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April 1, 2009

VIA HAND DELIVERY

Hon. Jaclyn Brilling
Secretary
State of New York Public Service Commission
Three Empire State Plaza, 14th Floor
Albany, New York 12223-1350

Re: Case 06-T-0650 - Application of New York Regional Interconnect Inc. for a Certificate of Environmental Compatibility and Public Need Pursuant to Article VII for a High Voltage Direct Current Electric Transmission Line Running Between National Grid's Edic Substation in the Town of Marcy, and Central Hudson Gas & Electric's Rock Tavern Substation Located in the Town of New Windsor

Dear Secretary Brilling:

Pursuant to the Ruling on Scope, Hearing Procedures and Schedule dated January 26, 2009 ("January 26 Ruling") in the above referenced case, enclosed is an original and two (2) copies of the Rebuttal Testimony of Panel H of New York Regional Interconnect Inc. ("NYRI").

1. NYRI's Panel H Rebuttal Testimony is being filed electronically to the Secretary's mailbox (Secretary@dps.state.ny.us) by 4:30 PM on April 1, 2009.
2. An original and two (2) hard copies of the Panel H Rebuttal Testimony are being hand delivered to the Secretary on April 1, 2009.
3. The Panel H Rebuttal filing will be served by 4:30 PM via e-mail on the Service List for Litigation Documents as of February 9, 2009.
4. All Panel H rebuttal filings, both hard copies and electronic, have been labeled clearly to reflect the case number (Case 06-T-0650) and subject matter (Party's name-rebuttal filing).
5. In addition to electronic service, one (1) hard copy of NYRI's Panel H rebuttal testimony has been mailed today to each of the following state agencies:

    i. NYS Department of Environmental Conservation;
    ii. NYS Department of Transportation;
    iii. NYS Department of Agriculture & Markets;
    iv. NYS Office of Parks, Recreation, and Historic Preservation; and

v. NYS Attorney General's Office

Please contact me if you have any questions.

Very truly yours,

COUCH WHITE, LLP

Leonard H. Singer

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LHS/dp
Enclosures
cc: ALJ Michelle Phillips and ALJ Jeffrey Stockholm (via E-Mail w/encl.)
All Parties on Litigation Service List (via E-Mail w/encl.)
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Before the

New York State Public Service Commission

New York Regional Interconnect Inc.

Case No. 06-T-0650

NEW YORK REGIONAL INTERCONNECT INC.

Rebuttal Testimony of Panel H Consisting of:

Christopher Thompson
Stephen Wood
James Mitsche
Richard Bucci
Scott Englander

On Behalf of New York Regional Interconnect Inc.

April 1, 2009

Q. PLEASE STATE YOUR NAME, RESPONSIBILITIES REGARDING THE NYRI PROJECT AND COMPANY AFFILIATION.

A. Christopher Thompson, President, New York Regional Interconnect Inc.

A. Stephen Wood, Project Environmental Consultant, ESS Group, Inc.

A. James Mitsche, Project Consultant, PowerGEM

A. Richard Bucci, Project Engineering Manager, WGI, Inc.

A. Scott Englander, Project Consultant, CRA International

Q. ARE YOU THE SAME INDIVIDUALS THAT PROVIDED DIRECT TESTIMONY FOR NYRI THAT WAS INCLUDED IN APPENDIX I OF NYRI'S APPLICATION?

A. Yes.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. Our testimony rebuts the direct testimony filed by other parties to this proceeding regarding the CARI Thruway Alternate Project.

Q. PLEASE DESCRIBE YOUR UNDERSTANDING OF THE CARI THRUWAY ALTERNATE PROJECT?

A. The CARI Thruway Alternate Project appears to consist of a total of 3 converter stations; 5 AC interconnections to the existing bulk transmission system; 241.6 miles of DC transmission line (predominately underground cable), a 2.9 mile cable tray

crossing of the Hudson River, and 13.4 miles (total 26.8 circuit miles) of 345 kV AC underground.

More specifically: 345 kV AC interconnection to National Grid's Edic substation, from a 26 acre AC/DC Converter Station adjacent to the Edic substation in the Town of Marcy, Oneida County; and 1,200 MW, 400 kV DC underground line connecting the Northern and two Southern New York City (NYC) converters.

