Exhibit 5

Design Drawings

HUDSON TRANSMISSION PARTNERS, LLC

THE HUDSON PROJECT

EXHIBIT 5 – DESIGN DRAWINGS

PREPARED PURSUANT TO SECTION 86.6

EXHIBIT 5– DESIGN DRAWINGS

Project location maps for the Project are presented in Exhibit 2, Location of Facilities. Design drawings related to the transmission line can be found in Exhibits E-1, Description of Proposed Transmission Line and E-3, Underground Construction. Drawings for the transition vault can be found in Exhibit E-2, Other Facilities.

Copyright © ESS Group, Inc., 2008

Exhibit 6

Economic Effects of Proposed Facility

HUDSON TRANSMISSION PARTNERS, LLC

THE HUDSON PROJECT

EXHIBIT 6 – ECONOMIC EFFECTS OF PROPOSED FACILITY

PREPARED PURSUANT TO SECTION 86.7

TABLE OF CONTENTS

SECTION **PAGE**

APPENDICES

EXHIBIT 6 – ECONOMIC EFFECTS OF PROPOSED FACILITY

6.1 Effects on Energy Supply and Prices

The purpose of the Hudson Transmission Project is to meet the New York Power Authority's (NYPA) need for new sources of capacity and energy as described in its March 11, 2005 Request for Proposals (RFP) for Long-Term Supply of In-City Unforced Capacity and Optional Energy. The goal of the RFP was "to solicit generation and transmission capacity to assist the NYPA to meet the needs of its customers at prices that are economical, stable and predictable over the long-run," through a number of requested products.

Specifically, the Project addresses the NYPA request for up to 500 megawatts of Unforced Capacity Delivery Rights ("UDRs"), supplied through firm transmission capacity from other power markets to Zone J.

In November 2006, NYPA announced its selection of the Hudson Project as "a significant milestone for reliable, economic, and clean electricity service in New York City, and for diversifying its energy mix." See Appendix 6-1 (NYPA news release of Nov. 28, 2006).

The Project will provide a new source of capacity and energy for NYPA's New York City customers from the PJM system at costs that are expected to be significantly lower than if the capacity and energy were to be provided by new, in-city generating resources. At the same time, the Project will help supplant the resources lost through the expected near-term retirements of one or more older, less efficient, and less environmentally benign generating plants.

6.1.1 Forecast of Power Needs

The Project will materially help meet the power needs of New York City (Zone J) in the 2010-2015 time period. According to the "System Reliability Assurance Study" prepared by Consolidated Edison Company of New York, Inc. ("Con Edison") dated December 30, 2005, the need for net additional resources to meet New York City energy demand will grow to 578 MW by 2015. In terms of total Peak Load Forecast, Con Edison makes the following "base case" estimates for Zone J load growth:

Year	Base Case Peak Load (MW)	High Growth Peak Load (MW)
2010	12,090	12,393
2011	12,217	12,562
2012	12,294	12,677
2013	12,426	12,847
2014	12,559	13,016
2015	12,648	13,142

(Con Edison notes that its "base case" projection for 2011-2015 is higher by about 30 MW than NYISO's Zone J forecast for the same period.)

6.1.2 Declining In-City Resources

At the same time that peak load is projected to grow, available resources inside Zone J are projected to decline. To meet reliability requirements, Con Edison must have available total

Copyright © ESS Group, Inc., 2008

capacity equal to 118% of peak load, or 14,266 MW in 2010 to meet Base Case projections. Of this total, 80% must be "in-city" capacity. Beyond 2010, however, Con Edison shows available in-city capacity declining to approximately 76% of the forecast resource requirements in 2015 in the Base Case.

Because capacity delivered via the Hudson Transmission Project can qualify as in-city capacity, the Project's ability to provide an additional 660 MW of such capacity will play a significant role in helping Zone J to meet its reliability reserve and in-city resource requirements.

6.1.3 Replacing Inefficient Resources and Reducing Greenhouse Gases

The City of New York has issued a comprehensive plan (known as "PlaNYC: A Greener, Greater New York") that focuses on five key areas – land, air, water, energy, and transportation – intended to "help ensure a higher quality of life" for New York City residents by 2030. The plan forecasts that New York City power demand and emissions of pollutants from power generation (including carbon dioxide) will increase in a "business as usual" scenario, while wholesale power prices are likely to increase from around $80/MWh in 2010 to as much as $150/MWh in 2030. The plan further identifies the need to displace older, inefficient power plants in order to reduce power prices and carbon dioxide emissions, pointing out that older, less efficient, more costly oil and gas-fired power plants tend to be "marginal cost producers" that set the power price in the New York electricity market, with costs that can be more than triple those of the lowest-cost resources, which are "imports" of energy brought into the City via transmission lines. (Source: New York City Economic Development Corporation PowerPoint presentation, "PlaNYC," from NYCEDC website, http://www.nycedc.com/NR/rdonlyres/AE2F1C08-40AC-494D-9EC2-A721381632E7/0/EPTFPlaNYCPresentation.pdf).

PlaNYC also specifically identifies "construction of dedicated transmission lines" linking the City to cleaner energy resources, as part of "Initiative 8" of the Energy section of the plan ("PlaNYC," pp. 100-111; see http://www.nyc.gov/html/planyc2030/html/plan/plan.shtml).

The Hudson Transmission Project will reduce power prices and emissions – the twin goals of PlaNYC - for the benefit of New York City electric consumers and their overall quality of life.

6.2 Other Economic Effects

6.2.1 Long-Term Effects Related to Land Use Patterns

The Project will not affect existing land use patterns in either New York or New Jersey. In New York, the cable will be entirely under water and underground, with only temporary impacts on City streets in a 2 square block area during construction. Once construction is complete, land uses will be unchanged.

In New Jersey, the proposed converter station site is compatible with the existing zoning classification and requirements. The land-based cable will be installed underground primarily via existing railroad rights-of-way, with no permanent impact on existing uses either directly along the route or adjacent land.

Copyright © ESS Group, Inc., 2008

In addition to the energy benefits, the Project will create long-term economic benefits for New York City through taxes, fees, and other payments. In addition, the Project will make payments to New York State for the use of state-owned lands underwater.

6.2.2 Short-Term Effects

The workforce for Project construction in New York City is expected to be recruited from the available labor supply in the surrounding area and will not result in significant relocation of personnel. Payments for labor salaries and wages can be expected to be used in part for personal purchases (food, lodging, fuel, etc.) in the immediate area during the construction period. Some Project-related expenditures for construction activities, materials, and salaries will also provide temporary revenues to the local and state economy through the payment of income and sales taxes.

The Project will not significantly affect housing, roads, community services, or schools in the area.

Copyright © ESS Group, Inc., 2008

Exhibit 7

Local Ordinances

HUDSON TRANSMISSION PARTNERS LLC

THE HUDSON PROJECT

EXHIBIT 7 – LOCAL ORDINANCES

PREPARED PURSUANT TO SECTION 86.8

TABLE OF CONTENTS

SECTION **PAGE**

EXHIBIT 7 – LOCAL ORDINANCES

16 NYCRR § 86.8 requires the applicant to submit a list of local ordinances applicable to the proposed facility.

The local laws listed below include provisions requiring that permits, licenses or other approvals be obtained from NYC authorities. Such requirements are pre-empted by Public Service Law § 130. Hudson Transmission Partners will ask the Public Service Commission to allow it to seek many of these local permits subject to the Pubic Service Commission's oversight.

7.1 Sources of Local Laws

The following laws, policies and regulations were consulted:

- NYC Environmental Quality Review
- NYC Zoning Resolution
- NYC Charter
- NYC Administrative Code
- Rules of the City of New York
- New York City Waterfront Revitalization Program
- PlaNYC

7.2 City Environmental Quality Review

Rules of the City of New York, Titles 5 and 6

§ 5-05 Environmental Review Procedures

The responsible agency for actions involving franchises and revocable consents is defined in the New York City Charter § 362(c), and that agency will determine whether the proposed action requires environmental review.

[Note: Because Article VII facilities are exempt from the State Environmental Quality Review Act, CEQRA likewise will not apply. Any local permits that will be sought by Hudson will be subject to oversight of the Commission.]

7.3 NYC Zoning Resolution

Article IV, Manufacturing District Regulations, Chapter 2, Use Regulations

§ 42-21 Performance Standards Regulating Noise

This section establishes the maximum permissible sound pressure levels in a Manufacturing District. The limit is reduced whenever a Manufacturing District adjoins a Residence District.

Copyright © ESS Group, Inc., 2008

7.4 NYC Charter

§ 364 Revocable consents

The Charter permits NYC to give a revocable consent for a fixed term to any person to construct and use pipes, conduits and tunnels under the City's inalienable property. The use may not interfere with use of the inalienable property for public purposes. A revocable consent may only be granted for a purpose for which a franchise may be necessary under circumstances in which a franchise is not appropriate to the planned use.

§ 1301(2) Powers and duties of the Commissioner (DBS)

Confers on the NYC Department of Business Services the exclusive charge and control over waterfront property and the altering, dredging, and deepening thereof.

§ 2903(b)(5) Powers and duties of the Commissioner (DOT)

Gives the NYCDOT control over the regulation of (1) the use and transmission of electricity in, upon, across, over and under all streets, roads, parks, and public places; and (2) the issuance of permits to use or open a street, including for the purpose of carrying on the business of transmitting, conducting, using and selling electricity.

7.5 NYC Administrative Code

7.5.1 Title 19, Transportation

§ 19-102 Unlawful use or opening of street

Requires any person removing, opening, disturbing the pavement of, or excavating in, a public street, or otherwise obstructing travel on same, to (1) obtain a permit from the NYC Commissioner of Transportation, and (2) conduct any such activity in compliance with § 24-521 of the code.

§ 19-107 Temporary closing of streets

Prohibits the partial or entire closure of a street to pedestrian or vehicular traffic unless a permit is obtained from the commissioner. If the street will be closed for one hundred eighty consecutive days, the commissioner will issue or cause to be issued a community reassessment, impact and amelioration (CRIA) statement before the two hundred tenth day of the closure.

§ 19-108 Display of permit

A copy of any permit issued pursuant to this subchapter must be kept on the site of the opening or use or at the designated field headquarters of the work, and must be presented on demand.

Copyright © ESS Group, Inc., 2008

§ 19-109 Protection at work site

Any party who opens or otherwise disturbs the pavement of or excavates in a public street, or uses any part of same in a manner that obstructs travel, shall provide barriers, shoring, lighting, warning signs or other protective measures in accordance with the rules of the department, and these protective measures shall be maintained according to the rules until the work is completed or the danger removed. Legible signs indicating the names of the permittee, the person for whom the work is being done, and any contractors must be displayed. These protective measures cannot be removed without written consent from either the commissioner or the person superintending the protected work or materials.

§ 19-117 Licensing of vaults

Prohibits the construction of a vault without a license issued by the commissioner pursuant to this section, or a revocable consent issued pursuant to chapter fourteen of the charter and the rules adopted by the commissioner thereto. Vaults must be constructed in satisfaction of the New York City building code. A license does not permit vault construction to extend beyond the line of the sidewalk or curbstone of any street.

§ 19-118 Construction

Requiring that materials used in vault construction conform to the New York City building code. Also requires the outward side of the grating or opening into the street to be either within twelve inches of the outside of the curbstone of the sidewalk, or within twelve inches of the coping of the area in front of the house to which the vault shall belong.

§ 19-119 Vault openings; protection of

Prohibits any person from removing or insecurely fixing, or causing, procuring, suffering, or permitting to be removed or insecurely fixed, so that it can be moved in its bed, any grate or covering or aperture of any vault or chute under any street. But the owner/occupant of the building to which the vault is connected may remove the grate or opening for the vault's proper purpose. If the grate or covering is removed, the opening or aperture must be enclosed with a strongbox or curb at least twelve inches high, firmly and securely made. If the opening of superficial area is more than two square feet, it must be enclosed when opened with strong railings at least three feet high that have been approved by the commissioner. No grate or covering may be removed before sunrise, and must be replaced before one-half hour after sunset.

§ 19-120 Vault covers must afford secure footing

Any vault cover that is broken or presents slippery footing must be replaced if the commissioner so orders.

Copyright © ESS Group, Inc., 2008

§ 19-121 Construction and excavation sites; storage of materials and equipment on street

Requires a permit before any portion of a street may be obstructed with construction materials or equipment. Notwithstanding the permit, sidewalks, gutters, crosswalks and driveways must be kept clear and unobstructed at all times, although the commissioner may authorize the obstruction of a sidewalk with equipment or material such that the safe passage of pedestrians is not interrupted. Additional conditions apply to this permit: the permit must be conspicuously posted; the outer surface of construction material or equipment must be clearly marked with high intensity fluorescent paint, reflectors, or other marking which is capable of producing a warning glow when illuminated; all construction material and equipment must display the name, address and telephone number of the owner; the street under such construction material or equipment must be shielded by wooden planking, skids or other protective covering approved by the commissioner; and construction material or equipment cannot obstruct a fire hydrant, bus stop or any other area as set forth in the rules of the department the obstruction of which would impair the safety or convenience of the public.

