



March 24, 2014

Ashley Moreno, Esq.  
Assistant Counsel  
State of New York Department of Public Service  
Three Empire State Plaza  
Albany, NY 12223-1350

Re: Niagara Mohawk Power Corporation d/b/a National Grid – Part 102 Report  
Gardenville-Dunkirk #141 115 kV Conductor Clearance Refurbishment Project  
Case 14-T-0034, Response to Discovery Requests

Dear Ms. Moreno:

Niagara Mohawk Power Corporation d/b/a National Grid (“National Grid”), received discovery requests DPS-1 through DPS-5 from the Staff of the Department of Public Service, dated February 25, 2014, regarding the *National Grid Gardenville-Dunkirk #141 Conductor Clearance Refurbishment Project* Part 102 Report.

The National Grid prepared response and attachments are provided in the enclosed CD-ROM.

Thank you for your attention to this matter.

Very truly yours,

*Lisa M. Zafonte*

Lisa M. Zafonte  
Senior Counsel  
Attorney for the Applicant,  
Niagara Mohawk Power Corporation d/b/a National Grid

Enclosure

cc: Ken Gavurnik, National Grid (via email without enclosures)  
Mary Bitka, National Grid (via email without enclosures)

Case 14-T-0034  
Niagara Mohawk Power Corporation d/b/a National Grid  
Part 102: Gardenville – Dunkirk 141  
Interrogatory/Document Request

Request No.: DPS-1  
Directed To: Niagara Mohawk  
From: DPS Staff – Richard Powell  
Niagara Mohawk Preparer/Title: David P. Gentile/Lead Engineer -  
Transmission Planning and Asset  
Management NY

DPS Information Requested:  
Previous Studies

Niagara Mohawk has proposed work on its T1260 Gardenville-Dunkirk #141 transmission line and has described, on page 1 of its report, additional anticipated work on both the #141 and 142 transmission lines. Staff understands that both circuits have been previously studied for repair, replacement, and/or relocation.

Please provide copies of all previously prepared studies that relate to the above-referenced facilities.

Niagara Mohawk Response:

The Gardenville-Dunkirk 141 142 115kV transmission lines were originally studied for repair, replacement and/or relocation beginning in 2008. In April 2009 a project scope document was released describing the existing facilities, their condition, and the scope of work proposed to upgrade the line. This document is included as Attachment 1.  
Attachment 1 – Final Scope Document April 2009

This work scope called for the replacement of existing hardware, insulators, shieldwires, conductors, and all Ritter-Conley steel flex towers. It was anticipated an Article VII would be required due to inclusion of reconductoring in the scope.

During subsequent preliminary engineering on the original work scope, tensile, torsion and corrosion tests were performed on the existing conductor (primarily 4/0 ACSR). Results indicated that the existing conductors have enough remaining strength to remain in service for an additional 15-20 years.

In light of these results, a meeting was held June 19, 2012 to discuss four alternatives for the project and their estimated cost:

- 1) A life extension refurbishment (\$44M to \$56M)
- 2) Reconductor in-kind 4/0 ACSR (\$56M - \$68M)
- 3) Reconductor with 477 kcm ACSR (\$71M - \$78M)

#### 4) Reconductor with 795 kcm ACSR (\$79 - \$88M)

Each alternative also included options of re-routing the line around the Villages of Silver Creek and Angola which is the main driver for the range of estimates for the four alternatives.

A review by Transmission Planning indicated there was no need to upgrade the line's capacity for the foreseeable future for local reliability purposes and the team concluded at the meeting that the life extension alternative was the most practical choice at this time with considerable cost savings.

A targeted refurbishment project to extend the operational life of the Gardenville-Dunkirk 141 142 lines and ensure they meet all technical requirements of the NESC was studied by Transmission Line Engineering and a report was issued in January 2013 included as Attachment 2.

