NE owns and a cleared transmission corridor. The surrounding area is primarily forested, with scattered residences. The Converter Station will be adjacent to and approximately 400 feet from the parcel of land which hosts the existing VELCO Coolidge substation. Multiple existing transmission lines are within approximately 200 feet of the Converter Station site. (See **Appendix 6.1.TDI-NE.5**).

TDI-NE has received local subdivision approval for the property to be used for the Converter Station. See **Appendix 7.1.TDI-NE**.

Sub-section 6.5	Interconnection Path
<i>For Eligible Facilities, describe and provide a map of the proposed interconnection that includes the path from the generation site to the ISO New England Inc. (“ISO-NE”) Pool Transmission Facilities (“PTF”). Describe how the bidder plans to gain interconnection path site control.</i>	

6.5.1 Hydro-Québec

6.5.1.1 Hydro-Québec – Hydropower Resources

N/A. All the hydroelectric generation stations and units that comprise the HQ Hydropower Resources are in operation and, therefore, have already been sited and constructed, and are already fully interconnected to the Hydro-Québec TransÉnergie transmission system within the Québec Control Area. Hydro-Québec has full site control over the interconnection paths during and beyond the term of the proposed HQ PPA.

6.5.1.2 Hydro-Québec – Québec Line



6.5.2 TDI-NE – NECPL

TDI-NE has site control over the interconnection path from the Canadian/U.S. border to the ISO-NE PTF as set forth in Section 6.2.3. See Overview Map in Section 6.1.2.

Sub-section 6.6	Interconnection Status
	<p><i>Please describe the status of any planned interconnection to the grid. Has the bidder made a valid interconnection request to ISO-NE, the applicable New England Transmission Owner, or any neighboring control areas, to interconnect at the Capacity Capability Interconnection Standard? Have any studies been completed by ISO-NE or the applicable Transmission or Distribution Owner? If multiple interconnection requests have been made, please specify all such active requests which have not been superseded by subsequent requests and information regarding the status of each. Provide copies of any requests made and studies completed. Describe how such studies and information support the costs assumed in preparing your bid and the associated timeline proposed.</i></p>

6.6.1 Hydro-Québec

6.6.1.1 Hydro-Québec – Hydropower Resources

All of the hydroelectric generation stations and units that comprise the HQ Hydropower Resources are in operation and, therefore, have already been sited and constructed, and are already fully interconnected to the Hydro-Québec TransÉnergie transmission system within the Québec Control Area.

6.6.1.2 Hydro-Québec – Québec Line

[REDACTED]

6.6.2 TDI-NE – NECPL

In 2013 TDI-NE made an interconnection request to ISO-NE that was accepted, and the NECPL interconnection study process has been completed. ISO-NE completed the System Impact Study (SIS) for the Project in October, 2016.¹⁸ ISO-NE issued an I.3.9 authorization for the NECPL on November 1, 2016 (**Appendix 6.6.TDI-NE**). As discussed below, the NECPL intends to interconnect at the Capacity Capability Interconnection Standard.

System Impact Study and I.39 Approval

TDI-NE filed an interconnection request with ISO-NE in 2013. The NECPL was assigned Interconnection Queue Position 425. Per the interconnection procedures that existed at the time, preliminary system impact studies (“SIS”) were performed by Siemens-PTI, a consultant retained by

¹⁸ The NECPL System Impact Study contains CEII and thus should be requested directly from ISO-NE.

TDI-NE. Siemens-PTI conducted technical work in close coordination with ISO-NE staff.

In January 2015, ISO-NE implemented its new Elective Transmission Upgrades (“ETU”) interconnection procedures (Schedule 25 to the ISO-NE Open Access Transmission Tariff). Under the transition provisions of Schedule 25, all projects in the existing queue were given new queue positions and ISO-NE assumed direct control of the interconnection studies. NECPL was assigned Queue Position 501. Under the new ETU procedures, a SIS was completed by consultants hired and managed by ISO-NE in October 2016. Following the completion of the SIS report, the affected Transmission Owners prepared Project Plan Applications for the upgrades that were identified in the report. The NEPOOL Reliability Committee recommended that ISO-NE approve those Project Plan Applications in October 2016.

ISO-NE provided the I.3.9 authorization for the NECPL, concluding that the NECPL “will not have a significant adverse effect upon the reliability or operating characteristics of the Transmission Owner’s transmission facilities, the transmission facilities of another Transmission Owner, or the system of a Market Participant.”

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

¹⁹ This document contains CEII and thus should be requested directly from ISO-NE.

[REDACTED]

[REDACTED]

VELCO Upgrades as the Interconnecting Transmission Owner

The cost estimates provided in the SIS are preliminary, have a 50% contingency and are not based on detailed engineering. Since the completion of the SIS, TDI-NE has worked closely with VELCO regarding the identified upgrades to review the assumptions underlying the cost estimates, explore less expensive and impactful alternatives and refine the cost estimates. Specifically, TDI-NE and VELCO engaged in the following scope of work:

- VELCO completed a detailed engineering analysis of the required reconductorings by each line segment. This analysis provided detailed information on conductor sizes, required pole replacements/modifications, access points, environmental resources and easements.
- VELCO completed a detailed engineering analysis on the required work at several substations. This analysis provided detailed information on the specifications and interconnection schemes required at each substation.
- VELCO completed a detailed engineering analysis of the interconnection equipment required to interconnect NECPL into the Coolidge Substation.

Using these deliverables, TDI-NE worked with an electrical consultant, MJ Electric

(www.mjelectric.com), to establish new estimates for the recondutorings and substation work. Additional contingency and VELCO management fees were added to these estimates until the estimates were more reflective of the specific upgrades required.

TDI-NE also used the results of the OIS to further understand which upgrades would be required if higher queued projects were built or not built. This analysis confirmed that certain original upgrade costs currently assigned to the NECPL would no longer be needed regardless of whether the higher queued project was built or not built.

Lastly, VELCO and ISO-NE confirmed in the OIS that another recondutoring originally identified in the SIS, would not be needed in the event that certain higher queued projects do not proceed.

Based on this information, the costs of the VELCO upgrades have been significantly reduced from the estimates in the SIS. These costs are included in overall NECPL tariff amount.

Using the specific knowledge gained from the engineering analysis, VELCO provided TDI-NE with a schedule for designing, permitting and constructing these upgrades.

Eversource Upgrades as an Affected Transmission System

TDI-NE has made no adjustments to the cost estimates provided in any of the system impact studies for the Eversource upgrades. These costs are reflected in the overall tariff amount.

Con-Edison Upgrades as an Affected Transmission System

[REDACTED]

[REDACTED]

Green Mountain Power Upgrades as an Affected Transmission System

The cost estimates for certain GMP upgrades are reflected in the overall tariff amount. TDI-NE has worked closely with Green Mountain Power (“GMP”) on upgrades related to its subtransmission system. Based on a technical analysis which analyzed battery storage as an alternative to reconductoring, TDI-NE and GMP intend to utilize 25 MWs of storage at two existing substations to mitigate approximately 57% of the linear feet of reconductoring necessitated by NECPL. Preliminary estimates from GMP indicate that this storage will be less expensive compared to traditional reconductoring.

Summary

As a result of these efforts and certain changes in the marketplace, significantly improved and refined estimates for the transmission system upgrades reflect a decrease from the estimates contained in the SIS. The revised estimates for the upgrades to the transmission and subtransmission systems have been incorporated into the total price of the NECPL TSA. TDI-NE is currently in the process of memorializing these changes with ISO-NE and VELCO as part of the project’s Interconnection Agreement. Please see Section 14 for detailed breakdowns of these upgrade costs and the Project Schedule in Section 10 for additional information on the timeline to permit and complete these upgrades.

Most importantly for the MA EDCs, the transmission tariff for the NECPL is not dependent on the final scope of the required upgrades. The MA EDCs will not bear **any** financial risk that the scope or cost of the facilities required to interconnect the NECPL differ from the costs projected in Section 14.



Sub-section 6.7	Electrical System Performance/Reliability
<p><i>Describe the Project's electrical system performance and its impact to the reliability of the New England Transmission system. For Transmission Projects provide a description of how the project would satisfy ISO NE's I.3.9 requirements. Provide the status of any interconnection studies already underway with ISO-NE and/or the transmission owner. Provide a copy of any studies completed to date. Provide a copy of an interconnection agreement, if any, executed by the bidder with respect to the proposed project. If an interconnection agreement has not been executed, please provide the steps that need to be completed before an interconnection agreement can be executed and the associated timeline.</i></p>	

6.7.1 Hydro-Québec

6.7.1.1 Hydro-Québec – Hydropower Resources

N/A. All of the hydroelectric generation stations and units that comprise the HQ Hydropower Resources are in operation and, therefore, are already fully interconnected to the Hydro-Québec TransÉnergie transmission system within the Québec Control Area.

The HQ Hydropower Resources will be managed as a portfolio to provide Firm Service Hydroelectric Generation. The size of the portfolio available to support this Proposal greatly exceeds the Firm Service Hydroelectric Generation offered in this Proposal. [REDACTED]

[REDACTED]

6.7.1.2 Hydro-Québec – Québec Line

[REDACTED]

6.7.2 TDI-NE – NECPL

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

[REDACTED]

[REDACTED]			
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

²¹ All these studies are CEII. In accordance with Section 1.7.4 of the RFP, the MA EDCs should request these CEII studies directly from ISO-NE.

Sub-section 6.8	Studies in lieu of I.3.9
<i>Projects that do not have I.3.9 approval from ISO-NE must include technical reports or system impact studies that approximate the ISO-NE interconnection process, including but not limited to clear documentation of study technical and cost assumptions, reasoning, and justification of such assumptions.</i>	

6.8.1 Hydro-Québec

6.8.1.1 Hydro-Québec – Hydropower Resources

N/A. All of the hydroelectric generation stations and units that comprise the HQ Hydropower Resources are in operation and, therefore, are already fully interconnected to the Hydro-Québec TransÉnergie transmission system within the Québec Control Area.

6.8.1.2 Hydro-Québec – Québec Line

[REDACTED]

6.8.2 TDI-NE – NECPL

As set forth in 6.6.2, the NECPL has an I.3.9 approval from ISO-NE.

Sub-section 6.9	Alternative Interconnection
<i>To the extent that you provide an alternative interconnection scenario based on ISO-proposed interconnection process changes, you must also include studies using the proposed ISO-NE-proposed process. Any such studies must be accompanied with clear documentation of study technical and cost assumptions, reasoning, and justification of such assumptions.</i>	

6.9.1 Hydro-Québec

6.9.1.1 Hydro-Québec – Hydropower Resources

N/A. All of the hydroelectric generation stations and units that comprise the HQ Hydropower Resources are in operation and, therefore, are already fully interconnected to the Hydro-Québec TransÉnergie transmission system within the Québec Control Area.

6.9.1.2 Hydro-Québec – Québec Line

[REDACTED]

6.9.2 TDI-NE – NECPL

As set forth in 6.6.2 the NECPL has an I.3.9 approval from ISO-NE, thus, no alternative interconnection scenario is required for the NECPL.

Sub-section 6.10	Electrical Models for ISO-NE
<i>Provide the electrical models of all energy resources supporting the proposed project in accordance with the filing requirements of the ISO-NE Tariff Schedule 22 and 23.</i>	

6.10.1 Hydro-Québec

[REDACTED]

6.10.2 TDI-NE – NECPL

The electrical models of the energy resources related to the NECPL are CEII. These models are in accordance with the filing requirements of the ISO-NE Tariff Schedule 25 and should be requested directly from ISO-NE. Schedule 25 (Elective Transmission Upgrades) applies to NECPL, while Schedule 22 (Large Generators) and Schedule 22 (Small Generators) do not.

Sub-section 6.11	Electrical One-Line Diagrams
<i>Provide a copy of an electrical one-line diagram showing the interconnection facilities and the relevant facilities of the transmission and/or distribution provider.</i>	

6.11.1 Hydro-Québec

6.11.1.1 Hydro-Québec – Hydropower Resources

n/a

6.11.1.2 Hydro-Québec – Québec Line



6.11.2 TDI-NE – NECPL

An electrical one line-diagram showing the interconnection facilities is provided in **Appendix 6.11.TDI-NE**.

Sub-section 6.12	Interconnection Facilities
<i>Specify and describe the current or new interconnection facilities (lines, transformers, switching equipment, system control protection, etc.) that bidder owns or is intending to construct or have constructed in order to deliver the proposed energy.</i>	

6.12.1 Hydro-Québec

6.12.1.1 Hydro-Québec – Hydropower Resources

All of the hydroelectric generation stations and units that comprise the HQ Hydropower Resources are in operation and, therefore, have already been sited and constructed, and are already fully interconnected to the Hydro-Québec TransÉnergie transmission system within the Québec Control Area. No new interconnection facilities are required as a result of this Proposal.

6.12.1.2 Hydro-Québec – Québec Line

[REDACTED]

[REDACTED]

[REDACTED]

6.12.2 TDI-NE – NECPL

Set forth in the below table is the list of the new interconnection facilities required to be constructed for the delivery of the proposed energy.

Figure 6.12.2 – List of New Interconnection Facilities for NECPL

Item	Location	Description
+/-320 kV HVDC Transmission Line	Alburgh – Ludlow, VT	154 miles
HVDC Converter Station	Ludlow, VT	10 acres
345kV AC line from Converter to Coolidge Substation	Ludlow, VT	0.6 miles
One new 345 kV breaker at Coolidge Substation including required disconnect switches, current transformers, potential transformers, relays, relay cabinets, metering, control, protection, communications, wiring, buswork, foundations, support structures and associated work to interconnect incoming 345kV circuit	Ludlow, VT	Existing VELCO substation

Moreover, VELCO’s General Arrangement (“GA”) and One-Line design of the interconnection of the NECPL into the Coolidge Substation confirms that the NECPL can interconnect to the Coolidge Substation at an existing open transformer bay. (See **Appendix 6.11.TDI-NE**).

Sub-section 6.13	IDV Files
<i>Incremental data requirements for Projects that include Transmission facilities; 1. IDV file(s) in PSSE v32 format modeling only the new/modified Transmission components of the project.</i>	

6.13.1 Hydro-Québec

6.13.1.1 Hydro-Québec – Hydropower Resources

n/a

6.13.1.2 Hydro-Québec – Québec Line

Given that the Québec Line is located outside of the United States and has been planned as part of the integrated Hydro-Québec TransÉnergie transmission system, system impacts within the ISO-NE area are not modeled as part of the Hydro-Québec transmission planning process.

6.13.2 TDI-NE – NECPL

The incremental data requirements for the NECPL are contained in an IDV file in PSSE v32 format. These files are CEII and should be requested directly from ISO-NE..

Sub-section 6.14	Full Deliverability
<i>Please detail with supporting information and studies (as available) that the energy contemplated in your proposal is able to be delivered to the Distribution Companies without material constraint or curtailment.</i>	

6.14.1 Hydro-Québec

6.14.1.1 Hydro-Québec – Hydropower Resources

The HQ Hydropower Resources will be managed as a portfolio to provide Clean Energy Generation. The size of the portfolio available to support this bid greatly exceeds the Clean Energy Generation offered in this proposal.

[REDACTED]

6.14.1.2 Hydro-Québec – Québec Line

[REDACTED]

[REDACTED]

6.14.2 TDI-NE – NECPL

On behalf of TDI-NE and HQ, PA Consulting Group, Inc. simulated the operation of the New England wholesale electricity market with the addition of the NECPL. In those simulations, no material transmission congestion was observed, confirming that the Clean Energy contemplated in this Proposal can be delivered to the Distribution Companies without material constraint or curtailment. (See **Confidential Appendix 3.3.TDI-NE.1**.)

Sub-section 6.15	Full Dispatch
<i>Please provide sufficient information and documentation to demonstrate that the proposed point of delivery into ISO-NE, along with their proposed interconnection and transmission upgrades including any transmission upgrades beyond the point of interconnection, is sufficient to ensure full dispatch of the proposal's Clean Energy Generation profile.</i>	

6.15.1 Hydro-Québec

6.15.1.1 Hydro-Québec – Hydropower Resources

n/a. The HQ Hydropower Resources will be managed as a portfolio to provide Clean Energy Generation. The size of the portfolio available to support this bid greatly exceeds the Clean Energy Generation offered in this proposal. [REDACTED]

[REDACTED]

6.15.1.2 Hydro-Québec – Québec Line

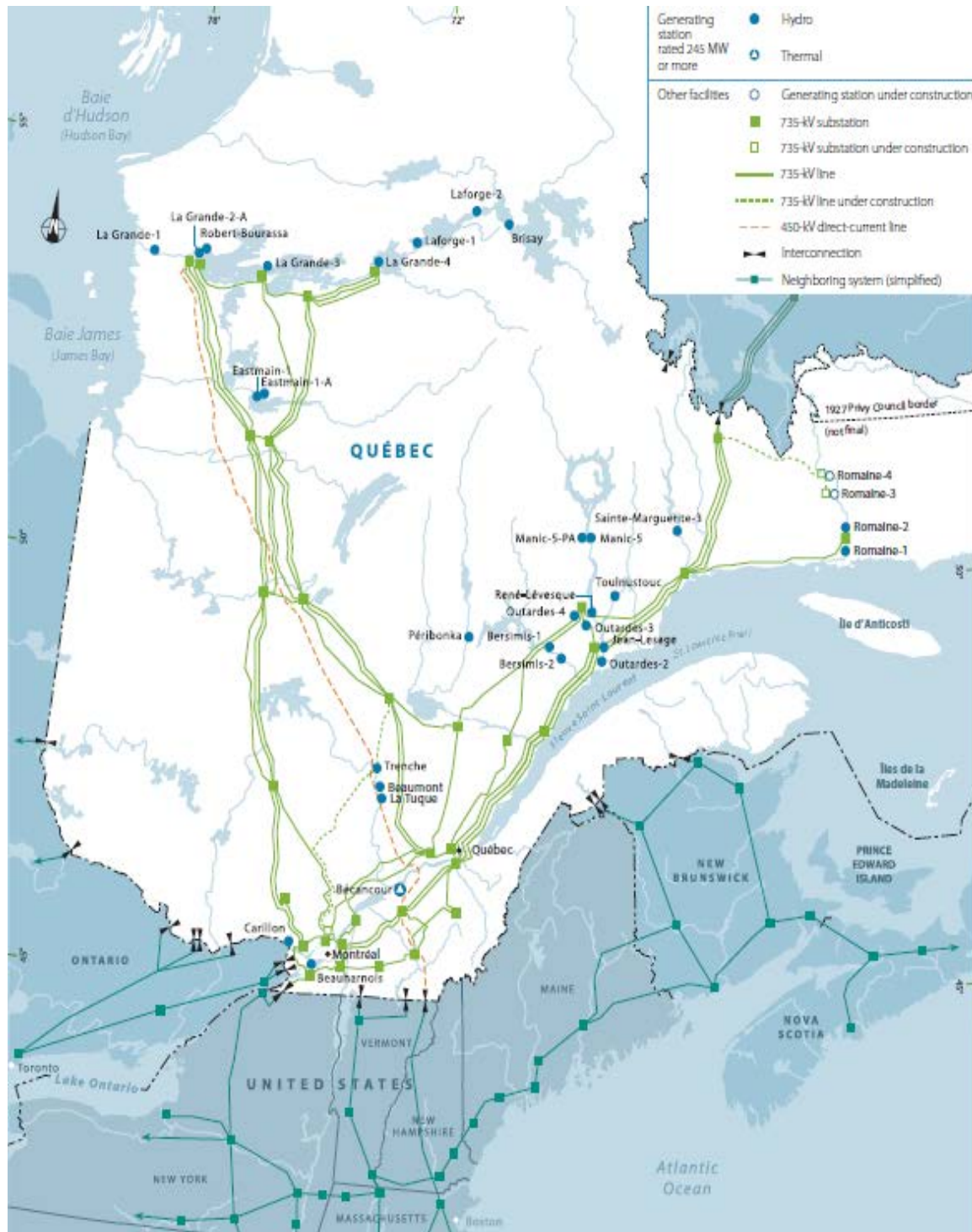
[REDACTED].

