



STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

PUBLIC UTILITIES COMMISSION
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November 2, 2016

Todd A. Bianco
Coordinator
Rhode Island Energy Facility Siting Board
89 Jefferson Blvd.
Warwick, RI 02888

**Re: The Narragansett Electric Co. d/b/a National Grid – Aquidneck Island Reliability
Project - Docket No. SB 2016-01**

Dear Mr. Bianco:

Attached are an original and six (6) copies of the Public Utilities Commission's (PUC) Advisory Opinion to the Energy Facility Siting Board.

Sincerely,

Luly E. Massaro
Luly E. Massaro
Commission Clerk

Enclosure

cc: Service

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
PUBLIC UTILITIES COMMISSION

IN RE: ISSUANCE OF AN ADVISORY OPINION :
TO THE ENERGY FACILITY SITING BOARD :
REGARDING THE NARRAGANSETT ELECTRIC :
COMPANY D/B/A NATIONAL GRID APPLICATION : DOCKET NO. 4614
TO CONSTRUCT THE AQUIDNECK ISLAND :
RELIABILITY PROJECT IN PORTSMOUTH AND :
MIDDLETOWN, RHODE ISLAND :

ADVISORY OPINION

I. Introduction

On December 29, 2015, the Narragansett Electric Company d/b/a National Grid (National Grid or Company) filed with the Energy Facility Siting Board (EFSB) an application to construct and alter certain of its transmission components in Portsmouth and Middletown, Rhode Island (Project). Specifically, the proposed work will: 1) rebuild and upgrade the existing 69 kV transmission lines (61 and 62 Lines) to 115 kV between the Dexter Substation in Portsmouth and the Jepson Substation on the east side of Jepson Lane in Portsmouth in the existing right-of-way (ROW); 2) build a new Jepson Substation on the west side of Jepson Lane in Middletown on property owned by National Grid and remove the existing Jepson Substation;¹ 3) reconfigure the existing Dexter Substation in Portsmouth to accommodate the upgraded transmission lines; 4) realign another 69 kV transmission line (63 Line) to connect to the new Jepson Substation; 5) temporarily relocate the 63 Line to allow for the construction of the new Jepson Substation; and 6) temporarily relocate the M13 and/or L14 115 kV transmission lines to allow for the improvements to the Dexter Substation. In its application, National Grid represented that the proposed work will reinforce and enhance the transmission system on Aquidneck Island and was

¹ The new Jepson Substation would be located entirely in Middletown with one access road located in Portsmouth. Environmental Report at Section 2.3; http://www.ripuc.org/efsb/efsb/SB2016_01_ER.pdf.

necessary to meet reliability requirements to serve a growing electric load in the area. According to National Grid, it determined after reviewing various alternatives that its proposed Project was the most cost-effective manner to meet the growing need on Aquidneck Island.²

In response to the filing, the EFSB conducted a preliminary hearing on March 24, 2016, and issued a preliminary order which, inter alia, directed the Rhode Island Public Utilities Commission (Commission or PUC) to provide the EFSB with an advisory opinion as to (i) the need for the proposed facility; (ii) whether it is cost justified. This requires a review of whether the proposed Project will allow transmission of energy at the lowest reasonable cost to the consumer. The EFSB also required that the evaluation of need expressly include a determination of the reasonableness of the cost of the Project. The reasonableness of cost is to include the cost impact and economics of reasonable alternatives to the various components of the Project that were identified by National Grid. The Division of Planning, the Office of Energy Resources (OER), and the Division of Public Utilities and Carriers (Division) were required to participate in the PUC proceeding pursuant to R.I. Gen. Laws § 42-98-9(d).³

After a review of the record in this matter including written testimony, data responses, live testimony, and memoranda, the Commission is of the opinion that the Project is needed in order to meet the ISO-NE reliability standards based on the projected load growth in the region coupled with the aging and obsolete equipment in the substations. The issue of need was an uncontested subject in this matter. Additionally, we are of the opinion that based on the evidence presented, the proposed Project represents the most cost effective approach to meeting that need. However, in the event the EFSB finds that the location of the new Jepson Substation is not viable for some reason, such as permitting, the alternative suggested by the Division's witness to rebuild the Jepson

² EFSB Preliminary Order at 1-2; http://www.ripuc.org/efsb/efsb/SB2016_01_order_prelim.pdf.

³ *Id.* at 9, 14.

Substation at its current location, albeit closer to the road, may represent a reasonable and cost-effective alternative.

