

STATE OF NEW YORK
DEPT. OF PUBLIC SERVICE
DATE <u>4/1/09</u>
CASE NO. <u>06-T-0650</u>
EX <u>295</u>

STATE OF NEW YORK  
PUBLIC SERVICE COMMISSION

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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

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Case 06-T-0650

New York Regional Interconnect Inc.  
INTERROGATORY/DOCUMENT REQUEST

**Request No.:** NYRI-46  
**Directed To:** Staff of the Department of Public Service  
**Date of Request:** January 15, 2009  
**Reply Date:** January 26, 2009  
**Witness:** Richard Quimby and Edward C. Schrom, Jr.  
**Subject:** Thruway Alternate

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Please provide all correspondence, memorandum, calculations, work papers and other documents relied upon to calculate the estimated \$3 billion cost of the Thruway alternate route (see p. 5, lines 7-8 of your direct testimony).

**Response:**

See attached document NYRI-46.pdf.

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Carri Route Underground +  
Northern Converter Station  
Down State Converter Station Oak Point  
Estimated 235 miles

235 miles } Underground  
\$9.6 million per mile } DPS-91

\* 2,256 million underground  
329.4 Northern Converter  
+ 11.7 Southern Converter  

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2,597.1 million

HVDC Converter Stations  
Survey of Current Typical Pricing

NYRI - 400 kV HVDC Project  
Rough Order of Magnitude (ROM) Cost Estimate  
Northern and Southern Converter Terminal stations  
Converter Station ROM Estimates based on Survey of Budgetary Installed Prices (Equipment, Installation and Testing) (\$ in millions)

"Bare" Quotes:

1000MW HVDC Converter Stations	Voltage	Delivery	Siemens	ABB	Alstom	Fujikura/Toshiba
AC to DC Converter Station	500 kV	30 - 36 mos	\$ 180.00	\$ 180.00	\$ 145.00	\$ 195.00
	250 kV	30 - 36 mos	na	na	na	172.00

Price Sources: Based on budgetary pricing received May - July 2002.

Supplier Qualifications: Only suppliers with proven experience in manufacturing/supply and installation of this type of equipment have been listed. They are able to offer similar ranges of MW sizes and configurations.

For Estimating Use (these notes are provided for use as a "factored" estimate):

1. Add Contingency: 25% Above prices are as quoted for "budgetary use" directly by the vendor, and stated to be representative but with significant variation based on specific high voltage grid system characteristics.
2. Add escalation for any planned procurements beyond 2002
3. Add costs of engineering and design, surveying, and construction management (approx 8%)
4. Above does not include cost of interconnection to the AC Substations (depends on number and configuration of AC circuit breakers, tie-lines, etc)
5. The above results in a "factored" \$ per KW based estimate for a representative converter station.

Summary Using \$180M for 1000MW (Quoted above by Siemens & ABB):

180 \$ / KW  
(see below) Contingency factor  
1.13 Escalation factor to 2007  
(see below) Engr/CM factor  
204 \$ / KW

TOTAL: The extrapolated number for 1200 MW using the same \$/KW, and the other factors shown above is about \$244 M

**NOTE:**

The NYRI South Converter Station also includes an SVC which is represented appropriately by similar \$/KVAR as the Converter Station \$/KW. This is due to the similarity of the power electronic components used. Therefore a figure in the range of 204 \$/KVAR has been incorporated. Therefore for a 300MVAR SVC, the approximate total estimate is: \$81 M

I. Northern Converter Station:

A. Total Materials and Transportation	80% of total	\$195,200,000
B. Labor - Civil Construction and Installation	20% of total	\$48,800,000
- includes labor and equipment for construction, including site prep (e.g., access, clearing and restoration) activities		
	Direct Cr Labor + Material	\$244,000,000
C. Route Surveys		N/A
D. Engineering and Inspection		
- includes Engineering, Procurement, and Construction Management (Including Inspection) Services		
NOTE: All vendor Engineering and Construction Supervision is included in Materials Cost		
	8%	\$19,520,000
E. Administrative Overhead		
- Owner Administration Costs by owner		
- Contractor(s)/Vendor(s) Administrative Overhead part of A, B, C and D above		
F. Contingency	25%	\$65,880,000
<b>TOTAL (A+B+C+D+E+F)</b>		<b>\$329,400,000</b>

Note: Above excludes Land and Right-of-Way Acquisition Costs, Permitting Costs, Finance Costs including Interest During Construction, Fees for Legal Services and other any other Services not listed.