6.15.2 TDI-NE – NECPL

The interconnection studies completed by ISO-NE confirm that with the planned transmission system upgrades in place, the maximum output of the NECPL (1000 MWs) can be fully dispatched, even under highly stressed system conditions. Thus, the Interconnection Agreement for the NECPL will reflect the NECPL's rights to 1000 MWs of Network Import Interconnection Service. TDI-NE's interconnection request for CNIIS is being processed by ISO-NE as queue position 668.

This finding was further confirmed by the electricity market simulations performed by PA Consulting. See Section 6.14.2 and **Confidential Appendix 3.3.TDI-NE.1.**

Attachment 6.1.1.1 | Map of major HQ hydroelectric generation facilities



Section 7 | Environmental Assessment, Permit Acquisition Plan and New Class 1 RPS Certification

Section Introduction

This section addresses environmental and other regulatory issues associated with project siting, development and operations for both generation and transmission projects, as applicable.

Sub-section 7.1

List of all the permits, licenses, and environmental assessments and/or environmental impact statements

Provide a list of all the permits, licenses, and environmental assessments and/or environmental impact statements required. If a bidder has secured any permit or has applied for a permit, please identify in the response.

- I. Provide a list of all Federal, state and local permits, licenses, and environmental assessments and/or environmental impact statements required to construct and operate the project.*
- II. Identify the governmental agencies that will issue or approve the required permits, licenses, and environmental assessments and/or environmental impact statements.*

7.1.1 Hydro-Québec

7.1.1.1 Hydro-Québec – Hydropower Resources

All of the hydroelectric generation units that comprise the HQ Hydropower Resources are in operation and, therefore, have already been sited, constructed, interconnected to the Hydro-Québec TransÉnergie transmission system within the Québec Control Area, and are fully permitted in accordance with applicable law.

7.1.1.2 Hydro-Québec – Québec Line

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

7.1.2 TDI-NE – NECPL

The NECPL has received all permits (or similar regulatory approvals), licenses, environmental assessments and/or environmental impact statements (collectively, “Permits”) required to commence and construct the transmission line. Please see Figure 7.1.2.a below for a list of these Permits. Copies of the Permits are contained in ***Appendix 7.1.TDI-NE***.

Figure 7.1.2.a – NECPL List of Permits

Permit	Agency	Date	Permit #
I.39 Authorization	ISO-NE	11/01/16	ETU #501
Negotiated Rate Authority	FERC	03/10/14	Docket# ER14-966-000
Presidential Permit	U.S. DOE	12/15/16	PP-400
NEPA FEIS	U.S. DOE	10/29/15	N/A
Sections 404 & 10 Permit	U.S. ACOE	01/29/16	NAE-2013-2689
Section 1111 Permit	VTrans	02/14/17	38887
Section 248 CPG	VT PSB	01/05/16	Docket #8400
Section 231 CPG	VT PSB	04/14/16	Docket #8704
401 Water Quality Certification	VT ANR (DEC)	11/24/15	2015-003
Lake Encroachment Permit (L. Champlain)	VT ANR (DEC)	11/24/15	2015-030
Lake Encroachment Permit (L. Bomoseen)	VT ANR (DEC)	11/24/15	2015-011
Stream Alteration Permit	VT ANR (DEC)	11/24/15	SA-06-0001
VT Wetland Permit	VT ANR (DEC)	11/24/15	2013-280
Construction Stormwater Permit	VT ANR (DEC)	11/24/15	VT0000184
Operational-Phase Stormwater Permit	VT ANR (DEC)	11/24/15	7354-9015
Floodplain Permit	VT ANR (DEC)	11/24/15	FP-4-0001-IND
Takings Permit	VT ANR (DFW)	03/08/16	EH-2016-02
Host Town Agreement	Town of Benson	06/10/15	Town Agreement
Host Town Agreement	Town of Ludlow	07/02/15	Town Agreement
Host Town Agreement	Town of Alburgh	06/02/15	Town Agreement
Subdivision Approval	Town of Ludlow	06/08/15	SUB15-003

In addition to the permits required to construct the NECPL, regulatory approvals will need to be obtained by VELCO, GMP and Eversource in order to construct the upgrades to their transmission infrastructure as identified in Section 6.12.2.

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Sub-section 7.2	Permit list timeline
<i>Provide the anticipated timeline for seeking and receiving the required permits, licenses, and environmental assessments and/or environmental impact statements. Include a project approval assessment which describes, in narrative form, each segment of the process, the required permit or approval, the status of the request or application and the basis for projection of success by the milestone date. All requirements should be included on the project schedule in Section 10.</i>	

7.2.1 Hydro-Québec

7.2.1.1 Hydro-Québec – Hydropower Resources

N/A. All of the hydroelectric generation units that comprise the HQ Hydropower Resources are in operation and, therefore, have already been sited, constructed, and are already fully interconnected to the Hydro-Québec TransÉnergie transmission system within the Québec Control Area. Hydro-Québec has obtained all necessary permits, licenses, and environmental assessments necessary to construct and operate the HQ Hydropower Resources.

7.2.1.2 Hydro-Québec – Québec Line

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7.2.2 TDI-NE – NECPL

As set forth in Section 7.1.2, all permits, licenses and environmental impact statements required to construct and operate the NECPL in Vermont have already been obtained, and thus, a project permitting timeline is not required. A summary of the approvals received by NECPL is set forth below.

[REDACTED]
[REDACTED]
[REDACTED]

I. FEDERAL APPROVALS

A. U.S. Department of Energy (“U.S. DOE”): Presidential Permit and NEPA Review

Overview: A Presidential Permit issued by the U.S. DOE is necessary to construct, operate, maintain, and connect electric transmission facilities at the United States international border. Before a Presidential Permit may be issued, the action must be found to be consistent with the public interest, through an evaluation of the following:

1. Environmental Impacts – Pursuant to NEPA, the U.S. DOE prepares an Environmental Impact Statement (“EIS”) and receives concurrence from the U.S. Department of State and the U.S. Department of Defense. The U.S. DOE also must complete Section 7 consultation with the U.S. Fish and Wildlife Service and Section 106 consultation with the U.S. Department of the Interior and other entities with jurisdiction over historic sites prior to issuing a permit. The U.S. Environmental Protection Agency, U.S. Coast Guard, and U.S. Army Corps of Engineers serve as cooperating federal agencies during the NEPA process.
2. Impact on Electric Reliability - the U.S. DOE considers the effect that the proposed project would have on the operating reliability of the U.S. electric power supply system; i.e., the ability of the existing generation and transmission system to remain within acceptable voltage, loading and stability limits during normal and emergency conditions.

Status: In May 2014, TDI-NE submitted an application to the U.S. DOE for a Presidential Permit, which initiated the NEPA process. On May 31, 2015, the U.S. DOE released the NECPL’s draft EIS to the public and opened a 60 day comment period during which it received public comments. In the summer of 2015, both DOD and DOS issued their formal concurrences. The Final EIS was issued on October 29, 2015. Following issuance of the I.39 approval, the Presidential Permit and Record of Decision were issued on December 6, 2016. **Appendix 7.1.TDI-NE.**

B. U.S. Army Corps of Engineers (“U.S. ACOE”): Section 10 and 404 Permits

Overview: Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act require

that permits must be obtained from the U.S. ACOE in order to construct any structure in or over navigable waters, or place or excavate any dredge or fill material in waters of the U.S. The portions of the NECPL that are to be placed in Lake Champlain, or that involved jurisdictional wetlands or stream/river crossings in the overland portion of the NECPL, triggered the need for these permits.

Status: In November 2014, TDI-NE submitted Sections 10 and 404 applications to the ACOE, and submitted final revisions in April 2015. In July 2015, the U.S. ACOE deemed the applications complete and solicited comments from the public. The U.S. ACOE determined there will be no permanent impacts to regulated waters as a result of the NECPL, and issued Sections 10 and 404 permits on January 29, 2016. (***Appendix 7.1.TDI-NE***).

C. Federal Energy Regulatory Commission: Docket ER14-966-000

Overview: On March 10, 2014, FERC issued an Order authorizing TDI-NE to sell transmission rights on the NECPL at negotiated rates. The Order requires TDI-NE to conduct an Open Solicitation (“OS”) process to ensure that transmission capacity on the NECPL is allocated in a manner that is not unduly preferential or discriminatory. (***Appendix 7.1.TDI-NE***).

Status: TDI-NE commenced its OS process on October 15, 2015. The first phase of the OS process concluded on December 4, 2015 with seven potential transmission customers submitting expressions of interest. The FERC process will be completed when FERC accepts TDI-NE’s: (1) report filed pursuant to Section 205 of the Federal Power Act detailing the allocation of capacity rights on NECPL; and (2) schedule for service on the NECPL under the ISO New England Open Access Transmission Tariff. (***Appendix 7.1.TDI-NE***).

II. STATE APPROVALS

A. Vermont Public Utility Commission (“VT PUC”): Section 248 Certificate of Public Good (“CPG”)

Overview: The VT PUC issues the over-arching state approval of electric transmission facilities, and must find that a proposed project promotes the general good of the State of Vermont pursuant to 30 V.S.A. Section 248. Its evaluation consists of reviewing specific statutory criteria, including electric system stability/reliability, local and regional planning, economic benefit, need, environmental impacts (including visual aesthetics and scenic and historic resources), public health and safety, impacts to existing or planning transmission facilities, and consistency with the State’s Comprehensive Energy Plan. The VT PUC process is a quasi-judicial proceeding that requires pre-filed testimony and exhibits from experts sponsored by the petitioner, state agencies, and other parties; discovery; a public hearing; site visit; and evidentiary hearings.

Status: TDI-NE submitted its Section 248 Petition to the VT PUC in December, 2014. Eighteen parties (state agencies, NGOs, individuals, towns, utilities, and regional commissions) intervened in the proceeding. In February 2015, the VT PUC held a public hearing and in May 2015 conducted a site visit to portions of the NECPL's route and to the proposed converter station site.

Between June and August 2015, TDI-NE reached settlement agreements with all of the active intervenors as well as certain other interested parties: VT Agency of Natural Resources, VT Department of Public Service, VT Department of Historic Preservation, VT Agency of Transportation, VELCO, Green Mountain Power, Burlington Electric Department, Conservation Law Foundation, the Towns of Alburgh, Benson, and Ludlow, and an adjoining landowner. TDI-NE also reach informal understandings with the Addison County Regional Planning Commission.

The technical hearings were held on October 20, 2015, during which all of TDI-NE's evidence and the settlement agreements were formally entered into the record. On January 5, 2016, the VT PUC issued an Order and associated CPG approving the NECPL. The CPG contains 51 specific conditions regarding the manner in which the NECPL must be constructed and operated. (***Appendix 7.1.TDI-NE***).

B. VT PUC: Section 231 CPG

Overview: In order for TDI-NE to own and operate a business over which the VT PUC has jurisdiction – in this case an electric transmission facility – the company is required to obtain a CPG under section 231 of Title 30. The VT PUC will grant a section 231 CPG when it finds that the operation of the business will promote the general good of the state.

Status: TDI-NE petitioned for a Section 231 CPG in January 2016. The Section 231 CPG was issued by the VT PUC on April 14, 2016. Its determination was based on the limited activities that TDI-NE intends to pursue in Vermont over which the Board has jurisdiction, and the regulatory oversight from FERC that both the NECPL and TDI-NE will be subject to. (***Appendix 7.1.TDI-NE***).

C. Vermont Agency of Natural Resources ("VT ANR"): Environmental Permits

Overview: To construct and operate the NECPL within Vermont and Lake Champlain, TDI-NE needed to obtain additional environmental permits pursuant to a number of VT regulatory programs.

Status: In the spring of 2015, TDI-NE submitted eight applications to VT ANR for the following environmental permits: Construction and Operational Phase Stormwater Permits, Lake Encroachment Permits (2), 401 Water Quality Certification, Floodplain Permit, Stream Alteration Permit, and VT Wetland Permit. All of these permit applications were deemed complete, and the 30 day public comment period was completed on October 2, 2015. On November 24, 2015, all permits

were issued by VT ANR. TDI-NE also received a Vermont Takings Permit on March 1, 2016 from the Vermont Department of Fish & Wildlife. This permit was a requirement of the Agreement between TDI-NE and VT ANR and is only required with respect to construction activities along discrete portions of the route (**Appendix 7.1.TDI-NE**).

A summary of each of the VT ANR-issued permits is as follows:

1. Individual Construction Stormwater Discharge Permit #7354-INDC (“INDC Permit”)

Stormwater discharges from construction sites with an area of soil disturbance greater than one acre are regulated by the VTDEC. The NECPL was required to obtain an Individual Discharge Permit, and the final permit issued on November 24, 2015. The INDC Permit is effective for five years from date of issuance (and then subject to renewal), and requires the NECPL to adhere to the approved Erosion Prevention and Sediment Control (“EPSC”) Plans for the Project.

The INDC Permit authorizes discharges from earth disturbance from construction activities on 285.9 acres. Permitted discharges may occur in the watersheds of, or directly into, the Black River, Lake Champlain, Otter Creek, and the Poultney River.

2. Authorization to Discharge under General Permit 3-9015 (“Operational Stormwater Permit”)

Because the NECPL involves the construction of new impervious areas (i.e., paved or unpaved roads, roofs, etc.) of one acre or more, an operational stormwater permit is required. The NECPL was authorized under coverage of the General Permit 3-9015 on November 24, 2015, which is valid for 10 years from the issuance date (after which it will require renewal). The permit authorizes the discharge of stormwater from an impervious area of two acres at the Ludlow Converter Station on Nelson Road in Ludlow, Vermont into an unnamed tributary of Twentymile Stream.

3. Stream Alteration Permit # SA-06-0001 (“SAP”)

A SAP is required for non-exempt project construction activities that result in impacts to perennial streams. An Individual SAP for the NECPL was issued on November 25, 2015, and will expire on December 1, 2018.

Construction of the NECPL will utilize six different construction methods for stream crossings, each with specifications for cable burial depth. The NECPL crosses a total of 52 perennial streams, and the NECPL design avoids disturbance of the natural stream bed on 43 crossings. The SAP authorization covers all NECPL stream crossings. Required pre-construction surveys may determine that SAP coverage is not required at one or more individual crossing sites; therefore, the issued SAP reflects the most conservative estimate of regulated in-stream activities.

4. Flood Hazard Area & River Corridor Individual Permit #FP-4-0001-IND (“Floodplain Permit”)

In general, project activities that occur within Special Flood Hazard Areas (“SFHA”) and River Corridors (“RC”) require authorization under a general, “reporting-only,” or individual Flood Hazard Area and River Corridor Permit. In reviewing the NECPL, VT DEC determined that no adverse impacts to public safety as a result of increasing flood elevations, flood velocities or decreasing flood storage volume will occur. DEC also found that the NECPL complies with NFIP Floodplain Management Criteria, and the final permit #FP-4-0001-IND was issued on November 24, 2015 and is valid for a period of five years (and then subject to renewal).

5. Vermont Individual Wetland Permit, File # 2013-280, DEC ID # WY15-0001 (“VWP”)

Due to construction requirements of the NECPL and the location of state-significant (Class II) wetlands and their associated 50-foot regulated buffers, an individual permit from the VT DEC Wetlands Program was required pursuant to the 2010 Vermont Wetland Rules. Impacts of 2.90 acres of wetlands and 11.02 acres of wetland buffers are authorized in the NECPL VWP, which was issued on November 23, 2015 and will expire 5 years from issuance in 2020. Permit conditions in the VWP are typical of state wetland permits in Vermont, and include requirements for the NECPL to employ certain Best Management Practices for all activities occurring under the VWP such as water disposal, stockpiling in upland areas, EPSC measures, and construction-phase impact demarcation. In addition to standard permit conditions, the NECPL is required to conduct monitoring and control of non-native invasive plant species in accordance with the NECPL’s Vegetation Management Plan.

**6. Lake Encroachment Individual Permit – Lake Champlain, Permit #2015-030 (“LC LEP”);
Lake Encroachment Individual Permit – Lake Bomoseen, Permit #2015-011 (“LB LEP”)**

Two separate LEPs have been authorized for the NECPL which permit the NECPL to be constructed beneath Lake Champlain and Lake Bomoseen. Overall NECPL work under the jurisdiction of the DEC Lakes & Ponds Program is similar in each lake in that both permits consist of cable installation. The two permits were issued on November 24, 2015 and expire 15 years following issuance (and then subject to renewal). Both LEPs allow the NECPL cables to remain in situ after the cables are de-energized at the end of the NECPL lifespan.

In Lake Champlain the LEP approves cable installation methodology of burying the cable into the lake bed with variable burial depth and/or cable covering according to lake bathymetry and existing sediment column. The Lake Champlain cable route is to be installed in generally deeper sections of Lake Champlain, away from the shoreline and, as permitted, avoids fisheries habitat, steep slopes, and archaeological resources to the extent possible. The Lake Champlain LEP authorizes HDD construction methods at the entry and exist points to the Lake in Alburgh and Benson, VT. Within the Lake Champlain lakebed, the LEP authorizes pre-construction clearing of obstacles along the cable route, followed by cable installation via four construction methods depending on water depth and conditions: jet plow trenching, shear-plow trenching, hand trenching with divers, and surface lay (no trenching).

For Lake Bomoseen, the LB LEP authorizes use of HDD for the cable installation methodology, with staging areas on both sides of Lake Bomoseen along U.S. Route 4 in Castleton, VT. The HDD bore length under Lake Bomoseen is approximately 2,300 feet, under a section of lake with surface water width of approximately 260 feet. The entry and exist points for HDD are outside of the regulated shoreline of Lake Bomoseen and therefore are not a regulated encroachment under the LEP program. Each cable of the NECPL will require its own HDD bore hole, and so two adjacent HDD holes at a depth of approximately 20 feet below the bed of Lake Bomoseen have been permitted.

7. Water Quality Certification, Project # 2015-003, ("401 WQC")

Overview: The WQC was required due to the need for the Presidential Permit and ACOE permits, and included a review of collateral state permits required for the NECPL associated with water quality. These included the SAP, FHARC, both LEPs, and stormwater permits. Due to the scope of the NECPL, the WQC considered impacts within multiple watersheds and subwatersheds. The NECPL will occur within five major Vermont watersheds (Lake Champlain Direct Main Lake, Lake Champlain Direct South End, Poultney River, Otter Creek, and the Black River), and cross 11 named streams. The NECPL will require disturbance of less than 0.2 percent in total across the five watersheds.

