

AN

INTERCONNECTION AGREEMENT

BETWEEN

NIAGARA MOHAWK POWER CORPORATION

AND

EMPIRE GENERATING CO, LLC

INTERCONNECTION AGREEMENT (the “Agreement”) is made as of January 15, 2004, between Niagara Mohawk Power Corporation, a National Grid company (“Niagara Mohawk”), a New York Corporation, and Empire Generating Co, LLC, a New York limited liability company (the “Producer”). (Collectively, Producer and Niagara Mohawk may be referred to as the “Parties”, or individually, as a “Party.”)

WHEREAS, the Producer is developing a power production facility to be located in the City of Rensselaer, County of Rensselaer, New York (the “Production Facility”);

WHEREAS, the Producer and Niagara Mohawk desire to provide for the interconnection of the Production Facility to Niagara Mohawk’s Transmission System under the terms and conditions set forth herein; and,

WHEREAS, certain Upgrades to Niagara Mohawk’s system will be needed solely for Producer’s benefit and will not support any other transmission user.

NOW THEREFORE, in consideration of the mutual representations, covenants and agreements set forth herein, the Parties to this Agreement agree as follows:

ARTICLE I DEFINITIONS

The following terms, when used herein with initial capitalization, shall have the meanings specified in this section.

- 1.1 “Agreement” shall mean this Interconnection Agreement between Niagara Mohawk and the Producer, including all exhibits hereto, as the same may be amended, supplemented, revised, altered, changed, or restated in accordance with its terms.
- 1.2 “Bulletin No. 756” or “ESB 756” shall mean that certain internal Niagara Mohawk document dated 2001, 2nd printing June, entitled “Supplement to Specifications for Electrical Installations; Parallel Generation Requirements” and designated Electric System Bulletin No. 756 and its Appendix C, as amended or superseded, as available on Niagara Mohawk’s website.
- 1.3 “Commercial Operation Date” shall follow the Initial Synchronization Date and shall mean the date after all pre-operational testing of the Interconnection Facility has been completed to Niagara Mohawk’s satisfaction, the Interconnection Facility has been energized, and the Producer has commenced selling energy or capacity into the wholesale power market administered by the NYISO pursuant to the NYISO OATT. Producer shall provide Niagara Mohawk written notice at least sixty (60) days in advance of the Commercial Operation Date and will reaffirm this date, or provide notice of a revised date, no less than twenty (20) days prior to the previously notified date.
- 1.4 “Commercially Reasonable Efforts” shall mean efforts which are designed to enable a Party, directly or indirectly, to satisfy expeditiously a condition to, or otherwise assist in

the consummation of, the actions contemplated by this Agreement and which do not require the performing Party to expend any funds or assume liabilities other than expenditures and liabilities which are customary and reasonable in nature and amount in the context of the actions contemplated by this Agreement.

- 1.5 “Confidential Information” shall mean any plan, specification, pattern, procedure, design, device, list, concept, policy or compilation relating to the present or planned business of a Party which has not been released publicly by its authorized representatives and which has been designated as “Confidential” by the Party asserting a claim of confidentiality, whether such Confidential Information is conveyed orally, electronically, in writing, through inspection, or otherwise. Confidential Information as used herein also includes Confidential Information supplied by any Party to another Party prior to the execution of this Agreement, and such Confidential Information shall be considered in the same trimmer and be subject to the same treatment as the Confidential Information made available after the execution of this Agreement. Confidential Information shall also include Confidential Information observed by any Party while visiting the premises of another Party.
- 1.6 “Delivery Point” shall mean the point at which the Interconnection Facility is connected to the Transmission System as indicated on Exhibit A. This point shall be at the jaw side of the disconnect switch (SW #599) connecting the Interconnection Facility, new breaker and switches to the existing bus work at the Niagara Mohawk Reynolds Road Substation
- 1.7 “Electricity” shall mean electric capacity as measured in MW or kW, energy as measured in MWh or kWh, and/or ancillary services.
- 1.8 “Emergency Condition” shall mean a condition or situation which is deemed imminently likely to (i) endanger life, property, or public health; or (ii) adversely affect or impair the Transmission System, the Production Facility, or the electrical or transmission systems of others to which Niagara Mohawk’s electrical systems are directly or indirectly connected.
- 1.9 “Facilities Study” shall mean the necessary studies performed by Producer, or its third party designee, approved by Niagara Mohawk as set forth in Article IV, Section 4.1. The Facilities Study is attached hereto as Exhibit B.
- 1.10 “FERC” shall mean the United States of America’s Federal Energy Regulatory Commission or any successor organization.
- 1.11 “Good Utility Practice” shall mean any of the practices, methods and acts engaged in or approved by a significant portion of the electric utility industry during the relevant time period, or any of the practices, methods and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act, to the exclusion of all others, but

rather to be acceptable practices, methods, or acts generally accepted in the region in which the Production Facility is located. Good Utility Practice shall include, but not be limited to, NERC (defined below) criteria, rules, guidelines and standards, NPCC (defined below) criteria, rules, guidelines and standards, New York State Reliability Council (defined below) criteria, rules, guidelines and standards, and NYISO (defined below) criteria, rules, guidelines and standards, where applicable, as they may be amended from time to time including the rules, guidelines and criteria of any successor organization to the foregoing entities. When applied to the Producer, the term Good Utility Practice shall also include standards applicable to a utility generator connecting to the distribution or transmission facilities or system of another utility.

- 1.12 “Greenbush #16 Line” shall mean the existing 115 kV circuit consisting of poles, wires, insulators, conductors and other miscellaneous hardware between Rensselaer Cogen Facility and the existing Niagara Mohawk Greenbush Substation.
- 1.13 “Hazardous Substance(s)” shall mean those substances, materials, products or wastes which are classified as hazardous or toxic under any applicable federal, state or local law, or any regulations promulgated thereunder, effective as of the date of execution of this Agreement, and the presence of which requires remediation, removal or cleanup under this Agreement.
- 1.14 “Initial Energization Date” shall mean the date upon which construction of the Interconnection Facility and Upgrades have been completed and have been determined by Niagara Mohawk to be completed in accordance with Power Control Order 6-1 (“PCO 6-1”) and the circuit breakers have been closed, thereby, permitting electricity to flow from Niagara Mohawk’s transmission system to the Production Facility.
- 1.15 “Initial Synchronization Date” shall mean a date that follows the Initial Energization Date, and which date shall occur during the pre-operational testing of the Production Facility and is the first date that Electricity flows from the Production Facility through the Interconnection Facility to the Delivery Point without the need for any further major repairs or testing as determined by Niagara Mohawk and in accordance with PCO 6-1
- 1.16 “Interconnection Facility” shall include all those facilities located between the Interconnection Point and the Delivery Point necessary to effect the transfer of Electricity produced at the Production Facility to the Transmission System, as such facilities are described in more particularity in Article II and in Exhibit A to this Agreement, and shall include any Modifications, replacements or upgrades made to the Interconnection Facility, and any communications and/or protection equipment installed for the operation of the Interconnection Facility.
- 1.17 “Interconnection Point” shall mean the point at which the Production Facility is connected to the Interconnection Facility, as indicated on Exhibit A. This point will be at the jaw side of the disconnect switch used to connect the Production Facility to the Interconnection Facility.

- 1.18 “Metering Point” shall mean that point at which the Electricity produced by the Production Facility will be metered by Niagara Mohawk for purposes of billing and metering for NYISO transactions, as depicted in Exhibit A.
- 1.19 “Modification” shall mean any new construction, new facilities, additions, reinforcements, alterations, improvements, appurtenances, replacements or upgrades made to the Interconnection Facility, Upgrades, Transmission System, or the Production Facility as required by the NYISO or revised reliability standards, after the Commercial Operation Date. “Modification” as it applies to the Interconnection Facility, Upgrades or Transmission System shall also include Modifications which are required to support the operations of the Producer including those required by: (i) changes in the operations of the Production Facility after the Effective Date as hereinafter defined, or (ii) changes in the technology employed at the Production Facility after the Effective Date.
- 1.20 “NERC” shall mean the North American Electric Reliability Council or any successor organization.
- 1.21 “New York Control Area” shall have the same meaning as in the Independent System Operator Agreement establishing the New York ISO (as defined below).
- 1.22 “New York ISO” or “NYISO” shall mean the New York Independent System Operator, Inc. or any successor thereto.
- 1.23 “Niagara Mohawk” shall mean Niagara Mohawk Power Corporation and its successors and permitted assigns.
- 1.24 “Niagara Mohawk Properties” shall mean those parcels of and/or interest in real property that Niagara Mohawk *uses* for its transmission facilities upon which portions of the Interconnection Facility will be constructed.
- 1.25 “NPCC” shall mean the Northeast Power Coordinating Council (a reliability council under Section 202 of the Federal Power Act) or any successor organization.
- 1.26 “NYISO OATT” shall mean the FERC-approved Open Access Transmission Tariff for the NYISO and/or the FERC-approved Service Tariff for the NYISO, as applicable, and as it may be amended from time to time.
- 1.27 “NYPSC” shall mean the New York Public Service Commission or any successor thereto.
- 1.28 “NYSRC” shall mean the New York State Reliability Council or any successor organization.
- 1.29 “Original Greenbush #16 Line” shall mean that portion of the Greenbush #16 Line to be removed between the Rensselaer Cogen Facility generating facility and the existing Niagara Mohawk structure number 29.

- 1.30 “Permanent Greenbush #16 Line” shall mean that new portion of the Greenbush # 16 Line to be constructed and attached to the same structures supporting the Interconnection Facility between the Rensselaer Cogen Facility generating facility and the existing Niagara Mohawk structure number 29.
- 1.31 “Producer” shall mean Empire Generating Co, LLC, and its successors and permitted assigns.
- 1.32 “Production Facility” shall mean Producer’s Electricity Production facility with a maximum net Winter rating of 672 MW and with a maximum net Summer rating of 603 MW located in the City of Rensselaer, County of Rensselaer New York, to be owned, operated and maintained by Producer.
- 1.33 “Property” and “Properties” shall mean that aggregate real property interest necessary for construction, operation and maintenance of the Interconnection Facility, which real property interest may be acquired in fee ownership, via easement or option, or other means of acquisition of property rights acceptable to Niagara Mohawk, or such real property interest held by Niagara Mohawk to which Producer will be allowed access for the removal of the Original Greenbush #16 Line, construction and removal of the Temporary Greenbush #16 Line, construction of the Permanent Greenbush #16 Line, and for other necessary modifications to the Greenbush #16 Line.
- 1.34 “Rensselaer Cogen Facility” shall mean the 79 MW Rensselaer Cogeneration Facility, located at 39 Riverside Avenue, Rensselaer, New York 12144, currently owned and operated by El Paso Merchant Energy, North America, or its successors or assigns.
- 1.35 “Retail Tariff” shall means Niagara Mohawk’s Retail Tariff, New York Public Service Commission (“NYPSC”) No. 207 – Electricity as approved by the NYPSC and all subsequent revisions, as it may be amended from time to time.
- 1.36 “System Reliability Impact Study” or “SRIS” shall mean that study entitled “Interconnection Study for the Empire State Newsprint Project,” authored by the Washington Group and approved by the NYISO Operating Committee on November 14, 2001.
- 1.37 “Temporary Greenbush #16 Line” shall mean that new temporary portion of the Greenbush #16 Line to be constructed between the Rensselaer Cogen Facility generating facility and the existing Niagara Mohawk structure number 29.
- 1.38 “Transmission System” shall mean the properties, structures, facilities, equipment, devices, and apparatus wholly or partly owned or leased by, or under contract to, or under the control of Niagara Mohawk or its Affiliates, other than the Interconnection Facility, which are necessary to interconnect the Production Facility to the New York Control Area, or are necessary for purposes of providing transmission and Retail Tariff services, including services under the NYISO Tariff.

- 1.39 “Upgrades” shall mean the modifications, reinforcements and additions to Niagara Mohawk’s Transmission System and distribution facilities required or recommended to be constructed and installed prior to the Commercial Operation Date in order for Niagara Mohawk to interconnect the Production Facility to the Transmission System in accordance with NYISO Tariff rules and regulations, as identified in the Facilities Study (Exhibit B to this Agreement), and pursuant to this Agreement, and that will be needed solely for Producer’s benefit and will not support any other transmission user.

Interpretation. The following rules shall govern the interpretation of this Agreement, including its definitions. The terms “includes” or “including” shall not be limiting, whether or not followed by the words “without limitation.” References to an article or section shall mean an article or section of this Agreement unless the context requires otherwise. References to a given agreement or instrument shall be a reference to that agreement or instrument as modified, amended, supplemented and restated.

ARTICLE II

AGREEMENT TO INTERCONNECT

DESCRIPTION OF INTERCONNECTION FACILITY

- 2.1 The Parties agree to interconnect the Production Facility to the Transmission System in accordance with the terms of this Agreement.
- 2.2 Term: This Agreement shall become effective as of the date first above written (the “EFFECTIVE DATE”), subject to its approval or acceptance for filing by the FERC, and shall continue in effect for thirty (30) years thereafter and shall be automatically renewed for each successive one-year period thereafter. This Agreement may be terminated by the Producer after giving Niagara Mohawk ninety (90) Calendar Days advance written notice, or by Niagara Mohawk notifying FERC after the Production Facility is retired..
- 2.3 The Interconnection Facility shall consist generally of those facilities, including but not limited to a new 345 kV high voltage transmission line and all associated equipment and upon which said facilities are located, necessary to effect the transfer of electricity produced at the Production Facility into the Transmission System. The Interconnection Facility shall connect with the Production Facility at the Interconnection Point and the Interconnection Facility shall connect with the Transmission System at the Delivery Point, as indicated on the one-line diagram in Exhibit A.
- 2.4 The Production Facility shall include all facilities and equipment up to and including the Production Facility’s high side generator breaker, line-side disconnect switch jaws, as indicated on Exhibit A. Producer agrees that the installation of the electrical equipment and the operation of the Production Facility must meet or exceed the standards of Good Utility Practice, all requirements of Bulletin No. 756 and the NYISO; provided, however, that in the event of a conflict between the requirements, rules and regulations of the

NYISO and the requirements of Bulletin No. 756, the requirements, rules and regulations of the NYISO shall govern.

- 2.5 Producer recognizes that nothing in this Agreement or in the Producer's financial support of the Interconnection Facility confers upon the Producer any right to transmit electricity over the Transmission System. However, the interconnection of the Production Facility to the Transmission System contemplated herein will allow Producer to access the New York Control Area for purposes of Producer's stated intent to participate in the wholesale market administered by the NYISO pursuant to the NYISO OATT.
- 2.6 Niagara Mohawk shall use Good Utility Practice to own, operate and maintain the Interconnection Facility, Upgrades and Transmission System. Niagara Mohawk does not, however, guarantee or warrant uninterrupted availability of the Interconnection Facility, Upgrades or the Transmission System. Any curtailment of deliveries over the Interconnection Facility, Upgrades or the Transmission System shall be governed by Good Utility Practice, the terms and conditions of the NYISO OATT, ESB 756 and any other tariffs, approved by a regulatory body having jurisdiction.
- 2.7 Niagara Mohawk, in accordance with the rates, terms and conditions of the Retail Tariff, shall provide Producer with station service power, if so requested or authorized. Producer agrees to complete all necessary applications and forms as required by the Retail Tariff.
- 2.8 Without limiting its rights hereunder, Niagara Mohawk reserves the right to operate the primary means of disconnect on the Producer's side of the Interconnection Point. Niagara Mohawk shall exercise such right of disconnect (a) in accordance with Bulletin No. 756, (b) in the event of an Emergency Condition, (c) after giving Producer reasonable notice under the circumstances, (d) in a non-discriminatory manner, and (e) in accordance with Good Utility Practice.
- 2.9 If the Producer relies on Niagara Mohawk's system protection equipment and practices for protection of the Production Facility or if the Producer relies on any other of Niagara Mohawk's equipment for support of its operations, the Producer agrees to release, indemnify, defend, and save harmless Niagara Mohawk, its agents and employees, officers, directors, parent(s) and affiliates, against any and all claims, judgments, cost, liability, damage, injury, penalties, fines (civil or criminal), or other costs arising from any damage or loss to the Production Facility, as a result of such reliance, whether the loss, damage or injury result to or be sustained by Producer or any other persons, firms or corporations. To the extent the Producer relies on any other of Niagara Mohawk's equipment for support of Producer's operations, Producer shall agree to indemnify Niagara Mohawk in accordance with this Section 2.9 except in the event of Niagara Mohawk's gross negligence or willful misconduct.

ARTICLE III
REPRESENTATIONS AND WARRANTIES OF PARTIES

- 3.1 Producer is a Corporation duly organized and validly existing under the laws of the State of New York. Producer is qualified to do business under the laws of the State of New York, is in good standing under the laws of the State of New York, has the power and authority to own its properties, to carry on its business as now being conducted, and to enter into this Agreement and the transactions contemplated herein and perform and carry out all covenants and obligations on its part to be performed under and pursuant to this Agreement, and is duly authorized to execute and deliver this Agreement and consummate the transactions contemplated herein.
- 3.2 Niagara Mohawk is a corporation duly organized, validly existing and qualified to do business under the laws of the State of New York, is in good standing under its certificate of incorporation and the laws of the State of New York, has the corporate authority to own its properties, to carry on its business as now being conducted, and to enter into this Agreement and the transactions contemplated herein and perform and carry out all covenants and obligations on its part to be performed under and pursuant to this Agreement, and is duly authorized to execute and deliver this Agreement and consummate the transactions contemplated herein.
- 3.3 The Producer and Niagara Mohawk each represents that: (a) upon receipt of all governmental permits, licenses and approvals required to construct and operate the Production Facility, Producer is not prohibited from entering into this Agreement and discharging and performing all covenants and obligations on its part to be performed under and pursuant to this Agreement; (b) upon the acceptance of the terms of this Agreement by FERC, the execution and delivery of this Agreement, the consummation of the transactions contemplated herein including the fulfillment of and compliance with the provisions of this Agreement will not conflict with or constitute a breach of or a default under any of the terms, conditions or provisions of any law, rule or regulation, any order, judgment, writ, injunction, decree, determination, award or other instrument or legal requirement of any court or other agency of government, or any contractual limitation, corporate restriction or outstanding trust indenture, deed of trust, mortgage, loan agreement, lease, other evidence of indebtedness or any other agreement or instrument to which it is a party or by which it or any of its property is bound and will not result in a breach of or a default under any of the foregoing; and (c) unless this Agreement is materially modified by any court or appropriate regulatory authority having jurisdiction and subsequently terminated, this Agreement shall be a legal, valid and binding obligation enforceable in accordance with its terms, except as limited by any subsequent order of any court or appropriate regulatory authority having jurisdiction, or by any applicable reorganization, insolvency, liquidation, readjustment of debt, moratorium, or other similar laws affecting the enforcement of rights of creditors generally as such laws may be applied in the event of a reorganization, insolvency, liquidation, readjustment of debt or other similar proceeding of or moratorium applicable to the Party and by general principles of equity (regardless of whether such enforceability is considered in a proceeding in equity or at law.)

ARTICLE IV FACILITIES STUDY

- 4.1 A Facilities Study attached hereto as Exhibit B shall be performed by Producer, or a third party selected by the Producer subject to Niagara Mohawk's approval. The Facilities Study shall estimate the cost of the equipment, engineering, procurement and construction and a preliminary schedule for the work needed to implement the recommendations of the System Reliability Impact Study and, in accordance with Good Utility Practice, to physically and electrically connect the Production Facility to the Transmission System. The Facilities Study shall include those studies that, in the judgment of Niagara Mohawk, are necessary to determine (a) an appropriate Interconnection Point and Delivery Point, (b) equipment and the facilities necessary and desirable for the construction and operation of any new or additional or modified transmission and distribution facilities, including but not limited to the Interconnection Facility and Upgrades, the electrical switching configuration of the connection equipment, the transformer(s), switchgear, meters, and other station equipment, (c) the interconnection voltage and operational constraints, (d) the estimated costs of facilities and/or the costs for Niagara Mohawk's and Producer's design, review, assistance and inspection of facilities to be designed and constructed by Producer and/or Niagara Mohawk, (e) the estimated costs of any Upgrades, (f) the removal of the Original Greenbush #16 Line and Temporary Greenbush #16 Line, and the design, engineering, and construction of the Temporary Greenbush #16 Line, Permanent Greenbush #16 Line, and other necessary modifications to the Greenbush #16 Line (g) the estimated time required to complete construction, removal, and installation of such facilities, and (h) a mutually agreed upon schedule and estimated budget for the activities contemplated under this Agreement, including but not limited to, the design, engineering, procurement activities and construction of the Interconnection Facility, Temporary Greenbush #16 Line, Permanent Greenbush #16 Line, other necessary modifications to the Greenbush #16 Line and Upgrades, and the removal of the Original Greenbush #16 Line and Temporary Greenbush #16 Line.
- 4.2 Niagara Mohawk shall review the Facilities Study as contracted and paid for by the Producer. Niagara Mohawk retains the right to require modifications of any aspect of the proposal for the Interconnection Point, Interconnection Facility, Delivery Point, and any new or additional or modified transmission and distribution facilities, including, but not limited to the Greenbush #16 Line, Original Greenbush #16 Line, Temporary Greenbush #16 Line and Permanent Greenbush #16 Line, and Upgrades as presented in the Facilities Study, prior to Niagara Mohawk's approval of the Facilities Study. Construction of the Interconnection Facility, Temporary Greenbush #16 Line, Permanent Greenbush #16 Line, other necessary modifications to the Greenbush #16 Line, and Upgrades, and removal of the Original Greenbush #16 Line and Temporary Greenbush #16 Line, shall proceed only following: (a) Niagara Mohawk's approval of the Facilities Study, (b) Producer's satisfaction, as determined by Niagara Mohawk, of the pre-conditions set forth in Article VII, (c) execution of this Agreement, (d) the receipt by Niagara Mohawk

of a written notice from Producer to proceed with such activities and, (e) receipt by Niagara Mohawk of a money deposit per Article XV of this Agreement.

- 4.3 The Parties recognize that as of the Effective Date of this Agreement the Interconnection Facility has not been authorized by the NYPSC, and, therefore, is subject to a certificate to be issued by the NYPSC pursuant to Article VII of the New York Public Service Law.

ARTICLE V REAL PROPERTY

5.1 OBTAINING REAL PROPERTY INTERESTS, AND NECESSARY LICENSES, PERMITS, AND APPROVALS

- 5.1.1 Producer will acquire all interests in real property that are necessary, in the opinion of Niagara Mohawk, for the Producer and/or Niagara Mohawk, as applicable, to construct, reconstruct, relocate, operate, repair, maintain, and remove the Interconnection Facility, Greenbush #16 Line, Temporary Greenbush #16 Line, and Permanent Greenbush #16 Line in accordance with the terms and provisions of this Agreement. Such real property interests may be acquired by Producer in the form of an option acceptable to both parties. Such options which shall name Niagara Mohawk as the optionee and grantee of the real property interests and shall be exercised by the Producer in favor of Niagara Mohawk to provide permanent easements or fee title necessary for the construction, reconstruction, relocation, operation, repair, maintenance and removal of the Interconnection Facility, Greenbush #16 Line, Temporary Greenbush #16 Line, and Permanent Greenbush #16 Line.
- 5.1.2 Niagara Mohawk shall authorize Producer to place applicable portions of the Interconnection Facility on existing Niagara Mohawk real property interests. The acreage and width of Niagara Mohawk's fee-owned real property necessary for the Interconnection Facility shall be subject to Niagara Mohawk's approval.
- 5.1.3 Producer shall be responsible for preparing applications for and obtaining all government permits, authorizations, licenses, certificates and approvals necessary to construct, relocate, operate, repair, maintain, and remove the Interconnection Facility, Temporary Greenbush #16 Line, Permanent Greenbush #16 Line, other necessary modifications to the Greenbush #16 Line, and Upgrades on terms and conditions acceptable to Niagara Mohawk. Said applications shall be prepared by Producer for submittal by Niagara Mohawk and/or Producer, where appropriate. Niagara Mohawk, at Producer's expense, shall be responsible for maintaining in full force and effect all permits, authorizations, licenses, certificates, and approvals necessary to operate and maintain the Interconnection Facility and Upgrades. Producer, at Producer's expense, shall be responsible for maintaining in full force and effect all permits, authorizations, licenses, certificates, and approvals necessary to operate and maintain the Production Facility. Producer and Niagara Mohawk agree to comply in all material respects with all federal,

state and local environmental and other laws, ordinances, rules, regulations, permits, licenses, approvals, certificates and requirements thereunder as may apply to each Party in connection with the activities each performs pursuant to this Agreement.

- 5.1.4 Producer agrees that, prior to the transfer by Producer of any real property interest to Niagara Mohawk under the terms of this Agreement, Producer shall conduct, or cause to be conducted, and be responsible for all costs of sampling, soil testing, and any other methods of investigation which would disclose the presence of any Hazardous Substance which has been released on the Property or which is present upon the Property by migration from an external source, and which existed on the Property prior to the transfer, and shall notify Niagara Mohawk in writing as soon as reasonably practicable after learning of the presence of Hazardous Substance upon said Property interest. Producer agrees to indemnify, defend, and save Niagara Mohawk, its agents and employees, officers, directors, parents and affiliates, harmless from and against any loss, damage, liability (civil or criminal), cost, suit, charge (including reasonable attorneys' fees), expense, or cause of action, for the removal or management of any Hazardous Substance and relating to any damages to any person or property resulting from presence of such Hazardous Substance.
- 5.1.5 Prior to transfer of control of the Interconnection Facility from Producer to Niagara Mohawk, Niagara Mohawk shall be given the opportunity to inspect, perform final testing and approve the Interconnection Facility and review all appropriate approvals, certificates, permits, and authorizations. Prior to transfer of control of the Interconnection Facility from Producer to Niagara Mohawk, Producer shall be responsible for correcting within thirty (30) days of discovery any situations that are contrary, in Niagara Mohawk's sole judgment, to Good Utility Practice, Bulletin No. 756, Niagara Mohawk's standards, procedures, practices and functional specification requirements, standard Niagara Mohawk environmental, construction, forestry, and right-of-way management practices and procedures, Niagara Mohawk's Standard Environmental Management and Construction Plan Protection Measures and Niagara Mohawk's Transmission Right-of-Way Management Plans or any applicable NYISO, NYPSC, NYSRC, NPCC, NERC, or FERC standards and criteria requirements, which such requirements shall govern in the event of a conflict between NYISO, NYPSC, NYSRC, NPCC, NERC or FERC and the requirements of Bulletin No. 756, which, in Niagara Mohawk's sole judgment, materially and adversely affect the operability of the Interconnection Facility or are contrary to applicable laws or permits, and for correcting any material deficiencies which could impede the transfer of control of the Interconnection Facility to Niagara Mohawk pursuant to this Agreement. Producer shall be responsible for the costs associated with making such corrections.

5.2 ACCESS RIGHTS

- 5.2.1 Niagara Mohawk hereby grants to Producer access and licenses, as necessary for Producer to construct the Interconnection Facility, Temporary Greenbush #16 Line, Permanent Greenbush #16 Line, other necessary modifications to the Greenbush #16 Line, and to remove both the Temporary Greenbush #16 Line and the Original Greenbush #16 Line.
- 5.2.2 Producer hereby grants to Niagara Mohawk all necessary access, and licenses, including adequate and continuing rights of access to Producer's property, as necessary for Niagara Mohawk to construct, operate, maintain, replace, or remove the Interconnection Facility and to read meters in accordance with the terms of this Agreement and to exercise any other of its obligations under this Agreement. Producer hereby agrees to execute such grants, deeds, licenses, instruments or other documents as Niagara Mohawk may require to enable it to record such rights of way, easements, and licenses.

5.3 RIGHT OF WAY ACQUISITION AND EXPENSE

- 5.3.1 Producer shall pay and be solely liable for all expenditures and paying for all activities incurred or engaged in by Producer and Niagara Mohawk in acquiring necessary real property interests and associated permits and authorizations required for Producer and Niagara Mohawk, as appropriate, to construct, reconstruct, relocate, operate, repair, maintain, as applicable, the Interconnection Facility, Temporary Greenbush #16 Line, Permanent Greenbush #16 Lines, other necessary modifications to the Greenbush #16 Line, and Upgrades, and to remove the Original Greenbush #16 Line, and Temporary Greenbush #16 Line, as required pursuant or related to this Agreement. Producer shall pay fair market value for the real property interests acquired as determined by an appraiser retained by Producer at Producer's expense (a copy of the appraisal shall be provided to Niagara Mohawk free of charge) or such other value as the Parties may agree upon in writing. Producer shall pay and be solely liable for all costs associated with the transfer of real property rights to Niagara Mohawk, including, but not limited to, closing costs, subdivision costs, transfer taxes and recording fees. Producer shall reimburse Niagara Mohawk for all costs Niagara Mohawk incurs in connection with transfers of property and any associated permits and authorizations and in carrying out Niagara Mohawk's responsibilities as provided in this Agreement, including but not limited to Article IX, except as to costs related to encroachments on existing Niagara Mohawk property, if any, that impede the siting or construction of facilities necessary to implement the interconnection under this Agreement.
- 5.3.2 Producer shall be responsible for defending and shall indemnify and hold harmless Niagara Mohawk, its directors, officers, employees, agents and affiliates, from and against all liabilities, expense (including litigation costs and attorney's fees) damages, losses, penalties, claims, demands, actions and proceedings of any nature whatsoever for construction delays, construction or operations cessations, claims of trespass, or other events of any nature

whatsoever that arise from or are related to an issue as to the sufficiency of the real property interests acquired or utilized by the Producer (including, but not limited to, those real property interests from Niagara Mohawk) for the construction, reconstruction, relocation, operation, repair, and maintenance of the Interconnection Facility, Temporary Greenbush #16 Line, Permanent Greenbush #16 Line, other necessary modifications to the Greenbush #16 Line, and the removal of the Original Greenbush #16 Line and Temporary Greenbush #16 Line. In no event, shall Niagara Mohawk be held liable to Producer or third parties for consequential, incidental or punitive damages arising from or any way relating to an issue as to the sufficiency of the real property interests acquired or utilized by the Producer (including, but not limited to, those real property interests from Niagara Mohawk) for the construction, reconstruction, relocation, operation, repair, and maintenance of the Interconnection Facility, Temporary Greenbush #16 Lines, Permanent Greenbush #16 Line, other necessary modifications to the Greenbush #16 Line, and removal of the Original Greenbush #16 Line and Temporary Greenbush #16 Line.

5.4 CONVEYANCE OF PROPERTY RIGHTS AND FACILITIES CONSTRUCTED

- 5.4.1 The real property interests necessary for the construction, reconstruction, relocation, operation, repair, and maintenance of the Interconnection Facility, Permanent Greenbush #16 Line, Temporary Greenbush #16 Lines, other necessary modifications to the Greenbush #16 Line, and Upgrades, and removal of the Original Greenbush #16 Line and Temporary Greenbush #16 Line, that are not already owned or controlled by Niagara Mohawk, shall be conveyed to Niagara Mohawk in fee simple or by an easement approved by Niagara Mohawk, with good and marketable title free and clear of all liens, encumbrances, and exceptions to title for a sum of \$1.00 at least thirty (30) days prior to the date scheduled for the commencement of construction or removal, as applicable, of any of the facilities described in Article VIII, Section 8.1 of this Agreement. With respect to any approved conveyance of easements, Producer shall subordinate pertinent mortgages to easement rights. Producer shall indemnify, defend, and hold harmless Niagara Mohawk, its agents and employees, officers, directors, parent(s) and affiliates, and successors in interest, from all liens and encumbrances against the property conveyed. Producer further agrees to provide to Niagara Mohawk a complete field survey with iron pin markers showing the centerline of the entire Interconnection Facility right-of-way, and a 40-year abstract of title, and a 10-year tax search for real property interests acquired by the Producer from third parties. Prior to the execution of an option, Producer shall be required to provide Niagara Mohawk a title insurance commitment with a complete title report issued by a reputable and independent title insurance company for any property rights, in fee or easement in the segment of the Interconnection Facility from the Production Facility to Niagara Mohawk's existing fee-owned right-of-way, that are to be transferred to Niagara Mohawk. At the time of the execution of an option by Producer, Producer shall provide a

title insurance policy naming Niagara Mohawk as the insured covering the real property interest to be acquired for any property rights, in fee or easement in the segment of the Interconnection Facility from the Production Facility to Niagara Mohawk's existing fee-owned right-of-way, that are to be transferred to Niagara Mohawk.

- 5.4.2 Producer shall provide to Niagara Mohawk conformed copies of all necessary real property interests, environmental, engineering, and other permits, authorizations, licenses, certificates, permits, approvals and as-built drawings not otherwise prepared by or directly for, or issued to Niagara Mohawk.
- 5.4.3 Upon completion of removal of the Original Greenbush #16 Line and Temporary Greenbush #16 Line and the construction and testing of the Interconnection Facility, Permanent Greenbush #16 Line, other necessary modifications to the Greenbush #16 Line, and 60 days prior to Initial Synchronization Date of the Interconnection Facility, in accordance with the Schedule provided in the Facilities Study, Producer shall convey and transfer the Interconnection Facility, Permanent Greenbush #16 Line, and, as required, other necessary modifications to the Greenbush #16 Line, to Niagara Mohawk for a sum of \$1.00.

ARTICLE VI PILOT PROGRAM

- 6.1 Subject to the terms and conditions of this Agreement, Niagara Mohawk shall be the owner and sole operator of the Interconnection Facility contemplated in this Agreement. The Production Facility may be subject to a Payment in Lieu of Taxes ("PILOT") program with the Rensselaer County Industrial Development Agency ("RCIDA"). Any proposed RCIDA PILOT program by and between the RCIDA and the Parties shall provide that Niagara Mohawk be the owner and sole operator of the Interconnection Facility under this Agreement. Furthermore, such RCIDA PILOT program must be acceptable to Niagara Mohawk and Producer must obtain Niagara Mohawk's prior written consent for a proposed RCIDA PILOT with respect to the Interconnection Facility.
- 6.2 PILOT Expenses: All costs and expenses (including attorneys' fees) incurred by Producer and Niagara Mohawk in connection with obtaining the RCIDA PILOT shall be paid by Producer. In the event that the PILOT is not acceptable to Niagara Mohawk, or in the event that the PILOT is in effect and acceptable to Niagara Mohawk but the PILOT terminates, Producer shall pay all applicable taxes under Section 15.2.3 of this Agreement.

ARTICLE VII
PRE-CONDITIONS OF DESIGN, ENGINEERING, PROCUREMENT AND
CONSTRUCTION ACTIVITIES

7.1 PRE-CONDITIONS OF DESIGN, ENGINEERING, PROCUREMENT AND
CONSTRUCTION ACTIVITIES

Producer agrees to complete to Niagara Mohawk's satisfaction and prior to Niagara Mohawk's or Producer's, as the case may be, respective commencement of any design, engineering, procurement, or construction activities, including preparation for construction, contemplated under this Agreement (a) all activities required in Articles IV (Facilities Study), V (Real Property), VI (PILOT Program), VIII (Section 8.1, Construction Financing; Section 8.2.1.1, Agreement with owner of Rennselaer Cogen Facility); (b) Niagara Mohawk and Producer have executed this Agreement; (c) Niagara Mohawk and Producer have established the Schedule, as required in Section 8.2.3; (d) Niagara Mohawk has received a written notice from Producer to proceed with the activities described in Article VIII, Section 8.2; and (e) Niagara Mohawk has received a money deposit per Article XV of this Agreement.

7.2 EFFECT OF FAILURE TO COMPLETE ALL PRE-CONDITIONS

In the event that Producer fails to timely and satisfactorily complete each of the pre-conditions in this Article VII, Niagara Mohawk may terminate this agreement upon thirty (30) days prior written notice to Producer subject to applicable NYISO and FERC requirements and Article XVII.

ARTICLE VIII
CONSTRUCTION

8.1 CONSTRUCTION FINANCING

Producer shall be responsible for arranging and securing all necessary construction financing to support the construction activities contemplated under this Agreement. Niagara Mohawk shall commence performance under this Agreement no earlier than the date of Producer's closing on its construction loan financing in connection with activities related to or to be performed under this Agreement.

8.2 DESIGN, ENGINEERING AND CONSTRUCTION ACTIVITIES

8.2.1 At Producer's expense, Producer shall design, engineer, and construct the apparatuses, equipment and facilities located between the Production Facility and the final 345 kV structure outside of the Reynolds Road Substation, as Depicted in Exhibit A, and the Temporary Greenbush #16 Line, Permanent Greenbush #16 Line, other necessary modifications to the Greenbush #16 Line, and removal of the Original Greenbush #16 Line and Temporary Greenbush #16 Line, and procure all equipment, construction materials and other materials necessary for

the activities described above, all in accordance with, as applicable, (a) the Facilities Study, (b) Good Utility Practice, (c) Niagara Mohawk's standards, and (d) agreement reached between Producer and the owner of the Rensselaer Cogen Facility.

- 8.2.1.1 Producer, at Producer's expense, shall negotiate and enter into an agreement to secure the consent of the owner of the Rensselaer Cogen Facility for Producer to remove the Original Greenbush #16 Line and Temporary Greenbush #16 Line, construct the Temporary Greenbush #16 Line, Permanent Greenbush #16 Line, other necessary modifications to the Greenbush #16 Line, which lines all are necessary for Niagara Mohawk to maintain the interconnection between the Rensselaer Cogen Facility and the Transmission System and for the payment by Producer to owner of the Rensselaer Cogen Facility for any outage related costs for which Niagara Mohawk would otherwise be responsible, if applicable. Such new lines shall be satisfactory to the owner of the Rensselaer Cogen Facility and shall, at a minimum, provide the Rensselaer Cogen Facility with at least as much output capacity as with the current interconnection facility. Producer shall provide Niagara Mohawk a conformed, written executed copy of the agreement Producer reaches with the owner of the Rensselaer Cogen Facility no less than thirty (30) days prior to the commencement of any removal or construction activities involving the Greenbush #16 Line, Original Greenbush #16 Line, Temporary Greenbush #16 Line or Permanent Greenbush #16 Line.
- 8.2.2 At Producer's expense, Niagara Mohawk shall design, engineer, and construct the apparatuses, equipment and facilities located between the final 345 kV structure located outside of the Reynolds Road substation and the Delivery Point, as depicted in Exhibit A, and all Upgrades necessary to facilitate the interconnection of Producer's Production Facility, and procure all equipment, construction materials and other materials necessary for the activities described above, all in accordance with (a) the Facilities Study, (b) Good Utility Practice and (c) Niagara Mohawk's standards.
- 8.2.3 Within forty-five (45) days of the Parties' execution of this Agreement, the Parties shall use Commercially Reasonable Efforts to determine a mutual Schedule (hereinafter the "Schedule") for their respective design, engineering and construction responsibilities as set forth in the Facilities Study attached hereto as Exhibit **B**. However, the Parties shall adjust the Schedule, as necessary, to comply with the certificate issued by the NYPSC pursuant to Article VII of the New York Public Service Law. Said Schedule may only be revised by mutual written consent of both Parties. Completion of construction by either Party shall be subject to the Force Majeure events as provided in Article XVII, Section 18.1.

All design, engineering, procurement, and construction activities for which Producer or a third party selected by Producer, upon approval of Niagara Mohawk, is responsible shall be performed in accordance with the Schedule mutually agreed to by the Parties in advance of the commencement of such activities as set forth in the Facilities Study attached hereto as Exhibit B. Producer shall inform Niagara Mohawk, at the Producer's expense, on the first business day of each month of the status of all such design, engineering, procurement, and construction activities, including, but not limited to, the following information: progress to date; a description of upcoming scheduled activities and events; the delivery status of all ordered equipment; and the identification of any event which Producer reasonably expects may delay construction of the Interconnection Facility Permanent Greenbush #16 Line, Temporary Greenbush #16 Line, other necessary modifications to the Greenbush #16 Line, and Upgrades, or removal of the Original Greenbush #16 Line, or the Temporary Greenbush #16 Line.