§ 19-122 Removal of debris

Requires that any person other than the commissioner of environmental protection or the commissioner of design and construction who paves or causes any street to be paved must remove the sand, dirt, rubbish or debris from such street and every part of it, within seven days after the pavement is completed.

§ 19-137 Land Contour Work

Requires a permit for land contour work including clearing, grubbing, grading, filling or excavating vacant lots and other land areas.

§ 19-144 Issuance of permit to open street within five years after completion of city capital construction project requiring resurfacing or reconstruction of such street

Any person proposing to install facilities in, on or over any street must review the City's capital budget, capital plan and capital commitment plan. No permit to use or open any street will be issued within a five year period within five years after the completion of a capital project relating to such street requiring resurfacing or reconstruction unless the person demonstrates that the need for the work could not have reasonably been anticipated prior to or during such construction.

§ 19-146 Prevention of disturbances of street surface

Requires a permit before any person may (1) fill in or raise, or cause to be filled in or raised, any street or any part thereof, any asphalt or asphalt blocks, concrete, flagstones, turf, stone, gravel, sand, clay or earth from any street.

Copyright © ESS Group, Inc., 2008

§ 19-147 Replacement of pavement and maintenance of street hardware

Requires any person who takes up any pavement, sidewalk, curb or gutter in any street to restore such pavement, sidewalk, curb or gutter to its proper condition to the satisfaction of the commissioner of transportation. Not more than one-third of the total excavation of any excavated rock must be refilled with broken stone in pieces not exceeding six inches in their largest dimension, mingled with clean earth and sand, and restored so as to insure the thorough and compact filling of all spaces. Also, all manhole covers, castings, and other street hardware must be maintained flush with the existing surrounding grade.

§ 19-153 Inspection, testing and repair of electrical-related infrastructure

Applies to electrical-related infrastructure within New York City that is capable of emitting stray voltage. Requires the use of non-conductive protective materials to insulate electrical-related infrastructure, where practicable and appropriate to protect public safety, to prevent stray voltage. Written guidelines and procedures for the annual inspection or testing of electrical-related infrastructure used to provide electrical service must be established and implemented. Every piece of qualifying electrical-related infrastructure (including underground cables) found to emit stray voltage must be repaired or made safe within twenty-four hours of such discovery. The electric corporation must also establish and implement a public educational program designed to inform of how to identify and protect oneself from the dangers of stray voltage.

7.5.2 Title 22, Economic Affairs

§ 22-116 Improvement of water front property; permit required

Requires a permit for any construction or obstacle of any kind to be placed or maintained on water front property that is owned by the City and under the charge and control of the Department of Ports and Trade.

7.5.3 Title 24, Environmental Protection and Utilities

§ 24-104 et seq.

These provisions concern emissions and air pollution. Relevant permits should be provided by the contractors engaged for the Project.

§ 24-218 General prohibitions

Exempts construction devices and activities from the general prohibitions against the making of unreasonable noise.

§ 24-220 Noise mitigation plan

Any entity performing construction work in New York City must adopt and implement a noise mitigation plan for each construction site whenever at least one of the listed construction devices

Copyright © ESS Group, Inc., 2008

is used at the site. No plan filing or approval is necessary if it conforms in all respects to the rules of the department with respect to construction devices and activities.

§ 24-221 Alternative noise mitigation plan

Authorizes the commissioner to approve upon application an alternative noise mitigation plan for a particular construction site that does not strictly comply with the noise mitigation rules.

§ 24-222 After hours and weekend limits on construction work

Limits construction work to weekdays between the hours of 7 a.m. and 6 p.m. Permission to engage in construction work outside these limits may be obtained under § 24-223.

§ 24-224 Construction work without noise mitigation plan unlawful

Where a noise mitigation plan is required, this provision prohibits construction work that does not comply with that plan.

§ 24-227 Construction, exhausts and other devices

Prohibits the use or operation of a construction device or combination of devices in such a way as to create an unreasonable noise.

§ 24-228 Exhausts

Prohibits causing or permitting the discharge into the open air of the exhaust of any device, including but not limited to any steam engine, internal combustion engine, power tools, compressors or turbine engine, so as to create an unreasonable noise.

§ 24-229 Containers and construction material

Prohibits the handling or transportation of any container or construction material on any public right-of-way in such a manner as to create an unreasonable noise.

§ 24-230 Paving breakers

Requires the use of a pneumatic discharge muffler with a paving breaker unless the breaker is operated hydraulically or electrically.

§ 24-404 Permits; excavations in street; gas distribution lines; electrical conductors

Requires the commissioner of transportation to provide written consent before any person can take up the pavement of any street, or excavate, for the purpose of laying any electrical conductors underground.

Copyright © ESS Group, Inc., 2008

§ 24-507 Private sewers and drains

A permit, subject to certain conditions, must be obtained before a person may construct sewers or drains, or to connect to a sewer or drain.

§ 24-509 Construction of sewers

Any sewer or drain must be constructed as prescribed by the Commissioner of Environmental Protection.

§ 24-523 Industrial waste; sewer surcharges

A permit may be required for direct or indirect discharges into the sewer system that do not conform with the characteristics of normal sewage as provided for in this section.

§ 24-405 Permit required

Requires the commissioner of transportation to provide written consent before any person can install any conduits for the use and transmission of electricity.

§ 24-415 Conditions to granting permit for conduit construction; security

The Commissioner of Transportation will grant a permit for conduit construction only if there is an existing demand for the construction, its occupation is reasonably assured, and the public interests require its construction.

7.5.4 Title 26, Housing and Building

§ 26-252 Sidewalk, sheds, fences, railings, etc.

Requires a permit for the construction of any sidewalk shed, fence, railing, footbridge, catch platform, builder's sidewalk shanty, or over-the-sidewalk chute.

7.5.5 Title 27, Construction and Maintenance

§ 27-109 Building matters covered

The New York City building code applies to excavation operations, and to all types of buildings and structures and their appurtenant constructions, including vaults, together with all surface and sub-surface construction within the curb line.

§ 27-131 Acceptance requirements

Sets forth the standards for acceptance of materials regulated by the building code.

§ 27-147 When permits required

Requires a written permit issued by the commissioner before any building construction or alteration work.

Copyright © ESS Group, Inc., 2008

§ 27-316 et seq. Permit Restrictions

Imposes restrictions on permits for construction in special flood hazard areas.

§ 27-909 Permits

Requires a permit from Department of Transportation for drainage systems relating to sidewalk and street openings.

§ 27-1009 General requirements

Requires a contractor engaged in building work to institute and maintain safety measures and provide all equipment or temporary construction necessary to safeguard all persons and property affected by the contractor's operations. Also requires the posting of a sign on each perimeter of a construction site fronting on a public thoroughfare that states the name, address and telephone number of the owner of the property and the name, address and telephone number of the general contractor. A construction site safety coordinator must be designated and present on the construction site.

§ 27-1017 Construction equipment

Requires the location, guarding, shielding, or barricading of all exposed, electrically charged, moving or otherwise dangerous parts of machines and construction equipment. Wires must be located to avoid a tripping hazard. A contractor shed and office located within thirty-feet of new construction or existing buildings shall be made of metal or other noncombustible material.

§ 27-1019 Removal and storage of material

Prohibits the accumulation of combustible waste material or debris. Also requires a party to act to prevent concrete or mortar washings, sand, grit, or any other material that would cause clogging from entering a sewer or drain.

§ 27-1021 Protection of sidewalks

Sets forth the minimum safeguards necessary to protect the public during construction operations, unless the street is officially closed to the public.

§ 27-1023 Warning signs and lights

Requires the use of red flags or signs during daylight hours, and red lanterns, red lights, oil flares, flashing beacons, lighted signs, or equivalent devices from sunset to sunrise, whenever a material pile or other obstruction or excavation or opening is located in, or adjacent to, a way open for use by persons other than workmen. Also requires the control and protection of traffic by barricades, signals, signs, flagmen, or other devices, equipment and personnel whenever any work is performed over, on, or in close proximity to a highway, street, or similar public way.

Copyright © ESS Group, Inc., 2008

§ 27-1028 Excavation or filling operations affecting adjoining property

If an excavation will affect the safety, stability, or usability of adjoining properties or buildings, the adjoining properties or buildings must be protected. The necessary safeguards are set forth in § 27-1031.

§ 27-1032 Protection of sides of excavations

Provides detailed requirements for the shoring and bracing of sides of excavations, as well as the construction of a guardrail. All excavated material and superimposed loads must be placed away from the edge of the excavation no less than a distance equal to one and one-half times the depth of the excavation, subject to certain exceptions.

§ 27-3002 Purpose

Applies the electrical code to the business of installing wiring for electrical light, heat, power, signaling, communication, alarm or data transmission in New York City.

§ 27-4010 Hazardous industries

Prohibits any person from conducting a hazardous or dangerous industry, trade, occupation or business requiring the storage or use of any explosive, flammable, combustible or otherwise dangerous substance without a permit.

§ 27-4010 Hazardous industries

A permit is required to conduct a hazardous or dangerous industry, trade, occupation, or business, requiring the storage or use of any explosive, flammable, combustible or other dangerous substance.

§ 27-4011 Permits

Requires a permit for the storage, use or transportation of any combustible, flammable or explosive article.

§ 27-4057 Transportation and delivery

Establishes the requirements and permit conditions for the transportation, delivery, and use of petroleum, shale oil, the liquid products of either, or of coal tar.

§ 27-4060 Lubricating oils

A permit for the transportation, storage, or use of machine, lubricating or other heavy oils is only required for quantities exceeding seventy gallons.

Copyright © ESS Group, Inc., 2008

§ 27-4102 Blow-pipes

Requires permit and certificate of fitness prior to operating a blowpipe or other similar device or apparatus, and using oxygen in combination with a combustible gas in or through a blow-pipe or similar device.

7.6 Rules of the City of New York

7.6.1 Title 1, Department of Buildings

§ 1-01 Material and Equipment Application Procedures

A party must obtain approval from the Commissioner of the Department of Buildings for any materials which in their use are regulated by the Building Code.

§ 5-01 Conveyance by Pumping Methods

This provision sets forth the physical qualities necessary for concrete used in construction.

§ 34-01 Phase-in of New Standards for Electrical Work

All electrical work must be performed in accordance with the electrical code technical standards.

7.6.2 Title 2, Board of Standards and Appeals

§ 3-02 Alteration, Repair, Excavation foro and Demolition of Buildings

The Administrative Building Code and Labor Law applies to all construction, including excavation.

7.6.3 Title 3, Fire Department

§ 8-02 Storage and Use of Cable Oils with a Flashpoint Over 300oF

A permit from the Fire Commissioner is required to either store or use cable oils with a flashpoint exceeding 300oF in quantities greater than seventy gallons.

§ 20-01 Storage and Use of Flammable and Combustible Liquids and Mixtures

A permit is required for the general storage and use of any flammable and combustible liquids or mixtures.

§ 32-01 Manufacture, Storage and Use of Pressurized Products

A permit is required under certain circumstances for the manufacture, storage and use of combustible, flammable and extremely flammable pressurized products.

7.6.4 Title 15, Department of Environmental Protection

§ 11-03 Notification

Copyright © ESS Group, Inc., 2008

Requires the immediate notification of the Commissioner, followed by notification in writing, of any release of any hazardous substance listed in § 11-04 of this Title in an amount which equals or exceeds the reportable quantity of such substance.

§ 18-37 Sewerage Systems, Service Connections and Discharges to Sewerage Systems

Establishes conditions for a permit to construct a new sewer service connection, including the requirement that any design and construction plan for a new sewerage system must be reviewed and approved by the Department of Environmental Protection.

§ 19-02 Disposal of Wastewater, Stormwater and Groundwater

A permit is required to discharge over 10,000 gallons per day of ground water into a public sewer. A permit is necessary for the discharge of anything other than stormwater into a sewer, catch basin or manhole.

§ 19-08 House and Trailer Connections

Establishes the conditions under which a permit may be obtained for connection of a construction trailer to the sewer system.

§ 20-01 et seq. Use and Supply of Water

Establishes the permit conditions and requirements for installation and/or use of taps and plugs; new water meters; and use of electrical tap indicators.