Status: The NECPL received an individual WQC dated November 24, 2015 from DEC, with an effective date concurrent with the Federal Clean Water Act Section 404 permit issued by the U.S. Army Corps of Engineers. In issuing the WQC, VT ANR found that the NECPL would ensure the protection of existing water quality conditions in accordance with the VWQS requirements.

8. Threatened & Endangered Species Takings Permit #EH-2016-02 ("VT Takings Permit")

The overland portion of the NECPL extends through areas that have been previously noted for occurrences of two Vermont-protected snake species: the endangered timber rattlesnake (*Crotalus horridus*) and the threatened eastern ratsnake (*Pantherophis alleghaniensis*). Because the NECPL construction activities will largely be limited to existing transportation corridors, the chance of impacts to these or other RTE species is limited. Nonetheless, the Takings Permit authorizes a take of up to 12 snakes, considering that the definition of "take" includes harassing a T&E species and that certain aspects of construction could constitute harassment even if an animal is not directly impacted, injured, or killed. The Takings Permit includes construction monitoring requirements which will identify T&E snakes that could be killed or harmed by construction activities, as well as a handling and relocation plan. The Takings Permit was issued on March 1, 2016.

D. Vermont Agency of Transportation ("VTrans"): Section 1111 Right-of-Way Permit and Lease

Overview: To install the cable within approximately 47 miles of state-owned highway ROWs²⁴, TDI-NE needed to obtain a Section 1111 permit from VTrans. The Section 1111 permit allows for the construction of NECPL within the State-owned right of way and provides the construction, inspection and operating obligations that TDI-NE must comply with.

Status: TDI-NE and VTrans have been working cooperatively since the NECPL's inception on the design within the State's right-of-way. A joint working group was created and the permitted design was vetted and approved by VTrans after numerous meetings. TDI-NE applied for the Section 1111 permit in May, 2014 and it was issued on February 14, 2016.

On a separate but related track, on July 17, 2015, TDI-NE and VTrans executed an Option/Lease Agreement which provides the commercial and legal terms for TDI-NE to utilize the State's road and railroad right of ways for a minimum of 40 years (plus an option for extension) (See **Appendix 6.2.TDI-NE.5**).

III. LOCAL APPROVALS

Overview: Transmission projects in Vermont that are authorized by the VT PUC under Section 248 are exempt from municipal zoning regulations and any permits associated therewith. Municipalities retain authority over the installation of utility lines within road rights-of-way permits.

Status: Along the NECPL's overland route, the cables are proposed under town highways located in the Towns of Alburgh, Benson and Ludlow. TDI-NE entered into Host Town Agreements with Alburgh, Benson and Ludlow in June and July, 2015 (See **Appendix 6.2.TDI-NE.5**). These Host Town Agreements authorize TDI-NE to install and operate the cables under town roads, and provide each town's approval under Section 1111.

TDI-NE also received approval from the Town of Ludlow on June 8, 2015 for subdivision of a parcel of land, a portion of which will be used for the Converter Station site.

²⁴ The term "highway" is used under Vermont statute to include certain classes of public roads (State or local). The term includes everything from gravel public roads to limited access divided highways.

Sub-section 7.3	Environmental assessment
	<p><i>Provide a preliminary environmental assessment of the site and project, including both construction and operation, as applicable. In addition, the bidder should identify environmental impacts associated with the proposed project, any potential impediments to development, and its plan to mitigate such impacts or impediments. The analysis should address each of the major environmental areas presented below, as applicable to the proposed project:</i></p> <ul style="list-style-type: none"> <i>i. Impacts during site development</i> <i>ii. Transportation infrastructure</i> <i>iii. Air quality impacts</i> <i>iv. Access to water resources/water quality impacts</i> <i>v. Ecological and natural resources impacts</i> <i>vi. Land use impacts</i> <i>vii. Cultural resources</i> <i>viii. Previous site use (e.g., greenfield, brownfield, industrial, etc.)</i> <i>ix. Noise level impacts</i> <i>x. Aesthetic/visual impacts</i> <i>xi. Transmission infrastructure impacts</i> <i>xii. Fuel supply access, where applicable</i>

7.3.1 Hydro-Québec

7.3.1.1 Hydro-Québec – Hydropower Resources

All of the hydroelectric generation units that comprise the HQ Hydropower Resources are in operation and, therefore, have already been sited, constructed, and fully permitted, and are already fully interconnected to the Hydro-Québec TransÉnergie transmission system within the Québec Control Area. Because no new hydroelectric generation projects will be required, there will be no incremental environmental impacts from hydroelectric generation as a result of this Proposal.

7.3.1.2 Hydro-Québec – Québec Line

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7.3.2 TDI-NE – NECPL

The U.S. DOE’s FEIS (October 2015) provides a comprehensive environmental assessment of the NECPL. See **Appendix 7.3.TDI-NE.1**. Additional environmental assessments from other regulatory agencies are contained within the Section 10 and 404 Permits issued by the ACOE, and the 401 Water Quality Certification and other state permits issued by VT ANR (See Section 7.1). The information contained in these documents provides extensive, detailed information on the potential environmental impacts of the NECPL and associated mitigation. These assessments have been subject to extensive agency review and available for public review and comment.

TDI-NE has committed to avoid, minimize, and/or mitigate impacts during construction and operation of the NECPL through the requirements identified in the settlement agreements, federal, state, and local permits/approvals, and other documents submitted in the VT PUC’s Section 248 proceeding. Please see **Appendix 7.3.TDI-NE.2** for an overview of this mitigation.

There are no “potential impediments to development” of the NECPL, given the issuance of all material federal, state, and local permits and the findings made thereunder, the settlement agreements reached in the VT PUC proceeding, and the resolution of potential environmental impacts through the identified mitigation measures.

The overall conclusions of the three overarching regulatory permits/approvals are as follows:

- (i) Presidential Permit: The “[U.S.] DOE determines that the issuance of a Presidential Permit to TDI New England is consistent with the public interest.”
- (ii) VT ANR 401 WQC. “The Agency certifies that there is a reasonable assurance that construction and operation of the [NECPL] and in accordance with the following conditions, will not cause a violation of the Vermont Water Quality Standards and will be in compliance with sections 301, 302, 303, 306, and 307 of the federal Clean Water Act, 33 U.S.C. § 1341, as amended, and other appropriate requirements of state law.
- (iii) VT PUC Section 248 CPG. The NECPL “will not have an undue adverse effect on aesthetics, historic sites, air and water purity, the natural environment, the use of natural resources, and the public health and safety . . . , and greenhouse gas impacts.”

All three regulatory decisions can be found at **Appendix 7.3.TDI-NE.1**. A summary of the analyses performed concerning the NECPL’s potential impacts, by project activity and/or by environmental resource category, is as follows:

i. Impacts during site development: A summary of potential impacts due to the NECPL can be found on pages S-16 to S-26 in the FEIS.

ii. Transportation infrastructure: An overview of the transportation infrastructure and potential impacts can be found in Sections 3.1.2, 3.2.2, 5.1.2 and 5.2.2 of the FEIS.

iii. Air quality impacts: An overview of the air quality impacts from construction and operations can be found in Sections 3.1.16, 3.2.16, 5.1.16, 5.2.16 and 6.1.13 of the FEIS.

iv. Access to water resources/water quality impacts: An overview of the water resources and water quality impacts can be found in Section 3.1.3, 3.2.3, 5.1.3, 5.2.3, 6.1.4 of the FEIS. In addition, an analysis of potential water quality impacts is contained within the Water Quality Certificate issued by VT ANR and the Section 404 and 10 permits issued by the US Army Corps of Engineers.

v. Ecological and natural resource impacts: An overview of potential impacts to aquatic and terrestrial habitats, sensitive species and wetlands can be found in Sections 3.1.4 to 3.1.8, 3.2.4 to 3.2.8, 5.1.4 to 5.1.8, 5.2.4 to 5.2.8 and 6.1.4 to 6.1.7 of the FEIS. Specific impacts to streams, wetlands, floodplains, sensitive habitats and species due to the construction of the project have already been permitted by VT ANR and the US Army Corps of Engineers. A discussion of potential impacts and necessary mitigation can be found in these permits. In addition, as part of the U.S. DOE’s review process for the Presidential Permit, Section 7 consultation with the US Fish & Wildlife

Service was completed on December 01, 2015.

vi. Land use impacts: An overview of land use impacts can be found in Sections 3.1.1, 3.2.1, 5.1.1, 5.2.1 of the FEIS.

vii. Cultural resources: An overview of cultural resources can be found in Sections 3.1.10, 3.2.10, 5.1.10, 5.2.10 and 6.1.19 of the FEIS. (Appendices and hyperlinks) In addition, Phase I Archaeological Reports and an Architecture Survey have been completed by cultural experts and submitted to the VT PUC (**Appendix 7.1.TDI-NE**). Section 106 consultation required under the NEPA process has been completed and a Programmatic Agreement has been signed by U.S. DOE and VT DHP.

viii. Previous site use: As detailed in Section 6.2, 97.3 miles of the NECPL (63%) is proposed within Lake Champlain. The 56.7 mile terrestrial portion is located within existing road and railroad right of ways that are actively maintained for transportation and utility purposes. Very short sections of the route are proposed on four private properties that are owned or will be owned by TDI-NE, three of which have residential buildings.

The Converter Station will be located within a forested area that has historically been logged. It will be adjacent to an existing overhead transmission corridor and is in close proximity (400 feet) to an existing VELCO substation.

ix. Noise level impacts: An overview of noise level impacts can be found in Sections 3.1.14, 3.2.14, 5.1.14, 5.2.14 and 6.1.14 of the FEIS. (Appendices and hyperlinks) In addition, a noise impact assessment report for the Converter Station was completed by a sound engineering consultant and submitted to the VT PUC. See **Appendix 7.3.TDI-NE.3**. As part of its CPG findings, the VT PUC determined there would be no undue adverse noise impacts as a result of the NECPL. (**Appendix 7.1.TDI-NE**)

x. Aesthetic/visual impacts: A detailed aesthetic report of the NECPL was completed by an aesthetic expert and submitted to the VT PUC. See **Appendix 7.3.TDI-NE.1**. As part of its CPG findings, the VT PUC determined there would be no undue adverse visual impacts as a result of the NECPL. TDI-NE committed to certain mitigation measures, such as post construction tree plantings and painting the Converter Station grey to reduce visual impacts.

xi. Transmission infrastructure impacts: As detailed in Section 7.1.2, certain upgrades on transmission infrastructure owned by VELCO, GMP, Con Edison and Eversource will be required in order to operate the NECPL in a manner that does not have an adverse impact on system stability and reliability. These upgrades will all occur within existing ROWs and will cause minimal impacts.

xii. Fuel supply access, where applicable: *This is not applicable to the NECPL.*

Sub-section 7.4	Documentation on support
<i>Provide documentation identifying the level of public support for the project including letters from public officials, newspaper articles, etc. Include information on specific localized support and/or opposition to the project of which the bidder is aware. Provide copies of any agreements with communities and other constituencies impacted by the project, and a plan for community outreach activities, and discuss the status of that plan.</i>	

7.4.1 Hydro-Québec

7.4.1.1 Hydro-Québec – Hydropower Resources

N/A. All of the hydroelectric generation units that comprise the HQ Hydropower Resources are in operation and, therefore, have already been sited, constructed, and fully permitted, and are already fully interconnected to the Hydro-Québec TransÉnergie transmission system within the Québec Control Area.

7.4.1.2 Hydro-Québec – Québec Line

[REDACTED]

7.4.2 TDI-NE – NECPL

The NECPL enjoys significant and widespread support throughout Vermont, New York and New England and has received virtually no opposition since its inception.

1. Support for the NECPL

TDI-NE has received a letter of support from Vermont Governor Phil Scott (**Appendix 7.4.TDI-NE.1**). In addition, Vermont’s federal legislative delegation (Senator Sanders, Senator Leahy and Representative Welch) are all well informed about the Project and the benefits it will bring to Vermont and New England. In particular, Senator Leahy’s Office recently reported, “The feedback that we have gotten from constituents and leaders around Vermont regarding the Clean Power Link project has all been positive, which is exceptional for an energy transmission project.” To speak directly with Senator Leahy’s Office about their perspective on the NECPL, please contact Tom Berry, Field Representative for U.S. Senator Patrick Leahy (Tom_Berry@leahy.senate.gov).

Conservation Law Foundation, New England’s premier environmental/renewable energy advocacy organization, has said, “TDI-NE has demonstrated care in addressing siting impacts of the New England Clean Power Link project. TDI-NE’s buried transmission line in Vermont shows that the facilities needed to transport electricity can meet high environmental standards for siting and be developed in a responsible, cooperative manner.” (See **Appendix 7.4.TDI-NE.2**).

Newspaper Articles: NECPL has enjoyed positive press coverage at the local and regional levels since

*Project inception. Please see **Appendix 7.4.TDI-NE.3** for a sample of newspaper articles from 2014-2017.*

Local Support: As described in Section 6.2.2, TDI-NE has Host Town Agreements with the three towns who have segments of the Project proposed in their town rights-of-way. In addition, each of these Towns have provided support letters as part of this bid (**Appendix 7.4.TDI-NE.4**).

All of the remaining towns along the shores of Lake Champlain and along the overland route have been notified about the NECPL on numerous occasions. TDI-NE has spent significant time in these communities and has not encountered opposition at any level.

Local support for the NECPL is based on four key tenants of NECPL: (1) It is fully buried along existing roads or in Lake Champlain and will have minimal impact to people's lives; (2) The overland towns will receive new and substantial property tax payments for a minimum of 40 years; (3) Generally, Vermonters support clean energy and many see NECPL as a replacement for the retired Vermont Yankee Nuclear Power Plant; and (4) TDI-NE has listened to input from local citizens and has made changes to the NECPL accordingly. The fact that there was no local opposition to the NECPL during the VT PUC process, as compared with many other large-scale energy projects, provides evidence of the support the NECPL enjoys in Vermont.

State Agencies: TDI-NE has executed settlement agreements with all Vermont State Agencies (Vermont Agency of Natural Resources, Vermont Division for Historic Preservation, Vermont Public Service Department) that have reviewed the NECPL in the VT PUC Section 248 proceeding. These agreements all stipulate that the State of Vermont agrees that the NECPL will provide an array of benefits to Vermonters. TDI-NE also enjoys a strong working relationship with VTrans, which owns approximately 30% of the NECPL's ROWs. (**Appendix 7.4.TDI-NE.5**)

Environmental Organizations: TDI-NE has consulted with the Conservation Law Foundation ("CLF") since project inception. Through a negotiation process CLF and TDI-NE signed a settlement agreement, which signifies CLF's support of the NECPL subject to TDI-NE meeting certain conditions regarding public benefits. (**Appendix 7.4.TDI-NE.5**). In addition, CLF has been supportive of the NECPL in the media on numerous occasions. [REDACTED]

Vermont Utilities: VELCO and GMP are the key utilities that interact with the NECPL. The NECPL will interconnect at VELCO's Coolidge substation, and the cable route will intersect with VELCO's transmission and GMP's distribution systems within the public ROWs, and upgrades to their system are necessitated by the NECPL (See Section 6.12.2). TDI-NE has a strong and positive working

relationship with these utilities and anticipates continuing this relationship during construction and operations. TDI-NE has executed MOUs with VELCO, GMP and the Burlington Electric Department that codify these relationships. **Appendix 7.4.TDI-NE.5.**

2. Outreach

As part of the development of the NECPL, TDI-NE has engaged in a required, regulatory outreach process and a more informal, voluntary outreach process. TDI-NE's website, www.necpl.com, is continually updated with information about the NECPL.

A. Outreach Required in Regulatory Proceedings

As part of the VT PUC, VTANR, U.S. DOE and U.S. ACOE permitting processes, TDI-NE has been involved in required outreach to the public regarding the NECPL. At numerous public hearings and public processes held by state and federal agencies during the permitting process there has been no public opposition to the NECPL. Below are summaries of this outreach:

- VT PUC Public Notices: TDI-NE individually notified over 700 landowners that abutted the proposed route at the time it filed its 248 petition with the PUC. In addition, TDI placed public notices in 22 local and regional newspapers on both the Vermont and New York sides of Lake Champlain.
- VT PUC Public Hearing (February 2015): Ten individuals provided comments at this hearing. The majority of the comments were supportive of the Project, while other comments were primarily related to questions about the Project's impact.
- VT PUC Site Tour (May 2015): With the exception of Alburgh and the Lake, the VT PUC Board held a tour of the entire overland route with interested parties.
- U.S. DOE Public Scoping Hearing (September 2014): U.S. DOE held two public hearings to solicit input from the public. Only one comment was received.
- U.S. DOE DEIS Public Hearing (August 2015): U.S. DOE held two public hearings to solicit input from the public on the DEIS. No one provided comments at these hearings.
- VTANR Public Hearings (November 2015): VT ANR received no comments at 3 hearings in connection with their environmental review of the Project.
- U.S. ACOE Public Hearing (December 2015): The U.S. ACOE did not hold a hearing due to lack of comments or concern regarding the NECPL.

B. TDI-NE'S Voluntary Outreach

1. Outreach Plan

TDI-NE's outreach approach has been to proactively seek input from affected stakeholders and work to address their concerns. There are numerous examples where the NECPL's design was changed or additional studies were commissioned due to input. The end result is that the NECPL is well supported in Vermont.

Since announcing the NECPL 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, non-governmental organizations, trade associations, regional commissions, and Vermont citizens. TDI-NE has engaged with thousands of people in Vermont and New England at hundreds of meetings or briefings over more than the past 3 years. A summary of some of these outreach activities is detailed below:

2. Outreach during Development (see *Appendix 7.4.TDI-NE.6*)

- 2014: TDI-NE sent letters to 14 towns along the overland route and all the towns that border Lake Champlain along the in-Lake route informing them of the proposed project.
- Summer – Fall, 2014: TDI-NE held six open house meetings along the NECPL route so local citizens could learn more about the NECPL. The response during these open houses was overwhelmingly positive.
- October 2014: TDI-NE held a half day Symposium at the ECHO Leahy Center for Lake Champlain, attended by approximately 50 public, nonprofit and private stakeholders with a strong interest or expertise in Lake Champlain. TDI-NE's experts produced preliminary results on multiple studies related to the construction and operation of NECPL in Lake Champlain. The stakeholders provided feedback on these reports during the Symposium and as a result TDI-NE's experts improved the reports to address this feedback.
- 2014-2017: TDI-NE met with all the selectboards of the towns along the overland route as well as regional planning commissions, town road commissioners, town planning commissions and adjoining landowners to the NECPL. Many of these towns request annual updates on the NECPL, which TDI-NE continues to do in person.
- 2016-2017: TDI-NE sent annual update letters to the overland towns. These letters often result in additional follow-up briefings between TDI-NE and the towns
- 2013-2017: TDI-NE keeps the NECPL website continually updated and has a list serve of over 200 e-mails who receive periodic updates. In addition, TDI-NE continues to meet with any party that is interested in the NECPL.