- 8.2.4 Niagara Mohawk shall inform Producer on the first business day of each month of the status of all such design, engineering, procurement, and construction activities, including, but not limited to, the following information: progress to date; a description of upcoming scheduled activities and events; the delivery status of all ordered equipment; and the identification of any event which Niagara Mohawk reasonably expects may delay Producer's construction of the Interconnection Facility, Permanent Greenbush #16 Line, Temporary Greenbush #16 Line, other necessary modifications to the Greenbush #16 Line, or removal of the Original Greenbush #16 Line, or the Temporary Greenbush #16 Line.
- 8.2.5 If, for an excused reason, Niagara Mohawk completes its design, engineering and construction responsibilities after the completion dates shown in the Schedule, as may be amended upon mutual written consent of the Parties, the Commercial Operation Date shall be automatically extended by the same length of time by which the scheduled completion dates of Niagara Mohawk's responsibilities are delayed with no penalty or additional cost owing the Producer from Niagara Mohawk, and no penalty, additional cost owing Niagara Mohawk from Producer.
- 8.2.6 If Producer completes its design, engineering and construction responsibilities after the completion dates shown in the Schedule, as may be amended upon mutual written consent of the Parties, or if Niagara Mohawk's completion dates cannot be met due to any revised or adjusted Schedule of the Producer's design, engineering and construction responsibilities, Producer acknowledges and agrees to reimburse, in accordance with Article XV of this Agreement, Niagara Mohawk for all costs incurred by Niagara Mohawk, that cannot be avoided, due to Producer's delaying said work.
- 8.2.7 Producer shall, at Producer's expense, (a) with Niagara Mohawk representatives present, test the Interconnection Facility, Temporary Greenbush #16 Line, Permanent Greenbush #16 Line, and other necessary modifications to the

Greenbush #16 Line, to ensure their safe and reliable operation in accordance with Good Utility Practice and (b) correct, within thirty (30) days of testing, any situations contrary to Good Utility Practice.

- 8.2.8 Niagara Mohawk shall, at Producer's expense, test the apparatuses, equipment and facilities located between the final 345 kV structure located outside of the Reynolds Road Substation and the Delivery Point as depicted in Exhibit A and the Upgrades to ensure their safe and reliable operation in accordance with Good Utility Practice and (b) correct, within thirty (30) days of testing, any situations contrary to Good Utility Practice.

8.3 RISK OF LOSS

Producer shall bear all risk of loss with respect to the Interconnection Facility removal of the Original Greenbush #16 Line and the Temporary Greenbush #16 Line, the Temporary Greenbush #16 Line, Permanent Greenbush #16 Line, other necessary modifications to the Greenbush #16 Line until completion of construction of the Interconnection Facility and the Permanent Greenbush #16 Line, and other necessary modifications to the Greenbush #16 Line and all title and interest in the Interconnection Facility, Permanent Greenbush #16 Line, and other necessary modifications to the Greenbush #16 Line have been transferred to Niagara Mohawk in accordance with the terms and conditions of this Agreement and, until such transfer, Producer waives all rights of recovery against Niagara Mohawk regarding such risk.

ARTICLE IX OPERATION AND MAINTENANCE

9.1 OPERATION AND MAINTENANCE OF INTERCONNECTION AND OTHER FACILITIES

- 9.1.1 At Producer's expense, Niagara Mohawk shall own, operate, maintain (maintain includes right-of-way vegetation management activities apportioned to the Interconnection Facility) and repair (repair includes, but is not limited to, replacement of existing equipment when required due to failure) the Interconnection Facility in accordance with Good Utility Practice.
- 9.1.2 At Niagara Mohawk's expense, Niagara Mohawk shall own, operate, maintain and repair the Upgrades in accordance with Good Utility Practice.
- 9.1.3 The Producer, at its own expense, shall own, and be responsible for operating, maintaining and repairing (repairing includes, but is not limited to, replacement of existing equipment when required due to failure) the Production Facility and other apparatuses, equipment and facilities located between the Production Facility and the Interconnection Point as Depicted in Exhibit A in accordance with Good Utility Practice. The Producer will notify in writing no later than December 1 of each year Niagara Mohawk of the schedule for scheduled outages

of the Production Facility for the next calendar year in accordance with Bulletin No. 756, Good Utility Practice, the Retail Tariff, NYISO practices and Niagara Mohawk standard practices and, upon making any changes to such schedules thereafter, shall promptly notify Niagara Mohawk of any such changes.

- 9.1.4 In furtherance of the Parties' mutual objective to preserve and maintain the reliability of the Transmission System, the Producer agrees, at the expense of the Producer, to coordinate with Niagara Mohawk, the planning and scheduling of any outages and any changes thereto in a manner that will preserve and maintain the reliability of, and minimize the effect on, the Transmission System, consistent with Good Utility Practice, Bulletin No. 756, the Retail Tariff, NYISO practices and Niagara Mohawk standard practices.
- 9.1.5 In furtherance of the Parties' mutual objective to preserve and maintain the reliability of the Transmission System, the Parties agree, at the expense of the Producer, to coordinate the planning and scheduling of preventative and corrective maintenance in a manner that will preserve and maintain the reliability of the Transmission System. The Parties shall conduct, at the expense of the Producer, preventative maintenance and corrective maintenance activities for the Interconnection Facility and the Production Facility, as scheduled and planned, or as they become necessary, consistent with Good Utility Practice. Niagara Mohawk shall conduct, at Niagara Mohawk's expense, preventative maintenance and corrective maintenance activities for the Upgrades as scheduled and planned, or as they become necessary, consistent with Good Utility Practice.
- 9.1.6 If the Producer requests that Niagara Mohawk perform maintenance during a time period other than as scheduled by Niagara Mohawk, Niagara Mohawk will use Commercially Reasonable Efforts to meet the Producer's request as long as meeting the request would not reasonably be expected, as determined by Niagara Mohawk, to have an adverse impact upon Niagara Mohawk's operations or the operations of Niagara Mohawk's customers. Notwithstanding the foregoing, should the Producer request Niagara Mohawk to perform maintenance that Niagara Mohawk in good faith determines may have an adverse impact on Niagara Mohawk's operations or the operations of Niagara Mohawk's customers, and if such maintenance may be delayed until after such period, Niagara Mohawk may reject the Producer's scheduling request. The Producer shall reimburse Niagara Mohawk for all costs incurred by Niagara Mohawk in satisfying the Producer's request.

ARTICLE X MODIFICATION OR RETIREMENT

10.1 MODIFICATION OF THE INTERCONNECTION FACILITY, UPGRADES OR TRANSMISSION SYSTEM

- 10.1.1 Niagara Mohawk shall retain the discretion to determine whether, when, and in what manner Modifications are required by Good Utility Practice and, as soon as reasonably practicable, shall advise Producer when it makes such a determination and whether performing the Modification, or the Modification itself, is expected to interrupt the flow of power over the Interconnection Facility. Niagara Mohawk shall provide Producer a written explanation of the need for Modifications, together with a cost estimate.
- 10.1.2 If Modification is required to support the operations of the Producer, Niagara Mohawk shall construct, operate, maintain and repair, at the Producer's expense, any such Modification, and the Producer shall reimburse Niagara Mohawk for all actual costs and expenses of constructing operating and maintaining the Modification.
- 10.1.3 Except in case of an Emergency Condition, the Producer shall give Niagara Mohawk three months advance written notice of any planned Modifications to the Production Facility that could reasonably be expected to affect the operations of the Transmission System or Interconnection Facility.
- 10.1.3.1 Such notice shall include plans, specifications, information and operating instructions relating to the impact of planned Modifications on the Transmission System, Interconnection Facility, and Upgrades or on Niagara Mohawk's electric operations.
- 10.1.3.2 If Niagara Mohawk determines that such Modification would have a material adverse effect upon Niagara Mohawk's operations or the operations of Niagara Mohawk's customers, then Niagara Mohawk shall so notify the Producer. In the event that the Producer elects to continue with such Modification, Niagara Mohawk shall be entitled to designate the earliest date upon which the Producer may begin operation of the Modification, provided however, that Niagara Mohawk shall not designate a beginning date that is later than eighteen (18) months after receipt of the notice mandated by subsection 10.1.3. The Producer shall be responsible for all costs associated with such Modification, including any costs incurred by Niagara Mohawk associated with ensuring that the Transmission System, Upgrades and Interconnection Facility would be compatible with such Modification.
- 10.1.3.3 Notwithstanding the foregoing, should the Producer propose a schedule for performing a Modification that Niagara Mohawk in good faith determines may adversely affect Niagara Mohawk's operations or the operations of Niagara Mohawk's customers, Niagara Mohawk may reject such schedule; however, Niagara

Mohawk is amenable to working with Producer on developing a workable schedule.

- 10.1.4 All Modifications to the Production Facility, Interconnection Facility, Upgrades, and Transmission System and any resulting effects on the Transmission System shall meet the rules and requirements of NERC, NPCC, NYSRC, and the NYISO or their respective successors, the standards of Good Utility Practice, the Retail Tariff and the requirements of Bulletin No. 756; provided, however, that in the event of a conflict between the rules and requirements of the NYISO and the requirements of Bulletin No. 756, the rules and requirements of the NYISO shall govern.

10.2 RELOCATION, REARRANGEMENT, ABANDONMENT OR RETIREMENT

- 10.2.1 If, during the term of this Agreement, Niagara Mohawk determines that it is required by Good Utility Practice to relocate, rearrange, abandon, or retire the Transmission System and such relocation, rearrangement, abandonment, or retirement requires a change to the Interconnection Facility, Niagara Mohawk shall use good faith efforts to give the Producer no less than one (1) year advance written notice and shall, to the extent consistent with Good Utility Practice, defer such action, to the extent reasonably practicable, so that the Producer's operation of the Production Facility may continue with minimal interruption.
- 10.2.2 If Niagara Mohawk is required or ordered by governmental authority or the NYISO to relocate, rearrange, abandon, or retire the Transmission System and such relocation, rearrangement, abandonment, or retirement requires a change to the Interconnection Facility, Niagara Mohawk shall promptly give the Producer written notice of such requirement or order.
- 10.2.3 If relocation, rearrangement, abandonment, or retirement is required pursuant to Paragraph 10.2.1 or 10.2.2 Niagara Mohawk shall perform or have performed, at the Producer's expense, the studies necessary to identify any Modifications to the Interconnection Facility, or Upgrades necessary for the continued operation of the Production Facility and shall inform the Producer of the estimated costs. The Producer shall at its option either: (a) reimburse Niagara Mohawk for all actual costs and expenses of such Modification, studies and estimates in accordance with Section 10.1.2 of this Agreement; (b) construct, at its own expense, a new Interconnection Facility subject to the terms of this Agreement; provided, however, that design, engineering, and construction activities relating to the existing Transmission System, Interconnection Facility, and Upgrades shall be performed by Niagara Mohawk, or by a third party selected by Niagara Mohawk, at the Producer's expense; or (c) terminate this Agreement, upon no less than sixty (60) days advance written notice to Niagara Mohawk.

ARTICLE XI POWER DELIVERIES

11.1 METERING

- 11.1.1 Niagara Mohawk shall, at Producer's expense, provide, own, and maintain compatible revenue quality metering equipment at the Reynolds Road substation. Such metering equipment shall record the delivery of energy, including reactive power, in such a manner so as to measure total facility power output and consumption. Niagara Mohawk shall provide suitable space within its facilities for installation of such metering equipment.
- 11.1.2 Niagara Mohawk shall provide, at Producer's expense, all necessary communication equipment and transmission mediums such as telephone lines and any necessary protection for such communication equipment and related equipment. Producer shall be responsible for, at Producer's expense, all communications required by Niagara Mohawk, the NYPSC or the NYISO. At Producer's own expense, Producer shall purchase, own and maintain all telemetering equipment located at the Producer's facilities required by Producer, Niagara Mohawk, the NYPSC or the NYISO. Producer shall provide, install and own Niagara Mohawk approved or specified test switches in the transducer circuits that have been approved or specified by Niagara Mohawk. Producer shall be responsible for any and all costs involved in the relocation of communication circuits and transmission mediums that may be required from time to time by Niagara Mohawk, the NYPSC, or the NYISO.
- 11.1.3 All metering equipment installed pursuant to this Agreement and associated with the Production Facility may be routinely tested by Niagara Mohawk in accordance with Good Utility Practice and applicable Niagara Mohawk, NYPSC and NYISO criteria, rules and standards. Each Party shall have the right at all reasonable times, upon giving not less than ten (10) days written notice to the other Party for the purpose of permitting the other Party to be present at the inspection, to inspect and test said meters and, if said meters or equipment are found to be defective, Niagara Mohawk shall adjust, repair or replace the same at the expense of the Producer, or if within one year of installation, at the expense of Niagara Mohawk. Any test or inspection requested by a Party shall be at the expense of that Party.
- 11.1.4 Electricity delivered to the Delivery Point by Producer hereunder shall be measured by electric watt hour meters of a type approved by Niagara Mohawk and the NYPSC. These metering facilities will be installed, owned, and maintained by Niagara Mohawk and shall be sealed by Niagara Mohawk, with the seal broken only upon occasions when the meters are to be inspected, tested or adjusted and representatives of both Niagara Mohawk and Producer are present. Producer shall pay all metering, testing and installation costs. The meters

shall be maintained in accordance with the rules set forth in 16 NYCRR Part 92, as amended from time to time, and with Good Utility Practice.

- 11.1.5 Niagara Mohawk will guarantee the installation of any meter and its accuracy for a period of one (1) year from the date that meter is installed; provided, however, that this guarantee does not cover any incidental or consequential damages that the Producer may suffer as a result of the failure of a meter to which this guarantee applies. Any repair or replacement, except for any repair or replacement occasioned by the negligence or willful misconduct of Producer, required during the initial year will be at the expense of Niagara Mohawk. In the event that any meter is found to be inaccurate after the initial year, Niagara Mohawk will repair or replace the same within a commercially reasonable time period at the expense of Producer.
- 11.1.6 Producer may elect to install at Producer's expense its own metering equipment in addition to Niagara Mohawk metering equipment. Such metering equipment shall meet the requirements of 16 NYCRR Part 92, as may be amended from time to time. Should any metering equipment installed by Niagara Mohawk fail to register during the term of this Agreement, the Parties shall use Producer's metering equipment, if installed. On any day or days on which neither Party's metering equipment is in service, the quantity of energy delivered shall be determined in such manner as the Parties agree. Niagara Mohawk's meter(s) shall be read on a schedule compatible with Niagara Mohawk's normal meter reading schedule consistent with NYISO requirements.
- 11.1.7 In the event the Producer desires access to Niagara Mohawk meter information related to the Production Facility and Interconnection Facility, the Producer, at its own expense, shall be responsible for purchasing and installing software, hardware and/or other technology that may be required to access such meter information. The software, hardware and/or other technology installed for this purpose shall be in compliance with any applicable NYPSC and Niagara Mohawk rules, requirements, or standards.
- 11.1.8 The Producer grants to the employees and agents of Niagara Mohawk the right of access to Producer's premises during regular business hours for purposes of the reading of Producer's meters.

11.2 LOSSES

No loss calculations shall be necessary if the Metering Point is located in close proximity to the Delivery Point, as depicted in Exhibit A. However, if the Metering Point(s) are changed and the metering equipment and the Delivery Point are not at the same location, the metering equipment shall record delivery of Electricity in a manner that accounts for losses occurring between the Metering Point(s) and the Delivery Point(s), which shall be calculated by Niagara Mohawk in accordance with mutually acceptable loss calculations.

In addition, Producer will be responsible for all costs associated with the change in Metering Point(s).

11.3 REACTIVE POWER SUPPORT

The Producer agrees to provide, at no cost to Niagara Mohawk, reactive capability to regulate and maintain system voltage at the Delivery Points in conformance with Bulletin No. 756 or any applicable NYISO tariff or agreement as they may be amended from time to time.

11.4 ISLANDING

Niagara Mohawk reserves the right to require, allow or prevent, with reference to Bulletin No. 756, the islanding of the Production Facility during an Emergency. This Agreement is not intended to impair or supersede any rights of the NYISO to allow or prevent the islanding of the Production Facility.

11.5 NYISO OR REGULATORY PENALTIES AND CHARGES

The Producer shall be solely responsible and liable for any penalties or charges imposed by the NYISO or by other regulatory bodies and payment thereof, for any products derived or failures to provide such products from the Production Facility to the NYISO, or for any failures by the Producer to comply with the regulations, rules, or procedures of the NYISO or other regulatory bodies.

**ARTICLE XII
INSURANCE PROVISIONS**

12.1 By the date on which construction of the Interconnection Facility begins, each Party agrees to maintain at its own expense insurance policies issued by reputable insurance companies reasonably acceptable to the other Party which provide insurance coverage which meets or exceeds the following requirements:

12.1.1 Workers Compensation and Employers Liability Insurance. Each Party shall provide workers compensation and employers liability insurance coverages as required by the State of New York. If required, such insurance coverage shall include but not be limited to the levels of coverage required by the U.S. Longshoremen's Act, the Harbor Workers Compensation Act and the Jones Act.

12.1.2 Comprehensive Public Liability (Including Contractual Liability). Each Party shall provide comprehensive public liability insurance, including contractual liability insurance, covering all activities and operations to be performed by it under this Agreement, with following minimum limits:

- (A) Bodily Injury - \$1,000,000/\$1,000,000
- Property Damage - \$1,000,000/\$1,000,000
- OR

(B) Combined Single Limit - \$1,000,000
OR

(C) Bodily Injury and Property Damage per Occurrence - \$1,000,000
General Aggregate & Product Aggregate - \$2,000,000 each

12.1.3 Umbrella or Excess Liability. Each Party shall provide umbrella or excess liability insurance coverage with a minimum limit of \$ 4,000,000.

12.2 Each Party may elect to self-insure any and/or all of the above insurance requirements. In addition, each Party shall name the other Party as an additional insured for all coverages except Workers Compensation and Employers Liability Insurance in order to provide the other Party protection from liability arising out of activities of the insured Party relating to the Interconnection Facility, the Party's side of the Interconnection Point, and/or the Upgrades, as the case may be.

12.3 In the event that a Party uses subcontractors in connection with this Agreement, that Party shall require all subcontractors to provide the same insurance coverages set forth in paragraphs 12.1.1, 12.1.2 and 12.13.

12.4 Upon request by either Party, the other Party shall promptly provide the requesting Party with either evidence of insurance or certificates of insurance evidencing the insurance coverage required under sections 12.1.1, 12.1.2, 12.1.3 and 12.2. If so requested, Producer shall provide such certificates or evidence of insurance to Niagara Mohawk at the following address:

To: Niagara Mohawk Power Corporation
Attention: Risk Management, Bldg. A-1
300 Erie Boulevard West
Syracuse, NY 13202

If so requested, Niagara Mohawk shall provide such certificates or evidence of insurance to Producer at the following address:

To: Empire Generating Co, LLC
Attention: President
1151 Flatbush Road
Kingston, NY 12401

Such certificates, and any renewals or extensions thereof, shall provide that at least thirty (30) days prior written notice shall be given to the other Party in the event of any cancellation or diminution of coverage and shall outline the amount of deductibles or self-insured retentions which shall be for the account of the insured Party.

12.5 If Producer fails to secure or maintain any insurance coverage, or any insurance coverage is cancelled before the completion of all services provided under this Agreement, and

Producer fails immediately to procure such insurance as specified herein (the “uninsured Party”), then Niagara Mohawk has the right to procure such insurance and, at its option, either bill the cost thereof to the Producer or deduct the cost thereof from any sum due the Producer under this Agreement.

- 12.6 To the extent reasonably requested, Producer shall furnish to Niagara Mohawk copies of any accidents report(s) sent to the Producer’s insurance carriers covering accidents or incidents occurring in connection with or as a result of the performance of the work under this Agreement.
- 12.7 Each Party shall comply with any governmental and/or site specific insurance requirements even if not stated herein.
- 12.8 By the date that such coverage is required, Producer represents that it will have full policy limits available and shall notify Niagara Mohawk in writing when coverages required herein have been reduced as a result of claim payments, expenses, or both.
- 12.9 Nothing contained in these insurance requirements is to be construed as (a) limiting the extent, if any, to which either Party is responsible for payment of damages, or (b) limiting, diminishing, or waiving the obligation of either Party to indemnify, defend and save harmless the other Party in accordance with this Agreement.

ARTICLE XIII

COMPLIANCE WITH LAWS AND REGULATIONS

- 13.1 Niagara Mohawk and Producer each agree to comply in all material respects with all applicable federal, state and local laws, ordinances, rules, regulations, permits, licenses, approvals, certificates, and requirements thereunder in connection with all its activities performed pursuant to this Agreement, including, but not limited to all design, environmental, regulatory, engineering, construction, and property acquisition activities.
- 13.2 If either Party observes that any requirement specified in this Agreement is at variance with any governing laws, ordinances, rules, regulations, permits, licenses, approvals, certificates and requirements thereunder, such Party shall promptly notify the other in writing before incurring any further liability, expense or obligation. Niagara Mohawk and Producer shall in good faith attempt to reform this Agreement to comply with the aforementioned laws, ordinances, rules, regulations, permits, approvals, or certificates. If Niagara Mohawk and Producer are unable to do so, either Party may terminate this agreement, subject to NYISO and FERC requirements.
- 13.3 Environmental Releases by Producer. The Producer shall notify Niagara Mohawk first orally and then in writing, of the Release of Hazardous Substances by Producer or its agents, that could reasonably be expected to enter upon Niagara Mohawk property, as soon as possible but not later than twenty-four (24) hours after the incident, and shall promptly furnish to Niagara Mohawk copies of any reports filed with any governmental agencies addressing such events. If Hazardous Substances are released or reasonably

believed to have been released onto Niagara Mohawk property, the Producer, at its own expense, shall conduct, or cause to be conducted, sampling, soil testing, and any other methods of investigation which would disclose the presence and extent of contamination by any Hazardous Substance which has been released onto Niagara Mohawk property and shall notify Niagara Mohawk in writing as soon as reasonably practicable after learning of the presence of any Hazardous Substance upon Niagara Mohawk property. The Producer shall notify Niagara Mohawk immediately of any type of remediation activities it plans to undertake. The Producer shall provide Niagara Mohawk thirty (30) days written notice prior to conducting any asbestos or lead abatement activities on Niagara Mohawk property, and shall promptly furnish to Niagara Mohawk (i) copies of any reports filed with any governmental or regulatory agencies pertaining to such abatement activities, (ii) copies of applications for permits to conduct abatement activities, and (iii) copies of all permits authorizing abatement activities. Except for Hazardous Substances released by Niagara Mohawk or its agents, the Producer agrees to indemnify, defend, and save harmless Niagara Mohawk, its agents and employees, from and against any loss, damage, liability (civil or criminal), cost, suit, charge (including reasonable attorneys' fees), expense, or cause of action, for the removal or management of any Hazardous Substance and/or relating to any damages to any person or property resulting from presence of such Hazardous Substance.

- 13.4 The Producer shall promptly provide to Niagara Mohawk, all relevant information, documents, or data regarding the Production Facility which may reasonably be expected to pertain to the safety, security or reliability of the Transmission System. As may be necessary, the Parties agree to enter into a confidentiality agreement governing the provision and use of such information, documents or data.
- 13.5 Niagara Mohawk shall file this Agreement with the appropriate regulatory authorities. If any such regulatory body materially modifies the terms and conditions of this Agreement and such modification(s) materially affect the benefits flowing to one or both of the Parties, the Parties agree to attempt in good faith to negotiate an amendment or amendments to this Agreement or take other appropriate action(s) so as to put each Party in effectively the same position in which the Parties would have been had such modification not been made. In the event that, within sixty (60) days or some other time period mutually agreed upon by the Parties after such modification has been made, the Parties are unable to reach agreement as to what, if any, amendments are necessary and fail to take other appropriate action to put each Party in effectively the same position in which the Parties would have been had such modification not been made, then either Party shall have the right to unilaterally terminate this Agreement, subject to applicable NYISO and FERC requirements.
- 13.6 In the event that it is determined that this Agreement is to be filed with the Federal Energy Regulatory Commission or its successor, the Parties agree to support such filing and that, absent the agreement of all parties to any proposed change to this Agreement, the standard of review for changes to this Agreement proposed by a Party, a non-party or the Federal Energy Regulatory Commission acting *sua sponte* shall be the "public interest" standard of review set forth in *United Gas Pipe Line Co. v. Mobile Gas Service*

Corp., 350 U.S. 332 (1956) and *Federal Power Commission v. Sierra Pacific Power Co.*, 350 U.S. 348 (1956) (the “*Mobile-Sierra*” doctrine).

ARTICLE XIV CREDITWORTHINESS

- 14.1 Producer shall supply to Niagara Mohawk evidence of Producer’s compliance with the “Creditworthiness Requirements for Customers” established by the NYISO in Attachment K of NYISO’s FERC Electric Tariff, Original Volume No. 2, and with the “Creditworthiness Requirements for Transmission Customers” established by the NYISO in Attachment W of NYISO’s FERC Electric Tariff, Original Volume No. 1, as such requirements may be amended from time to time. The currently effective NYISO tariffs, including the aforementioned Attachment K and Attachment W, are available on the NYISO Internet website.
- 14.2 Provision of Security. At least thirty (30) calendar days prior to the commencement of the design, engineering, procurement, and construction of any of the facilities under this Agreement, including but not limited to the Interconnection Facility, Upgrades, Temporary Greenbush #16 Line, Permanent Greenbush #16 Line, other necessary modifications to the Greenbush #16 Line and for the removal of the Original Greenbush #16 Line and Temporary Greenbush #16 Line, Producer shall provide Niagara Mohawk, satisfactory assurances of creditworthiness. Such assurances include, but are not limited to, a minimum investment grade rating for senior securities issued by Producer of BBB- by Standard & Poor’s Ratings Group or of Baa3 by Moody’s Investors Service, a prepayment, a letter of credit in a form satisfactory to Niagara Mohawk, or a parent guarantee from an entity deemed creditworthy by Niagara Mohawk, or any alternate form of credit assurance, in an amount and form satisfactory to Niagara Mohawk. Furthermore, if at any time during the period of construction up to the Commercial Operation Date and for any Modifications made at the Producer’s expense after the Commercial Operation Date, in addition to satisfactory assurances required hereunder, if the Producer (i) makes an assignment or any general arrangement for the benefit of creditors; (ii) default in the payment or performance of any obligation to the other party under this Agreement; (iii) files a petition or otherwise commence, authorize, or acquiesce in the commencement of a proceeding or cause under any bankruptcy or similar law for the protection of creditors or have such petition filed or proceeding commenced against it; (iv) otherwise become bankrupt or insolvent (however evidenced); (v) is unable to pay its debts as they fall due or (vi) fail to give adequate security for or assurance of its ability to perform its further obligations under this Agreement within seventy-two (72) hours of a reasonable request by Niagara Mohawk, Niagara Mohawk shall, upon written notice to Producer, have the right to either (i) withhold or suspend performance under this Agreement upon three (3) days from the date of such notice, or the beginning of the next month, whichever is earlier, or (ii) terminate this Agreement, subject to NYISO and FERC requirements and the rights provided under Section 22.1.1 of this Agreement in addition to any and all other remedies available hereunder or pursuant to law or equity. Should the creditworthiness, financial responsibility or ability to perform of Producer become unsatisfactory to

Niagara Mohawk at any time during the period of construction up to the Commercial Operation Date and for any Modifications made at the Producer's expense after the Commercial Operation Date, satisfactory assurances in the form of security or additional security may be required as a condition to further performance under the Agreement.

ARTICLE XV COST PAYMENTS

- 15.1 Niagara Mohawk shall invoice Producer at the start of each calendar month in an amount equal to Niagara Mohawk's actual costs and expenses for which Niagara Mohawk is to be reimbursed under this Agreement. However, if and as requested by Niagara Mohawk, the Producer shall reimburse Niagara Mohawk for costs and expenses in advance of Niagara Mohawk incurring the aforementioned costs or expenses. In such case, Niagara Mohawk shall send Producer a Statement of Project Costs ("Statement") specifying the required deposit for such estimated costs and expenses.
- 15.2 The Producer shall pay Niagara Mohawk within thirty (30) calendar days of Niagara Mohawk invoicing or sending a Statement for all costs incurred or for costs estimated in advance by Niagara Mohawk under this Agreement, including, but not limited to, the cost of constructing Upgrades and Modifications; and the costs of relocations, rearrangements, abandonments, retirements or removals; operation, maintenance, repair and spare parts; metering, telemetering and communication media; and miscellaneous studies, testing, documentation and items relating to the Interconnection Facility, Upgrades and Modifications performed by Niagara Mohawk at the request of Producer.
- 15.2.1 The Producer shall be responsible for all actual costs of Niagara Mohawk, including, but not limited to, capital costs, labor (direct and distributable); labor fringe benefits and payroll taxes; invoices for material, contractors, consultants, etc.; employee expenses; storeroom material and handling; any and all costs and expenses resulting from damage to Niagara Mohawk property not otherwise covered by insurance; sales and/or use taxes on invoices and material; transportation; Accumulated Funds Used During Construction ("AFUDC"); Capital Associated Distributable Charges ("CAD"); administrative and general expense ("A&G") at Niagara Mohawk's current rate at the time of invoicing applied to the total of all costs; and, unless Producer is exempt from such taxes and provides Niagara Mohawk with documentation supporting such exemption, state, county, local sales and use taxes applied to the total of all costs and expenses associated with, but not limited to, the acquisition, ownership, operation, maintenance, repair, spare parts, A&G, inspection, design review, engineering, surveying, project management and coordination, testing of electrical equipment and installation of energy management system remote terminal units and revenue meters, construction, construction monitoring, financing, maintenance, environmental and regulatory permitting and licensing of, taxes and transfer of title of the Interconnection Facility, Upgrades and Modifications, and any other cost or expense arising out of the Project.

15.2.2 The Producer shall be responsible for any and all costs or expenses that are incurred by Niagara Mohawk pursuant to this Agreement for the operation, and the maintenance and repair of the Interconnection Facility.

15.2.2.1 The Producer shall reimburse Niagara Mohawk on a monthly basis for operation, maintenance, and repair costs and expenses. However, if and as requested by Niagara Mohawk, the Producer shall reimburse Niagara Mohawk for operation, maintenance, and repair costs and expenses in advance of Niagara Mohawk incurring the aforementioned costs or expenses.

15.2.2.2 Operation, maintenance and repair costs and expenses shall include, but not be limited to, all actual costs and expenses associated with operation, maintenance (maintenance includes right-of-way vegetation management activities apportioned to the Interconnection Facility), repair, spare parts, inspection, engineering and legal services, contract administration, right-of-way acquisition, A&G, working capital (including material adders, overhead charges, and transportation charges), and allowed earnings and/or rates of return approved by a regulatory body having jurisdiction, as related to the Interconnection Facility.

15.2.3 Except to the extent Producer is exempt from any one or more of the following and provides Niagara Mohawk with documentation supporting such exemption, the Producer shall be responsible for any and all federal, state, local, and foreign taxes levied or assessed upon Niagara Mohawk for payments made to Niagara Mohawk by Producer for services provided under this Agreement including, but not limited to, the following: transfer tax, property tax, federal income tax, and New York State taxes, including New York income or gross receipts, sales and use taxes; provided, however, that Niagara Mohawk shall pay any applicable interest or penalty incurred as a result of Niagara Mohawk's delay in paying such taxes or seeking reimbursement from the Producer. If any form of tax, other than income or excess profits tax, under any present or future federal, state or other law different from or in addition to the taxes for which participation in or payment by Producer is provided herein or elsewhere in this Agreement, is required to be paid, levied or assessed against or incurred by Niagara Mohawk with respect to any property, property right, commodity, or service involved in, resulting from or accruing from Niagara Mohawk's performance under this Agreement, which such different or additional tax would not be required to be paid by Niagara Mohawk in the absence of this Agreement and, with respect to such different or additional tax, no obligation of Producer to participate or pay would have attached under the provisions of this Agreement elsewhere than in this subsection, then in such event Producer shall fully reimburse Niagara Mohawk for the full amount of such different or additional tax paid by Niagara Mohawk.

- 15.2.3.1 If Niagara Mohawk receives a refund from the taxing authorities of any amounts paid by Producer, Niagara Mohawk shall refund to Producer such amount refunded Niagara Mohawk (net of expenses related to obtaining the refund) within thirty (30) days of receiving such refund.
- 15.2.3.2 Notwithstanding the foregoing, Producer, at its own expense, shall have the right to require Niagara Mohawk to seek a Private Letter Ruling from the Internal Revenue Service on whether any of the sums paid to Niagara Mohawk by Producer under the terms of this Agreement for the construction of the facilities contemplated herein are subject to U.S. federal taxation. To the extent that the Private Letter Ruling concludes that any such sums are taxable to Niagara Mohawk, Producer shall reimburse Niagara Mohawk for all such taxes consequently imposed upon Niagara Mohawk in accordance with the terms of this Agreement. Producer shall reimburse Niagara Mohawk for all costs, including but not limited to legal fees, associated with seeking the Private Letter Ruling.
- 15.2.4 Increased income tax to Niagara Mohawk arising from Producer's payment or reimbursement of tax under the preceding provisions will be addressed in the following manner. Any net actual U.S. federal income tax or New York State tax (collectively, for this subsection 13.2.4, "Tax"), if any, arising out of any payment or reimbursement of any tax by Producer under this Article shall be reimbursed to Niagara Mohawk. The amount reimbursed to Niagara Mohawk under this subsection shall consist of (1) the Tax arising under this subsection (the "First Amount"); plus (2) the net actual Tax imposed on the First Amount (the "Second Amount"); plus (3) the net actual Tax imposed on the Second Amount (the "Third Amount"); and plus (4) the net actual Tax imposed on the Third Amount and on each succeeding amount until the final amount is less than one dollar.
- 15.3 Niagara Mohawk agrees to cooperate with the Producer in attempting to minimize Niagara Mohawk's costs under this Article, provided the Producer reimburses Niagara Mohawk for all costs incurred by Niagara Mohawk in connection with such cooperation, including reasonable attorneys' fees and expenses, and provided further that the Producer shall indemnify, defend, and save harmless Niagara Mohawk, its agents and employees, officers, directors, parent(s) and affiliates, against any and all penalties, judgments, fines (civil or criminal), or other costs that may be imposed by any governmental authority as a result hereof, but only to the extent that such penalties, judgments, fines, or other costs are not attributable to Niagara Mohawk's gross negligence or intentional misconduct.
- 15.4 Niagara Mohawk shall include with each invoice documentation supporting the costs, expenses, and/or taxes incurred by Niagara Mohawk in the previous quarter, or to be incurred in the next quarter, as provided for in Section 15.2.2.1. Niagara Mohawk will provide such documentation from its standard accounting methods. Within thirty (30)

days from date of the invoice, Producer shall pay the invoice and/or notify Niagara Mohawk that Producer disputes, in whole or in part, any of the costs, expenses, and/or taxes reflected in the invoice and shall specify with particularity the reasons for such dispute. If Producer disputes any invoice or portion thereof, the Producer shall immediately place into an independent escrow account an amount equal to the portion of the invoice it disputes. Such amount shall remain in escrow until the dispute between the Parties is resolved in accordance with Article XXVI of this Agreement. If any portion of any invoice the Producer has not disputed remains unpaid thirty (30) days from the invoice date, Niagara Mohawk shall apply to the unpaid balance, and Producer shall pay, a finance charge at the rate of one and one-half percent (1.5%) per month, but in no event more than the maximum allowed by law.

- 15.5 Producer acknowledges and agrees that Producer and/or Niagara Mohawk has undertaken to construct the Interconnection Facility in a particular configuration solely at the request of the Producer and in reliance on the Producer's commitment to pay all of the costs of constructing and of maintaining the Interconnection Facility. Accordingly, Producer and Niagara Mohawk agree that the Interconnection Facility and all of its components shall at all times be classified as generator leads that may be directly charged to Producer and not as improvements to Niagara Mohawk's Transmission System, except to the extent that Niagara Mohawk hereafter voluntarily elects to reclassify those facilities as improvements to its Transmission System. Producer hereby waives its right to challenge any of the provisions of this Section 15.5 under Section 206 of the Federal Power Act ("FPA"), and Producer and Niagara Mohawk hereby stipulate and agree that the provisions of this Section 15.5 may only be modified by the FERC under the public interest standard of Section 206 of the FPA. Nothing contained in this Section 15.5 shall be construed as limiting Producer's rights under Section 206 of the FPA with respect to the appropriate treatment of costs attributable to any portion of the Interconnection Facility that Niagara Mohawk may hereafter voluntarily reclassify as improvements to its Transmission System rather than as generator leads.

ARTICLE XVI

NOTICES

- 16.1 All notices required or permitted under this Agreement shall be in writing and shall be personally delivered or sent by certified or registered first class mail (return receipt requested, postage prepaid), facsimile transmission, or overnight express mail or courier service addressed as follows:

To Producer:

EMPIRE GENERATING
CO, LLC
Attn: Chet Szymanski
Plant Manager
75 Riverside Avenue
P.O. Box 350
Rensselaer, NY 12144
Tel: (518) 694-8205 ext. 302
cheseter.szymanski@naes.com

To Niagara Mohawk:

NIAGARA MOHAWK POWER
CORPORATION
Attn: Vice President, Transmission
Commercial Services
300 Erie Boulevard West
Syracuse, NY 13202
Tel: (315) 428-3159
Fax: (315) 428-5114

16.1.1 All notices required for billing purposes under this Agreement shall be in writing and shall be delivered to the following address:

To Producer:

EMPIRE GENERATING CO, LLC
Attn: Chet Szymanski
Plant Manager
75 Riverside Avenue
P.O. Box 350
Rensselaer, NY 12144
Tel: (518) 694-8205 ext. 302
cheseter.szymanski@naes.com

To Niagara Mohawk:

NIAGARA MOHAWK POWER
CORPORATION
Attn: Vice President, Transmission
Commercial Services
300 Erie Boulevard West
Syracuse, NY 13202
Tel: (315) 428-3159
Fax: (315) 428-5114

16.1.2 If given by electronic transmission (including telex, facsimile or telecopy), notice shall be deemed given on the date received and shall be confirmed by a written copy sent by first class mail. If sent in writing by certified mail, notice shall be deemed given on the second business day following deposit in the United States mails, properly addressed, with postage prepaid. If sent by same-day or overnight delivery service, notice shall be deemed given on the day of delivery.

16.2 Either Party may change its address for notices by notice to the other in the manner provided above.

16.3 Notwithstanding paragraph 16.1, any notice hereunder, with respect to an Emergency Condition or other occurrence requiring prompt attention, shall be communicated in an expedited manner and may be made by telephone provided that such notice is confirmed in writing promptly thereafter.

16.4 The representatives noted in paragraph 16.1, or their designees, shall be authorized to act on behalf of the Parties, and their instructions, requests, and decisions will be binding upon the Parties as to all matters pertaining to this Agreement and the performance of the Parties hereunder. Only these representatives shall have the authority to commit funds or make binding obligations on behalf of the Parties. The Parties shall be permitted to

change their respective representatives by providing notice to the other Party of the change of representative.

ARTICLE XVII

DEFAULT AND TERMINATION

- 17.1 In the event either Party (the “Defaulting Party”) abandons its work or facilities under this Agreement; becomes insolvent; or assigns or sublets this Agreement in a manner inconsistent with this Agreement, or is violating any of the material conditions, terms, obligations, or covenants of this Agreement, or is not performing this Agreement in good faith, the Non-Defaulting Party may terminate this Agreement by providing written notice. Before instituting proceedings before FERC to terminate the Agreement, Niagara Mohawk must give Producer written notice of the reasons for termination. If, within a period of ten (10) days of receiving such notice, Defaulting Party cures the default or breach cited by the Non-Defaulting Party in such written notice, to the reasonable satisfaction of the Non-Defaulting Party that provided such notice, and shall have complied with the provisions of this Agreement, such notice shall become null and void and of no effect. Otherwise, such notice shall remain in effect and, except to the extent expressly provided for herein, the obligations of the Parties under this Agreement shall terminate ten (10) days after such notice was provided, or in accordance with regulations or rulings of FERC, whichever is later.
- 17.2 In the event of a billing dispute between Niagara Mohawk and the Producer, Niagara Mohawk will not apply to remove the Interconnection Facility or any part of the Transmission System from service or to terminate transmission service thereon as long as the Producer: (i) continues to make all undisputed payment amounts and (ii) adheres to the dispute resolution procedures set forth in Article XXVI of this Agreement and pays into an independent escrow account the portion of any invoice in dispute, pending resolution of such dispute. If the Producer fails to meet these two requirements, then a default shall be deemed to exist, to which the procedures set forth in this Article XVII for the removal of the Interconnection Facility from service shall apply.
- 17.3 Termination of this Agreement shall not relieve Producer or Niagara Mohawk of any of its liabilities and obligations arising hereunder prior to the date termination becomes effective, and Producer or Niagara Mohawk may take whatever judicial or administrative actions as appear necessary or desirable to enforce its rights hereunder. The rights specified herein are not exclusive and shall be in addition to all other remedies available to either Party, either at law or in equity, for default or breach of any provision of this Agreement; provided, however, that in no event shall Niagara Mohawk or Producer be liable for any incidental, special, indirect, exemplary or consequential costs, expenses, or damages sustained by the other, as provided for in Article XXVII hereto.
- 17.4 If a Non-Defaulting Party provides to the Defaulting Party written notice of termination pursuant to paragraph 17.1 and, in accordance therewith, such notice remains in effect ten (10) days after such notice was provided, the Defaulting Party shall be liable to the Non-Defaulting Party for all costs, expenses, liabilities and obligations, including

reasonable attorneys' fees, incurred by the other Non-Defaulting Party resulting from or relating to the termination of this Agreement.