II. Need

The Aquidneck Island Reliability Project is needed to meet the reliability needs of the area served, particularly where studies have shown that the load is continuing to grow despite a declining population. National Grid witness Carlos Perez-Perez testified that the Project will improve the reliability of electric supply to the area by increasing the loading capability of the transmission system and replacing the aging Jepson Substation with modern equipment on a site across the street. He noted that the need for upgrades on Aquidneck Island were first identified in a 2007 transmission study. That finding of need was reinforced in Mr. Perez-Perez's subsequent 2015 reliability study which concluded that the existing transmission facilities on Aquidneck Island are inadequate to meet the National Grid, North American Electric Reliability Corporation, Northeast Power Coordinating Council, and ISO-NE reliability standards and criteria for the projected load and generation conditions in this area.⁴ Mr. Perez-Perez also testified that the Company's asset condition studies have revealed that the existing equipment at the Jepson Substation is in need of replacement due to its obsolete or aging condition coupled with the difficulty in obtaining replacement parts.⁵

Division witness Gregory Booth testified that the Project is needed to meet capacity and reliability standards. He testified that "the transmission project is clearly needed for nothing other than an N-1 situation, much less [than] the fact that capacity is going to be reached."⁶ Referencing the Jepson Substation, Mr. Booth noted that it has been in the Infrastructure, Safety, and Reliability

⁴ Perez-Perez Test. at 2-5; [http://www.ripuc.org/eventsactions/docket/4614-NGrid-Fiku-Perez\(6-28-16\).pdf](http://www.ripuc.org/eventsactions/docket/4614-NGrid-Fiku-Perez(6-28-16).pdf).

⁵ *Id.* at 5.

⁶ Tr. at 165 (Sept. 27, 2016).

discussions for years due to the extensive nature of the condition issues. The substation upgrades are needed regardless of the transmission project because it would be prohibitively expensive to maintain a full inventory of the replacement parts necessary to maintain reliability at the substations. He opined that the need for the additional transmission capacity is finally pushing the substation upgrades forward because the 115 kV transmission lines require an upgrade of the 69 kV substation for operational purposes, making the substation portion an integral part of the project regardless of where it is ultimately located.⁷

Middletown witness Steven A. Cabral testified that need for the Project was not satisfied because the relocation of the Jepson Substation was not supported by the Environmental Report submitted to the EFSB by National Grid.⁸ However, based on the testimony of Mr. Perez-Perez and Mr. Booth, we conclude that the dispute over the final location of the Jepson Substation does not obviate the need for either the transmission or substation upgrades. The locational issues are discussed below.

Additionally, based on the testimony of both National Grid witness Endrit Fiku and Mr. Booth, we conclude that the so called “no build” alternative is not feasible as it does nothing to address the reliability or asset conditions issues. We also conclude from their testimony that there is no currently feasible non-wires alternative that can meet the magnitude of the need.⁹ Therefore, based on the evidence presented, we conclude that the Project is crucial to meet the needs of residents and their expectation of superior performance from the transmission system.

⁷ Booth Test. at 7-10; http://www.ripuc.org/eventsactions/docket/4614-DPU-Booth_8-05-16.pdf; Tr. at 164-67, 174, 178-79.

⁸ Cabral Test. at 4; [http://www.ripuc.org/eventsactions/docket/4614-Middletown-Cabral\(7-21-16\).pdf](http://www.ripuc.org/eventsactions/docket/4614-Middletown-Cabral(7-21-16).pdf).

⁹ Fiku Test. at 4; Booth Test. at 23.

III. Cost-Justification and Review of Alternatives

A. Proposed Project

The proposed Project represents the most cost-effective solution to meeting the identified need for additional transmission and related substation condition issues. The proposed Project represented the lowest cost alternative to those reviewed, such as a 69 kV alternative, or undergrounding. In his testimony, Mr. Booth reviewed the transmission line route, design and cost of the alternatives and concluded that National Grid's proposed routes and design for the 61 and 62 Line upgrades and the 63 Line relocation are acceptable. Mr. Booth testified that his estimate for the proposed overhead route was \$18.5 million compared to the \$22.7 million estimate prepared by National Grid. Thus, he concluded that National Grid's estimate for this portion of the Project was reasonable.¹⁰ Mr. Booth also represented that his independent cost estimate for the entire proposed Project was \$60.9 million compared to National Grid's estimate of \$63.9 million.¹¹ We therefore conclude that National Grid's cost estimate is reasonable and in the range of what would be expected for a Project of this nature and design. We also note that this option results in the most cost effective pricing for Rhode Island customers because \$34.6 million of the \$39.2 million of the transmission related cost will be included in the Pool Transmission Facilities Tariff which regionalizes the costs.¹²