3. Outreach to be conducted during Pre-Construction and Construction

Once TDI-NE has confirmed the start date for construction it will notify all adjoiners and towns along the permitted route. This notification will include a description of the construction process and schedule as well as a toll free phone number to call to reach TDI-NE.

TDI-NE will hold pre-construction open house meetings. These meetings will provide an overview of the construction process and schedule and allow people to ask questions.

TDI-NE will contact adjoiners whose property is in close proximity to the cable route and offer individual meetings with them to discuss the NECLP plans near their property.

TDI-NE will have a full-time public relations contact person to respond to any inquiries during construction.

Sub-section 7.5	Documentation on Tier I resources
<i>For bids that include New Class I Renewable Portfolio Standard Eligible Resources, provide documentation demonstrating that the project was or will be qualified as such. If the facility is already in operation, please indicate when the facility received such qualification.</i>	

7.5.1 Hydro-Québec

7.5.1.1 Hydro-Québec – Hydropower Resources

N/A. The HQ Hydropower Resources are not New Class I Renewable Portfolio Standard Eligible Resources.

7.5.1.2 Hydro-Québec – Québec Line

N/A. The Québec Line is not a New Class I Renewable Portfolio Standard Eligible Resource.

7.5.2 TDI-NE – NECPL

The NECPL is not a New Class I Renewable Portfolio Standard Eligible Resource.

Sub-section 7.6	Confirm resource can be tracked
<i>All bidders must include sufficient information and documentation that demonstrates that the bidder will utilize an appropriate tracking system to ensure a unit-specific accounting of the delivery of Clean Energy Generation, to enable the Department of Environmental Protection, in consultation with DOER, to accurately measure progress in achieving the commonwealth's goals under chapter 298 of the acts of 2008 or Chapter 21N of the General Laws. The RECs and environmental attributes associated with Clean Energy Generation must be delivered into the Distribution Companies' NEPOOL GIS accounts.</i>	

7.6.1 Hydro-Québec

7.6.1.1 Hydro-Québec – Hydropower Resources

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

7.6.1.2 Hydro-Québec – Québec Line

[REDACTED]

7.6.2 TDI-NE – NECPL

Please see 7.6.1.1 above.

Sub-section 7.7	Existing claims or litigation
<i>Identify any existing, preliminary or pending claims or litigation, or matters before any federal agency or any state legislature or regulatory agency that might affect the feasibility of the project or the ability to obtain or retain the required permits for the project.</i>	

7.7.1 Hydro-Québec

7.7.1.1 Hydro-Québec – Hydropower Resources

[REDACTED]

7.7.1.2 Hydro-Québec – Québec Line

[REDACTED]

7.7.2 TDI-NE – NECPL

With respect to NECPL, there are no existing, preliminary or pending claims or litigation, or matters before any federal agency or any state legislature or regulatory agency that might affect the feasibility of the project or the ability to obtain or retain the required permits for the project.

Hydro-Québec Public Participation Program

As soon as it begins a transmission project, Hydro-Québec implements a public participation program to inform local stakeholders and take the host community's concerns into account. This approach aims to provide an understanding of the project, respond to stakeholders' information needs and gather community concerns regarding the project. A variety of means of communication are established with representatives from various levels of government, official community representatives, affected property owners, citizens, community organizations and local media. These discussions help determine line routes and substation locations. They also contribute to ensuring that projects take into account the needs and expectations of the host community.

The public participation process includes many steps and is adjusted based on the scale of the project and specific needs. The objective is to maintain a dialogue with the public interested in the project to integrate, as much as possible, their concerns throughout each step of the project. Several stakeholder groups are informed and consulted during the process, including:

- Government departments
- Municipalities and regional county municipalities (RCM) (elected officials and staff)
- Landowners concerned, neighbors and citizens
- Farmers union
- Economic, Environmental, Recreation and tourism organizations (local, regional)
- Media, etc.

The consultation is conducted in 4 steps during draft-design studies.

1. General Information
2. Pre-Consultation
3. Public Consultation
4. Information on the solution selected

A multidisciplinary team leads the public consultation. This team typically consists of project management (engineer and project leader), environment (project manager), engineering (design engineer), real estate expertise and communications (community relations).

The following are examples of public participation activities:

- Different kind of meetings (public, by invitation and open houses)
- Jobsite visits
- Media relations

And examples of public participation tools include:

- Information bulletins and opinion submission forms
- Visual presentations
- Web pages
- Online Q&A
- Public notices, invitations
- Info-project line
- Press releases

Once the necessary government approvals are granted and construction has begun, Hydro-Québec continues to keep the public informed about the project. It remains attentive to the concerns of the affected publics and ensures that the impact of the work is kept to a minimum.

Section 8 | Engineering and Technology; Commercial Access to Equipment

Section Introduction

This section includes questions pertinent to the engineering design and project technology. This section must be completed for a project that includes new facilities or capital investments for both generation and transmission components if applicable. Bidders should provide information about the specific technology or equipment including the track record of the technology and equipment and other information as necessary to demonstrate that the technology is viable.

Sub-section 8.1

Engineering plan

Provide a reasonable but preliminary engineering plan which includes the following information:

- I. Type of generation and transmission technology, if applicable*
- II. Major equipment to be used*
- III. Manufacturer of the equipment*
- IV. Status of acquisition of the equipment*
- V. Whether the bidder has a contract for the equipment. If not, describe the bidder's plan for securing equipment and the status of any pertinent commercial arrangements*
- VI. Equipment vendors selected/considered*
- VII. History of equipment operations*
- VIII. If the equipment manufacturer has not yet been selected, identify in the equipment procurement strategy the factors under consideration for selecting the preferred equipment*

8.1.1 Hydro-Québec

8.1.1.1 Hydro-Québec – Hydropower Resources

N/A. All of the hydroelectric generation units that comprise the HQ Hydropower Resources are in operation and, therefore, have already been constructed. Although new hydroelectric generation units may be added to the HQ Hydropower Resources portfolio in the future, no new facilities or capital investments for hydroelectric generation units are required as part of this Proposal. Thus, there are no applicable engineering, procurement, or construction steps remaining with respect to the HQ Hydropower Resources portion of this Proposal.

8.1.1.2 Hydro-Québec – Québec Line

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

8.1.2 TDI-NE – NECPL

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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[REDACTED]

Sub-section 8.2	Equipment manufacturer / track record
<i>If the bidder has not yet selected the major equipment for a project, please provide a list of the key equipment suppliers under consideration.</i>	

8.2.1 Hydro-Québec

8.2.1.1 Hydro-Québec – Hydropower Resources

8.2.1.2 Hydro-Québec – Québec Line

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

8.2.2 TDI-NE – NECPL

As stated in section 8.1.2 above, TDI-NE has selected the major equipment and related suppliers for the NECPL.

Sub-section 8.3	Status on equipment procurement
<i>Please identify the same or similar equipment by the same manufacturer that are presently in commercial operation including the number installed, installed capacity and estimated generation for the past three years.</i>	

8.3.1 Hydro-Québec

8.3.1.1 Hydro-Québec – Hydropower Resources

N/A. All of the hydroelectric generation units that comprise the HQ Hydropower Resources are in operation and, therefore, have already been constructed. Although new hydroelectric generation units may be added to the HQ Hydropower Resources portfolio in the future, no new facilities or capital investments for hydroelectric generation units are required as part of this Proposal. [REDACTED]

[REDACTED]

8.3.1.2 Hydro-Québec – Québec Line

[REDACTED]

8.3.2 TDI-NE – NECPL

ABB and NKT are the leading manufacturers of HVDC equipment in the world and have numerous projects that are presently in commercial operation. A sample of these projects is provided below. See **Appendix 8.1.TDI-NE.3** for additional details on these projects.

Please note that information with respect to estimated generation is ABB's proprietary business information and as such is not available to TDI-NE.

Figure 8.3.2 – HVDC Projects Supplied by ABB/NKT

Project	Location	Year	Capacity (MW)	Voltage (kV)	Length (Miles)
Maritime Link ²⁷	Newfoundland to Nova Scotia	2017	500	200	228
DolWin1	Germany (offshore wind)	2015	800	320	162
DolWin2	Germany (offshore wind)	2015	900	320	84
Nordbalt	Sweden	2015	700	300	280
Skagerrak 4	Norway to Denmark	2014	700	500	152
BorWin1	Germany (offshore wind)	2012	400	150	124
E/W Interconnector	Ireland	2012	500	200	181
Murraylink	Australia	2002	220	150	112
Cross Sound Cable	Connecticut to New York	2002	330	150	25

²⁷ Currently under construction.

Sub-section 8.4	Information on less mature technologies
<i>For less mature technologies, provide evidence (including identifying specific applications) that the technology to be employed for energy production is ready for transfer to the design and construction phases. Also, address how the status of the technology is being considered in the financial plan for the project.</i>	

8.4.1 Hydro-Québec

8.4.1.1 Hydro-Québec – Hydropower Resources

N/A. All of the hydroelectric generation units that comprise the HQ Hydropower Resources are in operation and, therefore, have already been constructed. Although new hydroelectric generation units may be added to the HQ Hydropower Resources portfolio in the future, no new facilities or capital investments for hydroelectric generation units are required as part of this Proposal. Thus, technology deployment is not required with respect to the HQ Hydropower Resources portion of this Proposal. Hydroelectric generation is a mature technology, and the basic design and performance of turbines have been understood for over a century.

8.4.1.2 Hydro-Québec – Québec Line

[REDACTED]

8.4.2 TDI-NE – NECPL

As HQT mentions above, the HVDC technology proposed for the NECPL and manufactured by ABB has a reliable operational history and is a mature technology. See Sections 8.2.2 and 8.3.2.

Sub-section 8.5	Full list of equipment needed
	<i>Please indicate if the bidder has a full and complete list of equipment needed for all physical aspects of the bid, including generation facilities, transmission lead lines, transmission proposals, and mandatory and voluntary transmission system upgrades. If not, identify the areas of uncertainty and when the full and complete list of equipment will be identified.</i>

8.5.1 Hydro-Québec

8.5.1.1 Hydro-Québec – Hydropower Resources

N/A. All of the hydroelectric generation units that comprise the HQ Hydropower Resources are in operation and, therefore, have already been constructed. Although new hydroelectric generation units may be added to the HQ Hydropower Resources portfolio in the future, no new facilities or capital investments for hydroelectric generation units are required as part of this Proposal. Thus, there is no list of equipment with respect to the HQ Hydropower Resources portion of this Proposal.

8.5.1.2 Hydro-Québec – Québec Line

[REDACTED]

[REDACTED]

[REDACTED]

8.5.2 TDI-NE – NECPL

TDI-NE has a full and complete list of all equipment needed for all physical aspects of the NECPL. The agreements in principle between TDI-NE and ABB, NKT provide the list of all the required equipment for the HVDC system. **Confidential Appendix 8.5. TDI-NE.**

[REDACTED]



Sub-section 8.6	Indicate if equipment has been secured
<i>Please indicate if the bidder has secured its equipment for all physical aspects of the bid, including generation facilities, transmission lead lines, transmission proposals, and mandatory and voluntary transmission system upgrades. If not, identify the long-lead equipment and describe the timing for securing this equipment.</i>	

8.6.1 Hydro-Québec

8.6.1.1 Hydro-Québec – Hydropower Resources

N/A. All of the hydroelectric generation units that comprise the HQ Hydropower Resources are in operation and, therefore, have already been constructed. Although new hydroelectric generation units may be added to the HQ Hydropower Resources portfolio in the future, no long-lead generation equipment is required as part of this Proposal. Thus, there are no applicable engineering, procurement, or construction steps remaining with respect to the HQ Hydropower Resources portion of this Proposal.

8.6.1.2 Hydro-Québec – Québec Line

[REDACTED]

8.6.2 TDI-NE – NECPL

[REDACTED]

[REDACTED]

Section 9 | Operation and Maintenance

Section Introduction

Projects that can demonstrate that the operation and maintenance (“O&M”) plan, level of funding, and mechanism for funding will ensure reliable operations during the term of the contract or the tariff are preferred.

Sub-section 9.1

O&M plan for the project

Provide an O&M plan for the project that demonstrates the long term operational viability of the proposed project. The plan should include a discussion of the staffing levels proposed for the project, the expected role of the project sponsor or outside contractor, scheduling of major maintenance activity, and the plan for testing equipment.

9.1.1 Hydro-Québec

9.1.1.1 Hydro-Québec – Hydropower Resources

The HQ Hydropower Resources are already built and they are being managed as a portfolio. Hydro-Québec Production will maintain staffing levels to maintain the current high level of reliability of the system as a whole. [REDACTED]

[REDACTED] A hydroelectric generating station that is properly maintained and refurbished can have a service life of more than 100 years. Hydro-Québec has generating stations in its fleet that have been in operation for over 100 years. To maintain its ability to meet the Québec load and other long term firm commitments to surrounding markets, Hydro-Québec routinely makes substantial investments to maintain and upgrade its facilities. [REDACTED]

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[REDACTED]

[Redacted]

9.1.1.2 Hydro-Québec – Québec Line

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- [Redacted]
- [Redacted]
- [Redacted]
- [Redacted]

[Redacted]

9.1.2 TDI-NE – NECPL

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Sub-section 9.2	O&M funding mechanism
<i>Describe in detail the proposed O&M funding mechanism and funding levels to support planned and unplanned O&M requirements.</i>	

9.2.1 Hydro-Québec

9.2.1.1 Hydro-Québec – Hydropower Resources

[REDACTED]

[REDACTED]

9.2.1.2 Hydro-Québec – Québec Line

[REDACTED]

9.2.2 TDI-NE – NECPL

Costs for O&M have been included in the proposed tariff for the duration of the project. Ongoing funding for both planned and unplanned O&M will be provided through revenues derived from the Transmission Service Agreements. O&M expenses will be incurred and paid on a regular basis (based on projects funding provided in the financial proforma). The majority of the maintenance services spending will occur during the annual service period.

Sub-section 9.3	Terms of the warranties
<i>Describe the terms (or expected terms) of the warranties and/or guarantees on major equipment that the bidder is utilizing or proposing to utilize.</i>	

9.3.1 Hydro-Québec

9.3.1.1 Hydro-Québec – Hydropower Resources

[REDACTED]

The HQ Hydropower Resources include hydroelectric generation units that have been in commercial operation beyond the applicable equipment warranty periods. In the event of failure of major equipment of any specific hydroelectric generation unit, the HQ Hydropower Resources are sufficient as a managed portfolio to cover the HQ PPA obligations while the unit is offline and under maintenance. Further, as discussed in Sections 5 and 9.2.1.1, Hydro-Québec has sufficient financial strength to support its operation and maintenance or refurbishment costs of equipment that is not under warranty.

9.3.1.2 Hydro-Québec – Québec Line

[REDACTED]

[REDACTED]			
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

[REDACTED]

[REDACTED]

9.3.2 TDI-NE – NECPL

The NECPL will have the benefit of both guarantees and warranties from the OEMs covering the entire transmission system. Specifically, based on the nature of the project, all system components including the HVDC converter stations, the HVDC cable, and the points of interconnections will be covered to ensure reliable uninterrupted power supply. For this project, guarantees will be provided by both the OEMs, ABB and NKT, in support of their assurances that the overall system will:

- Convey 1,000 MW of real power;
- Either provide or absorb up to 400 MW of reactive power without regard to the real power being transferred, and;
- Have a high availability guarantee (excluding planned outages and unplanned outages beyond the control of ABB and NKT).

These guarantees will ensure that the system remains capable of performing at a level which supports the EDC's receipt through the ISO-NE grid. Once confirmed, this guarantee will conclusively establish the NECPL's ability to consistently achieve expected performance.

The proposed warranties demonstrate TDI-NE's confidence that the NECPL will continue to perform for a period of five (5) years without failure(s) unless such is caused by maloperation of the system or damage caused by others. In the event of such a failure, TDI-NE's agreement with its EPC contractor will ensure that any failure is corrected without cost to the EDCs. The ABB Warranty offer for the NECPL project for the first five years is provided in ***Confidential Appendix 9.3.TDI-NE.1.***

By obtaining a complete end-to-end warranty from the OEM obliging it to provide splicing services for the HVDC cable (the most likely locations for possible cable failures), TDI-NE will have obviated any problem with assigning fault between the OEM and an independent separate installation. The OEM will also be providing the oversight required for the quality assurance of the entire field cable installation.

Following the expiration of the original 5-year warranty period, TDI-NE expects to enter into a continuing Long-Term Services Agreement (LTSA) with the OEM to provide the appropriate levels of continued performance for the systems and their components. In any event, under the contract, all warranty costs will be borne by TDI-NE and is included in the pricing structure submitted for the

entire system. ABB's scope of services describing their ability to provide a LTSA to the NECPL project can be found in ***Appendix 9.3.TDI-NE.2.***

Sub-section 9.4	Status of the project sponsor in securing any O&M agreements
<i>Describe the status of the project sponsor in securing any O&M agreements or contracts. Include a discussion of the sponsor's plan for securing a medium-term or long-term O&M contract, including the expected provider of O&M services.</i>	

9.4.1 Hydro-Québec

9.4.1.1 Hydro-Québec – Hydropower Resources

N/A. Hydro-Québec will self-perform all O&M services required to support the HQ Hydropower Resources. Operations are done internally with Hydro- Québec staffs that are highly trained to perform all operating tasks under a 24 hours/7 days schedule. All strategic hydro units are remotely controlled and monitored on a real time basis. Hydro unit overhauls are done through an engineering business unit (Hydro- Québec Équipement) with outside contractors.

9.4.1.2 Hydro-Québec – Québec Line

[REDACTED]

9.4.2 TDI-NE-NECPL

TDI-NE will work with renewable five (5) year O&M agreements over the duration of the supply agreement. TDI-NE has reached an agreement in principle with VELCO and an agreement in principle with ABB. VELCO will be the primary O&M Contractor for the NECPL, while ABB will provide specialized support services for the systems controls and service guidance during annual PM to VELCO.

Copies of the commitment letters from VELCO and ABB to provide O&M support services are and the associated scope of services from both organizations are provided in **Appendix 9.4.TDI-NE.1** as follows:

- Letter from ABB confirming their organization's support;
- ABB's detailed schedule for preventative maintenance;
- Letter from VELCO confirming their organization's support; and
- VELCO O&M Scope of Services.

During the initial five years of the project, the abovementioned operations and maintenance agreements will be augmented by the ABB warranty which covers material and labor for unplanned failures that are not part of daily operations or the PM program.