The CARI Thruway Alternate Project consists of:

- 5.9 miles within the NYPA Marcy South ROW from the northern converter to the junction with the New York Thruway ROW;
- 97.2 miles extending easterly within the Thruway ROW to the vicinity of Albany exit 21A;
- Continuing 117 miles southerly within the Thruway ROW to the Tappan Zee Bridge;
- 2.9 mile crossing of the Hudson River via a cable tray system attached to the undercarriage of the Tappan Zee Bridge;
- 13.4 miles underground within the MTA Metro North Hudson Line ROW from the Tappan Zee Bridge to a new 3.2 acre converter station adjacent to the MTA ROW at Spuyten Duyvil, Bronx, NY (delivering 600 MW);
- 8.1 miles underground from Spuyten Duyvil to a new 9.3 acres converter station at the Oak Point Rail Yard , Queens, NY (delivering 600 MW).

Additionally, there apparently would be AC circuits consisting of :

- two (2) - 8.9 mile long 345 kV AC circuits (600 MW) from Spuyten Duyvil Converter to Con Edison's W 49th St. substation in Manhattan;
- two (2) - 4.5 mile long 345 kV AC circuits (600 MW) from Oak Point converter to Con Edison's Rainey substation in Bronx.

Q. DO YOU AGREE WITH THE TESTIMONY OF DPS STAFF WITNESSES SCHROM AND QUIMBY THAT THE COST OF BUILDING AN UNDERGROUND DC TRANSMISSION LINE WITHIN THE NYS THRUWAY ROW WOULD EXCEED $3 BILLION?

A. Yes, but such a project would likely significantly exceed $3 billion. The DPS Staff estimate of $3 billion for the CARI Thruway Alternate Project, which they acknowledge as low, utilized costs from NYRI's work papers, which are not directly applicable to CARI's Thruway Alternate Project due to, for example, different construction and transportation methods and durations that would need to be utilized. As stated by the DPS Staff Witnesses, the DPS Staff estimate of $3 billion is low because it does not account for the large ravine crossings, the approximate 3 mile crossing of the Hudson River via attachment of a cable tray system to the undercarriage of the Tappan Zee Bridge, the cutting of hard rock along the Thruway, two (2) 345kV circuits of XLPE Cable (6 cables in total) 8.9 miles in length installed in a potentially constricted and heavily trafficked MTA Metro-North Hudson Line ROW to Manhattan,

and two (2) 345kV circuits (6 cables in total) under the East River for a distance of 4.5 miles designated as self contained fluid filled cable. The trenching of the hard rock along the southern portion of the Thruway would be extremely difficult and time-consuming, although the Conjunction LLC application notes that the project could transition to overhead where engineering and/or environmental constraints exist for underground configuration (i.e., wetlands, extensive rock, etc.). Where overhead, the Conjunction application indicates poles would be approximately 125 feet high and spaced every 600 to 1,000 feet. These are only a few of the many potential differences not accounted for in the DPS Staff cost estimate. Our estimate for the CARI Thruway Alternate Project, if all underground, is that it would cost at least twice as much as the facility proposed by NYRI along the proposed route, and would be about 5.5 times more expensive than the NYRI proposal when the costs of the converter stations are excluded.

Additionally, it is important to note that the proposed CARI Thruway Alternate Project converter stations in NYC are significantly different than NYRI's southern terminal. CARI's Thruway Alternate Project proposes two converter stations at the southern terminus. Also, as noted previously, CARI's Thruway Alternate Project includes two (2) 345kV AC underground lines extending from each of the new southern converter stations to interconnections at the Rainey substation at 36th Street in Queens and also the W 49th Street substation in Manhattan. These differences will have significant project cost implications.

Q. HAVE YOU REVIEWED THE NYSDOT POLICY ENTITLED ACCOMMODATION OF NON-COMMUNICATION UTILITIES ON NEW YORK STATE FREEWAY OR CONTROLLED AREAS?

A. Yes. First and foremost this policy requires a showing that there are no feasible alternative locations. NYRI has identified feasible alternates, as has DPS Staff Witness de waal Malefyt. Second, this policy establishes a 10 foot wide utility strip. While this is wide enough for the CARI Thruway Alternate Project's proposed 9 foot wide cable trench itself, it is not wide enough for construction or to prevent encroachment from tree roots into the thermal backfill. Such encroachment will disturb the heat dissipation properties of the thermal backfill and will cause cable overheating leading to de-rating and eventual cable failure. To provide the necessary ROW width, a 50 foot wide cleared area that is voided of deep rooted trees is required. Third, the policy raises an issue regarding the requirement for access. Since the 10 foot strip is to be located at the edge of the right of way, access along the trench for construction will require clearing of trees and vegetation (if present) for approximately an additional 40 feet toward the highway. In many locations this will result in removing all or part of the vegetative buffer that has separated adjoining residential and commercial uses from the heavy Thruway traffic. In addition, construction is generally limited to times of reduced traffic volumes. If construction is limited to mid-morning and mid-afternoon week day hours, this significantly impacts the duration and scheduling of work activities. The crossings of large natural features such as ravines and waterways,