- 17.5 In the event of termination of this Agreement, Niagara Mohawk, at its sole option and at the Producer's expense, will physically disconnect the Production Facility from the Transmission System, return the Transmission System to its original state prior to this Agreement, and remove any or all of Niagara Mohawk's Interconnection Facility equipment.

ARTICLE XVIII FORCE MAJEURE

- 18.1 Neither Party shall be considered to be in default or breach hereunder, and shall be excused from performance hereunder, if and to the extent that it shall be delayed in or prevented from performing or carrying out any provisions of this Agreement by reason of flood, lightning strikes, earthquake, fire, epidemic, war, invasion, riot, civil disturbance, sabotage, explosion, insurrection, military or usurped power, strikes, stoppage of labor, labor dispute, failure of contractors or supplies of material, action of any court or governmental authority, or any civil or military authority de facto or de jure, change in law, act of God or the public enemy, or any other event or cause beyond such Party's control, including, without limitation, disconnection or limited operation of Niagara Mohawk's electric system, unscheduled repairs or maintenance, fuel or energy shortages, or equipment breakdown resulting, in spite of Good Utility Practices, which are beyond such Party's reasonable control; provided, however, that neither Party may claim force majeure for any delay or failure to perform or carry out any provision of this Agreement to the extent that such Party has been negligent or engaged in intentional misconduct and such negligence or intentional misconduct contributed to that Party's delay or failure to perform or carry out its duties and obligations under this Agreement.
- 18.2 The Party claiming force majeure shall give notice to the other Party of the occurrence of force majeure no later than ten (10) business days after such occurrence and shall use due diligence to resume performance or the provision of service hereunder as soon as practicable.

ARTICLE XIX INDEMNIFICATION

- 19.1 To the fullest extent allowed by law and to the extent not otherwise articulated in this Agreement, each Party shall indemnify, defend, and save harmless the other Party, its agents and employees, officers, directors, parent(s) and affiliates, from and against any loss, damage, liability, cost, suit, charge, expense, or cause of action, whether unconditionally certain or otherwise, as they exist on the effective date of this Agreement or arise at anytime thereafter, (including but not limited to fees and disbursements of counsel incurred by the indemnified Party in any action or proceeding between indemnitor and the indemnified Party or between the indemnified Party and any third party or otherwise) arising out of any damage or injury to its property or property of third

parties (including real property, personal property and environmental damages), persons, (including injuries resulting in death), caused by or arising out of or in any way connected with this Agreement, or the work performed hereunder, or any equipment, property or facilities used by the other Party, its agents, employees, contractors, and suppliers; provided however, each Party shall be liable for all claims of the Party's own employees arising out of any provision of the Workers' Compensation Law.

- 19.2 Niagara Mohawk and Producer each agree to indemnify, defend, and save each other and their agents and employees, officers, directors, parent(s) and affiliates, harmless from and against any loss, damage, liability (civil or criminal), cost, suit, charge, expense (including reasonable attorneys' fees) or cause of action arising from violations by the other Party of said laws, ordinances, rules, regulations, permits, licenses, approvals, certificates and requirements thereunder. Niagara Mohawk and Producer each agree to bear fully all civil and criminal penalties that may arise from its own activities or from its own violations or from its own failure to comply with the aforementioned laws and requirements, whether such penalties are assessed against Producer or Niagara Mohawk. The provisions of this paragraph shall survive termination of this Agreement.
- 19.3 In the event that the claims, damages, losses, judgments, or settlements are the result of the negligence of both Parties, each Party shall be liable to the extent or degree of their respective negligence, as determined by mutual agreement of both Parties, or in the absence thereof, as determined by the adjudication of comparative negligence.
- 19.4 The indemnifying Party shall initiate promptly action to defend and indemnify the other Party against claims, actual or threatened, but in no event later than by the date the indemnifying Party receives notice by the indemnified Party of the service on the indemnified Party of notice, summons, complaint, petition to other service of process ***against*** the indemnified Party alleging damage, injury, liability, or expense attributed in any way to the Agreement, the work or acts, fault, negligence, equipment, materials, properties, facilities, personnel, or property of the indemnifying Party, its agents, employees, contractors or suppliers. The indemnifying Party shall defend any such claim or threatened claim, including as applicable, engagement of legal counsel, to respond to, defend, settle, or compromise any claim or threatened claim.
- 19.5 The indemnifying Party understands and agrees it is responsible for any and all costs and expenses incurred by the indemnified Party to enforce this indemnification provision.
- 19.6 The obligations set forth in this Article shall survive the later of the completion of the work, termination or expiration of the Agreement.

ARTICLE XX

RELATIONSHIP OF THE PARTIES

- 20.1 Nothing contained in this Agreement shall be construed or deemed to cause, create, constitute, give effect to, or otherwise recognize Producer and Niagara Mohawk to be

partners, joint venturers, employer and employee, principal and agent, or any other business association, with respect to any matter.

- 20.2 Unless otherwise agreed to in writing signed by both Parties, neither Party shall have any authority to create or assume in the other Party's name or on its behalf any obligation, express or implied, or to act or purport to act as the other Party's agent or legal empowered representative for any purpose whatsoever.
- 20.3 Neither Party shall be liable to any third party in any way for any engagement, obligation, commitment, contract, representation or for any negligent act or omission of the other Party, except as expressly provided for herein.
- 20.4 The rights and obligations of the Parties shall be limited to those expressly set forth herein.

ARTICLE XXI THIRD PARTY BENEFICIARY

- 21.1 No person or party shall have any rights or interests, direct or indirect, in this Agreement or the services or facilities to be provided hereunder, or both, except the Parties, their successors, and authorized assigns.
- 21.2 The Parties specifically disclaim any intent to create any rights in any person or party as a third-party beneficiary to this Agreement.

ARTICLE XXII ASSIGNMENT

- 22.1 Except as provided for in paragraphs 22.1.1, 22.1.2 and 22.1.3, neither Party may assign this Agreement or any of its rights, interests, or obligations hereunder without the prior written consent of the other Party, which such consent shall not be unreasonably withheld.
- 22.1.1 Producer may, upon prior written notice to Niagara Mohawk, assign, transfer, pledge, or otherwise dispose of its rights and interests under this Agreement to any lender or financial institution in connection with the financing or refinancing of the Interconnection Facility, Production Facility or property acquisition therefore. Niagara Mohawk hereby grants any such lender or financial institution assignee the following under this Agreement:
- (i) the right to cure occurrence of any event of default for the account of Producer;
 - (ii) the same time period to cure any events of default granted to Producer;

- (iii) the option to assume Producer's rights and obligations under the and the right to maintain the Agreement by providing full monetary compensation for any breach of Producer, which such assignee cannot cure other than paying monetary damages;
- (iv) the option to transfer the Interconnection Agreement to a new owner of the Production Facility in a foreclosure proceeding, or pursuant to a deed in lieu of foreclosure, which new owner shall be recognized as a Part to the Interconnection Agreement in replacement for Producer for all purposes under the Interconnection Agreement provided that such owner and owner's creditworthiness is acceptable to Niagara Mohawk and new owner assumes all obligations under the Interconnection Agreement.

22.1.2 Niagara Mohawk may, upon prior written notice to the Producer, assign, transfer, pledge, or otherwise dispose of Niagara Mohawk's rights and interests under this Agreement to any lender or financial institution in connection with the financing or refinancing of the Transmission System or property acquisition therefore.

22.1.3 Any company or entity which succeeds by purchase, merger or consolidation of the properties and assets, substantially or entirely, of Niagara Mohawk shall be entitled to the rights and shall be subject to the obligations of Niagara Mohawk under this Agreement.

22.2 Each Party agrees to reimburse the other Party for any costs and expenses (including reasonable attorneys' fees) incurred in connection with the other Party's review, execution and delivery of instruments, agreements or documents necessary in connection with the assigning Party's assignment, transfer, sale or other disposition of this Agreement or any interest in the Interconnection Facility or the Transmission System.

22.3 Any attempt to assign or assignment in violation of this Article XXII shall be considered null and void from its inception and Niagara Mohawk reserves the right to terminate this Agreement. Assignment contrary to the provisions of this Agreement shall make the assigning Party the indemnitor of the other Party and its successors against any liabilities and costs, including attorneys' fees as to which the assigning Party's transferee fails to indemnify, defend, and hold harmless the other Party, its agents, employees and its successors, from and against any loss, damage, liability, cost, suit, charge, expense (including reasonable attorneys' fees) or cause of action, incurred by the other Party as a result of said assignment or as a result of any dispute between the assigning Party and its transferees, or between any subsequent transferees, that arises from or relates to any assignment by the assigning Party. The provisions of this paragraph shall survive termination of this Agreement.

22.4 Any authorized assignment shall not relieve the assigning Party of the responsibility of full compliance with the requirements of this Agreement, unless the other Party consents and the assignee agrees in writing to be bound by all of the obligations and duties of the

assigning Party provided for in this Agreement and has provided written assurances to the other Party of continued performance and protection against liability upon assignment.

- 22.5 This Agreement shall bind and inure to the benefit of the Parties to this Agreement, their successors and permitted assigns.

ARTICLE XXIII WAIVER

- 23.1 No provision of this Agreement may be waived except by mutual agreement of the Parties as expressed in writing and signed by both Parties.
- 23.2 Any waiver that is not in writing and signed by both Parties shall be null and void from its inception.
- 23.3 No express waiver in any specific instance as provided in a required writing shall be construed as a waiver of future instances unless specifically so provided in the required writing.
- 23.4 No express waiver of any specific default shall be deemed a waiver of any other default whether or not similar to the default waived, or a continuing waiver of any other right or default by a Party.
- 23.5 The failure of either Party to insist in any one or more instances upon the strict performance of any of the provisions of this Agreement, or to exercise any right herein, shall not be construed as a waiver or relinquishment for the future of such strict performance of such provision or the exercise of such right.

ARTICLE XXIV AMENDMENT AND MODIFICATION

- 24.1 This Agreement may be amended or modified only if the amendment or modification is in writing and executed by both Parties. Any amendment or modification that is not in writing and signed by both Parties shall be null and void from its inception.
- 24.2 No express amendment or modification in any specific instance as provided herein shall be construed as an amendment or modification of future instances, unless specifically so provided in the required writing.
- 24.3 Except as provided for in paragraph 9.5, nothing in this Agreement shall be construed as affecting in any way the right of Niagara Mohawk to unilaterally make application to FERC (or any successor agency) for a change in rates, terms and conditions, charges, classifications of service, rule or regulation under Section 205, of the Federal Power Act ("FPA") and pursuant to FERC's rules and regulations promulgated thereunder, provided that Niagara Mohawk provides Producer with copies at the time they are submitted to

FERC of such applications that if approved would affect Producer's rights under this Agreement, and provided that Producer may intervene to oppose the proposed changes.

ARTICLE XXV GOVERNING LAW

- 25.1 This Agreement and the rights and obligations of the Parties to this Agreement shall be governed by and construed in accordance with the laws of the State of New York, without giving effect to the conflict of laws principles thereof.
- 25.2 Producer and Niagara Mohawk agree to submit to the jurisdiction of the courts in the State of New York for the purposes of interpretation and enforcement of this Agreement.
- 25.3 Producer and Niagara Mohawk waive personal service by manual delivery and agree that service of process on Producer or Niagara Mohawk in any action concerning or arising out of this Agreement may be made by registered or certified mail, return receipt requested, delivered to Producer or Niagara Mohawk at the addresses set forth in Article XIV of this Agreement.

ARTICLE XXVI DISPUTE RESOLUTION

- 26.1 Should a claim or dispute among the Parties arise under this Agreement, the Parties shall continue, in good faith, to perform their respective obligations hereunder. Notice of any claim or dispute that any Party may have against another Party, arising out of the Agreement shall be submitted in writing to the other Parties in a manner that clearly identifies the nature of the claim or dispute and requests that the Parties engage in negotiations to resolve the claim or dispute.
- 26.2 Upon receipt of the notice of claim or dispute under section 24.1, the Parties shall use Commercially Reasonable Efforts to resolve any such dispute without resorting to judicial resolution, through good faith negotiations between representatives with authority to resolve or settle the claim or dispute. The Parties agree to keep confidential any documents or materials exchanged and/or confidential information revealed in furtherance of resolving or settling the claim or dispute under this Article XXVI of this Agreement and that such documents, materials, or information shall be considered confidential settlement information and that, pursuant to Rule 408 of the Federal Rules of Evidence and parallel doctrines of state law, shall not be admissible as evidence in any subsequent judicial or regulatory proceeding.
- 26.3 If the dispute remains unresolved for more than sixty (60) days after receipt of the notice of claim or dispute under paragraph 26.1, any Party may seek resolution of its rights and remedies under this Agreement through any available forum in law or equity.

ARTICLE XXVII LIMITATION OF LIABILITY

- 27.1 Notwithstanding any other provision of this Agreement, neither Party shall be responsible to the other for incidental, indirect, exemplary, special or consequential damages (including punitive damages or loss of profits) in connection with this Agreement, *except* in cases of intentional misconduct, unless otherwise stated in this Agreement.
- 27.2 Third-Party Claims. Notwithstanding the provisions of Article XII as they may apply with respect to an indemnifying Party's responsibility for claims asserted against an indemnified Party by a third-party, under no circumstances shall Niagara Mohawk, or its directors, officers, employees, agents and Affiliates, be liable to the Producer, its directors, officers, employees, agents or Affiliates, for third-party claims, actions or causes of action for direct, indirect, incidental, punitive, special, exemplary, indirect, treble, multiple or consequential damages of any kind (including attorneys' fees, litigation costs, losses or damages caused by reason of the unavailability of the Production Facility, plant shutdowns or service interruptions, losses of use, profits or revenue, inventory or *use* charges, costs of purchased or replacement power, interest charges or costs of capital) resulting from or related to curtailments or interruptions of deliveries of Electricity over the Transmission System, including any such damages which are based upon causes of action for breach of contract, tort (including negligence and misrepresentation), breach of warranty or strict liability, that are alleged, filed or otherwise brought against Producer.
- 27.3 Survival. The provisions of this Article shall apply regardless of fault and shall survive termination, cancellation, suspension, completion or expiration of this Agreement.

ARTICLE XXVIII SEVERABILITY

- 28.1 If any term of this Agreement, or the interpretation or application of any term or provision to any prior circumstance, is held to be unenforceable, illegal, or invalid by any governmental agency or court of competent jurisdiction, the remainder of this Agreement, or the interpretation or application of all other terms or provisions to persons or circumstances other than those that are unenforceable, illegal, or invalid, shall not be affected thereby and each term and provision shall be valid and be enforced to the fullest extent permitted by law.

ARTICLE XXIX HEADINGS

- 29.1 The headings in this Agreement are included herein for convenience of reference only and shall not constitute a part of this Agreement for any other purpose, or limit or be used as an aid in construing the provisions of this Agreement.

ARTICLE XXX
INTEGRATION/MERGER/SURVIVABILITY

- 30.1 This Agreement sets forth the entire understanding and agreement of the Parties as to the subject matter of this Agreement. This Agreement merges and supersedes all prior agreements, commitments, representations, writings and discussions between the Parties with respect to the Interconnection Facility except for those agreements, commitments, representations, writings, or discussions which by their terms survive termination.
- 30.2 This Agreement shall not merge with or be terminated or superseded by any future agreement between the Parties that does not specifically and in writing so provide.

ARTICLE XXXI
COMPLIANCE WITH GOOD UTILITY PRACTICE

- 31.1 The Parties shall comply with Good Utility Practice.

ARTICLE XXXII
COUNTERPARTS

- 32.1 This Agreement may be executed in two or more counterparts, each of which shall be deemed an original but all of which together shall constitute one and the same instrument.

IN WITNESS WHEREOF, the Parties hereto have caused this instrument to be executed as of the day and year first above written.

Empire Generating Co, LLC

Niagara Mohawk Power Corporation

By: Daniel Hudson
Title: President
Date: 05/21/2024


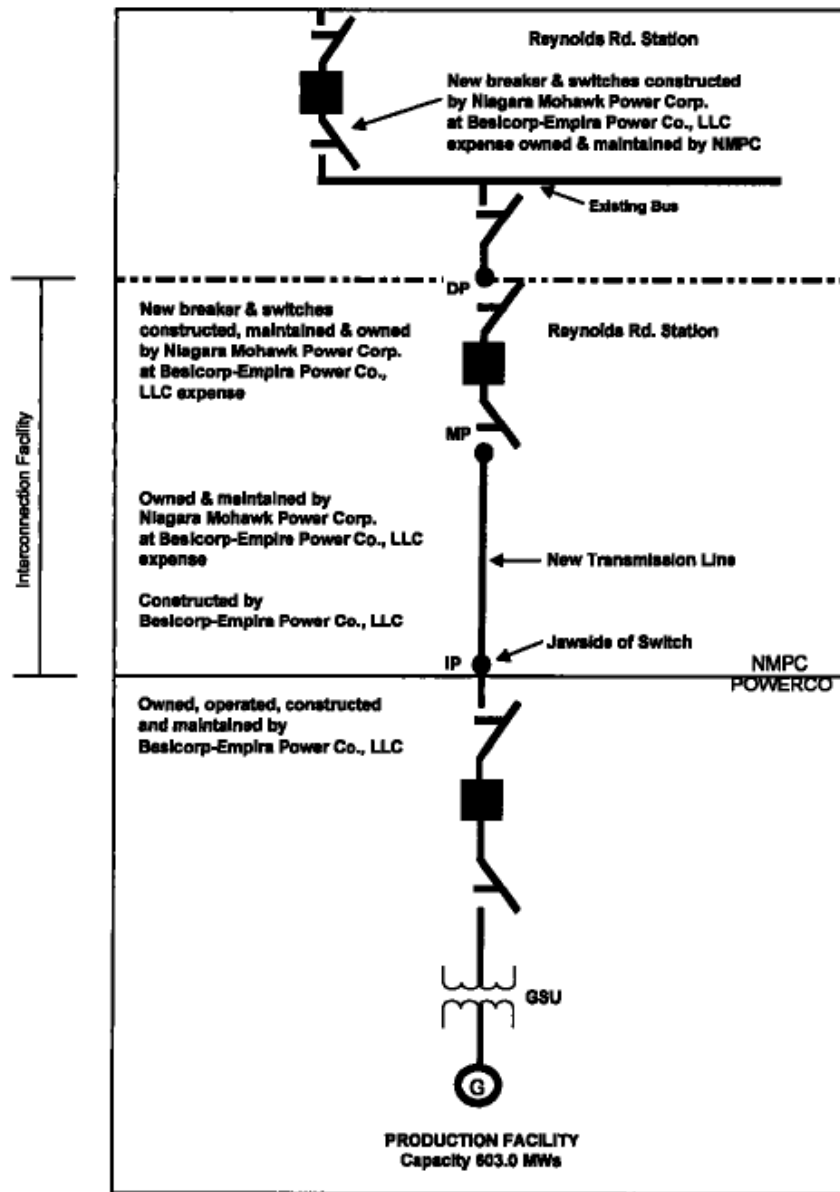
By: 
Title: Director, Commercial Services
Director:: Kevin C. Reardon
Date: May 21, 2024

Exhibit A

[One-Line Diagram]

Exhibit A



LEGEND

- Circuit Breaker
- Disconnect Switch
- IP Interconnection Point
- DP Delivery Point
- MP Metering Point

Notes:
For use in Interconnection Agreement Only
Not an Operating Diagram

Niagara Mohawk Power Corporation

DRAWN BY Trans Commercial Services		Besicorp-Empire Power Co., LLC	
CHECKED		Interconnection Diagram	
DATE 01/15/2004		SIZE A	DWG NUMBER EA-00W1
SCALE NOT TO SCALE		REV - 1	SHEET 1 OF 1

Exhibit B
[Facilities Study]

NIAGARA MOHAWK, A NATIONAL GRID COMPANY,

FACILITIES STUDY REPORT FOR

BESICORP - EMPIRE DEVELOPMENT COMPANY, LLC.

NM/NGRID UPGRADES ASSOCIATED WITH

THE 672 MW BESICORP - EMPIRE POWER COMPANY, LLC
COGENERATION POWER PLANT

IN RENSSELAER, NEW YORK

January 13, 2004

The Parties recognize that as of January 13, 2004, the Facilities Study has not been finalized because the Interconnection Facility has not been authorized by the New York State Public Service Commission (“NYSPSC”) and, therefore, the scope of the Facility Study is subject to the certificate to be issued by the NYSPSC pursuant to Article VII of the New York Public Service Law and additional studies, as required.

**This document was prepared by Niagara Mohawk Power Corporation.
It is made available to others upon express understanding that neither
NM/NGRID nor any of its affiliates, assumes any warranty or
representation with respect to the contents of this document or its accuracy
or completeness.**

**NIAGARA MOHAWK POWER CORPORATION
300 Erie Boulevard West
Syracuse, New York 13202**

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NIAGARA MOHAWK, A NATIONAL GRID COMPANY
FACILITIES STUDY REPORT FOR
BESICORP – EMPIRE DEVELOPMENT COMPANY, LLC:
NM/NGRID Upgrades Associated With The
672 MW POWER CO. Power Plant
in Rensselaer, New York

1 SUMMARY

Besicorp – Empire Development Company, LLC (“BEDCO”) has proposed the development of a cogeneration power plant in the City of Rensselaer, Rensselaer County, New York. The project will consist of three main components:

- (1) The Besicorp – Empire Power Company, LLC (“POWER CO.”) cogeneration power plant (“Plant”)
- (2) The connection of the Plant into the New York transmission grid
- (3) The replacement of other system elements due to the presence of the proposed Plant

The proposed Plant will be located in the City of Rensselaer, New York. The Plant will have two 161 MW gas-fired combined-cycle-generating units and one 297 MW steam turbine generators, for a total capability of 619 MW (603 MW after supplying the Plant’s auxiliary load), plus duct firing for a total of 672 MW (winter rating). The proposed plant will be adjacent to LG&E’s (“LG&E” or “El Paso”), Rensselaer Co-generation plant and approximately 8.1 miles from the Niagara Mohawk Power Corporation’s (“NMPC”) Reynolds Road Substation which will be used as the interconnection point. The POWER CO. Plant will operate mainly as a merchant plant with approximately 33 MW of electric energy and 160,000 lbs. of steam being supplied to the Empire State Newsprint Plant (“ESNP”) on an hourly basis, located adjacent to the plant site. The balance of the energy, its capacity and other ancillary services will be sold to the market. The proposed transmission facilities will be designed according to NMPC and Northeast Power Coordinating Council standards.

A System Reliability Impact Study (“SRIS”) identifying impacts to the NMPC system was completed in November 2001.¹ This study was conducted by Washington Group International (“WGI”) with coordinated input and review by NMPC, the New York Independent System Operator (“NYISO”), as well as being reviewed by the ISO-New England due to the interconnection at Reynolds Road, which is also directly connected to the transmission facilities to New England. Additionally, the study also reviewed the impacts to the NMPC local transmission system by the ESNP as purely a load on the NMPC transmission grid in the Capital Zone of the NYISO. This Facility Study includes the scope of work for potential upgrades associated with the surrounding NMPC transmission system and facilities resulting from the addition of the POWER CO. Plant. Subsequent to the approval by the NYISO, POWER CO.

¹ Report on the Empire State Newsprint Project for the Besicorp — Empire Development Company’s 505 MW Plant in Rensselaer, New York, dated November 2001. This report is included as APPENDIX 6 — SYSTEM RELIABILITY IMPACT STUDY.

also received confirmation from the Substation and Protection Engineering Group of New York State Electric & Gas that the interconnection of the POWER CO. Plant would not over duty any breakers or equipment on the NYSEG system with the interconnection at Reynolds Road.

This report documents preliminary engineering and conceptual design of modification and/or additions to NMPC's facilities to accommodate the interconnection of POWER CO.'s proposed Plant based on a two-breaker 345 kV installation at the NMPC Reynolds Road Substation. The following is a summary of the NMPC facilities requiring upgrade to incorporate the POWER CO. Plant:

- Mitigation of the short circuit impact on the Reynolds Road Substation by the replacement of the 115 kV breaker R63 at Reynolds Road with a new 50 kA breaker. The addition of the POWER CO. Plant increases the short circuit levels of the R-63 115 kV breaker at the Reynolds Road Substation beyond its 40-kA rating requiring its replacement.
- Addition of one new 345 kV line breaker at the Reynolds Road Substation will be required to accept the 345 kV generator leads from the POWER CO. substation switchyard to the Reynolds Road Substation.
- Addition of one new 345 kV bus breaker at the Reynolds Road Substation is required to provide clearing capability for the loss of the 345 kV Reynolds Road – Alps #1 transmission line, enabling the POWER CO. generators to remain connected to the 345 kV bus at Reynolds Road.
- Provide dual channel relaying at the Alps Substation. Extreme contingency analysis results indicated that the POWER CO. Plant extends critical clearing time of a three-phase fault at New Scotland on the New Scotland – Leeds circuit from 17 cycles to 19 cycles. This critical clearing time is considered acceptable because all 345 kV substations in the vicinity of the POWER CO. Plant, with the exception of Alps, have dual channel relaying, which provides backup clearing times comparable to primary clearing times.
- Modifications of the existing system protection schemes at Reynolds Road and Alps 345 kV substations to adjust for network changes, increased transmission loading and critical clearing time requirements.

2 POWER CO. PLANT

The proposed site of the POWER CO. Plant is in the proximity of the LG&E/EI Paso Rensselaer Generating Plant, in Rensselaer, NY. The plant is transmitting its output on the NMPC LG&E - Greenbush #16 115 kV Circuit. The POWER CO. site is approximately 5 miles southwest of the NMPC Reynolds Road Substation. The use of existing ROWs will require the construction of an 8.1 mile 345 kV transmission line to transmit the output power from the plant to the Reynolds Road substation. The geographic area for location of the proposed POWER CO. Plant and the Reynolds Road substation is shown in Figure 2-1. A conceptual drawing of the expanded Reynolds Road substation is shown in Figure 2-2 and Figure 2-3. The summer 2003 annual transmission review load flow study information sheet is also included as Figure 2-4.



Figure 2-1 Proposed Transmission Line Location

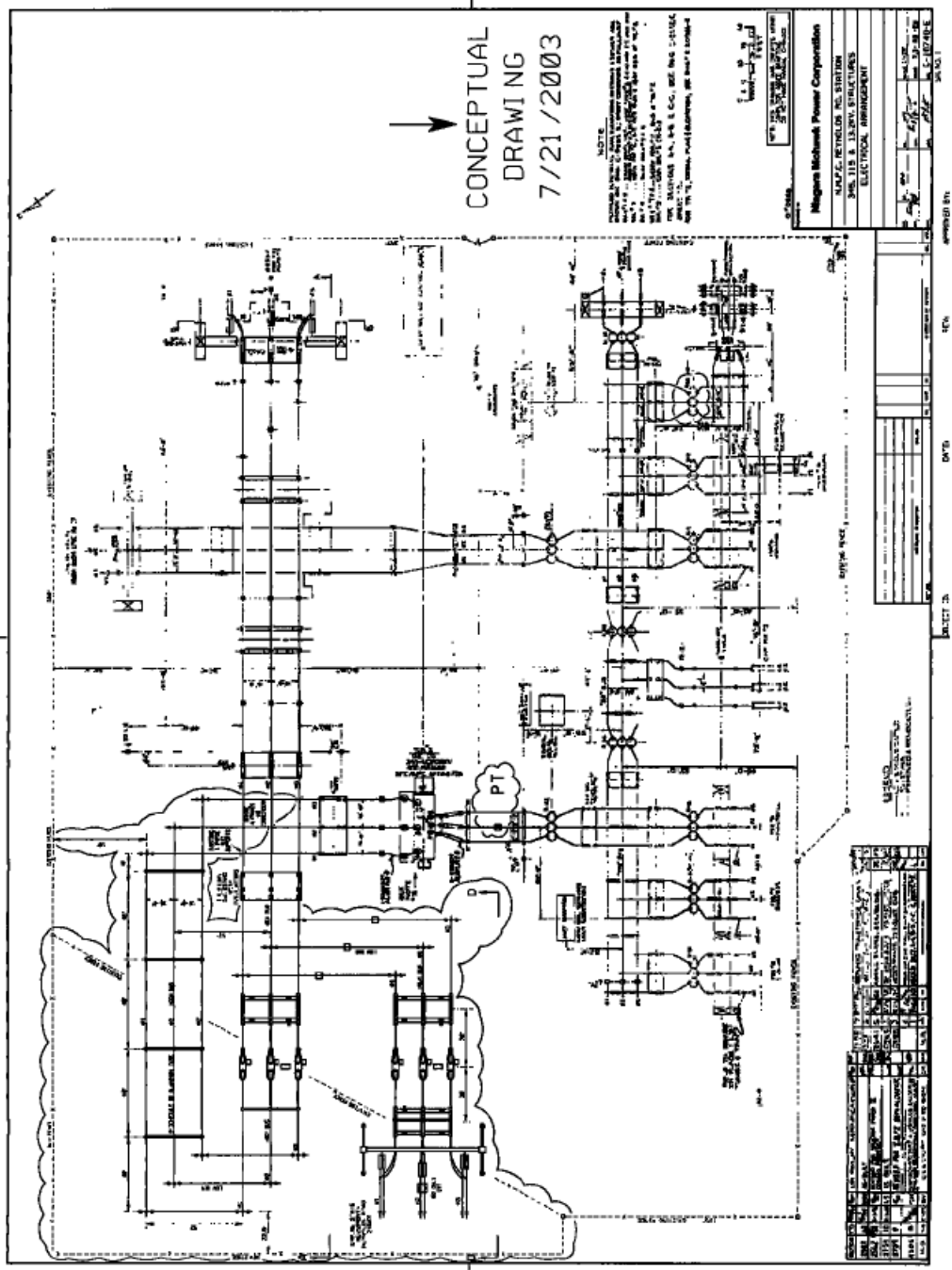


Figure 2-2 Reynolds Road Station Conceptual Layout

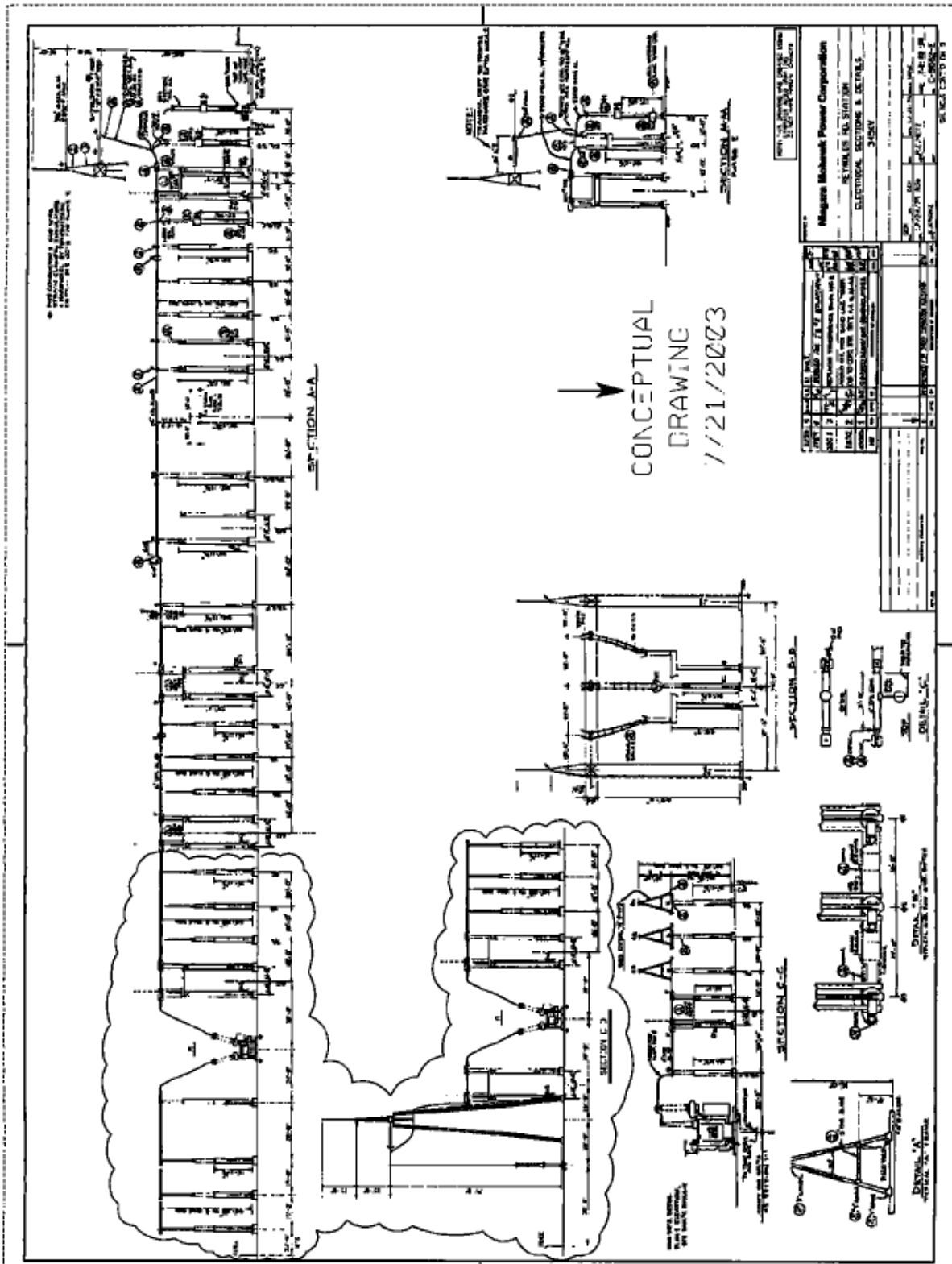


Figure 2-3 Reynolds Road Station Conceptual Profile

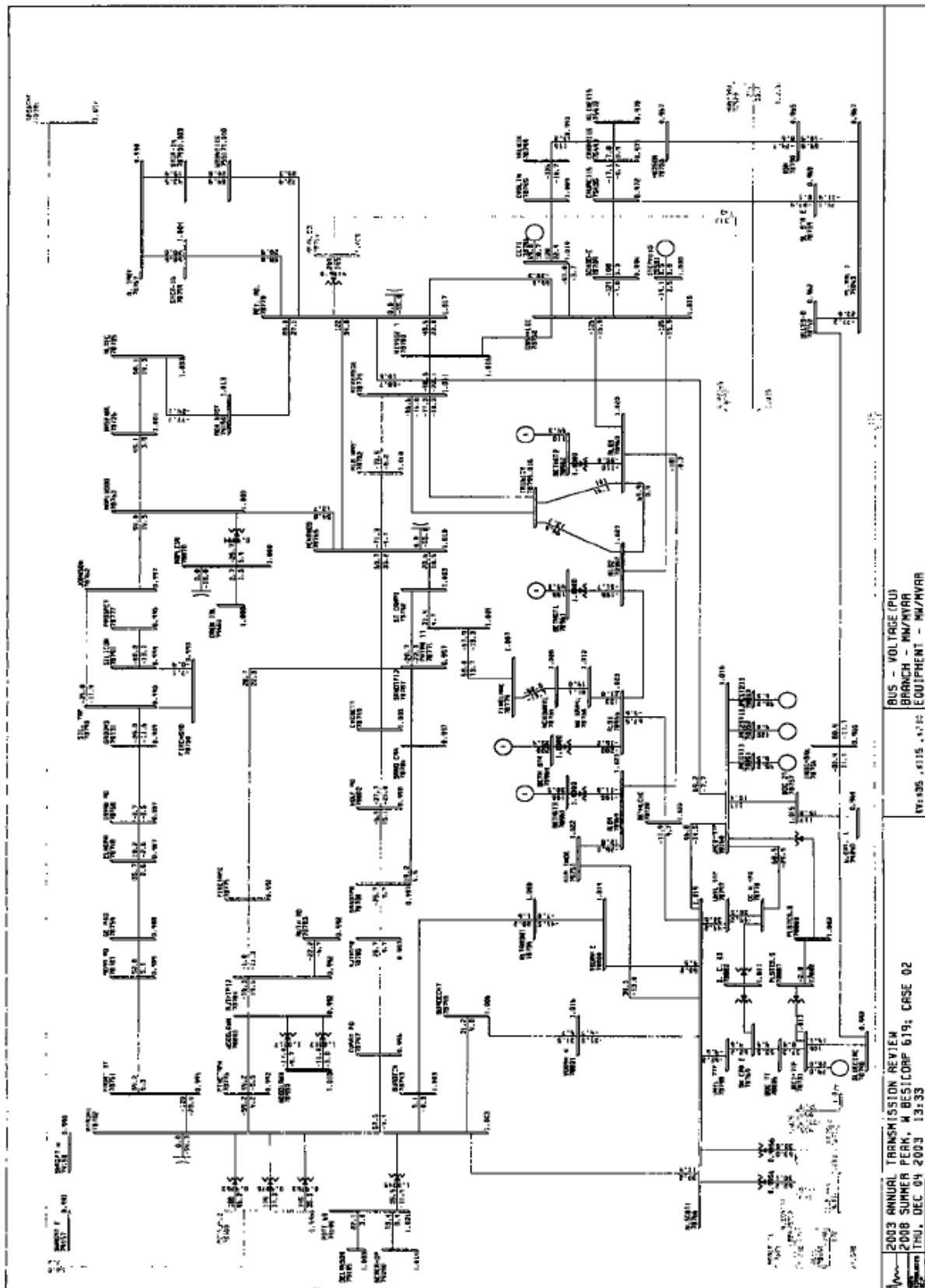


Figure 2-4 2003 Annual Transmission Load Flow Review

2.1. POWER CO. Plant Interconnection

Figure 2-5 illustrates the preliminary configuration to interconnect the proposed POWER CO. Plant to the 345 kV transmission system with a generator lead which extends from the POWER CO. Plant to the NMPC Reynolds Road Substation, through a single 345 kV breaker at Reynolds Road. The current configuration at Reynolds Road requires that a second 345 kV breaker also be installed as an isolation device such that the POWER CO. Plant can remain connected to the bus at Reynolds Road in the event of a line fault on the Reynolds Road – Alps #1 345 kV Circuit. The new 345 kV transmission line will be installed using 2-1192.5 kcmil ACSR conductors per phase for the entire length between the POWER CO. switchyard and the Reynolds Road Substation. NMPC will have the responsibility to design, install and test all necessary equipment at the Reynolds Road to accommodate this interconnection. POWER CO. will have the responsibility for all transmission line construction between these same two points. NMPC will be responsible for the approval of the transmission line design prior to the beginning of construction.

2.1.1. Special Protection Scheme

An NPCC Type 111 Special Protection System (“SPS”) will be required to detect a fault, line trip or failure on the Reynolds Road – Alps #1 345 kV circuit and automatically runback the POWER CO. Plant generators.

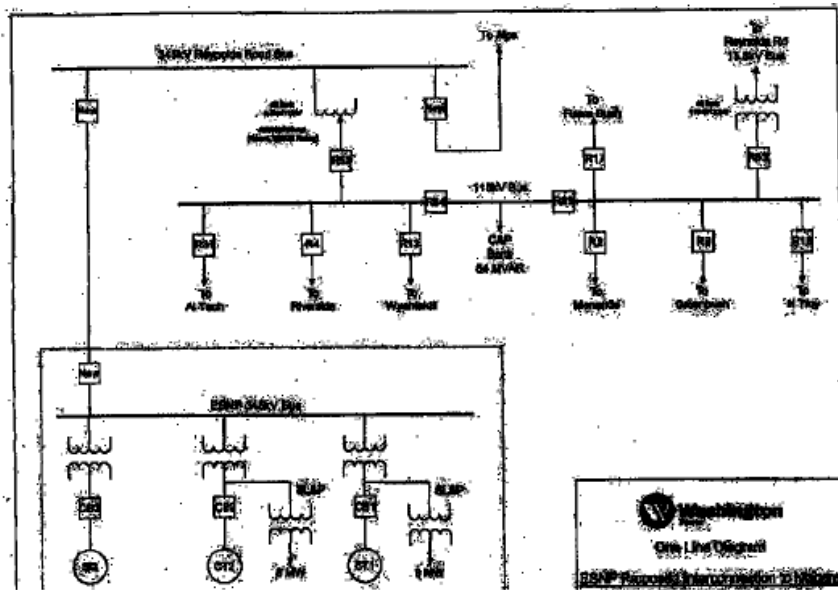


Figure 2-5 Conceptual POWER CO. Plant Configuration

3 SUBSTATION FACILITIES

This section documents the necessary review and/or modifications required at the NMPC substations to accommodate the interconnection, including estimated costs and preliminary schedule for these modifications.

This listing of substations and the affected equipment within a given substation requires field verification of ratings and protection schemes. Therefore this section is considered preliminary, as is this document.

3.1. Reynolds Road Substation

The upgrades at the Reynolds Road Substation are associated with the interconnection of the new 345 kV transmission facility, the installation of a second 345 kV isolation breaker, and the upgrading of an existing 115 kV circuit breaker which has been determined through the SRIS to be required to be replaced due to its current rating. The work at the Reynolds Road Substation will include the following additions/modifications (Reference Plan View: Appendix!, Figure 1-1).

