United States Nuclear Regulatory Commission Official Hearing Exhibit

In the Matter of: Entergy Nuclear Operations, Inc.
(Indian Point Nuclear Generating Units 2 and 3)

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Case No.: 10-T-0139

CHAMPLAIN HUDSON POWER EXPRESS, INC.

JOINT PROPOSAL

February 24, 2012

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BEFORE THE
PUBLIC SERVICE COMMISSION
STATE OF NEW YORK

Application of Champlain Hudson Power Express, Inc. and CHPE Properties, Inc. for a Certificate of Environmental Compatibility and Public Need Pursuant to Article VII of the Public Service Law for the Construction, Operation and Maintenance of a High-Voltage Direct Current Circuit from the Canadian Border to New York City.	Case No. 10-T-0139

JOINT PROPOSAL

Champlain Hudson Power Express, Inc. ("CHPEI"), CHPE Properties, Inc. ("CHPE Properties," and, together with CHPEI, "the Applicants"), Staff of the New York State Department of Public Service designated to represent the public interest in this proceeding ("DPS Staff"), the New York State Department of Environmental Conservation ("NYSDEC"), the New York State Department of State ("NYSDOS"), the New York State Department of Transportation ("NYSDOT"), the Adirondack Park Agency ("APA"), the New York State Department of Agriculture and Markets ("Ag & Mkts"), Riverkeeper, Inc. ("Riverkeeper"), Scenic Hudson, Inc. ("Scenic Hudson"), the City of Yonkers, the New York State Council of Trout Unlimited ("Trout Unlimited"), the City of New York ("CNY"), the New York State Office of Parks, Recreation and Historic Preservation ("OPRHP") and the Palisades Interstate Park Commission, and any other parties executing this Joint Proposal (collectively, "the Signatory Parties") respectfully submit this Joint Proposal on the 24th day of February, 2012,

pursuant to Rule 3.9 of the New York State Public Service Commission's ("Commission") Procedural Rules, 16 N.Y.C.R.R. § 3.9 (2011).

INTRODUCTION AND BACKGROUND

On March 30, 2010, CHPEI submitted a compilation of studies, analyses and other documents (the "Original Application"), purporting to satisfy the requirements of Article VII of the New York State Public Service Law ("PSL"), to the Commission, seeking a Certificate of Environmental Compatibility and Public Need ("Certificate"), pursuant to PSL Article VII, to construct the Champlain Hudson High Voltage Direct Current ("HVDC") Transmission System (the "HVDC Transmission System") including a voltage converter station (the "Converter Station") at a site in Yonkers, New York from the Canadian border in the Town of Champlain, New York, to points of interconnection with the Consolidated Edison Company of New York, Inc. ("Con Edison") in Manhattan and with the facilities of United Illuminating Company in Bridgeport, Connecticut.

The Original Application was supplemented by Applicants on July 22, 2010, July 29, 2010, August 6, 2010, and August 11, 2010. By letter dated August 12, 2010, the Secretary of the Commission ("Secretary") determined that the submitted documents, as supplemented, were filed or otherwise in compliance with the filing requirements of PSL Article VII as of August 11, 2010. Applicants' July 22, 2010 supplement also informed the Commission and the active parties that the Applicants were revising the proposal to eliminate the HVDC circuit between the Canadian Border and Bridgeport, Connecticut, and were changing the end point of the line in New York City from Sherman Creek to a substation in Astoria, Queens, New York, owned by the New York Power Authority ("NYPA").

On October 27, 2010, DPS Staff submitted a letter to the Commission identifying three alternative route segments and an alternative location for the HVDC Transmission System's Converter Station. Specifically, DPS Staff proposed: (1) that the HVDC Transmission System should run for approximately one hundred (100) miles along right-of-way ("ROW") owned or operated by railroads on the west side of the Hudson River from the Town of Bethlehem, New York, to the Town of Clarkstown, New York (the "Hudson River Western Rail Line Route"); (2) that the HVDC Transmission System should run along the NYSDOT ROW on the northerly and easterly banks of the Harlem River for approximately six miles to the rail yards west of Willis Avenue ("the Harlem River Rail Route"); (3) that the HVDC Transmission System should follow the NYSDOT ROW from the Willis Avenue Bridge through NYSDOT's Harlem Rail Yard to the East River, thereby avoiding the need to run through Hell Gate ("the Hell Gate Bypass Route"): and (4) that the Converter Station should be located in NYSDOT's Harlem Rail Yard rather than in Yonkers.

Applicants have agreed to construct the facilities and implement such measures as are necessary to permit at least 1,550 MW of electric energy to be delivered from NYPA's 345 kV Astoria Substation into Con Edison's 345 kV system unless prevented by a transmission system outage, maintenance outage, or the 'New York State Power System' is in an 'Emergency' or an 'Emergency State', as such terms are defined in the New York Independent System Operator, Inc.'s ("NYISO") Open Access Transmission Tariff ("OATT"), that prevents the delivery of 1,550 MW of energy out of NYPA's Astoria substation. To achieve this result, Applicants propose to construct a 345 kV High Voltage Alternating Current ("HVAC") cable circuit from the NYPA gas insulated switchgear ("GIS") substation to Con Edison's Rainey Substation (the "Astoria-Rainey Cable"), and to pursue the implementation of a Special Protection System or other operational measure(s) through the NYISO, the Northeast Power Coordinating Council

("NPCC") or other applicable authorities.[1] Together, the HVDC Transmission System and the Astoria-Rainey Cable comprise the Project proposal and are collectively referred to herein as the "Facility." The Applicants will pursue other solutions to this deliverability requirement if an Operational Measure cannot be implemented, provided that the Facility remains economic with the incremental cost of such other solutions.

Procedural conferences were held in this proceeding before Administrative Law Judges ("ALJs") Michelle L. Phillips and Kevin J. Casutto on September 21, 2010, and January 19, 2011. Public statement hearings were held before ALJs Phillips and Casutto on the following dates and at the following locations: October 24, 2010, in Yonkers, New York; October 28, 2010, in Kingston, New York; November 3, 2010, in Schenectady, New York; November 4, 2010, in Whitehall, New York; and, November 9, 2010, in Plattsburgh, New York. Applicants also hosted informal informational sessions for the public on the following dates and at the following locations: March 9, 2010, in Albany, New York; April 13, 2010, in Plattsburgh, New York; April 20, 2010, in Kingston, New York; May 4, 2010, in Scotia, New York; and May 12, 2010, in Yonkers, New York.

After exploratory discussions among the parties, a Notice of Impending Settlement Negotiations was filed with the Secretary by the Applicants and served on all parties on November 2, 2010. Over fifty (50) Settlement conferences were held between the period of November of 2010 and February of 2012. In addition, a number of conference calls and technical meetings were also held. Electronic communications facilitated the settlement process, as well as numerous discovery requests.

[1] If Con Edison moves forward with the installation of a phase angle regulating transformer ("PAR") connected to NYPA's Astoria 345 kV substation as it recently proposed in the NYISO stakeholder process, the Converter Station will also include a four-breaker 345 kV GIS ring bus connected to NYPA's Astoria substation.

After thorough discussion of the issues, the Signatory Parties recognize that their various positions can be addressed through settlement and agree that settlement is now feasible. The Signatory Parties further believe that this Joint Proposal gives fair and reasonable consideration to the interests of all parties and that its approval by the Commission is in the public interest. The Signatory Parties have made good faith efforts to accommodate the positions of the non-Signatory Parties.

TERMS OF THE JOINT PROPOSAL

I. GENERAL PROVISIONS

1. The support of the Signatory Parties for this Joint Proposal is expressly conditioned upon acceptance or approval by the Commission of all provisions thereof, without material change or condition. In the event that the Commission does not accept or approve this Joint Proposal in its entirety and without material change or condition, the Signatory Parties shall be free to pursue their respective positions in this proceeding without prejudice.

2. The Signatory Parties have entered into the Joint Proposal on the express understanding that it constitutes a negotiated resolution of the issues in this proceeding and that no Signatory Party shall be deemed to have approved, accepted, agreed to or otherwise consented to any legal or regulatory principle or methodology underlying or supposed to underlie any of the provisions of this Joint Proposal. The terms and provisions of this Joint Proposal apply solely to, and are binding only in, the context of the present Article VII proceeding and do not necessarily reflect the position any Signatory Party would take in a future adjudicatory proceeding. Each Signatory Party reserves the right in future Article VII proceedings to propose or include such terms and conditions as it may deem appropriate.

3. The discussions that produced this Joint Proposal have been conducted on the explicit understanding, pursuant to Rule 3.9(d) of the Commission's Procedural Rules, 16 N.Y.C.R.R. § 3.9(d) (2011), that any discussions among the Signatory Parties with respect to this Joint Proposal prior to the execution and filing thereof shall not be subject to discovery or admissible as evidence.

4. The Signatory Parties recognize that certain provisions of this Joint Proposal contemplate actions to be taken in the future to effectuate fully this Joint Proposal, including the review under the National Environmental Policy Act ("NEPA"), which must be completed in order to allow Federal agencies to issue permits and approvals necessary in order to allow construction of the Facility to proceed. Accordingly, the Signatory Parties agree to cooperate with each other in good faith in taking such actions and to refrain from taking any action(s) or position(s) in these or any other federal proceedings relating to the siting or other environmental impacts of the Facility that would conflict with the construction and operation of the Facility as agreed to in this Joint Proposal, with the exception that the authority and responsibilities of NYSDOS pursuant to Article 42 of the Executive Law and 15 C.F.R. Part 930 subpart D are not affected by this provision.

5. Nothing in this Joint Proposal or any appendix thereto is intended:

   a. to directly impose any obligations on or limit any pre-existing rights of any party other than Applicants; or

   b. to require the payment of incidental, consequential, or punitive damages by the Applicants, except as expressly stated in the Proposed Certificate Conditions (Appendix C"), Condition 29(d); or

   c. to obligate the Applicants to pay for damage to any existing co-located infrastructure ("CI"), as defined in Condition 27 of Appendix C, attributable to

the defective condition of such existing CI, or to restore such existing CI to a better condition than that existing immediately prior to the commencement of construction in the immediate vicinity of such existing CI; or

d. to obligate the Applicants to pay for any damage to any existing CI which could have been avoided by the exercise of reasonable care by the owner(s) and/or operator(s) thereof; or

e. to limit in any way any rights the Applicants may have in law or in equity to receive compensation from any owner(s) and/or operator(s) of CI for any damage to the Facility or injury to workers caused in whole or in part by the construction, operation, maintenance, or repair of any CI by the owner(s) and/or operator(s) thereof.

6. The Signatory Parties agree that, if a new material issue is raised by the public at any public statement hearing held in this proceeding after the filing of this Joint Proposal or in public comments timely submitted in connection with the filed Joint Proposal, nothing in this Joint Proposal shall be regarded as restricting in any way the ability of DPS Staff or the NYSDOS to address that new material issue in its testimony or pleadings filed in this proceeding, provided DPS Staff or the NYSDOS notifies all parties of its determination that a new material issue has been presented within thirty (30) days following the conclusion of the last public statement hearing (if the new issue is raised for the first time in a public statement hearing) or the close of any public comment period (if the new issue is raised for the first time in public comments filed within the public comment period). Except as expressly provided in the preceding sentence or to the extent a Signatory Party has expressly reserved its position on one or more issues addressed in the Joint Proposal, all Signatory Parties agree to support Commission approval of the

Joint Proposal in any pleadings or testimony filed in this proceeding. In order to qualify as a material issue for purposes of this provision, an issue must have a material bearing on a finding that the Commission is required to make or a condition that the signatory parties have agreed should be imposed under PSL § 126 in this proceeding or that pertains to the obligations and responsibilities of the NYSDOS pursuant to Articles 6, 6B and 42 of the New York State Executive Law.

7. In the event of any disagreement over the interpretation of this Joint Proposal, or implementation of any of the provisions thereof, that cannot be resolved informally among the Signatory Parties, such disagreement shall be resolved in the following manner:

   a. the Signatory Parties shall promptly convene a conference and in good faith attempt to resolve any such disagreement; and,

   b. if any such disagreement cannot be resolved by the Signatory Parties, any Signatory Party may petition the Commission for resolution of the disputed matter.

   c. Notwithstanding paragraphs 7(a) and (b) above, any material changes to the project that would alter the Applicant's ability to fulfill the accepted conditions in the Applicants' coastal consistency certification, or should future consistency certifications be necessary if additional federal authorization activities require federal agency approval or funding beyond those NYSDOS considered in its June 8, 2011 conditional concurrence, those material changes or additional activities shall be resolved pursuant to 15 C.F.R. Part 930 subpart D.

8. This Joint Proposal shall not constitute a waiver by the Applicants of any rights they may otherwise have to apply for additional or modified permits, approvals, or certificates from the Commission or any other agency in accordance with relevant provisions of law.

9. This Joint Proposal is being executed in counterpart originals and shall be binding on each Signatory Party when the counterparts have been executed.

II. EVIDENTIARY RECORD

10. Appendix A attached to this Joint Proposal lists the discovery, testimony, affidavits and exhibits agreed upon by the Signatory Parties to be proposed for admission as record evidence in this proceeding. The documents listed in this Appendix are being filed contemporaneously with this Joint Proposal.

III. ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED

A. Facility Description

11. The HVDC Transmission System proposed by the Signatory Parties in this Joint Proposal would be comprised of two solid dielectric (no fluids) HVDC electric cables, each approximately six (6) inches in diameter, extending from the international border to the Converter Station in Astoria, Queens, New York ("Astoria"). From the Converter Station, two HVAC circuits would connect to NYPA's 345 kV GIS Substation located at the complex of electric generating facilities located north of 20th Avenue and 29th Street in northernmost Astoria, and the Astoria-Rainey Cable would connect that substation to Con Edison's 345 kV Rainey Substation located on the northwest corner of 36th Avenue and Vernon Boulevard in Astoria. The HVDC transmission cables would be installed either underwater or underground along the overland portions of the HVDC Transmission System route. The Converter Station would be connected to the NYPA GIS substation

via an underground HVAC line. The HVAC cables of the Astoria-Rainey Cable would be installed underground in the streets of the CNY.