7.6.5 Title 34, Department of Transportation

§ 2-02 Permits

Lists the information that must be provided to the Department upon initial application for a permit under these rules. This information must be updated as necessary and refiled annually. This provision also includes the following permit requirements: insurance and indemnification requirements; the circumstances under which a permit bond must be provided; and display of permit at work site. Permit applications for work to be performed in Manhattan, or any permit to close streets, must be reviewed by the Office of Construction Mitigation and Coordination ("OCMC") before the permit may be issued. Permittees and owners of underground facilities shall comply with state Industrial Code Rule No. 53 relating to Construction, Excavation and Demolition Operations at or Near Underground Facilities. If non-emergency construction work will result in the closing of more than two-thirds of the moving lanes per direction on any street for more than 15 minutes per hour between the hours of 1 a.m. and 5 a.m., or greater than or equal to half the moving lanes per direction on any street or limited access roadway, for a duration equal to the lesser of four minutes or two traffic light cycles of the nearest traffic signal during all other hours, the permittee must post public notice at the site of closing seven calendar days prior to such closing as directed by the OCMC. All obstructions on the street must be

Copyright © ESS Group, Inc., 2008

protected by barricades, fencing, railing with flags, lights, and/or signs, placed as directed by the New York State or Federal Manual on Uniform Traffic Control Devices.

§ 2-05 Construction Activity

Unless these rules provide otherwise, or the permit so stipulates, a separate permit is required for each of the following activities: placing construction material on street during working hours; placing construction equipment other than cranes or derricks on the street during working hours; temporarily closing sidewalk; constructing temporary pedestrian walk in roadway; temporarily closing roadway; placing shanty or trailer on street; crossing a sidewalk; placing crane or derrick on street during working hours; storing construction material on the street during non-working hours; storing construction equipment on the street during non-working hours. This provision also provides the conditions imposed on permits issued for each of the listed activities.

§ 2-06 Land Contour Work

A permit is required to perform land contour work including the clearing, grubbing, grading, filling or excavation of vacant lots and other specified land parcels. This provision also requires the drainage of an excavation until the excavation is finished. Also sets conditions on drainage generally, fill material, and sodding or planting.

§ 2-07(b), (c) Underground Street Access Covers, Transformer Vault Covers and Gratings

The owner of a cover or grating on a street is responsible for monitoring the condition of the covers and gratings, as well as an area extending twelve inches outward from its perimeter. Restricts the hours during which subsurface work requiring cover and grating openings may be performed in critical roadways, including 49th Street from FDR Drive to Joe DiMaggio Highway.

§ 2-11 Street Openings and Excavations

This provision requires that permittees and owners of underground facilities comply with State of New York Industrial Code Rule 53 relating to Construction, Excavation and Demolition Operations at or near Underground Facilities. Permittees also must bear the expense of taking all necessary precautions to protect pipes, mains, conduits, and other appurtenances. The Police Department and the Communications Centers of the Fire Department and the Department of Transportation must be notified at least twenty-four hours in advance of non-emergency construction operations which require street closing permits. The precutting of pavement wearing course and base is required for all pavement removal. This provision also requires the sheeting and bracing of every open excavation five feet or more in depth. OCMC stipulation or Commissioner approval is necessary to obstruct more than one lane of traffic. Any unattended street opening or excavation must be plated. If traffic must be diverted to another lane, the permittee must provide either a flagperson or an authorized plan for the maintenance and protection of traffic at the point where traffic is diverted to assist motorists and pedestrians. This provision also regulates worksite maintenance, storage of materials, backfill and compaction, plating and decking, base, wearing course, concrete pavements, color coding at each excavation, and the

Copyright © ESS Group, Inc., 2008

quality control program requirement for roadways. Finally, the permittee must maintain a street opening location form to be presented upon request.

§ 2-13 Vaults

This provision requires a license prior to either the construction of a new vault or the enlargement of an existing vault. If the vault is to extend beyond the sidewalk or curbstone of any street, a revocable consent must be obtained. A street opening permit must also be obtained from the Department before any vault is constructed, altered or repaired.

§ 2-16 Street Closings Lasting More Than 180 Days

This provision requires an applicant to submit a Community Reassessment, Impact and Amelioration (CRIA) statement to the Department for approval if the issuance of a permit will result in closure of a publicly mapped street for more than 180 consecutive calendar days.

§ 4-15 Limitations Upon Dimensions and Weights of Vehicles

Requires a permit for the operation or movement of any vehicle that exceeds the size or weight limit criteria set forth in this provision.

7.6.6 Title 62, City Planning

§ 4-01 Procedures for Waterfront Revitalization Program Consistency

Projects subject to the City Environmental Quality Review ("CEQR") are reviewed by the Department of City Planning, Waterfront and Open Space Division, for consistency with Waterfront Revitalization Program policies.

7.6.7 Title 66, Department of Business Services

§ 2-03 Improvement and Alteration of Property and Marginal Streets

Requires a permit prior to any construction or obstacle of any kind on or about any wharf property or marginal street. A permit must also be obtained prior to placing any fill or making any removal, dredging or demolitions of any kind on or about any waterfront property or marginal street.

§ 2-11 Hazardous, Flammable or Explosive Substances

Requires compliance with all local, state and federal rules and regulations plus written approval from the Commissioner of the Department of Business Services before any person may load, unload, discharge, place, store or keep any material, fluid, gas or substance of any flammable, radioactive or hazardous nature upon any waterfront property or marginal street. The same rule applies to the draining, removal or discharge of gasoline, oil or any explosive, flammable or hazardous liquid, gas or substance from any vehicle upon any waterfront property or marginal street.

Copyright © ESS Group, Inc., 2008

7.7 New York City Waterfront Revitalization Program ("WRP")

Part I – The Program

Local discretionary actions such as those subject to the City's land use or environmental review and variance procedures are reviewed for consistency with the WRP policies. WRP jurisdiction is geographically limited to the coastal zone boundary. Hudson's proposed transmission line will be located in Coastal Zone Boundary Section 8.

Part II– The Policies (see also Exhibit 4)

Policy 4 Protect and restore the quality and function of ecological systems within the New York City coastal area

This Policy calls for adverse impacts from a proposed project to be minimized and mitigated. It aims to protect, and at times to restore, specific designated natural resources, including Significant Coastal Fish and Wildlife Habitats ("Habitat"). One such Habitat is the Lower Hudson Reach, within which the proposed transmission line would be laid. Projects in designated Habitats must avoid the destruction or significant impairment of habitat values.

Policy 5 Protect and improve water quality in the New York City coastal area

This Policy aims to protect the quantity and quality of water in the New York Coastal area. It requires management of non-point source pollution and the direct or indirect discharge to water bodies. It also imposes tighter constraints on excavations, dredging, or the placing of fill in navigable waters and in or near marshes, estuaries, tidal marshes, and wetlands.

Policy 7 Minimize environmental degradation from solid waste and hazardous substances

This Policy requires solid waste, including construction debris, to be transported by methods and routes that protect the coastal environment and the safety and general welfare of the public.

7.8 PlaNYC (see also Exhibit 6)

New York City's PlaNYC presents a long-term plan for City growth. It focuses on the City's land, air, water, energy, and transportation in attempting to use land more efficiently, absorb future growth, create affordable housing and open spaces. Goals include reducing energy consumption, increasing the supply of cleaner power, and reducing the City's carbon emissions. PlaNYC sets forth energy initiatives including dedicated transmission lines that import power from clean or renewable sources.

Copyright © ESS Group, Inc., 2008

Exhibit 8

Other Pending Filings

HUDSON TRANSMISSION PARTNERS, LLC

THE HUDSON PROJECT

EXHIBIT 8 – OTHER PENDING FILINGS

PREPARED PURSUANT TO SECTION 86.9

TABLE OF CONTENTS

SECTION **PAGE**

EXHIBIT 8 – OTHER PENDING FILINGS

The following is a list of the permits, certifications, and approvals required for the Project including those NYC permits and NYS DOT approvals which HTP will apply for subject to PSC jurisdiction and oversight. Pre-application meetings or communications have been conducted with several agencies as noted in the appropriate section below.

8.1 Federal

- **US Army Corps of Engineers:** Section 10 of the Rivers and Harbors Act of 1899 regulates work and structures that are located in, or that affect, navigable waters of the United States. The Project will require a Section 10 Individual Permit for the submarine cable crossing of the Hudson River. Section 404 of the Clean Water Act requires a permit be obtained for activities that will result in discharges of dredge or fill material into waters of the United States, including wetlands. Applications for these permits will be reviewed by the New York District of the US Army Corps of Engineers ("USACE-NYD"). A pre-application meeting was held on July 9, 2007. The following two agencies will participate in the USACE review.
    - **US Fish and Wildlife Service:** As part of the USACE-NYD permitting process, Endangered Species Act Review and Review under Fish and Wildlife Coordination Act will be required.
    - **National Marine Fisheries Service:** As part of the USACE-NYD permitting process, Essential Fish Habitat (EFH) Review, Endangered Species Review, and review under the Fish and Wildlife Coordination Act will be required.
- **Federal Energy Regulatory Commission (FERC):** The Federal Power Act requires that HTP obtain market-based rate authority to sell transmission rights to its customer the New York Power Authority. Interconnection agreements between PJM, PSEG and HTP, and between NY ISO, Consolidated Edison Company and HTP will be filed with and require acceptance by the FERC
- **US Coast Guard:** The USCG will be consulted throughout all stages of the Project, including: preconstruction review of all planned activities in order to avoid impacts to marine navigation; review of in-water construction activities; publishing up-to-date Notice to Mariners in order to minimize any navigational impacts that may occur during marine installation; and review of plans for post-construction as-built cable location documentation.

8.2 State

8.2.1 New York State

- **New York State Public Service Commission:** In addition to this application for a Certificate of Environmental Compatibility and Public Need pursuant to Article VII of the Public Service Law and the related Clean Water Act § 401 Certification and Environmental Management and Construction Plan, HTP will file a petition for a declaratory ruling establishing a lightened regulation scheme.

  With the exception of the approvals identified below, HTP anticipates that all necessary New York State (NYS) and local approvals, permits, certifications, and/or reviews for this Project,

Copyright © ESS Group, Inc., 2008

will be issued through the Article VII proceeding and related post-certificate processes, either directly by the Commission or subject to its oversight. Pre-application meetings with the Department of Public Service took place on December 12, 2006 and May 11, 2007.

- **New York State Department of State - Coastal Management Program:** HTP will submit a request for Coastal Zone Management Consistency Certification, which is a requirement of the USACE-NYD permitting process. A pre-application meeting took place on May 11, 2007.

- **New York State Office of Parks, Recreation, and Historic Preservation:** As part of the USACE-NYD permitting process, Historic and Archaeological Review under Section 106 of the National Historic Preservation Act will be required.

- **New York State Office of General Services:** HTP will apply for an interim work permit and Underwater Utility Easement for Use of state-owned lands under the Hudson River.

- **New York State Department of Transportation:** HTP will seek PSC authorization to apply for permits that would, in the absence of Public Service Law Section 130, apply to construction activities under, and occupancy of, rights of way under the control of the NYS DOT in connection with 12th Ave. (West Side Highway) and the associated bicycle path.

8.2.2 State of New Jersey

- **New Jersey Department of Environmental Protection:** HTP will apply for the following permits related to the New Jersey portion of the project: Waterfront Development Permit, Wetlands and Stream Encroachment Permit, 401 Water Quality Certification, Tidelands Conveyance, Acceptable Use Permit, and New Jersey Pollutant Discharge Elimination System Permit. .

- **New Jersey Meadowlands Commission**: HTP will file with the Commission for Site Plan Approval for jurisdictional portions of the project.

- **New Jersey State Office of Parks, Recreation, and Historic Preservation:** HTP will submit documentation sufficient for Historic and Archaeological Review of cultural resources along the New Jersey portions of the Project route.

8.3 Municipal Permits

8.3.1 New York City

HTP will seek PSC authorization to apply for permits that would, in the absence of Public Service Law Section 130, apply to construction activities, including building permits, permits for street closings and excavation, for use of City sewers and water, and consents to locate vaults and conduits in City streets.

Copyright © ESS Group, Inc., 2007

8.3.2 New Jersey

- **Bergen County:** HTP will submit a Soil Erosion and Sedimentation Control Plan to the Bergen County Soil Conservation District for certification.
- HTP will apply for Municipal Construction Permits with all affected communities including: Cliffside Park, Edgewater Borough, North Bergen, and Ridgefield Borough

8.4 NY ISO

HTP will require NY ISO approval of its System Reliability Impact Study and Facilities Cost Study and execution of an Interconnection Agreement with Consolidated Edison Company and NY ISO.

8.5 PJM

HTP will require PJM approval of its System Reliability Impact Study and Facilities Cost Study and the execution of an Interconnection Service Agreement and Construction Service Agreement with PJM and Public Service Electric and Gas.

Copyright © ESS Group, Inc., 2007

Exhibit 9

Cost of Proposed Facility

HUDSON TRANSMISSION PARTNERS LLC

THE HUDSON PROJECT

EXHIBIT 9 – COST OF PROPOSED FACILITY

PREPARED PURSUANT TO SECTION 86.10

EXHIBIT 9 COST OF PROPOSED FACILITY

HTP has filed a motion for an order waiving the requirements of Section 86.10.