On a long-term basis, TDI-NE will secure reoccurring 5-year renewals of existing O&M agreements to

provide O&M coverage for the life of the supply agreement. Consistent with this approach, TDI-NE will secure a post-warranty LTSA with ABB to provide needed long-term support for the NECPL. A tabular summary listing of the long-term maintenance requirements for the NECPL can be found in ***Appendix 9.4.TDI-NE.2.***

Sub-section 9.5	Bidder's experience with O&M services for other similar projects
<i>Provide examples of the bidder's experience with O&M services for other similar projects.</i>	

9.5.1 Hydro-Québec

9.5.1.1 Hydro-Québec – Hydropower Resources

Hydro-Québec has developed and operated hydroelectric generation projects since the state-owned corporation was created in 1944. Regarding the generation that will support the HQ PPA, Hydro-Québec has been operating and maintaining the HQ Hydropower Resources since the creation of Hydro-Québec or since the stations were commissioned. One of the largest hydroelectric companies in the world, Hydro-Québec operates 61 hydroelectric generating stations located across Québec totaling more than 36,000 MW of generation capacity. [REDACTED]

[REDACTED]

9.5.1.2 Hydro-Québec – Québec Line

[REDACTED]

[REDACTED]

[REDACTED]

9.5.2 TDI-NE – NECPL

As indicated above TDI-NE will use its team of qualified and experienced service providers who have the appropriate and recent experience in operating and maintaining similar projects. TDI-NE also has an internal team of energy professionals who have decades of experiencing managing and implementing O&M plans for public and private energy projects. For additional detail on TDI-NE's internal expertise and representative resumes of the VELCO personnel that will be supporting the

TDI-NE team on the NECPL please see **Appendix 9.5.TDI-NE**.

Figure 9.5.2 – Example of Operational Experience at Other Projects

Project	Team Member	Description	Location	Year
Highgate HVDC Converter Station	VELCO	Provide O&M Services for 200 MW HVDC Converter Station an asynchronous connection between Québec and ISO-NE.	VT	1985
Phase II Transmission Line	VELCO	Provide O&M Services for 2,000 MW HVDC Line between Québec and ISO-NE.	VT	1986
Cross Sound Cable	Caldwell Marine	Provide marine standby service and repair for 330 MW submerged HVDC Line.	CT–NY	2002
Cross Sound Cable	ABB	Provide corrective and planned maintenance services for 330 MW submerged HVDC Line.	CT–NY	2002
PSE&G Northeast Reliability Project	Gene Martin (TDI-NE)	Development and implementation of operations and maintenance plan for \$1.8B reliability upgrade project.	NJ	2013
University of New Hampshire CHP Plant	Bob Harrison (TDI-NE)	Long term operations and maintenance responsibility for Combined Heat and Power plant.	NH	2007
New York Power Authority	Suresh Dave (TDI-NE)	In-house project engineer and project manager overseeing the operation and maintenance of multiple NYPA high voltage substation and transmission line assets.	NY	1980-2002

[REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]
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[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Section 10 | Project Schedule

A bidder must demonstrate that its proposal can be developed, financed, and constructed and be technically viable within a commercially reasonable timeframe. The bidder is required to provide sufficient information and documentation that shows that the bidder's resources, process and schedule are adequate for the acquisition of all rights, permits and approvals for the project and for the financing of the project consistent with the proposed project milestone dates.

For Eligible Generation Facilities or Transmission Projects that are not yet in-service, bidders are required to provide a complete critical path schedule for the project from the notice of selection of the project for contract consideration to the start of commercial operations. For each project element, list the start and end date.

Sub-section 10.1	Identify the elements on the critical path. The schedule should include, at a minimum, preliminary engineering, financing, acquisition of real property rights, Federal, state and/or local permits, licenses, environmental assessments and/or environmental impact statements (including anticipated permit submittal and approval dates), completion of interconnection studies and approvals, procurement, facility contracts, start of construction, construction schedule, fuel supply, and any other requirements that could influence the project schedule and the commercial operation date.
------------------	---

Please see **Confidential Appendix 10** for the Schedule.

10.1.1 Hydro-Québec

10.1.1.1 Hydro-Québec – Hydropower Resources

Hydro-Québec has already constructed and commissioned the existing HQ Hydropower Resources. Therefore, the Clean Energy Generation requested by the Distribution Companies is operating and available today.

10.1.1.2 Hydro-Québec – Québec Line

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

10.1.2 TDI-NE – NECPL

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Please see the Schedule in ***Confidential Appendix 10.***

Sub-section 10.2	Detail the status of all critical path items, such as receipt of all necessary siting, environmental, and ISO-NE approvals.
------------------	---

10.2.1.1 Hydro-Québec – Hydropower Resources

There are no pending critical path items for the HQ Hydropower Resources, because they already are in commercial operation.

10.2.1.2 Hydro-Québec – Québec Line

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

10.2.2 TDI-NE – NECPL

[REDACTED]

Section 11 | Project Management/Experience

Section Introduction

<i>Bidders are required to demonstrate project experience and management capability to successfully develop (for a project that includes new facilities or capital investment) and operate the project proposed. The Distribution Companies are particularly interested in project teams that have demonstrated success in projects of similar type, size and technology and, for projects that include new facilities or capital investment, can demonstrate an ability to work together effectively to bring the project to commercial operation in a timely fashion.</i>

Sub-section 11.1	Organizational chart for the project
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<i>Provide an organizational chart for the project that lists the project participants and identifies the corporate structure, including general and limited partners.</i>
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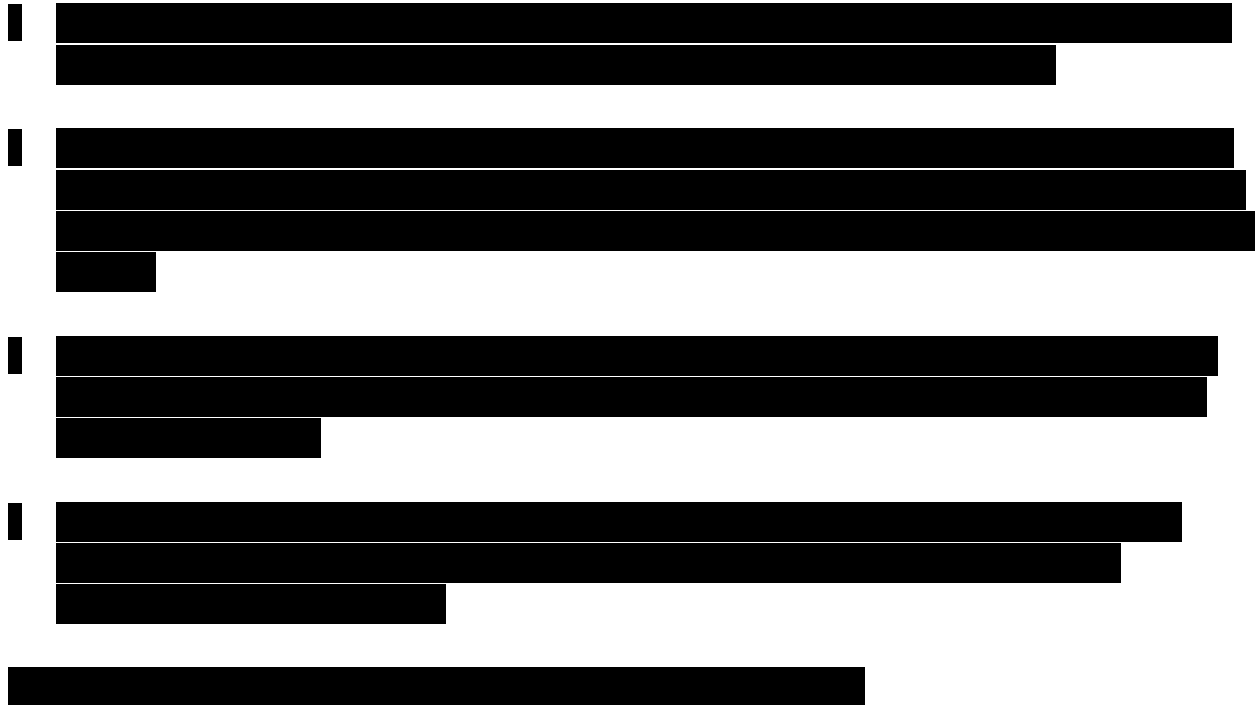


11.1.1 Hydro-Québec

This Project is a collaboration between Hydro-Québec, TDI-NE, and their respective affiliates to develop a new intertie between the Hydro-Québec and ISO-NE transmission systems as part of this packaged Proposal for the delivery of a minimum of 8.3 TWh of clean Incremental Hydroelectric Generation produced by existing HQ Hydropower Resources. The Project to develop the new intertie involves construction of new Canadian and U.S. transmission facilities that are in the

advanced stages of development. The chart above depicts the project participants.

The Canadian component of the Proposal involves divisions or subsidiaries of Hydro-Québec, which is a state-owned corporation of the Province of Québec:



11.1.2 TDI-NE – NECPL

The organization chart for the *NECPL: 100% Hydro Bid* participants is depicted above. The *NECPL: 100% Hydro Bid* participants have not formed a corporate structure that involves general and limited partners. Rather, they have executed proprietary and confidential contracts with each other that govern their partnerships.

TDI-NE's Role

TDI-NE's portion of the Project bid will be supported by a fixed price transmission tariff directly with the MA EDCs that will cover the cost of constructing and operating the NECPL and be established pursuant to a TSA for 20 years. As part of the TSA, TDI-NE will require the MA EDCs to assign the capacity of NECPL directly to HQ, thereby allowing HQ to transmit a minimum of 8.3 TWh of hydroelectricity over the NECPL for the TSA contract term.

Hydro-Québec's Role

Hydro-Québec is bidding in a fixed energy price for a minimum of 8.3 TWh/annually of hydroelectric energy and the associated environmental attributes. Hydro-Québec will source the energy from its existing 36,000 MW fleet of hydro dams. The Hydro-Québec energy price will include all interconnection costs in Québec. Hydro-Québec, through HQ TransÉnergie, will also construct, own, operate and maintain the Québec Line.

Sub-section 11.2	Specific experience of the bidder for new facilities or capital investment
<i>For a project that includes new facilities or capital investment, provide statements that list the specific experience of the bidder and each of the project participants (including, when applicable, the bidder, partners, EPC contractor and proposed contractors), in developing, financing, owning, and operating generating or transmission facilities (as applicable), other projects of similar type, size and technology, and any evidence that the project participants have worked jointly on other projects.</i>	

11.2.1 Hydro-Québec

11.2.1.1 Hydro-Québec – Hydropower Resources

N/A. All of the hydroelectric generation units that comprise the HQ Hydropower Resources are in operation and, therefore, have already been constructed. Although new hydroelectric generation units may be added to the Hydro Québec system portfolio in the future, no new facilities or capital investments for hydroelectric generation units are required as part of this Proposal. Thus, the HQ Hydropower Resources portion of this Proposal is complete.

11.2.1.2 Hydro-Québec – Québec Line

[REDACTED]

[REDACTED]

[REDACTED]

²⁸ Section 5 contains additional financial and other information regarding Hydro-Québec and its affiliates involved in the Project.



11.2.2 TDI-NE – NECPL

TDI-NE manages the NECPL by utilizing employees of TDI. TDI-NE and TDI are both owned by Blackstone. Together, Blackstone and TDI have significant experience in developing, financing, owning and operating power generation and transmission facilities (See Section 11.4.2)

Development Experience: The NECPL is managed by the same team that has been developing the Champlain Hudson Power Express Project (“CHPE”) in New York. CHPE is a 1,000 MW HVDC transmission line that will ship clean energy into Zone J in New York City. This 333 mile buried line is fully permitted (federal and New York) and is currently in the commercialization stage.

Financing Experience: Blackstone currently has \$368 Billion in assets under management and is the largest private equity firm in the world. Over the past decade, Blackstone has financed and developed over 30 billion of energy infrastructure asserts (including approximately 6,000 MWW of power generation assets) and is a word class energy infrastructure developer. The TDI-NE team is managed by Sean Klimczack (Senior Managing Director, Private Equity Group) and Bilal Khan (Managing Director, Private Equity Group).

SocGen is one of the world’s largest global financial institutions with a presence in 76 countries, over 148,000 employees. SocGen maintains a substantial and continuous presence in the Americas and employs an energy project finance team of 14 front-office professionals. SocGen is the leading project finance advisor in the Americas having advised on over \$47 billion of financings between 2012-2016, equivalent to a 12.35% market share.

Ownership Experience: Select energy projects that project sponsor, Blackstone, has successfully developed or which are currently under construction. Additional detail for each project can be found in Section 11.5.2.

Contractor Experience: TDI-NE will rely on two EPC contractors, the ABB/NKT Consortium and Quanta Services. The ABB/NKT Consortium will be the EPC for the Lake Segment and Converter Station, and provide the HVDC cables for installation by Quanta Services, which will serve as the EPC contractor for the Overland Segment. See Section 8.1 for further information.

ABB and NKT are global leaders in manufacturing and installing HVDC systems. Combined they have over 135,000 employees and revenue exceeding \$35 billion in 2016. The ABB/NKT Consortium will utilize Caldwell Marine for the cable installation in Lake Champlain. See Section 8.1 for additional details on ABB and NKT.

Quanta Services is also a global leader in underground construction with over 28,000 employees and approximately \$7.6 Billion in revenue in 2016. Quanta has 56 operating units, four of which (Mears, EHV Power, H.L. Chapman, Underground Construction Co.) will be involved in the installation of the cable along the NECPL's Overland Segment.

For additional information regarding the experience of the ABB/NKT Consortium, Quanta and their respective subsidiaries, please see ***Appendix 11.2.TDI-NE***.

Operating Experience: The TDI-NE team has significant experience in operating energy projects. For the NECPL, TDI-NE will utilize VELCO and ABB for operations and to execute project maintenance services under an Operations and Maintenance Agreement that is being developed. VELCO owns the transmission system in Vermont and currently operates and maintains 738 miles of transmission lines which includes the 52 mile 450 kV direct current line, known as Phase II. In addition, VELCO and ABB provide similar services for the Highgate HVDC Converter Station in Vermont.

As mandated by TDI-NE's negotiated rate authority with FERC, once the NECPL is operational TDI-NE will turn over operating control to ISO-NE – the system operator for the New England electrical system.

Sub-section 11.3	Specific experience of the bidder for existing facilities
<i>For a bid that includes existing facilities, provide statements that list the specific experience of the bidder and each of the project participants (including, when applicable, the bidder, partners, EPC contractor and proposed contractors), in owning and operating generating or transmission facilities (as applicable), other projects of similar type, size and technology, and any evidence that the project participants have worked jointly on other projects.</i>	

11.3.1 Hydro-Québec

11.3.1.1 Hydro-Québec – Hydropower Resources

Since its creation in 1944, Hydro-Québec has designed, developed, owned and managed a vast fleet of hydropower generating stations.

Development of generating assets

During the period from 1944-1959, Hydro-Québec undertook construction of a series of hydropower generating stations: the second and third sections of Beauharnois, Carillon, Bersimis-1 and Bersimis-2 and the Manic-Outardes Complex.

In 1971, Hydro-Québec commenced development of the La Grande Complex in the Baie-James region. Project management was assigned to Société d'énergie de la Baie James, which subsequently became a wholly owned subsidiary of Hydro-Québec. In 1996, when the final generating station, Laforge-2, was commissioned, La Grande became the largest hydropower complex in the world, a title it retained for a number of years.

Another major build-out period began in 2003 and is still undergoing today with continuing works on the Romaine Complex. To date, the following generation stations have been added to the fleet since 2003:

Figure 11.3.1.1 – HQ Generating Stations Since 2003

Generating Station	Commissioning Year	Installed Capacity (MW)
Sainte-Marguerite	2003	882
Rocher-de-Grand-Mère	2004	230
Toulnostouc	2005	526
Eastmain-1	2006	480
Mercier	2007	55
Péribonka	2007-8	385
Rapide-des-cœurs	2008-9	76
Chute-Allard	2008-9	62
Eastmain-1-A	2011-12	768

Generating Station	Commissioning Year	Installed Capacity (MW)
Sarcelle	2013	150
Romaine-2	2014	640
Romaine-1	2015	270
Total installed capacity added since 2003		4,524

[REDACTED]

[REDACTED]

Generating Station Operations

Hydro-Québec owns and operates a fleet consisting of 61 hydropower generating stations with a total installed capacity of over 36,000 MW. The hydropower fleet also includes 27 large reservoirs, as well as 668 dams and 99 control structures (as of December 31, 2016).

[REDACTED]

The generating fleet is managed with two major goals in mind: the security of Québec's electricity supply and the profitability of operations. Because reservoir generating stations have large storage capacities and can be started up in a matter of minutes, Hydro-Québec can adjust output based on domestic demand and conditions on markets outside Québec. Several large reservoirs are managed on a multiannual basis to ensure water level management across the system.

11.3.1.2 Hydro-Québec – Québec Line

Hydro-Québec TransÉnergie operates one of the most extensive transmission systems in North America, markets system capacity and manages power flows across Québec. The Régie de l'énergie has designated the *Direction – Contrôle des mouvements d'énergie* (CME) of Hydro-Québec TransÉnergie as Reliability Coordinator for transmission systems in Québec.

Hydro-Québec has collaborated in many instances to advance the energy market in New England.

As discussed in Section 9.1, Hydro-Québec has 15 interconnections with transmission systems in New England, New York, Ontario, and New Brunswick. One of these is the Phase II transmission line, which has been a prime example of the regional benefits of collaboration for over a quarter century. As described in Attachment 11.3.1.2, Phase II not only was a major advancement in HVDC technology, but also addressed an over-reliance on fossil fuel through the introduction of economically supplied clean hydro power.

11.3.2 TDI-NE – NECPL

TDI-NE does not currently have existing facilities, so this question is not directly applicable. See Section 9.5. for the experience of TDI-NE personnel on representative energy projects. In addition, as mentioned in 11.2.2, Blackstone has significant experience owning and operating energy projects.

