



**New York Regional Interconnect Inc.**  
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Albany, New York 12207

February 14th, 2006

Mr. John Adams  
Director of System and Resource Planning

New York Independent System Operator  
3890 Carmen Road,  
Schenectady, New York  
12303

Re: New York Regional Interconnection Solutions Proposal to the RNA

Dear John,

It is truly our pleasure to enclose herewith the New York Regional Interconnect Inc.'s ("NYRI") formal response to the New York Independent System Operator's ("NYISO") solicitation for needed reliability solutions, dated December 22<sup>nd</sup>, 2005, following the first phase of the Reliability Needs Assessment ("RNA"). The NYRI Project, which is nominally a 1200 MW HVDC transmission facility, is planned to interconnect entirely within the NYISO's control area between Edic Substation in the town of Marcy and Rock Tavern Substation in the town of Windsor, both in New York State. The NYRI Project has been in development for approximately three years and has been refined in ways that allow its design to bring substantial environmental and technical excellence, as well as sustainable reliability benefits to the Bulk Power Transmission System of New York.

The singular purpose of NYRI is the focus on the development and construction of transmission assets that allow for the provision of true non-discriminatory access to the energy markets in New York. NYRI's core concentrations are to enhance reliability and offer transportation products that will improve market efficiencies for customers and ratepayers. NYRI has evolved and responded with clear vision to contribute solutions in reversing the national trend of underinvestment in the transmission grid. It is NYRI's intention to: complete the permitting, construction, commissioning, and operation of the proposed new transmission facility that will improve the reliability and security of the New York Bulk Power Transmission System; to operate the proposed transmission facility so as to enable continued market development and greater competition; to provide access for ratepayers seeking a more diversified supply base of technologies and fuel sources, and for generators seeking to offer their energy products to deep load pockets; to facilitate sustainable improvements in air quality, and; to provide reliability enhancements that will effectively reinforce and stabilize the interconnected AC system.

Mr. John Adams, Director of System and Resource Planning  
New York Independent System Operator, Schenectady



I appreciate your and the entire NYISO staff's review and consideration of this submittal, and can assure you that I will help focus the entire NYRI leadership team on providing any additional information you may require to complete your evaluation.

Yours very truly,

**NEW YORK REGIONAL  
INTERCONNECT INC.**

A handwritten signature in black ink that reads "William G. May". The signature is written in a cursive style with a large, looping initial "W".

William G. (Bill) May  
NYRI Project Manager

e-mail: [wgm@nyri.us](mailto:wgm@nyri.us)

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## **Introduction**

The assembled document herewith is New York Regional Interconnect Inc.'s ("NYRI") formal response to the New York Independent System Operator's ("NYISO") solicitation for needed solutions dated December 22<sup>nd</sup> 2005 following the first phase of the Reliability Needs Assessment ("RNA") approved by the NYISO Board of Directors on December 19<sup>th</sup> 2005. More particularly, pursuant to section 6.0 of the NYISO's Comprehensive Planning Process for Reliability Needs contained in Attachment Y of the NYISO Open Access Transmission Tariff, the NYISO has solicited solutions to reliability needs identified in the RNA. The RNA identified future reliability needs in NYISO Zones G-K resulting from load growth, planned generating unit retirements and, more generally, increasing dependency on the existing New York Bulk Power Transmission System. The NYRI Project has identified its developing transmission project program as having a very high potential for providing a comprehensive solution to many of the NYISO's stated concerns. The NYRI Project addresses both strategic technical and power market enhancements to the New York Bulk Power System on many different levels. By copy of this solution response to the subject solicitation, NYRI hereby requests full consideration in the NYISO Comprehensive Planning Process that is currently underway.

New York Regional Interconnect Inc.'s fundamental development plan that has matured over the last three years has a strategic mandate of demonstrating the value of a truly independent transmission company. The singular purpose and intent of NYRI is to focus on the development of transmission assets that allow for the provision of non-discriminatory access to New York's energy markets with a core concentration on reliability enhancement. In so doing, the proposed NYRI Project will offer transportation products, greater choice and market efficiencies for customers, ratepayers and generators. NYRI has evolved and has responded with clear vision to contribute solutions in reversing the national trend of underinvestment in the transmission grid. It is NYRI's objective to permit, construct, commission, and operate the proposed new transmission enhancement (to the New York Bulk Power Transmission System) so as to enable continued market development, and greater competition from a wider supply base of technologies and fuel sources, to provide substantial, sustainable improvements in air quality, and to enhance reliability by reinforcing the interconnected AC System.

