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Via Electronic Mail

October 11, 2016

Luly E. Massaro
Commission Clerk
Public Utilities Commission
89 Jefferson Boulevard
Warwick, RI 02888

**Re: The Narragansett Electric Company d/b/a National Grid
Aquidneck Island Reliability Project
PUC Docket No. 4614**

Dear Ms. Massaro:

I am enclosing for filing on behalf of The Narragansett Electric Company d/b/a National Grid its responses to the Rhode Island Division of Public Utilities Record Requests from the Public Utilities Commission public hearing that was held on September 27, 2016 in the above docket. I am sending electronic copies to the Service List and will provide a hard copy to anyone that requests it.

Sincerely,



Peter V. Lacouture

Enclosure

Copy to: PUC Docket No. 4614 Service list (*via e-mail*)

**STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
PUBLIC UTILITIES COMMISSION**

In the Matter of:

THE NARRAGANSETT ELECTRIC COMPANY	:	
d/b/a NATIONAL GRID'S NEED TO CONSTRUCT	:	
AND ALTER CERTAIN TRANSMISSION	:	PUC Docket No. 4614
COMPONENTS IN THE TOWNS OF PORTSMOUTH	:	
AND MIDDLETOWN (AQUIDNECK ISLAND	:	
RELIABILITY PROJECT)	:	

**NATIONAL GRID'S RESPONSE TO THE
RECORD REQUESTS OF SEPTEMBER 27, 2016**

RECORD REQUEST NO. 1: Are the transmission lines that are being replaced the same transmission lines that were repaired or replaced following the last major storm that resulted in an outage on Aquidneck Island?

RESPONSE NO. 1:

No. Within the last 5 years, two major weather related outage events for Aquidneck Island involved the L14 and M13 115 kV transmission lines north of Dexter Substation. The first event occurred during Tropical Storm Irene when a transmission line structure on the L14 Line fell upon the M13 Line. The transmission line that was damaged in 2013 during Storm NEMO was again the 115kV L14 Line located north of the Dexter Substation. The damage occurred near Montaup Country Club due to a tree falling on structures 21 & 22 of the L14 Line. Due to the proximity of the damaged structure to the energized M13 Line, the M13 Line was taken out of service to safely perform repairs. The Bellrock, Tiverton, Dexter and Bates substations were affected. Since the Dexter substation feeds Aquidneck Island, customers on the island lost power during this event. See "PUC Docket 3628 – 2013 Annual Service Quality Report, Electrical Operations", National Grid, May 1st, 2014, p. 18-19.

Response prepared by or under the supervision of
Endrit Fiku, P.E.

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RECORD REQUEST NO. 2: How will the project cost be recovered? How will the project cost be recovered from Regional Network Service and/or Local Network Service? Which components are covered under each?

RESPONSE NO. 2:

A summary of project component costs and their anticipated recovery mechanism is contained in Table 7.3 on page 39 of Attachment A to the Company's Environmental Report. A copy of this table is included with this response as Exhibit A. Within this table, the Company's proposed project is referred to as "Alternative Solution 2." All costs denoted in the table as PTF are anticipated to be recovered in Regional Network Service, and any other transmission costs are anticipated to be recovered in Local Network Service.

Response prepared by or under the supervision of
Carlos Perez-Perez, P.E.

7.3 Comparison of Alternative Solutions

		Aquidneck Island Transmission Solutions	
		Alternative Solution 1	Alternative Solution 2
Transmission Upgrades		<ol style="list-style-type: none"> 1. Reconstruct the 61 and 62 Lines at 69 kV 2. Relocate and Rebuild Jepson Substation to address both asset condition and thermal concerns 3. Reinforce Dexter Substation by reconfiguring the 115 kV into a breaker and half layout initially operated with 4 breakers, replacing the existing 115-69 kV transformers with four 115-69 kV transformers. 	<ol style="list-style-type: none"> 1. Reconstruct the 61 and 62 Lines at 115 kV 2. Relocate and Rebuild Jepson Substation to address both asset condition and thermal concerns 3. Reconfigure Dexter by Removing the 115-69 kV transformers and 69 kV equipment. Reconfigure the 115 kV yard by removing the 115 kV circuit switchers and installing load break switches on the line sides of the 115/13.8 kV transformer. Install a 115 kV circuit switcher to protect the 115/13.8 kV transformer.
Transmission Line Cost (in 2014 \$USD millions with -25/+50% accuracy level)		\$11.5	\$22.1 (PTF: All)
Transmission Substation Cost (in 2014 \$USD with -25/+50% accuracy level)	Dexter (\$millions)	\$18.3 (PTF: \$9)	\$3.9 (PTF: \$3.0)
	Jepson (\$millions)	\$10.3	\$13.2 (PTF: \$9.5)
Total		\$40.1 (PTF: \$9)	\$39.2 (PTF: \$34.6)
Project Construction Time		30 months	24 months

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RECORD REQUEST NO. 3: Please explain why the population is decreasing on Aquidneck Island and the load forecasting projects increasing load.