B. 69 kV Alternative

Although perhaps not intuitively obvious, the proposed Project represents a more cost effective alternative than a "69 kV alternative." The alternative would involve reconstructing the existing 61 and 62 Lines at 69 kV, relocating and rebuilding the Jepson Substation to address both

¹⁰ Booth Test. at 12. Mr. Booth stated that he conducted an analysis of the alternative overhead options and arrived at figures similar to National Grid's for those as well. *Id. See* Tr. at 83-84.

¹¹ Booth Test. at 11-12.

¹² National Grid Response to Record Request 2.

asset condition and reliability issues, and upgrading the Dexter Substation by reconfiguring the 115 kV and replacing the existing 115/69 kV transformers with four 115/69 kV transformers.¹³ According to Mr. Fiku, construction of the 69 kV Alternative would address the reliability and asset condition issues but it would be a less robust solution than the proposed Project.¹⁴ At the hearing, Mr. Fiku explained that while it would meet the current reliability needs, it would be insufficient for future reliability needs. Mr. Fiku, Mr. Perez-Perez, and Mr. Booth all testified that this alternative would actually be more expensive, primarily due to the need for additional future upgrades to a newer Jepson Substation in order to accommodate the 115 kV line.¹⁵ Mr. Perez-Perez highlighted cost estimates that showed that the 115 kV alternative is actually \$900,000 less than the 69 kV alternative in the short term. Mr. Fiku and Mr. Booth noted that there would be additional long term costs associated with future upgrades to 115 kV plus the prospect of abandoned and wasted work.¹⁶ Additionally, unlike the proposed Project, only \$9 million of the \$40.1 million of transmission related costs would be regionalized. For all of these reasons, we advise that it would be an inefficient use of ratepayer resources to pursue this option. Thus, it does not represent the most cost-effective alternative in the short- or long-term.

C. Underground Alternative

Mr. Booth found the underground alternatives to be substantially more expensive with a higher environmental impact than utilizing an above ground route along the Company's existing rights-of-way.¹⁷ National Grid witness David Campilii testified that the conceptual cost estimates of an underground route would range from \$50.6 million to \$69.4 million depending on which

¹³ Environmental Report at Section 5.2.

¹⁴ Fiku Test. at 4.

¹⁵ Tr. at 48-49 (Sept. 27, 2016).

¹⁶ *Id.* at 60-61, 176-78.

¹⁷ Booth Test. at 13.

route was followed.¹⁸ When we compare this to Mr. Booth's estimate of approximately \$83 million, we conclude that the underground route is a much less cost effective option. Furthermore, Mr. Campilli testified that the underground alternatives would entail significantly more engineering and construction challenges. Finally, Mr. Campilli also testified that while underground transmission lines are less susceptible to certain weather conditions, when they experience an outage, it is almost never temporary and often results in a longer outage duration than overhead lines. There are also additional operational challenges with underground lines that do not exist with the overhead lines.¹⁹ Based on this uncontroverted testimony, we conclude that the underground alternative does not, in this case, represent a more cost-effective alternative.

D. Location of Jepson Substation

Addressing the issue of the location of the Jepson Substation, we conclude that the proposed relocation represents the most cost effective alternative within the proposed Project. However, in the event the Jepson Substation cannot be built on the west side of Jepson Lane for some reason not evaluated by the Commission, such as environmental or other permitting issues, a relocation of the Jepson Substation on the existing site, although a less than ideal solution, may be a reasonable alternative from a cost and reliability perspective.

The proposed Project includes the relocation of the Jepson Substation to a site on the west side of Jepson Lane, across the street from the current location. In his testimony, Mr. Booth indicated that the existing site could be a reasonable alternative to constructing on a new site, albeit at a somewhat higher cost.²⁰ National Grid witness Daniel McIntyre testified that reuse of the

¹⁸ Campilli Test. at 6 (corrected at hearing); [http://www.ripuc.org/eventsactions/docket/4614-NGrid-Campilli\(6-30-16\).pdf](http://www.ripuc.org/eventsactions/docket/4614-NGrid-Campilli(6-30-16).pdf); Tr. at 80.