Copyright © ESS Group, Inc., 2008

Exhibit E-1

Description of Proposed Transmission Line

HUDSON TRANSMISSION PARTNERS, LLC

THE HUDSON PROJECT

EXHIBIT E-1 – DESCRIPTION OF PROPOSED TRANSMISSION LINE

PREPARED PURSUANT TO SECTION 88.1

TABLE OF CONTENTS

SECTION **PAGE**

FIGURES

EXHIBIT E-1 - DESCRIPTION OF PROPOSED TRANSMISSION LINE

The objective of Hudson Transmission Partners LLC's proposed electric transmission facility ("Project") is to respond to, and meet the needs of, the New York Power Authority's request for long-term supply of In-City unforced capacity and optional energy. The Project will be comprised of a back-to-back Alternating Current (AC)-DC-AC converter station in Ridgefield, New Jersey, which will be connected by a 230kV AC circuit to the Bergen Substation and by a new 345 kilovolt (kV) AC electric transmission circuit, installed in several segments as described below, with the capacity to transmit 660 megawatts (MW) of power, which will be connected to Con Edison's W 49th Street Substation in midtown Manhattan, New York. The New York State portion of the Project, which is the subject of this Article VII application and will be referred to as the "NY Facility", consists of an AC circuit, running between the New York-New Jersey boundary in the Hudson River to the exterior wall of the W 49th Street Substation, and associated equipment as described below and in Exhibit E-2.

E-1.1 Project Components

The Project will include the following components:

- **Connection to PJM Grid:** The Project will be connected to the PJM grid at the PSE&G Bergen Substation in Ridgefield, New Jersey by means of a new 230 kV AC circuit.
- **Back-to-Back AC-DC-AC Converter Station:** A back-to-back AC-DC-AC converter station will be constructed at 1 Railroad Avenue in Ridgefield, New Jersey.
- **Upland Cable (New Jersey):** From the converter station, a new 345 kV circuit will be installed underground. The upland power line in New Jersey will traverse approximately 3.0 miles of upland to the Hudson River landfall in Edgewater, New Jersey.
- **New Jersey Cable Landfall:** In Edgewater, the power line will enter the Hudson River at the southwestern corner of the Edgewater Commons Shopping Center parking lot. Prior to entering the Hudson River, the Upland Cable will transition to Submarine Cable in an underground Transition Vault to be constructed within the parking lot, see Figure 2-5.
- **Submarine Cable:** In the Hudson River, Submarine SCFF Cable will be installed. The submarine cable will extend approximately 4 miles south to the New York City Landfall. The Submarine Cable System will be buried below the present river bottom a minimum of 10 feet in areas outside the limits of Federal Navigation Channels and a minimum of 15 feet below present river bottom within the limits of Federal Navigation Channels.
- **New York City Cable Landfall:** In Manhattan, the cable will exit the Hudson River between NYCEDC Piers 92 and 94. The Submarine Cable will transition to Upland Cable in an underground Transition Vault to be constructed in W 52nd Street, east of 12th Avenue.
- **Upland Cable (New York City):** From the Transition Vault, the cable system will be installed underground using City streets for approximately 0.5 miles to the Con Edison W 49th Street Substation, see Figure 2-4.

Copyright © ESS Group, Inc., 2008

- **Connection to NYISO Grid:** The Project will be connected to the NYISO Grid inside the Con Edison W 49th Street Substation.

E-1.2 345 kV Alternating Current Circuit

The Project's Upland Cable will utilize a cross linked polyethylene (XLPE) cable and the submarine cable will use a self-contained fluid-filled (SCFF) cable. The SCFF type of power line technology is used within roadways and has also been successfully installed in submarine applications (e.g., NYPA Sound Cable Project in Long Island Sound). The NYSPSC has also previously approved the use of SCFF cable technology in similar areas of the Hudson River.

SCFF cables have a single conductor with a dielectric-fluid core that acts as an insulating medium. The proposed project will contain three (3) power cables each containing one (1) conductor. The proposed cable system will also contain a fiber optic cable. The submarine single core SCFF cable consists of segmental strips of copper conductor, carbon black paper conductor screen, PPL insulation, dielectric screen, copper woven rayon tape binder, extruded lead alloy sheath, bronze tapes reinforcement, extruded polyethylene sheath, double copper flat wire armor layers, and extruded polyethylene serving. The insulating fluid is pressurized for static pressure within the hollow core of the SCFF cable, and is not a circulating system under constant flow. Figure E1-1 shows a typical cross-section of submarine SCFF Cable. A well-proven cable insulating fluid consisting of a low viscosity blend of predominantly C11/C12 linear alkyl benzenes that are noncorrosive and readily biodegradable will be used under constant pressure to serve as an electrical insulator for this high voltage cable. For a discussion of the low aquatic toxicity of linear alkyl benzenes please refer to Exhibit 4.

The upland single core XLPE cable consists of segmental strips of copper conductor, semi-conductive polymer conductor screen, XLPE insulation, semi-conductive polymer insulation screen, water barrier, metallic sheath, and extruded polyethylene sheath with graphite coating. Figure E1-2 shows a typical cross-section of upland XLPE cable.

The power cable system will also include other ancillary equipment at the cable terminations. Pressurizing equipment, including fluid pressurizing pumps and drivers, fluid storage tanks, controls, piping and valves, and instrumentation, will be located in equipment vaults adjacent to the Transition Vaults both in New York and New Jersey.

This cable insulating system has been proven capable of servicing the high voltage cable under the most extreme operating conditions as well as during normal loading conditions. The fluid pressure control system ensures maintenance of a relative constant pressure within the cable system, and will accommodate any expansion of the fluid volume due to temperature variation of the cable associated with the power level cycling of the link.

The submarine SCFF cable will be designed to provide maximum protection to the marine environment through the engineered design of the cable system and its subsurface installation methods. This protection will be afforded by armoring the cable with galvanized steel wrapping and by embedding the submarine cable in the river bottom to either 10 or 15 feet below the river bottom. At the landfalls, the cables will be placed within either high density polyethylene (HDPE) or steel

Copyright © ESS Group, Inc., 2008

conduits installed with HDD techniques. Final design of the HDD conduit system will be provided in the EM&CP.

In addition, the three single core cables of the submarine SCFF cable will be independently connected to a hydraulic fluid pressurization system. If mechanical damage to the submarine cable should occur, the use of fluid flow limiting valves will minimize any loss of fluid to the environment. These valves will allow insulating fluid pressure to be maintained while preventing water penetration in the cable until repairs can be completed. The cable system volume and pressure measuring equipment will be automatically and continuously monitored as part of overall project operations; the monitoring system will provide an alarm to the cable system operator to ensure immediate response to any abnormal changes in pressurization system conditions. Final details of the monitoring will be presented in the EM&CP.

E-1.3 Fiber Optic Cable

In order to provide the required remote monitoring telemetry, control and voice communications, a fiber optic cable will be installed alongside the power cable. The fiber optic cable will be simultaneously installed via jet plow embedment in the same trench as the 3 conductor cable bundle and will be provided with appropriate mechanical protection.

Copyright © ESS Group, Inc., 2008

Exhibit E-2

Other Facilities

HUDSON TRANSMISSION PARTNERS, LLC

THE HUDSON PROJECT

EXHIBIT E-2 – OTHER FACILITIES

PREPARED PURSUANT TO SECTION 88.2

TABLE OF CONTENTS

SECTION **PAGE**

FIGURES

EXHIBIT E-2 - OTHER FACILITIES

This Exhibit describes other facilities that will be part of the Project. In addition to the cable system, the Project will include an underground Transition Vault and Equipment Vault on W. 52nd Street, a splice vault, and cable terminations within the Con Edison West 49th Street Substation.

E-2.1 Transition Vault and AC Interconnection

A Transition Vault will be installed in W 52nd Street to facilitate transition between the Submarine Cable and Upland Cable. Adjacent to this vault will be an equipment vault of similar size which will house the dielectric fluid feed system and protective enclosures.

These underground vaults will be approximately 30 feet long by 60 feet wide and 8 feet deep and located under the sidewalk and street on the north side of 52nd street. Figure E2-1 shows the approximate location of these vaults. The final vault dimensions will depend upon several factors and will be finalized prior to filing the EM&CP. The vaults will be designed and installed in compliance with City code requirements and pursuant to a permit from NYC DOT.

The AC Interconnection to the NYISO Grid will take place within the Con Edison W 49th Street Substation. The Upland Cable will enter the W 49th Street Substation on its west side through an existing subsurface wall penetration located under the building's 12th Avenue pedestrian entrance.

The Upland Cable will be delivered and installed in two sections of approximately equal length. The two cables will be spliced together in an approximately 15 feet x 30 feet underground splice vault which will be located on 51st Street between 11th Avenue and 12th Avenue.

E-2.2 Design and Installation Details

The three vaults (Transition, Equipment and Splice) and equipment components will be designed, constructed, and installed by Prysmian Power Cable Systems LLC ("Prysmian") and will conform to applicable ANSI standards for 345 kV electrical equipment and the requirements of the National Electric Safety Code. The details of the AC Interconnection will be provided in the Facilities Study that will be performed pursuant to the requirements of the NYISO OATT.

The majority of the construction activities are expected to take place during daylight hours. Dewatering is not expected to be required; however, if dewatering is required, resulting discharges will be properly monitored and treated according to applicable standards. The HDD contractor will require use of a hydrant as a water source during the drilling operation. The drilling fluid will be contained within the drill pit and drilling spoils (rock chips and earth) will be removed from the drilling fluid recycling equipment and properly disposed of.

Existing roadways are expected to be suitable for delivery of materials and construction equipment to the Site. If however, following further engineering design and location of all existing utilities, the final route layout should require the need for any temporary road closures, these will be detailed in the EM&CP. All work will be performed under the supervision of Prysmian. Construction tasks will include but not be limited to site and access preparation, installation of appropriate construction erosion and sedimentation controls, any grading or land excavation that may be necessary, traffic control, HDD, vault construction, trenching, conduit installation, cable pulling and site restoration.

Copyright © ESS Group, Inc., 2008

During the Horizontal Direction Drilling (HDD) operation the drilling rig will be positioned on 52nd Street's north sidewalk, with the drill fluid recycling trailer parked adjacent to it. Behind this trailer will be others containing additional drilling equipment and material. The contractor will need forklift access to the trailers, and the side walk clear, in order to move drill rod to and from the drilling rig.

Public parking will be restricted to the south side of 52nd street during construction activities (HDD, cable pulling and splicing, vault construction, trenching and conduit installation). There also may be parking restrictions on 51st street depending upon the final location of the splice vault and cable route.

Although HTP will aim to keep the streets open to traffic during the entire project there may be certain activities requiring temporary street closures, which will be further defined in a more detailed construction and traffic control plan which will be provided in the EM&CP.

E-2.3 Control and Protection

The control and protection system will be designed to electrically isolate the HTP line immediately from the Con Edison system upon recognizing an electrical fault By automatically powering down the transmission line components in the case of a fault, major failures of the system will be avoided. Electrical power for continuously operating the control and protection system will be provided from a dedicated source and will be unaffected by the status of the HTP line it is monitoring.

E-2.4 Cooling Systems

There are no cooling systems associated with the Project.

E-2.5 Transition Vault Service

The Transition Vault will require electrical and control services to be installed. The final design of the vault will determine the type and size of these services.

E-2.6 Fire Protection

The fire protection system for the dielectric fluid system and the Transition Vault, if necessary, will meet local code requirements and industry standards such as the National Fire Protection Association Standards.

Copyright © ESS Group, Inc., 2008

Exhibit E-3

Underground Construction

HUDSON TRANSMISSION PARTNERS, LLC

THE HUDSON PROJECT

EXHIBIT E-3 – UNDERGROUND CONSTRUCTION

PREPARED PURSUANT TO SECTION 88.3

TABLE OF CONTENTS

SECTION **PAGE**

FIGURES

EXHIBIT E-3 - UNDERGROUND CONSTRUCTION

E-3.1 Cable System Installation

The Project involves the construction of a back-to-back AC-DC-AC converter station in Ridgefield, New Jersey and installation of a new 345 kV AC electric transmission cable system across the Lower Hudson River from New Jersey to New York with the capacity to transmit 660 MW of power. This cable system will transmit power from the proposed converter station in Ridgefield, NJ to Con Edison's W 49th Street substation in midtown Manhattan, New York. The cable system will include approximately eight miles of buried transmission cable, approximately four miles of which will be installed beneath the Hudson River. The submarine portion of the proposed cable system will enter the riverbed in Edgewater, New Jersey and make landfall in Manhattan near the 49th Street Substation.