3.1.1. 345 kV Switchyard

The 345 kV switchyard work mainly consists of creating a new 345 kV bay by the addition of a 345 kV circuit breaker, associated disconnects and bus work, along with the required communications, controls and protection required for the interconnection. The following equipment will be installed at the Reynolds Road 345 kV substation:

- Two (2) dead tank breakers (CB) rated 50 kA, 3000 continuous amps will be installed;
- Three (3) Disconnect switches, with Motor Operators will be installed;
- One (1) Line 345 kV Grounding Switch will be installed;
- One (1) Line 345 kV Line Trap and Tuning Equipment will be installed;
- One (1) Set of metering CT / VT Units; and
- One (1) Potential Transformer (PT) will be installed

3.1.2. 115 kV switchyard

The 115 kV switchyard work mainly consists of the replacement of an existing 115 kV circuit breaker (R63) which was determined to be beyond its normal rating through the SRIS analysis performed for the interconnection of the POWER CO. Plant.

- One live tank breaker rated 40 kA will be replaced with a new 50 kA live tank breaker (R-63)

3.1.3. Foundations

It is proposed that new foundations will be poured for all new 345 kV equipment in the Reynolds Road Substation. Such foundations will be required for the two (2) 345 kV circuit breakers, the 345 kV Grounding Switch, metering transformers and the one (1) Potential Transformer. The existing building foundation will need to be expanded to accommodate the additional required building space.

3.1.4. Grounding System

The grounding system will consist of a ground conductor grid and driven ground rods. All ground conductors will be copperweld.

3.1.5. Station Service

Station Service at the Reynolds Road Substation is not anticipated to need modifications or replacement in order to serve the additional facilities. Additional analysis may be required following specific specifications on the equipment are determined. The Station Service consists of two battery sets (125 VDC) and charger systems with _____AH batteries and a _____A chargers.

3.1.6. Controls and Protection

Control and protection additions/replacements will include:

- a) Controls and indication for 345 kV breaker (#TBD-B1) and motor operated disconnect (#TBD-D1) for the line interconnection of the POWER CO. Plant.
- b) Controls and indication for 345 kV breaker (#TBD-B2) and motor operated disconnect (#TBD-D2) for the isolation breaker on the Alps #1 345 kV connection at Reynolds Road.
- c) Synchronism check and reclosing relays for the new 345 kV breaker (#TBD-B1) and (#TBD-B2)
- d) Spare points on the existing annunciators will be used for the new alarms.
- e) Protection packages (system 1 & 2) for the 345 kV POWER CO. line will be installed. System 1 will be directional comparison carrier blocking (with on/off, and FSK power line carrier equipment) relaying system. System 1 cabinet will be located next to the existing panel _____. The new cabinet will be designated as #_____. System 2 will be permissive over-reach transfer trip (with POTT communication equipment) relay system. System 2 cabinet will be located next to the existing panel. The new cabinet will be designated as # _____.
- f) High speed and standard 345 kV breaker failure relaying for breaker (#TBD-B1) and for 345 kV breaker (#TBD-B2).
- g) 345 kV bus differential relays for 345 kV bus #_____ (system 1 and system 2). System 1 will be mounted on panel #_____ and system 2 will be on panel #_____.
- h) Communication processor.
- i) Digital fault recorder will be installed on panel #_____.
- j) Protective and controls associated with the replaced 115 kV circuit breaker R63 will be revised accordingly, if required.

3.1.7. EMS System

Harris RTU exists at the station to monitor and control the 345 kV facilities from NMPC Dispatch Center at _____. It is equipped for _____ status, _____ control pairs, and _____ analog points. Spare points available in the RTU will be used to accommodate additional status, control, and sequence inputs associated with the new substation facilities.

3.1.8. Digital Fault Recorder System

A new Digital Fault Recorder (“DFR”) system will need to be installed in the control building.

3.1.9. Interfaces with Transmission

Transmission engineering will undertake the following interface with the substation equipment:

- 2 – 1192.5 kcmil ACSR conductors drops will be made from the 345 kV line to the appropriate 345 kV breaker disconnect switches for the (#TBD-B1) breaker.

3.1.10. Review of Reynolds Road Distribution Feeds

A complete short circuit analysis will be reviewed/conducted to analyze the 13.2 kV distribution circuits. Those circuits, which will be analyzed through this study, are the 33451, 33452, 33453, and 33454 – 13.2 kV distribution circuits.

3.1.11. POWER CO. Plant Revenue Metering

NMPC will be responsible for providing all required metering equipment for the POWER CO. Plant revenue metering which will be installed at the Reynolds Road Substation. Such metering equipment will be in accordance with NMPC and NYISO revenue metering specifications.

3.1.12. POWER CO. 345 kV Metering

The meters provided for the Reynolds Road 345 kV interconnection will be capable of providing required billing quantities via dial-up telephone to the NMPC / POWER CO. or POWER CO. and the NYISO, using a UTS MV-90 in their standard format and protocol. With the location of the meters at Reynolds Road, there will be no need to be capable of being electronically compensated to reflect losses in the transmission line facilities. Any losses on transmission will be solely borne by POWER CO. The specific meters must also be capable of measuring bi-directional energy flow.

3.2. *Alps Substation*

The SRIS review of system condition indicated that modifications of the existing system protection schemes at the Alps 345 kV substation is required to adjust for network changes caused by increased transmission loading and critical clearing time requirements. It is also necessary to coordinate breaker tripping and reclosing schemes to take into account the inclusion of the POWER CO. Plant input to the NMPC system.

An NPCC Type III Special Protection System (“SPS”) will be required to detect and runback the Plant for a Reynolds Road – Alps #1 345 kV line failure or breaker trip.

3.3. Greenbush Substation

The SRIS review for the interconnection of the POWER CO. Plant to the NMPC Reynolds Road Substation concluded there were no impacts on the equipment at the Greenbush 115 kV Substation. However, additional studies are required to look at the potential required modifications to the protection scheme and station hardware.

3.4. Menands Substation

The SRIS review for the interconnection of the POWER CO. Plant to the NMPC Reynolds Road Substation concluded there were no impacts on the equipment at the Menands 115 kV Substation. However, additional studies are required to look at the potential required modifications to the protection scheme and station hardware.

3.5. Riverside Substation

The SRIS review for the interconnection of the POWER CO. Plant to the NMPC Reynolds Road Substation concluded there were no impacts on the equipment at the Riverside 115 kV Substation. However, additional studies are required to look at the potential required modifications to the protection scheme and station hardware.

3.6. Arsenal Substation

The SRIS review for the interconnection of the POWER CO. Plant to the NMPC Reynolds Road Substation concluded there were no impacts on the equipment at the Arsenal 115 kV Substation. However, additional studies are required to look at the potential required modifications to the protection scheme and station hardware.

3.7. Wynantskill Substation

The SRIS review for the interconnection of the POWER CO. Plant to the NMPC Reynolds Road Substation concluded there were no impacts on the equipment at the Wynantskill 115 kV Substation. However, additional studies are required to look at the potential required modifications to the protection scheme and station hardware.

3.8. Rensselaer Waste Water Substation

The SRIS review for the interconnection of the POWER CO. Plant to the NMPC Reynolds Road Substation concluded there were no impacts on the equipment at the Rensselaer Water Tap. However, additional studies are required to look at the potential required modifications to the protection scheme and station hardware.

3.9. North Troy Substation

The SRIS review for the interconnection of the POWER CO. Plant to the NMPC Reynolds Road Substation concluded there were no impacts on the equipment at the North Troy 115 kV Substation. However, additional studies are required to look at the potential required modifications to the protection scheme and station hardware.

3.10. Stephentown Substation

The SRIS review for the interconnection of the POWER CO. Plant to the NMPC Reynolds Road Substation concluded there were no impacts on the equipment at the Stephentown 115 kV Substation. However, additional studies are required to look at the potential required modifications to the protection scheme and station hardware.

3.11. Feura Bush Substation

The SRIS review for the interconnection of the POWER CO. Plant to the NMPC Reynolds Road Substation concluded there were no impacts on the equipment at the Feura Bush 115 kV Substation. However, additional studies are required to look at the potential required modifications to the protection scheme and station hardware.

3.12. LG&E/ El Paso Substation

The SRIS review for the interconnection of the POWER CO. Plant to the NMPC Reynolds Road Substation concluded there were no impacts on the equipment at the LG&E / El Paso 115 kV Substation for the LG&E / El Paso Cogeneration Plant. However, additional studies are required to look at the potential required modifications to the protection scheme and station hardware.

3.13. POWER CO. Substation

3.13.1. POWER CO. Special Protection Scheme

The SRIS review for the interconnection of the POWER CO. Plant has indicated that there will be a need to install a NPCC Type 111 SPS equipment. This SPS equipment will automatically runback the output of the generation units at the POWER CO. Plant to an approximate ____% output, for the case of the loss of the Alps #1 345 kV Line between Reynolds Road and the Alps Substation, or for the loss of its associated breaker (#TBDB2) at the Reynolds Road Substation.

- Installation of an audio-tone transmitter at Alps, with a receiver at POWER CO. Plant.
- It may be possible to share communications paths and equipment for different SPSs.

3.13.2. Station Service Metering

Dual Station Service supply will be provided for the POWER CO. 345 kV switchyard in accordance with NPCC requirements, in accordance with NPCC Document A-5, Section 3.6.

The physical bus arrangement of the POWER CO. 345 kV switchyard enables the station service for the POWER CO. Plant to be supplied through the 345/13.8 kV step-down transformer, for a

complete shutdown of the cogeneration facility. A second source is being investigated using nearby NMPC substation distribution or sub-transmission feeds. This second source may require modifications at the station selected as the source for the 2nd station service feed.

4 SUBSTATION COST ESTIMATES AND CONSTRUCTION SCHEDULES

Project cost estimates (+/- 20% accuracy) for the substation work are summarized in Table 4-1. These are based on present day dollars. All substation facilities identified in Table 4-1 are considered Pool Transmission Facilities ("PTF"). No salvage value is included in the estimates.

The estimated project schedule for the POWER CO. substation is provided in Table 4-1. Project duration includes project commencement through completion for the additions/modifications detailed above for engineering, material delivery and construction of work. Costs associated with the POWER CO. Plant or the switchyard are not included. Only incremental costs attributed to the POWER CO. projects are included.

Table 4-1 Total NMPC Estimated Substation Costs

Facility Description	Project Schedule (Months)						Estimated NMPC Substation Costs (Jan 2004 \$ Millions)
	Pre Engineering	Approval	Design	Material Delivery	Construction	Total	
Reynolds Road 345 kV	2	1	9	4	6	22	3.85
Reynolds Road 115 kV	1	1	2	2	2	8	0.250
Reynolds Road 13.2 kV	----	----	----	----	----	----	0
Alps 345 kV	1	1	4	4	3	13	0.350
Arsenal 115 kV	----	----	----	----	----	----	0
Rensselaer County Waste Water 115 kV Tap	----	----	----	----	----	----	0
Riverside 115 kV	----	----	----	----	----	----	0
Wynantskill 115 kV	----	----	----	----	----	----	0
Menands 115 kV	----	----	----	----	----	----	0
Greenbush 115 kV	----	----	----	----	----	----	0
North Troy 115 kV	----	----	----	----	----	----	0
Seaway 115 kV Tap	----	----	----	----	----	----	0
Feura Bush 115 kV	----	----	----	----	----	----	0
POWER CO. Plant 345 kV	----	1	----	----	----	1	0.150

4.1. Related Interface Work at POWER CO. Plant Station

This report does not cover the interface facilities (switchgear, metering, protection, and SCADA, etc.) required at the Plant for the interconnection. This needs to be addressed at a later date after the Plant electrical one-line is finalized.

4.2. Related Interface Work at the Alps Station

This report addresses the need for an SPS system installation at the Alps 345 kV Substation, but does not address any interface facilities (switchgear, metering, other protection, and SCADA, etc.) which may be required at this facility, until such time as the final electrical interconnection is finalized.

5 POWER CO. TRANSMISSION LINE

This section will provide the details of the POWER CO. 8.1 mile transmission line interconnection facility. Specifics along portions of the route vary according to the location; therefore the transmission line is described as three separate segments as follows:

- Segment One: POWER CO. Plant south approximately 1.7 miles along a 100-foot NMPC ROW easement;
- Segment Two: From Segment One for approximately 2.3 miles (generally northeast) along an existing 250-foot NMPC fee-owned ROW
- Segment Three: From Segment Two for approximately 4.1 miles (generally north) along an existing 355-foot NMPC fee-owned ROW.

5.1. ROW Segment Descriptions

The following will describe the characteristics of the three segments of the Proposed Transmission Line.

5.1.1. Segment 1

The Proposed Transmission Line route starts at the proposed new POWER CO. Plant in the City of Rensselaer and travels south, along an existing 100-foot wide NMPC ROW into the Town of East Greenbush, to an intersection with another NMPC ROW, a distance of approximately 1.7 miles. This portion of the ROW contains an existing 115 kV transmission line (Greenbush #16 Circuit) for its entire length, and an 8-inch natural gas pipeline (NMPC Pipeline E-35) for 0.8 miles from the POWER CO. Plant to the crossing of Teller Road (Sun Oil Road). (The portion of Segment 1 containing the natural gas line is referred to as Segment 1A.) The gas pipeline is 40 feet from the western edge of the ROW and the transmission line is 40 feet off the eastern edge of the ROW, providing a 20-foot separation between the facilities. From Teller Road south (referred to as Segment 1B), the existing 115 kV transmission line is located in the center of the ROW.

For Segment 1, the Proposed Transmission Line route will be placed on double circuit steel monopole structures within the existing ROW. The existing Greenbush #16 Circuit will be placed on temporary structures on the western side of the ROW until the new steel monopoles are in place on the eastern side of the ROW. The existing Greenbush #16 Circuit will then be placed on the eastern side of the new monopoles. A cross section of the ROW is shown in Figure 5-5 and Figure 5-6.

5.1.2. Segment 2

The Proposed Transmission Line route then follows an existing ROW (New Scotland – Reynolds Road) in a northeasterly direction for approximately 2.3 miles, where additional circuits enter the ROW. The ROW followed by Segment 2 is a 250-foot wide corridor and the Proposed Transmission Line will be located within the ROW along the northern side. The corridor contains two existing sets of structures: the Feura Bush - Reynolds Road #17 115 kV

Circuit (constructed for 230 kV), and the Greenbush #16 115 kV Circuit. The Proposed Transmission Line will be constructed on a new set of single circuit steel monopoles located on the northern side of the ROW. A cross section of the ROW is shown in Figure 5-7.

5.1.3. Segment 2A

This is a short section of NMPC ROW that connects to the Greenbush substation. It is 0.7 miles long and ranges from 100 to 250 feet wide. Initially there is one existing circuit (Greenbush #16) and then two additional circuits (Reynolds Road - Greenbush #9 Circuit and Riverside - Reynolds Road #4 Greenbush station tap).

5.1.4. Segment 3

The Proposed Transmission Line will then continue approximately 4.1 miles in a northerly direction following an existing NMPC ROW, and will terminate at the NMPC Reynolds Road substation. The new circuit will be constructed along the western side of this combined 355-foot wide ROW. This portion of the ROW presently contains four electric circuits. These are (from east to west):

- Reynolds Road - Greenbush #9 115 kV Circuit;
- Riverside - Reynolds Road #4 115 kV Circuit;
- Distribution Circuit 13.2 kV (constructed for 34.5 kV); and
- Feura Bush - Reynolds Road #17 115 kV Circuit (constructed for 230 kV).

This ROW also accommodates a Dominion Telecom (formerly Telergy) fiber optic conduit, which enters the ROW north of 1-90 at MP 5.5 and exits just south of the Reynolds Road substation at MP 8. Also within this ROW are a Dominion Gas 12-inch natural gas pipeline and a NEON Communications fiber optic conduit. The Proposed Transmission Line will be constructed on a new set of single circuit steel monopoles (located on the western side of the ROW). A cross section of the ROW is shown in Figure 5-8.

Table 5-1 ROW Paralleled by or Intersecting the Proposed Transmission Line

Segment	Length/ Width	Existing Voltage and Structure Type	Existing Circuits/Other utilities
Segment 1A	0.8 miles 100 feet	115 kV monopole	Greenbush #16 115 kV Circuit 8-inch NMPC Natural Gas Pipeline E-35
Segment 1B	0.9 Miles 100 feet	115 kV monopole	Greenbush #16 115 kV Circuit
Segment 2	2.3 miles 250 feet	115 kV monopole 115 kV H Frame (built for 230 kV)	Greenbush #16 115 kV Circuit Feura Bush - Reynolds Road #17 115 kV Circuit
Segment 2A	0.7 miles 100/150 feet	115 kV lattice 115 kV lattice 115 kV monopole 115 kV lattice 115 kV lattice	Reynolds Road - Greenbush #9 115 kV Circuit Riverside - Reynolds Road #4 115 kV Circuit Greenbush #16 115 kV Circuit Reynolds Road - Greenbush #9 115 kV Circuit Riverside - Reynolds Road #4 115 kV Circuit
Segment 3	4.1 miles 355 feet	13.2 kV monopole 115 kV H frame (built for 230 kV)	Distribution Circuit 13.2 kV Circuit Feura Bush - Reynolds Road #17 115 kV Circuit Dominion Telecom, Inc. Fiber Optic Conduit Dominion Transmission Inc. 12-inch Gas Pipeline Neon Communications Fiber Optic Conduit

FIGURE 5-1

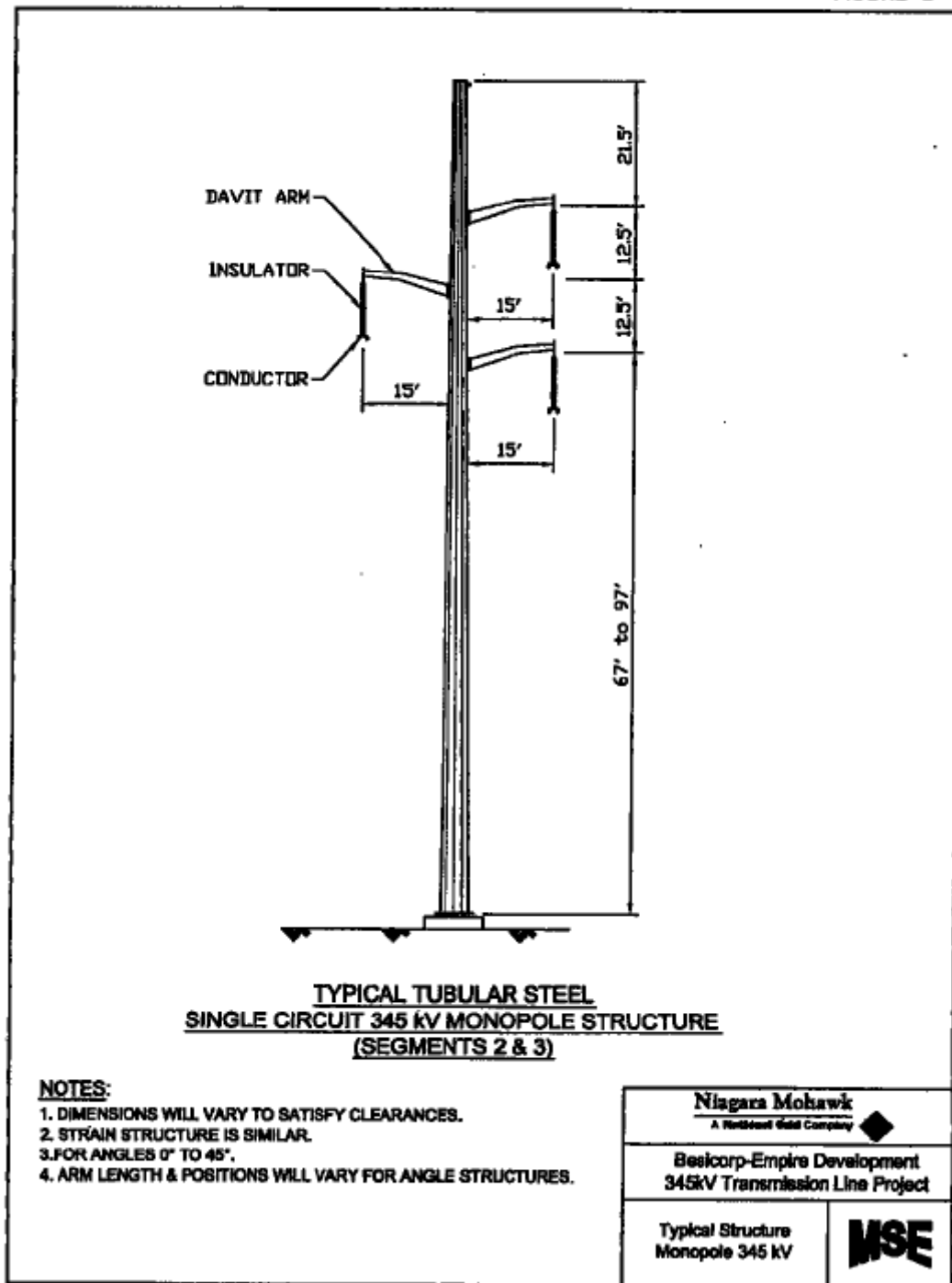


Figure 5-1 Typical Tabular Monopole (Segments 2 & 3)

FIGURE 5-1

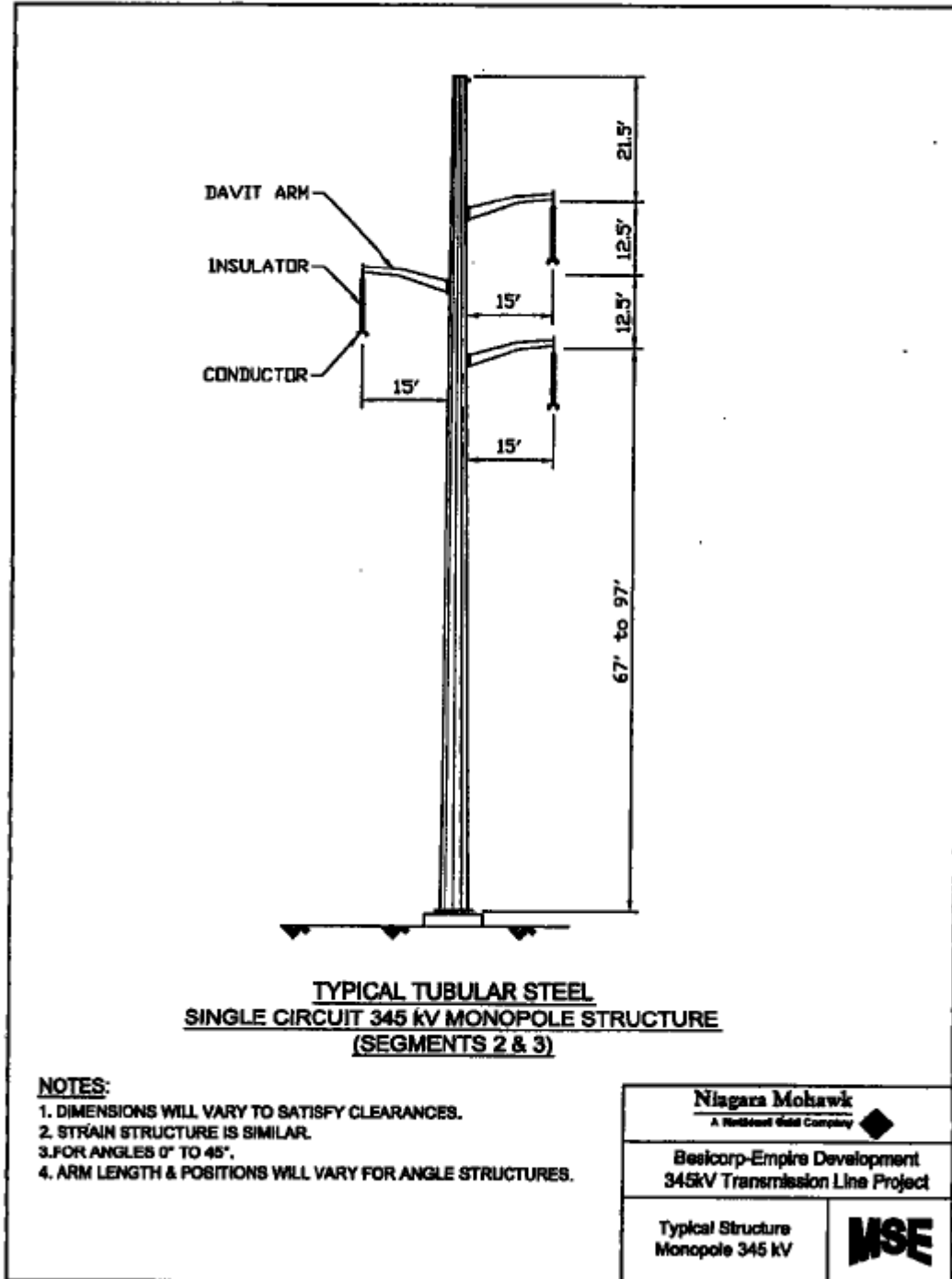


Figure 5-2 Typical Tabular Steel Large Angle Monopole

FIGURE 5-3

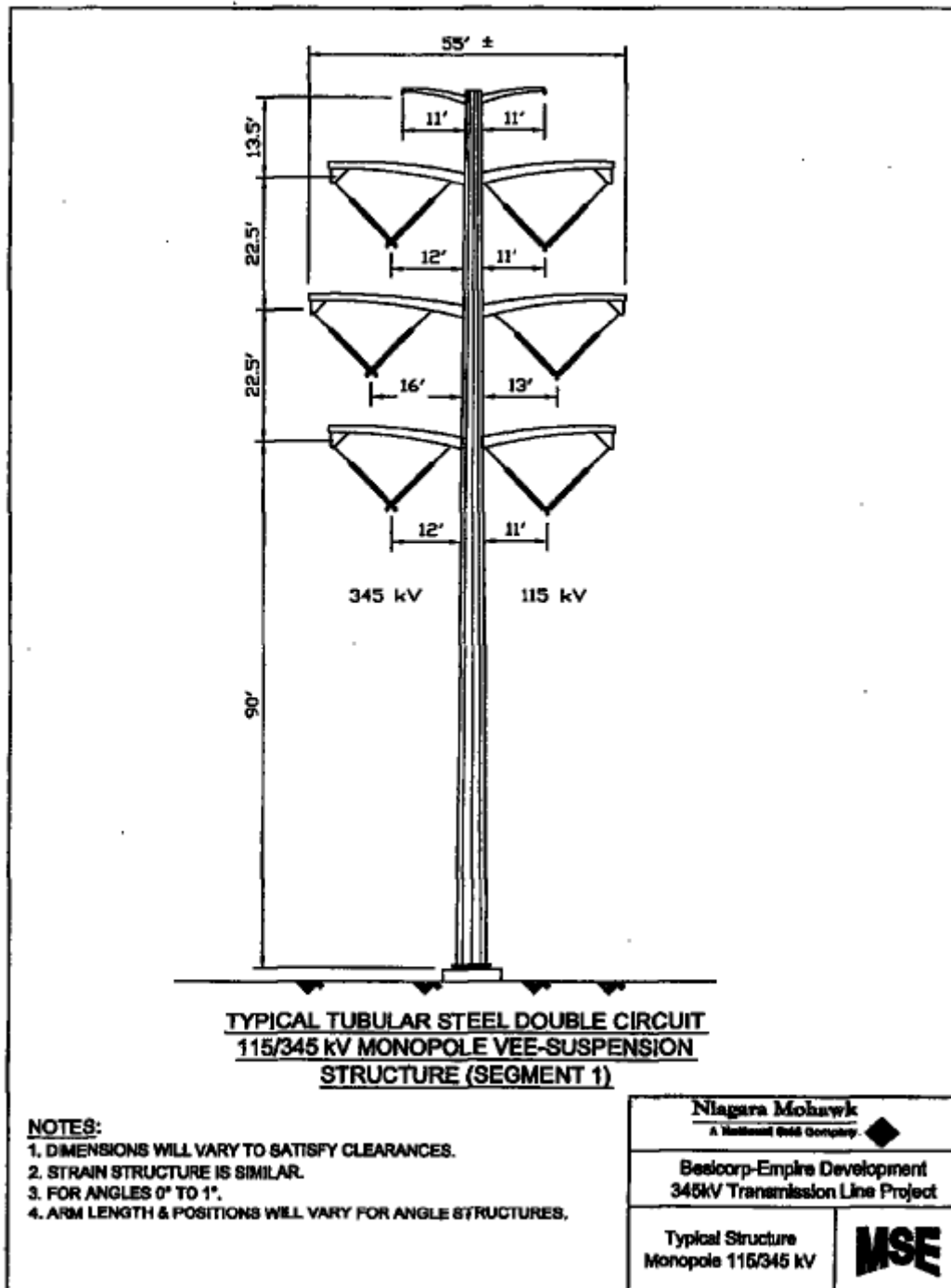


Figure 5-3 Typical Tabular Steel Double Circuit Monopole

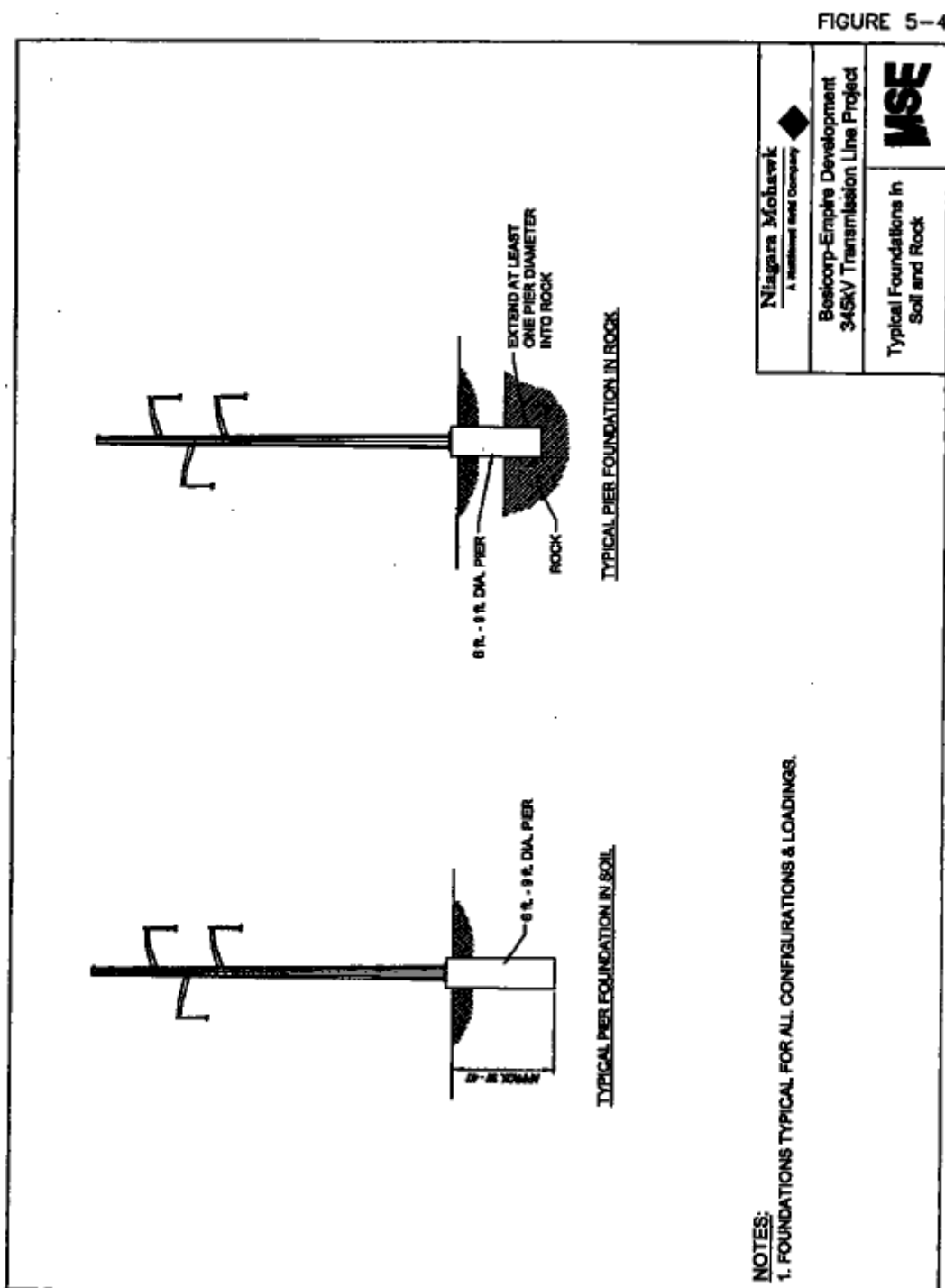


Figure 5-4 Typical Monopole Foundations

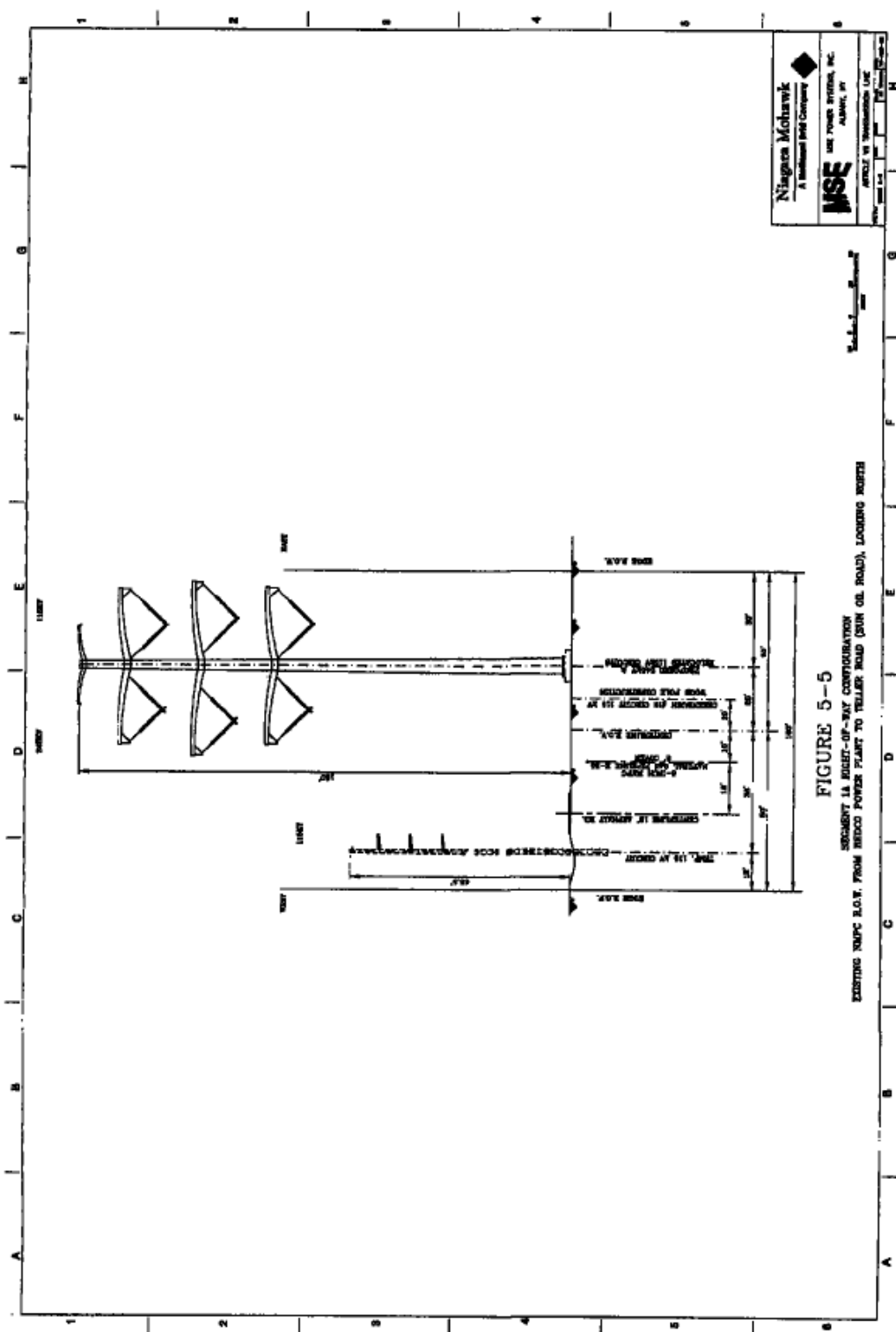


Figure 5-5 Segment 1A ROW Configuration



5.2. General Description of the Proposed Transmission Line

The NMPC proposed 345 kV transmission line will occupy existing NMPC ROWs for its entire length with one exception at the intersection of segments 1 & 2. The total length of the route is approximately 8.1 miles.

5.3. Monopole Structure Types

Steel monopole tubular structures are preferred for the Proposed Transmission Line. The monopole structures will be approximately 112 feet to 160.5 feet in height and will be self-supporting. The structures will be galvanized, and therefore neutral in color, with gray porcelain insulators. The following figures illustrate the type of monopole structures that will be required:

- tubular steel single circuit monopole structure (Figure 5-1);
- tubular steel circuit monopole structure for large angles (Figure 5-2); and
- tubular steel double circuit 115/345 kV Vee-suspension monopole structure (Figure 5-3).

A single, reinforced concrete pier is proposed as the typical monopole foundation. The piers will be from 6 to 9 feet in diameter and nominally 30 to 40 feet in depth. Where solid rock is encountered, the piers will extend at least one pier diameter into the rock. Typical pier foundations in soil and rock are shown in Figure 5-4. The pier foundation size requirements will be determined by a detailed geotechnical analysis as part of a project specific EM&CS&P Plan that will be submitted to the NYSPSC for review and approval prior to construction.

5.4. Power Conductor

Two 1192.5 kcmil 45/7 ACSR power conductors will be used for each phase of the new 345 kV circuit. Single 795.0 kcmil 26/7 ACSR will be used for each phase of the 115 kV circuit on Segment 1.

5.5. Monopole Structure Locations

Exact monopole locations will depend on final design of the Proposed Transmission Line that will be provided in the EM&CS&P Plan. Structures will be approximately 600 to 1,000 feet apart. Actual spans will vary based on environmental factors, required clearance from the ground, and the adjacent transmission lines.

5.6. Right-of-Way Width

The Proposed Transmission Line will be constructed on existing ROWs for its entire length with one exception. For Segment 1, the first 1.7 miles of the project, the monopole structures will be placed within an existing 100-foot wide ROW. It is anticipated that additional ROW may be acquired at the intersection of Segment 1 and 2 where the alignment joins an existing NMPC ROW. For Segment 2, the next 2.3 miles of the Proposed Transmission Line, the structures will be placed within an existing 250-foot wide ROW. For Segment 3, approximately 4.1 miles, the

monopole structures will be placed within an existing 355-foot wide ROW. The ROW configurations proposed for each segment are shown in Figure 5-5 through Figure 5-8.

5.7. *Electric and Magnetic Fields*

This analysis demonstrates compliance with the NYSPSC Policy Statement dated September 11, 1990, concerning electric and magnetic fields (“EMF”). The EMF strengths along were estimated along the edge of the existing NMPC ROW followed by the Proposed Transmission Line. The methodology used to model EMF and a summary of the results are presented below.

5.7.1. Evaluation Criteria

The EMF limits established by the NYSPSC include the following criteria for all Proposed Transmission Line segments:

1. The maximum electric field at 1 meter above ground along the edge of the ROW shall be less than 1.6 kilovolts per meter (kV/m).
2. The maximum electric field at 1 meter above ground over public roads shall be less than 7.0 kV/m in accordance with NYSPSC Opinion No. 78-13.
3. The magnetic field at 1 meter above ground at all locations along the edge of the ROW shall be less than 200 mG in accordance with NYSPSC Policy Statement dated September 11, 1990.
4. Electric fields meeting the above criteria shall be calculated at maximum system overvoltage of 1.05 per unit (p.u.).
5. Magnetic fields meeting the above criteria shall be calculated at winter normal conductor rating for each line.

5.7.2. Methodology

The EMF strengths were calculated utilizing the industry accepted computer program “ENVIRO”, Version 3.51, developed by the Electric Power Research Institute (“EPRI”). The existing circuits within each segment of the ROW were identified. The configurations are shown in the cross sections presented in Figure 5-5 through Figure 5-8. Minimum conductor clearances to ground surface per National Electric Safety Code (“NESC”) are used in the EMF calculations for conservative results. A minimum vertical clearance of 37 feet is used for Segments 2 and 3 for the new 345 kV construction. For Segment 1, the minimum vertical clearance was set at 55 feet. All minimum clearances are assumed to take place at a maximum conductor operating temperature of 257 degrees Fahrenheit. The winter normal conductor ampacities were obtained from the NMPC Transmission System Thermal Ratings Manual. Electric field calculations were performed for 1.05 p.u. overvoltage.