II. Southern Converter Station (with SVC):

A. Total Materials and Transportation	80% of total	\$244,000,000
B. Labor - Civil Construction and Installation	20% of total	\$61,000,000
- includes labor and equipment for construction, including site prep (e.g., access, clearing and restoration) activities		
	Direct Cr Labor + Material	\$305,000,000
C. Route Surveys		N/A
D. Engineering and Inspection		
- includes Engineering, Procurement, and Construction Management (Including Inspection) Services		
NOTE: All vendor Engineering and Construction Supervision is included in Materials Cost		
	8%	\$24,400,000
E. Administrative Overhead		
- Owner Administration Costs by owner		
- Contractor(s)/Vendor(s) Administrative Overhead part of A, B, C and D above		
F. Contingency	25%	\$82,350,000
<b>TOTAL (A+B+C+D+E+F)</b>		<b>\$411,750,000</b>

Note: Above excludes Land and Right-of-Way Acquisition Costs, Permitting Costs, Finance Costs including Interest During Construction, Fees for Legal Services and other any other Services not listed.

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New York Regional Interconnect Inc. Application  
STAFF OF THE DEPARTMENT OF PUBLIC SERVICE  
INTERROGATORY/DOCUMENT REQUEST

Request No.: DPS-91  
Requested By: Edward Schrom  
Date of Request: October 17, 2008  
Reply Date: October 27, 2008  
Witness: Panel D  
Subject: Costs Estimates

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1. Provide the following cost estimates for overhead construction of:
  - (a) a lattice tower (material and labor);
  - (b) a steel pole structure (material and labor); and
  - (c) a mile of overhead line (provide all the assumptions and details of the assumptions used in the cost estimate; Indicate the number of structures per mile and the type(s) of structure per mile used in the estimate).

**RESPONSE:**

The requested cost estimates based on the overhead lattice and steel pole segments lengths and other known specifics of the NYRI line are provided as follows:

- a) a lattice tower (average cost, including foundations): \$117,000;
- b) a steel pole structure (average cost, including foundation): \$179,000;
- c) (i) a mile of overhead line (average cost, using an average number of 6.7 lattice structures per mile): \$1,500,000; and  
(ii) a mile of overhead line (average cost, using an average number of 7.5 steel pole structures): \$2,050,000

2. Provide the following cost estimates for underground construction:
  - (a) of the cable per mile to trench: rock, semi rock and soil, or soil; and
  - (b) a mile to place the facility underground (Provide all the assumptions and details of the assumptions used in the cost estimate).

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RESPONSE:

a) Please refer to the response to DPS-31 and the attachments thereto (see Appendix R), in which the estimated costs per linear mile for trenching of the NYRI cable were provided as follows:

(i) Rock: approximately \$3,101,000;

(ii) Semi-rock (or shale): approximately \$1,346,000; and

(iii) Soil (or sand): approximately \$1,479,000

These figures are for the Civil works only. Therefore, costs related to the cable materials and splicing/terminations, which are about the same for each type of Civil works, are excluded. Also excluded are the costs related to surveying, engineering and administration. These common costs are included in the response to Item 2b) below.

b) The average estimated cost per mile to place the facility underground along the Proposed Route was determined to prepare Section 3.1.2 of Exhibit 3, as \$9,630,000 per mile, which is an approximate five-fold increase in transmission line cost compared to installing overhead line (please refer to the response to DPS-91.1).

For additional details relating to all underground installation, refer to Section 3.1.2 of Exhibit 3. In addition, Tables 9.2-3a, 9.2-3b, 9.2-3c, and 9.2-3d of Exhibit 9 provide the underground cost estimates for the proposed underground segments of the Proposed Route, which are included within the average estimated per mile cost to place the facility underground along the Proposed Route.

3. Provide the cost estimate for the transition structure and the estimated cost to install. Provide all the assumptions and details of the assumptions used in the cost estimate.

RESPONSE:

Please refer to Exhibit DPS-91.3, attached hereto.

General Response to DPS-91.1, DPS-91.2, and DPS91.3:

The cost estimate data for the responses to DPS-91.1, DPS-91.2 and DPS-91.3 includes material, transportation and labor on the

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same basis as described in Section 9.1 of Exhibit 9 (i.e., mid-2007 conditions, excluding escalation and sales tax). It also does not include Route Surveys, Land and ROW Acquisition, Fees for Legal and other Services, Administrative Overhead, Finance Costs including interest during construction, and Host Community Fund.

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