Both the New Jersey and New York Landfall locations will involve the installation of a cofferdam (each approximately 30 feet x 100 feet in size) to help facilitate the transition of the cable to or from the River. The landfall transition will be accomplished using HDD methodology which will minimize any impacts to the nearshore area. The submarine cable will be installed using jet plow embedment to bury the submarine cable to a minimum of 10 feet below the present river bottom outside of navigational channels. Those portions of the submarine cable route located within a navigational channel (i.e. federal channel) will be located a minimum of 15 feet below the present river bottom. In order to minimize any impacts to aquatic resources, HTP proposes to conduct jet plow embedment of the submarine cable within the September through mid-November time frame.

Installation of the cofferdam and HDD landfall conduits will occur prior to the jet plow installation of the submarine cable. HTP intends to schedule the cofferdam installation, HDD and submarine cable installation sequentially. However, it is conceivable that due to unforeseen delays in cable manufacturing or delivery, agency preferences or other inputs, a scheduling lag of up to one year may occur following the installation of the cofferdam and HDD. In that instance, the cofferdam would be appropriately marked for navigational safety in consultation with the U.S. Coast Guard, and would remain in place awaiting the submarine cable installation.

HTP has selected cable installation methodologies that will minimize environmental impacts and pose no threat to public safety. The methodologies chosen for upland, landfall and Hudson River installation are described below.

E-3.1.1 Upland Cable

The upland cable route will begin at the Transition Vault in W 52nd Street and end at the Con Edison W 49th Street Substation as shown on Figure 2-4. The upland cable will be buried below street grade. Subject to confirmation of the depth and location of existing utility facilities, it is expected that the cable will be installed below existing utility facilities in the area. Behind the Transition Vault, a trench approximately 6 feet wide, with depth to be determined by the position of existing subsurface utility facilities, will be excavated along the upland cable route to the 49th Street Substation. Installation of the upland cable will be performed using a combination of trenching and pipe jacking techniques. The cable will enter the Substation via an existing conduit

Copyright © ESS Group, Inc., 2008

below street grade. Detailed information on the upland construction and installation will be presented in the EM&CP.

All excavation will be performed with standard machinery, including excavators and backhoes, and will be performed in accordance with applicable safety standards. Excavated soils will be removed off-site at the end of each workday. The upland cable will be located in a conduit system with three vaults, each with a manhole for access. The trench will be backfilled using clean fill. Excess soil will be disposed of offsite as required and permitted by NYSDEC, after field screening to insure proper handling and disposal off site.

E-3.1.2 Landfall Transition

The transition of the submarine cable from water to land will be accomplished through the use of Horizontal Directional Drilling (HDD) methodology to avoid installation conflicts with service utilities, traffic, and environmental conditions. The HDD will be staged at the upland landfall area at W 52nd Street and involve the drilling of borehole(s) from land under W 52nd Street, 12th Avenue, the Pier 92 access road, and the berth area between Piers 92 and 94 to the HDD exit point in the Hudson River, which will be located within a temporary submerged cofferdam located at the seaward end of the berth areas between Piers 92 and 94. After completing the HDD, a HDPE or steel conduit will be placed in the borehole, which will ultimately house the cable system. The proposed horizontal drilling route is shown on Figure E3-1a. Detailed information on the HDD boreholes and type of conduit to be used will be presented in the EM&CP. The number, and size, of the boreholes for the HDD process will depend upon the complexity of existing underground utilities in the vicinity of the upland landfall transition. Depending upon the constructability of the area it is estimated that either 3 boreholes of approximately 20-26", or one borehole of approximately 48-50" will be required.

E-3.1.2.1 Horizontal Directional Drill

The HDD operation will include an upland based HDD drilling rig system, drilling fluid recirculation systems, residuals management systems, and associated support equipment. HDD drilling material handling equipment will be located on W 52nd Street. Upon completion of the drilling, the excavation area will be reused for construction of the Transition Vault. See Figure E3-1b

An excavation pit approximately 10 feet wide, by 10 feet long, by 6 feet deep will be constructed within the footprint limits of the Transition Vault in W 52nd Street to accommodate horizontal directional drilling operations. The upland HDD staging area will be approximately 70 feet by 150 feet. The construction work in this location may require temporary restrictions on parking and vehicular and pedestrian traffic on W 52nd Street. This pit will also be utilized for the construction of the underground Transition Vaults described in Exhibit E-2. Soils from this pit will be disposed of off-site as required and permitted by NYSDEC. Stormwater erosion and sedimentation controls will be installed as necessary on the site prior to the initiation of construction activities. Once construction is completed, all

Copyright © ESS Group, Inc., 2008

equipment and construction materials will be removed from the site and the area returned to its original condition.

The exact drilling length of the transition between submarine and upland will depend on the location of the exit area selected in the Hudson River and will be determined during final design and construction and provided in the EM&CP. The offshore end will terminate in a pre-excavated pit where the jet plow cable burial machine will start.

A drill rig will be set up on W 52nd Street behind the HDD/bentonite pit where drill pipe will be set in place to begin the horizontal drilling. A bentonite and freshwater slurry will then fill the pit in which the bentonite forms a hard shell lining of the tunnel wall during the drilling process. When the drill bit emerges into the cofferdam offshore, the bit is replaced with a series of reamers to widen the borehole followed by a pulling head on the end of pipe and then the drill pipe is used to pull back the conduit into the bored hole from the offshore end. As with the drill process, freshwater will be utilized to the maximum extent practicable as the reaming process nears the pre-excavated pit.

Drilling of the initial boreholes will originate from the HDD staging area on W 52nd Street and advance toward the offshore exit point. Upon completion of the initial drill, the borehole will be reamed out to the larger diameter necessary to ultimately accommodate the cable conduit. A conduit pipe (either steel or HDPE) will then be installed in the borehole(s) to serve as protection for the submarine cable. Once the internal cable conduit(s) have been inserted into the steel or HDPE conduit pipe, a clay/bentonite medium will be inserted into the outer pipe to fill the void between the cable conduits and the pipe, and the pipe ends will be sealed.

The upland HDD operation will be a self-contained system combined with a drilling fluid re-circulation system. This re-circulation system will recycle drilling fluids and contain and process drilling returns for offsite disposal to minimize excess fluids disposal and residual returns. None of these materials will be directly discharged or released to marine or tidal waters in the Hudson River. The HDD construction process will involve the use of bentonite drilling fluids in a mineral water slurry in order to transport drill cuttings to the surface for recycling, aid in stabilization of the in situ sediment drilling formations, and to provide lubrication for the HDD drill string and down-hole assemblies. This drilling fluid is composed of a carrier fluid and solids. The selected carrier fluid for this drilled crossing will consist of water (approximately 95%) and inorganic bentonite clay (approximately 5%).

The temporary cofferdam will be installed prior to the beginning of the HDD borehole construction, and will remain in place until jet plow embedment installation of the submarine cable is complete. This operation will take place seaward of the pierhead line and within the limits of the Federal Navigation Channel. The cofferdam will contain and minimize any bentonite releases offshore. The cofferdam will be approximately 30 feet wide and 100 feet long and will be open at the seaward end to allow for manipulation of the HDD conduits. Approximately 1,260 cubic yards of sediment will be excavated from the cofferdams to expose the seaward end of the borehole. The cofferdam walls will be constructed using steel

Copyright © ESS Group, Inc., 2008

sheet piles driven from a barge-mounted crane. The tops of the cofferdam sheet piles will remain submerged, approximately 5 feet above the river bottom, for the duration of the submarine cable installation. The location of the cofferdam will be marked to warn vessels of the temporary cofferdam's presence below the water surface. The cofferdam excavation pit will be backfilled with imported clean backfill material to restore the river bottom to preconstruction grade. No removal of sediment outside of the cofferdam will be required.

The HDD operation will be designed to include a drilling fluid fracture or overburden breakout monitoring program to minimize the potential of drilling fluid breakout into waters of the Hudson River. It is expected that the HDD conduit systems will be drilled through sediment overburden at the landfall location. Drilling depths in the overburden will be sufficiently deep to avoid pressure-induced breakout of drilling fluids through the river bottom based primarily on estimates of overburden thickness and porosity. Nevertheless, a visual and operational monitoring program will be implemented during the HDD operation to detect a fluid loss. This monitoring includes:

- visual monitoring of surface waters in the Hudson River by drilling operation monitoring personnel on a daily basis to observe potential drilling fluid breakout points;
- drilling fluid volume monitoring by technicians on a daily basis throughout the drilling and reaming operations for each HDD conduit system;
- development and implementation of a fluid loss response plan and protocol by the drill operator in the event that a fluid loss occurs. These response plans include drill stem adjustments, injection of loss circulation additives such as Benseal that can be mixed in with drilling fluids at the mud tanks, and other mitigation measures as appropriate; and
- use of bentonite drilling fluids that will gel or coagulate upon contact with the River.

In the unlikely event of an unexpected drilling fluid release, the bentonite fluid density and composition will cause it to remain as a cohesive mass on the river bottom in a localized slurry pile similar to the consistency of gelatin. This cohesive mass can be quickly cleaned up and removed by divers and diver-operated vacuum equipment.

It is likely that some residual volume of bentonite slurry will be released into the pre-excavated pit. The depth of the pit and the temporary cofferdam perimeter will contain any bentonite slurry that may be released. Prior to drill exit and while the potential for bentonite release exists, diver teams will install a water-filled temporary dam around the exit point to act as an underwater "silt fence". This dam will contain the bentonite fluid as it escapes and sinks to the bottom of the pre-excavated pit to allow easy clean-up using high-capacity vacuum systems. Final design details will be presented in the EM&CP.

Copyright © ESS Group, Inc., 2008

The installation of the cofferdam and removal of sediment will take approximately 2 weeks to complete. The HDD process is expected to take approximately up to 3 months[1] to complete.

E-3.1.3 Submarine Cable

The submarine cable will be installed within the riverbed of the Hudson River along the cable route shown in Figure 2-3. As described in Ex. 3, HTP has chosen the cable route based partly on geophysical and geotechnical data which indicates that the conditions are suitable for jet plow embedment to the required burial depth. A minimum burial depth of 15 feet below present river bottom is planned within Federal Navigation Channels to avoid potential operational impacts to the Federal Navigation Channel and a depth of 10 feet below present bottom in areas of the riverbed located outside of the Federal Navigation Channel. Based upon recent survey of the submarine cable route, some areas of the Federal Navigation Channels are not at their authorized dredged channel depth. To comply with USACE-NYD guidelines of burying cables 15 feet below the authorized dredged depths of the Federal Channels, the overlaying material would need to be dredged out prior to the jet plow burial machine commencing burial operations. This would increase the level of impacts to the Hudson River. Therefore, HTP will seek permission from the USACE to install the cable 15 feet below the present river bottom within the Federal Channels and 10 feet below the present river bottom outside the Federal Channels.

Typical cross-section of the submarine cable installation is provided as Figure E3-2. The submarine cable will be buried using the jet plow embedment technology. Jet plow embedment methods for submarine cable installations are considered the most effective and least environmentally damaging compared to traditional mechanical dredging and trenching operations, and have been recently authorized by the NYSPSC, NYSDEC, and USACE for similar projects (e.g., Cross Sound Project and the Neptune Regional Transmission System). This method of laying and burying the cables simultaneously ensures the placement of the submarine cable at the target burial depth with minimum bottom disturbance and with the fluidized sediment settling back into the trench. Jet plow equipment uses a pressurized water pump system on board the cable vessel to fluidize sediments, creating a trench approximately 18 inches wide into which the submarine cable settles into through its own weight. The temporarily suspended sediment settles over the submarine cable to bury the cable.

Prysmian's cable-laying vessel, the C/S *Giulio Verne* (shown in Figure E3-3), which is specifically designed for installations of submarine cable, will be used both for transporting the cable to the United States from the overseas manufacturing facility and for installation in the Hudson River. The submarine cable is installed in continuous lengths delivered from the cable factory via a revolving turntable on the vessel that deploys the cable over the side of the ship into the jet plow. The *Giulio Verne* is equipped with seawater pumps that take water from just below the river surface to provide high pressure seawater to the jet plow device via an umbilical. The submarine cable location and burial depth will be continuously recorded during installation for use in the preparation of as-built location plans, which will be provided to agencies and organizations as required for inclusion on future navigation charts and in easement agreements.

[1] The length of time required for the HDD process depends on the number of boreholes required for the proposed Project. A single borehole drill will require approximately 3.5 weeks. Detailed information on the HDD boreholes will be presented in the EM&CP.