where the highway utilizes a bridge, presents design and construction challenges, especially if the cable cannot be attached to the bridge. Each bridge would have to be analyzed individually for its capability to accommodate a cable attachment. If a bridge cannot be used it may be necessary to route outside the Thruway right-of-way in order to cross a particular natural feature. If a bridge can be used, construction would take place from the bridge requiring lane closures and slowing of traffic in contravention of the Accommodation policy. To protect highway and bridge stability during construction, one would expect the use of blasting to be severely restricted or banned. Extensive hard rock, which we understand is located in the southern portion of the Thruway, would present significant construction challenges. The policy also precludes the CARI presented option of transitioning to overhead structures in select segments of the Thruway ROW where environmental and engineering constraints may be present regarding undergrounding because such overhead structures could not be located within the 10 foot strip, due to their size. This would require additional land acquisition outside the Thruway right-of-way to construct the overhead structures in select constrained locations.

Q. HOW WOULD SUCH A LINE NEED TO BE CONSTRUCTED ALONG BRIDGES THAT EXIST ON THE THRUWAY?

A. In general, construction would take place from the bridge requiring lane closures. Hangers would be designed, fabricated and attached to the bridge. Conduits would be

attached to the hangers, one for each cable, and the cables would be pulled through the conduits. This would add significant weight to the bridge. Each bridge would have to be analyzed to determine if there is sufficient capability to support the additional static and dynamic loading on the bridge due to the cables/conduits and hangers, and the Thruway Authority/NYSDOT would have to carefully review and approve each bridge analysis to ensure the cables could be safely accommodated, both from a bridge design and maintenance viewpoint. In addition, cable protective measures would likely need to be installed, such as a small fenced area or concrete encasements at each end of the bridge around the cable/conduit entry and exit locations. If the NYSDOT determines that the cable cannot be safely attached to a bridge, bridge reinforcement may be needed, or an alternative crossing method would be developed which may necessitate locating the line outside the Thruway right of way. The longest bridge crossing is the Thruway Tappan Zee 2.9 mile bridge crossing of the Hudson River. The CARI Thruway Alternate Project proposes to cross this via cable trays, attached to the undercarriage of the bridge.

Q. IF AN HVDC LINE WERE TO BE BUILT INTO NYC WOULD A CONVERTER STATION BE REQUIRED?

A. Yes, it would. A converter station is required at each end of the transmission line. The only other possibility is to build the converter station outside of NYC (as NYRI proposes) and then connect into NYC via AC line(s). The CARI Thruway Alternate

Project, however, lists two converter stations at the southern terminal in NYC. One at Spuyten Duyvil, and the other at Oak Point.

Q. HOW MUCH LAND IS REQUIRED FOR A CONVERTER STATION?

A. The design of a converter station in the densely developed NYC area would be different than the open air design proposed by NYRI at the Edic and Rock Tavern locations. In general, a city block should provide a sufficient foot print, recognizing that the various components of the converter station would be designed and constructed in a vertical configuration, thus requiring a multi-story building on the footprint. This is a much more expensive type of building construction than the open air design proposed by NYRI at Edic and Rock Tavern. In addition, there would likely have to be significant architectural considerations (visual, noise, etc.) to the building design in NYC, in order for it to be an acceptable new structure within a major residential metropolitan location. The Conjunction application, relied on by CARI, lists the 2 southern converter station locations as Spuyten Duyvil at 9.3 acres and Oak Point at 3 acres in size.

Q. WOULD A TRANSMISSION LINE OR LINES BE REQUIRED TO INTERCONNECT THE CONVERTER STATION TO THE TRANSMISSION GRID IN NYC?

A. Yes, high voltage AC transmission line(s) would be required to connect the converter station to the AC power grid, along with expansion of Con Edison's existing high voltage substation(s), or the construction of new high voltage AC substations for termination of the new AC transmission lines and for the circuit breakers and/or transformers necessary to integrate the new AC circuits into grid operations. In the NYRI proposed project this is done by expansion of the Edic and Rock Tavern AC substations, as shown in Exhibit E-2 of NYRI's application. The CARI document regarding its Thruway Alternate Project indicates the need for two (2) 345kV circuits from the Spuyten Duyvil converter site to the existing W 49th St. substation, and two (2) 345 kV circuits from the Oak Point converter to the existing Rainey substation. All of these interconnections are proposed as underground.