Sub-section 11.4	Management chart
<p><i>Provide a management chart that lists the key personnel dedicated to this project and provide resumes of the key personnel. For Eligible Facilities or Transmission Projects that are not yet in-service, key personnel of the bidder's development team having substantial project management responsibilities must have:</i></p> <ol style="list-style-type: none"> <i>I. Successfully developed and/or operated one or more projects of similar size or complexity or requiring similar skill sets; and</i> <i>II. For a project that includes new facilities or capital investment, experience in financing power generation projects (or have the financial means to finance the project on the bidder's balance sheet).</i> 	

11.4.1 Hydro-Québec

11.4.1.1 Hydro-Québec – Hydropower Resources

Hydro Québec operates 61 hydroelectric generation stations that comprise over 36,000 MW of installed capacity and one of the most extensive transmission system in North America with 21,296 miles of lines, and 15 interconnections with the adjacent control areas. [REDACTED]

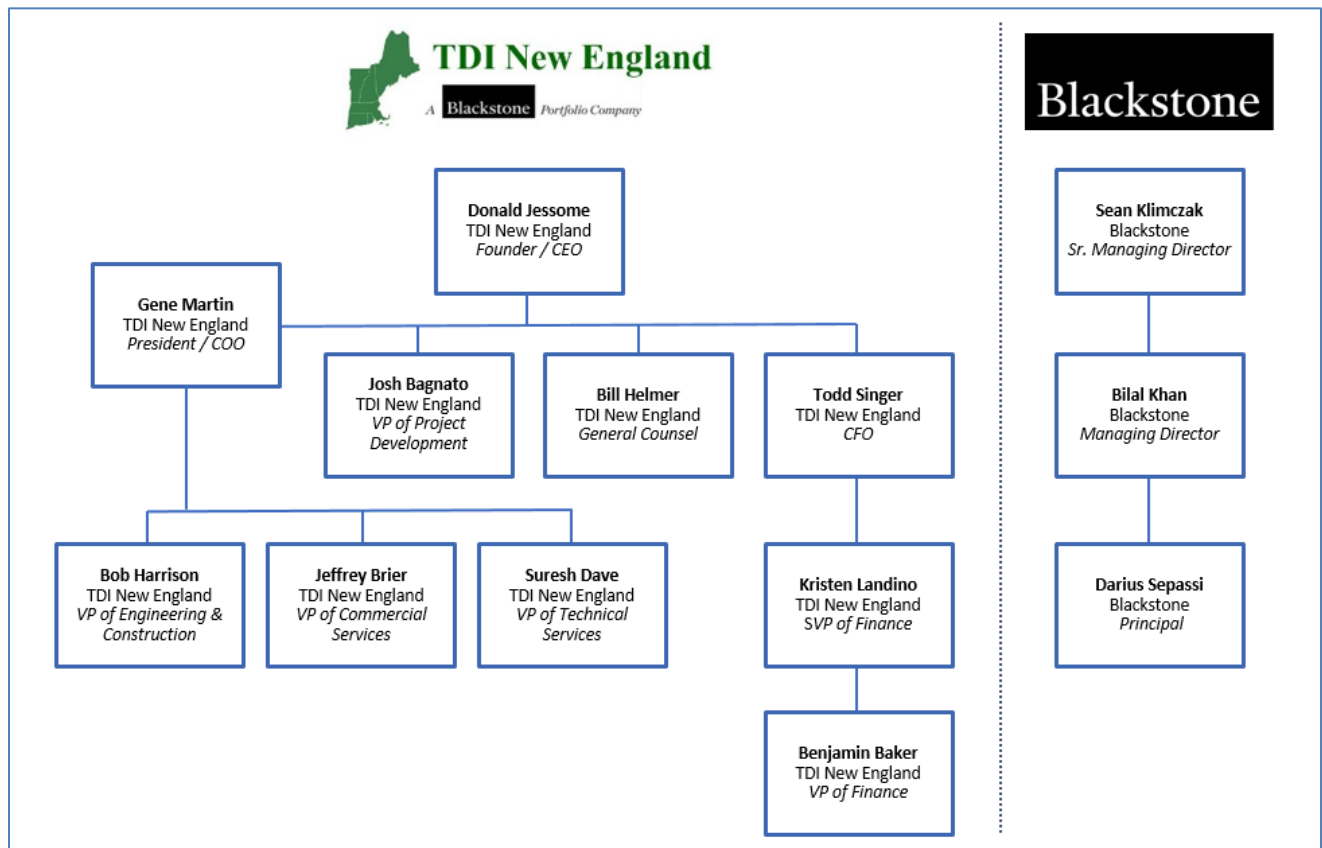
11.4.1.2 Hydro-Québec – Québec Line

Hydro-Québec has developed many large scale projects over recent years, supported by the executive management and expert staff of various divisions within Hydro-Québec. [REDACTED]

11.4.2 TDI-NE – NECPL

Below is a management chart of key personnel dedicated to the NECPL. Detailed bios of these individuals can be found in **Appendix 11.4.TDI-NE**.

Figure 11.4.2 – NECPL Management Chart



All employees referenced in Figure 11.4.2 are directly employed by TDI and made available under contract to TDI-NE.

Sub-section 11.5	List of all projects the project sponsor has successfully developed or that are currently under construction
<p><i>Provide a listing of all projects the project sponsor has successfully developed or that are currently under construction. Provide the following information as part of the response:</i></p> <ul style="list-style-type: none"> <i>I. Name of the project</i> <i>II. Location of the project</i> <i>III. Project type, size and technology</i> <i>IV. Commercial operation date</i> <i>V. Estimated and actual capacity factor of the project for the past three years</i> <i>VI. Availability factor of the project for the past three years</i> <i>VII. References, including the names and current addresses and telephone numbers of individuals to contact for each reference.</i> 	

11.5.1 Hydro-Québec

11.5.1.1 Hydro-Québec – Hydropower Resources

Hydro-Québec is continually expanding and renewing its generation and transmission systems. [REDACTED]

[REDACTED] Also, Hydro-Québec has commissioned several major hydroelectric generation stations during the past decade. Information regarding those and other existing HQ Hydropower Stations can be found at <http://www.hydroquebec.com/generation/centrale-hydroelectrique.html>.

11.5.1.2 Hydro-Québec – Québec Line

Hydro-Québec TransÉnergie similarly makes significant investments in transmission infrastructure in the ordinary course. [REDACTED]

[REDACTED]

[REDACTED]			
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

11.5.2 TDI-NE – NECPL

Below is a table of select energy projects that the project sponsor, Blackstone, has successfully developed or that are currently under construction. For references regarding these projects below, please contact Josh Bagnato at TDI-NE:

Josh Bagnato
VP, Project Development
TDI-NE
Pieter Schuyler Building
600 Broadway
Albany, NY 12207
[REDACTED]

Project Name	Location	Project Type	Project Size (TEV - \$)	Project Size (MW)	Technology	COD	C.F. (Last 3 Yrs) Estimated	C.F. (Last 3 Yrs) Actual	Availability Factor*
Tierra Mojada	Guadalajara, Mexico	CCGT	\$715	875	GE H Class	N/A	~90%	N/A	N/A
Bujagali	Bujagali, Uganda	Hydro	\$891	250	Kaplan turbines	August 2012	70% - 84%	68%	95%
Goreway	Toronto, Canada	CCGT	\$1,084	880	GE 7251FB combustion turbines	June 2009	~37%	34%	90%
Mariveles	Luzon, Philippines	Coal	\$2,000	605	Harbin turbines	June 2014	~90%	77%	82%
Meerwind	North Sea	Wind	\$1,755	288	Siemens 3.6MW WTG	February 2015	P50 of 54%	N/A	97%>
Ventika	Nuevo Leon, Mexico	Wind	\$852	252	Acciona AW 116/3000 WTG	April 2016	47.0%	~44%	97%
Cheniere	Cameron Parish, Louisiana	LNG	\$18,200		GE LM2500+ G4 gas driven refrigerant compressors, ConocoPhillips' Optimized Cascade Process liquefaction technology	SPL Train 1: Achieved 05/27/16 SPL Train 2: Achieved 09/15/16 SPL Train 3: Achieved 03/28/17 SPL Train 4: Ops expected 2H'17 SPL Train 5: Ops estimated 2H'19	N/A	N/A	N/A
Moser Solar	Various States in India	Solar	\$785	393	--	2010-2017	18%	17%	N/A
Moser Anuppur	Anuppur, India	Coal	\$1,360	1,200	--	2015/2016	85%	80%	91%
Monnet Angul	Angul Orissa, India	Coal	\$1,180	1,050	--	N/A	85%	N/A	N/A
Total			\$28,770	5,793					

* Bujagali data covers last three years, Mariveles data covers the period from post-warranty outage through sale (Apr15:Dec16), Goreway data covers COD through sale (Jun09:Dec10)

Sub-section 11.6	Bidder's project team responsibilities
<p><i>With regard to the bidder's project team, identify and describe the entity responsible for the following, as applicable:</i></p> <ul style="list-style-type: none"> <i>I. Construction Period Lender, if any</i> <i>II. Operating Period Lender and/or Tax Equity Provider, as applicable</i> <i>III. Financial Advisor</i> <i>IV. Environmental Consultant</i> <i>V. Facility Operator and Manager</i> <i>VI. Owner's Engineer</i> <i>VII. EPC Contractor (if selected)</i> <i>VIII. Transmission Consultant</i> <i>IX. Legal Counsel</i> 	

11.6.1 Hydro-Québec

11.6.1.1 Hydro-Québec – Hydropower Resources

N/A. All of the hydroelectric generation units that comprise the HQ Hydropower Resources are in operation and, therefore, have already been constructed. Although new hydroelectric generation units may be added to the Hydro Québec system portfolio in the future, no new facilities or capital investments for hydroelectric generation units are required as part of this Proposal. Thus, the HQ Hydropower Resources portion of this Proposal is complete, and this Section 11.6 will focus on the transmission elements of the Project.

11.6.1.2 Hydro-Québec – Québec Line

[REDACTED]

11.6.2 TDI-NE – NECPL

[REDACTED]

[REDACTED]

[REDACTED]
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[REDACTED]

[REDACTED]

Sub-section 11.7	Bidder's experience in ISO-NE other Markets affected by the bid
<i>Provide details of the bidder's experience in ISO-NE other Markets affected by the bid. With regard to bidder's experience with ISO-NE markets, please indicate the entity that will assume the duties of Lead Market Participant for your Project. Please provide a summary of the proposed Lead Market Participant's experience with each of the ISO-NE markets.</i>	

11.7.1 Hydro-Québec

11.7.1.1 Hydro-Québec – Hydropower Resources

[REDACTED]

[REDACTED]

11.7.1.2 Hydro-Québec – Québec Line

[REDACTED]

11.7.2 TDI-NE – NECPL

The *NECPL: 100% Hydro Bid* relies on the experience of Hydro Québec in ISO-NE markets. See Section 11.7.1 above.

Attachment 11.3.1.2 | Specific experience of the bidder for existing facilities - Phase II

To facilitate long-term energy contracts entered into between Hydro-Québec and the participant members of NEPOOL, Hydro-Québec undertook a joint project in coordination with the New England utilities to construct the Phase II project (Phase II), the world's first multiterminal high voltage direct current system, which spans 932 miles between Radisson substation in the James Bay region of northern Québec, and Nicolet substation in the south of Québec, to Sandy Pond substation in Ayer, near Boston. Phase II was placed in service in 1990 and can deliver 1200 – 1400 MW or more to New England on a regular basis.

The Phase II transmission line is an important interconnection, because it has delivered billions of kilowatt-hours of clean, renewable electricity from the Hydro-Québec system for over a quarter century. During that period, this intertie to Hydro-Québec has operated at a high level of availability. Although the pre-Restructuring era energy contracts have expired, the Massachusetts Distribution Companies that are interconnection rights holders on the Phase II line continue to receive value from this project.

Section 12 | Emissions

Sub-section 12.1	Provide estimates for existing & new generation
<p><i>For existing generation facilities, provide emissions estimates based on available continuous emissions monitoring data. Where continuous emissions monitoring data is not available, provide emissions estimates based on the most recent stack emissions test conducted using an EPA reference method approved by the applicable permitting and enforcement authority. Where continuous emissions data or actual stack emissions test data are not available, provide emissions estimates based on emissions factors from the latest edition of EPA's AP-42, Compilation of Air Pollutant Emissions Factors.</i></p> <p><i>For new generation facilities, provide emissions estimates based on available data from the unit manufacturer. Alternatively, provide actual emissions data determined in accordance with the paragraph above for a similar facility built within the past 3 years. Include copies of supporting documentation for all emissions estimates.</i></p>	

12.1.1 Hydro-Québec

12.1.1.1 Hydro-Québec – Hydropower Resources

N/A. The HQ Hydropower Resources are not thermal generation facilities, and thus do not have emissions monitoring or stack testing. Moreover, hydroelectric generation is not listed as a pollution source category in EPA's AP-42, Compilation of Air Pollutant Emissions Factors (Fifth Edition, January 1995, supplements A (February 1996) through F (September 2000)), or in the 2001-2011 updates published on the U.S. EPA's website.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

12.1.1.2 Hydro-Québec – Québec Line

Operation of the Québec Line will create no air emissions, so this question is not applicable.

12.1.2 TDI-NE – NECPL

Operation of the NECPL transmission line will create no air emissions, so this question is not applicable.

[REDACTED]

Sub-section 12.2	Describe emission reduction investments
	<p><i>Describe any past investments that will, or have been made to your facility to improve its emissions profile or any planned future investments made to your facility in order to improve its emissions profile. Pollutant specific emissions improving technologies include, but are not limited to:</i></p> <ul style="list-style-type: none"> • <i>NOx – Selective/Non-Selective Catalytic Reduction</i> • <i>SOx – wet/dry scrubbers</i> • <i>PM – fabric filter/bag house, electrostatic precipitator, cyclone separator</i> • <i>CO – oxidation catalyst</i> <p><i>Investments that improve overall emissions include, but are not limited to:</i></p> <ul style="list-style-type: none"> • <i>equipment tune-ups (improves combustion efficiency and emissions)</i> • <i>boiler tube replacements (improves heat transfer efficiency and reduces fuel use)</i> • <i>other efficiency improvements (e.g., installing a heat exchanger to use waste heat to pre-heat feed water to the boiler)</i> <p><i>Include control equipment specifications, date(s) of installation, expected life of equipment, benefits gained from the addition of such equipment, etc.</i></p>

12.2.1 Hydro-Québec

12.2.1.1 Hydro-Québec – Hydropower Resources

N/A. The HQ Hydropower Resources are not thermal generation facilities. None of the technologies or investments listed applies to hydroelectric generation.

12.2.1.2 Hydro-Québec – Québec Line

This question appears to apply to thermal generators, which makes it not applicable to the Québec Line.

12.2.2 TDI-NE – NECPL

This question appears to apply to thermal generators, which makes it not applicable to NECPL. However, TDI-NE has committed to using commercially reasonable efforts to utilize circuit breakers that do not contain SF6. SF6 is a gaseous dielectric that can be used in transmission systems and can emit greenhouse gases. In the event that SF6-containing breakers are utilized, TDI-NE shall participate in the U.S. Environmental Protection Agency's ("US EPA") SF6 Emissions Reduction Partnership for Electric Power Systems on an ongoing basis while the breakers, or other equipment, are present. For more information on this Program visit this [EPA website](#).

[REDACTED]					
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

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12.3.1.2 Hydro-Québec – Québec Line

[REDACTED]

12.3.2 TDI-NE – NECPL

PA Consulting estimated that the *NECPL: 100% Hydro Bid* would decrease annual CO₂ emissions in Massachusetts by 0.9 million metric tons under a generation-based standard and 1.5 million metric tons under a consumption-based standard. For the New England region as a whole, reductions range from an average of approximately 2.3 million metric tons and 2.6 million metric tons of CO₂ annually using a generation-based and consumption-based standard, respectively.

PA Consulting conservatively utilized the generation-based standard to calculate the impact of the Project on meeting GWSA goals, since this is the standard Massachusetts is likely to adopt in the near term. Based on this standard, PA calculates that the *NECPL: 100% Hydro Bid* will contribute 24% to the Commonwealth's remaining emission reduction requirement to meet its 2020 GWSA target. Importantly, NECPL's contribution to the 2020 GWSA goal would increase to 40% if the consumption-based standard were used, and 61% using a standard which assumed that all the CO₂ emission reductions in New England caused by the *NECPL: 100% Hydro Bid* would contribute to meeting GWSA goals.

Attachment 12 | Calculation of Avoided Greenhouse Gas emissions

A horizontal bar chart titled "U.S. should take action to address climate change" showing the percentage of respondents who believe the U.S. should take action to address climate change. The chart is broken down by age group (18-29, 30-49, 50-69, 70+) and gender (Male, Female). The y-axis lists the age groups and gender combinations. The x-axis represents the percentage, ranging from 0 to 100. The bars are colored in shades of blue and green. The data is as follows:

Age Group	Gender	Percentage
18-29	Male	85%
18-29	Female	88%
30-49	Male	82%
30-49	Female	85%
50-69	Male	78%
50-69	Female	80%
70+	Male	75%
70+	Female	78%

[illegible]

Section 13 | Contribution to Employment and Economic Development and Other Direct and Indirect Benefits

Sub-section 13.1	
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<i>Please provide an estimate of the number of jobs to be created directly during project development and construction (for a project that includes new facilities or capital investment), and during operations, and a general description of the types of jobs created, estimated annual compensation, the employer(s) for such jobs, and the location. Please treat the development, construction, and operation periods separately in your response.</i>
--

Hydro-Québec and TDI-NE commissioned PA Consulting to conduct an economic analysis of the employment and economic development and other direct and indirect benefits that arise from the *NECPL: 100% Hydro Bid*.

13.1.1 Hydro Québec

Please see Section 13.1.2.

13.1.2 TDI-NE – NECPL

PA Consulting utilized IMPLAN (Impact Analysis for Planning), an Input-Output model, to calculate the number of jobs created directly during the *NECPL: 100% Hydro Bid*'s construction and operations and separated them between Massachusetts and the rest of New England. Since the development of the *NECPL: 100% Hydro Bid* is largely completed, no analysis of those jobs was conducted. According to the PA Consulting Report (Sections 4.2.3 and A.2), the *NECPL: 100% Hydro Bid* will create over 20 direct full-time jobs within Massachusetts, and over 500 direct full-time jobs in the rest of New England, during its construction period. During its operations period, the *NECPL: 100% Hydro Bid* will create over 120 direct full-time jobs in the rest of New England. During the construction phase, direct jobs will consist primarily of labor and engineering occupations.

Figure 13.1.2 – Direct Jobs and Wages Impacts from the *NECPL: 100% Hydro Bid*

Year	Period	New Jobs		Higher Wages (\$ in millions)	
		Massachusetts	Rest of New England	Massachusetts	Rest of New England
2018	Construction	33	564	2.2	36.6
2019		33	556	2.2	36.1
2020		24	548	1.6	35.8
2021	Construction/ Operations	16	298	1.0	17.9
2022	Operations	--	121	--	7.0
2023		--	122	--	7.1
2024		--	123	--	7.2
2025		--	124	--	7.3
2026		--	125	--	7.4
2027		--	126	--	7.5
2028		--	127	--	7.6
2029		--	128	--	7.7
2030		--	129	--	7.6
2031		--	130	--	7.9
2032		--	131	--	8.0
2033		--	132	--	8.1
2034		--	133	--	8.3
2035		--	134	--	8.4
2036		--	135	--	8.5
2037		--	136	--	8.6
2038		--	138	--	8.8
2039		--	139	--	8.9
2040		--	140	--	9.1
2041	Partial Year Operations	--	71	--	4.6

Sub-section 13.2	
<i>Please provide the same information as provided in response to question 13.1 above but with respect to jobs that would be indirectly created as a result of the proposed project.</i>	

13.2.1 Hydro-Québec

13.2.2 TDI-NE – NECPL

PA Consulting also utilized IMPLAN to calculate the number of jobs indirectly created during construction and operations, separating them between Massachusetts and the rest of New England. According to the PA Consulting Report (Sections 4.2.3 and A.2), the *NECPL: 100% Hydro Bid* will create over 50 secondary full-time jobs within Massachusetts, and over 300 secondary full-time jobs in the rest of New England, during its construction period. During its operations period, the *NECPL: 100% Hydro Bid* will create over 1,100 secondary full-time jobs within Massachusetts, and over 1,300 secondary full-time jobs in the rest of New England. These jobs will be created in the health care, real estate, education, construction sectors, among many others.