¹⁹ Campilli Test. at 3-4; Tr. at 85.

²⁰ Booth Test. at 14-17, 24.

current location was rejected because of size constraints, construction challenges, impact on direct abutters, and environmental challenges associate with the proximity to Sisson Pond.²¹

Building on the existing site would entail building a new substation between the existing substation and Jepson Lane. However, the evidence indicated that building on the existing site would be very difficult, would take longer, and would be more expensive. The section of the property where the new substation would be built is not completely vacant, as there are overhead feeders that would need to be relocated but stay on site. The existing substation would need to stay in service while the new station was being built on the same piece of property. This is not impossible, but it does create construction challenges. These challenges include the need to build the new transmission facilities over the existing facilities resulting in taller structures than those that would be built on a new site across the street.²²

The sequencing of the construction would be more complex than building on a new site. Mr. Booth testified that the logistics and construction of the required capacity and circuit exits would be more time consuming and there would be a short term decline in reliability during construction. The project would take one and a half to two years longer to complete due to this sequencing, outage scheduling, additional permitting, and work safety issues.²³ Mr. Booth estimated that it would cost at least \$2.4 million more to build on the existing site.²⁴ At the hearing, he clarified that his cost estimate was only the building of the substation on the current site and did not include environmental costs or costs associated with scheduling complexities and “the substantial reliability risk that take[s] place through several years.”²⁵ In his testimony, Mr. Booth

²¹ McIntyre Test. at 2; <http://www.ripuc.org/eventsactions/docket/4614-NGrid-Rebuttal-McIntyre.pdf>; Tr. at 110-12.

²² McIntyre Rebuttal at Attachment DM-1 (Attachment 1F to Division Data Request R-II-1); <http://www.ripuc.org/eventsactions/docket/4614-NGrid-Rebuttal-McIntyre.pdf>.

²³ *Id.*

²⁴ Booth Test. at 16-17; Tr. at 160.

²⁵ Tr. at 160.

agreed that it is difficult to build a 115 kV substation on a site designed for a 69 kV substation.²⁶ The evidence presented by National Grid also showed that a new substation built on the front of the existing site have taller structures and be closer to Jepson Lane and abutting property owners than a new substation built on the proposed site across the street.²⁷

Mr. Booth indicated that he would absolutely recommend building the substation on the proposed site as there are no construction constraints, sequencing issues, or reliability issues as there are with building on the existing site. He testified that “it is clearly more efficient to construct a new substation on a clean piece of property and have it ready for a transfer of the higher voltage transmission service.”²⁸ Furthermore, the proposed site is located further from Sisson Pond than the existing site. Finally, with regard to Lots 22 and 26 of Plat 60 in Portsmouth, National Grid rejected these sites that it does not own because they are subject to Agricultural Land Preservation Restrictions with the Rhode Island Agricultural Lands Preservation Commission that requires the demonstration of “extreme need” and the “lack of any viable alternative” before the deed restriction can be lifted.²⁹ Therefore, this site is not a realistic option.

For all of these reasons, we conclude that relocation of the Jepson Substation to the west side of Jepson Lane is the most cost-effective and reliable alternative within the overall proposed Project. However, as the PUC was not charged with evaluation of environmental or zoning and other permitting issues, if the EFSB finds that there is some impediment to building on the proposed site on the west side of Jepson Lane, building on the existing site may be a reasonable alternative, but certainly not the most cost effective or most reliable.

²⁶ Tr. at 160-62.

²⁷ McIntyre Test. at 3. Tr. at 92-93; *See* National Grid’s Response to Record Request 5.

²⁸ Booth Test. at 16, 17.

²⁹ Environmental Report at Section 5.4.5.

IV. Conclusion

It is in the public interests of the State of Rhode Island to have a highly reliable electric utility system. We count on such a system to maintain safe and comfortable homes, businesses and schools and we require a reliable electric grid to maintain a strong economy. National Grid's proposed Aquidneck Island Reliability Project is necessary to meet the current reliability needs and future load growth needs. The proposed Project represents the most cost effective approach to meeting that need.

(22590) Advisory Opinion³⁰

Public Utilities Commission



Herbert F. DeSimone, Jr.

Herbert F. DeSimone, Jr., Commissioner

Marion S. Gold

Marion S. Gold, Commissioner

Dated: November 2, 2016

³⁰ This number is being assigned for administrative purposes only and does not constitute an order or decision of the Commission.