12. The route of the Facility (the "Route") is depicted on a series of maps included as Appendix B; the depiction is of a nominal centerline (the "Centerline") and an Allowed Deviation Zone. Those portions of the Allowed Deviation Zone that are ultimately determined to be actually affected by construction of the Facility, as well as certain areas outside the Allowed Deviation Zone that are needed temporarily for site investigation, access, and construction, are referred to as the Construction Zone. When the Facility is completed, those owning it (the "Certificate Holders") would have either exclusive control of, via fee, easement, or other appropriate interest, or rights granted by a governmental authority to use such authority's permanent ROW and certain adjacent areas as defined in Appendix C, Condition 5. The Astoria-Rainey Cable would be located in the streets of CNY in accordance with rights granted by CNY (collectively, the "Facility ROW").

13. The HVDC Transmission System would originate underwater at the international border between the United States and Canada in the Town of Champlain, New York and continue south into Lake Champlain. Two (2) cables would extend south through Lake Champlain for approximately one hundred-one (101) miles entirely within the jurisdictional waters of New York State ("NYS"). At the southern end of Lake Champlain, the cables would exit the water in the Town of Dresden, New York. From Dresden, the HVDC Transmission System would continue overland for approximately eleven (11) miles primarily within the ROW of NYS Route 22, to the Village of Whitehall.

14. To avoid installing HVDC cables within the Hudson River polychlorinated biphenyl ("PCB") site (U.S. Environmental Protection Agency ("EPA") Identification Number NYD980763841), which stretches from Hudson Falls, New York, to the Federal Dam at Troy, New York, as well as in certain sensitive areas within the lower Hudson River, the cables would be buried along an overland route. In the Village of Whitehall, the cables would transition from the Route 22 ROW to enter the existing railroad ROW owned by Canadian Pacific Railway ("CP") and remain buried for approximately sixty five (65) miles in and along the railroad ROW from Whitehall to Schenectady. The proposed cable route would enter Erie Boulevard just north of the railroad crossing at Nott Street and continue along Erie Boulevard to a point south of State Street where it would again enter the railroad ROW. Along this portion of the route there are several alternative routings that include both the railroad ROW and various public ways for transitioning from the railroad to the city streets. The public ways include Nott Street, North Jay Street, Green Street, North Center Street, Pine Street, Union Street, Liberty Street and State Street as well as private property (Parking Lot) at approximately 160 Erie Boulevard. The route would follow the railroad ROW for a short distance, and would then deviate west of the railroad property, pass under Interstate 890 then turn south along the eastern edge of the General Electric ("GE") property, approximately parallel with the CSX railroad ("CSX"), re-entering the CP railroad ROW just north of Delaware Avenue. From this point in Schenectady, the line would follow the CP railroad ROW to Rotterdam. In the Town of Rotterdam, New York, the route would transfer from the CP ROW to the CSX ROW and proceed southeast for approximately twenty four (24) miles before entering the Town of Selkirk. The cables would then travel south for approximately twenty nine (29) miles generally in and along the CSX ROW through

Ravena, New Baltimore, Coxsackie, the Town of Athens and Village and the Town of Catskill, before entering the Hudson River in the Town of Catskill (hamlet of Cementon).

15. Upon entering the Hudson River via Horizontal Directional Drill ("HDD"), the HVDC underwater cables would be located within the Hudson River for approximately 67.05 miles until reaching a point north of Haverstraw Bay. The cables would leave the water via HDD and enter the CSX ROW in the Town of Stony Point, Rockland County. The cables would bypass Haverstraw Bay for approximately 7.66 miles, including three HDD installations under the Stony Point State Historic Park Site and Rockland Lake State Park. After the HDD under the parks, the cables would enter the Hudson River via HDD, and be buried in the river for approximately 20.7 miles to the Spuyten Duyvil, which leads to the Harlem River. The cables would extend south-easterly within the Harlem River for approximately 6.6 miles, exiting the water to a location along an existing railway ROW in the Bronx and continuing along that ROW for approximately 1.1 miles. At this point, the line would enter the East River via HDD, cross the East River and make land-fall at Astoria, Queens.

16. At Astoria, the cables would terminate at a Converter Station to be located near Luyster Creek, north of 20th Avenue. From the Converter Station, a 345 kV underground circuit would connect to the existing 345 kV GIS substation owned by NYPA. The Converter Station would be installed on properties currently owned by Con Edison located in an industrial zone in Astoria. The HVDC Converter Station would be a "compact type" with a total footprint (i.e., building and associated areas and equipment) of approximately five (5) acres (approximately 550 feet by 400 feet). The main building would be approximately 165 feet by 325 feet, with a height of approximately 70 feet. These

circuits would interconnect with the NYPA substation near the site of the Charles Poletti Power Project in Queens, New York.[2]

17. The Applicants will initiate a System Impact Study at the NYISO concerning the Astoria-Rainey Cable within thirty (30) days after the filing of this Joint Proposal. The Astoria-Rainey Cable would be constructed, owned, and maintained by the Certificate Holders and would be under the operational control of the NYISO.

18. The Commission must consider the totality of all of the relevant factors in making its determination of environmental compatibility and public need. The relevant factors include, without limitation: the electric system, cost, environmental impact, the availability and impact of alternatives, overland considerations, conformance to long-range plans, state and local laws, identified benefits, and the public interest, convenience and necessity. The Signatory Parties support the issuance of an Article VII Certificate to the Applicants for the Facility, as described here, based on those factors.

B. The Need for the Facility

19. The Facility is needed to deliver an estimated 7640 gigawatt hours ("GWh") per year of energy, comprised of hydroelectric and wind energy generated in Canada to CNY. The benefits of these deliveries would include reductions in wholesale electric power prices and expected reductions in emissions of sulfur dioxide ("SO_2"), oxides of nitrogen ("NO_x") and carbon dioxide ("CO_2") as described in detail in paragraphs 141-143 below.

20. NYISO's 2010 Comprehensive Reliability Plan ("CRP") identified several risk factors that could affect the implementation of the reliability plan and future system reliability,

[2] If Con Edison proceeds with its recently announced plans to connect a PAR to NYPA's Astoria 345 kV substation, the Converter Station will also include a 345 kV GIS ring bus in a building adjacent to and on the same parcel as the rest of the Converter Station, unless a superior site is available closer to NYPA's 345 kV Astoria substation. Additional information on this GIS ring bus and the building in which it would be constructed to house it is provided in the Report attached hereto as Exhibit 125.

including Higher than Expected Load Growth (§ 3.1.1); Environmental Initiatives and Zones at Risk (§ 3.1.2); and Indian Point Plant Retirement Scenario (§ 3.1.3). In addition, the CRP at page 9 noted the increasing reliance on customers willing to curtail their electric power demands (Special Case Resources or "SCRs"); such customers are not obligated to continue to register at the rates projected by the 2010 CRP. The facility should help mitigate the potential adverse impacts that may be associated with these risk factors, although it is uncertain whether these factors will materialize, or the extent to which the Facility could mitigate such impacts, at this point.

21. The delivery of up to an additional 1,000 MW of electricity to CNY, through the Facility would provide a significant increase in energy supply capability and a resultant enhancement in system reliability. These deliveries would also enhance reliability through fuel diversity by reducing the proportion of CNY's electricity needs supplied by natural gas-fired generation.

C. Cost of the Certificated Facility

22. As originally proposed, the capital cost of the HVDC Transmission System was estimated to be $1.9 billion. In evaluating the capital cost of the HVDC Transmission System, as now proposed, estimated to be $2 billion, the Commission should recognize that, as a merchant project, all the risks associated with the HVDC Transmission System – as well as all risks associated with the use of the Astoria-Rainey Cable by shippers also using the HVDC Transmission System – would be borne by private investors rather than by utility rate payers. A certificate condition is proposed that would allow the Commission to reconsider its public interest finding and reopen the record should the Certificate Holders change their business model and seek approval of alternative or additional means of financing the these facilities, such as cost-of-service rates, from

either a federal or state regulatory body. Certificate Holders further agree that there shall be no cost-based charges for use of the Astoria-Rainey Cable for any energy or capacity produced by the capability of the Astoria Energy 2 Generating Station existing and in operation at Astoria, Queens, New York on February 1, 2012. Except as expressly provided in this Paragraph 22, nothing contained in this Joint Proposal shall be construed as affecting in any way the rights of Certificate Holders to unilaterally make application to the Federal Energy Regulatory Commission ("FERC") for a change in rates, terms and conditions, charges, classification of service, Service Agreement, rule or regulation under section 205 of the Federal Power Act ("FPA") and pursuant to FERC's rules and regulations promulgated thereunder.

23. DPS Staff has estimated the cost of the Astoria-Rainey Cable to be $194 million (2015 dollars), based on the NYISO Class Year 2010 Facilities Studies, Part 2 Studies: Deliverability Study and System Deliverability Upgrade Facilities ("SDU"), June 29, 2011, pp. 24-25, posted under meeting materials for the NYISO Operating Committee, July 14, 2011. This includes the cost of the Astoria-Rainey Cable, Existing Station Upgrades at Astoria and Rainey, and associated Sales and Service tax, adjusted for inflation.

D. Environmental Impact

24. The Application, testimony and exhibits designated for inclusion in the evidentiary record describe the nature of the probable environmental impacts of the Facility and are briefly summarized below. The environmental impacts associated with the Facility are expected to be avoided, minimized or mitigated, provided that the Best Management Practices ("BMPs") and Guidelines for the preparation of the Environmental Management and Construction Plan ("EM&CP Guidelines") agreed to by the Signatory Parties are adhered

to in the preparation of the Environmental Management and Construction Plan ("EM&CP") and provided that the EM&CP and the Proposed Certificate Conditions agreed to by the Signatory Parties are strictly complied with during facility construction, operation, and maintenance. The Signatory Parties agree that the Facility, located and configured as provided in this Joint Proposal, represents the minimum adverse environmental impact considering the state of available technology and the nature and economics of the various alternatives and other pertinent considerations. The route of the Facility is preferred because it would avoid and/or minimize the disturbance of natural habitat, and would use some existing and previously disturbed ROW.

25. The following sections address the potential for environmental impacts to result from the construction, installation and operation of the Facility with respect to various impact types.

a. Topography, Geology, Soils

26. No permanent or significant impacts related to geology or soils are anticipated. Along the overland route, initial clearing operations would include the removal of soils in the immediate trench area. Typically, the trench would be up to nine (9) feet wide at the top and at least three (3) feet deep to allow for the proper depth and separation required for the burial of the cables. Erosion controls such as straw bales and silt fencing would be used during construction to minimize storm-water run-off and the erosion of soils and surficial geologic materials, both at the trench and at the soil stockpiles. Upon completion of the installation of the overland cable, the surface of the Facility ROW disturbed by construction activities would be graded to match the original topographic contours and to be compatible with surrounding drainage patterns, except at those locations where permanent changes in drainage will be required to prevent erosion that

could lead to possible exposure of the cables or where restoration would be contrary to sound ROW management practices. An important geologic feature, the Hudson Palisades in Rockland County, will be crossed via HDD installations to avoid surface disturbances by drilling beneath the surface for long distances.

b. Aquatic Physical Characteristics

27. In the Hudson River and portions of Lake Champlain, jet plow installation technology would be used to bury the HVDC Transmission System's underwater cables. The jet plow would result in fluidization of the sediment, allowing both DC cables to be buried side-by-side in a single trench, with the option of including a fiber optic cable. Burial depth within the Hudson Harlem and East Rivers will be at the maximum depth achievable that would allow each pole of the bi-pole to be buried in a single trench using a jet-plow, which is expected to be at least six (6) feet below the sediment water interface. Where the cables traverse any federally maintained navigation channel, the cables will be buried at least fifteen (15) feet below the United States Army Corps of Engineers' ("USACE") authorized navigation channel depth in a single trench. Burial trenches would be installed in a linear path approximately two (2) feet wide, with an additional six (6) to eight (8) foot width disturbed along the sediment surface by the jet trenching device skids, wheels or support frame. Depressions in lake bottoms or river-beds are anticipated after installation but it is expected that the topography would return to pre-installation conditions through natural redeposition of the disturbed material into the trench within three (3) years.

28. The use of shear plow installation technology in the southern portion of Lake Champlain would result in the sediment being cut to a sufficient depth to bury the cables at a target depth of between three (3) and four (4) feet or the maximum reasonably attainable depth,

whichever is shallower, in a linear path of less than one foot in width. As would be the case with the jet plow, any depressions are expected to fill in naturally as a result of natural sediment redeposition.

29. The use of the jet plow or self-propelled remotely operated vehicles ("ROVs") in the northern part of Lake Champlain would result in the fluidization of the sediment sufficient to allow the cables to be buried at a target depth of between three (3) and four (4) feet or the maximum reasonably attainable depth, whichever is shallower. In those locations where the waters of Lake Champlain are one hundred fifty (150) feet deep or deeper, the cable may be buried at depths shallower than three (3) feet, or be laid on the lake bottom without burial, but only if a recognized authoritative technical consultant concludes that public health and safety can be appropriately protected without burial of the cable, and such conclusion is ratified by Commission approval of the EM&CP.

30. The use of HDD technology would avoid the need for shoreline trenching and disturbance to the shallow water interface between land and water. The cables would enter and exit the water through either a cofferdam, which would be approximately sixteen (16) feet by thirty (30) feet with a dredged entry/exit pit typically six (6) to eight (8) feet deep, or through a steel pipe. The installation and removal of cofferdams in accordance with the Proposed Certificate Conditions proposed along with this Joint Proposal are not expected to have any significant impacts on aquatic physical characteristics.

31. Conventional bucket dredging would be used to pre-dredge in order to achieve authorized cable burial depths in any federal navigation channel and for HDD entry and exit pits. The dredged material would be placed in scows and either replaced in the trench (if determined by the appropriate permitting authority to be suitable for replacement in the

trench) or pits or removed for placement at a permitted location. Dredging may result in sediment resuspension as the bucket is brought to the surface. The associated plume would travel varying distances depending upon sediment type and hydrodynamics. Impacts are expected to be similar to the deposited sediments suspended by water jetting. Placement of imported backfill when dredge spoil is not used would create some additional increases in suspended sediment, but these are expected to be short-term and localized. Any impacts from dredging discussed above are not expected to be significant.

32. In areas where the cables cannot be buried, primarily areas of rocky substrate or at utility crossings, the cables would be laid on the bottom and protected by laying articulated concrete mats or other appropriate materials over the cables for protection. The mats will alter local hydraulic conditions such that some sediment deposition or scouring may occur around the irregularity in the bottom formed by the mats. However, the overall change in bottom topography would be small because the mats will extend only a short height above the bottom. The mats are not expected to have a significant effect on near bottom hydrodynamics, which may be similar to the conditions found in rocky bottom areas.