Q. MR. MITSCHE, ARE YOU GENERALLY FAMILIAR WITH THE ELECTRIC TRANSMISSION SYSTEM IN NYC?

A. Yes, I am familiar with the NYC electric transmission system. I performed the Hudson Transmission Project SRIS (660 MW at W 49th Street) and the Bayonne Energy Center (612 MW at Gowanus) SRIS, as well as numerous exploratory studies in zone J.

Q. MR. BUCCI, ARE YOU GENERALLY FAMILIAR WITH THE ELECTRIC TRANSMISSION SYSTEM IN NYC?

A. Yes, I have been involved in numerous electric transmission and substation projects within NYC, including the interconnections for the Astoria Energy Project, the Linden Cogeneration Project, East River Generating Plant, the 345 kV M29 Underground Feeder Project, studies of the proposed Gowanus and Kent Avenue Generating Projects, and various other in-city transmission and substation projects.

Q. TO YOUR KNOWLEDGE DO EITHER THE 49TH STREET OR RAINEY SUBSTATIONS IN NYC, WHERE THE CARI THRUWAY ALTERNATE PROJECT PROPOSES TO INTERCONNECT, HAVE OPEN BUS POSITIONS?

A. There is one at West 49th Street but there are a number of different projects proposed to use this open bus position interconnection point. Also, Con Edison itself has requested to use this position.

Additionally there are very few, if any, substations in NYC with the capacity to accept 600 MW. This would require further study, and this study would need to recognize all the projects in the NYISO queue that are proposing to access these 345 kV locations (Q 206, 232, 261, 266, 267, 272, 295, 305, 307, 308 for a total of more than 6700 MW).

Q. IF THERE ARE NO AVAILABLE BUS POSITIONS, WOULD AN EXISTING SUBSTATION HAVE TO BE EXPANDED TO ALLOW THE

INTERCONNECTION OF THE TIE LINES FROM THE CONVERTER STATIONS?

Yes.

Q. DID CARI PROVIDE ANY INFORMATION REGARDING WHETHER THERE IS LAND AVAILABLE IN NYC FOR SUBSTATION EXPANSION?

A. No, not that we have seen.

Q. DID THE SPONSOR OF THE THRUWAY ALTERNATIVE PROJECT, CARI, PROVIDE ANY INFORMATION THAT SHOWS THE IMPACT OF THIS ALTERNATIVE ON ELECTRIC PRICES?

A. No analysis of the economic impact of the CARI Thruway Alternate Project was provided. Because the CARI Thruway Alternate Project is significantly different from NYRI (e.g., its southern terminals are in different zones), the results of the NYRI analysis cannot be extrapolated to the CARI Thruway Alternate Project. If DPS Staff's estimate of the $3 billion cost for the alternative (i.e., approximately 50% more than the NYRI project) is accurate, then the CARI Thruway Alternate Project would require consumer savings 50% higher than those of the NYRI project to yield the same cost-benefit ratio. Whether the consumer savings for the CARI Thruway Alternate Project could be expected to be 50% higher than those of the NYRI project is a matter of pure speculation, given the lack of analysis.

Q. ARE YOU AWARE OF ANY INFORMATION THAT HAS BEEN PROVIDED BY CARI IN THIS CASE SHOWING THE IMPACTS OF SUCH AN ALTERNATIVE PROJECT ON SYSTEM RELIABILITY?

A. No.

Q. WHAT STUDIES ARE REQUIRED UNDER NYISO TARIFFS TO ESTABLISH THAT A NEW GENERATION PROJECT CAN BE SAFELY INTERCONNECTED TO THE TRANSMISSION SYSTEM?

A. A feasibility study, system reliability impact study, and facilities study. All would need to be done for the CARI Thruway Alternate Project.

Q. CAN YOU GENERALLY DESCRIBE THE INFORMATION THAT IS PROVIDED IN AN SRIS?

A. The SRIS tests whether a project, in addition to those ahead of the project in the NYISO queue, can safely and reliability interconnect to the New York grid. That is, whether there is a negative impact on grid reliability not able to be accommodated by normal NYISO operating procedures.