The New York Regional Interconnection Project has been in active development since early 2003. The Project proposes to construct a bipolar, bi-directional, high voltage direct current ("HVDC") transmission line extending from the Edic Substation in the Town of Marcy, Oneida County, to the Rock Tavern Substation in the Town of New Windsor, Orange County. The HVDC transmission system will be designed and operated with a rated power flow of 1200 MW at a nominal voltage of  $\pm 400$  kV DC. The Project is scheduled to be in commercial operation for the summer of 2011. An important feature of the NYRI Project is that it intends to receive and subsequently deliver power entirely within the New York Control Area (NYCA).

As a result of its diligence in managing the development program over the past three years, NYRI is poised to immediately take several major steps towards expanding and reinforcing New York's high-voltage transmission system to meet the needs of New York State in the twenty-first century. The NYRI Project has been designed to increase the existing network's capacity for the transfer of bulk electrical power from centers of lower cost, surplus and often cleaner generation units in the western and central regions of the state to centers of growing demand in the southeast. The NYRI Project will continuously function to relieve chronic congestion caused by some of New York's most seriously constrained transmission bottlenecks. With both Federal and State regulatory planning agencies giving high priority to ensuring the adequacy of resources required to secure the supply of electrical power, the NYRI Project is a viable, timely, directly pertinent and well-prepared response to the needs identified in the RNA.

On November 17th, 2005, the Federal Energy Regulatory Commission (FERC) published proposed reforms which acknowledge the significant contribution that can be made by independent transmission companies, such as New York Regional Interconnect Inc. The FERC policy initiatives specifically address the need for new transmission investment that will serve to strengthen network reliability, increase efficiency, reduce congestion and enhance the operation of the market. NYRI will continue to pursue all applicable features of Federal and State Energy Policy that will allow the NYRI Project to reach fruition, thereby meeting the identified bulk power transmission system needs and providing maximum benefit to the New York power market.

With a nominal transfer capacity of 1200 MW, the NYRI Project will make a significant contribution towards meeting both medium and long-term reliability and capacity requirements in the Lower Hudson Valley. The NYRI Project provides a cost effective alternative to building new oil or gas-fired generators within densely populated urban areas of the southeast region or postponing the announced intended retirement of existing generating facilities that have reached or exceeded their design life. NYRI believes strongly that increasing transmission capacity between zones C and G will provide positive reliability, environmental and economic impacts throughout New York State resulting in more comprehensive benefits and longer term solutions to the Bulk Power System's growing needs.

The NYRI Project, when considered among all other practical alternatives to correct the reliability problems identified by the NYISO, addresses the reliability needs in a more comprehensive and substantive way (as compared with other alternatives) by providing for increased power transfers between all regions of the state. Increasing transmission capacity across key electrical interfaces will do far more than avoid potential violations of reliability criteria in the short and medium term. It will lay the foundation for long-term solutions to a catalogue of problems confronting the State's electrical power system, including:

- persistent congestion and its attendant costs;
- a bulk power market confounded by extreme inter-regional price differentials;
- regional wholesale prices at levels that expose ratepayers to the chronic inefficiencies of the electrical infrastructure including some of the highest retail prices in the nation;

- an increasingly dangerous over-dependence on oil and gas-fired generation contributing to increased levels of emissions of greenhouse gases and noxious pollutants from the State's power plants, especially in densely populated urban areas;
- constraints in existing transmission infrastructure that inhibit the ability to deliver large amounts of renewable energy products from areas upstate.

It is the purpose of this RNA solution submittal to demonstrate that NYRI's proposed significant addition to the transmission network is the single most important and cost-effective element of a long-term, comprehensive strategy for the development of New York State's electrical bulk power system. The capacity addition brought about by NYRI's proposed major transmission system enhancement allows for a much wider range of energy supply choices and expanding market opportunities in the future.