33. During HVDC Transmission System operation, it is anticipated that the main source for potential impacts to aquatic physical characteristics would occur in the event of cable damage. In this instance, a jet plow may be used to unbury a length of the cable on either side of the repair location. The cable would then be cut and the ends brought to the surface. The damaged section of cable would be cut out and a new, slightly longer piece of cable would be spliced in and the cable lowered to the lake- or riverbed. The cable would then be reburied by diver operated hand jets ("hand jetting") or use of ROVs with water jets. The impacts are similar to those described for the original installation, but

much smaller in duration and extent. Because the HVDC cables do not contain a coolant fluid, there is no potential for fluid release in the event of a damaged cable.

34. Installation and operation of the HVDC Transmission System's underwater cables would not have any significant impacts on natural tidal flow or water depths, as the underwater cables will be buried in the Hudson, Harlem and East Rivers; and either in a buried configuration under the Lake Champlain lake- bed or laid upon the surface of the lake bed in water depths of one hundred fifty (150) feet or greater.

c. Aquatic Sediment and Water Quality

35. Hydrodynamic modeling of the northern Lake Champlain and the Hudson, Harlem and East Rivers performed by the Applicants and included in the Evidentiary Record (Exhibits 84, 85 and 90) indicates that installation of the HVDC Transmission System's underwater cables, in accordance with the Water Quality Certification ("WQC", Appendix D to this Joint Proposal), would likely result in sediment disturbance and resuspension of short duration and within agreed to limits. Dispersion of sediments during cable installation would be influenced by horizontal advection, dominated by local tidal currents and settling rates. Because the bottom sediments along the HVDC Transmission System route are primarily silt and sand, sediments resuspended during cable installation are expected to settle quickly.

36. Hydrodynamic modeling of southern Lake Champlain performed by the Applicants and included in the Evidentiary Record (See Exhibits 84 and 90) shows that water quality standards for the states of New York and Vermont are expected to be achieved with the use of shear plow from Crown Point south to Dresden, New York. The Applicants have also agreed not to utilize the jet plow or shear plow unless test trials have successfully

demonstrated their ability to achieve the total suspended solids ("TSS") standards established in the WQC.

37. Monitoring of suspended sediments, turbidity and water quality, would be performed prior to and during cable installation in accordance with the WQC (Appendix D) and the Suspended Sediment/Water Quality Sampling and Monitoring Plan (Attachment 1 of Appendix C to this Joint Proposal) for jet plow embedment operations and shear plow embedment operations. Mitigation strategies would be implemented prior to and during installation if conditions exceed the water quality thresholds established in the WQC (Appendix D) and the Proposed Certificate Conditions (Appendix C).

38. A Spill Prevention, Control and Countermeasures ("SPCC") Plan or its equivalent would be filed as part of the EM&CP and implemented during construction to avoid or minimize potential impacts to aquatic sediments and water quality that could result from spills of fuel, oils, or other substances associated with aquatic installation vessels and construction equipment.

39. No permanent or long-term impacts on water quality from cable installation are expected. In addition, no impacts are expected to occur during cable operation unless cable repair is required.

d. Benthic Resources

40. Construction of the HVDC Transmission System is expected to cause a temporary, localized disturbance to the benthos. However, the area disturbed represents a small fraction of the bottom, and it is expected that the temporary and localized loss of benthic prey or resources would not have any significant impacts on benthic resources. In addition, recruitment and re-colonization of the benthic communities are expected to

occur following construction because soft-bottom benthic species have adapted to naturally occurring bottom disturbances.

41. During jet plow, shear plow, conventional dredging and HDD activities, potential impacts to benthic communities would be limited to the areas of cable installation and cofferdam dredging. Temporary impacts, including increases in suspended sediment concentrations and redeposition of these sediments, may extend beyond the immediate area of active construction but are likely to be temporally and spatially limited.

42. HDD techniques and the installation of temporary cofferdams to contain sediment disturbed during dredging at landfall locations will also avoid or minimize suspended sediment and turbidity effects in the near shore benthic habitats. The use of jet plow and shear plow embedment and HDD construction methods is not expected to interfere with opportunistic re-colonization of benthos following construction activities.

43. It is expected that a long-term alteration of the lake or river bottom would occur with the placement of rip-rap or articulated concrete mats along the cable route, which would result in the mortality of benthic biota and other immobile or slow-moving benthic organisms located in the immediate area of placement. Given the anticipated short segments where rip-rap or concrete mats would be placed (primarily utility crossings and natural impediments), this alteration is not expected to cause any significant loss of soft bottom benthic habitat or associated benthic species. The rip-rap or concrete mats likely would provide structure for additional new hard benthic habitat for epibenthic organisms to colonize.

44. In areas where the cables cannot be buried and protective covering is therefore necessary, the existing benthos would be buried. However, in areas of hard bottom the exposed surface of the mats would create similar habitat. Epibenthic communities may develop

on the mats over time, which would provide structure that can be used by some demersal species.

45. Operation of the HVDC Transmission System's underwater cables is anticipated to have insignificant impacts to benthos, fish and shellfish resources. The Applicants will complete a Benthic and Sediment Monitoring Study and Bathymetry, Sediment Temperature and Magnetic Field Study based on pre-approved scopes of study that will characterize these communities and quantify temperature and magnetic field changes. The scopes for these studies are in Attachments 2 and 3 of Appendix C to this Joint Proposal. The underwater cables will be buried to a depth such that the magnetic field would be weak enough that, once the cables are energized, the benthic community is not expected to differ significantly from that found in the adjacent benthic area. Heat produced by the cables would be primarily dissipated in the sediments and would therefore have a negligible thermal effect on benthic populations. The underwater cables use a solid dielectric design that does not contain cooling fluids, thus eliminating the potential for such fluids to be released into the environment.

e. Finfish

46. Given the narrow construction route, bottom-feeding finfish are likely to temporarily relocate to adjacent areas unaffected by construction. Any pelagic piscivorous (fish feeding) species might leave the immediate construction area because of the noise and suspended sediment plume it produces, but they would resume feeding along the cable route and forage on fish that had re-occupied the construction area as soon as the cable installation vessel leaves.

47. In areas where conventional dredging would be employed, typically for deeper burial areas such as at crossings of a navigation channel, construction will involve sediment

removal, cable laying, and then backfilling. Sediment surface characteristics would be altered since it is unlikely that exactly the same grain size composition will be created as existed prior to cable installation. However, these areas are likely to become colonized over time with benthic organisms. Given the small amount of anticipated conventional dredging, any altered prey abundance or modified substrate characteristics are not likely to have any significant impacts on fish species.

48. Cable installation in sediment would likely result in a temporary and localized increase in suspended sediments, which could potentially lead to gill abrasion, hindering of predation efficiency of sight feeding fish in or adjacent to the cable route, and negative effects on respiration. However, the sediments suspended during construction activities are expected to affect localized areas and settle quickly out of the water column or be dispersed, any impacts on fish species in or adjacent to the cable route are likely to be temporary and not significant.

49. Underwater cable installation activities would be limited to certain times of the year to avoid life-cycle or migratory impacts to Atlantic sturgeon, American shad, winter flounder, striped bass, and other anadromous fish populations, as well as resident species such as shortnose sturgeon using the affected areas. These construction windows have been established in the Proposed Certificate Conditions (Appendix C) and the WQC (Appendix D).

50. Operation of the HVDC Transmission System's underwater cables is anticipated to have no adverse impacts to finfish resources. In the Hudson, Harlem, and East Rivers, the cables would be buried in a single trench to a target depth of six (6) feet below the sediment water interface, or the maximum depth achievable and would therefore not likely create a physical barrier that could interfere with fish migration or use of existing

habitats or nursery areas. Potential impacts to fish species, if any, from electromagnetic fields and thermal dissipation during the normal operation of the Facility are expected to be insignificant as a result of the proposed installation method of two cables being buried side-by-side in a single trench to an expected burial depth of at least six (6) feet below the sediment-water interface.

f. Lacustrine and Aquatic Protected Species

51. The Applicants will take all necessary measures consistent with this Joint Proposal, the Proposed Certificate Conditions, the BMPs and the EM&CP Guidelines, to avoid and/or minimize impacts to threatened or endangered wildlife species listed at 6 N.Y.C.R.R. Part 182 ("TE species") and their occupied habitats that are found to be located in the Construction Zone.

52. Aquatic TE species in Lake Champlain are the lake sturgeon, mooneye, and eastern sand darter. Aquatic TE species in the Hudson, Harlem and East Rivers are the shortnose sturgeon, fin whale, humpback whale, sei whale, and four species of sea turtle.

53. Within the Hudson River, both the shortnose sturgeon and the Atlantic sturgeon are listed as Federally-endangered species. In addition, a total of thirteen (13) finfish, two (2) shark, and three (3) skate species in the Hudson River are currently designated as Essential Fish Habitat ("EFH") species under the Magnuson-Stevens Fishery Conservation and Management Act (Public Law 94-265) amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267). These species include: Atlantic sea herring, bluefish, Atlantic butterfish, scup, black sea bass, red hake, cobia, Atlantic mackerel, Spanish mackerel, king mackerel, summer flounder, winter flounder, windowpane, sand tiger shark, sandbar shark, clearnose skate, little skate, and winter skate.

54. NYSDOS, Division of Coastal Resources, together with the NYSDEC, has designated seventeen (17) Significant Coastal Fish and Wildlife Habitats ("SCFWHs") within or in the vicinity of the HVDC Transmission System area. The routing as outlined in this Joint Proposal would avoid directly transiting twelve (12) of these areas. Within the remaining five (5) SCFWHs (Kingston Deepwater Habitat, Esopus Estuary, Poughkeepsie Deepwater Habitat, Hudson River Mile 44-56, and Lower Hudson Reach), the settlement parties have identified certain "Exclusion Zones" (Appendix B) that will be avoided to the maximum extent possible.[3] The overall installation plan and construction windows will be designed to accommodate location-specific and season-specific restrictions intended to avoid and/or minimize potential impacts on TE species.

55. The four species of Federal and State-listed sea turtles are the leatherback sea turtle, Kemp's Ridley sea turtle, loggerhead sea turtle, and green sea turtle. None of these sea turtles nest in the New York Harbor estuary, nor do they reside there year-round. In the event that transient sea turtles are present during installation of the underwater cables, it is expected that impacts, if any, to the species will not be significant in light of the species' mobility and the limited areas of construction.

56. Several species of Federally-endangered whales are known to occur seasonally near New York's coasts, but these marine mammals are seldom observed in the New York Harbor region. The vessels used for the installation of the cable would be operated at low speeds in this portion of the HVDC Transmission System area. Accordingly, the risk of potential collision with transient whales would not be significant.

57. The installation of the underwater cables is not expected to have any significant impacts on shortnose sturgeon. The cables have been routed to avoid or minimize impacts to

[3] As noted in the Certificate Conditions, the use of the term "Exclusion Zones" does not mean that all Project facilities are necessarily excluded from such area.

sensitive habitats. In addition, construction windows are established as a Certificate Condition to ensure that work will not impact these species during their most vulnerable life stages. In the unlikely event that transient shortnose sturgeon are present during installation, it is expected that any impacts from construction, installation and maintenance of the underwater cable will not be significant.

58. Operation of the HVDC Transmission System is not expected to have any significant impacts on protected aquatic species. In the Hudson, Harlem, and East Rivers, the underwater cable would be buried in a single trench to a target depth of six (6) feet below the sediment water interface or at the maximum depth achievable. Monitoring of the HVDC Transmission System's operation would be conducted in accordance with applicable Certificate Conditions (Appendix C).

g. Freshwater and Tidal Wetlands and Water Resources

59. Construction and operation of the HVDC Transmission System is expected to result in temporary impacts to wetlands and waterbodies along overland segments of the cable route, including within the CP and CSX railroad ROW. This may include both direct impacts, where the edge of the cleared construction corridor traverses a wetland or riparian area, and indirect impacts from vegetation clearing and ground disturbance in adjacent areas. During construction, short-term effects on water quality may be caused by localized increases in turbidity and downstream sedimentation resulting from trenching and disturbance within the water body. Water quality impacts would be minimized by limiting the duration of construction activities within the water body to the extent possible, and by immediately restoring and stabilizing the streambed and banks once construction is completed. At crossings with significant stream flows, the use of dry-ditch crossing methods instead of open cut methods would reduce potential impacts

from turbidity and sedimentation, because disturbed sediments within the construction area would not become resuspended.

60. The HVDC Transmission System would be located in the following water bodies and tributaries thereto: Lake Champlain and the Hudson, Harlem and East Rivers. The water quality classifications for the water bodies encountered range from AA to I.

61. Disruptions to streams and water bodies crossed would be minimized during HVDC Transmission System construction, operation and maintenance through measures detailed in the Proposed Certificate Conditions set forth in Appendix C below, as well as in the EM&CP (Appendix E).

62. Approximately 49.5 acres of wetland have been delineated in the field along the HVDC Transmission System route, and review of National Wetlands Inventory ("NWI") and NYSDEC freshwater wetlands mapping has shown an additional 6.5 acres for a total of fifty-six (56) acres of wetland area. No fill or permanent alteration to wetlands is expected to result from the HVDC Transmission System in general and it is anticipated that wetland hydrology, vegetation, and water quality will return to pre-construction conditions in most areas following restoration of the construction area. However, in limited areas, forested wetland cover may be converted to an emergent marsh or scrub-shrub community as part of the Certificate Holders' Vegetation Management Plan. Of the total of 56.0 wetland acres, approximately 10.7 acres have been identified as forested wetland.

h. Terrestrial Wildlife and Plants and Protected Species

63. Impacts to vegetation, including rare, threatened or endangered plant species under 6 N.Y.C.R.R. Part 193 ("RTE plants") and terrestrial wildlife habitats have been avoided or minimized by locating the HVDC Transmission System route underwater to the extent

possible. Where overland routes have been proposed, the HVDC Transmission System corridor has been located primarily along existing railroad or roadway ROW or other previously disturbed areas. Use of previously disturbed railroad ROW for the installation of the overland cables would generally avoid or minimize the potential impacts to wildlife and plants. In total, approximately two hundred thirty six (236) acres of existing forest cover may be cleared to accommodate proposed construction areas and easements. Upon completion of construction activities, initial restoration activities, including soil stabilization and temporary seeding of disturbed areas would be conducted. Natural revegetation within the disturbed areas, along with the continuation of any existing management practices, would result in vegetation cover similar to the preconstruction habitat, although vegetation will be managed within and adjacent to the ROW to preclude re-forestation. During operation of the Facility, all vegetation would be managed in a condition that ensures safe access to existing and proposed facilities and to prevent future electrical service interruptions caused by deep-rooted vegetation growing over the cables of the Facility. Permanent forest clearing on the Facility ROW will result in loss of approximately 60 (sixty) acres of forest land.