5.7.3. Results

Results of the EMF model runs are presented below in Table 5-2. Illustrations of the electric and magnetic field profiles for each segment of the Proposed Transmission Line are presented in Figure 5-9 through Figure 5-14. In addition to the conservative runs required by the NYSPSC, NMPC has also evaluated the EMF that would be experienced in the field based on actual 2002

peak loading of the existing facilities and normal peak load for the Proposed Transmission Line. Results from the peak load scenario are presented in Table 5-2. Illustrations of the EMF field profiles for each segment at the peak load are presented in Figure 5-15 through Figure 5-20.

5.7.4. Conclusions

Based on the calculated results, the required criterion are satisfied:

1. In all cases the calculated maximum electric field at the edge of ROW is less than the required 1.6 kV/m.
2. In all cases the calculated maximum electric field within the ROW is less than the required 7.0 kV/m.
3. In all cases the calculated maximum magnetic field at the edge of ROW is less than the required 200 mG.

The centerline of the Proposed Transmission Line is based on preliminary data. These results may be subject to change as the detailed design is finalized. Detailed design plans will be submitted in the EM&CS&P Plan.

Table 5-2 Results of Electric and Magnetic Studies

ROW Segment	Maximum Electric Field @ ROW Edge (kV/m)	Maximum Electric Field in ROW (kV/m)	Maximum Magnetic Field at ROW Edge (mG)
<i>Maximum Conductor Rating</i>			
<i>Segment 1</i>	1.4	2.8	191.6
Segment 2	0.7	4.7	158.8
Segment 3	0.8	4.2	196.2
<i>Actual 2002 Peak Loading</i>			
Segment 1	1.4	2.7	147.3
Segment 2	0.7	4.0	72.6
Segment 3	1.4	6.7	77.5

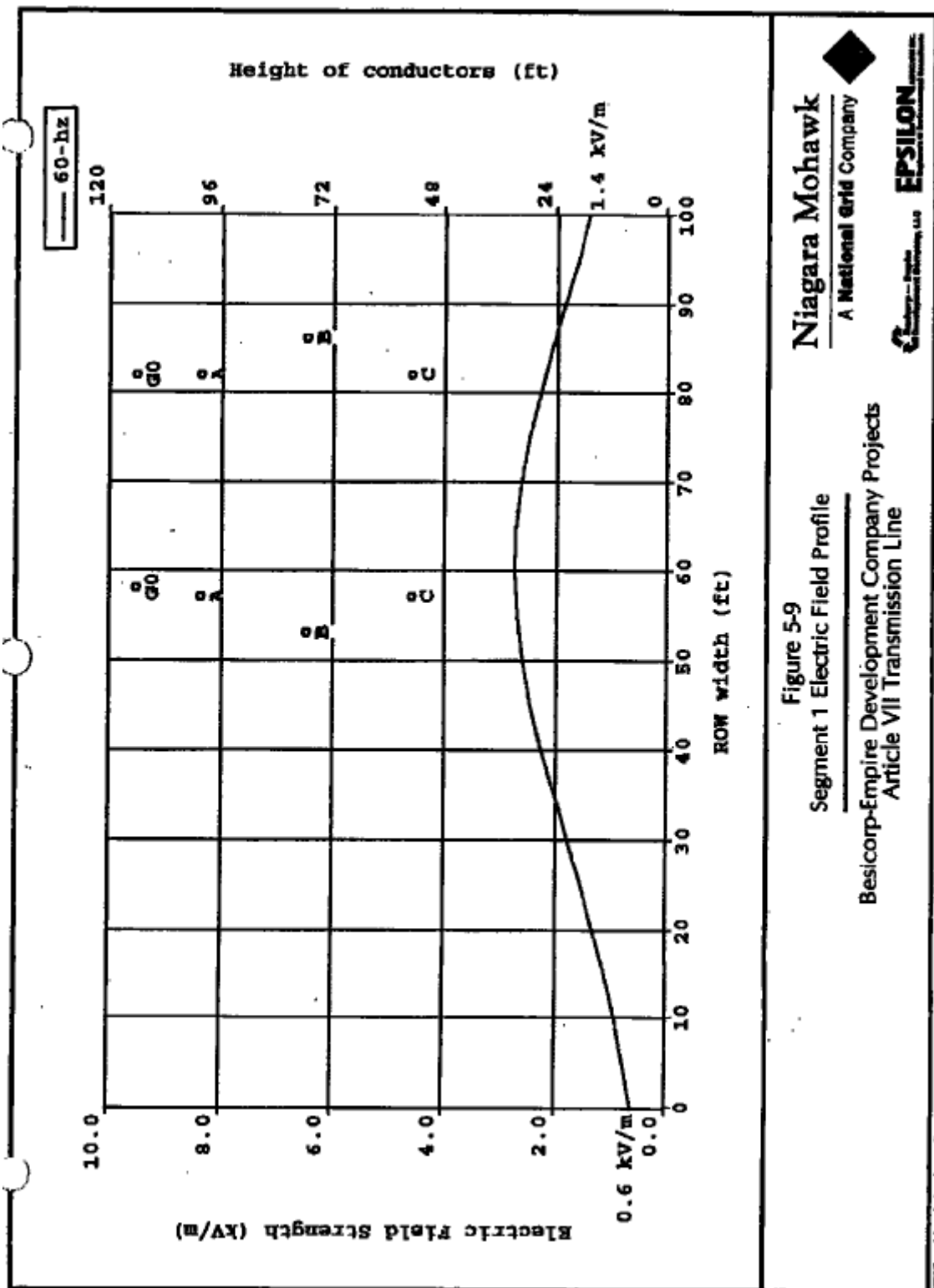


Figure 5-9 Segment 1 Electric Field Profile

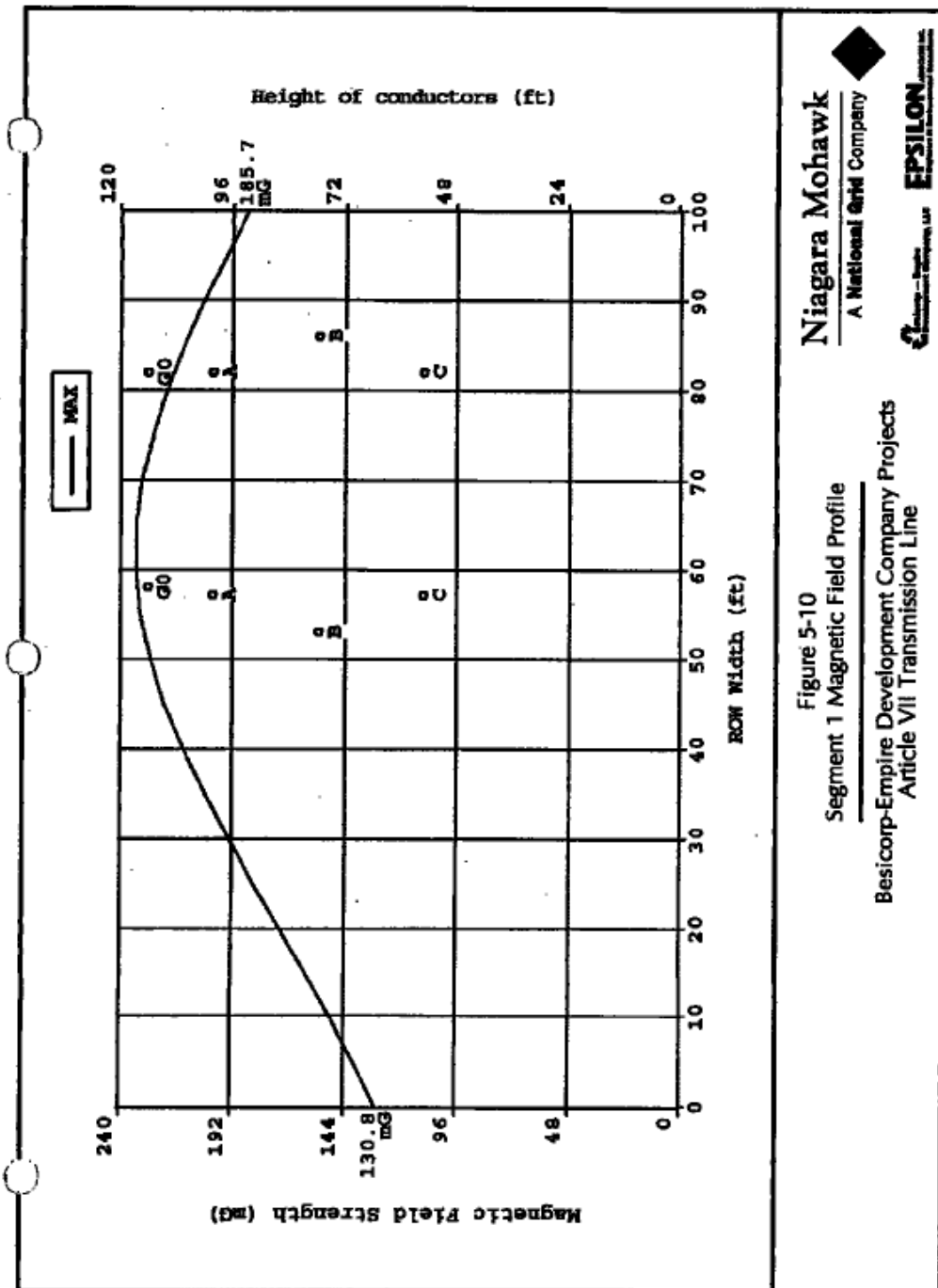


Figure 5-10 Segment 1 Magnetic Field Profile

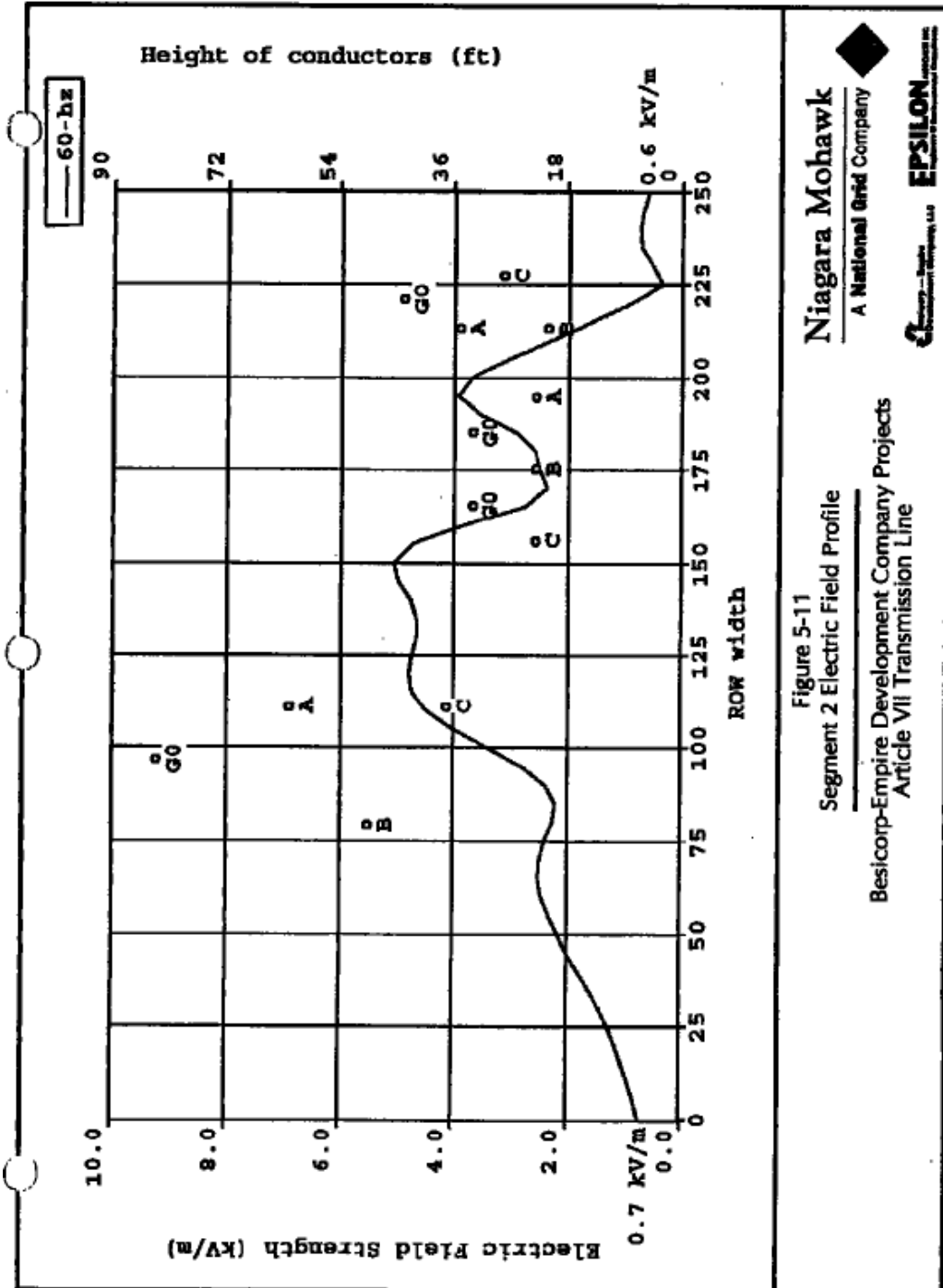


Figure 5-11 Segment 2 Electric Field Profile

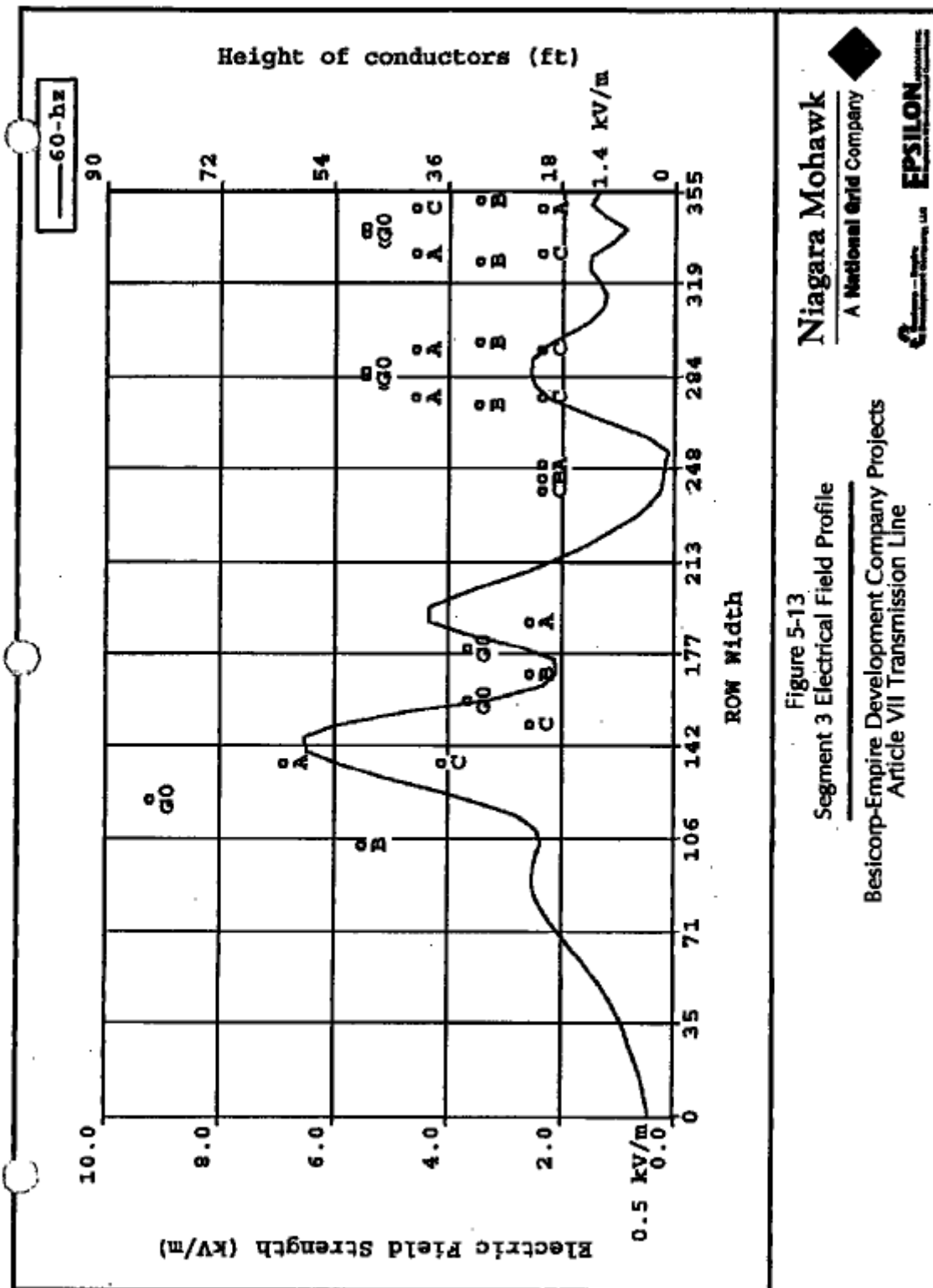


Figure 5-13 Segment 3 Electric Field Profile

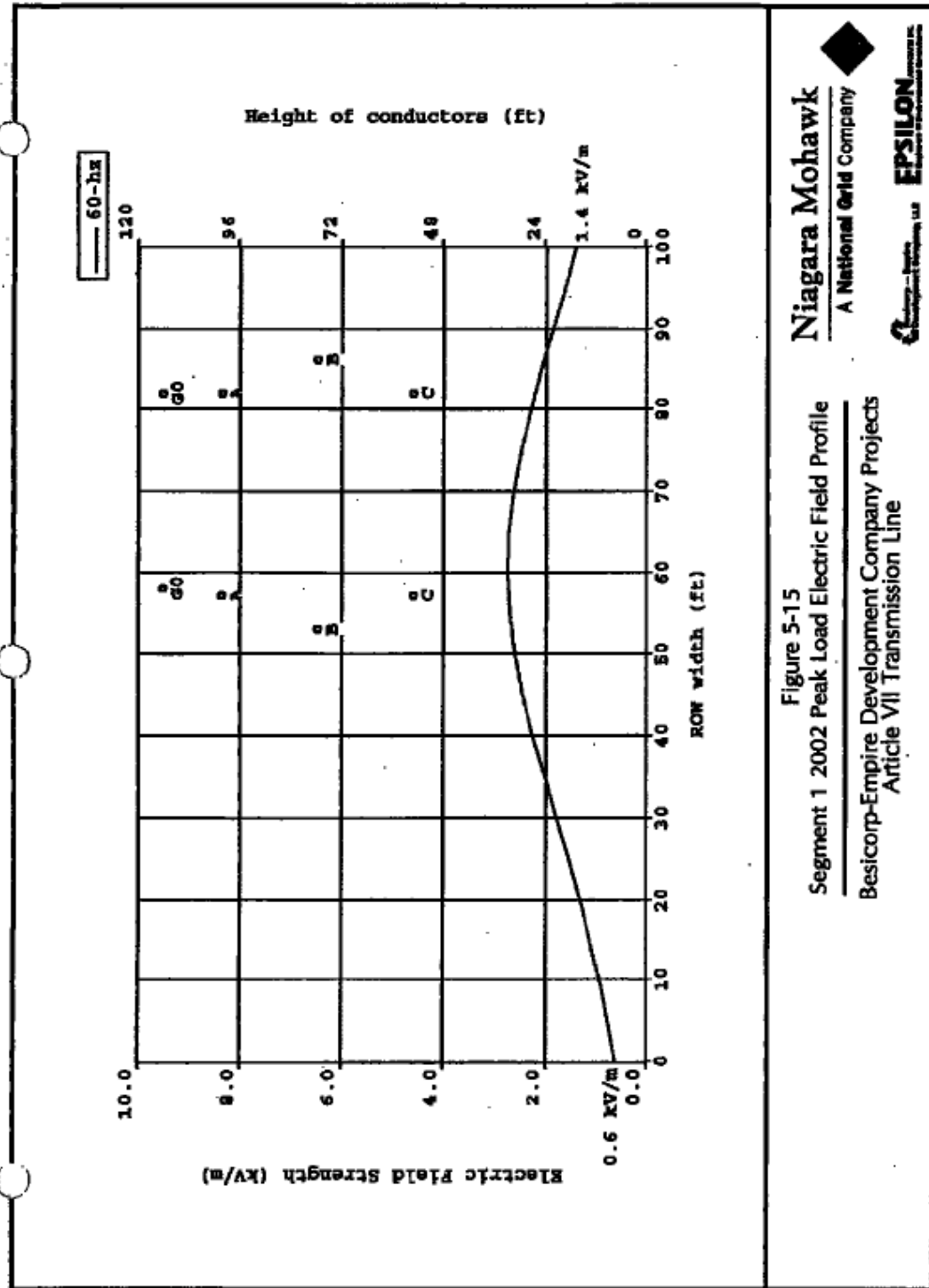


Figure 5-15 Segment 1 2002 Peak Load Electric Field Profile

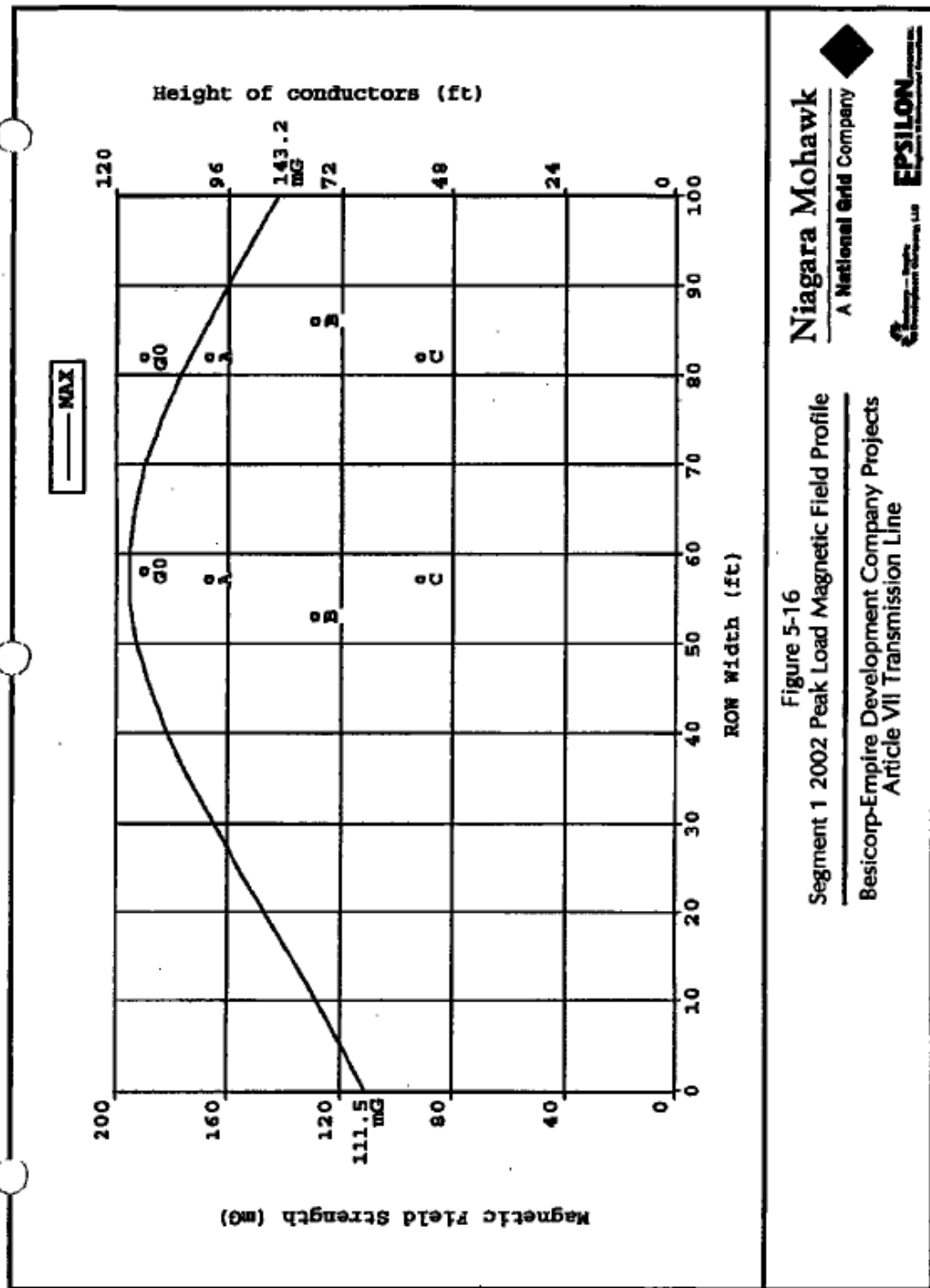


Figure 5-16 Segment 1 2002 Peak Load Magnetic Field Profile

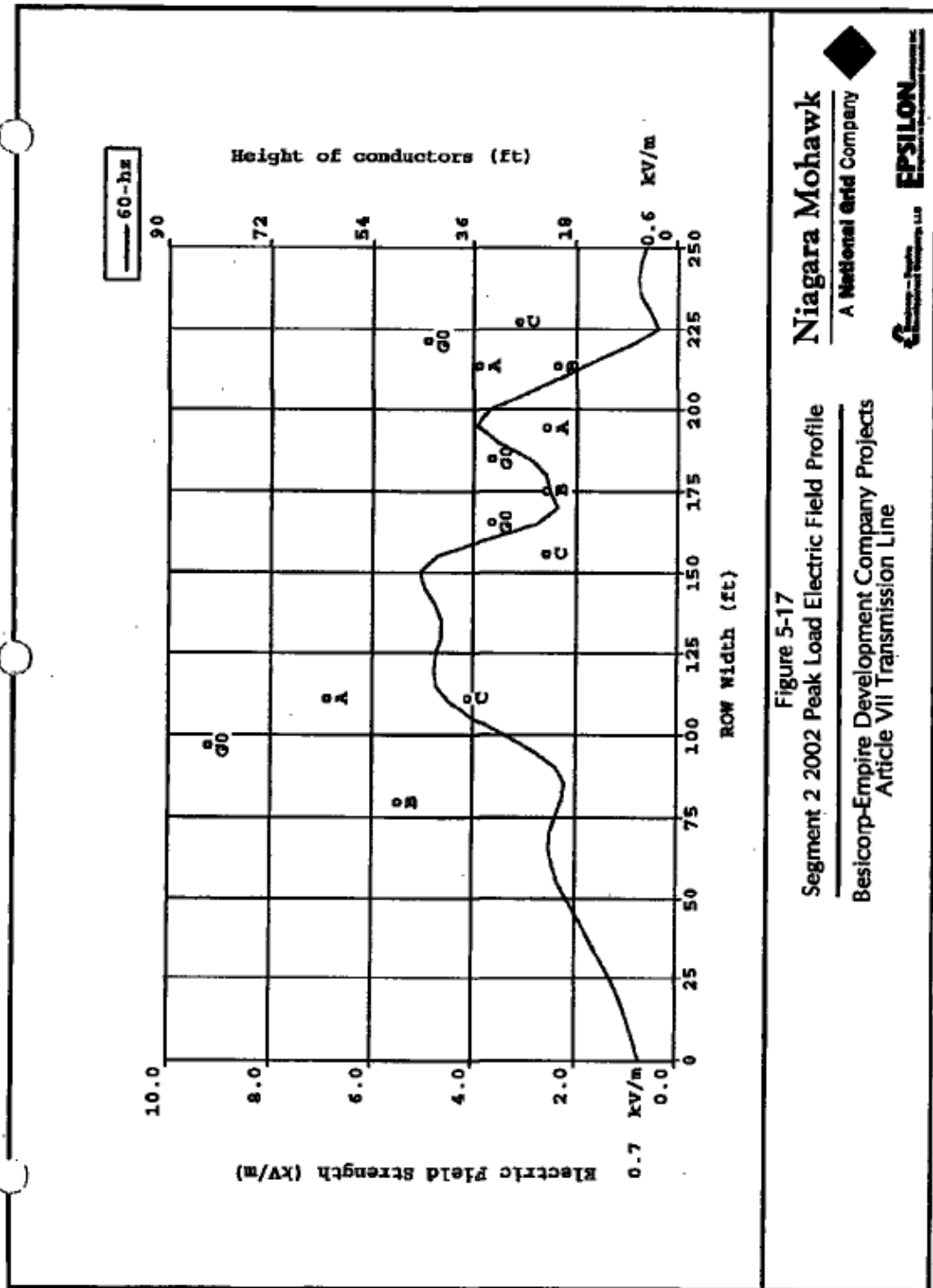


Figure 5-17 Segment 2 2002 Peak Load Electric Field Profile

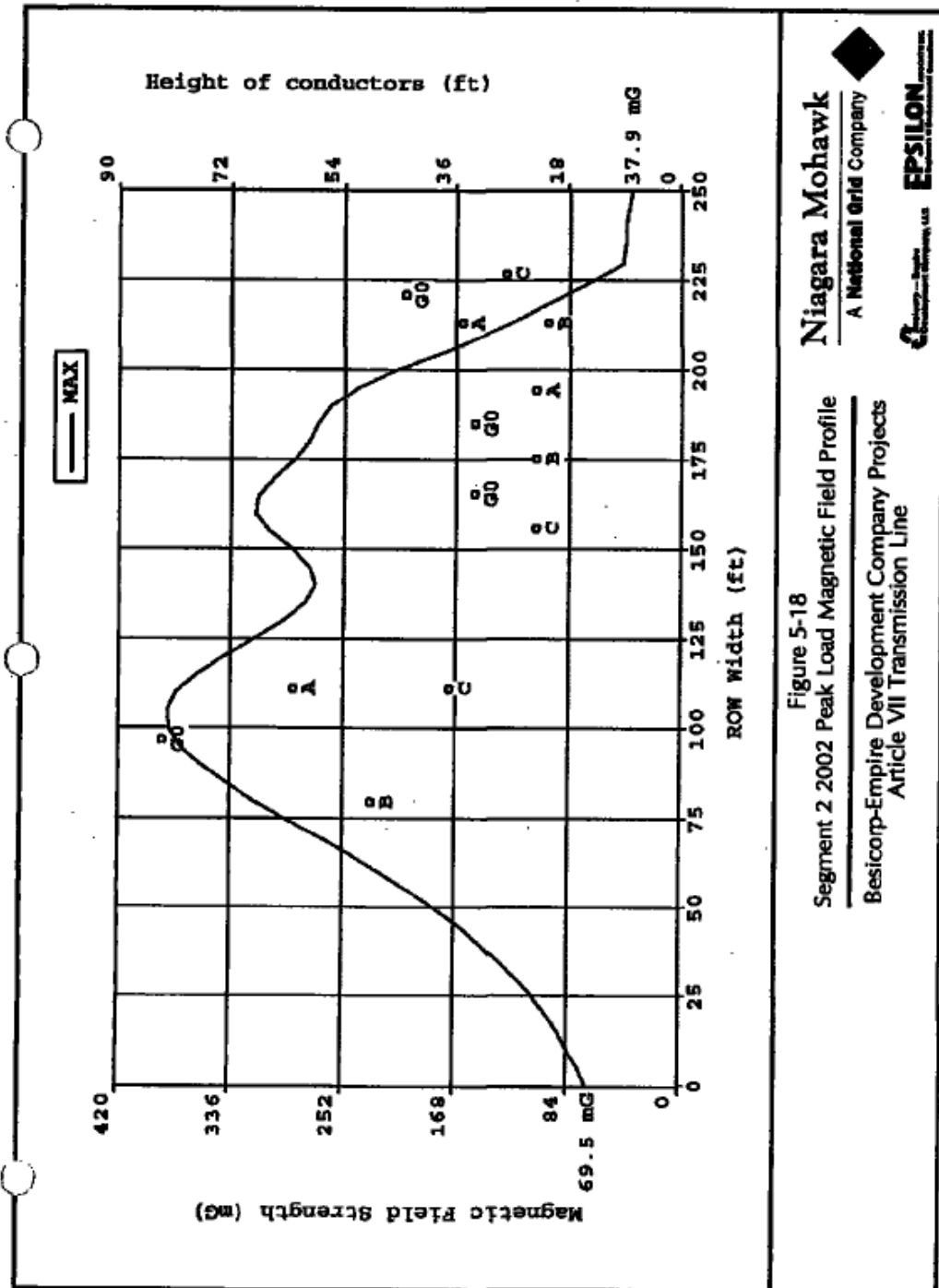


Figure 5-18 Segment 2 2002 Peak Load Magnetic Field Profile

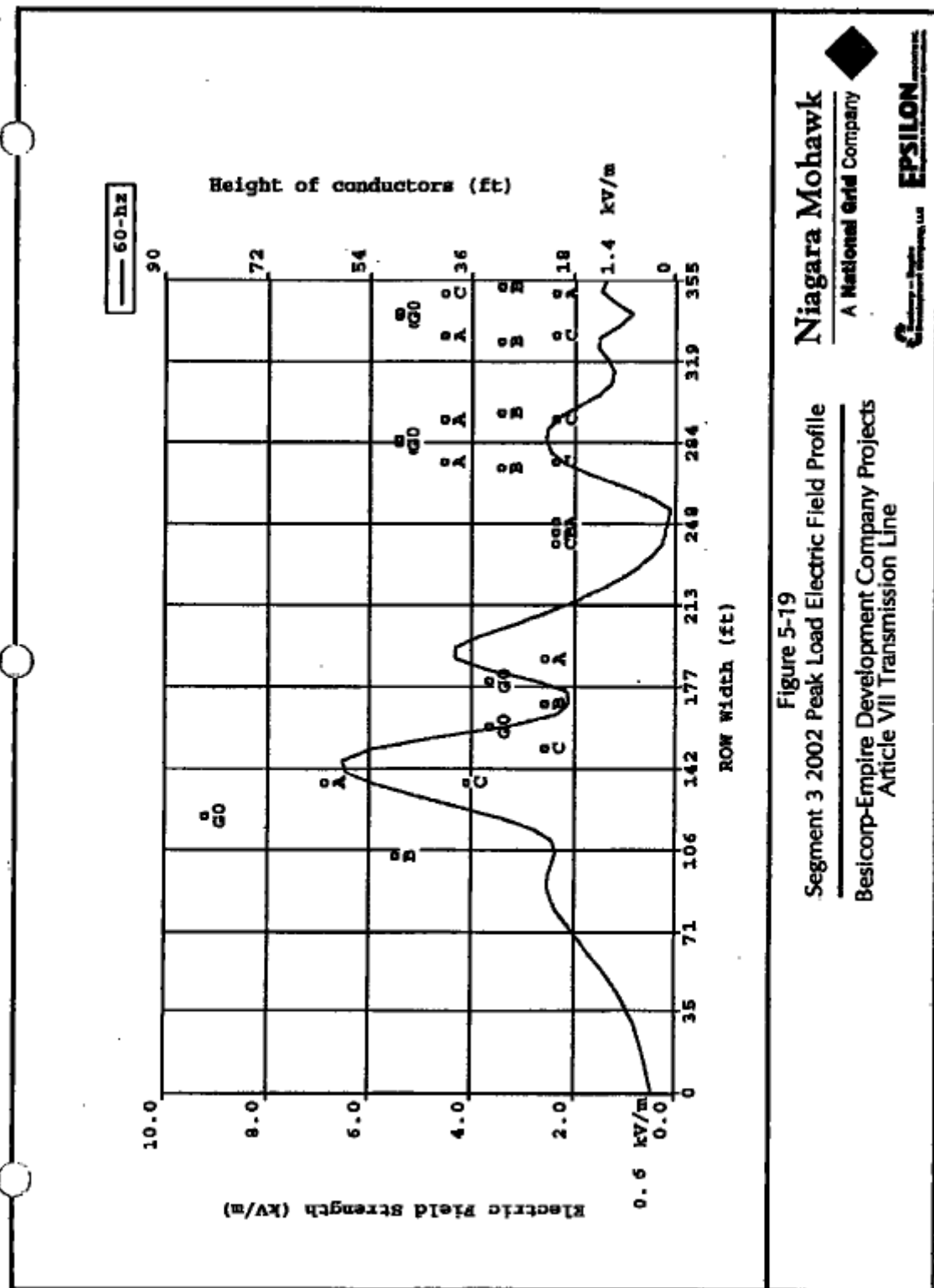


Figure 5-19 Segment 3 2002 Peak Load Electric Field Profile

Figure 5-19

Segment 3 2002 Peak Load Electric Field Profile
 Besicorp-Empire Development Company Projects
 Article VII Transmission Line

Niagara Mohawk

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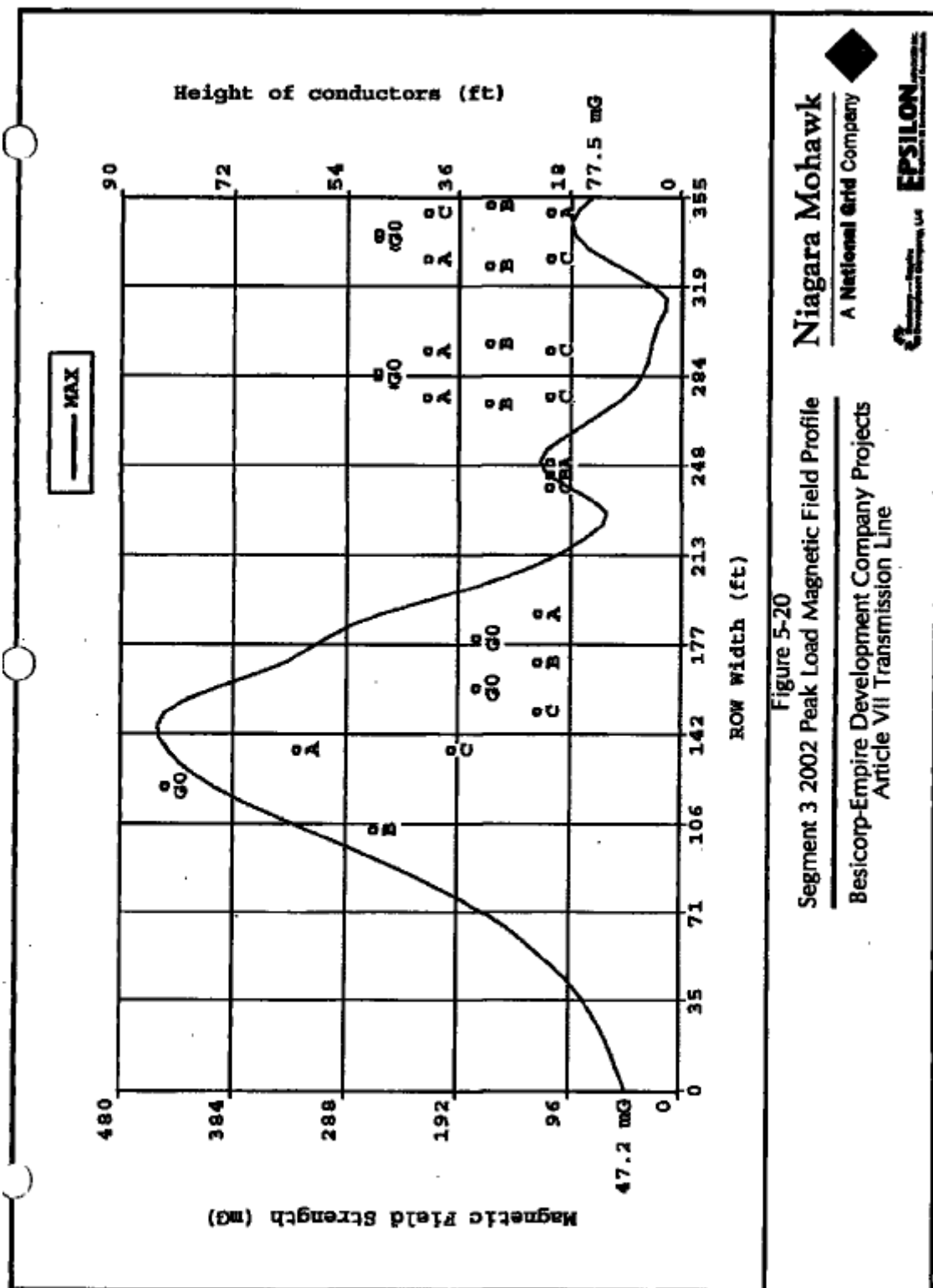


Figure 5-20 Segment 3 2002 Peak Load Magnetic Field Profile

5.8. Construct Segment One Temporary 115 kV Line

POWER CO. will construct a temporary 115 kV circuit, consisting of engineered self-supporting structures, rather than wood poles with guys, along the western edge of the existing easement. Such structures will be placed within the current easement and so as not to interfere with the existing macadam service roadway. This roadway exists along the northern portion of this segment. On the southern portion, the self-supporting structures will be placed so as not to interfere with an agricultural field, as will be indicated on EM&CS&P drawings being prepared as part of the New York State Siting Board's Article VII process. Installation of said temporary line will be coordinated with the local fanner and his growing season and associated activity.