### **Project Description & Interconnection to Transmission System**

New York Regional Interconnect Inc. proposes to construct and operate a bipolar, bi-directional, high voltage direct current (HVDC) transmission line extending from the Edic Substation in the Town of Marcy, Oneida County, to the Rock Tavern Substation in the Town of New Windsor, Orange County. The HVDC transmission line will be designed and operated with a rated power flow of 1200 MW at a nominal voltage of  $\pm 400$  kV DC. The NYRI Project is scheduled to be in commercial operation for the summer of 2011.

The bipolar system will be designed to operate as two independent electrical poles such that a forced outage on one electrical pole will not affect the operation of the other electrical pole. When one electrical pole is out of service, the other electrical pole will operate in a monopole configuration at 50% of the rated power flow (600 MW) with a metallic return conductor providing the return path for the DC current.

The HVDC line will terminate at new AC/DC converter stations in the vicinity of both the Edic and Rock Tavern Substations. Interconnections with the existing New York State Bulk Power Transmission System Grid are proposed at Niagara Mohawk's/National Grid's existing Edic Substation and at Central Hudson Gas & Electric's existing Rock Tavern Substation. The interconnections between the converter stations and the existing substations will be a single circuit 345kV AC transmission line.

A system single line drawing is attached as Appendix A; a single line interconnection drawing is attached as Appendix B, and; AC/DC converter station outline for the interconnections at Edic and Rock Tavern substations is attached as Appendix C.

The HVDC transmission line will be designed in accordance with all applicable national and state codes and regulations, and in particular the National Electrical Safety Code. It will extend south from the Marcy area and potentially cross seven counties in New York between the northern and southern converter stations. The preferred route proposes to utilize or parallel existing, operating railroad and energy rights-of-way and corridors for 95% of the entire distance.<sup>1</sup> The NYRI Project presently has electric transmission development rights on 253 miles of existing railroad rights-of-way. These lease rights have been acquired from the New York Susquehanna and Western and Norfolk Southern railroads.

In addition to the route controlled by NYRI (described above), several alternative segments to this route are being studied in response to regulatory assessment requirements for electric transmission lines pursuant to Article VII of the New York State Public Service Law. The described controlled route and incremental study route segments are depicted graphically in Appendix F.

The transmission line will be constructed overhead on steel structures designed to achieve maximum span length practicable. In addition, underground construction (cabling) will be considered by the NYRI Project when required by regulation or when otherwise necessary in order to minimize impact in unique areas such as public parks and protected scenic resources.

### **Converter Stations**

The northern and southern AC/DC converter stations will be similar in design and will each occupy a footprint up to approximately 30 acres. Additional space for voltage support equipment (at Rock Tavern), and for visual, acoustical and other impact mitigation purposes may require an additional 10-20 acres for each converter station. Converter station design will include:

- outdoor 345 kV switchyard;
- six single-phase three winding converter transformers;
- DC smoothing reactors;
- converter building housing thyristor converter valves, auxiliary power systems, cooling equipment, control & protective relay systems and fire protection systems;
- 345 kV AC filter yard with two AC filter banks to absorb harmonic currents and provide reactive power;
- DC switchyard and DC filter yard;
- Dynamic Voltage Support Equipment Package at Rock Tavern (the southern terminus).

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<sup>1</sup> NYRI's Article VII Application will contain approximately 385 miles of route segments in total, including both preferred and alternate routes.

## **Project System Benefits and NYISO Reliability Needs**

NYRI's proposed transmission project will provide significant benefits to New York State, its rate-payers, and the energy markets that the NYISO administers by:

- establishing another strong strategic transmission path between upstate New York and southeastern New York control zones. Initial economic dispatch modeling commissioned by NYRI indicates energy price reductions in the hundreds of million dollars annually by reducing current congestion pricing adversely affecting the New York Market;
- facilitating the transfer of up to 1200 MW of lower cost upstate generation into the lower Hudson Valley area of New York. The additional capacity delivered from the project is a direct response to the basic compensatory MW needs identified in the RNA. Additional capacity itself will also add to system reliability and place significant downward pressure on energy prices in zone G and south;
- providing reliability improvements including an alternate delivery route for upstate generators, as well as significantly reducing or eliminating voltage limitations on the UPNY-SENY and Central East interfaces;
- reducing loss of load expectations for both the New York Control Area and NYC;
- providing benefits by addressing voltage and stability issues by including in the NYRI Project's conceptual design provisions for dynamic or static reactive power support equipment and features. These specific needs will be identified during the SRIS studies and judiciously incorporated into the Project's subsequent detailed engineering design. The conceptual design contemplates the NYRI Project delivering up to 300 MVAR's of supplementary reactive power support (additional to its own reactive load requirements) to the system at Rock Tavern;
- providing a large amount of capacity directly to the southeast region without significantly increasing short circuit levels;
- providing the NYISO with the ability to precisely control power on the HVDC line thereby improving stability and steady state voltage performance of the New York system;
- maximizing utilization of existing generation assets in Zones A-E thus improving fuel diversity and deliverability of renewable energy to southeast New York;
- adding 1200 MW capacity resources to Zone G while having a positive effect on transfer limits and voltage and stability limits at the UPNY-SENY and Central East Interfaces;
- reducing the amount of pollutants (SO<sub>x</sub> and NO<sub>x</sub>) emitted by power plants - specifically in the southeast and Lower Hudson Valley as a result of more compliant and benign generating facilities gaining broader access to the market;

In addition, future benefits of the NYRI Project include the capability to expand the system's transfer capacity by an incremental 1200MW - with nominal effort and cost, and without the need to make major conductor augmentation and/or land acquisition.

### **Evidence of a Commercially Viable Technology**

The Project design engineer is Teshmont Consultants, LP of Winnipeg, Manitoba, Canada. Teshmont has been the premier consulting firm providing HVDC system design services and engineering since 1966. Further details are available at: <http://www.teshmont.com>

HVDC systems have been proven in the commercial market place for performance and reliability over several decades. An HVDC primer is included in Appendix G. This document describes much of the design criteria that will be used in the NYRI Project. Additionally, a technical paper is included in Appendix D. This paper discusses the reliability of HVDC systems from recent operational experience.

### **Demonstration of Site Control**

NYRI has forwarded evidence of site control to the NYISO under separate cover. That site control remains in place consistent with those transmitted documents.

### **Status of Contracts Under Negotiation and Financing Arrangements**

NYRI is a privately held New York Corporation. Currently it is not negotiating any contractual arrangements with end users of the Project. NYRI is fully capitalized for the purposes of comprehensive permitting and development of the Project. Construction financing will commence upon completion of the NYSPSC Article VII Certification and all other pertinent State and Federal proceedings.

### **Status of NYISO Interconnection Process**

NYRI completed its interconnection application with the NYISO on May 13<sup>th</sup>, 2005. The project was assigned an interconnection queue position of 191. NYRI executed a feasibility study agreement with the NYISO in January 2006 and has fully mobilized in preparation to complete those studies on an expedited basis. NYRI is working with the NYISO to expedite the delivery of the required load flow cases from NYISO in order to complete those studies. NYISO has indicated it expects to have the requisite base case deliverables to NYRI by the end of February 2006. NYRI will seek to share the results of the feasibility studies and all other technical design information contemporaneously as may be required to support the Comprehensive Planning Process for Reliability Needs assessment.

Upon completion of the Feasibility Studies and obtaining the respective approvals, NYRI is planning to move directly to the System Reliability Impacts Study Process ("SRIS") and expedite the required studies to completion. Initial studies by the project have not indicated any reason to suspect unreasonable results with either study or major negative technical or environmental impacts from the Project's interconnection to the New York Bulk Power Transmission System.

## **Project Permitting**

NYRI is currently preparing an application for a Certificate of Environmental Compatibility and Public Need under Article VII of New York State Public Service law. The Project Leadership Team has met with the Department of Public Service Staff numerous times during the development of the application documents. The most recent meeting on February 8<sup>th</sup>, 2006 addressed the public outreach program planned to start with the public at-large in mid March 2006. The Article VII application documentation is approximately 90% complete. The necessary public outreach is currently commencing and is critical to finalizing the application. The anticipated filing for the Article VII application is May 2006. Discussions with the New York Department of Public Service staff have indicated that the NYRI Project's planned duration of sixteen months to obtain certification is reasonable.

The receipt by the project of a New York State Public Service Commission issued Certificate of Environmental Compatibility and Public Need removes the burden of filing for local jurisdictional approvals to construct the Project. However, the NYRI Project will also file for and obtain all appropriate Federal approvals including US Army Corp of Engineers Section 404 permits and Federal Aviation Administration ("FAA") approvals, and other required permits.