64. Because the Facility would predominately utilize existing transportation corridors and will be constructed, operated and maintained in accordance with the Proposed Certificate Conditions set forth in Appendix C below, wildlife habitat loss or conversion or impacts to vegetation would be minimized. Wildlife use within and adjacent to the Facility ROW is not anticipated to change measurably as a result of construction or operation of the Facility.

65. The Applicants will take all necessary measures consistent with this Joint Proposal, the Proposed Certificate Conditions, the BMP document and the EM&CP, as well as specific

measures described below, to avoid or minimize impacts to TE species and their occupied habitats and RTE plants.

66. The Indiana bat (*Myotis sodalis*) is a Federally- and New York State-endangered species that may be resident within the Hudson River Valley throughout the year. Indiana bats roost in trees and maternity colonies may be associated with a variety of forested community types identified along the overland cable route, including Appalachian oak-hickory, beech-maple mesic, floodplain and hemlock-northern hardwood forests. To the extent roosting trees are identified within the construction corridor, any impacts to these trees will be avoided or minimized.

67. The Karner blue butterfly (*Lycaeides melissa samuelis*) is a Federally and New York State-endangered species occurring in scattered populations in the vicinity of the HVDC Transmission System area in Saratoga and Albany Counties. The species is highly specialized on the larval host plant, wild blue lupine (*Lupinus perrenis*). Frosted elfin (*Callophrys irus*) is a State-listed threatened species of butterfly that occurs in the HVDC Transmission System area in Saratoga and Albany Counties. In the upper Hudson River area, it feeds on wild blue lupine associated with pine barrens, oak savannahs, dry oak forests, and disturbed grasslands, such as those that would be within Facility ROW and at airports. As the habitat requirements are similar to the Karner blue butterfly, the two species may co-occur. Areas of potential habitat for the Karner blue butterfly and frosted elfin were identified in the project area by field investigators. A *Karner Blue Butterfly Impact Avoidance and Minimization Report,* which is provided in the Evidentiary Record Exhibit 109, summarizes the routing and construction activities that would be employed to avoid and/or minimize impacts to occupied and potential habitat containing wild blue lupine and nectar patches.

68. Based on the recommended project location and installation and management techniques, as spelled out in settlement documents, installation and operation of the transmission cables is not expected to have any significant impacts on protected terrestrial species.

i. Land Use

69. The overland and underwater design of the Facility is consistent with state policies, Article 42 of the Executive Law entitled: *Waterfront Revitalization of Coastal Areas and Inland Waterways*, and Local Waterfront Revitalization Plans.

70. The Facility will be designed, operated and maintained to limit impacts to the current and planned land uses within the vicinity; Section 2 of the Environmental Assessment (attached here as Exhibit 121) and the Revised and Updated Exhibit 7 of the Application (attached here as Exhibit 115) discuss the planned land uses in further detail. Impacts associated with construction activities are anticipated to be localized and temporary in nature and are not expected to conflict with existing or planned land uses in the vicinity of the Facility.

71. The Facility has been sited and designed to avoid long-term or permanent impacts to all land uses within and adjacent to the construction corridor. The entirety of the Facility is located underwater or underground, except for the specific facility components including various cooling equipment at locations along the Facility ROW and the Converter Station at Astoria, with minimal potential impact to the general public or private property, open space, or any existing or planned land uses.[4] Underwater segments of the Facility are not expected to result in any significant permanent impacts to land or water uses, water-dependent uses, navigation, municipal water intakes, and other coastal uses are not

[4] If Con Edison proceeds with recently announced plans to connect a PAR to NYPA's Astoria 345 kV substation, the Converter Station will also include an above ground structure housing a new four-bay GIS ring bus as described in greater detail in the Report attached hereto as Exhibit 125.

expected to be affected. Along the overland segments of the Route, impacts to land use would be minimized by burying the line within and along existing disturbed railroad and roadway ROW to the extent possible.

72. The majority of the overland segments of the proposed route of the HVDC Transmission System would follow existing CP and CSX railroad ROW, and to a lesser extent NYS Route 22 and other road ROW. Close coordination with the railroad companies, the NYSDOT, and local municipal highway departments during the equipment delivery and construction stages of the Facility would assist in avoiding or minimizing conflict with ongoing operations and uses.

73. In order to bypass the Haverstraw Bay Significant Coastal Fish and Wildlife Habitat, the HVDC Transmission System would cross into Rockland Lake State Park and Stony Point State Historic Site. The cables would traverse these parklands via HDD, so there would be no permanent impacts to the current uses or visual character of these areas. Land use plans and policies, including the New York State Open Space Conservation Plan and local park and recreational area policies, were investigated for the counties, cities, towns, and villages crossed by the overland portion of the HVDC Transmission System. Construction and operation of the overland portion of the line is not expected to have any significant effects on local or regional land use patterns or land use planning because the line will be installed underground and is routed within and along existing disturbed railroad and roadway ROWs to the extent possible.

74. The Astoria-Rainey Cable will be installed for approximately three (3) miles within city streets of the borough of Queens in CNY. Land use adjacent to the Astoria-Rainey Cable is primarily residential, industrial, commercial, and open space. Two parks, one playground and three schools have been identified as being located adjacent to the

proposed route and the route is in the vicinity of other social features such as a library and a senior center. The Applicants' proposed EM&CP would propose measures to be taken to avoid and minimize any adverse land use and traffic impacts.

j. Agricultural

75. The Construction Zone would include approximately 138,040 linear feet of ROW within designated Agricultural Districts. Mapping obtained from the Cornell Institute for Resource Information Sciences indicates that the Construction Zone would cross Agricultural Districts for an estimated 46,690 linear feet in Washington County, 47,640 linear feet in Saratoga County, 660 linear feet in Schenectady County, 20,560 linear feet in Albany County and 22,490 linear feet in Greene County. The Facility would not cross Agricultural Districts in Rockland, Westchester, Queens or New York counties.

76. For the overland portion of the HVDC Transmission System, cables would be installed primarily within existing railroad or roadway ROW. If construction activities require that work occur on agricultural lands outside of the railroad ROW, Proposed Certificate Conditions 78 and 79 would require that appropriate mitigation measures be applied to maintain agricultural viability of agricultural soils, and that an "Agricultural Inspector" be available to provide site-specific agricultural information as necessary for development of the proposed EM&CP, and to serve as a contact with affected farmers and County Soil and Water Conservation Districts concerning farm resources and management matters pertinent to the agricultural operations. During construction, potential effects on adjacent agricultural land would be minimized by limiting impacts such as vegetation clearing and ground disturbance to the Construction Zone.

k. Visibility from Areas of Public View

77. The Facility has been sited and designed to minimize impacts on visual and aesthetic resources. The transmission cables would be installed underwater in existing waterways or buried along existing railroad, utility or roadway ROW, or installed via trenchless technology. This approach would minimize the visual and landscape impacts associated with traditional overhead transmission lines or conventional underground facilities sited on new ROW. Tree clearing for facility construction may result in changes to local views. Adverse impacts at locations due to clearing at areas with identified public interest (including parks, heritage resource sites, and residential areas) will be minimized by implementing tree protection measures and appropriate arboricultural standards, and use of landscape planting in select locations.

78. The only permanent above-ground components associated with the Facility would be line markers, warning signs at navigable waterways, cooling units and the Converter Station. Line markers will not be obtrusive as sited along existing corridors, and warning signs at the banks of navigable waterway crossings would be located in areas where visual contrasts are minimized due to existing shoreline development and visual sensitivity is low. Since the setting of the proposed Converter Station is dominated by existing utility infrastructure, and the immediate environment surrounding the proposed location of the Converter Station is predominantly industrial and commercial in nature, the Converter Station would not be out of character with existing land use and would not redefine the nature of the view. Views toward the Converter Station site from nearby residential areas are dominated by the expanse of existing utility infrastructure. Most of the Converter Station's elements would be enclosed within buildings which are within a scale similar to existing facilities adjoining the site at Astoria.

79. Although there would be no significant permanent visual impacts outside of the proposed Converter Station, there would be temporary visual impacts during construction. The majority of visual impacts would be caused by the large equipment necessary for construction both on-land and in-water, which would be seen along the Route for a limited amount of time, as well as any stormwater and erosion controls, such as silt fences, hay bales, and temporary mulching, etc. Once construction is completed, all equipment would be removed and the impacted areas will be re-seeded. Temporary erosion controls would be removed once revegetation is established.

80. The vegetative characteristics within the Construction Zone would change temporarily during the construction phase of the Facility. Existing vegetation that serves as a buffer in visually sensitive areas, such as the NYS Route 22 Lakes to Locks Scenic Byway, the Mohawk River – Erie Barge Canal, scenic areas, and viewpoints would be maintained where the vegetation does not interfere with the integrity of the cables or safe installation of the Facility. The Applicants' proposed EM&CP would include an analysis and rationale for construction affecting forest cover areas rather than utilizing existing cleared roadside areas within these areas. In situations where vegetation clearing is necessary for safe and proper installation of the Facility within visually sensitive areas, the vegetation clearing methods to minimize impacts would be detailed in the EM&CP and performed in accordance with the BMPs set forth in Appendix F below. Vegetative buffers in visually sensitive areas would be identified during restoration for landscape plantings as appropriate, except where replacement would inhibit or impair the safe operation of the cables.

l. Cultural and Historic Resources

81. A Pre-Phase 1A cultural resources screen report and a Phase 1A cultural resource investigation for the HVDC Transmission System route was submitted in April and September of 2010, respectively. The reports presented an assessment of the archeological sensitivity and potential for the prospective area of potential effects ("APE") for both the HVDC Transmission System and the Astoria Rainey Cable. Phase 1B field work was also completed for a portion of the overland route. A Phase 1B investigation for the remainder of the Route would be completed prior to construction. Route modifications or other mitigation would be made, as necessary, to avoid, minimize or mitigate impacts to any sensitive areas identified, as appropriate. No construction would occur in areas that have not been surveyed or where surveys have not been provided to the OPRHP and DPS Staff.

82. An aquatic route survey was conducted in the Spring of 2010, which included a geophysical survey employing a side-scan sonar and magnetometer data collection (Exhibit 31). The Lake Champlain Maritime Museum reviewed this geographical data for the Hudson River collected by the NYSDEC and its contractors, and the Phase 1A Cultural study, to create a list of potential submerged cultural resources in the transmission corridor. The Report discussing the sensitive submerged archeological resources is annexed to this Joint Proposal as Exhibit 19. The Applicants and DPS Staff have maintained contact and consultation with the OPRHP Historic Resources Bureau in accordance with Parks, Recreational and Historic Preservation Law §14.09 during the review of the Route. General provisions for resource evaluation, avoidance and impact minimization have been developed, and additional detailed analysis, planning and mitigation design will be detailed in a Cultural Resource Management Plan to be

developed in further consultation with the New York State Historic Preservation Office ("NYSHPO") and DPS Staff (and other consulting parties in the pending National Historic Preservation Act Section 106 project review for necessary federal licenses). Details of cultural and heritage resource site avoidance and protection measures will be addressed as appropriate in the EM&CP. Proposed Certificate Conditions address appropriate requirements to preclude construction in areas where cultural resource evaluations have not been concluded, to require implementation of appropriate resource protection measures, and to address unanticipated resource discoveries during Facility construction, including cultural artifacts and the handling of human remains.

m. Transportation

83. Because the electric cables comprising the Facility would be located entirely overland or under water, or attached to existing railroad bridges, no permanent impacts on transportation are expected. Where the proposed cable route intersects with planned or ongoing transportation infrastructure improvements, cable design, installation methods and installation schedule have been planned to accommodate those transportation facilities. The Converter Station would be designed to meet the substantive requirements of the local height ordinances to avoid impacts to air traffic.

84. Impacts to railroads associated with the installation of the HVDC Transmission System are anticipated to be minor, temporary, and localized. Equipment delivery and installation stages will be closely coordinated with the railroad companies to avoid or minimize conflicts with on-going railroad operations. Active rail lines will be crossed using trenchless methods, not by open cut trenching. Once installed, the HVDC Transmission System will be buried within the railroad ROW and have no effect on railroad operations. At locations of long HDD bores, it may be necessary to install small,

above-grade cooling units at the edge of the railroad ROW or within the railroad ROW but these will be sufficiently far from the railroad tracks so that they will not impact railroad operations.

85. Impacts to roadways associated with the installation of the Facility are anticipated to be minor, temporary, and localized. Use of roadways for the delivery of oversized loads would be minimized by the use of rail and water transportation where feasible. In the event that transportation of oversize loads by road is required, Applicants have agreed to comply with all NYSDOT requirements and, for construction within the CNY, all applicable CNY requirements as well. The routing, construction schedule and traffic control plans of the Facility will mitigate direct traffic impacts and indirect effects of construction on transportation facilities and adjacent land uses.

86. Where New York State highway ROW is to be occupied, all work will be performed in accordance with applicable regulations and standards, including 17 N.Y.C.R.R. Part 131 covering Accommodation of Utilities within State highway ROW, the applicable design standards of the *American Association of State Highway and Transportation Officials*, and NYSDOT's *Requirements for the Design and Construction of Underground Utility Installations within the State Highway Right-of-Way, Manual of Uniform Traffic Control Devices*, the *Highway Design Manual, and the Requirements for the Design and Construction of Underground Utility Installations* with the State highway ROW. Highway Work Permits will be obtained for any work in, on, under, or over State highway ROW, which includes areas and facilities such as shoulders, guiderails, clear zones, vegetated areas, slopes, and drainage facilities in addition to the paved roadway.

87. During construction of the Facility, minor and temporary impacts to existing infrastructure are possible where these features will be crossed by the cable route. Where

installation of the proposed Facility will occur within a road or highway ROW, the jurisdictional municipality or regulatory agency will be contacted to ensure appropriate protection and safety measures are employed. Where in-road work will be extensive enough to require detours or road closings, a *Maintenance and Protection of Traffic Plan* will be completed in consultation with all affected agencies prior to the start of construction.