Copyright © ESS Group, Inc., 2008

From the HDD exit point, the cable is embedded by means of towing the jet plow along the cable route. The jet plow is skid/pontoon-mounted and has no propulsion system of its own (Figures E3-4 and E3-5). Instead, it depends on the cable vessel for propulsion. The submarine cable is deployed from the cable-laying vessel to the jet plow device, and into the jetting blade. The pre-determined deployment depth of the jetting blade controls the cable burial depth, by optimizing the pressure at the nozzles, and the rate of advancement of the jet plow. The pontoons on the jet plow can be made buoyant to serve different installation needs. This method of laying and burying the cables simultaneously ensures the placement of the submarine cable at the target burial depth with minimal bottom disturbance and the majority of the fluidized sediment settling back into the trench.

The jetting blade is fitted with hydraulic pressure nozzles, which direct pumped seawater downward and backwards, to fluidize the river sediments such that the jet plow can advance in the direction of the cable laying and embed the cable in the river bottom. The hydraulic pressure nozzles create a direct downward and backward "swept flow" force inside the trench. This provides a down and back flow of re-suspended sediments within the trench, thereby "fluidizing" the *in situ* sediment column as it progresses along the predetermined submarine cable route such that the submarine cable settles into the trench under its own weight to the planned depth of burial. The jet plow's hydrodynamic forces do not work to produce an upward movement of sediment into the water column since the objective of this method is to maximize gravitational replacement of re-suspended sediments within the trench to bury or "embed" the cable system as it progresses along its route.

As the jet plow progresses along the route, the water pressure at the jet plow nozzles will be adjusted as sediment types and/or densities change to achieve the required minimum burial depth. In the unlikely event that the minimum burial depth is not met during jet plow embedment, the use of diver-assisted water jet probes will be utilized to achieve the required depth. In the event that the required burial depth cannot be met using these methods, then alternate cable protection measures would be implemented (i.e., concrete mats).

The jet plow device is equipped with horizontal and vertical positioning equipment that records the laying and burial conditions, position, and burial depth, and communicates this information back to the *Giulio Verne*.

The installation of the submarine cable, approximately 3.6 miles in length, via jet plow embedment is anticipated to take approximately 7 days to complete.

E-3.2 Cable System Reliability

In order to insure the integrity and reliability of the cable system once it has been installed, a number of design elements and protective measures have been included. Industry experience and engineering studies have shown the SCFF and XLPE cables proposed for the Project, along with the proposed submarine and upland installation methods previously described, to be highly reliable. Mechanical damage to the cable system will be avoided as a result of the following design elements and protective measures:

Copyright © ESS Group, Inc., 2008

- The SCFF cable system has a number of armoring layers to protect from mechanical damage, as previously described (Ex E-1.2)
- Embedment depths of the submarine cable meets or exceeds USACE-NYD depth of burial standards for pipelines or cables in the Hudson River (minimum 15 feet below riverbed inside of Federal Navigation Channel and minimum 10 feet below riverbed outside of Federal Navigation Channel), depths at which anchor damage is unlikely to occur.
- Conduits within the HDD boreholes will provide added protection to the SCFF cable at the shoreline landfall and nearshore areas;
- Prysmian's world-wide cable installation experience and specialized cable laying vessel and jet plow equipment insure a safe and reliable cable installation; and
- Upland cables will be protected within concrete encased duct banks.

E-3.3 Cable System Maintenance

The cable system has been designed to operate with little or no on-going maintenance. By incorporating a fiber-optic cable into the system design, the entire system can be continuously monitored via remote telemetry. The insulating fluid pressurization system is a closed, static system and does not require regular maintenance. The cable system volume and pressure measuring equipment will be automatically and continuously monitored, as will the operating temperature of the circuit, and provide an alarm to the cable system operator to ensure immediate response to any abnormal changes in pressurization system conditions. In addition, the general condition of the Transition Vault, equipment vault and splicing manhole will be inspected periodically to ensure that no unforeseen leaks or damage have occurred. Final details of monitoring and inspection protocols will be presented in the EM&CP.

If mechanical damage to the submarine cable should occur, the use of fluid flow limiting valves will minimize any loss of fluid to the environment. These valves will allow insulating fluid pressure to be maintained while preventing water penetration in the cable until repairs can be completed. Should a cable failure occur, a mobilization and communication plan would be implemented. Once the location of the fault is identified (via system monitoring devices and observations), the cable will be repaired using typical trench repair and backfill methods if the fault is in the upland portion. Within the submarine portion of the Project the procedures listed below are the typical way of repairing any cable fault:

1. Repair crews will mobilize the splice boat and fine tune the location of the fault. The splice boat will likely be a barge, equipped with water pumps, jetting devices, hoisting equipment and other tools typically used in repairs of cables;
2. Expose the cable with hand-operated jet tools and cut the cable in the middle of the damaged area;
3. Position the repair vessel above the cut cable and raise one end;

Copyright © ESS Group, Inc., 2008

4. Cut off the damaged portion of the cable;
5. Perform a cable splice between the retrieved cable and the spare cable onboard;
6. Pay out cable and move to the other cable end, keeping a portion of the spare cable on board;
7. Retrieve the other cable end;
8. Cut off the damaged portion of the cable;
9. Perform the final cable splice between the retrieved cable and spare cable onboard;
10. Lower the second joint and position it on the sea bottom;
11. Hand jet the repaired and exposed sections back into the riverbed; and
12. Demobilize the repair vessel.

Copyright © ESS Group, Inc., 2008

Exhibit E-4

Engineering Justification

HUDSON TRANSMISSION PARTNERS LLC

THE HUDSON PROJECT

EXHIBIT E-4 – ENGINEERING JUSTIFICATION

PREPARED PURSUANT TO SECTION 86.4

TALE OF CONTENTS

SECTION **PAGE**

EXHIBIT E-4 – ENGINEERING JUSTIFICATION

E-4.1 Relationship to Existing Networks

The Project facilities consist of three major components: a 660,000 kilowatt (660 MW) high voltage direct current (HVDC) converter station; a 1,800 foot long, 230 kilovolt, alternating current (230 kV AC) electric power cable connecting the HVDC facility to the PJM System at the Public Service Electric and Gas Bergen Substation; and a 7 mile 345 kV AC underground/submarine three phase electric power cable interconnecting the HVDC Converter Station to the NY-ISO system at Con Edison's W 49th Street Substation. The HVDC Converter Station and PJM AC interconnecting cable are both located in the Borough of Ridgefield, New Jersey and the W 49th Street Substation is located in the New York City borough of Manhattan.

The 230 kV AC, three phase interconnecting cable system between the Bergen Substation and the HVDC Converter Station facility will reside in an underground three-conduit system installed using horizontal directional drilling (HDD) technology.

The 345 kV AC, three phase cable interconnecting the HVDC Converter Station with New York will be buried in upland rights of way obtained through negotiated easements with the CSX and New York, Susquehanna & Western (NYS&W) Railroad and private property owners between Ridgefield and Edgewater, New Jersey. In Edgewater, the AC cable enters the bed of the Hudson River via an underground, three-conduit system installed using HDD technology. Figure 2-1 shows the interconnection of the proposed Hudson Facility with the W49th Street Substation.

The HVDC Converter Station in Ridgefield, New Jersey will be comprised of a main building to house the solid-state, HVDC converter valves, system control and protection devices and auxiliary power supplies; outdoor electrical switches, capacitors and reactors to support the HVDC process and provide electrical harmonic filtering; gas insulated switchgear (GIS) and underground cabling to interconnect the various station components; and other secondary components necessary to ensure safe and reliable system operation

The converter station facilities will be designed, manufactured, installed, and tested by Siemens. AC cables will be designed, manufactured and installed by Prysmian. Both companies have extensive international HVDC transmission experience. All facilities will be constructed in accordance with the National Electric Safety Code and applicable ANSI standards.

Final details of the New York interconnection will conform to the requirements of the NY-ISO System Reliability Impact and Facility Studies.

E-4.2 Reliability and Economic Benefits

The Hudson Transmission Project will use HVDC technology in a "back-to-back" configuration. Energy delivered at the PJM AC system interconnection (at 230 kV) will be converted at the Ridgefield, New Jersey Converter Station to HVDC using solid-state electronics and immediately converted back to AC for delivery to New York (at 345 kV), all in a single process. Using a single site, the "back-to-back" conversion process eliminates the need to site an HVDC converter station in the space-limited NYC area, while still offering the benefits of an HVDC technology interconnection:

Copyright © ESS Group, Inc., 2008

- The HVDC process allows for a precise control of the energy transfer;
- Energy transfer is bidirectional;
- The conversion process prevents the transmission line from acting as a new path for short-circuit duty between the two AC systems, thereby reducing overload and transient impacts on the interconnected electric systems; and
- The project may offer additional reactive power (leading or lagging) to the interconnected systems through onsite static filter devices not required for the HVDC conversion process.

The upland 230 kV and 345 kV interconnecting cables will feature an inner copper conductor surrounded by solid dielectric insulation. Layers of copper taping and insulating plastic jackets will internally neutralize electric fields and provide safe paths to ground for short circuit currents in the event of cable damage. Additional details of the land cables are provided in Exhibit E-1. A fiber optic cable will also be installed to provide the required monitoring capability and telemetry.

The interconnecting three phase, 345 kV AC submarine cables use self-contained fluid-filled ("SCFF") construction. A hollow core, segmented copper conductor is wrapped with paper polypropylene laminated (PPL) insulation material. The hollow core serves as a duct for cable insulating fluid to circulate within the cable and provide dielectric strength. Similar to the land-based cables, the submarine cables are also constructed with metallic tapes and plastic jacketing to neutralize electric fields and act as a short circuit path. The cable itself also has protective steel armoring wires to protect it against damage. Additional details of the submarine cable are provided in Exhibit E-1.

The proposed cable installation design and techniques have been selected to minimize the potential of mechanical damage to the cable system and ensure operational safety and reliability of the cable. Direct burial of the submarine cable to depths as required by the USACE, generally expected to be 15 feet within the Federal Channel and 10 feet below the riverbed outside the channel, provides significant safety and reliability against cable damage by vessels or anchors. In addition, the use of a specialized environmentally sensitive (low impact) proven cable laying technology and an experienced marine installation crew will provide for safe installation of the submarine cable. At the landfall locations the submarine cable will be encased within either a steel or polyethylene conduit to provide protection against mechanical damage.

Each phase of the three phase 230 kV and 345 kV upland cables will be installed underground in its own conduit to an approximate depth of 3 feet below ground surface with pre-cast concrete cap placed in the trench above the conduits. The fiber optic cable will be installed in a separate conduit. This type of installation will provide sufficient protection against damage due to traffic. At utility crossings, the cables will be protected by a steel sleeve.

Design of the Project will meet or exceed all reliability, protection, and control requirements and criteria of the Northeast Power Coordinating Council (NPCC), Reliability First, the New York Independent System Operator (NYISO), the PJM Interconnection, and the local service providers, Public Service Electric and Gas, and Consolidated Edison. All critical auxiliary equipment, controls, protections, metering, and communications will employ redundant systems to maximize system availability and reliability. Economic benefits of the proposed facilities are described more fully in

Copyright © ESS Group, Inc., 2008

Exhibit 6, with reference to increased supply and the opportunity to reduce costs and emissions. Other benefits include:

- **Optimal point of interconnection:** The Project will be connected to the heart of Con Edison's load, thereby increasing the transfer capability between the Zone J load pocket and PJM. As will be detailed in the NYISO System Reliability Impact Study (SRIS), this interconnection can be accomplished with minimal need for AC system upgrades in New York.

- **Enhanced system reliability:** Connecting to Con Edison's system at W 49th Street with HVDC technology will not contribute to the system's short-circuit fault duty and could provide positive benefits for the system by supplying voltage support and current corrective capability.

- **Greater reliability and availability:** The underground and submarine installation of the Project's transmission cable system, the redundancy in its conversion equipment and the cable's connection to the Bergen Substation as opposed to a dedicated generator provide it with an inherently higher reliability and availability than AC generation and overhead transmission systems.

A transmission line interconnected to the adjacent PJM network will add no new sources of air emissions, water consumption or discharges, and create no noise, traffic, neighborhood impacts, or land use conflicts.

E-4.3 Date of Completion and Impact of Delay

NYPA has expressed its desire for the Project to be in commercial operation by 2010. While the actual in-service date depends on a number of factors, HTP envisions a construction period of approximately 24 months, based on discussions with its contractors and on the recent experience of the Neptune Regional Transmission System project. Delays in the in-service date will postpone the timing of the economic and reliability benefits described in Exhibit 6.

E-4.4 System Impact Studies

HTP has moved pursuant to Section 85-2.3(c) for permission to file the SRIS after it has been reviewed by the NYISO TPAS, by the end of February, 2008. HTP initiated the SRIS process in December 2005, with the filing of an Interconnection Request. HTP signed an SRIS Agreement and paid the required deposit in March 2007. HTP's request is identified as #206 on the NYISO Interconnection Queue and its status is identified as "SRIS/SIS in progress." HTP's electrical engineering consultant has completed a draft of the SRIS and will be providing copies for review to NYISO staff and to Consolidated Edison no later than January 15, 2008. HTP expects to submit the SRIS to TPAS, and then to the NYISO Operating Committee, for their respective reviews, and expects to receive NYISO Operating Committee approval on or before the end of February, 2008.