The temporary line will be designed and constructed in accordance with NMPC approved standards or as modified and approved by the NMPC Transmission Design Engineering Group.

The temporary facilities will be installed in parallel to those currently existing between poles #4 and #29 along the Greenbush #16 115 kV Circuit. This temporary 115 kV circuit will be constructed using 795 kcmil ACSR for its entire length.

Once this temporary line has been tested by NMPC personnel and declared ready for service, NMPC personnel will perform the necessary disconnection and reconnection at both poles #4 and #29 from the existing structures, to the new temporary structures. At this point the temporary circuit will be capable of being energized and available for use by the LG&E/EI Paso Generating Plant.

5.9. Removal of Existing Greenbush #16 115 kV Circuit along Segment One

Upon successful completion of NMPC's transfer from the Original Greenbush #16 115 kV Circuit to the Temporary Greenbush #16 115 kV Circuit facilities, POWER CO. will remove all existing poles, wires, insulators, guys, etc. which are currently used on the Original Greenbush #16 115 kV Circuit, between NMPC pole #4 and NMPC pole #29 on this Original Greenbush #16 Circuit. Caution will be used to not disturb the existing NMPC 8" natural gas line which exists in the northern portion of this ROW (between NMPC Greenbush #16 115 kV structure #4 and structure #14 in the vicinity of Teller Crossing Road (a.k.a. Sun Oil Road).

5.10. Construct Segment One 345 kV Line and 115 kV Line

POWER CO. will construct a series of steel monopole structures, designed in accordance with NMPC Standards or as modified and approved by NMPC Transmission Design Engineering Group, which will support both a 115 kV circuit to replace the Original Greenbush #16 115 kV Circuit, and a new 345 kV circuit for the transmission of the POWER CO. Plant output along this approximate 1.7 mile stretch of the transmission line.

A new three-pole structure will be constructed on the POWER CO. site to accommodate the rerouting of the Original Greenbush #16 115 kV Circuit to the eastern side of the new NMPC ROW on the POWER CO. site. The 115 kV New Greenbush #16 Circuit will be constructed by POWER CO. on the eastern side of the new double-circuit steel monopole structures and will

consist of one 795-kcmil ACSR conductor per phase. Vee-string insulators will be installed to support the conductors.

The 345 kV circuit will be constructed on the western side of the structures and will consist of two bundled 1192.5 kcmil ACSR conductors per phase. Vee-string insulators will be installed to support the conductors.

Static wires will be installed to on either side of the monopole structures to protect each circuit individually. The 345 kV circuit protection will consist of _____ and the 115 kV circuit protection will consist of _____.

5.11. Construct Segment Two 345 kV Line

POWER CO. will construct a series of single-circuit steel monopole structures, designed in accordance with NMPC Standards or as modified and approved by NMPC Transmission Design Engineering Group, which will support a new 345 kV circuit for the transmission of the POWER CO. output along this approximate 2.3 mile stretch of the POWER CO. transmission line.

The 345 kV circuit will be constructed on the northern side of the current New Scotland – Reynolds Road 250-foot wide ROW. The new 345 kV circuit will consist of two bundled 1192.5 kcmil ACSR conductors per phase. Vee-string insulators will be installed to support the conductors. In addition, _____ will be installed for system protection on this entire length of the transmission line.

5.12. Construct Segment Three 345 kV Line

POWER CO. will construct a series of single-circuit steel monopole structures, designed in accordance with NMPC Standards or as modified and approved by NMPC Transmission Design Engineering Group, which will support a new 345 kV circuit for the transmission of the POWER CO. output along this approximate 2.3 mile stretch of the POWER CO. transmission line.

The 345 kV circuit will be constructed on the western side of the current New Scotland – Reynolds Road 355-foot wide ROW. The new 345 kV circuit will consist of two bundled 1192.5 kcmil ACSR conductors per phase. Vee-string insulators will be installed to support the conductors. In addition, _____ will be installed for system protection on this entire length of the transmission line.

5.13. Other Infrastructure

5.13.1. Existing Utilities

Construction of the Proposed Transmission Line could potentially interfere with existing utilities in the ROW or utilities that cross the ROW at roads. The preliminary design completed for this Application has determined methods to avoid interference with these utilities. The only direct impact would be the relocation of a 1.7-mile section of an existing electric circuit (Greenbush #16 115 kV Circuit). This temporary relocation has been designed to minimize the downtime for the circuit to three-one weekend periods through construction of temporary structures within the

existing ROW. This circuit serves only one customer, the existing Coastal Power Plant and only operates when it is economical and there is a demand for electricity. Typically, the Plant does not operate on the weekends when electric demand is down. The type of disruption planned for temporary relocation of the transmission line will not have a substantial effect on this customer or any other NMPC customers. Development of the EM&CS&P Plan will include locating existing utilities that cross the ROW. Design of the Proposed Transmission Line will avoid conflicts with these existing utilities. The flexibility in the design will allow existing utilities to be avoided by adjusting the monopole locations or heights. The proposed construction plan also has limited excavation requirements that can easily avoid any underground utilities.

5.13.2. Industrial Facilities

Railroad Signals

The magnetic field produced by the Proposed Transmission Line produces a secondary electric field, generally referred to as the longitudinal electric field (“LEF”). Its magnitude is usually in the range of tens of millivolts (“mV”), about one million times smaller than the vertical electric field (“VEF”). The direction of this electric field is horizontal and parallel to the phase conductors on the transmission lines.

This secondary electric field can be the cause of electrical interference to railroad signaling. The Proposed Transmission Line would cross railroad tracks at two separate locations on Segment 2. At each of these locations, existing electric circuits cross the railroad within the existing ROW. There are currently no problems with the railroad signals in this area. This new circuit will also be designed to avoid any adverse impact to railroad signals.

As a detailed design is completed through the development of the EM&CS&P Plan, NMPC will consult with CSX and Amtrak. NMPC will define the scope of work required to study any potential impacts and seek to identify design solutions that avoid any impact to railroad signals prior to final design and construction.

Oil Tank Farm and Natural Gas Lines

The Proposed Transmission Line could affect the corrosion protection systems in the adjacent tank farm and adjacent gas lines by inducing a voltage in these metal objects. The induced voltages can compromise facility integrity and can be the source of corrosion activity for buried facilities or facilities in contact with the soil. The adjacent facilities have existing corrosion protection systems to prevent corrosion of the metal. The addition of the Proposed Transmission Line will change the character of the electric field and may require adjustment of corrosion protection systems.

NMPC has contracted with the same firm that completed the corrosion protection study for the installation of the Greenbush #16 115 kV Circuit to study the potential impact of the Proposed Transmission Line and issue recommendations to ensure protection of these facilities. The results will be included in the EM&CS&P Plan.

Radio Broadcast Signals

An additional potential effect of the Proposed Transmission Line includes interference with radio signals at certain frequencies.

6 REVIEW OF OTHER TRANSMISSION LINES

6.1.1. Review Line #9 from Greenbush to Reynolds Road Stations

The thermal analysis performed as part of the MS for this interconnection indicated that no conductors would require replacement. As part of the final review of existing facilities along the POWER CO. transmission line corridor, the Reynolds Road – Greenbush #9 115 kV Circuit conductors will be reviewed to insure that there will be no adverse impact on the ratings of the circuit due to the final interconnection.

6.1.2. Review Line #4 from Riverside to Reynolds Road Station

The thermal analysis performed as part of the SKIS for this interconnection indicated that no conductors would require replacement. As part of the final review of existing facilities along the POWER CO. transmission line corridor, the Reynolds Road – Greenbush #9 115 kV Circuit conductors will be reviewed to insure that there will be no adverse impact on the ratings of the circuit due to the final interconnection.

7 TRANSMISSION LINE COST ESTIMATE AND CONSTRUCTION SCHEDULE

Project cost estimates (+/- 20% accuracy) for the transmission work is summarized in Table 7-1. These are based on present day dollars. All transmission facilities identified in Table 4.1 are considered Pool Transmission Facilities ("PTF"). No salvage value is included in the estimates.

The estimated project schedule for the NMPC Transmission Lines is also provided in Table 7-1. Project duration indicated includes project commencement through completion for the additions / modifications detailed above for preliminary engineering, material delivery and construction of work. Durations assume that the lines can be out of service for extended durations during stringing work. Material deliveries will not be done concurrent with permitting activities, but after POWER CO. has notified NMPC of the right to proceed. Costs associated with the POWER CO. switchyard are not included in this report.

Table 7-1 Total NMPC Estimated Transmission Line Costs

Transmission Line Description	Project Schedule (Months)						Estimated NMPC Line Costs (Jan 2004 \$ Millions)
	Pre Engineering	Approval	Design	Material Delivery	Construction	Total	
Alps – Reynolds Road #1 345 kV	----	----	----	----	----	0	0
Arsenal – Reynolds Road #31 115 kV	<1	----	----	----	<1	1	.010
Rensselaer County Waste Water #31 115 kV Tap	----	----	----	----	----	0	0
Riverside – Reynolds Road #4 115 kV	<1	----	----	----	<1	1	.010
Greenbush #4 115 kV Tap	----	----	----	----	----	0	0
Wynantskill – Reynolds Road #13 115 kV	----	----	----	----	----	0	0
Menands – Reynolds Road #2 115 kV	<1	----	----	----	<1	1	.010
Reynolds Road – Greenbush #9 115 kV	----	----	----	----	----	0	0
North Troy – Reynolds Road #16 115 kV	----	----	----	----	----	0	0
Seaway #16 115 kV Tap	----	----	----	----	----	0	0
Feura Bush – Reynolds Road #17 115 kV	----	----	----	----	----	0	0
POWER CO. – Reynolds Road 345 kV	1	2	----	----	5	8	.100
Greenbush – LG&E #16 115 kV	<1	----	----	----	<1	1	.050

8 APPROVALS AND PERMITS

This section outlines the resource approvals and permit requirements for the transmission line replacement and installation.

8.1. Article X

On November 22, 2000, POWER CO. announced the filing of its Pre-Application for siting of a 505 MW Power Plant and the Empire State Newsprint Recycling Plant in the City of Rensselaer, Rensselaer County, New York. On December 21, 2001, POWER CO. filed an Article X/SEQRA Application with the State of New York. On May 29, 2002 the Siting Board of New York determined the Application for the POWER CO. Plant was compliance with the regulations. Culminating settlement discussions that began in October 2002, in June 2003, a Joint Settlement Agreement was executed by POWER CO., New York State Department of Environmental Conservation (“NYS DEC”), New York State Department of Health, the Rensselaer County Environmental Management Council, the City of Rensselaer, the Sierra Club, and NMPC. Final Siting Board and NYS DEC Commissioner’s decisions for permitting of the projects are expected in February 2004.

8.2. Article VII

On April 29, 2003, NMPC filed the Article VII Application for the proposed POWER CO. transmission line and all its components. On June 13, 2003, the New York State Public Service Commission (“NYS PSC”) deemed the Application to satisfy the minimum requirements under the Public Service Law 122. Public Statement hearings followed on July 14, 2003. On July 22, 2003, the Administrative Law Judge (“ALJ”) adopted a schedule whereby Reply Briefs are due by April 16, 2004. In October and November 2003, hearings on Direct Testimony occurred before all interested parties.

8.3. NYISO

In November 2001, the NYISO Transmission Planning Advisory Subcommittee approved the SRIS for the Empire State Newsprint Project (now known as the Besicorp – Empire Power Company’s POWER CO. Plant). Following this approval by the subcommittee, the NYISO staff presented the project to the Operating Committee for its approval. On November 14, 2001, the NYISO Operating Committee approved the SRIS for the POWER CO. Plant.

Subsequent to the approval by the NYISO, POWER CO. also received confirmation from the Substation and Protection Engineering Group of New York State Electric & Gas that the interconnection of the POWER CO. Plant would not overduty any breakers or equipment on the NYSEG system with the interconnection at Reynolds Road.

In conjunction with this approval by the NYISO, POWER CO. and WGI representatives presented the interconnection to representatives from the NE-ISO as well.

8.4. ACOE

The Army Corps of Engineers (“ACOE”) application for permission to construct certain components associated with the proposed recycled newsprint manufacturing facility and the proposed Cogeneration facility were filed by POWER CO. on April 25, 2003. This application relates to navigable waters and wetlands. Additional ACOE applications for the interconnection of the electric and the gas transmission lines associated with these facilities was filed by NMPC on July 3, 2003.

APPENDIX 1- REYNOLDS ROAD THERMAL RATING SHEETS

E/011 115KV REYNOLDS RD. - ALPS			CIRCUIT: 1						
DESCRIPTION		EQUIPMENT	NAME PLATE	SUMMER NORM LFE STE			WINTER NORM LFE STE		
REYNOLDS RD.	ASSOC.115KV EQ.	SUMMARY I/P		2308	2823	3791	3035	3402	4000
WWW	T.B.2-448MVA	AUTOTRANSF		508 *	604 *	784 *	585 *	676 *	874 *
E	2000/1600-5A	BUSHING CT	1600	3200	3200	3200	3200	3200	3200
E	2000/2000-5A	BCT-SHORTED	2000	4000	4000	4000	4000	4000	4000
E	2000/1200-5A(M)	BUSHING CT	1200	2400	2400	2400	2400	2400	2400
E	2000/1600-5A	BUSHING CT	1600	3200	3200	3200	3200	3200	3200
-	2500 AL 91STR	STA CONN		1856	2250	3184	2395	2687	3498
/-*	SW.6299	SWITCH (53)	2000	2100	2540	3600	2500	2880	3600
-	6.00" AL.(IPS)	BUS TUBE		4539	5624	8230	6041	6808	9052
/	SW.199	SWITCH (53)	3000	3150	3810	5400	3750	4320	5400
-	6.00" AL.(IPS)	BUS TUBE		4539	5624	8230	6041	6808	9052
/	SW.188	SWITCH (53)	3000	3150	3810	5400	3750	4320	5400
= 3	2 2500 AL 91STR	O/H LINE		4118	4550	5596	5278	5594	6464
-	2 2500 AL 91STR	LINE TRAP	3000	3030	3330	4230	3210	3540	4500
-	2 2500 AL 91STR	O/H LINE		4118	4550	5596	5278	5594	6464
-	11.12 2 1192.5 ACSR 45/7	O/H LINE		2796	3232	3700	3416	3752	4160
-	2 1192.5 ACSR 45/7	O/H LINE		2796	3232	3700	3416	3752	4160
= 3	2 1192.5 ACSR 45/7	LINE TRAP	3000	3030	3330	4230	3210	3540	4500
-	2 1192.5 ACSR 45/7	O/H LINE		2796	3232	3700	3416	3752	4160
/*)	SW.188	CKT SWITCHER	2000	2080	2320	2660	2440	2680	2980
-	2 2500 AL 91STR	STA CONN		3712	4500	6368	4790	5374	6996
/	SW.199	SWITCH (53)	3000	3150	3810	5400	3750	4320	5400
-	5.00" AL.(IPS)	BUS TUBE		3256	4013	5679	4315	4850	6278
-+--	BUS 79K*-5" AL	BUS-TERMINL							
	11.12 Total Mileage	AMPS @ KV=							
		Total mileage							

E/011: 345 KV REYNOLDS RD. - ALPS			CIRCUIT: 1						
DESCRIPTION		EQUIPMENT	NAME FLATE	SUMMER			WINTER		
				NORM	LTE	STE	NORM	LTE	STE
ALPS		CIRCUIT	AMPS	508	605	784	585	676	874
		RATINGS	MVA	303	361	468	349	403	522
		NMPC	AMPS	508	605	784	585	676	874
		ONLY	MVA	303	361	468	349	403	522

LAST REVISION		
WAC	10	1988 INST. DIF TRANS.

METERING INFORMATION		
0	REYNOLDS RD. ALPS	
1 SWITCHBOARD:	1200WB;1200VB	1800WB;900VB
2 POWER CONTROL:	NONE	NONE
3 NORTH ALBANY:	NONE	NONE
4 SWITCHBOARD:	1800A	3000A

NOTES
SEE TRANSFORMER SECTION FOR COMPLETE RATINGS ON T.B. NO. 2 CIRCUIT LIMITED BY TRANSFORMER AND ASSOCIATED EQUIPMENT

E/321 REYNOLDS RD. STATION 149713V - T.B. CIRCUIT 2									
DESCRIPTION	EQUIPMENT	NAME PLATE	SUMMER			WINTER			
			NORM	LTE	STE	NORM	LTE	STE	
REYNOLDS-345KV									
---+---	BUS 99K"-6"AL	BUS-TERMINL							
	6.00" AL (IPS)	BUS TUBE	4539	5624	8230	6041	6808	9052	
*- /	SW.6299 (MO)	SWITCH (S3)	2000	2100	2540	3600	2500	2880	3600
	6.00" AL (IPS)	BUS TUBE	4539	5624	8230	6041	6808	9052	
	2500 AL 91STR	STA CONN	1856	2250	3184	2395	2687	3498	
	2000/1600-5A	BUSHING CT	1600	3200	3200	3200	3200	3200	
E	2000/1200-5A (MO)	BUSHING CT	1200	2400	2400	2400	2400	2400	
E	2000/2000-5A	BCT-SHORTED	2000	4000	4000	4000	4000	4000	
E	2000/1600-5A	BUSHING CT	1600	3200	3200	3200	3200	3200	
	745 K.V.	1P IN MVA	508 *	601 *	784 *	581 *	676 *	874 *	
	T.B.NO.2-448MVA	AMPS @ KV-	345	850	1012	1312	978	1131	1462
WWW		AUTOTRANSF							
		AMPS @ KV-	115	2550	3037	3936	2936	3393	4387
	2 2000/2000-5A	BUSHING CT	2000	4000	4000	4000	4000	4000	
	(EMS)								
	2 2500 AL 91STR	STA CONN		3712	4500	6368	4790	5374	6996
	5.00" AL (IPS)	BUS TUBE		3256	4013	5679	4315	4850	6278
	2000/2000-5A	BUSHING CT	2000	4000	4000	4000	4000	4000	
E	3000/3000-5A	BUSHING CT	3000	6000	6000	6000	6000	6000	
E	R52	BREAKER-OIL	3000	3120	3480	3990	3660	4020	4470
E	3000/3000-5A	BUSHING CT	3000	6000	6000	6000	6000	6000	
E	2000/2000-5A	BUSHING CT	2000	4000	4000	4000	4000	4000	
	3.50" AL (IPS)	BUS TUBE		2308	2823	3791	3035	3402	4226
	SW.5277	SWITCH (S3)	3000	3150	3810	5400	3750	4320	5400
	3.50" AL (IPS)	BUS TUBE		2308	2823	3791	3035	3402	4226
---+---	BUS 77K"-3.5"AL	BUS-TERMINL							
	LOW METER SCALE								
	400WB,400VB								
	600A								
		AMPS @ KV-							
0	Total Mileage	Total mileage							

E/321 345KV REYNOLDS RD. STATION - 245/115KV - T.B. - CIRCUIT: 2									
DESCRIPTION	EQUIPMENT	NAME PLATE	SUMMER			WINTER			
			NORM	LTE	STE	NORM	LTE	STE	
REYNOLDS-115KV	CIRCUIT	AMPS	508	605	784	585	676	874	
	RATINGS	MVA	303	361	468	349	403	522	
	NMPC	AMPS	508	605	784	585	676	874	
	ONLY	MVA	303	361	468	349	403	522	
<div> <div> LAST REVISION WAC 9 1988 INS.OSW.#7 BK.... </div> <div> METERING INFORMATION 0 REYNOLDS-345KV REYNOLDS-115KV 1 SWITCHBOARD: 1200WB;1200VB NONE 2 POWER CONTROL: 600WB;600VB NONE 3 NORTH ALBANY NONE 1000WB 4 SWITCHBOARD: 1800A NONE </div> <div> NOTES TRANSFORMER LOADING - SEE AMBIENT TEMPERATURE LOADING GUIDE NEW-REY. RD (E)-FAILED:05/11/82,GE REFURB. SENT TO DEW.:02/11/83,LOAN CHG&E TO OSW.:03/10/88,TO L.R. 8/88 SEE REYNOLDS RD.-ALPS #1(345KV) </div> </div>									

115 KV ARSENAL - REYNOLDS BUS									
CIRCUIT: 31									
	DESCRIPTION	EQUIPMENT	NAME PLATE	SUMMER			WINTER		
				NORM	LTE	STE	NORM	LTE	STE
ARSENAL	BUS	BUS-TERMINL							
/	SWJ177	SWITCH (30)	1200	1296	1836	2400	1692	2136	2400
E	2000/2000-5A	BUSHING CT	2000	4000	4000	4000	4000	4000	4000
E	1200/600-5A	BUSHING CT	600	1200	1200	1200	1200	1200	1200
O	R31	BREAKER-OIL	1600	1664	1856	2128	1952	2144	2384
E	1200/800-5A	BUSHING CT	800	1600	1600	1600	1600	1600	1600
E	2000/800-5A	BUSHING CT	800	1600	1600	1600	1600	1600	1600
/	SWJ188	SWITCH (30)	1200	1296	1836	2400	1692	2136	2400
0	CUSTOMER OWNED	SUB-TOTAL							
	NMPC-EASTERN								
	2.8	336.4 ACSR 26/7	O/H LINE	646 *	742 *	801 *	784 *	838 *	910 *
	0.75	795 ACSR 36/1	O/H LINE	1105	1269	1408	1347	1471	1593
<--	RENSSELAER WAST	TAP							
	1.12	795 ACSR 36/1	O/H LINE	1105	1269	1408	1347	1471	1593
	0.46	795 AWAC 26/7	O/H LINE	1092	1260	1407	1332	1462	1389
		795 ACSR 36/1	O/H LINE	1105	1269	1408	1347	1471	1593
= 3		LINE TRAP	1200	1212	1332	1692	1284	1416	1800
		795 ACSR 36/1	O/H LINE	1105	1269	1408	1347	1471	1593
/	SWJ188	SWITCH (30)	2000	2160	3060	4000	2820	3560	4000
	2.50" AL (IPS)	BUS TUBE		1654	2010	2590	2161	2415	2906
E	2000/2000-5A	BUSHING CT	2000	4000	4000	4000	4000	4000	4000
E	1200/600-5A	BUSHING CT	600	1200	1200	1200	1200	1200	1200
O	R31	BREAKER-OIL	1600	1664	1856	2128	1952	2144	2384
E	1200/800-5A	BUSHING CT	800	1600	1600	1600	1600	1600	1600
E	2000/800-5A	BUSHING CT	800	1600	1600	1600	1600	1600	1600
	2.50" AL (IPS)	BUS TUBE		1654	2010	2590	2161	2415	2906
/	SWJ177	SWITCH (30)	2000	2160	3060	4000	2820	3560	4000
	2.50" AL (IPS)	BUS TUBE		1654	2010	2590	2161	2415	2906
--	BUS*77G*-3.5"AL	BUS-TERMINL							
	5.13	Total Mileage	Total mileage						

E/223		115 KV ARSENAL - REYNOLDS RD.		CIRCUIT: 31500						
DESCRIPTION		EQUIPMENT	NAME	SUMMER			WINTER			
			PLATE	NORM	LTE	STE	NORM	LTE	STE	
REYNOLDS RD.		CIRCUIT	AMPS	646	742	801	784	858	910	
		RATINGS	MVA	128	147	159	156	170	181	
		NMPC	AMPS	646	742	801	784	858	910	
		ONLY	MVA	128	147	159	156	170	181	
LAST REVISION										
SMS 8 2003 LN REDONE & RENAMED										
METERING INFORMATION										
0		A.I. TECH		REYNOLDS RD.						
1		SWITCHBOARD: NONE		120WB,120VB						
2		POWER CONTROL: NONE		NONE						
3										
4		SWITCHBOARD: NONE		600A						
				NOTES						

E/422 115 KV REYNOLDS RD. FEURA BUSH		CIRCUIT: 17							
DESCRIPTION		EQUIPMENT	NAME PLATE	SUMMER			WINTER		
				NORM	LTE	STE	NORM	LTE	STE
REYNOLDS RD.									
-+-	BUS 990'-2.5" AL 2.50" AL (TPS)	BUS-TERMINL BUS TUBE		1654	2010	2590	2161	2415	2906
/	SW.1799	SWITCH (53)	2000	2100	2540	3600	2500	2880	3600
	2.50" AL (TPS)	BUS TUBE		1654	2010	2590	2161	2415	2906
E	2000/1500-5A	BUSHING CT	1500	3000	3000	3000	3000	3000	3000
E	2000/1600-5A	BUSHING CT	1600	3200	3200	3200	3200	3200	3200
O	R17	BREAKER-OIL	1600	1664	1856	2128	1952	2144	2384
E	2000/2000-5A	BUSHING CT	2000	4000	4000	4000	4000	4000	4000
E	2000/2000-5A	BUSHING CT	2000	4000	4000	4000	4000	4000	4000
	2.50" AL (TPS)	BUS TUBE		1654	2010	2590	2161	2415	2906
	5.00" AL (TPS)	BUS TUBE		3256	4013	5679	4315	4850	6278
	2 795 AL 378TR	STA CONN		1768	2122	2596	2256	2520	2922
	5.00" AL (TPS)	BUS TUBE		3256	4013	5679	4315	4850	6278
	6.00" AL (TPS)	BUS TUBE		4539	5624	8230	6041	6908	9052
/-*	SW.1788(MO)	SWITCH (30)	1200	1296	1836	2400	1692	2136	2400
	1033.5 ACSR 45/7	O/H LINE		1280 *	1478	1674 *	1563 *	1715 *	1881 *
= 3		LINE TRAP	1600	1616	1776	2256	1712	1888	2400
	12.52 1033.5 ACSR 45/7	O/H LINE		1280 *	1478	1674 *	1563 *	1715 *	1881 *
	STRUC.24(OLD#)								
	0.05 1033.5 ACSR 45/7	O/H LINE		1280 *	1478	1674 *	1563 *	1715 *	1881 *
	STRUC.								
	0.02 1192.5 ACSR 45/7	O/H LINE		1398	1616	1850	1708	1876	2080
	S.P.201A,B,C								
	2.76 1192.5 ACSR 45/7	O/H LINE		1398	1616	1850	1708	1876	2080
	TAKE-OFF STRUC.								
	1272 AL 61STR	O/H LINE		1311	1466 *	1696	1608	1792	1981
= 3		LINE TRAP	2000	2020	2220	2820	2140	2360	3000

B/A22 115 KV REYNOLDS RD. - FEURA BUSH									
CIRCUIT									
DESCRIPTION		EQUIPMENT	NAME	SUMMER			WINTER		
			PLATE	NORM	LTE	STE	NORM	LTE	STE
E E O E E -	1272 AL 61STR	O/H LINE		1311	1466 *	1696	1668	1792	1981
	SW.1788	SWITCH (53)	2000	2100	2340	3600	2500	2880	3600
	2 1272 AL 61STR	STA CONN		2382	2948	3784	3054	3510	4226
	2000/2000-5A	BUSHING CT	2000	4000	4000	4000	4000	4000	4000
	2000/1600-5A	BUSHING CT	1600	3200	3200	3200	3200	3200	3200
	R17	BREAKER-OIL	2000	2000	2320	2660	2440	2680	2980
	2000/2000-5A	BUSHING CT	2000	4000	4000	4000	4000	4000	4000
	2000/1600-5A	BUSHING CT	1600	3200	3200	3200	3200	3200	3200
	2 1272 AL 61STR	STA CONN		2382	2948	3784	3054	3510	4226
	SW.1799	SWITCH (53)	2000	2100	2340	3600	2500	2880	3600
400" AL (IPS)		BUS TUBE		2609	3200	4375	3440	3860	4863
BUS 99G-4" AL		BUS-TERMINL							
15.35 Total Mileage		AMPS @ KV=							
FEURA BUSH		Total mileage							
		CIRCUIT	AMPS	1280	1466	1674	1563	1715	1885
		RATINGS	MVA	254	292	333	311	341	375
		NMPC	AMPS	1280	1466	1674	1563	1715	1885
		ONLY	MVA	254	292	333	311	341	375

LAST REVISION
WAC 1 1994 NEW TERMINAL....

METERING INFORMATION		
0	REYNOLDS RD.	FEURA BUSH
1 SWITCHBOARD:	300WB, 300VB	?
2 POWER CONTROL:	RTU-DIGITAL	RTU-DIGITAL
3 RGN CTL.-EAST:	RTU-DIGITAL	RTU-DIGITAL
4 SWITCHBOARD:	1500A	

NOTES	
WAS N. SCOTLAND-REYNOLDS RD. #3	
JMOSELKIRK-PH 2-GAS#201-105.7MVA	
STM#202-156.2MVA	
GAS#301-105.7MVA	
DBL. CKT. STRUCTURES-STRUC. 197 TERU	
STRUC 202 * N.S.-ALBANY #8	

E/258		115 KV REYNOLDS RD. GREENBUSH		CIRCUIT 9					
DESCRIPTION		EQUIPMENT	NAME PLATE	SUMMER			WINTER		
				NORM	LTE	STE	NORM	LTE	STE
REYNOLDS RD.									
--+	BUS 99G-2.50AL	BUS-TERMINL							
	2.50" AL (IPS)	BUS TUBE		1654	2010	2590	2161	2415	2906
/	SW 999	SWITCH (30)	2000	2160	3060	4000	2820	3560	4000
	2.50" AL (IPS)	BUS TUBE		1654	2010	2590	2161	2415	2906
E O E E	2 2000/1200-5A	BUSHING CT	1200	2400	2400	2400	2400	2400	2400
	R9	BREAKER-OIL	2000	2080	2320	2660	2440	2680	2980
	2000/1000-5A	BUSHING CT	1000	2000	2000	2000	2000	2000	2000
	2 2000/2000-5A	BUSHING CT	2000	4000	4000	4000	4000	4000	4000
/	2.50" AL (IPS)	BUS TUBE		1654	2010	2590	2161	2415	2906
	SW 988	SWITCH (30)	2000	2160	3060	4000	2820	3560	4000
= 3	2.50" AL (IPS)	BUS TUBE		1654	2010	2590	2161	2415	2906
		LINE TRAP	2000	2020	2220	2820	2140	2360	3000
	0.84 2 795 ACSR 36/1	O/H LINE		2210	2538	2816	2694	2942	3186
	TWR T-427-TIED								
H H H 									

E/249		113 KY MENANDS - REYNOLDS RD.		CIRCUIT: 2					
DESCRIPTION		EQUIPMENT	NAME	SUMMER			WINTER		
		FLATE		NORM	LTE	STE	NORM	LTE	STE
REYNOLDS RD.		CIRCUIT	AMPS	1092	1260	1407	1284	1416	1589
		RATINGS	MVA	217	250	280	255	282	316
		NMPC	AMPS	1092	1260	1407	1284	1416	1589
		ONLY	MVA	217	250	280	255	282	316

LAST REVISION		
WAC	2	1994 REV. MENANDS...

METERING INFORMATION		
0	MENANDS	REYNOLDS RD
1	SWITCHBOARD:	120WB,150WB,150VB
2	POWER CONTROL:	RTU-DIGITAL RTU-DIGITAL
3	REGN CTL.-EAST:	RTU-DIGITAL RTU-DIGITAL
4	SWITCHBOARD	600A 800A

NOTES

115 KV NORTH TROY - REYNOLDS ROAD			CIRCUIT 115					
DESCRIPTION	EQUIPMENT	NAME PLATE	SUMMER			WINTER		
			NORM	LTE	STE	NORM	LTE	STE
NORTH TROY								
2.50" AL (IPS)	BUS-TERMINL		1654	2010	2590	2161	2415	2906
SW.1699	SWITCH (30)	1200	1296	1836	2400	1692	2136	2400
1.50" AL (IPS)	BUS TUBE		1008	1231	1484	1302	1470	1681
2 1200/800-5A	BUSHING CT	800	1600	1600	1600	1600	1600	1600
R16	BREAKER-OIL	1200	1248	1392	1596	1464	1608	1788
1200/1200-5A	BUSHING CT	1200	2400	2400	2400	2400	2400	2400
500 CU 375TR	STA CONN		916 *	991 *	1247	1118 *	1176 *	1396
SW.1688	SWITCH (30)	1200	1296	1836	2400	1692	2136	2400
500 CU 375TR	O/H LINE		1005	1046	1331	1222	1253	1495
3.67 605 ACSR 26/7	O/H LINE		937	1079	1192 *	1141	1250	1348 *
SYCAWAY-1.34ML	TAP							
6.43 605 ACSR 26/7	O/H LINE		937	1079	1192 *	1141	1250	1348 *
TWR 427								
0.17 795 ACSR 36/1	O/H LINE		1105	1269	1408	1347	1471	1593
795 ACSR 36/1	O/H LINE		1105	1269	1408	1347	1471	1593
SW.1688	SWITCH (30)	2000	2160	3060	4000	2820	3560	4000
2.50" AL (IPS)	BUS TUBE		1654	2010	2590	2161	2415	2906
2000/2000-5A	BUSHING CT	2000	4000	4000	4000	4000	4000	4000
2000/800-5A	BUSHING CT	800	1600	1600	1600	1600	1600	1600
R16	BREAKER-OIL	1600	1664	1836	2128	1952	2144	2384
2 2000/800-5A	BUSHING CT	800	1600	1600	1600	1600	1600	1600
2.50" AL (IPS)	BUS TUBE		1654	2010	2590	2161	2415	2906
SW.1699	SWITCH (30)	2000	2160	3060	4000	2820	3560	4000
3.50" AL (IPS)	BUS TUBE		2308	2823	3791	3035	3402	4226
799" 3.5" AL	BUS-TERMINL							
10.27 Total Mileage	Total mileage							

E/255		115 KV NORTH TROY - REYNOLDS RD.		CIRCUIT 16		400			
DESCRIPTION	EQUIPMENT	NAME PLATE	SUMMER			WINTER			
			NORM	LTE	STE	NORM	LTE	STE	
REYNOLDS RD.		CIRCUIT	AMPS	916	991	1192	1118	1176	1348
		RATINGS	MVA	182	197	237	222	234	268
		NMPC	AMPS	916	991	1192	1118	1176	1348
		ONLY	MVA	182	197	237	222	234	268

LAST REVISION		
WAC	9	1984 INITIAL ISSU...

METERING INFORMATION		
0	NORTH TROY	REYNOLDS RD.
1	SWITCHBOARD:	80WB 150WB, 150VB
2	POWER CONTROL:	NONE
3		
4	SWITCHBOARD:	400A 800A

NOTES

E/259 11.5 KV. RIVERSIDE - REYNOLDS RD. CIRCUIT 4									
	DESCRIPTION	EQUIPMENT	NAME PLATE	SUMMER			WINTER		
				NORM	LTE	STE	NORM	LTE	STE
RIVERSIDE --+	BUS-3"AL	BUS-TERMINL							
	3.00" AL.(IPS)	BUS TUBE		2015	2459	3244	2643	2959	3626
	SW.499	SWITCH (30)	1200	1296	1836	2400	1692	2136	2400
	2.50" AL.(IPS)	BUS TUBE		1654	2010	2590	2161	2415	2906
E	2000/800-5A	BUSHING CT	800	1600	1600	1600	1600	1600	1600
E	1200/600-5A	BUSHING CT	600	1200	1280 *	1200 *	1200 *	1200 *	1200 *
O	R4	BREAKER-OIL	1600	1664	1856	2128	1952	2144	2384
E	1200/600-5A	BUSHING CT	600	1200	1200 *	1200 *	1200 *	1200 *	1200 *
E	2000/1200-5A	BUSHING CT	1200	2400	2400	2400	2400	2400	2400
	2.50" AL.(IPS)	BUS TUBE		1654	2010	2590	2161	2415	2906
	SW.488	SWITCH (30)	1200	1296	1836	2400	1692	2136	2400
	795 ACSR 26/7	O/H LINE		1114	1287	1443	1359	1492	1629
	1.1 795 ACSR 26/7	O/H LINE		1114	1287	1443	1359	1492	1629
	TWR.16								
	1.46 795 ACSR 36/1	O/H LINE		1101 *	1269	1408	1347	1471	1593
<--+	GREENBUSH---SEE	TAP							
H									
	0.85 2 40 CU 7STR	O/H LINE		1108	1214	1464	1416	1450	1660
H									
	TWR.2								
	0.09 795 ACSR 36/1	O/H LINE		1101 *	1269	1408	1347	1471	1593
	795 ACSR 36/1	O/H LINE		1101 *	1269	1408	1347	1471	1593
	SW.488	SWITCH (30)	2000	2160	3060	4000	2820	3560	4000
	2.50" AL.(IPS)	BUS TUBE		1654	2010	2590	2161	2415	2906
E	2000/2000-5A	BUSHING CT	2000	4000	4000	4000	4000	4000	4000
E	2000/800-5A (M)	BUSHING CT	800	1600	1600	1600	1600	1600	1600
O	R4	BREAKER-OIL	1600	1664	1856	2128	1952	2144	2384
E	2 2000/800-5A	BUSHING CT	800	1600	1600	1600	1600	1600	1600
	2.50" AL.(IPS)	BUS TUBE		1654	2010	2590	2161	2415	2906
	SW.477	SWITCH (30)	2000	2160	3060	4000	2820	3560	4000
	2.50" AL.(IPS)	BUS TUBE		1654	2010	2590	2161	2415	2906
--+	BUS-77G"	BUS-TERMINL							
		AMPS @ KV=							
	3.5 Total Mileage	Total mileage							

E/259 11.5 KV RIVERSIDE REYNOLDS RD. CIRCUIT									
DESCRIPTION	EQUIPMENT	NAME	SUMMER			WINTER			
		PLATE	NORM	LTE	STE	NORM	LTE	STE	
REYNOLDS RD.									
	CIRCUIT	AMPS	1105	1200	1200	1200	1200	1200	
	RATINGS	MVA	220	239	239	239	239	239	
	NMPC	AMPS	1105	1200	1200	1200	1200	1200	
	ONLY	MVA	220	239	239	239	239	239	

LAST REVISION	
SMS	8 2003 CIRCUIT REVISED

METERING INFORMATION	
0	RIVERSIDE REYNOLDS RD.
1 SWITCHBOARD:	150WB;150VB
2 POWER CONTROL:	NONE
3	
4 SWITCHBOARD:	800A

NOTES

115 KV RIVERSIDE - REYNOLDS RD. #4 - OPENED CIRCUIT TAP											
DESCRIPTION				EQUIPMENT	NAME PLATE	SUMMER			WINTER		
						NORM	LTE	STE	NORM	LTE	STE
RVSE-REY.RD.#4											
			TWR.25								
			RIVERSIDE-								
			REYNOLDS RD. #4			1105	1200	1200 *	1200	1200	1200
		1.7%	2 4/0 CU 7STR	O/HLINE		1168	1214	1464	1416	1450	1660
			TWR.43								
		0.14	2 397.5 ACSR 18/1	O/HLINE		1400	1606	1738	1702	1862	1974
			TWR.44								
		1.9%	2 4/0 CU 7STR	O/HLINE		1168	1214	1464	1416	1450	1660
			TWR.61								
		0.03	795 ACSR 36/1	O/HLINE		1105	1269	1408	1347	1471	1593
			795 ACSR 36/1	O/HLINE		1105	1269	1408	1347	1471	1593
			SW. 488	SWITCH (30)	1200	1296	1836	2400	1692	2136	2400
			1272 AL 61STR	STA CONN		1191	1474	1892	1527	1755	2113
			2000/2000-5A	BCT-SHORTED	2000	4000	4000	4000	4000	4000	4000
			1200/1200-5A	BUSHING CT	1200	2400	2400	2400	2400	2400	2400
			R4	BREAKER-OIL	1600	1664	1856	2128	1952	2144	2384
			1200/600-5A	BUSHING CT	600	1200	1200	1200 *	1200	1200	1200 *
			2000/2000-5A	BCT-SHORTED	2000	4000	4000	4000	4000	4000	4000
			1272 AL 61STR	STA CONN		1191	1474	1892	1527	1755	2113
			SW.499 (NO)	SWITCH (30)	600	648 *	918 *	1280 *	846 *	1068 *	1200 *
			1272 AL 61STR	STA CONN		1191	1474	1892	1527	1755	2113
			BUS	BUS-TERMINI, AMPS @ KV= Total mileage							
3.29			Total Mileage								

E059A	111 KV RIVERSIDE REYNOLDS RD. #4 - GREENBUSH CIRCUIT TAP
--------------	---

DESCRIPTION	EQUIPMENT	NAME PLATE	SUMMER			WINTER		
			NORM	LTE	STE	NORM	LTE	STE
GREENBUSH	CIRCUIT RATINGS	AMPS	648	918	1200	846	1068	1200
		MVA	129	182	239	168	212	239
	NMPC ONLY	AMPS	648	918	1200	846	1068	1200
		MVA	129	182	239	168	212	239

LAST REVISION	
WAC	1 1985 MARK R4.....