RESPONSE NO. 3:

Although population is decreasing on Aquidneck Island, the level of economic activity is rising. For example, Table 1 below shows that while population decreased 3.9% from 2000 to 2015, real gross county product increased 18.3%; real personal income increased 11.0%; real per capita income increased 15.5%; total employment increased 5.2%; and the housing stock increased 4.7%. While population on Aquidneck Island is forecast to decline 2.4% from 2015 to 2040, real gross county product is forecast to increase 43.5%; real personal income by 36.1%; real per capita income by 39.4%; total employment by 11.9%; and housing stock by 7.6%.

Increases in gross county product and employment tend to increase the electrical use of businesses on Aquidneck Island. Increases in real income tend to increase residential electrical use as households demand more energy using appliances, such as air conditioning and home electronics. Households may also use electrical appliances more as their income rises. Increases in the housing stock also tend to increase residential load. The ISO-NE load projections are driven by the level of economic activity in Rhode Island, as forecasted by Moody's Analytics, and are adjusted for the effects of energy efficiency programs.

Response prepared by or under the supervision of
Carlos Perez-Perez, P.E.

ATTACHMENT TO NATIONAL GRID RESPONSE No. 3

Table 1 - Newport County Economic Indicators

	Population (Ths.)	Gross County Product (\$2009m)	Real Personal Income (\$2009m)	Real Per Capita Income (\$2009m)	Total Non Farm Employment (Ths.)	Housing Stock (Ths.)
1990	87.527	\$3,828	\$3,191	\$36,454	36.825	37.552
2000	85.734	\$4,052	\$3,956	\$46,144	38.627	39.657
2010	83.142	\$4,927	\$3,945	\$47,448	40.273	41.824
2015	82.423	\$4,792	\$4,393	\$53,298	40.644	41.514
2020	82.194	\$5,134	\$4,580	\$55,721	42.184	41.542
2030	81.436	\$5,939	\$5,153	\$63,278	43.441	43.064
2040	80.431	\$6,877	\$5,977	\$74,317	45.497	44.680
% Change						
1990-2000	-2.0%	5.8%	24.0%	26.6%	4.9%	5.6%
2000-2015	-3.9%	18.3%	11.0%	15.5%	5.2%	4.7%
2015-2020	-0.3%	7.1%	4.3%	4.5%	3.8%	0.1%
2015-2030	-1.2%	23.9%	17.3%	18.7%	6.9%	3.7%
2015-2040	-2.4%	43.5%	36.1%	39.4%	11.9%	7.6%

Source: Moody's Analytics, October 2016. Newport County consists of Acquidneck Island, including the City of Newport and the towns of Middletown, Portsmouth, Tiverton, Little Compton and Jamestown.

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RECORD REQUEST NO. 4: Do the condition of the existing substation and the distribution forecasts require the substation to be upgraded even if the transmission lines are not upgraded?

RESPONSE NO. 4:

Yes, Jepson substation needs to be upgraded regardless of any transmission lines improvements to address distribution asset condition and reliability concerns, and the need for additional capacity on Aquidneck Island. The substation consists of obsolete equipment that needs to be replaced and the substation no longer has capacity to supply customers on Aquidneck Island with a safe, adequate, and reliable service. The substation has to be rebuilt to address these numerous asset condition concerns and expanded to provide new capacity and redundancy to maintain a safe and reliable electrical system on Aquidneck Island.

Response prepared by or under the supervision of
Endrit Fiku, P.E.

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RECORD REQUEST NO. 5: Provide rendering of the proposed substation on the existing site similar to the rendering of the new substation on National Grid's PowerPoint slide No. 7.

RESPONSE NO. 5:

National Grid's consultant is preparing the requested rendering which is expected to take two weeks to complete. An updated response will be filed once the rendering is available.

Response prepared by or under the supervision of
Daniel McIntyre, P.E.

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RECORD REQUEST NO. 6: Provide aerial photo of the existing substation site with the proposed electric equipment overlaid over photo.

RESPONSE NO. 6:

Attached as Attachment 6 is a Rhode Island Geographic System 2011 aerial photo of the existing Jepson Substation with an overlay of the equipment layout from H-*STUDYP-0*.

Response prepared by or under the supervision of
Daniel McIntyre, P.E.

A north arrow pointing upwards and a scale bar marked from 0 to 50 feet.