Attachment 2 – Conceptual Engineering Report January 2013

The refurbishment project included tower repair and painting, insulator, fitting, conductor splice and shieldwire replacements, and the reinforcement of existing crossings over buildings in the Villages of Silver Creek and Angola with the option to purchase if owners are willing to sell.

Due to the magnitude of the scope change from a full Article VII reconductoring project to a targeted asset condition refurbishment, it was decided that the project would be vetted by the full committee review sanctioning process to inform senior management of the change and provide an opportunity to evaluate the alternatives and recommended line refurbishment option.

The partial sanction paper dated April 29, 2013 recommending a targeted asset condition refurbishment and \$2.5M for preliminary engineering and the purchase of long lead materials was approved by the Company and included as Attachment 3.

Attachment 3 – Gardenville-Dunkirk 141 142 Asset Condition Refurbishment Sanction Paper April 29, 2013

The paper was approved and a field inspection of the lines was performed in the summer of 2013 and the findings documented in a Field Inspection Report in October 2013 included as Attachment 4.

Attachment 4 – Field Inspection Report October 2013

The project scope was redefined in a new Technical Scope Document dated February 2014 included as Attachment 5.

Attachment 5 – Technical Scope Document February 2014

Request No.: DPS-2  
Directed To: Niagara Mohawk  
From: DPS Staff – Richard Powell  
Niagara Mohawk Preparer/Title: Natasha Deschene/Sr. Engineer – Electric Transmission Engineering

DPS Information Requested:  
Mitigation Options

Please describe all measures available to gain additional clearance in lieu of replacement or addition of a structure(s).

Niagara Mohawk Response:

The primary options that were considered for this project were reconductoring, retensioning, floating deadends, structure replacements and intermediate structures.

Where practical, reconductoring and/or retensioning was considered; however, these options were limited due to the amount of differential tension the existing deadend towers could withstand without exceeding their design limitations. Additionally, the option of retensioning was further limited by factors including: the age of the conductor, criticality of the crossing and rated breaking strength of the existing wire.

The use of floating deadends on clearance projects is limited to; spans that have suspension structures adjacent to the substandard clearance span that can be converted to a floating deadend, spans where the substandard clearance value is small enough to be mitigated by the floating deadend, and spans that are not considered critical crossings. None of the substandard clearance spans for the 141 line were determined to be a good candidate for a floating deadend.

The use of structure replacements was limited to spans that had an adjacent suspension structure(s) that could be replaced to obtain the required clearance. Where the adjacent structure(s) were deadend towers the option of replacing the structure was not feasible, as the deadend replacement structures for this line would need to be steel and the lead time would not have coincided with the project schedule. In these situations an intermediate structure was considered. Existing property rights were also a consideration when investigating the option of structure replacements or intermediate structures.

Request No.: DPS-3  
Directed To: Niagara Mohawk  
From: DPS Staff – Richard Powell  
Niagara Mohawk Preparer/Title: Mary Bitka/ Licensing & Permitting  
Engineer

DPS Information Requested:  
Response from SHPO

Niagara Mohawk provided a copy of its correspondence to the New York State Historic Preservation Office (SHPO) as Appendix B to its report.

Please provide any correspondence from SHPO regarding the proposed work to the Gardenville-Dunkirk line.

Niagara Mohawk Response:

Please see attached correspondence (Attachment 6) from the SHPO office indicating this project will have No Effect upon cultural resources in or eligible for inclusion in the National Registers of Historic Places.

Request No.: DPS-4  
Directed To: Niagara Mohawk  
From: DPS Staff – Richard Powell and  
Richard Quimby  
Niagara Mohawk Preparer/Title: Natasha Deschene/Sr. Engineer – Electric  
Transmission Engineering

DPS Information Requested:  
Structure 412

The aerial photographs show that the placement of structure 412 locates conductors over a home and in close proximity of a garage and another home.