88. Impacts to commercial and recreational use of navigable waterways during the construction phase are expected to be minor and temporary. During construction, the presence and operation of the cable installation vessels will create elevated noise levels and additional traffic on these waterways. All work activities will be closely coordinated with the USACE, the United States Coast Guard ("USCG"), federal, state, and local agencies and other local pilot associations, as determined to be necessary to minimize or avoid impacts. A Notice to Mariners or similar notification will be issued prior to any in-water work, as will notice to each affected municipality. Work activities in the vicinity of the Harlem River rail bridge will also be coordinated with the railroad to minimize disruption of rail traffic.

n. Noise

89. Construction noise associated with the installation of the overland transmission lines, Converter Station and transformer substation will be temporary in nature and impact will vary according to the construction equipment in use and existing background or ambient noise at given times and locations. Residents and businesses could be temporarily affected by noise from construction activities associated with the installation of the overland segments of the cables and the Converter Station. No residence will be exposed to significant noise levels for an extended period. Underwater noise from the operation

of vessels and installation of cables could impact certain aquatic organisms, although these impacts should be temporary and localized. The Applicants have requested that the Commission refuse to apply local noise ordinances during the construction phase of the Facility outside of CNY as provided in the Proposed Certificate Condition 32 (Appendix C). Appropriate noise control measures are included in the construction and mitigation control measures agreed to be applied during facility construction. Measures to apply at residential areas and other noise sensitive locations include: public outreach, appropriate work hour/work operation restrictions, temporary sound barriers, employment of equipment fitted with sound deadening materials, selection of low noise equipment and procedures, and other noise reduction work methods or devices as determined appropriate for the locale and tasks.

o. Communications

90. Both HVAC and HVDC power cables are designed with outer metal layers at ground potential and create no external electric field. The direct current magnetic field of the cables would not induce voltages or currents into communications equipment, including but not limited to marine radios, remote telephones, and cell phones. The cables, therefore, would not create any corona discharge and are not independent sources of radio, telephone, or television interference.

91. All electronic equipment associated with the construction and operation of the Converter Station located outside the valve halls, including communication cables and wires, would be in compliance with CISPR 11 (Comite International Special des Perturbations Radioelectriques, International Special Committee on Radio Interference, under IEC International Electro-technical Commission). This standard is considered to be equivalent

to the Federal Communications Commission ("FCC") part 15. The substation will also comply with IEC61000-6-1.

p. Electric and Magnetic Fields

92. The Signatory Parties believe that ensuring that the operation of the Facility complies with the interim electrostatic field standard (1.6 kV/m at the edge of the Facility ROW, measured at one meter above ground) established by the Commission in Opinion No. 78-13 (issued on June 19, 1978 in Cases 26529 and 26559) and the limit for magnetic fields (200 milliGauss ("mG") at the edge of the Facility ROW, measured one meter above ground) set in the Statement of Interim Policy on Magnetic Fields of Major Electric Transmission Facilities (issued on September 11, 1990 in Cases 26529 and 26559) calls for an appropriate Certificate Condition, which is contained in Appendix C hereof. The Signatory Parties believe, however, that the Commission standards and limit will be met: (1) in the case of the portions of the Facility that consist of HVAC facilities, because the values at the edge of the Facility ROW are below the 1.6 kV/m standard and the 200 mG limit, respectively; and, (2) in the case of the portion of the Facility that consists of HVDC facilities, because the electrostatic field associated with buried facilities is almost nonexistent and the difference between the magnetic field at the edge of the Facility ROW and at a distance of one hundred (100) feet from such edge (in order to differentiate between the earth's magnetic field and that of the DC facilities) is less than the 200 mG limit.

93. Since these transmission cables will be shielded, buried or covered with protective measures, the magnitudes of the electric field levels are expected to be inconsequential. In the water, the sheathing and insulation around the cables and the surrounding earth and

water will screen the electric field produced by the cables. On land, the soils covering the facility will screen the electric field to inconsequential levels.

94. The magnetic field levels were calculated using the C3CORONA, Version 3 software developed by the Bonneville Power Administration and the U.S. Department of Energy at three (3) locations: CP Railroad, over Lake Champlain, and over the Hudson River. For the CP Railroad calculation, the estimate assumed two cables would be buried to a depth of three and a quarter (3.25) feet. Calculated magnetic field levels at one meter above the ground were below two hundred (200) mG for the CP Railroad location at the centerline when the cables were touching (cable separation of 0.34 feet), at four (4) feet from the centerline when the cables are separated by one (1) foot, and at eleven (11) feet from the centerline when the cables were separated by three (3) feet.

95. The C3CORONA model also calculated that the expected magnetic field levels over Lake Champlain and the Hudson River were 0.4 mG and 44.6 mG, respectively, at the water's surface over the centerline under the assumption that the cables were separated by six (6) feet and buried to a depth of three (3) feet. This range is comparable to the expected magnetic field of a household appliance and considerably less than the earth's magnetic field (~470 to 590 mG). Therefore, there are no expected long term electromagnetic field ("EMF") exposure issues along Lake Champlain, the Hudson River, the Harlem River and the East River.

96. Magnetic field levels were also calculated at the riverbed of the Hudson River under the assumption that the cables would be installed vertically within the same trench to a planned depth of six (6) feet. Where the cables are laid vertically into a single trench, the maximum magnetic field deviation from background magnetic field if the cables are in a north/south orientation is calculated to be 26.2 mG at ten (10) feet from the centerline at

one (1) foot above the riverbed or lakebed. The magnetic field associated with the cables lessens as the distance horizontally and vertically from the centerline increases.

97. Modeling of compass deflection at an underwater cable burial depth of six (6) feet was also performed. At one (1) foot over the centerline, the maximum compass deflection is 21.3 degrees for the vertical installation. At ten (10) feet horizontally from the centerline, the maximum compass deflection is less than three (3) degrees at one (1) foot above the river bed where the cables are laid vertically on top of one another. Similar results were reported where the cables were laid horizontally (side-by-side) at a burial depth of six (6) feet so that, even if sediment conditions were such that the top cable "slid" off of the other, it would not significantly alter the information conveyed to aquatic organisms by the geomagnetic field. In terms of navigation, as the cables are outside of the designated navigation channel (where vessel traffic will be heaviest), the impact of the expected compass deflection is anticipated to be minimal.

98. Impacts to fish species from magnetic fields associated with the HVDC Transmission System's cables are not expected to be significant. Migratory species coordinate and make use of multiple cues to navigate and the magnetic field of the cables will accentuate or attenuate the magnetic field of the earth in a constant fashion along a narrow band of river bottom. Available literature indicates that there would be no adverse effects on egg or larval development, based on the expected magnetic fields associated with the HVDC Transmission System's cables. In addition, as a percentage of the overall spawning area, the area potentially affected by the weak magnetic field produced by the HVDC Transmission System is small and therefore would not have any significant effects on the total number of eggs and larvae present during spawning.

E. Availability and Impact of Alternatives

99. The Application and exhibits to be supplied for the record describe the availability and impact of alternatives to the Facility and are summarized below. Considering all the factors, the Signatory Parties agree that the Facility, as located and configured in this Joint Proposal is preferable, on balance, to any of the alternatives considered.

a. Alternative Technologies

100. The Applicants assessed several alternative cable technologies and determined that crossed-linked polyethylene ("XLPE") HVDC cables were the preferred technology for the following reasons. The use of solid dielectric cables means that no insulating or dielectric cooling fluids are required and there is no risk of a leak causing a fluid spill or sheen in the water. The XLPE cables that would be installed in the water are made up of several layers consisting of a conductor, polyethylene insulation, a copper sheath, outer covering and metallic armoring, which serve to reduce the electric field. A similar analysis was conducted for the Astoria Rainey Cable and the XLPE HVAC cables were the preferred technology. The advantages of the XLPE HVAC cables included off-the-shelf availability in diameters that would allow for a long-term emergency rating of approximately 1,000 MVA and elimination of any potential for dielectric fluid loss. For detailed information on XLPE cables see Exhibit 122 attached hereto.

b. Alternative Routes

101. The Signatory Parties considered and rejected various alternative routes for the Facility. The siting of the Route was developed through evaluations of various alternative landfall locations and overland routes, as well as through consultation with the Energy Subcommittee of the Harbor Safety, Operations, and Navigation Committee; the USACE and the USCG for underwater routes. Four (4) alternative routes for the Astoria Rainey

Cable were considered and rejected in favor of the route proposed for that line. Each of these routes was rejected in its entirety by the Signatory Parties due to presence of CNY infrastructure, engineering challenges, additional construction costs, and additional environmental impacts.

102. Three alternative landfalls and overland route segments in proximity to lower Lake Champlain were considered and rejected in favor of the Route, including: (1) the Putnam Station Route, which would exit the waters of Lake Champlain in Putnam, New York and utilize residential roads and NYS Route 22 to reach Whitehall, New York; (2) the Ticonderoga Route, which proposed three potential exit points that would allow for use of NYS Route 22 to connect to Whitehall, New York; and (3) within the South Lake to Whitehall (as proposed in the Application). The alternatives analysis, provided as Exhibit 86, concluded that the environmental impacts associated with the first two (2) alternates did not appear to be significantly different from those identified with the landfall location in Dresden, New York, but that they would require a longer upland construction period, resulting in more disruption to the environment and the community. Whitehall was not selected as the favored landfall point due to concerns about water quality impacts between Dresden and Whitehall.

103. Four (4) alternative routes in proximity to the Hudson, Harlem and East Rivers were considered and rejected in favor of the Route: the route proposed in the March 2010 Original Application; the Hudson River Western Rail Line and Harlem River Rail routes presented by DPS Staff on October 27, 2010; and an overland segment from Poughkeepsie, New York on NYS Route 9 south to Peekskill Bay and into the Hudson River. Each of these routes was rejected in its entirety by the Signatory Parties due to engineering challenges, additional construction costs, and additional environmental

impacts. The alternatives analysis provided as Exhibit 86 demonstrated that there were no feasible alternatives to locating the HVDC Transmission System in the Hudson River between Cementon and Haverstraw Bay.

104. The Original Application also provided an evaluation of the potential to utilize existing utility ROW from Montreal, Canada to New York City, New York. These alternatives were determined to be infeasible due to cost, routing complexity, private property access, and acquisition and construction access.

105. The preferred route as presented in this Joint Proposal was determined to be the best suited for the Facility, since it provides an appropriate balance among the various state interests, and it represents the minimum adverse environmental impact, considering the state of available technology, the nature and economics of the studied alternatives and other pertinent considerations.

c. Alternative Locations for Converter Station

106. Multiple converter station locations were considered by the Signatory Parties. These alternatives included: three locations in Brooklyn in proximity to the Gowanus 345 kV substation; a property on Wells Avenue in Yonkers, New York; the Harlem River Rail Yard in the Bronx Borough of CNY; and a parcel owned by Consolidated Edison on the northern bank of Luyster Creek in the Astoria neighborhood of the Borough of Queens in New York City. The area near Con Edison's Rainey substation was reviewed and no location of sufficient size to site the converter station was identified. The Brooklyn sites were rejected as being too distant from the preferred Point of Interconnection at the Astoria 345 kV substation. The Bronx site is owned by NYSDOT, which has declined to make that site available to Applicants. The Astoria site is superior to the Yonkers site due to environmental and cost benefits. The Yonkers site would require installation of 11

miles of double circuit three-phase 345 kV circuits through the Hudson and Harlem Rivers in two trenches with a separation distance of 33 feet to deliver the Facility's energy to Astoria. The Astoria site would also require less disruption to existing land uses as it is on a parcel which has historically been utilized for utility-related purposes. The signatory parties agree that the overall environmental impacts would be reduced by the selection of the Astoria site and that the operation of a Converter Station would be consistent with the existing uses of the Astoria site and with the planned use of the site to the extent such plans are publicly available. A detailed review of these alternatives is contained in Exhibit 108.

d. Alternative Methods to Fulfill Energy Requirements

107. The Facility is expected to deliver electricity produced by wind and hydroelectric generation in Canada, displacing other, typically gas-fired, generation in and around CNY. Based on this expectation, DPS Staff performed an analysis comparing the cost of 1000 MW of Canadian hydroelectric power delivered to CNY via the Facility to the cost of building and operating 1,000 MW of combined cycle gas-fired turbine ("CCGT") generation of similar capacity located in CNY.

108. Because the Project is expected to be financed on a merchant basis, the difference between the estimated costs of these two supply options should not be interpreted as ratepayer benefits. To the extent that prices for electricity are determined by the long run cost of constructing and operating new CCGT capacity, these production cost savings will be captured by the Applicants, their financial backers and/or the users of the Facility.

109. Future developments may provide higher or lower-cost alternatives than those assumed by DPS Staff, causing the difference in cost between these two supply alternatives to differ from DPS Staff's estimates. DPS Staff provides this long-term production cost

comparison solely as a preliminary estimate of one important component of societal benefits – total production costs – to assist the Commission in deciding whether the facilities proposed in this case can be expected to yield net societal benefits.

110. For the capital cost of the HVDC Transmission System, DPS Staff assumed $2.0 billion, as in Exhibit 111. DPS Staff assumed annual operating costs for the HVDC Transmission System of $14.7 million per year, producing a 35 year Net Present Value ("NPV") of $0.2 billion. For the amount of energy to be delivered by the Facility, DPS Staff relied upon a report prepared by London Economics International ("LEI") for the Applicants, filed with the July 22, 2010 Article VII Application supplement. LEI assumed that the Facility would deliver 7640 GWh per year, representing an approximately 87% capacity factor. To be consistent with the LEI analysis, DPS Staff assumed that sufficient new hydroelectric resources would be developed to supply 7640 GWh per year of energy to CNY.

111. For the cost of the Facility's energy supply, DPS Staff used public information regarding the cost of new hydroelectric supply in Quebec. Specifically, HydroQuebec's 2009 Annual Report indicated that one project (Eastmain/La Sarcelle) could provide 8700 GWh of energy annually beginning in 2012 at a cost of $5 billion (Canadian), and another project (Romaine) could deliver 8000 GWh of energy annually beginning in 2014 at a cost of $6.5 billion (Canadian). Based on this, DPS Staff estimated that the cost of new dams to provide 7640 GWh of energy per year to CNY would be approximately $6.7 billion in 2015 (adjusting for exchange rate, inflation, and line losses).