METERING INFORMATION		
0	RVSE. REY. RD. #4	GREENBUSH
1	SWITCHBOARD:	NONE 120WB
2	POWER CONTROL:	NONE NONE
3		
4	SWITCHBOARD:	NONE 600A

NOTES
R4(NO)-NORMALLY OPEN

WYNANTS KILL (NYSEG) - REYNOLDS RD. - CIRCUIT										
DESCRIPTION		EQUIPMENT	NAME PLATE	SUMMER NORM L TE STE			WINTER NORM L TE STE			
WYNANTS KILL (NY)										
--+		BUS-795ACSR	BUS-TERMINL							
		795 ACSR 45/7	STA CONN		1160	1293	1355	1363	1470	1520
		SW 98849	SWITCH (30)	1200	1260	1524	2160	1500	1728	2160
		795 ACSR 45/7	STA CONN		1160	1293	1355	1363	1470	1520
		0.03 795 ACSR 45/7	O/H LINE		1080	1240	1380	1310	1440	1560
		0.03 NYSEG	SUB-TOTAL							
NMPC-EASTERN										
		3.87 605 ACSR 26/7	O/H LINE		937 *	1079 *	1192 *	1141 *	1250 *	1348 *
		0.39 795 ACSR 36/1	O/H LINE		1105	1269	1408	1347	1471	1593
		795 ACSR 36/1	O/H LINE		1105	1269	1408	1347	1471	1593
		SW 1388	SWITCH (30)	2000	2160	3060	4000	2820	3560	4000
		2.50" AL (IPS)	BUS TUBE		1654	2010	2590	2161	2415	2906
E		2000/2000-5A	BUSHING CT	2000	4000	4000	4000	4000	4000	
		2000/800-5A	BUSHING CT	800	1600	1600	1600	1600	1600	
		R13	BREAKER-OIL	1600	1664	1836	2128	1952	2144	2384
		2 2000/800-5A	BUSHING CT	800	1600	1600	1600	1600	1600	
		2.50" AL (IPS)	BUS TUBE		1654	2010	2590	2161	2415	2906
/		SW 1377	SWITCH (30)	2000	2160	3060	4000	2820	3560	4000
		3.50" AL (IPS)	BUS TUBE		2308	2823	3791	3003	3402	4226
			BUS-TERMINL AMPS @ KV= Total mileage							
		4.29 Total Mileage								

31292 WYNANTS KILL (NYSEG) REYNOLDS RD. CIRCUIT: 19

DESCRIPTION	EQUIPMENT	NAME PLATE	SUMMER			WINTER		
			NORM	LTE	STE	NORM	LTE	STE
REYNOLDS RD.	CIRCUIT	AMPS	937	1079	1192	1141	1250	1348
		RATINGS	MVA	186	214	237	227	248
	NMPC	AMPS	937	1079	1192	1141	1250	1348
		ONLY	MVA	186	214	237	227	248

LAST REVISION

WAC 11 1990 REV NYSEG RTGS.

METERING INFORMATION

0	WYNANTS KILL (N	REYNOLDS RD.
1	SWITCHBOARD:	25WI, 10VI 150WB, 150VB
2	POWER CONTROL:	NONE RTU-DIGITAL
3	REG CTL -ALB:	NONE RTU-DIGITAL
4	SWITCHBOARD:	400A 800A

NOTES

NYSEG CIRCUIT NUMBER IS 988

NYSEG S.O 10988 DATED 12/18/87

NYSEG METERS ON LOW SIDE OF T.B.

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APPENDIX 3 – NMPC POWER CO. STATION WORK LIST

APPENDIX 4 – TRANSMISSION LINE STATION WORK LIST

APPENDIX 5 – PROJECTS SCHEDULE

APPENDIX 6 – SYSTEM RELIABILITY IMPACT STUDY

Besicorp – Empire Development Company, LLC

**Interconnection Study
For the Empire State Newsprint Project**

Prepared by Dr. George A. Mulligan

Khin Swe

Reviewed by: Richard M. Bocci

November 2001

Washington Group International, Inc.

**510 Carnegie Center
Princeton, NJ 08543**

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 - B.1 Summer Peak (9 Sheds)**
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- C. Thermal Analysis TLTG Output**
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- D. Voltage Analysis Output (17 Sheds)**
- E. ESNP Plant Stability Data (4 Sheets)**
- F. Transient Stability System Response Plots (195 Sheets)**
- G. Interconnection Study for the Empire State Newsprint Project Newsprint Manufacturing Plant Load**

Executive Summary

Besicorp-Empire Development Company, LLC (Besicorp) engaged Washington Group International, Inc. (WGI) to perform an Interconnection Study to assess the feasibility of interconnecting a 603 MW net generating plant to be located at the BASF site in the city of Rensselaer, N.Y. Besicorp expects to commence commercial operation of the plant in the Summer of 2004.

The Empire State Newsprint Project (ESNP) is an integrated facility consisting of an electric generating plant and a recycled newsprint manufacturing plant. The generating plant will cost of two 161 MW gas turbine units and one 297 MW steam unit which will provide a net sumac maximum output of 603 MW after supplying the generating plant auxiliary load. A portion of the plant net output will tonally provide power to the newsprint manufacturing plant with a maxim load of approximately 66 MW. The newsprint manufacturing plant load is represented as off in these studies in order to model maximum output into the bulk power system. A separate analysis of the newsprint manufacturing plant load corrected to the system without the power plant is provided in Appendix G. The ESNP is proposed to be connected to the Niagara Mohawk Power Corporation (NMPC) Reynolds Road 345 kV substation by an approximately 9 mile long overhead 345 kV transmission line with two 1192 haul ACSR conductors per phase. The interconnection plan includes the addition of two new 345 kV circuit breakers at the Reynolds Road 345 kV substation.

This study evaluated the impact on the reliability of the bulk power system of the proposed interconnection to the Reynolds Road 345 kV Substation. The propose of the report is to evaluate the proposed interconnection and to recommend modifications, as may be required. The report addresses intra-area and inter-area transfer limit issues including thermal, voltage, and stability limits. The report also addresses local load flow, extreme contingency, and fault duty issues. WGI performed these studies with the exception of the fault duty study, which was performed by NMPC and provided to WGI for inclusion in this report. The studies evaluated the performance of the system with and without the proposed project using the latest FERC Form 715 power flow summer and winter peak base cases (filed by NYISO in April 2001) which are applicable to year 2004. Representations for the baseline units, databases for thermal transfer limit analysis, and dynamics databases were all provided by the New York Independent System Operator (NYISO).

When dispatched to Southeast New York (SENY), the impact of the ESNP Project on New York State summer normal and agency transfer capability is a reduction of 475 MW on Central East and of 775 MW on Total East intakes. Upstate NY - Southeast NY (UPNY-SENY) intake transfer capability is minimally affected with a reduction of 25 MW normal from 4250 MW to 4225 MW and of 50 MW emergency from 4900 MW to 4850 MW. UPNY-Con Ed interface transfer capability actually increases by 175 MW nominal from 4125 MW to 4300 MW and by 150 MW emergency from 5975 MW to 6125 MW. The reductions in Central East and Total East at due to the power distribution of the additional 603 MW on the bulk power transmission system. For dispatches to SENY, approximately 12 percent (71 MW) of the additional generation from ESNP flows west across the Central East interface and east across the Marcy South transmission facilities. Approximately 51 percent (306 MW) of the additional generation from ESNP flows on

the New Scotland–Leeds 345 kV circuits which are the limiting elements for Central East and Total East.

The ESNP Project also impacts the Inter-Area transfer limits. The NY-NE summer limits increase by a range of 125 MW to 325 MW normal and by 150 MW to 300 MW emergency for the redispatch locations examined. The NE-NY limits decrease by a range of 150 MW to 250 MW normal and 150 MW to 275 MW emergency. The NY-PJM limits are unchanged for both normal and emergency conditions and the PJM-NY limits are affected by only a 25 MW increase under normal conditions for ESNP Project dispatched to PJM.

The winter Intra-area limits are higher than the summer limits and are little changed by the addition of The ESNP Project. Central East and Total East decrease by 125 MW and 50 MW, respectively, both normal and emergency for The ESNP Project dispatched to SENY, while UPNY/SENY and UPNY/Con Ed normal limits increase by 50 MW and 25 MW.

The transmission limitations may cause generators that contribute to the loading of the transmission lines to operate at lower levels of dispatch than they would otherwise for some part of the summer season. The ESNP Project may at times have reduced output due to these transfer limitations, but this depends on other factors, such as unit bid prices, that may cause the NYISO to select other units to operate at reduced levels. This assumes that the plant will be operated in accordance with the NYISO's operational procedures and limits through its day-ahead Security Constrained Unit Commitment (SCUC) and real time Security Constrained Dispatch (SCD). This is designed to dispatch The ESNP Project and other plants in a manner that maximizes reliability and minimizes energy costs.

The short circuit analysis performed shows a requirement to replace one 115 kV circuit breaker at Reynolds Road. All other circuit breakers remain within their rated capability.

This SRIS has been performed in accordance with all NYISO requirements. All required system upgrades have been identified herein. Approval of this SRIS does not preclude the possibility of future conditions, as envisioned in NYISO requirements, which may, at times, limit output of the ESNP Project or any other generating plant in the system so that system reliability and security will be maintained.

This SRIS confirms that the ESNP Project results in no adverse material impact on the Niagara Mohawk transmission system or the New York State bulk power system. The conclusions, based on the results and assumptions of this analysis, are as follows:

1. The 345 kV interconnect into the NMPC Reynolds Road 345 kV substation ensures that full output of the ESNP Project can be delivered to the New York State 345 kV system at Summer peak load. Of course, ESNP Project at other power plants may be subject to curtailment if NYISO Security Constrained Dispatch (SCD) attempts to optimize the Central East and Total East transfers during the summer peak load period. Additionally, the ESNP Project will be tripped for loss of the Reynolds Road–Alps 345 kV circuit to avoid overloading the Reynolds Road 345/115 kV bank.

2. The ESNP Project when dispatched to SENY reduces both summer normal and emergency Central East transfer capability by 475 MW and decreases both the normal and emergency Total East transfer capability by 775 MW. The UPNY-SENY transfer capability is manually reduced by 25/50 MW normal/emergency, and the UPNY-Con Ed transfer capability is actually increased by 75 MW normal and decreased by 25 MW emergency. The impact of the ESNP Project on the Inter-Area transfer capabilities is less with NY-NE increasing by a range of 125 MW to 325 MW, NE-NY limit decreasing by a range of 150 MW to 275 MW, and NY-PJM and NM-NY limits remaining unchanged (25 MW increase name in NM-NY for ESNP dispatched to NM).
3. Addition of the ESNP Project does not have any adverse impact to the transient stability response of the overall transmission system.
4. The short circuit analysis shows that only one 115 kV circuit breaker at Reynolds Road is required to be replaced.
5. The ESNP Project will not adversely impact bulk power system reliability, as the plant will be operated in accordance with the NYISCPs operational procedures and limits through its day-ahead Security Constrained Unit Commitment (SCUC) and real time Security Constrained Dispatch (SCD). This conclusion also assumes that locational generation capacity requirements are met.

Interconnection Study

For the Empire State Newsprint Project

1.0 *Introduction*

This report presents the results of the thermal, stability, and voltage transfer limit analysis, local load flow and stability analysis, fault day analysis, and extreme contingency analysis performed by WGI for the proposed 603 MW (net) ESNP Project. The analysis is based on connection of the ESNP Project into the NMPC Reynolds Road 345 kV substation. The purpose of the analysis is to determine the impact of the ESNP Project on the reliability of the New York Bulk Power System and to ensure that the resulting bulk power system will conform to all applicable planning standards and design criteria including those of NYSRC[1], NPCC[2], NERC[3], and NYPSC[4]. The SRIS has been performed in accordance with the NYISO System Reliability Impact Study Criteria and Procedures [5]. The analysis included an assessment of the impact of the proposed ESNP Project on NYISO intra-area and inter-area transfer limits. The basic electrical system studies include load flow, thermal transfer limit, stability, voltage, and fault duty studies.

The ESNP Project is scheduled for commercial operation in the summer of 2004. The study evaluated the performance of the system with and without the proposed ESNP Project using the FERC Form No. 715 load flow cases submitted by NYISO to FERC in April 2001. The FERC filing contains representations of the Summer 2006 and Winter 2006'7 Peak Load conditions. It was agreed with NMPC and NYISO to use these cases as representative of the 2004 system conditions. NYISO also provided representations for the baseline units, databases for thermal transfer limit analysis, and dynamics databases for transit stability analysis. The PSS/E computer program was used for load flow, thermal transfer limit, voltage, and stability analysis. The fault duty analysis was performed by NMPC and provided to WGI for inclusion in this report. The Aspen One-Liner computer program was used for the fault duty analysis.

2.0 *The Proposed Project*

The proposed ESNP Project consists of two 161 MW gas turbine units and one 297 MW steam turbine unit to be located at the BASF site in Rensselaer, N.Y. The project will have a summer maximum output of 603 MW and a net winter maximum output of 660 MW, after providing the generating plant auxiliary load. A portion of the plant output will normally provide power to a recycled newsprint manufacturing plant with a maximum load of approximately 66 MW. This load is represented as 0 MW in all analyses to provide the maximum net output of 603 MW into the bulk power system. The plant is to be connected to the Reynolds Road substation by approximately 9 miles of overhead 345 kV line. A one-line diagram showing the planned interconnection scheme is shown on Figure 1. The input data for the ESNP Project, generator step-up transformers, and 345 kV overhead line are as follows:

Generator Data:

161 MW, 18 kV, 0.85 p.f. –Each of two gas turbine units.

297 MW, 18 kV, 0.85 p.f. – Steam turbine unit.

Generator Step-up Transformer Data:

CT1 GSU: 120/160/200 MVA OA/FA/FA, 345-18 kV, $Z=10\%$ on 120 MVA base, $X/R = 20$.

$Z = 0.00417 + j0.0833$ p.u. on 100 MVA base.

CT2 GSU; 120/160/200 MVA OA/FA/FA, 345-18 kV, $I-I0\%$ on 120 MVA base, $X/R = 20$.

$Z = 0.00417 + j0.0833$ p.u. on 100 MVA base.

Steam GSU: 200/266/332 MVA OA/FA/FA, 345-18 kV, $Z=10\%$ on 200 MVA base, $X/R = 20$.

$Z = 0.0025 + j0.05$ p.u. on 100 MVA base.

345 kV Overhead Line:

1192 kcmil ACSR, 2 conductors per phase, 1109 MVA, 9.1 miles.

$Z = 0.00071 + j0.00706$ p.u. on 100 MVA base. $B = 0.12$ p.u.

The above data is considered to be preliminary, as the proposed equipment has not yet been purchased.

The ESNP Project machine data for the stability analysis including machine, excitation system, and governor representations is provided in Appendix E.

3.0 Study Methodology and Assumptions

3.1 Study Cases

In accordance with the study scope, the impact of the proposed ESNP Project on the bulk power system was analyzed using a baseline set of assumptions. The basic set of power flow cases were:

Case 1 – Base Case without the ESNP Project The base case included the proposed PG&E Athens Facility, Bethlehem Energy Center, Heritage Energy Facility, Ramapo Energy Facility, Bowline Point Unit 3, Oakdale shunt capacitors/FACTS project, Middletown Tap 345/138 kV substation, OH-Michigan Phase Shifters, 115 kV series reactor at North Catskill, and the CT-LI DC Tie-line. The Energy Facility is not included as a baseline unit because it had not met regulatory milestones at the time this study began. The Article X Application had not been completed.

Case 2 – Case 1 with ESNP Project dispatched to SENY (80% to New York City and 20% to Long Island).

Case 3 – Case 1 with ESNP Project dispatched to PJM.

Case 4 – Case 1 with ESNP Project dispatched to New England.

The analyses were conducted under forecasted summer and winter peak load conditions.

Both the Summer and Winter Peak Load 2006 study cases were developed from the FERC Form No. 715 load flow case submitted by NYISO to FERC in April 2001. NYISO provided representations for the baseline units, which were added to form Case 1. NYISO provided necessary data bases for performing thermal transfer limit analysis and also provided the dynamics data base for performing transient stability analysis. One-line diagrams of the power flow cases used in this study are provided in Appendix B.

3.2 Analyses Conducted

The analyses conducted for the SRLS included thermal, voltage, stability, and short circuit analyses. The PTI PSS/E software package was used for the thermal, voltage, and transient stability analyses, and Aspen One-Liner was used for the short circuit analyses.

The thermal, voltage and stability analyses were used to evaluate the performance of the bulk power system for the various study cases with respect to NYISO and NPCC criteria, and to determine the transfer limits for the cases. Thermal analysis was conducted on the Summer and Winter Peak Load cases using the PSS/E Power Flow and TLTO activity. The PSS/E Power Flow program was used to evaluate the base (pre-contingency) system conditions for all study cases. Voltage contingency analysis, also using the PSS/E Power Flow program, was conducted for the Summer Peak Load cases only. Stability analysis was also conducted for the Summer Peak Load cases only, using the PSS/E Dynamics program.

The short circuit analysis was conducted to determine whether the proposed ESNP Project would adversely impact the adequacy (e.g., exceed the capability) of existing circuit breakers in the area. The analysis assumed that all existing generators plus the facilities specifically noted in each case description of Section 3.1 were in-service. Additionally, the Glenville and Skygen's Waterford projects were included in the short circuit analysis, although they are not included as baseline units in the Scope of Work. The generator impedances are represented by their direct-axis subtransient reactance at rated voltage (X''_{dy}), which means that the breaker duty levels are determined immediately after the occurrence of the fault at which time the generator contribution (into the fault) is at its maximum.

3.3 Assumptions

The study assumes that locational generation capacity requirements are met. The ESNP Project adds generation to the system and it is, therefore, necessary to reduce generation output elsewhere to maintain the energy balance in the system. For each case of redispatch whether ESNP Project was dispatched to SENY, New England, or PJM the assumption used in the study was to reduce generation output according to the standard proportions used in the NYISO Operating Studies Task Force (OSTF) operating studies.

The other key assumptions used in this study include:

- a) locations for increasing and decreasing generation to vary transfers across transmission interfaces;
- b) modeling of phase angle regulators (PARs) - All cases had PARs maintained at the scheduled MW as provided in the FERC load flow case; and
- c) status of other proposed projects as discussed in the Study Scope contained in Appendix A.

4.0 Analysis Results

4.1 Impact on Base System Conditions

Before considering contingencies, the impacts of the ESNP Project on base system conditions were evaluated by simply comparing various system parameters in the power flow cases used for the study. Summaries of these power flow cases for Summer and Winter peak load conditions are included in Appendix B.

4.1.1 Impact on Generation Dispatch

Tables 4.1.1.S1, 4.1.1.S2, and 4.1.1.S3 provide summaries of the assumed generation dispatch changes due to the ESNP Project for the Summer Peak Load cases. Tables 4.1.1.W1, 4.1.1.W2, and 4.1.1.W3 provide similar summaries for the Winter Peak Load cases.

4.1.2 Impact on Base Power Flows

Table 4.12.3 provides a summary of the normal ratings and base (pre-contingency) power flows of various transmission lines in the study area for the Summer Peak Load cases for comparison. Table 4.12.W provides a similar summary for the Winter Peak Load cases.

The summer table shows that the ESNP Project redispatched to SENY in Case 2, has little impact on the flow on the Total East interface for the assumed generation redispatch since the projects and the redispatched generation are located east of Total East. The distillation of flows on the lines that comprise Total East are shifted somewhat, slightly reducing flow across Central East, and increasing flow on the Marcy-South lines. The ESNP Project full output appears on the UPNY-SENY and UPNY-Con Ed interfaces. The distribution of flows on the circuits comprising these interfaces is acceptable and no circuit is overloaded. There is no effect on the net flow across the NY-NE interface, of course. However, the distribution of flows on lines comprising the interface shifts somewhat, with decreased flow on the Pleasant Valley-Long Mountain tie and decreased flow coming back into New York on the Alps-Berkshire tie.

The table shows that when the ESNP Project is dispatched to PJM as in Case 3, the Central East and Total East transfers are reduced and loading on their circuits are reduced. In Case 4 with ESNP Project dispatched to New England, the four intra-area interface transfers remain relatively unchanged compared to Case 1. The circuits comprising these interfaces remain acceptably loaded. Fifty seven percent (57%) or 342 MW of the ESNP Project output flows to New England over the Alps/MANY-Berkshire tie and 28% or 167 MW flows over the Pleasant Valley-Long Mountain tie.

4.13 Impact on Base Voltage Levels

Table 4.1.3.S provides a summary of the normal (pre-contingency) high and low voltage limit and base voltage of various buses in the study area for the Summer Peak Load cases for comparison. Table 4.1.1W provides a similar summary for the Winter Peak Load cases. These tables show that when the ESNP Project is dispatched to SENY the result is a decrease in voltage of about 1% at Pleasant Valley and other buses on the southern end of lines that makeup the UPNY-SENY interface, for the Summer Peak Load case. The effect is even less when ESNP Project is dispatched to PJM or New England with Pleasant Valley 345 kV bus having a decrease of 0.5 to 1 kV, respectively.

4.1.4 Impact on PARS Settings

Table 4.1.4.S provides a summary of the tap ranges and tap positions of PARs in the study area for the Summer Peak Load cases for comparison. Table 4.1A.W provides a similar summary for the Winter Peak Load cases.

4.1.5 Impact on System Lessee

Table 4.1.5 provides a summary of the tap losses and changes in system losses due to the ESNP Project and the subsequent generation redispatch.

4.2 Impact on Transfer Limits

The planning study results reported in the following sections are based on individual interface limits (non-simultaneous). This optimization of the individual intake limits will be performed operationally under the NYISO security constrained dispatch procedures where system and economic impacts of generation dispatch are considered.

4.2.1 Thermal Analysis Results

Tables 4.2.1.S1, 4.2.1.S2, 4.2.1.W1, and 4.2.1.W2 provide summaries of the normal thermal transfer limits determined for the intra-Area and inter-Area transmission interfaces for the Summer and Winter Peak Load cases. Tables 4.2.1.S3 and 4.2.1.S4, 4.2.1.W3, and 4.2.1.W4 provide summaries of the emergency transfer limits for the intra-Area and inter-Area interfaces. Light load thermal analysis, although included in the scope of work provided in Appendix A, was not performed. It was cleaned not necessary in discussion with NMFC due to generally lower transfers that occur at light load Additional details regarding the thermal analysis results are provided in Appendix C.

These tables show that ESNP Project when dispatched to SENY reduce both the summer normal and emergency Central East trait capability by 475 MW to 2250 MW and 2525 MW respectively and decrease the Total East normal and emergency transfer capability by 775 MW to 4350 MW and 4875 MW, respectively. These changes are due to the power distribution of the additional 603 MW on the bulk power transmission system. For dispatches to Southeast New York, approximately 12 percent (71 MW) of the additional generation from ESNP Project flows west across the Central East intake and east across the Marcy South transmission facilities. Approximately 51 percent (306 MW) of the additional generation from ESNP Project flows on the New Scotland–Leeds 345 kV circuits, which am the limiting dements for Central East and Total East. UPNY-SENY normal amen mobility is minimally affected with a normal reduction of 25 MW from 4250 MW to 4225 MW. UPNY-Con Ed normal transfer capability actually increases by 75 MW from 5350 MW to 5425 MW. The UPNY-SENY emergency transfer capability has a reduction of 50 MW from 4900 MW to 4850 MW, and the UPNY-Con Ed emergency trait capability has a reduction of 25 MW from 6275 MW to 6250 MW. Approximately 42 percent (253 MW) of the additional generation from ESNP Project flows on the Lads–Pleasant Valley 345 kV circuits which are the limiting dements fa UPNY-SENY.

These transmission limitations may cause generators that contribute to the loading of these lines to operate at lower levels of dispatch than they would otherwise for some part of the summer season. The ESNP Project may at times have reduced output due to these tender limitations, but this depends on other factors, such as unit bid prices, that may cause the NYISO to select other units to operate at reduced levels. This asserts that the plain WM be operated in accordance with the NYISCYs operational procedures and limits through its day-ahead Security Constrained Unit Commitment (SCUC) and real time Security Constrained Dispatch (SOD).

The four Intra-Area transfer limits remain about the same with ESNP Project dispatched to PJM as for dispatch to SENY. The change is no more than 75 MW normal and 25 MW emergency. With ESNP Project dispatched to New England, compared to SENY, the Central East transfer

capability increases by 300 MW normal and emergency. Total East increase by 450 MW normal and emergency. UPNY-SENY is reduced by 250 MW normal and 225 MW emergency. UPNY-Con Ed is reduced by 75 MW normal and increased by 25 MW emergency.

In general the ESNP Project also has impact on the Inter-Area transfer limits. The inter-area limits shown in the summary tables are based on direct tie-line equipment limitations. Equipment limitations internal to NY, NE or NM can be found by examination of TLTG output in Appendix C. The NY-NE limits increase by a range of 125 MW to 325 MW normal and by 150 MW to 300 MW emergency for the redispatch locations examined. The NE-NY limits decrease by a range of 150 MW to 250 MW normal and 150 MW to 275 MW emergency. With the exception of a 25 MW increase normal for ESNP dispatched to PJM, the NY-FSM limits are unchanged normal and emergency and the FSM-NY limits are also unchanged normal and emergency.

The four Intra-Area winter transfer limits are found to be higher than the corresponding summer transfer lines and the impact of ESNP dispatched to SENY is small. Central East normal and emergency transfer limits decrease by 125 MW and Total East decreases by 75 MW with ESNP dispatched to SENY. The ESNP redispatch increases UPNY-SENY normal and emergency transfer limits by 50 MW and UPNY-Con ED normal is unchanged and emergency decrease by 25 MW.

The NY-NE and NM-NY winter transfer limits are higher than their summer limits and the NY-NE limit is increased by 350 MW by the addition of The ESNP Project and the PJM-NY limit is decreased by a small amount (25 MW). The NE-NY and NY-PJM winter transfer limits are lower than their summer limits and NE-NY limit is decreased by 400 MW by the addition of The ESNP Project and the NY-NM is increased by a small amount (25 MW). The Inter-Area transfer limits are influenced by the dispatch and PAR settings provided in the FERC case. These were left unchanged in the transfer limit analyses. Adjustment of the PAR settings or changes in dispatch could be utilized to increase the NE-NY and NY-NM transfer limits.

4.2.2 Local Thermal Analysis Results

Tables 4.22.S1, 4.2.2.S2, 4.22.W1, and 4.2.2.W2 provide summaries of summer and winter post contingency power flows for the Albany 115 kV transmission circuits for Cases 1 and 2. These circuits are acceptably loaded in the base cases. Three contingencies in the summer cases result in a circuit loaded above long term emergency (LTE) rating in the base case without the ESNP Project. These are for loss of either Albany-Greenbush circuit, the other Albany-Greenbush circuit carries 211 MW, which is in excess of its LTE rating of 197 MW. The other is for L/O Albany-Krumkill, the Albany-Bethlehem circuit carries 298 MW which is in excess of its LTE rating of 208 MW. With ESNP Project in service the loading of the Albany Greenbush circuit decreases for the first two contingencies and for the third contingency the loading of the Albany-Bethlehem circuit is the same. The overloads that occur are pre-existing conditions that are either lessened by ESNP Project in service, or remain unchanged, and are therefore not the responsibility of ESNP Project. Since the local flows are very similar in base Case 3 and 4 (redispatch to PJM and N.E., respectively), these contingencies are not repeated for Case 3 and 4.

The same three contingencies in the winter cases result in a circuit loaded above LTE rating in the base case without The ESNP Project. Two of the circuits are within LTE rating in the with ESNP case and the third has loading unchanged.

Additionally it is recognized that for loss of the Reynolds Road –Alps 345 kV circuit, all of the ESNP Project’s output would be on the Reynolds Road– 345/115 kV bank Wadi would overload. The ESNP Project and NMPC have agreed that the ESNP Project will be tripped for a fault on the Reynolds Road –Alps 345 kV circuit.

4.2.3 Voltage Analysis Results

Power flow analysis was conducted to evaluate the impact of the ESNP Project on the voltage performance of the men Appendix D provides one-line plots of the bulk power system without and with the ESNP Project.

The voltage analysis shows that the voltage limits for all for Inter-area transmission interfaces tested are less constraining than the thermal limits for summer peak conditions. Voltage collapse was tested without aid with the ESNP Project in-service for two contingencies. These were for the loss of the Marcy-South double-circuit and the loss of the New Scotland #99 bus. The highest transfer levels at which converged load flows resulted for these contingencies were determined. Applying the 95% safety margin to these transfer levels, the following voltage constrained trait limits were determined:

	Case 1	Case 2
Central East	2783 MW	2434 MW
Total East	5169 MP/	4462 MW
UPNY SENY	4405 MW	4439 MW
UPNY Con Ed	4192 MW	4482 MW

Load flow cases for Cases 1 and 2 were then examined for voltage violations at the voltage-constrained transfer limits reported above for all lines in-service and for the two contingencies described above. Table 4.2.3 provides voltages for various buses in the study area for these cases. Examination of these bus voltages shows that all voltages at within their post-contingency high and low voltage limits. Plots of these load flow cases are included in Appendix D.

The voltage-constrained transfer limits in all cases exceed the thermal transfer limits. Thus the thermal transfer limits predominate.

4.14 Stability Analysis Results

Stability testing was conducted for Cases 1 and 2 at the summer normal thermal transfer limits previously determined plus a 10% safety margin. The thermal trader limits plus 10% are shown in the following table.

Case (Normal Limits)	Interface			
	Central-East	Total East	UPNY/SENY	UPNY/CONED
1 – Base Case w/o ESNP Project	3010 MW	5638 MW	4768 MW	4413 MW
2 –ESNP Project In Service	2550 MW	4703 MW	4670 MW	4711 MW

Additional stability testing was conducted for Case 2 at the summer emergency thermal transfer limit plus a 10% safety margin.

Case (Emergency Limits)	Interface			
	Central-East	Total East	UPNY/SENY	UPNY/CONED
2 –Ewe project in Service	2810 MW	5095 MW	4812 MW	4718 MW

System response plots for the following eight design requirement contingencies are provided in Appendix F. A list of these cases is also provided in Table 4.2.4.

1. CE38 - LLG fault at Marcy, Marcy-Coopers/Edic-Fraser double circuit
2. TE32 - 3 Phase fault at New Scotland, New Scotland #77 bus fault
3. TE35 – 3 Phase fault at Leeds, Leeds-Athens #91
4. RottNscot – 3 Phase fault at Rotterdam 115 kV, Rotterdam-New Scotland 115 kV # 13
5. Nscot115 –3 Phase fault at New Scotland 115 kV, New Scotland-Bethlehem 115 kV #1
6. RottBsmpt – 3 Phase fault at Rotterdam 230 kV, Rotterdam-Bear Swamp 230 kV #E205
7. NE10 – SLG at Northfield, Alps-Berkshire-Northfield 345 kV. Stuck 5T breaker, reject Northfield #3 and #4.
8. Single phase fault at Leeds 345 kV Substation with stuck breaker. Backup cleared at 12 cycles.

All of the stability test were stable demonstrating that the thermal transfer limits we not strained by stability limits.

Auto-reclosing schemes are included in contingencies 1 and 2 above and the ESNP Project shows no adverse effect on the redosing schemes.

4.2.5 Overall Impact on Transfer Limits

It has been determined that thermal transfer limits are more constraining than either voltage or stability limits for the four transmission interfaces tested both without and with the ESNP Project.

As discussed in Section 4.1 1, Tables 4.2.1.1 and 4.2.1.2 show that the ESNP Project reduces the summer normal Central East transfer capability by 475 MW and decreases the Total East normal transfer capability by 775 MW. The UPNY-SENY normal transfer capability is minimally reduced and the UPNY-Con Ed normal transfer capability is increased by 75 MW. The ESNP Project will not adversely impact bulk power system reliability. The NYISO's operational procedures and limits through its day-ahead SCUC and real time SCD is designed to dispatch the ESNP Project and other plants in a manner that maximizes reliability and minimizes energy costs.

4.3 Fault Duty Analysis

Table 4.3 provides a summary of the short-circuit analysis results in the vicinity of Reynolds Road 345 kV and significant Eastern New York 115 and 345 kV substations. The analysis indicates that the addition of the ESNP Project increases the short circuit levels of the R-63 115 kV breaker at the Reynolds Road substation beyond its 40 kA rating and should be replaced. All other existing NMPC breakers have sufficient capability to meet the additional short circuit currents due to the ESNP Project.

4.4 Extreme Contingency Analysis

Extreme Contingency analysis with the ESNP Project was performed in conformance with NYSRC and NPCC criteria. Extreme contingency testing is done to understand the Units of the power system. Problems identified in extreme tests do not require remediation, but, if possible, low cost system improvements, generation dispatch impacts, or simple operating procedures should be identified.

A list of extreme contingencies tested is included in Table 4.4.1. Cases tested included plant and substation outages and a three phase fault with stuck breaker at the Leeds 345 kV substation. All extreme contingency cases tested were stable.

Critical clearing time analysis was also performed for substations in the vicinity of the ESNP Project. A list of critical clearing time cases is included in Table 4.4.2. The results of the analysis indicate that the ESNP Project extends the critical clearing times of a three phase fault at New Scotland on the New Scotland-Leeds 345 kV circuit from 17 cycles to 19 cycles (normal clearing time would be less than 5 cycles). This is acceptable because all 345 kV substations in the vicinity of the ESNP Project, except Alps, have dual channel relaying which provides backup clearing times comparable to primary clearing times. The ESNP Project plans to provide dual channel relaying at Alps. For a three phase fault on the Albany-Greenbush 115 kV #1 circuit, the critical clearing time is 13 cycles with or without ESNP Project. For a three phase fault on the Greenbush-Reynolds Road 115 kV circuit, the critical clearing time is 15 cycles with or without ESNP Project. For a three phase fault on the 115 kV side of the Reynolds Road 345/115 kV bank, the critical clearing time is 17 cycles with or without the ESNP Project.

5.0 Conclusions

This study was undertaken to evaluate the impact of the proposed ESNP Project on the reliability of the bulk power system. Analysis was conducted to evaluate the impacts of the proposed ESNP Project on the New York intra-Area and inter-Area transfer limits. The conclusions, based on the results and assumptions of that analysis, are as follows:

1. The 345 kV interconnect into the NMPC Reynolds Road 345 kV substation ensures that full output of the ESNP Project can be delivered to the NYISO 345 kV system at Summer peak load. Of course, ESNP Project and/or other power plants may be subject to curtailment if NYISO Security Constrained Dispatch (SCD) attempts to optimize the Canal East and Total East transfers during the summer peak load period. Additionally, the ESNP Project will be tripped for loss of the Reynolds Road–Alps 345 kV circuit to avoid overloading the Reynolds Road 345/115 kV bank.
2. The ESNP Project when dispatched to SENY reduces both summer normal and emergency Central East transfer capability by 475 MW and decreases both the normal and emergency Total East transfer capability by 775 MW. The UPNY-SENY transfer capability is minimally reduced by 25/50 MW normal/emergency and the UPNY-Con Ed transfer capability is actually increased by 75 MW normal and decreased by 25 MW emergency. The impact of the ESNP Project on the Inter-Area transfer capabilities is less with NY-NE increasing by a range of 125 MW to 325 MW, NE-NY limits decreasing by a range of 150 MW to 275 MW, and NY-NM and NM-NY limits remaining unchanged (25 MW increase normal in NM-NY for ESNP dispatched to NM).
3. Addition of the ESNP Project does not have any adverse impact on the transient stability response of the overall transmission system. All eight design requirement cases that was tested was stable both without and with ESNP Project.
4. The short circuit analysis shows that only one 115 kV circuit breaker at Reynolds Road is required to be replaced.
5. The ESNP Project will not adversely impact bulk power system reliability as the plant will be operated in accordance with the NYISO's operational procedures and limits through its day-ahead Security Constrained Unit Commitment (SCUC) and real time Security Constrained Dispatch (SCD). This is designed to dispatch ESNP Project and other plants in a manner that maximizes reliability and minimizes energy costs.

The System Reliability Impact Study (SRIS) has been performed in accordance with all NYISO requirements. All required system upgrades have been identified herein. Approval of this SRIS does not preclude the possibility of future conditions, as envisioned under New York ISO requirements, which may, at times, limit output of the ESNP Project or any other generating plant in the system and that system reliability and security will be maintained.