Please:

- (a) explain whether Niagara Mohawk has evaluated the public safety implications of the line placement;
- (b) provide a copy of any analysis performed regarding the line placement on public safety; and,
- (c) describe and provide a copy of any analysis, including drawings, performed that evaluates relocating the structure and conductors in this location that would avoid such structures.

Niagara Mohawk Response:

- (a) Niagara Mohawk has evaluated the public safety implications of the pre-existing spans that cross over structures by assessing its conformance to the National Electrical Safety Code (NESC). Clearances identified as substandard are being addressed.
- (b) Attachment 7 is a copy of our Maximum Conductor Temperature Analysis (MCTA) for the Gardenville-Dunkirk 141 line, which evaluates the public safety by identifying the actual clearances of each span in comparison to NESC requirements.
- (c) Relocation of the structures and conductors in this location was not considered as part of the conductor clearance project but was considered as part of the upcoming refurbishment. Two alternative routes (Attachment 8 & 9) were identified and a conceptual estimate for each route was prepared for discussion purposes. The rerouting was discussed at an internal meeting in June of 2012. At that time it was determined that instead of rerouting, Niagara Mohawk would consider purchasing land from the property owners in Silver Creek that had buildings under the transmission line, if the owner was willing to sell at fair market value.

Request No.: DPS-5  
Directed To: Niagara Mohawk  
From: DPS Staff – Richard Powell and  
Richard Quimby  
Niagara Mohawk Preparer/Title: David P. Gentile/Lead Engineer -  
Transmission Planning and Asset  
Management NY

DPS Information Requested:

On page 1 of the report, Niagara Mohawk describes that it plans to do more extensive refurbishment of both the Gardenville-Dunkirk #141 and 142 lines in the next three years.

Please provide:

- (a) a description of the anticipated work;
- (b) a description of any necessary authorizations to complete the anticipated work; and,
- (c) the anticipated timeline to complete the work plan.

Niagara Mohawk Response:

(a) A detailed description of the targeted asset condition refurbishment work on the Gardenville-Dunkirk 141 142 lines can be found in Attachment 3 (Technical Scope Document dated February 2014) of the response to information request DPS-1 in this Case 14-T-0034.

In addition to the work outlined in that February 2014 Scope Document, two additional items have since been identified and will be considered for inclusion in this project – station and line switch replacements.

Field visits in the summer of 2013 by Transmission Asset Management personnel identified the following switches on the Gardenville-Dunkirk 141 142 lines were in poor condition and require replacement: Lakeview Switch Structure 113 & 114, Angola Switch Structure 118, and North Angola Station 116, 170 & 171.

Discussions with field personnel also identified the following station switches connecting to the 141 & 142 lines need to be replaced due to poor condition and past mis-operations: Gardenville 56 & 76, Shaleton 119, Cloverbank circuit switchers 101 and 201 as well as the normally open transfer switch 301, and Dunkirk 223 & 253.

(b) Permitting anticipated for this project encompasses highway, railroad and environmental permitting.

The line crosses several NY State highways and county roads including Interstate I-90 (4 crossings) and Routes 400, 179, 75, 5, 20 and 60. As such, it is anticipated that highway permitting will be required.

The line crosses railroad tracks 10 times and 2 steel poles will be added between tracks adjacent to a freight yard to meet clearance requirements. Permitting will be required for installation of the new pole.

Environmental permitting consisting of a Part 102 Report, pursuant to 16 NYCRR § 102, will be submitted to the Commission for their review. Additionally, permit authorization from NYSDEC and/or USACE is likely to be required, as the lines cross regulated natural resources.

(c) The anticipated timeline to complete the full asset refurbishment project is as follows:

Major Milestone	Current Date
Preliminary Engineering	6/2014
Planning Sanction	8/2014
Engineering Design Complete	4/2015
Project Sanction	6/2015
Construction Start	9/2015
Construction Complete	12/2016
Ready for Load	3/2017
Financial Closure	6/2018