Q. TO YOUR KNOWLEDGE HAS SUCH A STUDY BEEN PERFORMED FOR THE CARI THRUWAY ALTERNATE PROJECT?

A. No.

Q. COULD THE SRIS STUDY FOR THE CONJUNCTION PROJECT BE USED TO SATISFY THE NYISO STUDY REQUIREMENTS FOR THE CARI THRUWAY ALTERNATE PROJECT?

A. No, different initial queued generators were assumed in previous studies that would need to be updated according to the NYISO OATT. In addition, the CARI Thruway Alternate Project has a different northern interconnection point than the Conjunction project, and the Conjunction project is not in the NYISO queue. For these reasons as well, a new SRIS would be required for the CARI Thruway Alternate Project

Q. WHAT SYSTEM CONDITIONS WOULD NEED TO BE STUDIED IN A NEW SRIS?

A. The system conditions include analyzing everything with a higher queue position. The NYISO process obligates a proposed project to formalize an interconnection agreement and enter into study agreements. During that process, the NYISO will create and deliver to the project's sponsor an approved load flow case that includes all other projects in the queue ahead of the proposal to be included in the studies.

Q. DOES THE CONJUNCTION SRIS PROVIDE SUFFICIENT INFORMATION TO EVALUATE THE SYSTEM RELAIBILITY IMPACTS OF THE CARI THRUWAY ALTERNATE PROJECT?

A. No it does not. The Conjunction SRIS is dated March 2004. There have been many system changes since that time that would need to be studied. In addition, as stated above, a new SRIS would use a different network model and generation mix than the Conjunction SRIS and would be required to include all projects ahead of the CARI Thruway Alternate Project in the NYISO queue.

Q. DOES THE NYRI SRIS PROVIDE SUFFICIENT INFORMATION TO EVALAUTE THE SYSTEM RELAIBILITY IMPACTS OF THE CARI PROPOSED THRUWAY ALTERNATE PROJECT?

A. No, it does not. The CARI project has a different southern interconnection point, therefore the system impacts of the NYRI project and the CARI Thruway Alternate Project would not be similar.

Q. ONCE THE NYRI PROJECT IS BUILT AND OPERATING WOULD IT PRECLUDE BUILDING AN HVDC PROJECT IN THE THRUWAY RIGHT OF WAY?

A. No. The NYRI project would not preclude the building of an HVDC project in the Thruway right of way at a future point in time. There may, of course, be other reasons, however, why such a project may not be feasible. Such a future project would have to meet applicable NYISO and siting requirements applicable to such a project.

Q. ONCE THE NYRI PROJECT IS BUILT AND OPERATING WOULD IT PRECLUDE THE BUILDING OF ADDITIONAL TRANSMISSION CAPACITY FROM SENY INTO NYC?

A. No. One would expect that such a project would have to address the same significant challenges in NYC that exist at present (as have been mentioned in the responses above). However, there is a possibility that some of these challenges would be lessened if, for example, Con Edison builds additional transmission/substation facilities in NYC to serve increased load there and these facilities had the capacity to accommodate additional lines coming into NYC. Such a future project would, however, have to meet applicable NYISO and siting requirements applicable to such a project.

Q. ARE YOU AWARE OF WHO THE PROPONENTS OR FINANCIAL SPONSOR OF THE CARI PROPOSED PROJECT THAT ADOPTS THE FORMER CONJUNCTION PROJECT INFORMATION ARE?

A. At this point, one could only assume that it is CARI.

Q. CAN YOU COMMENT AS TO THE REQUIRED SCHEDULE, RESOURCES AND FINANCIAL COMMITMENT A MAJOR TRANSMISSION PROJECT MAY INVOLVE IN NEW YORK STATE BASED ON YOUR EXPERIENCE?

A. Yes. The sponsor of a major transmission project must be willing to commit to at least a 3-4 year development schedule in order to complete the initial development of the project. The sponsor must also be willing to commit a minimum of $25 million to fund the work involving public involvement programs, project engineering, routing analysis, environmental studies, transmission interconnection studies, interconnection financial commitments, system economic studies, and a host of other types of required work and agreements.

Q. TO YOUR KNOWLEDGE HAS ANY ENTITY COMMITTED TO DEVELOP AND IMPLEMENT THE CARI PROPOSED THRUWAY ALTERNATIVE PROJECT?

A. No.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes.

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