Copyright © ESS Group, Inc., 2008

Exhibit E-5

Effect on Communications

HUDSON TRANSMISSION PARTNERS LLC

THE HUDSON PROJECT

EXHIBIT E-5 – EFFECT ON COMMUNICATIONS

PREPARED PURSUANT TO SECTION 86.4

TABLE OF CONTENTS

SECTION **PAGE**

EXHIBIT E-5 – EFFECT ON COMMUNICATIONS

E-5.1 Radio and Television Interference

E-5.1.1 New Jersey Converter Station

No AC-DC-AC conversion equipment or facilities will be located in New York. The HTP Converter Station, located in Ridgefield, New Jersey, is designed to minimize the potential for Radio Interference. Due to effective screening by the converter station valve hall, high frequency (HF) noise is limited to radiation from the air-insulated outdoor, high voltage AC switchgear and overhead interconnecting busbar and lines. The extended use of shielded cables and enclosed, electric field-suppressing gas insulated switchgear (GIS) will further reduce the potential for generation of HF noise. Radio frequency measurements will be taken in the vicinity of HVDC converter station to verify no disturbance to any radio, broadcast, or communication services. All open-air electronic equipment associated with the converter operation located outside the valve halls will be in compliance with Electro- Magnetic Compatibility (EMC) emission standards, such as CISPR 11 (ComitC International Special des Perturbations Radio Electriques, International Special Committee on Radio Interference, under IEC International Electro-technical Commission), which standard is considered as being equivalent to FCC part 15. The converter station will also be in compliance with IEC61000-6-1.

E-5.1.2 Power Cables

The underground 345 kV AC power cables interconnecting the converter station with the Con Edison W49th Street Substation incorporate outer metal shielding at ground potential and create no external electric fields. The cables, therefore, do not create any corona discharge and are not independent sources of radio, telephone, or television interference.

E-5.1.3 Con Edison W 49th Street Substation

The New York interconnection of the 345 kV AC power cables will be at the indoor Con Edison W49th Street substation. The GIS cable terminations will minimize the generation of corona discharge associated with the project and limit the ability to produce radio interference.

E-5.2 Power Line Carrier interference ("PLC")

A PLC noise study will be performed in cooperation with the interconnecting utilities to determine the necessity for and dimensioning of additional PLC filters to minimize effects on AC power system protective relay devices. Such filters, if required, will be installed between the converter transformers and the AC switchgear at the New Jersey converter station.

E-5.3 Telephone Interference

Converter Station AC harmonic filters will be designed in cooperation with the interconnecting utilities to limit the contribution to harmonic distortion in the AC grid to a level that will not influence the local telephone systems.

Copyright © ESS Group, Inc., 2008

Exhibit E-6

Effects on Transportation

HUDSON TRANSMISSION PARTNERS LLC

THE HUDSON PROJECT

EXHIBIT E-6 – EFFECTS ON TRANSPORTATION

PREPARED PURSUANT TO SECTION 88.6

TABLE OF CONTENTS

SECTION **PAGE**

FIGURES

EXHIBIT E-6 – EFFECTS ON TRANSPORTATION

This Exhibit describes the existing transportation system in the New York portion of the Project Area and the potential impacts and mitigation measures resulting from construction, operation, and maintenance of the Project.

Information included in this Exhibit is based on review of existing published data and limited field investigation. Roadway, rail, air, and waterborne transportation in the New York portion of the Project Area are described below.

Once in operation, the Project will not affect transportation. During construction, vehicle traffic on the nearby roads and streets and Hudson River navigation will be impacted in confined areas and for limited time periods. The Project will not impact either rail or air transportation resources.

E-6.1 Roadway Transportation

E-6.1.1 Existing Conditions

The New York upland route and associated components of the Project will be located within a limited part of Manhattan's West Side. The New York City (NYC) roadways bounding the Project site include 12th Avenue (West Side Highway) to the west, W 52nd Street to the north, 11th Avenue to the east, and W 49th street to the south. This network of roadways is shown in Figure E6-1.

Twelfth Avenue (also known as West Side Highway and New York State Route 9A) serves as the primary arterial providing access to the area and to the Con Edison W 49th Street Substation. In the vicinity of the Project, 12th Avenue is an at-grade eight (8) lane arterial roadway (four lanes in each direction) with a median divider. A parking lane is located along the east side of the northbound lanes. Traffic signals are located at the intersections of 12th Avenue with W 49th, W 50th, W 51st and W 52nd streets.

Eleventh Avenue is an at-grade six (6) lane roadway with a painted divider separating north and south bound traffic. Traffic signals are located at the intersections of 11th Avenue with W 49th, W 50th, W 51st and W 52nd Streets.

W 52nd Street is an at-grade three (3) lane roadway with one-way traffic in an easterly direction. The two outer lanes are used for parking. Traffic signals are located at the intersections of W 52nd with 11th and 12th Avenues.

W 51st Street is an at-grade three (3) lane roadway with one-way traffic in a westerly direction. The two outer lanes are used for parking. A traffic signal is located at the intersection of W 51st Street and 11th Avenue.

W 50th Street is an at-grade three (3) lane roadway with one-way traffic in an easterly direction. The two outer lanes are used for parking. A traffic signal is located at the intersection of W 50th and 11th Avenue.

Copyright © ESS Group, Inc., 2008

W 49th Street is an at-grade three (3) lane roadway with one-way traffic in a westerly direction. The two outer lanes are used for parking. A traffic signal is located at the intersection of W 49th and 11th Avenue.

An elevated access road adjacent to the NYCEDC pier area is located between 12th Avenue and the Hudson River, extending from Pier 88 to Pier 92. Access ramps are located to the north of W 52nd Street and to the south of W 48th Street. At-grade parking is available beneath the elevated access road.

Many of these roadways have been recently resurfaced or reconstructed and therefore are included in NYC's list of protected streets and intersections. These roadways are to remain protected for five years upon completion of the construction. Installation of the cable on these roadways would require authorization from the NYCDOT Commissioner during their respective "protected" periods. Protected roadways in the vicinity of the Project include the following:

- 11th Avenue, from W 45th Street to W 55th Street, protected until 11/09/08;
- W 45th Street, from 11th Avenue to 12th Avenue, protected until 11/01/08;
- W 46th Street, from 11th Avenue to 12th Avenue, protected until 04/15/09;
- W 47th Street, from 11th Avenue to 12th Avenue, in progress;
- W 49th Street, from 11th Avenue to 12th Avenue, in progress;
- W 50th Street, from 11th Avenue to 12th Avenue, in progress;
- W 52nd Street, from 11th Avenue to 12th Avenue, protected until 06/24/09;
- Intersection of 11th Avenue and W 49th Street, protected until 11/09/08; and
- Intersection of 11th Avenue and W 50th Street, protected until 11/09/08.

The 2003 Traffic Volume Report from the New York State Department of Transportation (NYSDOT) provides recent traffic count data for sections of state highway systems in New York County. The Annual Average of Daily Traffic (AADT) for the portion of the West Side Highway that includes the Project site, between 14th Street and 72nd Street, is 80,748 vehicles. Bus service in the New York metropolitan area is provided by NYC Transit. Bus routes closest to the Project area are shown in Figure E6-2. This includes bus route M50 that extends Crosstown between east and west Midtown via W 49th and W 50th Streets. This route travels north and south on 12th Avenue, east on W 50th Street, and west on W 49th Street. Operation is daily with a service interval ranging between 11 and 50 minutes (MTA, 2007).

E-6.1.2 Impacts and Mitigation

Impacts to roadway transportation during construction of the Project will be minimal except in the immediate vicinity of the work, and these impacts are expected to be temporary.

Copyright © ESS Group, Inc., 2008

For the portion of the cable route from the Hudson River to the Transition Vault under W 52nd Street, subsurface Horizontal Directional Drilling (HDD) will be used. This method of construction effectively eliminates construction impacts to 12th Avenue entirely (as well as to the bike path and access and parking areas west of 12th Avenue), since the installation of conduit and cable will take place entirely beneath the surface.

The greatest impact to City streets will likely be on W 52nd and W 51st Streets between 12th and 11th Avenues. 52nd St. will be the location of the drill pit for the HDD equipment and subsequently for pulling conduit and cable from the landfall site, and constructing the underground Transition Vault. 51st St. will be the location of a splicing pit. These operations are expected to require temporary, partial closure of the two streets between 11th and 12th Avenues. Trench excavation and conduit installation from the Transition Vault to the Con Edison Substation will involve work on W 52nd Street, 11th Avenue, W 51st Street, and 12th Avenue. Trench and installation work will proceed day-to-day for short distances, so that impacts to the street and sidewalk on any given day will be highly localized. It is expected that this work will involve primarily the sidewalks and street edges, so that most required street closures are likely to be partial rather than complete. Trenching and cable installation from the Transition Vault to the Con Edison Substation is expected to take up to 6 months depending upon subsurface conditions. All construction operations involving streets and sidewalks will be done in accordance with permits obtained from the NYSDOT for 12th Avenue, and from New York City Department of Transportation (NYCDOT) for other streets.

Transportation of the land-based equipment and construction materials to the Project site will also create temporary impacts to the NYC roadway network. These deliveries will slightly increase the volume of traffic and minimally affect the annual average daily trip (AADT) count.

Once in operation, the transmission facility will require no on-site employees for operation and maintenance. Traffic associated with routine periodic inspections or maintenance of the cable system's Transition Vault will be minimal, and will represent a negligible volume when compared with existing daily traffic volumes in the area. Periodic inspection and maintenance of Transition Vault equipment will be accomplished via a manhole, and may require occasional partial closures of W 52nd Street to enable parking of service vehicles and safe access to and from the manhole. Apart from the Transition Vault, the cable itself is designed such that inspection and maintenance will not be required except on an emergency basis. In the highly unlikely event of such an emergency, access to the cable and necessary repair work will be performed with the appropriate approvals from NYSDOT or NYCDOT.

E-6.2 Railroads

This Section describes the existing railroad and subway network in the area of the Project's New York upland components and the potential impact and mitigation to railroads resulting from construction, operation, and maintenance of the Project.

Copyright © ESS Group, Inc., 2008

E-6.2.1 Existing Conditions

E-6.2.1.1 Freight/Passenger Railroads

According to the USGS Central Park, NY-NJ topographic quadrangle, there are several freight/passenger railroad tracks located within a tunnel that runs parallel to 10th Avenue. These tracks are approximately 1,500 feet east of the New York landfall area and Con Edison W 49th Substation.

The Metro-North Railroad and the Long Island Railroad are commuter railroads located in New York City. These lines travel to the surrounding areas of New York, New Jersey, and Connecticut.

Penn Station, a major transit hub for the Metro-North and Long Island Railroads, is located approximately 1.1 miles from the Project site at W 33rd Street and 8th Street. The Metro-North Railroad travels west from Penn Station into New Jersey by way of the Port Jervis and Pascack Valley Lines. These lines cross the Hudson River south of the Lincoln tunnel approximately 1 mile south of the Project Landfall location. The Long Island Railroad travels east from Penn Station into Long Island by way of the City Terminal Zone (MTA, 2007).

Grand Central Station, another major transit hub for the Metro-North Railroad, is located approximately 1.3 miles from the Project site at E 45th Street and Park Avenue. The Metro-North Railroad travels north and east from Grand Central Station to surrounding areas of New York and Connecticut. Commuter rails that extend from this station include the Harlem, Hudson, and New Haven lines (MTA, 2007).

E-6.2.1.2 Subways

The NYC Transit, part of the Metropolitan Transportation Authority (MTA), provides subway service to the City. The subway system has 25 interconnected routes, and operates 24 hours a day. Scheduled times vary between subway trains ranging from 1.5 to 20 minutes, depending on time of day. The subway station nearest the Project site is located at W 50th Street and 8th Avenue (approximately 3,200 feet east). This station services the C and E southbound only trains, and provides connections to the M10, M20, M27, M50, and M104 NYC Transit bus lines (MTA, 2007). This subway station/route is shown in Figure E6-3.

E-6.2.2 Impacts and Mitigation

The Project will not impact the existing railroads and subway system. The railroads and subways will not be used to transport land-base equipment and construction materials to the Project site. However, construction workers may commute to/from the job site using the NYC Transit subway system. Construction operations, including subsurface HDD, will not impact any rail or subway infrastructure, the closest of which is located approximately 1,500 feet away.

Copyright © ESS Group, Inc., 2008

E-6.3 Airports

The New York City Landfall and Con Edison W 49th Street Substation are located near several air transportation services provided in the New York metropolitan area. These services include the following airport and heliport facilities as shown on Figure E6-4.