## **NYRI's Commitment To Public Need and Corporate Citizenship**

The New York Regional Interconnection brings a new vision and spirit to the common need we all share as citizens of New York State. The responsibilities of environmental and technical excellence are the mandates of the entire leadership team as well as of the investors. The stewardship of all New York State's natural resources is a high priority, as is recognizing the need for broad community benefits that are fundamental to the consideration of the Project. NYRI is actively investigating ways and means to allow communities hosting the project's facilities to share proportionately in the many benefits it offers.

## **Project Leadership Team**

Development of the NYRI Project benefits from a senior management team with over 100 years of cumulative experience in New York State Energy Projects. Key Members of the Project Management team include:

❖ **William G. (Bill) May, Project Manager for NYRI**

Bill is an accomplished energy project professional who brings over 28 years of diversified project development, technical management, and team leadership skills to the independent energy project industry. Bill has deployed all of his many technical, commercial and project development skills on numerous development and operating energy projects owned and financed by independent energy producing and processing companies. Recently, Bill served as Project Manager for the Astoria Energy Project in Queens (NYC) from the conceptual stage in 1999 through preparation for construction financing in 2003. Since 1994, Bill has been providing leadership to a significant number of large development projects in New York State, New England and South America. Prior to 1994, Bill worked as a construction manager and field engineer for the General Electric Companies Energy Services Organization, as well as CRS Sirrene Engineers and Constructors. Bill received a Bachelor of Civil Engineering Technology degree from Rochester Institute of Technology.

❖ **Robert L. (Bob) Malecki, Senior Regulatory Affairs Manager for NYRI**

Bob has over 35 years experience working on a wide array of energy projects including managing the Licensing and Environmental Operations Department at an electric and gas utility serving approximately one third of New York State. He is presently specializing on the NYRI project permitting and multi-disciplinary environmental efforts. Bob is an expert in the comprehensive evaluation of impacts related to the siting, construction and operation of energy-related facilities. He has chaired several state and national utility professional committees addressing energy facility development and operation environmental issues. Representing national and state utility trade associations, he has provided expert testimony before the US Congress, US Dept. of Energy, EPA and various state legislative commissions regarding environmental and permitting aspects of electric transmission and generation, gas storage and right-of-way operations. Recently, Bob participated in an investigative committee for the National Academy of Sciences addressing the environmental aspects of Gas Pipeline Right of Way Security and Operations. Bob has a BS degree in Forest Science from the Pennsylvania State University and has performed graduate studies at the SUNY College of Environmental Science and Forestry at Syracuse and the University of Michigan.

❖ **William J. (Bill) Cooney, Senior Project Engineering Manager for NYRI**

Bill is specializing in NYRI's transmission asset development and design engineering management. He is a former high level engineering manager with New York State Electric & Gas Corporation and has over 35 years of experience in the engineering, design, licensing, construction, and maintenance of electric T&D facilities. In addition, Bill has extensive project management experience, has provided expert testimony in Article VII hearings, and has served on industry policy and R&D committees. Bill has a BSEE degree from Rensselaer Polytechnic Institute and an MS degree from New York State University at Binghamton.

Mr. John Adams, Director of System and Resource Planning  
New York Independent System Operator, Schenectady

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## **Appendix A NYRI Project Single-Line Drawing**

Mr. John Adams, Director of System and Resource Planning  
New York Independent System Operator, Schenectady

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## **Appendix B Interconnection Single-Line Drawing**

Mr. John Adams, Director of System and Resource Planning  
New York Independent System Operator, Schenectady

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## **Appendix C Converter Station Outline**

Mr. John Adams, Director of System and Resource Planning  
New York Independent System Operator, Schenectady

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## **Appendix D CIGRE HVDC Reliability Analysis**

Mr. John Adams, Director of System and Resource Planning  
New York Independent System Operator, Schenectady

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## **Appendix E Project Schedule**

NYRI Seeks to provide its project and solutions to the NYISO's Reliability Needs no later than Summer of 2011. A level one development schedule is attached:

Mr. John Adams, Director of System and Resource Planning  
New York Independent System Operator, Schenectady

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## **Appendix F Proposed Route (including alternatives)**

Mr. John Adams, Director of System and Resource Planning  
New York Independent System Operator, Schenectady

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## **Appendix G Siemens HVDC Brochure**