112. For the cost of the alternative resource, DPS Staff relied on an estimate of the cost of a new 547 MW CCGT plant in CNY prepared by the NYISO and filed with the FERC on March 29, 2011 in Docket ER11-2224; see Attachment V (Affidavit of Christopher

Ungate), p. 12. DPS Staff scaled this up and adjusted for inflation, leading to an estimated cost of $2.0 billion for 1000 MW of CCGT capacity in 2015.

113. For the cost of energy from the CCGT, DPS Staff relied on recent forecasts of natural gas prices at Henry Hub, from the Department of Energy's Energy Information Administration ("EIA"). Gas prices were adjusted for gas transportation costs based on the historical difference between Henry Hub and CNY gas prices. The EIA's 2010 Annual Energy Outlook forecasted a Henry Hub gas price of $7.02 per MMBtu (million metric British thermal units) in 2015. However, EIA's 2011 Annual Energy Outlook forecasted a lower Henry Hub gas price of $5.17 per MMBtu in 2015, based on a greater anticipated supply of "shale gas" using hydro-fracturing. DPS Staff used these two EIA forecasts as "high" and "low" gas price scenarios. DPS Staff estimated energy costs based on the CNY price of natural gas multiplied by the "heat rate" of 7079 Btu per kWh, reflecting the average of summer and winter heat rates estimated by NYISO for a new CCGT plant. Energy costs escalate with the forecasted gas prices.

114. For variable operating and maintenance ("O&M") expenses, DPS Staff relied on an estimate of $6/MWh (in 2015) for CCGTs, from p. 79 of the LEI study prepared for Applicants. This value is comparable to the variable O&M expenses for gas-fired turbines prepared by National Economic Research Associates ("NERA") for the NYISO (see *Independent Study to Establish Parameters of the ICAP Demand Curve for the New York Independent System Operator,* September 3, 2010, p. 99, provided here as Exhibit 124). Based on this information, DPS Staff estimated annual variable O&M costs of approximately $46M per year for 7640 GWh of energy in 2015. DPS Staff assumed these costs would increase post-2015 at the average rate of inflation, forecast at 2.1%.

115. For fixed O&M expenses, DPS Staff relied on the NYISO March 29, 2011 filing referenced above. The NYISO estimated the fixed operating costs of a CCGT plant to be approximately $120 per kW-year in 2011, including labor, materials, overhead, site leasing, property taxes (without abatement), and insurance. At Applicants' request, property taxes were excluded from this analysis on the ground that such taxes would be transfer payments and would not represent economic costs. After removing property tax expenses, DPS Staff estimated annual fixed O&M costs of a 1000 MW CCGT to be approximately $34 million per year in 2015. DPS Staff assumed these annual costs would escalate with inflation.

116. DPS Staff combined these fuel and non-fuel operating costs, and then computed the NPV in 2015 of the stream of operating costs for 35 years of operation (consistent with the project's financing). The use of separate high and low gas price forecasts yielded a range of operating costs. For the NPV discount rate, DPS Staff employed the Commission-approved discount rate of 5.5% (real); combined with the forecasted inflation rate of 2.1%, this implies a nominal discount rate of 7.72% (i.e. 1.055x1.021 – 1 = .0772). This resulted in a range of NPV operating costs over a 35 year period of approximately $8.3 to $10.3 billion NPV. Thus the uncertainty in gas price forecasts leads to an uncertainty of almost $2 billion in NPV operating costs for the alternative energy source.

117. Finally, DPS Staff addressed the "deliverability" issues surrounding the Astoria Point of Interconnection. Astoria is the site of numerous generation plants and has limited transmission interconnections to CNY's bulk (345 kV) transmission system. The Astoria site includes 345kV transmission lines that formerly delivered power from the now-retired 890 MW Poletti plant, providing a potential outlet for Applicants' energy. However, the Astoria Energy II ("AE2") project currently uses approximately 550 MW

of that capacity. The Astoria-Rainey Cable will provide sufficient energy deliverability to permit both AE2 and the HVDC Transmission System to deliver all or substantially all of their electric output into Con Edison's 345 kV transmission system on a simultaneous basis, assuming the implementation of appropriate operational or other measures. Please see Siemens-PTI Inc.'s Study and Summary of Energy Deliverability Report provided here as Exhibit 123. However, these upgrades alone will not be sufficient to enable Applicants to qualify to supply a full 1,000 MW of Capacity Resource Interconnection Service ("CRIS") due to constraints elsewhere on Con Edison's 345 kV system. DPS Staff assumed that the alternative resource (1,000 MW of CCGT generation in CNY) could interconnect elsewhere on Con Edison's 345 kV system, and therefore avoid the cost of the Astoria-Rainey Cable. However, the alternative resource would face comparable limitations on CRIS rights, due to constraints elsewhere on Con Edison's 345 kV system, as explained by the Siemens Deliverability Analysis provided by the Applicants. As a result, DPS Staff agreed that the additional costs to achieve full capacity deliverability (beyond the cost of the Astoria-Rainey Cable) would be incurred by both the Facility and the alternative, and therefore cancel out in the net benefit analysis.

118. DPS Staff estimated the long-term production cost savings of the Facility as the cost of the Facility plus the cost of the hydropower (dams), less the cost of the combined cycle plant and the present value of the plant's fuel and other operating and maintenance costs. Over a 35-year period, the savings (NPV) ranged from approximately $1.2 billion to $3.2 billion in 2015.

119. Applicants have reviewed the DPS Staff's analysis described above and would note that it does not purport to be a complete analysis of all social costs associated with

construction of a new 1,000 MW CCGT in CNY. Applicants contend that a complete social cost analysis would also include the external costs imposed on society of the far greater physical footprint of a CCGT plant (including required oil storage tanks) compared to the CHPEI Converter Station in CNY's crowded urban environment, and by the release of the oxides of nitrogen, carbon dioxide and waste heat produced by such a facility. Other social costs that would need to be included to complete this analysis of social costs would include the costs imposed by the release of air pollution and greenhouse gasses by the natural gas pipelines and production fields that would supply such a plant, including not only the sulfur dioxide, oxides of nitrogen and carbon dioxide released by pipeline converter stations, but also the release of substantial quantities of methane, a potent greenhouse gas, in natural gas production and transmission.

120. Moreover, Applicants indicate that such a generating facility would consume substantial quantities of natural gas, which unlike the wind and water resources that will supply CHPEI is a finite resource that is an essential fuel for home heating in some parts of the country and may not be easy to replace. To the extent that the plant would be required to operate on oil to meet applicable in-city reliability requirements, Applicants note that the environmental impacts associated with fuel supply would be correspondingly greater.

121. Applicants acknowledge that quantifying all of these social costs would be extremely difficult, if not impossible. Thus, while DPS Staff's analysis of certain of the social benefits of the Facility is useful as a sensitivity analysis suggesting that the Facility can be expected to provide net social benefits even under a very stringent set of assumptions, Applicants do not believe that this analysis can be regarded as a measure of the actual benefits of the Facility, to society as a whole which may be considerably higher than the production cost savings calculated by DPS Staff.

122. The Signatory Parties agree that the "no build" alternative is not the preferred option in this proceeding, as it would result in a less desirable balance of economic and environmental benefits compared to adverse environmental impacts than would the construction and operation of the Facility. Moreover, because the HVDC Transmission System is being developed on a merchant basis rather than at ratepayer expense, the Facility should be viewed as a complement to the Commission's public policy objectives to promote renewable generation facilities, reduce environmental impacts, such as air pollution, and increase fuel diversity.[5]

123. The Signatory Parties have also concluded that conservation and distributed generation cannot be considered to be effective alternatives to the Facility. Unlike the HVDC Transmission System, which is being developed on a merchant basis without the need for ratepayer funding, both conservation and distributed generation are unlikely to significantly increase in CNY without Commission assistance. The Commission may pursue funding for projects in order to achieve whatever benefits they can provide in addition to the Facility.

F. Overland Considerations

124. The Facility as proposed would be located entirely underground or under water, except for the specific facility components including various cooling equipment at locations along the Facility ROW, and the Converter Station at Astoria. See Exhibit 117 for a list of cooling equipment at locations along the Facility ROW.

[5] *See* Executive Order 111 - Directing State Agencies To Be More Energy Efficient And Environmentally Aware "Green And Clean State Buildings And Vehicles" (issued by Governor George Pataki on June 30, 2001 and continued by Governor Eliot Spitzer on January 1, 2007 and by Governor David Paterson on March 20, 2008), and Executive Order 24 – Establishing a Goal to Reduce Greenhouse Gas Emissions Eighty Percent by the year 2050 and Preparing a Climate Action Plan (issued by Governor David Paterson August 6, 2009).

G. Conformance to Long-Range Plans for Expanding the Electric Grid

125. The Facility is consistent with the most recent State Energy Plan, which establishes as a policy objective that the state of New York will support energy systems that enable the state to significantly reduce greenhouse gas emissions.[6] In furtherance of this goal, the Renewable Portfolio Standard ("RPS") goal was increased from twenty five (25) percent to thirty (30) percent on January 8, 2010.[7] The New York State Energy Plan states that an increase in renewable energy will require additional transmission in New York.[8] Not all of the electricity delivered by the Facility will meet the exacting standards of New York's RPS program. However, because wind and hydro resources already represent ninety-four (94) percent of the electricity power generation in the Hydro-Québec control area, and because Hydro-Québec has no plans to interconnect any additional generation resources other than wind, hydro, and other renewable resources,[9] Applicants anticipate that at least ninety-four (94) percent of the power will come from hydroelectric and/or wind resources that will not contribute to greenhouse gas emissions.

126. The Facility is also consistent with CNY's own PlaNYC, in which the CNY recognized that providing CNY residents with increased access to renewable energy supplies will

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[6] *See* Energy Infrastructure Issue Brief, New York State Energy Plan 2009 (December 2009), p. 9, *available at* http://www.nysenergyplan.com/2009stateenergyplan.html.

[7] *Id.* at 15, 25.

[8] *Id.* at 1.

[9] Wind and hydro resources already represent ninety-four (94) percent of the power generation in the Hydro-Québec control area. Hydro-Québec, Annual Report 2010, p. 3 (2011). *Available at* http://www.hydroquebec.com/publications/en/annual_report/pdf/rapport-annuel-2010.pdf. Applicants contacted Hydro-Québec which has informed the Applicants that the sources of remaining 6% are imports from the neighboring control areas and diesel generation connected to certain isolated distribution systems operated by Hydro-Quebec in remote portions of the Province of the Québec.

simultaneously reduce electricity prices, local air pollution, and greenhouse gas emissions in the CNY[10].

H. System Reliability Impact Studies

127. A System Reliability Impact Study ("SRIS") for the interconnection of the HVDC Transmission System at NYPA's 345 kV bus located at Astoria has been completed by the NYISO. The study shows that the HVDC Transmission System can be connected to the New York State Bulk Power System ("NYSBPS") without adversely affecting reliability. The Applicants have not yet executed a study agreement for a NYISO Class Year Study. That study will determine the additional system upgrades needed to allow the HVDC Transmission System to connect to the NYSBPS as an energy resource and may also determine the additional system upgrades required for the HVDC Transmission System to qualify as a capacity resource to the extent that Applicants request Capacity Resource Interconnection Service. The NYISO stated: "Subsequent to the 7/29/10 [Transmission Planning Advisory Subcommittee] review and recommendation for [Operating Committee] approval of the Astoria [Optional Interconnection Study ("OIS")] #2 study report for [Certificate Holders'] HVDC Transmission Project #305, the NYISO informed [Certificate Holders] that [Long Term Emergency ("LTE")] rather than [Short Term Emergency ("STE")] ratings should have been used in the study for the two Astoria-E13th Street Q35L & Q35M cable circuits owned by NYPA. If LTE ratings were used in the OIS #2 study for the two Astoria-E13th Street Q35L & Q35M cable circuits, loss of one of the two cables would have caused the remaining cable circuit to exceed its LTE rating of 621 MVA but there would have been no significant adverse impact on the reliability of the New York State Transmission System. To avoid the

[10] *See* PlaNYC (2007), pp. 112-117, *available at* http://www.nyc.gov/html/planyc2030/html/theplan/the-plan.shtml.

overload beyond LTE, some form of mitigation would be required, which could include automatically tripping the entire 1,000 MW output of the HVDC Transmission System upon the loss of either cable circuit, automatically running back (virtually instantaneously) the HVDC Transmission System to 621 MW upon the loss of either cable circuit, or requesting an exception to exceed the LTE rating up to the STE rating and reducing the HVDC Transmission System output to 621 MW within 15 minutes following the loss of either cable circuit. A determination will be made in the future as to which option to pursue to prevent an overload of either of these cable circuits (NYISO Review of the Optional Interconnection Study-2 for Transmission Developers, HVDC Astoria Project Interconnection Queue #305 Report dated March 3, 2011, Draft March 9, 2011)." However, the Signatory Parties note that each of these alternatives would require approval by NYISO or other applicable authorities other than the Commission before it is known whether they can be implemented.

I. State and Local Laws

128. Applicants will comply with the substantive provisions of each applicable state statute and regulation, including the NYS Coastal Management Program and Article 42 of the Executive Law entitled: *Waterfront Revitalization of Coastal Areas and Inland Waterways*. By way of example, Applicants will comply with the substantive requirements of the statutes and regulations cited in Paragraphs 16-20 of the Proposed Certificate Conditions.

129. Applicants agree to obtain required proprietary permits/consents/authorizations before the start of construction. In addition, Applicants will obtain Commission approval of all required Municipal consents under PSL § 68.

130. The Revised and Updated Exhibit 7 provided as Exhibit 115 identifies, for each required municipality in which the Facility will be located, all potentially applicable local laws and regulations issued thereunder, as well as every such local legal provision that Applicants requested in such exhibit that the Commission refuse to apply because, as applied to the Facility, such local legal provision is unreasonably restrictive in view of the existing technology, factors of cost or economics, or the needs of consumers.

131. Except for those provisions of local laws identified in the Revised and Updated Exhibit 7 provided as Exhibit 115, that Applicants specifically requested that the Commission refuse to apply, Applicants will comply with, and the location of the Facility as proposed conforms to, all substantive local legal provisions applicable thereto.