- La Guardia Airport – approximately 5.7 miles to the east;
- J.F.K. Airport – approximately 12.4 miles to the southeast;
- Brooklyn Heliport – approximately 12.7 miles to the southeast;
- Downtown Heliport – approximately 4.8 miles to the south;
- VIP Heliport – approximately 1.3 miles to the southwest;
- Newark International Airport – approximately 9.7 miles to the southwest; and
- Teterboro Airport – approximately 5.7 miles to the northwest.

The installation and operation of the proposed cable system will have no impact to air transportation and the existing airport and heliport facilities, including communications. The Project is not proposing any transmission towers and all New York components will be located below ground.

E-6.4 Navigable Waterways

This Project will involve work within the Hudson River between Edgewater, New Jersey and Piers 92-94. This work will entail the installation of the submarine cable and the shoreline landfall construction activities. All work that will take place within the Hudson River will be temporary and, once the cable is installed, there will be no impacts to navigation activities. All project work activities will be closely coordinated with local, state, and federal agencies including the U.S. Coast Guard (USCG), the U.S. Army Corps of Engineers (USACE), and the local Port Operations Committee. The following section is based upon review of available published works.

E-6.4.1 Existing Conditions

The Hudson River extends some 315 miles, from the headwaters in the Adirondack Mountains at Lake Tear of the Clouds to its meeting with the Atlantic Ocean at New York City. The River generally runs in a north-south direction. The Lower Hudson River is open to the south and connects to New York Harbor at the confluence with the East River. Piers and wharves line the NYC waterfront beginning at the Battery and then heading north for a stretch of 5 miles. Along the west side of the Hudson River are the cities of Jersey City, Hoboken, Weehawken, Guttenberg, Hudson Heights, Edgewater, and Fort Lee. This 9 mile stretch of River also includes many piers. The Lower Hudson River ranges from approximately 3,000 feet to 3,700 feet in width within the Project Area.

The Lower Hudson River is used for navigation by both recreational and commercial vessels engaged in waterborne commerce. Peak usage by recreational vessels is during the warmer months of the year, typically April through October. Several of the piers and wharves on the NYC side of the river are capable of handling large transoceanic liners. Pilotage is required in the Hudson River for foreign and U.S. vessels under registry (NOAA, 2004).

Copyright © ESS Group, Inc., 2008

As presented in Figure 2-3, charted water depths in the project vicinity vary from 2± feet to 65± feet. At the entrance of the Hudson River, near Ellis Island, there are three federal channels that extend north towards the Lincoln Tunnel. The project depths of these channels are 40 feet mean low water (MLW), 45 feet MLW, and 40 feet MLW respectively from the New Jersey shoreline to the New York shoreline. The widths of these channels vary. North of the Lincoln Tunnel, at the proposed New York landfall area, is a federal channel basin with a depth of 48 feet MLW. The dimensions of the basin are approximately 2,000 feet by 5,000 feet. North of the New York landfall area, from 59th Street in Manhattan to Albany, the project depth is 32 feet MLW. However, the Weehawken-Edgewater Federal Channel, located near the New Jersey shoreline between 85th Street and 156th Street in Manhattan, has a project depth of 30 feet MLW. The width of the Weehawken-Edgewater Channel is approximately 800 feet.

The Lincoln Tunnel is located south of the proposed New York City Landfall area between Weehawken, New Jersey and W 46th Street in Manhattan.

E-6.4.1.1 Pilotage

Vessels traveling the Hudson River between the Long Island Sound and Yonkers, New York are serviced by United New York & New Jersey Sandy Hook Pilot Association. However, U.S. vessels enrolled in the coastwise trade are serviced by Interport Pilots Agency, Inc.

The Hudson River is well marked and has both floating and fixed navigational aids.

In 2005 (latest data available), there were 202,689 vessel trips (drafts between 18 feet and 39 feet) of vessels engaged in waterborne commerce reported in the Hudson River Channel between New York and New Jersey. There were 101,376 upriver trips reported and 101,313 downriver trips reported in the area in 2005. Recorded trips in this area were predominantly made by self-propelled dry cargo vessels. A small percentage of trips were made by self-propelled tankers and tugs. Recreational vessel trips are not included in the data (USACE, 2005).

E-6.4.1.2 Hazards and Obstructions

Seaward of the Weehawken-Edgewater Federal Channel is an obstruction with approximate dimensions of 30 feet by 85 feet. The minimum height of the obstruction is 30.2 feet MLW and it is marked with a buoy.

Charted fish trap areas are designated along the Hudson River from The Battery in New York City to Stony Point, New York. USACE permitted vessels place fish traps, shad nets, and poles in these areas during active months between March and May. These locations are usually marked by flags during the day and by lights during the night. A fish trap area, approximately 500 feet wide by 3.5 miles long, is located in the project vicinity between New Jersey and New York. The area extends from Pier 99 to W 130th Street in Manhattan. Caution is advised when navigating through this area (NOAA, 2004).

Copyright © ESS Group, Inc., 2008

Ice season typically occurs between January and March in the Hudson River. Coast Guard Ice Breakers and continuous marine traffic successfully maintain open water as far north as Albany.

There are no bridges located in the project vicinity.

E-6.4.1.3 Cable/Pipeline Crossings

The proposed cable route crosses an existing pipeline area located in the Hudson River between Guttenberg, New Jersey and W 78th Street in Manhattan. According to the navigational charts, the width of this area is approximately 1,000 feet and contains two parallel gas pipelines owned by WGP-Transco.

There is also a charted pipeline area that extends from Cliffside Park, New Jersey to W 133rd Street in Manhattan. The width of the pipeline area is approximately 1,000 feet and includes several WGP-Transco gas pipelines. This area is north of the proposed New Jersey landfall area and will not be affected by the Project.

E-6.4.1.4 Anchorages

Naval Anchorage Area No. 19 is located along the Hudson River from W 70th Street to the George Washington Bridge on the New York side of the River. The width of the anchorage extends from Manhattan to the eastern limit of the Weehawken-Edgewater Federal Channel. The anchorage serves as a safe harbor hurricane anchorage for naval vessels. It is designed to accommodate an entire naval battle group and includes numerous active berths. However, the anchorage is seldom utilized by the Navy. The larger berths are 1,500 feet in diameter with the smaller points being approximately 900 feet in diameter. The proposed cable route passes through the anchorage from the New Jersey landfall area to the New York landfall area (NOAA, 2004).

Naval Anchorage 16 is also located within the Hudson River from the Union Dry Dock and Repair Company Shipyard to the Fort Lee flagpole in Edgewater, New Jersey. This anchorage is located north of the proposed cable route.

E-6.4.1.5 Restricted Areas

The safety and security zone located at the New York City Passenger Ship Terminal is a New York Marine Inspection Zone and Captain of the Port Zone. Passenger vessels pierside at this location are designated by the Captain of the Port as requiring special protection to safeguard facilities, vessels, and the surrounding areas from danger. Entry into or movement in this zone is prohibited without authorization from the Captain of the Port New York. This area is bounded by Pier 84 to the south, Pier 96 to the north, the Hudson River to the west, and the New York shoreline to the east. This zone is enforced whenever passenger vessels are pierside at Pier 88, 90, or 92. This zone is also enforced when the Passenger Ship Terminal or the adjacent Intrepid Sea-Air-Space Museum is being used as an Emergency

Copyright © ESS Group, Inc., 2008

Operations Center. The activation and termination of this zone is announced in accordance with 22 CFR 165.7 (NOAA, 2004).

E-6.4.2 Impacts and Mitigation

E-6.4.2.1 Construction Impacts

Construction impacts to Lower Hudson River navigation associated with the Submarine Cable installation will be temporary and localized. This is based upon the following:

- The Applicant has consulted extensively with the New York City Economic Development Corporation (NYCEDC) in an effort to minimize impacts to navigation and berthing operations in the vicinity of the area of the Hudson River between Piers 86 and 94. Selection of the landfall site took into account NYCEDC's expressed preferences.

- The HDD operation will be conducted from the upland; therefore there will be limited navigational impacts associated with the installation of the borehole(s) from landside operations, as described below.

- The HDD operation and cable pulling will require the placement of a temporary cofferdam located at the seaward end of Piers 92-94. The cofferdam will be approximately 30 feet wide and 100 feet long and will remain open at the seaward end to allow for manipulation of the HDD conduits. The cofferdam will be constructed using steel sheet piles driven from a barge-mounted crane. The tops of the cofferdam sheet piles will remain submerged, approximately 5 feet above the river bottom, for the duration of the submarine cable installation. The location of the cofferdam will be appropriately marked to warn vessels of its presence below the water surface. The material from within the temporary cofferdam will be disposed of at an approved upland facility. The installation of the cofferdam and removal of sediment will take approximately 2 weeks to complete. The cofferdam may be in place for up to a year depending on the sequencing of the installation.

- The HDD operation will involve a marine construction component in order to construct the borehole(s). This operation will take place seaward of the pierhead line and within the limits of the Federal Navigation Channel. It is expected that a marine work barge will be stationed at the seaward end of the NYCEDC Piers 92-94. This marine-based operation will facilitate the HDD operation and conduit installation. Since the berth areas between these two Piers are not active Cruise Ship Terminals and only used for emergency situations, there will be minimal, if any, effects to the passenger ship terminal berths during installation. HTP will coordinate all construction activities with NYCEDC so as to minimize any conflicts with the passenger ship arrivals and departures. The HDD process is expected to take approximately up to 3 months[1] to complete.

[1] The length of time required for the HDD process depends on the number of boreholes required for the proposed Project. A single borehole drill is anticipated to take approximately 3.5 weeks. The number, and size, of the boreholes for the HDD process will depend upon the complexity of existing underground utilities in the vicinity of the upland landfall transition. Depending upon the

Copyright © ESS Group, Inc., 2008

- The HDD operation will be closely coordinated with the NYCEDC, USCG, and New York Harbor Vessel Transportation Service (VTS), and Notice to Mariners will be posted as required.

- The jet plow embedment process for installation of the Submarine Cable will involve a cable-laying vessel and a hydraulic jet plow towed behind the vessel. Jet plow embedment of the submarine cable system from the New York Landfall to the New Jersey Landfall is expected to take approximately 7 days to complete.

- The jet plow installation will be closely coordinated with the NYCEDC, USCG, and New York Harbor Vessel Transportation Service (VTS), and Notice to Mariners will be posted as required.

- All in-water operations associated with the HDD operation and the jet plow embedment process will be conducted by qualified and certified vessel and equipment operators.

E-6.4.2.2 Operation

- Once installed, the submarine cable system will have no impact to navigation in this area of the Hudson River.

- The submarine cable will be buried a minimum of 10 feet below the present river bottom in areas outside the limits of established Federal Navigation Channels and buried a minimum of 15 feet below the present river bottom in areas within the limits of the Federal Navigation Channel). These burial depths will comply with current USACE-NYD guidelines for the placement of cables and pipelines within Federal Channels and navigable waters of the Hudson River.

- The cable burial depths of 10 feet and 15 feet provide sufficient sediment overburden to avoid cable damage by vessel anchors or other mechanical impacts.

- The submarine cable will be an AC system. Therefore, there will be no measurable compass deflection effects on vessels transiting over the cables. Additionally, there will be no electrical interference with radio, GPS, or radio-beacon navigational equipment.

- Once installed, the submarine cable route will be charted by the National Oceanic and Atmospheric Services on the next version of the Nautical Chart for the Hudson River. It is also expected that this cable area designation will be published in the Coastal Pilot and Notice to Mariners for this area of the Hudson River. These cable area designations do not restrict or preclude vessel traffic or general navigation within these areas.

constructability of the area it is estimated that either 3 boreholes of approximately 20-26", or one borehole of approximately 48-50" will be required. Detailed information on the HDD boreholes will be presented in the EM&CP.

Copyright © ESS Group, Inc., 2008

E-6.5 References

Metropolitan Transportation Authority. 2004. MTA Manhattan Long Island Railroad Map.

Metropolitan Transportation Authority. 2007. MTA Manhattan Bus Map.

Metropolitan Transportation Authority. 2007. MTA Manhattan Metro-North Railroad Map.

Metropolitan Transportation Authority. 2007. MTA Manhattan Subway with Bus, Railroad, and Ferry Connections Map.

NOAA. 2003. Navigational Chart #12341—Hudson River: Days Point to George Washington Bridge. 26th Edition, June 2003.

NOAA. 2004. United States Coast Pilot 2—Atlantic Coast: Cape Cod, MA to Sandy Hook, NJ. 33rd Edition.

NOAA. 2006. Navigational Chart #12335—Hudson and East Rivers: Governors Island to 67th Street. 41st Edition, September 2006.

Copyright © ESS Group, Inc., 2008