Figure 13.2.2 – Secondary (Indirectly Created) Jobs and Wages Impacts from the *NECPL: 100% Hydro Bid*

Year	Period	New Jobs		Higher Wages (\$ in millions)	
		Massachusetts	Rest of New England	Massachusetts	Rest of New England
2018	Construction	62	332	4.7	22.2
2019		61	327	4.6	22.0
2020		55	322	4.2	21.8
2021	Construction/ Operations	574	736	35.0	43.5
2022	Operations	1,261	1,239	76.5	64.8
2023		2,491	2,524	151.8	131.6
2024		4,884	5,082	299.4	264.8
2025		7,079	7,618	436.7	396.8
2026		6,997	7,616	434.3	396.8
2027		5,024	5,460	313.9	284.6
2028		2,129	2,299	133.9	120.0
2029		987	1,066	62.5	56.0
2030		847	914	53.6	47.0
2031		982	1,144	62.2	60.6
2032		1,047	1,259	66.3	66.8
2033		1,144	1,350	72.4	71.7
2034		1,137	1,375	72.1	71.8
2035		1,101	1,373	69.8	71.8
2036		1,153	1,382	73.0	72.3
2037		1,160	1,390	73.5	72.8
2038		1,170	1,402	74.1	73.5
2039		1,180	1,413	74.8	74.1
2040		1,190	1,423	75.4	74.7
2041	Partial Year Operations	601	718	38.1	39.3

Sub-section 13.3	
<i>Please describe any other economic development impacts (either positive or negative) that could result from the proposed project, such as creating property tax revenues or purchasing capital equipment, materials or services for New England businesses. Please provide the location(s) where these economic development benefits are expected to occur.</i>	

13.3.1 Hydro-Québec

Please see Section 13.3.2.

13.3.2 TDI-NE – NECPL

As explained in Section 13.5.2, TDI-NE has partnered with Community Action of the Franklin, Hampshire and North Quabbin Regions to fund \$1 million annually in energy improvements for low income households in western Massachusetts. This funding will result in improvements to approximately 2,500 low income households over a 20 year period

As the host state, Vermont will receive economic benefits in the form of taxes, lease payments, and benefit funds aimed at assisting with Lake Champlain clean-up, renewable energy development, and electric ratepayer relief. These benefits are summarized in the table below.

Table 13.3.2 – Economic Benefits in Vermont (\$ in millions)		
Item	40-Year Estimate	Purposes
VT Benefits	\$506	Lake Champlain clean-up, renewables, and ratepayer benefits
Lease Payments	\$200	Payments for utilizing State and Town rights-of-way
Tax Payments	\$475	Property taxes, corporate income taxes, and sales taxes
Total	\$1,180	40 year estimate of Vermont specific benefits

Sub-section 13.4	
<i>To the extent not already specified elsewhere in your response, please address the factors listed in Section 2.2.2.9 and describe any benefits or impacts associated with the proposed project.</i>	

13.4.1 Hydro-Québec

Please see Section 13.4.2.

13.4.2 TDI-NE – NECPL

The *NECPL: 100% Hydro Bid* will provide a number of direct and indirect benefits to the Commonwealth of Massachusetts, its EDC, and its ratepayers during the *NECPL: 100% Hydro Bid's* 20-year contract. Using the PA Consulting Report (**Appendix 3.3.TDI-NE**), TDI-NE estimates that the *NECPL: 100% Hydro Bid* will generate almost \$20 billion of total benefit during the first 20 years of operations. During this time, the *NECPL: 100% Hydro Bid* will create over \$7.1 billion of economic output and lead to over 1,100 long-term jobs in Massachusetts.

The table below provides an overview of the economic benefits generated by the NECPL assuming the delivery of hydroelectric generation, with further explanation to follow:

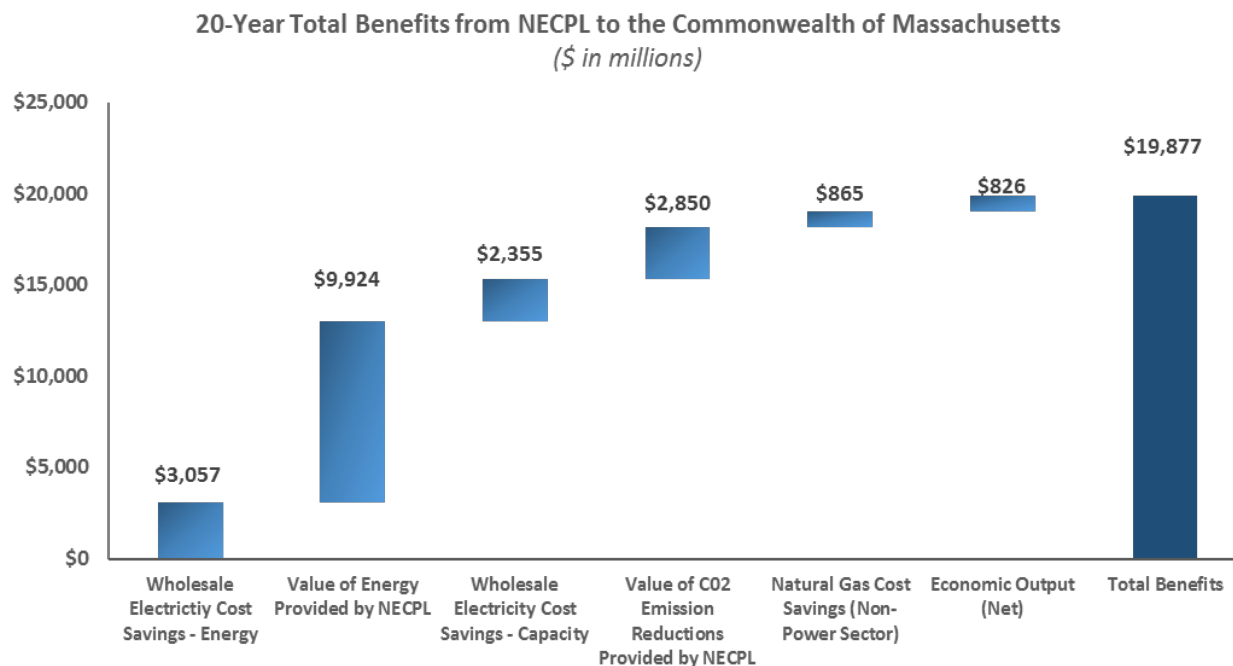
Figure 13.4.2.a: Overall Economic Benefits of the NECPL (\$ in millions)		
Benefit Type	20-Year Total Benefits⁽¹⁾	NPV of Benefits⁽²⁾
(1) Value of Energy Provided by NECPL	\$9,924	\$5,146
(2) Value of CO ₂ Emission Reductions Provided by NECPL	\$2,850	\$1,419
(3) Wholesale Electricity Cost Savings – Energy	\$3,057	\$1,617
(4) Wholesale Electricity Cost Savings – Capacity	\$2,355	\$1,960
(5) Wholesale Natural Gas Cost Savings (non-power sector)	\$865	\$453
(6) Economic Output:		
Economic Output (gross)	\$7,104	\$4,561
Less: Electricity Cost Savings	(\$5,412)	(\$3,578)
Less: Natural Gas Cost Savings (non-power sector)	(\$865)	(\$453)
Economic Output (net)	\$826	\$530
Total 1 through 6	\$19,877	\$11,126

Source: PA Consulting, TDI Analysis

- (1) Analysis reflects the 20-year transmission contract period only; the NECPL will continue to provide both economic and environmental benefits to the Commonwealth throughout its expected useful life
- (2) Using discount rate of 6.99%, consistent with the discount rate that the evaluators will use for analyzing and assessing the bid submittals.

Figure 13.4.2 provides a summary of the total 20 year benefits that are estimated to flow to the Commonwealth by benefit type. An overview of these benefit types and the methodology for estimating these benefits is also provided.

Figure 13.4.2.b – 20-Year Total Benefits from NECPL to the Commonwealth of Massachusetts



As the figure above reflects, the *NECPL: 100% Hydro Bid* will create economic benefits in five major categories: the value of the electricity generated directly by the *NECPL: 100% Hydro Bid*, the value of carbon emissions reduced by the *NECPL: 100% Hydro Bid*, wholesale electricity cost savings, natural gas cost savings and net economic output. The basis for each of these benefit estimates is described below

Value of Energy Provided by the *NECPL: 100% Hydro Bid*:

This benefit reflects the direct market value of the *NECPL: 100% Hydro Bid* selling 8.3 TWh of energy into the New England electricity system. This energy has significant value for Massachusetts ratepayers, based on PA Consulting’s analysis of the forecasted energy price at the Coolidge Substation. More specifically, PA Consulting forecasts around the clock energy prices at the Coolidge Substation to average more than [REDACTED] during the first 20 years of operation. This equates to an average of approximately \$500 million per year in market value from selling 8.3 TWh into the New England electricity system and receiving the Coolidge Substation energy price. During the first 20 years of operation, PA Consulting forecasted a total of \$9.9 billion in market value of the 8.3 TWh delivered by the *NECPL: 100% Hydro Bid*.

Value of CO₂ Emissions Reduction:

To quantify the value of the environmental benefit to New England, and specifically to the Commonwealth of Massachusetts, associated with the emission reductions attributable to the *NECPL: 100% Hydro Bid*, PA Consulting assumed that the value of avoiding one metric ton of CO₂ emissions is equal to the marginal CO₂ abatement cost calculated in the Avoided Energy Supply Costs in New England: 2015 Report (“AESC 2015 Report”) prepared for the Avoided Energy Supply Component Study Group. The use of the marginal abatement cost calculation from the AESC 2015 Report to monetarily quantify benefits from CO₂ emission reductions has been established within Massachusetts regulatory processes (see the most recent Massachusetts Joint Statewide Three-Year Electric and Gas Energy Efficiency Plan, filed on October 30, 2015). Once the *NECPL: 100% Hydro Bid* is operational, Massachusetts would realize approximately \$2.8 billion in value from CO₂ emission reductions during the first 20 years of operations using generation-based accounting, and \$4.5 billion in value using consumption-based accounting. The benefits to the New England region as a whole would be even more substantial – \$6.8 billion using generation-based accounting and \$7.8 billion using consumption-based accounting.

Wholesale Electricity Cost Savings:

The *NECPL: 100% Hydro Bid* is forecasted to decrease wholesale electricity costs for residential, commercial, and industrial users of electricity. Wholesale electricity costs are primarily comprised of costs for capacity and energy. Capacity costs are the payments made to power plants to ensure they are available to operate when needed, which is effectively a reservation charge paid to power plants. Energy costs are the payments made to power plants for the actual electricity they produce when they are needed, which is effectively a variable production charge. *NECPL: 100% Hydro Bid* is forecasted to reduce both categories of costs for Massachusetts ratepayers.

The *NECPL: 100% Hydro Bid* is forecasted to reduce energy costs by providing electricity at a low production cost. Since the energy originates from Hydro-Québec’s portfolio of hydroelectric power plants, its production costs will be lower than almost all the existing power plants in Massachusetts and New England. By providing electricity with low production costs, the *NECPL: 100% Hydro Bid* will operate ahead of (*i.e.*, displace) the more expensive power plants (e.g., coal, fuel oil, and natural gas) that Massachusetts ratepayers would have otherwise relied on for their electricity needs.

Like energy costs, the *NECPL: 100% Hydro Bid* is forecasted to lower capacity costs by increasing the amount of low cost capacity available to Massachusetts ratepayers. More specifically, capacity costs in ISO-NE are calculated based on the Forward Capacity Auction, which purchases capacity on behalf of electricity users to meet the New England system’s peak electricity demand. All else equal, the more low cost capacity that is available in the auction, the lower the total cost of purchasing capacity. This is because low cost capacity will be purchased before higher cost capacity. As a result, Massachusetts ratepayers will pay less for capacity and realize the associated cost savings.

Gas Cost Savings:

By delivering 8.3 TWh annually into the New England electricity system, the NECPL is forecasted to decrease the demand for natural gas from the power sector (since natural gas-fired power plants will operate less with the *NECPL: 100% Hydro Bid's* 8.3 TWh in the market). This in turn will reduce power sector usage of natural gas, which will lower pricing for Massachusetts's residential, commercial, and industrial users of natural gas. This results in lower wholesale natural gas costs, since less demand from the power sector for natural gas translates into more supply for the other sectors, and more supply results in lower pricing based on the economics of supply and demand.

Net Economic Output:

PA Consulting calculated the economic impacts to Massachusetts ratepayers resulting from (1) the NECPL's direct expenditures in Massachusetts (*e.g.*, design, engineering, and environmental services projected to be provided by firms in Massachusetts), (2) the NECPL's expenditures in Vermont and their indirect impact on Massachusetts, and (3) lower wholesale electricity and natural gas costs from *NECPL: 100% Hydro Bid's* operations. This analysis found that wholesale electricity and natural gas prices and natural gas usage would decrease as a result of *NECPL: 100% Hydro Bid's* operations, and that these decreases would lead to lower wholesale electricity and natural gas costs for Massachusetts ratepayers. As a result, ratepayers would have more disposable income to spend in the economy, since they would be spending less on electricity and natural gas services, which would result in higher economic output for Massachusetts's economy.

Sub-section 13.5	
<p><i>Describe how your project will (a) contribute to reducing winter electricity price spikes in Massachusetts, and (b) guarantee energy delivery in winter months. Class I RPS eligible projects must guarantee that 70% of energy in their delivery profile of the Winter Peak Period will be delivered over the course of every Winter Peak Period (see Section 2.2.2.7). Clean Energy Generation for projects containing firm service hydroelectric generation, and Clean Energy from new Class I RPS eligible resources paired with firm service hydroelectric generation, will be required to submit a delivery profile with no Winter Peak Period hour less than 60 percent (60%) of their highest annual single hourly delivery claimed in their annual delivery profile.</i></p>	

13.5.1.1 Hydro-Québec – Hydropower Resources

[illegible]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

1. [REDACTED]

13.5.1.2 Hydro-Québec – Québec Line

The Project to build a new intertie between the Hydro-Québec and New England transmission systems is needed to enable the import of the Incremental Clean Energy Generation under the HQ

PPA. [REDACTED]
[REDACTED]
[REDACTED]

13.5.2 TDI-NE – NECPL

The NECPL is in a unique position to contribute to reducing winter electricity price spikes in Massachusetts. The NECPL will provide a baseload power resource with a low production costs that can provide up to 1,000 MW of firm clean energy capacity in the winter. Based on PA Consulting's analysis, if the NECPL had been operating in January 2014 and importing its 1,000 MW of electricity from Hydro-Québec's diversified pool of hydroelectric power plants, the NECPL would have had two important effects on New England's wholesale electricity and natural gas markets by: (1) decreasing the electricity market's usage of expensive natural gas and fuel oil-fired power plants, and (2) decreasing the power sector's usage of natural gas (since natural gas-fired power plants would have been displaced by the NECPL). See **Confidential Appendix 3.3.TDI-NE.1** at pages 7-11.

Accordingly, the NECPL would have lowered wholesale electricity costs for Massachusetts and New England ratepayers. More specifically, PA Consulting estimates that wholesale electricity costs for Massachusetts ratepayers would have decreased by nearly \$200 million in January 2014 with the NECPL in the market – primarily as a result of: (i) less demand for natural gas from the electricity sector resulting in a decrease in natural gas pricing, and (ii) less electricity generated by expensive natural gas-fired power plants. These cost savings represent an approximate 25% decrease from actual January 2014 wholesale electricity costs, and demonstrates both the winter reliability benefits and cost savings the NECPL can provide to Massachusetts ratepayers. Furthermore, while not quantified here, by decreasing the amount of electricity generated by CO₂-emitting natural gas-fired power plants, the NECPL would have also decreased CO₂ emissions in January 2014.

Confidential Appendix 3.3.TDI-NE.1 at pages 10-11).

Sub-section 13.5*	
<i>If applicable, please demonstrate any benefits to low-income ratepayers in the Commonwealth, and the impact, if any, those benefits will have on the cost to the project.</i>	

13.5.1* Hydro-Québec

See response in Section 13.5.2*.

13.5.2* TDI-NE – NECPL

TDI-NE has partnered with Community Action of the Franklin, Hampshire, and North Quabbin Regions (“Community Action”). Community Action has 40 years of experience managing energy conservation programs serving low-income households and has strong, well-established systems for managing millions of dollars from multiple funding sources for the benefit of low-income ratepayers. In all four counties of Western Massachusetts, Community Action completes home energy assessments, conducts project management and oversight, and contracts with local HVAC vendors, weatherization contractors, electricians, and home repair specialists to carry out work in single family as well as multi-unit residential buildings. Cite to website site, Annual reports

Under the terms of this partnership, TDI-NE will contribute \$1 million annually to Community Action over a twenty year period, provided that TDI-NE successfully executes a TSA as part of this RFP. This funding will provide critical assistance to approximately 2,500 low-income ratepayer households over the life of the contract by reducing energy costs and emissions, consistent with the state’s goals.

Community Action’s ongoing funding streams do not allow for certain types of energy efficiency-related improvements (e.g. replacement of windows or knob and tube wiring) or innovative heat pump and high efficiency space and water heating technologies. Community Action has, however, been part of pilot programs with the Massachusetts Department of Energy Resources to install ductless mini-splits, heat pump hot water heaters, and pellet stoves, and the Massachusetts Clean Energy Center to install ductless mini-splits. As a result, Community Action is now in a position to implement these types of home energy improvements throughout its service area. TDI-NE’s financial contribution would allow this to happen and would leverage federal, state, and private utility dollars to extend the reach of TDI-NE’s support. The planned improvements will place low-income households in a more sustainable position for decades.

More information on this partnership, including an overview of the Partnership and a Letter of Intent, can be found in **Appendix 13.5.TDI-NE**. In addition, Clare Higgins (CHiggins@communityaction.us), Executive Director of Community Action, may be contacted for more information about this partnership.