132. A Certificate Condition contained in Appendix C hereof provides that the Applicants will apply for specified CNY permits, subject to the Commission's ongoing jurisdiction.

133. To the degree that the subject matter of the *New York State Uniform Fire Prevention and Building Code and the Energy Conservation Construction Code* apply to the Facility, Applicants agree to undergo building plan review and obtain building permits, inspections, and certificates of occupancy, as appropriate, upon the inspection and completion of construction from the CNY Department of Building. The Signatory Parties agree that if Applicants follow such a course of action, the record in this proceeding supports a finding under PSL § 126(1)(f) that the Facility is designed to operate in compliance with applicable state laws, and regulations issued there under, concerning the *New York State Uniform Fire Prevention and Building Code and the Energy Conservation Construction* Code. A Certificate Condition in Appendix C hereof implements the Applicants' agreement.

J. Public Interest, Convenience and Necessity

134. The benefits of the Facility fall into three principal categories: (a) reduced wholesale market prices in CNY, Long Island and the lower Hudson Valley; (b) reduced air emissions in those areas; and (c) increased reliability of the Bulk Power System in CNY.

a. Wholesale Energy Price Savings

135. The Applicants and DPS Staff forecast the potential reduction in wholesale market prices, using different electricity production cost computer models and comparing the effects under a scenario with the Facility, to a scenario without the Facility, assuming no other changes to electricity supply or demand as a result of lower prices. These forecasts, therefore, do not address how long these savings could be expected to last, since they neglect potential supply and demand responses to lower prices resulting from the Facility.

136. The Facility is expected to benefit NYS by reducing wholesale electric energy prices in CNY, Long Island and the lower Hudson Valley. In a report filed with the July 22, 2010 Article VII Application supplement, LEI initially estimated that the wholesale energy market price benefits of the Facility would range from $684 million per year to $904 million per year on average over a ten year period, with an expected average savings of $813.5 million per year for the New York Control Area as a whole ("NYCA").

137. In January 2011, DPS Staff also prepared estimates of the wholesale energy market price savings resulting from the Facility, which showed a lower level of savings. Specifically, DPS Staff's analysis performed using the GE MAPS model and the input database from the 2009 State Energy Plan placed the cost savings for a single test year (2018) between $405 and $720 million.

138. Working collaboratively, Applicants and DPS Staff identified several reasons for the difference between the LEI and DPS Staff results. LEI updated its analysis incorporating

study changes as described in LEI's Report of the 2018 Test Year Modeling Analysis provided to the parties in settlement discussions on January 18, 2011 and provided as Exhibit 88.

139. The results of DPS Staff's GE MAPS study and LEI's updated analysis are similar, as shown in Figure 1 below:

Figure 1. Comparison of wholesale energy market benefits of the Facility for NYCA in 2018 ($ millions)

	Wholesale Energy Market Benefit ($ millions)
DPS Staff estimate	$405 - $720
LEI Updated wholesale energy market benefit with CHPEI @ 75%- 90%	$554 - $654

These studies also demonstrate that, in addition to the benefits to the NYCA noted above, the Facility could also reduce wholesale market prices in neighboring control areas.

140. Given the substantial difference between the computer models of the operation of the NYSBPS used by LEI and DPS Staff, and the differences in other assumptions underlying the forecasts, the similarity of results between these two studies clearly shows that the Facility will result in substantial reductions in wholesale energy prices.

b. Environmental Benefits

141. These studies also indicated that the Facility would result in environmental benefits by reducing the emissions of SO_2, NO_X, and CO_2 due to the displacement of electric power that would have otherwise been generated by burning fuel in power plants. A comparison of the estimates of annual environmental benefits as predicted by LEI and by DPS Staff using the GE MAPS program for calendar year 2018 is presented in Figure 2 below:

Figure 2. Comparison of emissions reductions of the Facility for NYCA in 2018

Emissions Reductions	SO_2 (tons)	NO_X (tons)	CO_2 (tons)
DPS Staff estimate	499 - 828	748 - 1,432	1.5-2.2 million
LEI Updated emissions reduction benefit with CHPEI @ 75%- 90%	454 – 571	952-1,114	2.5-2.9 million

Here, too, the similarity between the results produced by the very different modeling approaches used by LEI and DPS Staff suggest that these are reasonable estimates of the reductions in emissions of these pollutants resulting from the Facility.

142. DPS Staff revisited its analysis in July 2011 to address concerns that benefits might be significantly reduced from earlier estimates as a result of energy deliverability concerns. To address these, Applicants undertook additional analyses that resulted in the proposal to construct and operate the Astoria-Rainey Cable. In addition, Applicants are also pursuing implementation of the Operational Measures. As described in paragraph 117 above, these measures could allow Applicants and the new gas-fired AE2 combined cycle unit to simultaneously deliver their respective energy to Con Edison's 345 kV system. Although the benefits of this increased capability have not been quantified, the expectation is that both the economic and air emissions benefits should be greater than the estimates provided by LEI and DPS Staff for the Applicant's original proposal. Further, it should be noted, however, that as it was completing its July 2011 analysis addressing energy deliverability concerns, DPS Staff became aware of recent significant changes in environmental regulations that are expected to impose much more stringent emissions limits for SO_2 and NO_x in the near future. First, revisions to the NYSDEC NO_x

Reasonably Available Control Technology ("RACT") regulations include lower NO_x emission rate standards. Second, on July 6, 2011, the USEPA finalized its proposed Clean Air Transport Rule as the Cross State Air Pollution Rule ("CSAPR"), requiring more aggressive reductions in SO_2 and NO_x emissions on an accelerated basis. While these requirements may reduce air pollutant emissions from older existing generators and thereby reduce the air quality benefits of the Facility to some extent, the Signatory Parties agree that the air quality benefits of the Facility are expected to remain substantial.

143. The Signatory Parties agree that the "no build" alternative could potentially result in the loss in annual wholesale market price savings in the range of $405-$720 million and associated reductions in emissions of SO_2, NO_x, and CO_2 due to displacement of electricity that would otherwise be generated by burning fossil fuels.

144. The Signatory Parties have agreed upon the establishment of the Hudson River and Lake Champlain Habitat Enhancement, Restoration, and Research/Habitat Improvement Project Trust (the "Trust"), as detailed at Proposed Certificate Condition 165 in Appendix C, to be used exclusively for in-water mitigation studies and projects that have a direct nexus to the construction and operation of the Facility. The Signatory Parties have participated in extensive discussions to develop a variety of studies and projects that will minimize, mitigate, study and/or compensate for the short-term adverse aquatic impacts and potential long-term aquatic impacts and risks to these water bodies from construction and operation of the Facility.

145. NYSDOS and the following parties signing this Joint Proposal, without reservation, have agreed to serve on the Governance Committee of the Trust:

(1) Champlain Hudson Power Express, Inc. and CHPE Properties, Inc;

(2) DPS;

(3) DEC;

(4) CNY;

(5) APA;

(6) Trout Unlimited;

(7) Scenic Hudson; and

(8) Riverkeeper.

146. Within sixty (60) days after the execution of the Joint Proposal, DPS staff will convene a meeting of the Governance Committee. The Governance Committee shall have final decision-making authority over the Trust and will develop internal rules and procedures which shall establish:

(a) the organization and administration of the Trust;

(b) the operations of the Committee including assistance with the implementation of the Priority Projects as defined in Proposed Certificate Condition 165 in Appendix C and making final determinations regarding other projects proposed to be funded through the remainder of the Trust; and

(c) all other necessary and appropriate tasks including the development of a schedule for future committee meetings.

Provided however that the Governance Committee shall have no authority to authorize the expenditure of any money or the making of any legally enforceable commitment(s) by the Trust prior to the date of Applicants initial endowment of the Trust as provided in Proposed Certificate Condition 165 in Appendix C.

147. Technical sub-committees consisting of interested signatories to the Joint Proposal and interested state and federal resource agencies with permitting authority or other jurisdiction over the Facility will be convened by the Governance Committee after the

Governance Committee's first meeting to provide scientific and technical advice, support and recommendations. The technical sub-committees will evaluate and assist with the implementation of the projects approved for funding.

c. Reliability Benefits

148. Due to the highly controllable nature of the HVDC Transmission System, the Facility will provide the NYSBPS with a number of benefits that can be expected to increase overall system reliability. These benefits include fast voltage control, and the ability to energize at a lower voltage level when required. In addition, the output of the HVDC Transmission System is controllable so that system operators can match load and generation, at morning pick up, during system emergencies, normal operation, etc. This HVDC Transmission System provides another source into the Con Edison control area. The HVDC Transmission System is isolated and prevents system disturbances from the Hydro-Quebec system propagating into New York, likewise, disturbances in New York cannot propagate into the Hydro-Quebec system.

d. Other Considerations

149. The Facility is not expected to have any adverse impacts on public safety or on public lands, as it would be located almost entirely underground or under water, and the Proposed Certificate Conditions dealing with construction would minimize both the impacts on the public and the safety issues associated with the construction and maintenance of the Facility. In addition, the portions of the Facility's overland route would be subject to taxation by the municipalities in which they would be located.

IV. PROPOSED FINDINGS

150. The Signatory Parties agree that the record in this proceeding enables the Commission to make the findings required in connection with the construction and operation of an

electric transmission line that are set forth in PSL §126(1)(a), (b), (c), (d)(1) and(2), (f) and (g).

V. PROPOSED CERTIFICATE CONDITIONS

151. The Signatory Parties agree that the proposed Certificate Conditions set forth in Appendix C hereto are acceptable and appropriate for inclusion in a Certificate of Environmental Compatibility and Public Need authorizing construction and operation of the Facility as proposed herein.

VI. ENVIRONMENTAL MANAGEMENT AND CONSTRUCTION PLAN GUIDELINES

152. The Signatory Parties agree that the BMPs and the EM&CP Guidelines set forth in Appendices G and F hereto are acceptable and appropriate for application to the Facility as proposed herein.

VII. WATER QUALITY CERTIFICATION

153. The Signatory Parties agree that the record in this proceeding supports the proposed WQC set forth in Appendix D hereto. On the date that the executed Joint Proposal was filed, the Applicants also filed a request that the Commission issue a WQC, pursuant to § 401 of the Federal Clean Water Act ("CWA"), for activities associated with construction of the Facility. The CWA requires a federal permit to discharge dredged or fill material into "navigable waters" (33 U.S.C. §§ 1311(a) and 1342(a)) and requires an applicant for a federal permit to provide a certification from the State that the discharge will comply with State water quality standards. Given the ministerial nature of the Commission's decisions to grant a WQC (in that, whether issued before or after an Article VII Certificate, such WQC must be consistent with any such certificate), as well as the normal sixty (60) day period for granting the certifications established in federal rules [33

C.F.R. §325.2(b)(1)(ii)] (which period may be extended for up to one year) after which a waiver will be deemed to occur, the Commission delegated responsibility for granting a WQC in connection with Article VII certificates to the Director of the Office of Energy Efficiency and the Environment. As requested by the Applicants, the Director should issue the WQC on or before the 60th day after the filing of this request to avoid waiver of such certification, unless DPS Staff has provided information to the USACE indicating that circumstances require a period of time longer than sixty (60) days (up to one year).

[SIGNATURE PAGES FOLLOW AT THE END OF THE DOCUMENT]

APPENDIX A - LIST OF TESTIMONY AND EXHIBITS TO BE ADMITTED

Testimony:

Direct testimony of Samantha Hard, Julia Frayer, Joshua Brown, Sean Murphy, Laurence E. Perkins, Carl Erik Opsahl, Alan Prior, Laura Lefebvre, Ronald A. Alveras, Robert Quiggle, Jack Wu, Kenneth Cormier, Judith Bartos, and Anthony Agresti sponsoring Exhibits 1 through 9 (Exhibits 1 through 9 to the application in this proceeding (the "Application") and Exhibits 10-15 (Exhibits E1 through E-6 to the Application).

In addition to the Original Application that was submitted on March 30, 2010, the Applicants filed the "Supplement to the Article VII Application by CHPEI" document on July 22, 2010 ("Supplement"). Julia Frayer, Joshua Brown, Samantha Hard, Judy Bartos, Anthony Agresti, Sarah Zappala, Laurence Perkins, and Alan Prior sponsored Attachments A through M of the Supplement.

Applicants also listed several reports that were shared with the parties during the settlement negotiations.