6.0 References

1. “Initial Ratability Rules For Planning and Operating the New York State Power System”, New York State Reliability Council, September 10, 1999.
2. “Basic Criteria for Design and Operation of Interconnected Power Systems”; Northeast Power Coordinating Council; August 9, 1995.
3. “NERC Planning Standards”; North American Electric Reliability Council; September 1997.
4. “Operating, Design, and Planning Criteria for Bulk Power Supply Systems of New York State”; New York State Department of Public Service; March 4, 1981.
5. “System Reliability Impact Study Criteria and Procedures”, NYISO, July 19, 2000

TABLES

**Table 4.1.1.S1
Generation Redispach
For Beiscorp to SENY
Summer Peak Cases**

Generator Name	Case 1 (W/O Beiscorp) MW	Case 2 (W/Beiscorp to SENY) MW	Delta MW
Beiscorp		603	603
Gowanus GT1A	50	0	-50
Gowanus GT1B	50	0	-50
Gowanus GT2A	50	0	-50
Gowanus GT2B	50	0	-50
Astoria GT2A	78	0	-78
Astoria GT2B	78	0	-78
JFK GT1	40	0	-40
JFK GT2	40	0	-40
YORK GT1	40	0	-40
Northport 4	360	300	-60
Port Jefferson 4	170	110	-60

**Table 4.1.1.82
Generation Redpatch
For Bealcorp to PJM
Summer Peak Cases**

Generator Name	Case 1 (W/O Bealcorp) MW	Case 3 (W/Bealcorp to PJM) MW	Delta MW
Bealcorp		603	603
SHAWVILLE 1	114	51	-63
S RIV G1	84	66	-18
KITTGEN 1	118	52	-66
MARTIN CREEK 3	800	705	-95
MARTIN CREEK 4	800	705	-95
ATHENIA 3	11	-55	-66
BERGEN	14	-52	-66
LINDEN A	38	21	-18
PERRY 5	138	102	-36
BLE #1	0	-66	-66

**Table 4.1.1.53
Generation Redispach
For Bealcorp to NE
Summer Peak Cases**

Generator Name	Case 1 (W/O Bealcorp) MW	Case 4 (W/Bealcorp to NE) MW	Delta MW
Bealcorp		803	803
Mystic 7	565	416	-149
Canal 2	577	398	-179
Newington 1	406	257	-149
Millstone 3	1137	1018	-119

**Table 4.1.1.W1
Generation Redispach
For Bealcorp to SENY
Winter Peak Cases**

Generator Name	Case 1 (W/O Bealcorp) MW	Case 2 (W/Bealcorp to SENY) MW	Delta MW
Bealcorp	0	660	660
Ast 4	361	136	-225
Rav 2	364	139	-225
JFK GT1	36	0	-36
JFK GT2	36	0	-36
JFK GT3	18	0	-18
Farrk GT	62	0	-62
NYPA106	90	11	-79

**Table 4.1.1.W2
Generation Redpatch
For Basicorp to PJM
Winter Peak Cases**

Generator Name	Case 1 (W/O Basicorp) MW	Case 3 (W/Basicorp to PJM) MW	Delta MW
Basicorp		660	660
SHAWVILLE 1	126	138	12
S RIV G1	89	68	-21
KITTGEN 1	140	67	-73
MARTIN CREEK 3	157	51	-106
MARTIN CREEK 4	0	-106	-106
ATHENIA 3	11	-63	-74
BERGEN	0	-73	-73
LINDEN A	39	19	-20
PERRY 5	0	-40	-40
BLE #1	129	60	-69

**Table 4.1.1.W3
Generation Redpatch
For Beacorp to NE
Winter Peak Cases**

Generator Name	Case 1 (W/O Beacorp) MW	Case 4 (W/Beacorp to NE) MW	Delta MW
Beacorp		680	680
Mystic 7	565	400	-165
Canal 2	577	379	-198
Newington 1	408	241	-165
Millstone 3	1137	1005	-132

Table 4.1.2.8
Base System Conditions - Summer Peak
Power Flows (in Megawatts)

Transmission Interface or Line	Normal Rating (MW)	Case 1 (W/O Basicorp) (MW)	Case 2 (W/Basicorp to SENY) (MW)	Case 3 (W/Basicorp to PJM) (MW)	Case 4 (W/Basicorp to NE) (MW)
CENTRAL-EAST		1825	1754	1511	1817
TOTAL-EAST		3411	3415	2810	3407
Marcy-New Scotland	1677	663	643	544	653
Edie-New Scotland	1331	612	594	501	602
Fraser-Gilboa	1494	190	184	28	184
Coop Corn-Shoemaker	1464	888	743	635	697
Coop Corn-Rock Tavern	1554	598	649	547	606
Branchburg-Ramapo	1046	201	200	201	198
UPNY-SENY		4366	4974	4383	4374
Athens-PI Valley	1331	1066	1191	1079	1122
Leeds-PI Valley	1331	1094	1224	1106	1152
Leeds-Hurley Ave	1385	800	882	817	829
Long Mount-CTNY/PI Valley	1240	-373	-264	-310	-538
Coop Corn-Shoemaker	1464	688	743	635	697
Coop Corn-Rock	1554	698	649	547	606
UPNY-CONE		3810	4416	3828	3809
PI Valley-Wood St	1720	651	666	568	546
PI Valley-Millwood	1720	628	646	546	524
PI Valley-Fishkill ckt 1	1720	313	363	341	292
PI Valley-Fishkill ckt 2	1720	313	363	341	282
Roseton-Fishkill	1935	680	683	636	618
Ramapo-Buchanan	1703	318	390	308	321
Ladentown-Buchanan	1703	662	644	659	687
NY-NE		114	116	115	708
Rotterdam-Bear Swamp	436	-88	-95	-107	-54
Alps/Many-Berkshire	1434	-137	-20	-44	205
CTNY/PI Valley-Long Mount	1240	373	264	310	540

Table 4.1.2.W
Base System Conditions - Winter Peak
Power Flows (In Megawatts)

Transmission Interface or Line	Normal Rating (MW)	Case 1 (W/O Bascorp) (MW)	Case 2 (W/Bascorp to SENY) (MW)	Case 3 (W/Bascorp to PJM) (MW)	Case 4 (W/Bascorp to NE) (MW)
CENTRAL-EAST		1808	1829	1552	1891
TOTAL-EAST		3625	3635	2962	3623
Marcy-New Scotland	1792	429	631	516	640
Edin-New Scotland	1624	604	582	474	590
Fraser-Gilboa	1524	225	192	28	211
Coop Corn-Shoemaker	1786	520	582	835	533
Coop Corn-Rock Tavern	1793	461	520	547	474
Branchburg-Ramapo	1221	500	200	201	500
UPNY-SENY		3818	4484	3815	3818
Athens-PI Valley	1784	831	661	837	886
Leeds-PI Valley	1331	846	983	863	904
Leeds-Hurley Ave	1712	847	747	663	677
Long Mount-CTNY/PI Valley	1135	-191	-66	-122	-382
Coop Corn-Shoemaker	1786	520	743	635	533
Coop Corn-Rock	1783	461	646	547	474
UPNY-CONE		2974	3641	2974	2970
PI Valley-Wood St	1976	404	530	419	395
PI Valley-Millwood	1976	370	497	385	361
PI Valley-Fishkill ckt 1	1976	277	352	306	249
PI Valley-Fishkill ckt 2	1976	277	352	306	249
Roseton-Fishkill	2527	755	963	838	802
Ramapo-Buchanan	1822	222	390	308	228
Ladentown-Buchanan	1822	759	944	859	770
NY-NE		108	115	114	771
Rotterdam-Bear Swamp	436	-55	-85	-107	-17
Alps/Mary-Berkshire	1434	29	-20	-44	402
CTNY/PI Valley-Long Mount	1135	191	66	122	382

Table 4.1.3.8
Base System Conditions - Summer Peak
Bus Voltages (In Kilovolts)

Bus	Case 1	Case 2	Case 3	Case 4
New Scotland 345 kV	365.3	364.7	366.2	364.4
New Scotland 115 kV	117.4	117.0	116.9	117.0
Alpe 345 kV	354.2	352.8	353.1	352.8
Gilboa 345 kV	358.8	358.1	358.5	355.9
Leeds 345 kV	353.1	353.1	353.1	353.1
Athens 345 kV	353.0	352.9	353.0	352.9
Pleasant Valley 345 kV	347.3	344.8	346.8	346.3
Hurley Ave 345 kV	348.4	346.7	347.9	347.4
Roseton 345 kV	350.2	347.6	348.1	348.3
Fleahill 345 kV	349.5	348.8	348.8	348.2
Millwood 345 kV	351.6	350.0	351.4	351.4
Sprainbrook 345 kV	352.9	351.9	352.9	353.0
Marcy T1 345 kV	358.7	357.8	358.6	354.4
Edic 345 kV	358.5	357.6	356.6	354.4
Fraser 345 kV	362.7	360.8	361.2	360.2
Oakdale 345 kV	359.9	358.6	352.8	356.8
Coopers PC 345 kV	361.2	367.6	359.9	357.2
Rock Tavern 345 kV	356.3	353.6	353.9	352.5
Ramapo 345 kV	357.3	356.3	356.7	356.8
Buchanan N. 345 kV	356.1	355.2	355.9	355.9
Buchanan S. 345 kV	354.2	362.8	354.0	363.9

Table 4.1.3.W
Base System Conditions - Winter Peak
Bus Voltages (in Kilovolts)

Bus	Case 1	Case 2	Case 3	Case 4
New Scotland 345 kV	354.8	353.4	355.8	354.4
New Scotland 115 kV	117.1	116.9	117.3	117.1
Alps 345 kV	353.8	351.8	352.7	352.3
Gilboa 345 kV	357.9	358.4	358.4	357.7
Leeds 345 kV	358.6	354.8	358.8	358.5
Athens 345 kV	358.4	354.4	358.4	358.3
Pleasant Valley 345 kV	352.0	348.1	350.9	350.9
Hurley Ave 345 kV	354.3	351.3	353.6	353.8
Roseton 345 kV	356.2	353.2	355.1	355.3
Flatkill 345 kV	353.8	350.1	352.8	352.8
Millwood 345 kV	350.3	348.8	349.2	349.4
Sprainbrook 345 kV	348.6	345.2	347.8	347.8
Marcy T1 345 kV	351.9	351.9	353.2	351.9
Edic 345 kV	351.8	351.5	353.1	351.5
Fraser 345 kV	359.0	357.5	359.2	358.7
Oakdale 345 kV	347.8	346.3	347.4	347.1
Coopers PC 345 kV	360.2	358.2	358.8	359.5
Rock Tavern 345 kV	354.8	353.9	353.2	354.0
Ramapo 345 kV	356.0	354.5	355.2	355.5
Buchanan N. 345 kV	354.2	352.4	353.6	353.8
Buchanan S. 345 kV	353.5	350.8	352.5	352.7

Table 4.1.4.3
Base System Conditions - Summer Peak
Phase Angle Regulators

Bus	Schedule MW/ Angle Range	Case 1	Case 2	Case 3	Case 4
Ramapo (2)	100 each Actual MW	100	100	100	99
	+40/-40 each Angle	7.1	10.4	-15.2	8.2
Waldwick - FAIR SH	375 Actual MW	375	375	375	375
	+35/-35 Angle	2.1	5.5	-22.8	3.3
Waldwick - HAWTH SH	275 Actual MW	275	275	275	277
	+30/-30 Angle	0.4	3.8	-23.5	1.8
Waldwick - HILLS SH	375 Actual MW	375	375	375	377
	+32/-32 Angle	-0.3	3.1	-24.4	0.9
Farragut (2)	500 each Actual MW	500	500	492	501
	+30/-30 each Angle	-4.8	-0.2	-30.0	-3.6
Goethals	0 Actual MW	1	0	1	1
	+25/-25 Angle	-4.0	-8.5	18.5	-5.3
Pittsburgh	75 Actual MW	75	75	75	74
	+40/-40 Angle	15.8	15.1	14.7	18.8
Northport	200 Actual MW	200	200	199	198
	+50/-50 Angle	8.3	1.7	6.9	11.4

Table 4.1.4.W
Base System Conditions - Winter Peak
Phase Angle Regulators

Bus	Schedule MW/ Angle Range		Case 1	Case 2	Case 3	Case 4
Ramapo (2)	250 each Actual MW		250	250	250	250
	+40/-40 each Angle		-0.4	2.9	-24.2	-0.1
Waldwick - FAIR SH	300 Actual MW		300	300	300	300
	+35/-35 Angle		-8.9	-12.2	18.1	-9.1
Waldwick - HAWTH SH	310 Actual MW		310	310	310	310
	+30/-30 Angle		-6.5	-9.8	19.3	-8.8
Waldwick - HILLS SH	330 Actual MW		330	330	330	330
	+32/-32 Angle		-6.1	-9.4	19.9	-6.4
Farragut (2)	500 each Actual MW		500	500	500	500
	+30/-30 each Angle		0.5	4.9	-26.5	0.8
Goethals	0 Actual MW		0	0	0	0
	+25/-25 Angle		-15.4	-20.0	8.8	-15.8
Pittsburgh	105 Actual MW		105	105	105	105
	+40/-40 Angle		15.3	14.4	12.6	18.3
Northport	200 Actual MW		200	200	200	200
	+50/-50 Angle		8.4	0.2	6.8	12.0

Table 4.1.5
Summary System Losses
Summer and Winter Peak

Description	NY		System	
	MW	MW Vs Case 1	MW	MW Vs Case 1
Summer				
Case 1 - without Besicorp	930.1	-	14813.1	-
Case 2 - Besicorp to SENY	989.7	58.6	14881.7	68.6
Case 3 - Besicorp to PJM	924.2	-5.9	14859.8	48.5
Case 4 - Besicorp to NE	958.1	28.0	14834.3	21.2
Winter				
Case 1 - without Besicorp	854.1	-	14487.4	-
Case 2 - Besicorp to SENY	902.5	48.4	14524.8	57.2
Case 3 - Besicorp to PJM	837.0	-17.1	14504.6	37.2
Case 4 - Besicorp to NE	876.7	22.6	14504.0	36.6

TABLE 4.2.1.81
NYCA Intra-Area Bulk Power System Normal Thermal Transfer Limits (MW)
Summer Peak

Case	Central East	Total East	UPNY/BENY	UPNY/CONED
Case 1 - (w/o Bealcorp)	2725 ⁽¹⁾	5125 ⁽¹⁾	4250 ⁽²⁾	5350 ⁽²⁾
Case 2 (with Bealcorp to BENY)	2250 ⁽¹⁾	4350 ⁽¹⁾	4225 ⁽²⁾	5425 ⁽²⁾
Case 3 (with Bealcorp to PJM)	2275 ⁽¹⁾	4250 ⁽¹⁾	4200 ⁽²⁾	5350 ⁽²⁾
Case 4 (with Bealcorp to N.E.)	2550 ⁽¹⁾	4800 ⁽¹⁾	3975 ⁽²⁾	5350 ⁽²⁾

Note:

- (1) Leeds - New Scotland 345 kV at 1538 LTE rating for loss of Leeds - New Scotland 345 kV.
(2) Pleasant Valley - Leeds 345 kV at 1538 LTE rating for loss of Pleasant Valley - Athens 345 kV.
(3) Sprbrook-Dunwoody 345 kV Ckt 1 at 2708 LTE rating for loss of Flatkill-PI Vile, Flatkill-Wood A, Wood A-PI VileW 345 kV and PI Vile345-PRVile13.

TABLE 4.2.1.82
NYCA Inter-Area Bulk Power System Normal Thermal Transfer Limits (MW)
Summer Peak

Case	NY → NE	NE → NY	NY → PJM	PJM → NY
Case 1 - (w/o Beacorp)	1000 ⁽¹⁾	1350 ⁽²⁾	1000 ⁽³⁾	2225 ⁽⁴⁾
Case 2 (with Beacorp to SENY)	1275 ⁽¹⁾	1100 ⁽²⁾	1000 ⁽³⁾	2225 ⁽⁴⁾
Case 3 (with Beacorp to PJM)	1175 ⁽¹⁾	1200 ⁽²⁾	1000 ⁽³⁾	2250 ⁽⁴⁾
Case 4 (with Beacorp to N.E.)	1375 ⁽¹⁾	1150 ⁽²⁾	1000 ⁽³⁾	2225 ⁽⁴⁾

Note:

- (1) CTNY398 - Pitvley 346 kV at 1317 LTE rating for loss of Southgate-Milstone 346 kV and Milstin #3.
- (2) Norwalk Harbor - Northport 138 kV at 315 LTE rating for loss of Pitvley-Fishkill & CTNY398-Pitvley 346 kV.
- (3) E. Twende - Hired 230 kV at 531 LTE rating for loss of Erie S - S. Ripley 230 and E. Sayre - N. Wav 115 kV.
- (4) E. Twende - Hired 230 kV at 531 LTE rating for loss of Homer Cy - Watro 345 kV and E. Sayre - N. Wav 115 kV.

TABLE 4.2.1.83
NYCA Intra-Area Bulk Power System Emergency Thermal Transfer Limits (MW)
Summer Peak

Case	Central East	Total East	UPNY/SENY	UPNY/CONED
Case 1 - (w/o Bealcorp)	3000 ⁽¹⁾	5650 ⁽¹⁾	4900 ⁽²⁾	6275 ⁽³⁾
Case 2 (with Bealcorp to SENY)	2525 ⁽¹⁾	4875 ⁽¹⁾	4850 ⁽²⁾	6250 ⁽³⁾
Case 3 (with Bealcorp to PJM)	2550 ⁽¹⁾	4800 ⁽¹⁾	4850 ⁽²⁾	6275 ⁽³⁾
Case 4 (with Bealcorp to N.E.)	2825 ⁽¹⁾	5325 ⁽¹⁾	4825 ⁽²⁾	6275 ⁽³⁾

Note:

- (1) Leeds - New Scotland 345 kV at 1724 STE rating for loss of Leeds - New Scotland 345 kV.
(2) Pleasant Valley - Leeds 345 kV at 1724 STE rating for loss of Pleasant Valley - Athens 345 kV.
(3) Sprbrook-Dunwoody 345 kV Ckt 1 at 3247 STE rating for loss of Flatkill-Pi Vile, Flatkill-Wood A, Wood A-Pi Villw 345 kV and Pi Vile345-PiVile13.

TABLE 4.2.1.84
NYCA Inter-Area Bulk Power System Emergency Thermal Transfer Limits (MW)
Summer Peak

Case	NY → NE	NE → NY	NY → PJM	PJM → NY
Case 1 - (w/o Bealcorp)	1575 ⁽¹⁾	2000 ⁽²⁾	1225 ⁽³⁾	2325 ⁽⁴⁾
Case 2 (with Bealcorp to SENY)	1925 ⁽¹⁾	1725 ⁽²⁾	1225 ⁽³⁾	2325 ⁽⁴⁾
Case 3 (with Bealcorp to PJM)	1825 ⁽¹⁾	1850 ⁽²⁾	1225 ⁽³⁾	2425 ⁽⁴⁾
Case 4 (with Bealcorp to N.E.)	1975 ⁽¹⁾	1800 ⁽²⁾	1225 ⁽³⁾	2325 ⁽⁴⁾

Notes:

- (1) CTNY368 - Pivley 345 at 1601 STE rating for loss of Southgate-Milstone 345 kV and Milston #3.
- (2) Norwell Harbor - Northport 138 kV at 426 STE rating for loss of Pivley-Flaherty & CTNY368 - Pivley 345 kV.
- (3) E. Twanda - Hired 230 kV at 598 STE rating for loss of Erie S - S. Ripley 230 and E. Sayre - N. Wav 115 kV.
- (4) Homer Cy - Watco 345 kV at 755 MW normal rating for pre-contingency loading.

TABLE 4.2.1.W1
NYCA Intra-Area Bulk Power System Normal Thermal Transfer Limits (MW)
Winter Peak

Case	Central East	Total East	UPNY/SENY	UPNY/CONED
Case 1 - (w/o Besicorp)	3175 ⁽¹⁾	8025 ⁽¹⁾	4875 ⁽²⁾	5725 ⁽³⁾
Case 2 (with Besicorp to SENY)	3050 ⁽¹⁾	5950 ⁽¹⁾	4825 ⁽²⁾	5725 ⁽³⁾
Case 3 (with Besicorp to PJM)	3125 ⁽¹⁾	5950 ⁽¹⁾	4900 ⁽²⁾	5725 ⁽³⁾
Case 4 (with Besicorp to N.E.)	3100 ⁽¹⁾	5950 ⁽¹⁾	4850 ⁽²⁾	5725 ⁽³⁾

Note:

- (1) Edic - Clay 345 kV at 1434 MW LTE rating for loss of Clay-Edic 345 kV and Clay 345-Clay 115 kV
- (2) Pleasant Valley - Leeds 345 kV at 1538 MW LTE rating for loss of Pleasant Valley - Athens 345 kV.
- (3) Spritbrook-Dunwoody 345 kV Ckt 1 at 2708 LTE rating for loss of Fishkill-Pi Vile, Fishkill-Wood A, Wood A-Pi Villw 345 kV and Pi Vile 345-Pi Vile 13.

TABLE 4.2.1.W2
NYCA Inter-Area Bulk Power System Normal Thermal Transfer Limits (MW)
Winter Peak

Case	NY → NE	NE → NY	NY → PJM	PJM → NY
Case 1 - (w/o Besicorp)	1375 ⁽¹⁾	1075 ⁽²⁾	650 ⁽³⁾	2850 ⁽⁴⁾
Case 2 (with Besicorp to SENY)	1725 ⁽¹⁾	675 ⁽²⁾	675 ⁽³⁾	2625 ⁽⁴⁾
Case 3 (with Besicorp to PJM)	1800 ⁽¹⁾	650 ⁽²⁾	650 ⁽³⁾	2575 ⁽⁴⁾
Case 4 (with Besicorp to N.E.)	1800 ⁽¹⁾	800 ⁽²⁾	650 ⁽³⁾	2650 ⁽⁴⁾

Notes:

- (1) CTNY388 - Pitvley 345 kV at 1317 MW/LTE rating for loss of Southgate-Milstone 345 kV and Millin #3.
- (2) Norwalk Harbor - Northport 138 kV at 315 MW/LTE rating for loss of Pitvley-Fishkill & CTNY388-Pitvley 345 kV.
- (3) E. Twanda - Hild 230 kV at 664 MW/LTE rating for loss of Erie E-S, Ripley 230 and E. Sayre-N. Way 115 kV
- (4) E. Twanda - Hild 230 kV at 664 MW/LTE rating for loss of Homer Cy-Wisc345 and E. Sayre-N. Way 115 kV

TABLE 4.2.1.W3
NYCA Intra-Area Bulk Power System Emergency Thermal Transfer Limits (MW)
Winter Peak

Case	Central East	Total East	UPNY/SENY	UPNY/GONED
Case 1 - (w/o Bealcorp)	3176 ⁽¹⁾	6026 ⁽¹⁾	5625 ⁽²⁾	6550 ⁽³⁾
Case 2 (with Bealcorp to SENY)	3060 ⁽¹⁾	5950 ⁽¹⁾	5576 ⁽²⁾	6525 ⁽³⁾
Case 3 (with Bealcorp to PJM)	3125 ⁽¹⁾	5990 ⁽¹⁾	5550 ⁽²⁾	6500 ⁽³⁾
Case 4 (with Bealcorp to N.E.)	3100 ⁽¹⁾	5960 ⁽¹⁾	5300 ⁽²⁾	6550 ⁽³⁾

Note:

- (1) Edic - Clay 345 kV at 1434 MW STE rating for loss of Clay-Edic 345 kV and Clay 345-Clay 115 kV
(2) Pleasant Valley - Leeds 345 kV at 1724 MW STE rating for loss of Pleasant Valley - Athens 345 kV.
(3) Sprbrook-Dunwoody 345 kV Ckt 1 at 3862 MW STE rating for loss of Fishkill-PI Vile, Fishkill-Wood A, Wood A-PI VileW 345 kV and PI Vile345-PI Vile13.

TABLE 4.2.1.W4
NYCA Inter-Area Bulk Power System Emergency Thermal Transfer Limits (MW)
Winter Peak

Case	NY → NE	NE → NY	NY → PJM	PJM → NY
Case 1 - (w/o Bealcorp)	2000 ⁽¹⁾	1800 ⁽²⁾	750 ⁽³⁾	2725 ⁽⁴⁾
Case 2 (with Bealcorp to SENY)	2350 ⁽¹⁾	1350 ⁽²⁾	775 ⁽³⁾	2700 ⁽⁴⁾
Case 3 (with Bealcorp to PJM)	2225 ⁽¹⁾	1550 ⁽²⁾	775 ⁽³⁾	2775 ⁽⁴⁾
Case 4 (with Bealcorp to N.E.)	2400 ⁽⁵⁾	1550 ⁽²⁾	775 ⁽³⁾	2700 ⁽⁴⁾

Note:

- (1) CTNY398 - Pittsley 345 (73117-74344) at 1801 MW STE rating for loss of Reactor-Sand Bar 115kV & Millstein #3.
- (2) Norwalk Harbor - Northport 138 kV (73166 - 75053) at 428 MW STE rating for loss of Pittsley-Fishkill and CTNY398 - Pittsley 345 kV.
- (3) E. Twarda - Hired 230 kV (382-75413) at 588 MW STE rating for loss of Erie E-S, Ripley 230 and E. Sayre-N. Wav 115 kV
- (4) Homer Cy - Westco 345 kV (479-75407) at 775 MW normal rating for pre-contingency loadings.
- (5) E. Twarda - Hired 230 kV (382-75413) at 588 MW STE rating for loss of Homer Cy-Westco345 and E. Sayre-N. Wav 115 kV
- (6) CTNY398 - Pittsley 345 (73117-74344) at 1135 MW normal rating for pre-contingency loading.

Table 4.2.2.S1
 Basicorp Project
 Summer Peak 115 kV Line Flows (MW)
 Case1 (Without Basicorp)

Description	Normal/LTE Rating (MW)	Base Case	L/O Greenbush- Reynolds Rd	L/O Greenbush- Schodack E	L/O Albany- Greenbush #1	L/O Albany- Greenbush #2	L/O Albany-Trinity #2	L/O Albany- Kumkill
Albany-Greenbush #1	182/187	132	81	114	O/S	220	145	139
Albany-Greenbush #2	182/197	132	81	114	220	O/S	145	139
Greenbush-Reynolds Rd	237/293	122	O/S	187	83	83	145	140
Greenbush-Schodack E	129/153	105	111	O/S	103	103	105	102
Valken-Hudson	124/138	101	107	112	99	99	101	99
Alco-N Catskill	116/120	103	103	106	103	103	103	104
Albany-Trinity #1	188/244	103	138	109	118	118	170	115
Albany-Trinity #2	147/178	110	147	118	125	125	O/S	122
Albany-Bathlehem	200/208	133	128	137	131	131	131	298
Albany-Kumkill	248/277	168	170	161	187	167	167	O/S

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Table 4.2.2.52
Beacon Project
Summer Peak 115 kV Line Flows (MW)
Case 2 (Beacon to SENY)

Description	Normal TE Rating (MW)	Base Case	L/O Greenbush-Reynolds Rd	L/O Greenbush-Schock E	L/O Albany-Greenbush #1	L/O Albany-Greenbush #2	L/O Albany-Trinity #2	L/O Albany-Kumkill
Albany-Greenbush #1	182/197	127	94	105	O/S	211	138	133
Albany-Greenbush #2	182/197	127	94	105	211	O/S	138	133
Greenbush-Reynolds Rd	237/293	78	O/S	128	41	41	99	95
Greenbush-Schock E	129/158	121	125	O/S	119	119	121	119
Vailin-Hudson	124/138	118	119	128	114	114	116	114
Albany-Kumkill	119/120	114	113	119	114	114	114	114
Albany-Trinity #1	199/244	95	117	102	109	109	165	108
Albany-Trinity #2	147/178	101	125	108	118	118	O/S	113
Albany-Bellefleur	200/208	142	139	147	141	141	140	288
Albany-Kumkill	248/277	156	159	151	157	157	158	O/S

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Table 4.2.2.W1
Berkcorp Project
Winter Peak 115 kV Line Flows (MW)
Case1 (Without Berkcorp)

Description	Normal/LTE Rating (MW)	Base Case	L/O Greenbush-Reynolds Rd	L/O Greenbush-Schoelack E	L/O Albany-Greenbush #1	L/O Albany-Greenbush #2	L/O Albany-Trinity #2	L/O Albany-Krumhilt
Albany-Greenbush #1	228/250	152	72	137	O/S	253	188	159
Albany-Greenbush #2	228/250	152	72	137	253	O/S	188	159
Greenbush-Reynolds Rd	237/283	180	O/S	227	145	145	219	210
Greenbush-Schoelack E	180/187	87	88	O/S	84	84	87	84
Velich-Hudson	145/158	80	88	88	78	78	80	77
Alco-N Catskill	118/120	81	80	85	81	81	81	82
Albany-Trinity #1	214/258	127	181	132	144	144	220	140
Albany-Trinity #2	190/178	135	193	140	153	153	O/S	148
Albany-Bethlehem	243/248	115	108	119	114	114	113	298
Albany-Krumhilt	248/277	183	190	179	184	184	185	O/S

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Table 4.2.2.V2
Bealcorp Project
Winter Peak 115 kV Line Flows (MW)
Case 2 (Bealcorp to SEINT)

Description	Normal/LTE Rating (MW)	Base Case	L/O Greenbush- Reynolds Rd	L/O Greenbush- Schodack E	L/O Albany- Greenbush #1	L/O Albany- Greenbush #2	L/O Albany- Trinity #2	L/O Albany- Kumkill
Albany-Greenbush #1	229/250	146	86	127	O/S	242	181	153
Albany-Greenbush #2	229/250	146	86	127	242	O/S	181	153
Greenbush-Reynolds Rd	237/293	141	O/S	186	86	99	169	161
Greenbush-Schodack E	168/187	104	112	O/S	102	102	105	102
Valley-Hudson	145/159	98	103	107	94	94	97	94
Alco-N Catskill	119/120	93	92	86	93	93	93	94
Albany-Trinity #1	214/256	119	169	124	134	134	205	130
Albany-Trinity #2	169/178	128	109	132	143	143	O/S	139
Albany-Berkeham	243/249	128	121	130	124	124	123	298
Albany-Kumkill	249/277	172	177	188	174	174	175	O/S

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Table 42.3
Voltage-Constrained Transfer Limit
Bus Voltages (in Kilovolts)

Bus	Case 1 Total East = 5,170 MW	Case 1 LJO NSCOT89	Case 1 LJO Marry South	Case 2 Total East = 4,467 MW	Case 2 LJO NSCOT89	Case 2 LJO Marry South
New Scotland 345 KV	349.84	336.82	333.70	354.13	348.82	347.86
New Scotland 115 KV	118.26	112.84	112.00	116.69	115.39	115.15
Alps 345 KV	350.79	342.39	340.27	352.11	346.80	346.17
Gilboa 345 KV	350.89	340.66	341.50	355.83	351.39	351.87
Leeds 345 KV	348.88	343.78	338.66	352.82	350.01	347.41
Athens 345 KV	348.40	343.67	338.42	352.17	346.77	347.11
Pleasant Valley 345 KV	344.31	343.37	340.80	344.49	344.48	342.63
Hurley Ave 345 KV	344.66	342.06	338.43	346.22	345.33	343.10
Roseton 345 KV	345.17	345.17	343.17	346.17	345.17	345.17
Pierhill 345 KV	345.73	345.22	343.86	346.58	345.99	344.86
Millwood 345 KV	349.86	349.19	348.90	348.42	348.24	348.01
Spentbrook 346 KV	351.89	351.32	351.15	351.23	351.07	350.96
Merry T1 345 KV	341.91	331.31	333.26	351.90	351.01	350.46
Edin 345 KV	340.95	329.90	331.87	351.34	348.97	348.61
Fraser 345 KV	345.16	331.36	335.62	354.82	348.64	348.84
Oakdale 346 KV	336.18	323.58	311.86	348.17	345.85	334.83
Coopers PC 345 KV	343.31	330.50	348.89	351.31	344.71	355.85
Rock Tavern 345 KV	347.41	342.87	350.20	350.18	347.63	352.53
Ramapo 345 KV	355.16	353.87	355.42	355.50	354.82	355.90
Buchanan N. 345 KV	354.65	353.81	354.60	354.67	354.15	354.73
Buchanan S. 345 KV	352.47	351.69	351.84	352.21	351.91	352.02

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Table 4.2.4
Design Requirement
Stability Case List

<u>Case No.</u>	<u>Description</u>	<u>Result</u>
1	CE38 - LLG fault at Marcy, Marcy-Coopers/Edic-Fraser double circuit	Stable
2	TE32 - 3 Phase fault at New Scotland, New Scotland #77 bus fault	Stable
3	TE35 - 3 Phase fault at Leeds, Leeds-Athens #91	Stable
4	RottNscot - 3 Phase fault at Rotterdam 115 kV, Rotterdam-New Scotland 115 kV # 13	Stable
5	Nscot115 - 3 Phase fault at New Scotland 115 kV, New Scotland-Bethlehem 115 kV #1	Stable
6	RottBemp - 3 Phase fault at Rotterdam 230 kV, Rotterdam-Bear Swamp 230 kV #E205	Stable
7	NE10 - SLG at Northfield, Alps-Berkshire-Northfield 35 kV. Stuck 5T breaker, reject Northfield #3 and #4.	Stable
8	Single phase fault at Leeds 345 kV substation with stuck breaker. Backup cleared at 12 cycles.	Stable

[illegible]

Short Circuit Analysis

LOCATION	TODAY'S SYSTEM 1PH/3PH AMPS	TODAY'S SYSTEM 1PH/3PH MVA	SYSTEM ADDITIONS 1PH/3PH AMPS	SYSTEM ADDITIONS 1PH/3PH MVA	TODAY'S SYSTEM 1PH/3PH AMPS	TODAY'S SYSTEM 1PH/3PH MVA	SYSTEM ADDITIONS 1PH/3PH AMPS	SYSTEM ADDITIONS 1PH/3PH MVA	TODAY'S SYSTEM 1PH/3PH AMPS	TODAY'S SYSTEM 1PH/3PH MVA	SYSTEM ADDITIONS 1PH/3PH AMPS	SYSTEM ADDITIONS 1PH/3PH MVA
LEEDS 345KV BUS FAULT	22732	13582	28717	17505	27807	16815	33822	19505	24032	14358	20038	17135
HURLEY 345KV BUS FAULT	13883	8301	14342	8480	17182	10273	17914	10582	14888	8895	15510	9170
PLEASANT VALLEY 345KV BUS FAULT	25853	15528	28535	18511	38659	23047	40100	23776	33401	18859	34718	20585
NORTHFIELD MTLN 345KV BUS FAULT	15033	11594	18555	11458	19137	11434	18288	11412	16573	9802	16850	9875
REYNOLDS RD 115KV BUS FAULT	32348	8437	36516	7180	36584	7331	42335	8278	31842	6548	35338	7106
N. TROY LN #16 R-16 (88G)	31783		35589		35134		40833		31283		35122	
GREENBUSH LN #8 R-4 (88G)	31002		34022		34958		38875		30274		34347	
MENANDS LN #2 R-2 (88G)	30886		34646		35421		40853		30875		34685	
FEJURA BUSH LN #17 R-17 (88G)	30228		34517		34385		38530		28782		33822	
TR #3 R-3 (88G)	32365		36600		36883		42321		31885		35323	
BUS TIE BKR R-43 (88G - 33G)	23371		25303		26883		31845		28106		27379	
CAP BANK BKR R-21 (33G)	32390		36598		36883		42315		31848		35316	
BUS TIE BKR R-44 (88G - 77G)	23564		25330		26872		31830		28091		27367	
WYNANTSBUILL LN #13 R-13 (77G)	31570		35383		36123		40820		31283		35111	
RIVERSIDE LN #4 R-4 (77G)	30316		34270		35531		40554		30771		34532	
ARSENAL LN #31 R-31 (77G)	31838		35878		38483		41780		31578		35843	
TR #2 R-32 (77G)	25405		27434		29688		33810		28608		28644	
RIVERSIDE 115KV BUS FAULT	25834	5085	27512	5387	28553	5854	33771	5485	25853	5139	28484	5577
NORTH TROY 115KV BUS FAULT	14084	2803	17885	3480	17177	3416	20732	4054	14876	2959	17519	3504
MENANDS 115KV BUS FAULT	25715	5113	27585	5404	30048	5875	33481	6558	28023	5174	28783	5638
FEJURA BUSH 115KV BUS FAULT	27401	5448	27750	5423	29484	5852	30437	5948	25534	5077	2889	5139
ARSENAL 115KV BUS FAULT	12439	2473	12882	2478	15883	3118	16411	3205	13582	2700	14186	2788
GREENBUSH 115KV BUS FAULT	29384	5832	31522	6160	34482	6850	38488	7623	28871	5853	32549	6438

* Includes Athens, Bethlehem Rapower, Glenville, Stone Holdings, Sargent and Bedco, Inc.

**Table 4.4.1
Extreme Contingency
Stability Case List**

Case No.	Description	Result
Plant Outage		
1	Loss of ESNP Plant due to 3 phase fault. Plant cleared at 5 cycles.	Stable
2	Loss of Athens Plant due to 3 phase fault. Plant cleared at 5 cycles.	Stable
3	Loss of Bethlehem Plant due to 3 phase fault. Plant cleared at 5 cycles.	Stable
Substation Outage		
4	Loss of Reynolds 345 kV Substation due to 3 phase fault. Substation cleared at 5 cycles.	Stable
5	Loss of New Scotland 345 kV Substation due to 3 phase fault. Substation cleared at 5 cycles.	Stable
6	Loss of Alps 345 kV Substation due to 3 phase fault. Substation cleared at 5 cycles.	Stable
7	Loss of Athens 345 kV Substation due to 3 phase fault. Substation cleared at 5 cycles.	Stable
8	Loss of Leeds 345 kV Substation due to 3 phase fault. Substation cleared at 5 cycles.	Stable
9	Three phase fault @ Leeds 345 kV Substation with stuck breaker. Backup cleared at 12 cycles.	Stable

Table 4.4.2
Critical Clearing Time
Stability Case List

Case No.	Description	Critical Clearing Time
1	Three phase fault at New Scotland on New Scotland-Leeds 345 KV circuit	17 cycles without ESNP Project 18 cycles with ESNP Project
2	Three phase fault at Albany 115 KV on Albany-Greenbush 115 kv circuit	13 cycles without ESNP Project 13 cycles with ESNP Project
3	Three phase fault at Greenbush 115 KV on Greenbush-Reynolds Road 115 KV circuit	15 cycles without ESNP Project 16 cycles with ESNP Project
4	Three phase fault at Reynolds Road 115 KV on Reynolds Road 345/115 KV bank	17 cycles without ESNP Project 17 cycles with ESNP Project

Review of System Reliability Impact Study

Interconnection Study For the Empire State Newsprint Project

NYISO REVIEW TEAM

NOVEMBER 9, 2001

NISAR SHAH (LEAD), CORY SMITH, KENNETH LAYMAN

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Introduction

Basicorp-Empire Development Company, LLC (Basicorp) has proposed the Empire State Newsprint Project (ESNP) consisting of an electric generating plant and a recycled newsprint manufacturing plant to be located in the city of Rensselaer, N.Y. The generating plant will consist of two 161 MW gas turbine units and one 297 MW steam unit which will provide a net maximum output of 603 MW in the summer and 680 MW in the winter. This generating plant is proposed to be connected to the Niagara Mohawk Power Corporation (NMPC) Reynolds Road 345 kV Substation by a new approximately 9 mile long overhead 345 kV transmission line. Basicorp expects to commence commercial operation of the plant in the summer of 2004.

Basicorp engaged Washington Group International, Inc. (WGI) to perform an interconnection study to assess the feasibility of interconnecting this 603 MW net generating plant into Niagara Mohawk's Reynolds Road 345 kV Substation.

The purpose of the study is to determine the impact of the Project on the reliability of the New York State Bulk Power System (NYBPS) and to ensure that the resulting bulk power system would conform to all applicable planning standards and design criteria, including those of NYSRC¹, NPCC² and NERC³. The NYISO's Operating Committee (OC) approved a work scope on 2/14/01 that required a report to be prepared following the report outline specified in the NYISO's SRIS Criteria and Procedures. Basicorp provided a report titled "Interconnection Study For the Empire State Newsprint Project", dated July 2001, which was subsequently revised on October 16, 2001 and November 2001 in response to NYISO's initial comments. This November report is the subject of this review.

¹ *New York State Initial Reliability Rules, New York State Reliability Council, September 10, 1999.*

² *Basic Criteria for Design and Operation of Interconnected Power Systems (NPCC Basic Criteria); Northeast Power Coordinating Council; April 9, 1995.*

³ *NERC Planning Standards; North American Electric Reliability Council; September 1997.*

Report Content

Description of Information Presented for Review

In order to properly evaluate a project's reliability impact on the New York State Bulk Power System (NYBPS), a minimum amount of analysis results and supporting data is required. As of the writing of this review report, Besicorp through their consultant WGI, has submitted the following documentation and data:

- 1) Approved Study Scope.
- 2) Study report.
- 3) Appendices containing analysis results including power flow and stability plots, TLTG output and one line diagrams.
- 4) Additional TLTG output and Stability plots in response to NYISO's October 18 review.

Information Needed to Complete Review

All information needed to complete this review has been received.

Transfer Analysis

- 1) Under tables 4.1.1.S2 and 4.1.1.W2, case 3, dispatch to PJM, several generators are shown motoring (<0 MW). In addition, several generators within the New York state are shown motoring in the TLTG output. Bowline and Lovett, for example, are shown dispatched to -166 MW each while evaluating NE-NY transfers. NYISO staff was not comfortable with the generation dispatch and asked Besicorp to correct the errors and make at least one TLTG run to demonstrate that there is no significant impact on the results. Besicorp complied with NYISO's request and showed that with proper dispatch, the transfers will change only by 10 MW. NYISO staff is satisfied that correcting the errors and making a complete re-run of the analysis will not materially change the study results, and therefore, is not necessary. NYISO staff is satisfied with the results as presented.
- 2) The report identifies in the Executive Summary and in the tables that the project will cause the Central East and the Total East transfer limits to decrease by 475 MW and 775 MW respectively. Since the project will be operated in accordance with the NYISO Security Constrained Unit Commitment (SCUC) and Security Constrained Dispatch (SCD), this decrease in transfer limit can be corrected through a variety of generation dispatches if necessary, and therefore, does not adversely impact system reliability.

Stability Analysis

- 1) Stability results indicate that the system remains stable and well damped when tested for design contingencies after the project is added in the system. For transfer analysis, stability runs were tested for Central East emergency transfer levels of 2810 MW (including 10% margin over emergency thermal) and the system remains stable and well damped. NYISO staff is satisfied that stability analysis does not show any adverse impact on the system.
- 2) NYISO staff is satisfied with the Critical Clearing Time (CCT) analysis of several 345 kV and 115 kV substations in the vicinity of the project. The CCT varies between 13 cycles and 19 cycles which appear to be higher than the back-up breaker trip settings.

Extreme Contingency Analysis

NYISO staff is satisfied with the Stability analysis of the Extreme Contingencies studied. These contingencies included plant and substation outages, and stuck breaker test at Leeds substation.

Short Circuit Analysis

- 1) The short circuit analysis was performed by Niagara Mohawk Power Corporation (NMPC) and the summarized results have been included in the report as Table 4.3. NMPC has identified one 115 kV circuit breaker (R-63) at Reynolds Road substation

that will be overdutied and should be replaced. All other NMPC circuit breakers, according to the report (page 16), have sufficient capability to meet the additional fault current due to ESNP project. Table 4.3 does not indicate individual circuit breaker ratings to compare the fault levels against. NMPC appears to have a policy of not publishing circuit breaker ratings. The table shows several locations where fault current exceeds 40 kA. It is not clear in the report whether the breakers at those locations have higher ratings or whether the individual breaker analysis indicate the actual fault levels are within the breaker ratings. NYISO staff contacted NMPC to make sure there is no oversight. It was confirmed that the project causes only breaker R-63 to be overdutied and should be replaced. All other circuit breakers are within their interrupting capability. NYISO staff is satisfied with the results of the short circuit study.

General Comments

ISO New England (ISO-NE) has asked Besicorp and their consultants to perform some additional analysis to demonstrate that the project does not adversely impact the reliability of New England system. Besicorp agreed to comply with ISO-NE's request and will be working closely with ISO-NE's staff to complete the additional analysis.

Conclusion

Changes, Explanations, and Further Assessments

The results presented in the study report indicated that the Empire State Newsprint Project would not adversely impact the reliability of the New York State Bulk Power System. This assumes that the plant will be operated in accordance with the NYISO operational procedures and limits through its day-ahead Security Constrained Unit Commitment (SCUC) and real time Security Constrained Dispatch (SCD). The project, however, needs to complete the following actions prior to commercial operation of the plant:

1. Replace one 115 kV circuit breaker (R-63) at Reynolds Road substation.
2. Establish procedure to trip some or all of the ESNP plant output to protect the transformer against loss of Reynolds Road-Alps 345 kV line.

NYISO staff is satisfied with the SRIS report and recommends its approval.