Section 14 | Additional Information Required for Transmission Projects (and All System Upgrades Associated with Proposed Transmission Projects)

Sub-section 14.1	Transmission Project Information
	<p><i>i. Overall project description</i></p> <p><i>ii. The operating voltage of the proposed project</i></p> <p><i>iii. The type of structures (such as steel towers or poles) that would be used for the proposed project</i></p> <p><i>iv. The length of the proposed transmission line and the type(s) of terrain and land ownership of the proposed ROW</i></p> <p><i>v. The substation facilities (number of breakers, transformers, etc.) required at each terminal of the proposed project and information as to how the new facilities would interconnect to any existing facilities.</i></p> <p><i>vi. The estimated costs of the proposed project broken out into separate categories as described below for transmission facilities and substation facilities in nominal year dollars.</i></p> <p><i>a. For cost of service or modified cost of service proposals:</i></p> <ol style="list-style-type: none"> <i>1. Provide the capital cost estimate presented as a buildup of costs by category, such as environmental, engineering, civil works, materials, equipment, construction, construction management, physical and price contingencies, allowance for funds used during construction (AFUDC), and all other categories for which recovery under FERC would be sought. These categories are illustrative; aggregate costs into the categories most relevant to the development of the proposed project. All costs should be provided in nominal dollars.</i> <i>2. For projects with transmission and substation components, separate the costs into two rows (e.g. use one row for substation construction and a second for transmission construction). Describe the detailed financial plan on a monthly basis during the construction period, e.g., for 3 years or as long as necessary. The plan should present the costs and financial outlays in each month of the construction period, and the corresponding sources of financing (equity contribution and debt drawdown), as in the following illustrative table. Data should include an estimate of the cost of both physical and price contingencies during the construction period. The financing plan should indicate the ability to finance the construction of the proposed project under base case and contingency scenarios.</i> <i>3. Describe the proposed financing sources and instruments.</i> <i>4. Sources of funds for construction and working capital - include name of entity providing debt financing, loan amounts, interest rates, repayment period, grace period during construction; and equity provided by project sponsor.</i> <i>5. Sources of funds for unexpected repairs or replacement construction during the operating period, e.g., replacement of tower. Note: the operating period is the applicant's estimate of the useful life or accounting life of the transmission project element(s).</i> <p><i>b. If the bidder is proposing fixed-rate pricing rather than cost-of-service or modified cost-of-service pricing, provide sufficient information and assessment to show that the proposed project, including any necessary transmission network upgrades, is financially viable. In this regard, provide capital cost estimates and operation and maintenance cost estimates and the basis for your estimates, including the extent to which estimates are based on vendor contracts or vendor quotes, your experience in the development, construction and/or operation of similar projects, your approach regarding contingency and risk management, and your proposed financing plan. All costs should be provided in nominal dollars, although inflation and cost escalation estimates should be provided. Please describe in detail the due</i></p>

diligence you have conducted in developing your pricing and tariff proposal.

vii. Provide a proposed schedule for project development through release for operation that includes key critical path items, such as:

- a. Develop contracts for project work;*
- b. Completion of studies and receipt of approvals needed for the interconnection;*
- c. Permitting; R/W and land acquisition;*
- d. Engineering and design;*
- e. Material and equipment procurement, including identification of long lead time equipment;*
- f. Facility construction;*
- g. Agreements (interconnection, operating, scheduling, etc.) with other entities;*
- h. Pre-operations testing;*
- i. Project in-service date; and*
- j. Other items identified by the bidder.*

viii. Bidder must indicate whether it proposes to recover abandonment costs for its transmission project from the Distribution Companies, as described in Section 2.2.2.6.2 of this RFP. If so, Bidder must acknowledge that recovery of any such abandonment costs shall be in accordance with FERC rules and policies, and also acknowledge that in no event will a Bidder seek to recover abandonment costs if the abandonment was caused directly or indirectly by some act or failure to act of the Bidder. Bidder must further affirmatively commit not to seek from FERC or any other agency or authority any treatment of abandonment costs inconsistent with the provisions of Section 2.2.2.6.2 of the RFP. To the extent the Bidder proposes to recover abandonment costs, such proposal should be further described as set forth in Appendix C-2 of this RFP.

14.1.1 Hydro-Québec

14.1.1.1 Hydro-Québec – Hydropower Resources

This question is not applicable to generation projects.

14.1.1.2 Hydro-Québec – Québec Line

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

TDI-NE – NECPL

i. Overall project description

The NECPL is a proposed electric transmission line that will run from the US/Canadian border to Ludlow, VT along underwater and underground routes. The electricity shipped through the NECPL will be generated by existing hydroelectric resources owned by Hydro-Québec, and will be delivered to the New England electric grid. The 154 mile transmission line will utilize high voltage direct current (HVDC) technology, capable of transmitting 1,000 megawatts (MW) of electricity. The underwater portions of the transmission line, approximately 97 miles in length, will be buried 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 (terrestrial) portions of the transmission line, approximately 57 miles in length, will be buried underground within existing public road and railroad rights-of-way (“ROWS”), or on private land under TDI-NE ownership or control. The NECPL will begin at the Canadian / US Border and transmit electricity as described above from Alburgh, VT to Ludlow, VT, where it will tie into TDI-NE’s proposed Converter Station. The Ludlow Converter Station will convert the electrical power from 320 kV direct current (“DC”) to 345 kV alternating current (“AC”) and then connect to the 345 kV Coolidge Substation in Cavendish, VT that is owned by the Vermont Electric Power Company (“VELCO”).

Figure 14.1.2.i – Map of New England Clean Power Link



ii. The operating voltage of the proposed project

The operating voltage of the NECPL is 320 kV DC. The NECPL will convert to 345 kV AC power at

the Coolidge Substation which will provide access to the bulk transmission system operated by ISO-NE.

iii. The type of structures (i.e., steel towers or poles) that would be used for the proposed projects

NECPL is a completely buried transmission project with no overhead structures along the 154 mile HVDC transmission line. Two, approximately 6" XLPE, HVDC cables will be buried in the ground or submerged in Lake Champlain. The Converter Station will be above ground and will contain electrical infrastructure within the Converter Station site. Details of the height and locations of this infrastructure can be found in **Appendix 6.1TDI-NE.5**.

There will also be a single (riser pole) structure on VELCO's property adjacent to VELCO's Coolidge substation. This pole will serve as the point of demarcation between the NECPL and VELCO at the interconnection location for the NECPL.

iv. The length of the proposed transmission line and the type(s) of terrain and land ownership of the proposed ROW

The NECPL is 154.1 miles in total length from the Canadian/U.S. border to the interconnection demarcation point in Ludlow, VT. Please see table below for details of the installation technique, terrain and land ownership by mile from Alburgh, VT to Ludlow, VT.

Figure 14.1.2.iv – Mileage and Other Details of NECPL Transmission Line

Mile Marker	Installation	Terrain	Land Ownership
0.0 – 0.3	Buried	Buried in Road ROW	Town of Alburgh
0.3 – 0.5	Buried & HDD	Buried on private land	TDI-NE
0.5 – 2.0	HDD & Diver Lay	Buried in Lake Champlain	State of Vermont
2.0 – 22.0	Jet Plow	Buried in Lake Champlain	State of Vermont
22.0 – 66.0	Lay on Bottom	Submerged in Lake Champlain	State of Vermont
66.0 – 74.0	Jet Plow	Buried in Lake Champlain	State of Vermont
74.0 – 97.8	Shear Plow & HDD	Buried in Lake Champlain	State of Vermont
97.8 – 97.9	HDD & Buried	Buried on private land	TDI-NE
97.9 – 102.1	Buried	Buried in Road ROW	Town of Benson
102.1 – 132.5	Buried	Buried in Road ROW	State of Vermont
132.5 – 137.6	Buried	Buried in Railroad ROW	State of Vermont
137.6 – 149.0	Buried	Buried in Road ROW	State of Vermont
149.0 – 153.3	Buried	Buried in Road ROW	Town of Ludlow
153.3 – 153.7	Buried	Buried in private access road	TDI-NE
153.7 – 154.1	Buried	Buried in Road ROW	Town of Ludlow
154.1 – Coolidge	Buried	Buried in private land	VELCO

v. The substation facilities (number of breakers, transformers, etc.) required at each terminal of the proposed project and information as to how the new facilities would interconnect to any existing facilities.

NECPL Converter Station (see site plan below): In order to convert DC to AC power a new Converter Station must be built in Vermont. The Converter Station will utilize voltage source converter (VSC) technology manufactured by ABB. This technology includes converter valves with transistors, developed for electric transmission to lower system losses, increase stability, and improve power transfer and voltage control capabilities.

The layout of the VSC station of an HVDC Converter Station utilizes a modular design that incorporates factory-assembled converter valve modules, cooling systems and controls which minimizes the required footprint. The DC components of the Converter Station are enclosed in the building, keeping noise emissions low while maintaining a secure facility. VSC converters typically utilize much less space than traditional HVDC substation layouts, which require significant areas for filtering equipment. Within the Converter Yard there will three AC transformers and three circuit breakers connected to the AC line which will connect to Coolidge.

The NECPL Converter Station will be located on a TDI-NE-owned property of 27.2 acres. The total post-construction site area (i.e., building and associated areas and equipment) will be approximately 4.5 acres. The total amount of land to be cleared for construction will be approximately 10 acres due to required grading and facility access needs. The Converter Station's building will have a footprint of approximately 165 feet by 325 feet 6 (1.2 acres).

The entire station will be surrounded by secure fencing that will be compliant with the National Electrical Safety Code and other applicable industry standards. The Converter Station has been designed to minimize visual and noise 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. The 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 NECPL transmission line.

Details, including a cut and fill plan, context map and elevations of the equipment required at the Converter Station are contained in **Appendix 6.1.TDI-NE.5**.

VELCO Coolidge Substation (Interconnection Point): An approximately 0.6 mile 345 kV (AC) line will run underground from the Converter Station to the point of demarcation outside the fence line of VELCO's 345 kV Coolidge Substation. A riser structure will be installed adjacent to and outside the fence and will serve as the demarcation point between TDI-NE and VELCO.

VELCO has designed the interconnection scheme, which will allow the NECPL to utilize an existing

open bay at the substation and to interconnect with the installation of one new breaker. See **Appendix 6.11.TDI-NE** for detailed engineering of this interconnection.

Figure 14.1.2.v – Site Plan of NECPL Converter Station and Interconnection



- vi. The estimated costs of the proposed project broken out into separate categories as described below for transmission facilities and substation facilities in nominal year dollars.*
- b. If the bidder is proposing fixed-rate pricing rather than cost-of-service or modified cost-of-service pricing, provide sufficient information and assessment to show that the proposed project, including any necessary transmission network upgrades, is financially viable. In this regard, provide capital cost estimates and operation and maintenance cost estimates and the basis for your estimates, including the extent to which estimates are based on vendor contracts or vendor quotes, your experience in the development, construction and/or operation of similar projects, your approach regarding contingency and risk management, and your proposed financing plan. All costs should be provided in nominal dollars, although inflation and cost escalation estimates should be provided. Please describe in detail the due diligence you have conducted in developing your pricing and tariff proposal.*

[REDACTED]

[REDACTED]

[REDACTED]

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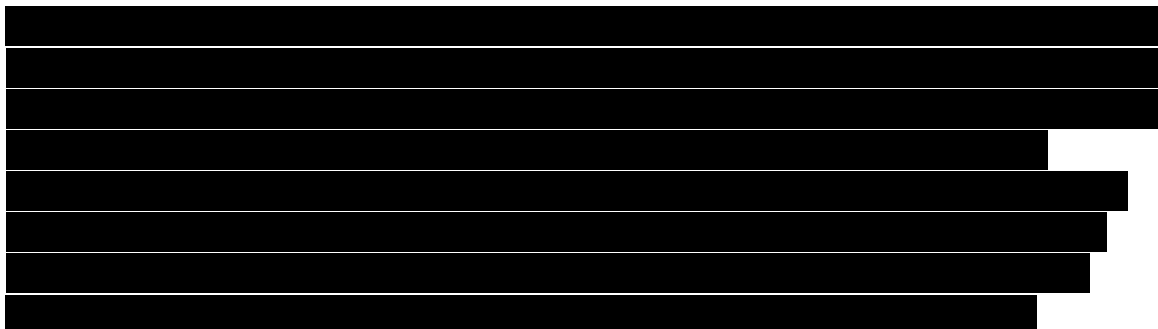
Sub-section 14.2	The proposed payment required for the transmission project and all system upgrades
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14.2.1 Hydro-Québec

14.2.1.1 Hydro-Québec – Hydropower Resources

This question is not applicable to generation resources.

14.2.1.2 Hydro-Québec – Québec Line



14.2.2 TDI-NE – NECPL

- i. All proposals must include significant cost containment as stated in the RFP.*

TDI-NE is offering a fixed-price bid and is assuming the cost risk for the Project. Please see Section 14.3.2 and 14.1.2.vi.b for more information on the fixed-price bid.

- ii. List all situations which may change the proposed payments by consumers during the contract term.*

TDI-NE is offering a fixed-price bid and is assuming the cost risk for the Project. Please see Section 14.3.2 and 14.1.2.vi.b for more information on the fixed-price bid.

- iii. Identify any limits placed upon the bidder's post-contract term rates according to current FERC rules.*

There are no limits placed upon the NECPL's post-contract term rates.

- iv. Identify all other project revenues which may be received by the bidder during the contract term which would not reduce rates paid by consumers.*

NECPL will not receive any other project revenues other than those set out in Section 14.3.

- v. ***If the proposed payments may change during the contract term or the proposal is based on cost of service, the bidder must provide the method that transmission owner shall use to determine the payment for the Transmission Project under the transmission Rate Schedule or Tariff and Service Agreement to be filed with FERC. If the proposed payment is a formula rate, the Eligible Bidder must also provide the formula and its proposed inputs that the transmission owner will file with FERC.***

The TDI-NE proposal is not cost of service. For details on the required annual payments please see Section 14.3.

- vi. ***If the proposed payment is based on the Transmission Project's cost of service and may change during the contract term based on changes in the cost of service, a full revenue requirements model must be included and submitted as a working Excel spreadsheet with the formulas intact.***

This question is not applicable because TDI-NE's proposal is not cost of service.

- vii. ***If the pricing proposed is based on cost of service, detail all cost containment commitments. Examples of such commitments include fixed price components, cost overrun restrictions, or other cost bandwidth provisions that are proposed to limit ratepayer risk must be clearly defined.***

This question is not applicable because TDI-NE's proposal is not cost of service.

- viii. ***Please include full and complete descriptions of all cost containment measures that you propose to be included in your pricing. Additionally provide any supporting documentation for any savings or methods of savings including cost caps on any portion of your project. Please include working excel spreadsheets to more fully explain how your cost containment measures should work. Please provide details and notes that describe the nexus between the cost containment provisions in your proposal and those supporting documents and spreadsheets. Please provide examples about how any cost containment measures you are proposing would work.***

TDI-NE is offering a fixed-price bid and is assuming the cost risk for the Project. Please see Section 14.3.2 and 14.1.2.vi.b for more information on the fixed-price bid.

- ix. ***To the extent that you are proposing different interconnection scenarios that affect cost please include full and complete cost information on each scenario. Please describe all interconnection and transmission upgrade costs required to interconnect at the Capacity Capability Interconnection Standard and to ensure full dispatch, including transmission upgrades that may need to occur beyond the point of interconnection.***

TDI-NE is not proposing different interconnection scenarios. For information on transmission

upgrade costs, please see Section 14.1.2.vi and **Confidential Appendix 14.1.TDI-NE** and Section 6.6.2.

- x. ***Please describe the coordination of the availability of the Clean Energy Generation and any associated transmission or distribution facilities. All proposals must include a project schedule, and proposals including a combination of transmission and Clean Energy Generation should propose complete critical path schedules, for both elements of the project, from the notice of selection for contract consideration to the start of commercial operations (the “Baseline Schedule”). Please describe all aspects of your proposal that protect ratepayers from risks associated with payments for transmission costs when any associated expected Clean Energy Generation, as proposed by the bidder, is absent, reduced, or curtailed as compared to the Baseline Schedule.***

TDI-NE and HQ have coordinated to ensure that the new HVDC interconnect between Quebec and New England is completed by [REDACTED]. Please see Section 10 for a detailed critical path project schedule. For additional details on this coordination, please see Section 3 (availability), Section 8 (equipment procurement), Section 9 (O&M). Pursuant to section 2.1 of the Firm Electric Transmission Rights Purchase Agreement (Section 15), the EDCs do not incur any transmission costs until the “PPA Start Date” (i.e., the date on which deliveries of energy commence under a PPA).

- xi. ***Please describe your approach to avoid line losses. Please see Section 3.2.***

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Sub-section 14.3	The schedule of the payments defined in 14.2 above including when the payments will commence, how often payments will be required and the length of time over which payments will be required. In no event may payments commence before the Transmission Project is placed in service
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14.3.1 Hydro-Québec

14.3.1.1 Hydro-Québec – Hydropower Resources

The questions is not applicable to generation resources.

14.3.1.2 Hydro-Québec- Québec Line

[REDACTED]

14.3.2 TDI-NE – NECPL

[REDACTED]

[REDACTED]

[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
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[REDACTED]

Sub-section 14.4	The design life of the project
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14.4.1 Hydro-Québec

14.4.1.1 Hydro- Québec – Hydropower Resources

The questions is not applicable to generation resources.

14.4.1.2 Hydro-Québec – Québec Line



14.4.2 TDI-NE – NECPL

The NECPL’s design life is a minimum of 40 years from start of project operations.

14.7.1 Hydro-Québec**14.7.1.1 Hydro- Québec – Hydropower Resources**

The questions is not applicable to generation resources.

14.7.1.2 Hydro-Québec – Québec Line

[REDACTED]

14.7.2 TDI-NE – NECPL

The reliability benefits of the NECPL Project include the following. Please see Section 3.3 for a more comprehensive explanation of these benefits.

- A fully buried transmission system utilizing industry standard HVDC technology with an [REDACTED] availability factor.
- The ability of the NECPL to be available ‘on demand’, at the times of system need, and in the quantities required by the system.
- The Project’s HVDC system can be designed to automatically adjust its power dispatch within a few hundred milliseconds in response to events in the AC system (e.g., tripping of a critical line) to mitigate the risk of overloading other lines in the AC system and resulting cascading outages.
- The Voltage Source Converter (“VSC”) technology used by the NECPL will allow the delivery of any amount of clean energy between zero MWs and 1,000 MWs, while the NECPL’s maximum ‘ramp rate’ (the rate at which output can be modified to match the needs of the New England system) is 99 MW per minute.
- The VSC technology used by the NECPL can also provide a simultaneous injection/absorption of reactive power up to +/- 400 MVar at PF 1.0 in the inverter mode, which can provide essential grid stabilization services for New England.
- A robust interconnection point that has been thoroughly study and approved by ISO-NE.
- The ability to qualify up to 1,000 MWs in the Forward Capacity Market and minimal upgrades required on the ISO system as confirmed by an Overlapping Impact Analysis completed by ISO-NE.
- The ability to reliably deliver power during winter price spikes and displace natural gas generation.

⁴⁶ The RFP does not include sections 14.5 or 14.6.

- Installing 25 MWs of batteries in collaboration with GMP to mitigate overloads and provide a new resource for operating reserves, frequency regulation and peak load reductions. Using Storage to mitigate overloads on the ISO-NE system is a new innovation that could increase the use of storage in New England and decrease the need for more impactful reconnectorings.

Section 15 | Exceptions To Form PPA and or Variations From The Proposed Tariff Requirements

Please attach an explanation of any exceptions to the Form PPAs set forth in Appendix C-1 or Appendix C-2 to this Notice, including any specific alternative provisions in a redline format to the Form PPA.

Transmission bids must contain a proposed tariff, rate schedule or transmission service agreement (“Transmission Agreement”) that the Bidder proposes as the vehicle for recovery of its transmission costs from the Distribution Companies. In addition, all transmission bids must separately contain a B-27 detailed summary of the material provisions of the proposed Transmission Agreement. Such a summary should include, but not be limited to, a discussion of the key provisions set forth in Appendix C-3, as well as a cross-reference to the corresponding sections of the proposed Transmission Agreement where such provisions may be found.

Bidders are discouraged from proposing changes to the Form PPA and or variations from the Proposed Tariff requirements.

15.1 Hydro-Québec

15.1.1. Hydro-Québec – Hydropower Resources

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

15.1.1. TDI-NE – NECPL

Please see ***Confidential Appendix 15.2.TDI-NE.1***, the Transmission Agreement that TDI-NE proposes as the vehicle for recovery of its transmission costs. ***Appendix 15.2.TDI-NE.2*** provides a detailed summary of the material provisions of the Transmission Agreement.