JOINT PROPOSAL Exhibit List

Exhibit 1: General Information Regarding Application (Exhibit 1 to the Application)

Exhibit 2: Location of Facilities (Exhibit 2 to the Application)

Exhibit 3: Alternatives Analysis (Exhibit 3 to the Application)

Exhibit 4: Environmental Impacts (Exhibit 4 to the Application)

Exhibit 5: Design Drawings (Exhibit 5 to the Application)

Exhibit 6: Local Economic Effects (Exhibit 6 to the Application)

Exhibit 7: Local Ordinance Review (Exhibit 7 to the Application)

Exhibit 8: Other Pending Filings (Exhibit 8 to the Application)

Exhibit 9: Cost of Proposed Facilities (Exhibit 9 to the Application)

Exhibit 10: Description of Proposed Transmission Lines (Exhibit E-1 to the Application)

Exhibit 11: Other Facilities (Exhibit E-2 to the Application)

Exhibit 12: Underground Construction (Exhibit E-3 to the Application)

Exhibit 13: Engineering Justification (Exhibit E-4 to the Application)

Exhibit 14: Effects on Communication (Exhibit E-5 to the Application)

Exhibit 15: Effect on Transportation (Exhibit E-6 to the Application)

Exhibit 16: Agency Consultation (Appendix B to the Application)

Exhibit 17: Wetland Delineation Report (Appendix C to the Application)

Exhibit 18: Historic Sediment Sampling Location (Appendix D to the Application)

Exhibit 19**: Historic and Archeological Resource Mapping and Tables (Appendix E to the Application)

Exhibit 20: LEI Projected Energy Market and Emissions Impact Analysis Report (Appendix F to the Application)

Exhibit 21: Nexans Cable System Study Report (Appendix G to the Application)

Exhibit 22: Electric and Magnetic Fields Report (Appendix H to the Application)

Exhibit 23: Appendix A: Data Gaps and Deficiencies (Appendix A to the Supplement filed on July 29, 2010)

Exhibit 24: Appendix B: Requests for Additional Information (Appendix B to the Supplement)

Exhibit 25: Appendix C: Response to NYSDEC Comments (Appendix C to the Supplement)

Exhibit 26: Appendix D: Revised Project Description / Updated Facility Description and Resources (Appendix D to the Supplement)

Exhibit 27: Projected Energy Market, Capacity Market and Emissions Impact Analysis of the Champlain-Hudson Power Express Transmission Project for New York (Attachment A to the Supplement)

Exhibit 28: Revised Wetland Delineation Report (Attachment B to the Supplement)

Exhibit 29: Visual Assessment Report (Attachment C to the Supplement)

Exhibit 30: Noise Assessment Report (Attachment D to the Supplement)

Exhibit 31: Marine Survey Report (Attachment E to the Supplement)

Exhibit 32: Updated Ecological Mapping (Attachment F of the Supplement)

Exhibit 33: Threatened and Endangered Species Consultations (Attachment G of the Supplement)

Exhibit 34: Updated Design Drawings (Attachment H of the Supplement)

Exhibit 35: Revision of Exhibit 7 Local Ordinance Review (Attachment I of the Supplement)

Exhibit 36: Exhibit 9: Cost of Proposed Facility Supplemental (Attachment J of the Supplement)

Exhibit 37: Revision of Exhibit E-2 Other Facilities (Attachment K of the Supplement)

Exhibit 38**: Draft SRIS Report (Attachment L of the Supplement)

Exhibit 39: Revised Electric and Magnetic Fields Report (Attachment M of the Supplement)

Exhibit 40: Certificates of Service (Attachment N of the Supplement)

Exhibit 41: HVDC Classic Reference List (Attachment O of the Supplement)

Exhibit 42: Aquatic Sampling and Analysis Plan (Attachment P of the Supplement)

Exhibit 43: Supplemental Alternatives Analysis (Attachment Q of the Supplement)

Exhibit 44: List of Recreational Trails and Public Recreational Areas along Underwater Transmission Cable Route (Attachment R of the Supplement)

Exhibit 45: FOIL Letters sent to Public Drinking Water Systems (Attachment S of the Supplement)

Exhibit 46: Estimate Tax Impacts (Rough Estimates Only) (Attachment T of the Supplement)

Exhibit 47: Flood Insurance Maps (Attachment U of the Supplement)

Exhibit 48: State, County, and Municipal Land Use Plans, Comprehensive Plans and Master Plans; Local Laws, Codes, and Zoning Ordinances (Attachment V of the Supplement)

Exhibit 49: Replacement Maps (Attachment W of the Supplement)

Exhibit 50**: Feasibility Study Report (NYISO Queue #305) (Attachment X of the Supplement)

Exhibit 51: Consultations with Transportation Agencies (Attachment Y of the Supplement)

Exhibit 52: Public Notices (Attachment Z of the Supplement)

Exhibit 53: Public Information Plan (Attachment AA of the Supplement)

Exhibit 54: Filing with Federal Energy Regulatory Commission (Attachment AB of the Supplement)

Exhibit 55: National and State Heritage Areas, State Heritage Trails (Attachment AC of the Supplement)

Exhibit 56: Letter to Commission, dated August 6, 2010

Exhibit 57: Design Drawings (Attachment A to August 6, 2010 letter)

Exhibit 58: Updated Exhibit 7 (Attachment B to August 6, 2010 letter)

Exhibit 59: Letter to Commission, dated August 11, 2010

Exhibit 60: Design Drawings (Attachment to August 11, 2010 letter)

Exhibit 61: Response to Visual Assessment Information Needs Request (Attachment to August 11, 2010 letter)

Exhibit 62: Certificates of Service (Attachment to August 11, 2010 letter)

Exhibit 63: DPS-1 through DPS-190[11]

Exhibit 64: NYSDEC-1 through NYSDEC-6

Exhibit 65: APA-1 through APA-9

Exhibit 66: CHG-1 through CHG-17

Exhibit 67: COW-1 through COW-6

Exhibit 68: Entergy-1 through Entergy-2

Exhibit 69: IBEW-1 through IBEW-11

Exhibit 70: IPPNY-1 through IPPNY-39[12]

Exhibit 71: NYPA-1 through NYPA-12

Exhibit 72: NYSTA/CC-1 through NYSTA/CC-9

Exhibit 73: OPRHP-1 through OPRHP-3

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[11] DPS-130 does not exist.

[12] IPPNY 36-39 do not include responses.

Exhibit 74: RVK-1 through RVK-12

Exhibit 75: ADKC-1 and ADKC-2

Exhibit 76: APA Informal-1 through APA Informal-2

Exhibit 77: NYSDEC Informal-1

Exhibit 78: DOS Informal

Exhibit 79: NYSDOT Informal-1 through NYSDOT Informal-5

Exhibit 80: RVK Informal-1

Exhibit 81: Informal IRs received verbally during the Settlement Conferences (Informal -1 through Informal-5)[13]

Exhibit 82: DPS Informal-1 through DPS Informal-23[14]

Exhibit 83: COY-1 through COY-14

Exhibit 84: Lake Champlain Water Quality Modeling (October, 2010)

Exhibit 85: Hudson, Harlem and East River Water Quality Modeling (October, 2010)

Exhibit 86: Champlain Hudson Power Express Project – Updated Alternatives Analysis (submitted on November 5, 2010)

Exhibit 87: Applicants' Letter to New York State Department of State regarding Updated Alternatives Analysis (January 18, 2011)

Exhibit 88 LEI Memo on the Results of the 2018 Test Year Modeling Analysis (distributed January 24, 2011)

Exhibit 89: Technical Review Report by ESS, submitted by Riverkeeper, Inc. and Scenic Hudson (January 21, 2011)

Exhibit 90: Revised Lake Champlain Water Quality Report with Shear Plow (January, 2011)

Exhibit 91: Letter to New York State Department of State (dated February 4, 2011)

Exhibit 92: Letter to New York State Department of State (dated February 18, 2011)

Exhibit 93: Harlem Rail Yard Layout Map (submitted on February 23, 2011)

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[13] Informal-4 does not exist.

[14] DPS Informal-16 does not exist.

Exhibit 94: Cultural Resources Analysis of Underwater Remote Sensing Data for Champlain Hudson Power Express dated February 22, 2011 and Revised Cultural Analysis Report dated August 09, 2011

Exhibit 95: Typical Construction Spreads along Route 22 (submitted on February 23, 2011)

Exhibit 96: Ballston Spa Alternative (submitted on February 23, 2011)

Exhibit 97: Routing Map for Erie Boulevard, City of Schenectady (submitted on February 24, 2011)

Exhibit 98: Route Reconfiguration in Lake Champlain: Environmental Impacts (submitted on (February 28, 2011)

Exhibit 99: Certificate of Service on Additional Municipalities (submitted on March 4, 2011)

Exhibit 100: Applicants' Letter to New York State Department of State, dated March 18, 2011

Exhibit 101: Applicants' Response to New York State Department of Public Service review of ESS Report (submitted on 4/15/2011).

Exhibit 102: Description of Protected Areas within Hudson River (submitted April 29, 2011)

Exhibit 103 Memorandum from Exponent Inc on Effect of Bolt-on Split Pipe on DC Magnetic Field Levels, dated March 15, 2011

Exhibit 104: Meeting notes for meeting with Energy Subcommittee of the Harbor Operations Safety and Navigation Committee held on March 16, 2011 (submitted on March 28, 2011)

Exhibit 105: Upland Deviation Zone Report (submitted on May 20, 2011)

Exhibit 106: Fidelity Title Review (submitted on May 3, 2011)

Exhibit 107: Revised Noise Assessment Report (June 2011)

Exhibit 108: Comparative Analysis of Converter Station Sites (Yonkers, Astoria and Harlem River Yard Sites) (submitted on April 20, 2011, revised on February 6, 2012)

Exhibit 109: Karner Blue Butterfly (*Lycaeides Melissa samuelis*) Impact Avoidance and Minimization Report (submitted on June 17, 2011) and *confidential maps.* **

Exhibit 110: Amendment to Visual Assessment Report: Projected Converter Station in Astoria, NY. (June 16, 2011)

Exhibit 111: Revised Construction Cost of the Project (submitted on April 29, 2011)

Exhibit 112: CHPEI- 1 through CHPEI-14

Exhibit 113: IBEW Informal-1

Exhibit 114: CECONY-1 through CECONY-22, CECONY Informal-1 and 2, and CECONY to NYPA-1[15]

Exhibit 115: Revised and Updated Exhibit 7 to the Application (submitted on July 14, 2011), along with all local laws cited therein

Exhibit 116: Revised Electric and Magnetic Fields Report (July 2011)

Exhibit 117: List of cooling equipment at locations along the ROW

Exhibit 118: Lake Champlain Burial Depth Update (submitted October 26, 2011)

Exhibit 119: Revised Electric and Magnetic Fields Report for HVAC Cable

Exhibit 120: Revised Alternatives Analysis for Astoria-Rainey Cable (Revised February 7, 2012)

Exhibit 121: Revised Environmental Impacts assessment (February 7, 2012)

Exhibit 122: Report to the Parties regarding cable types (February 9, 2012)

Exhibit 123: Siemens PTI – TDI's Merchant CHPEI Transmission Project with POI at Astoria (NYISO Queue # 305 Deliverability Analysis)

Exhibit 124: Independent Study to Establish Parameters of the ICAP Demand Curve for the New York Independent System Operator, September 3, 2010, Revised September 7, 2010 and November 15, 2010

Exhibit 125: Applicants' Report to Parties regarding Con Edison's Proposed Local Transmission Plan (February 14, 2012)

Appendix B: Description of the Facilities and Maps***
Appendix C: Proposed Certificate Conditions and Monitoring Reports***
Appendix D: Water Quality Certification***
Appendix E: EM&CP Guidelines***
Appendix F: Best Management Practices***

**Confidential Document – Document was only filed with the ALJs.
*** Included in the DVD, "Joint Proposal of Settlement Exhibits," dated February 24, 2012.

[15] CECONY 20-22, and CECONY Informal 1 and 2 do not include responses.

CASE 10-T-0139 – Joint Proposal

IN WITNESS WHEREOF, the Parties hereto this day signed and executed this Joint Proposal.

Champlain Hudson Power Express, Inc.
By:
Donald Jessome
President and CEO

DATE: 2/14, 2012

CASE 10-T-0139 – Joint Proposal

IN WITNESS WHEREOF, the Parties hereto this day signed and executed this Joint Proposal.

CHPE Properties, Inc.
By:
Donald Jessome
President and CEO

DATE: 2/14, 2012

CASE 10-T-0139 – Joint Proposal

IN WITNESS WHEREOF, the Parties hereto this day signed and executed this Joint Proposal.

Staff of the New York State Department
of Public Service
By:
Steven Blow
Assistant Counsel

CASE 10-T-0139 – Joint Proposal

IN WITNESS WHEREOF, the Parties hereto this day signed and executed this Joint Proposal.

New York State Department of
Environmental Conservation
By:
Patricia Desnoyers
Office of General Counsel

DATE: February 24, 2012

CASE 10-T-0139 – Joint Proposal

IN WITNESS WHEREOF, the Parties hereto this day signed and executed this Joint Proposal.

Cesar A. Perales
Secretary of State
New York State Department of State

Dated: February 23, 2012

CASE 10-T-0139 – Joint Proposal

IN WITNESS WHEREOF, the Parties hereto this day signed and executed this Joint Proposal.

New York State Department of
Transportation*
By:
Robert L. Sack, P.E.
Director
Operations Division

DATE: February 17, 2012

* The New York State Department of Transportation is signing this Joint Proposal in support of only those provisions thereof that address issues related to the use and protection of the highways, roads, streets, or avenues and other transportation facilities that are owned by, operated by or under the jurisdiction of the New York State Department of Transportation.

CASE 10-T-0139 – Joint Proposal

IN WITNESS WHEREOF, the Parties hereto this day signed and executed this Joint Proposal.

Terry deFranco Martino

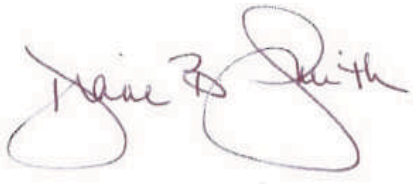
New York State Adirondack Park Agency
By:
Terry deFranco Martino
Executive Director

DATE: 2-23-2012

CASE 10-T-0139 – Joint Proposal

The Department of Agriculture and Markets' endorsement of this Joint Proposal and the supporting documents is limited to those terms and conditions that impact agricultural resources.

IN WITNESS WHEREOF, the Parties hereto this day signed and executed this Joint Proposal.



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New York State Department of Agriculture
and Markets
By:
Diane Smith
Associate Attorney

DATE: February 23, 2012

CASE 10-T-0139 – Joint Proposal

IN WITNESS WHEREOF, the Parties hereto this day signed and executed this Joint Proposal.

Riverkeeper
By:
Paul Gallay
President and Hudson Riverkeeper

CASE 10-T-0139 – Joint Proposal

IN WITNESS WHEREOF, the Parties hereto this day signed and executed this Joint Proposal.

Scenic Hudson
By:
Ned Sullivan
President

CASE 10-T-0139 – Joint Proposal

IN WITNESS WHEREOF, the Parties hereto this day signed and executed this Joint Proposal.

City of Yonkers
By:
Bryan D. Duroy
Assistant Corporation Counsel

DATE: February 23, 2012
Yonkers, New York

CASE 10-T-0139 – Joint Proposal

IN WITNESS WHEREOF, the Parties hereto this day signed and executed this Joint Proposal.

William A Wellman

New York State Council of Trout Unlimited
By:
William Wellman
Region 5 Vice President

DATED: 2/13/12

CASE 10-T-0139 – Joint Proposal

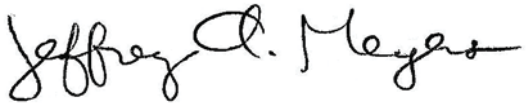
IN WITNESS WHEREOF, the Parties hereto this day signed and executed this Joint Proposal.

City of New York
By:
Sergej Mahnovski
Director of Energy Policy
Office of the Mayor

DATE: 2-23-2012

CASE 10-T-0139 – Joint Proposal

IN WITNESS WHEREOF, the Parties hereto this day signed and executed this Joint Proposal.



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New York State Office of Parks, Recreation
& Historic Preservation and the
Palisades Interstate Park Commission
By:
Meyers Jeffrey
Associate Attorney

DATE: February 24, 2012