nationalgrid

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Senior Counsel

February 16, 2018

BY HAND DELIVERY AND ELECTRONIC MAIL

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

RE: Docket 4783 - Proposed FY 2019 Electric Infrastructure, Safety, Reliability Plan
Response to OER Data Request – Set 1

Dear Ms. Massaro:

On behalf of National Grid,[1] I have enclosed ten (10) copies of the Company's response to a data request issued by the Rhode Island Office of Energy Resources in the above-referenced docket.

Thank you for your attention to this transmittal. If you have any questions, please contact me at 781-907-2121.

Very truly yours,

Raquel J. Webster

Enclosures

cc: Docket 4783 Service List
Greg Booth, Division
Leo Wold, Esq.
Al Contente, Division

[1] The Narragansett Electric Company d/b/a National Grid (National Grid or the Company).

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OER 1-1

Request:

Regarding the Company's capacity planning process and peak load forecasts mentioned in Section 2 of the Proposed FY 2019 Electric Infrastructure, Safety, and Reliability Plan, entitled Electric Capital Investment Plan, pages 31 and 32 of 50, please provide the following:

(a) A copy of the Company's most recent forecast used for the capacity planning process.

(b) A description of the annual process the Company undertakes to develop the forecast, including major milestones and overall timeline from inception to finalized forecast.

(c) A description of the limitations of current forecasting techniques and how the changing distribution system, including distributed energy resources (DER) growth, will impact the forecasting process.

(d) A description of major improvements to forecasting that the Company views may be necessary in the short-term and long-term in order to maintain forecast integrity as DER penetration grows.

(e) An explanation of why the Company uses an extreme weather scenario in its planning studies.

(f) Whether the Company has considered using probabilistic methods for forecasting and planning studies, and how such methods could be implemented.

Response:

(a) Please see Attachment OER 1-1 for a copy of the summer and winter forecasts referenced on page 31 of the FY2019 ISR Plan.

(b) The annual process the Company undertakes to develop the forecast,is as follows:
- September: Develop projections for energy efficiency solar & reductions for use in the model
- October: Gather summer and winter actual peak data and actual weather associated with those peaks for use in the model
- November 1: Complete the forecast

OER 1-1, page 2

(c) Under the current forecasting process, the Company uses an aggregate policy-based approach to distributed energy resources (DER). Specifically, the Company uses energy efficiency and solar (PV) state-wide policy based targets. This means that for the more local spatial levels, general allocations of DERs are assumed. As DERs on the system increase, the forecasts at the local levels would benefit from increased knowledge and detail for DERs at these finer spatial levels. Additional local knowledge can contribute to targeting of DERs and potential Non-Wires Alternative (NWA) projects.

(d) Additional local and customer level DER information on locations, production (of technologies such as PV), and reductions (for programs like EE) would be useful in improving the accuracy of the high level and planning area forecasts. Many of the steps in the ISR, such as the AMI metering, are good steps forward in the short-term. Further end-use metering on the DER technologies over the longer term would be beneficial. Additional customer level information to determine their propensity (technical potential, financial value, and likelihood to install DERs) over the longer-term would be beneficial in informing more spatially oriented forecasts, as well as marketing programs for these technologies (i.e. NWAs).

(e) The Company uses an extreme weather scenario, specifically a five percent probability that planning criteria will not be exceeded. This increases the likelihood that the system is reliably constructed and maintained for not only normal or average weather, but in the event of extreme weather events.

(f) The Company currently employs a limited probabilistic approach to its summer and winter peak forecasts for the single variable - weather. It performs discreet forecasts for 50%, 10%, and 5% probabilities for the summer and winter peaks providing three levels of uncertainty for each. Additional probabilistic methods can complement this current approach. A wider range of probabilities can include other explanatory variables such as, but not limited to, type of customer, DERs, economics, and policies. In addition, probabilities can even be developed for a more continuous band of weather uncertainties beyond just the three currently used. Probabilistic approaches can provide additional information on the likelihood of higher and lower loads versus single deterministic forecasts, allowing planners to more accurately access risks and costs to upgrade and maintain the network. It can also more accurately address the interactions of the many inputs into the planning process on a probabilistic basis.

Prepared by or under the supervision of: Joseph F. Gredder

Rhode Island Summer Peaks (Actuals and 50/50, & 95/5 Weather-Adjusted Cases)

after Solar and Energy Efficiency Reductions

YEAR	Actuals (MW)	Actuals (% Grwth)	Normal 50-50 (MW)	Normal 50-50 (% Grwth)	Extreme 95-5 (MW)	Extreme 95-5 (% Grwth)
2003	1,670	#DIV/0!	1,783	#DIV/0!	1,974	#DIV/0!
2004	1,628	-2.5%	1,832	2.7%	2,022	2.5%
2005	1,805	10.8%	1,760	-3.9%	1,950	-3.5%
2006	1,985	10.0%	1,789	1.6%	1,979	1.5%
2007	1,777	-10.5%	1,849	3.4%	2,039	3.1%
2008	1,824	2.6%	1,786	-3.4%	1,976	-3.1%
2009	1,713	-6.1%	1,816	1.7%	2,006	1.5%
2010	1,872	9.3%	1,749	-3.7%	1,939	-3.3%
2011	1,974	5.5%	1,836	5.0%	2,026	4.5%
2012	1,892	-4.2%	1,826	-0.6%	2,016	-0.5%
2013	1,965	3.9%	1,835	0.5%	2,025	0.5%
2014	1,653	-15.9%	1,752	-4.5%	1,942	-4.1%
2015	1,738	5.1%	1,839	5.0%	2,029	4.5%
2016	1,803	3.8%	1,782	-3.1%	1,972	-2.8%
2017			1,793	0.6%	1,986	0.7%
2018			1,783	-0.6%	1,977	-0.5%
2019			1,780	-0.2%	1,974	-0.1%
2020			1,780	0.0%	1,976	0.1%
2021			1,786	0.3%	1,982	0.3%
2022			1,794	0.5%	1,991	0.5%
2023			1,804	0.5%	2,001	0.5%
2024			1,812	0.5%	2,011	0.5%
2025			1,821	0.5%	2,021	0.5%
2026			1,830	0.5%	2,031	0.5%
2027			1,840	0.5%	2,042	0.5%
2028			1,850	0.6%	2,053	0.6%
2029			1,861	0.6%	2,065	0.6%
2030			1,872	0.6%	2,077	0.6%
2031			1,883	0.6%	2,090	0.6%

	Actuals	Normal 50-50	Extreme 95-5
Compound Avg. 10 yr ('06 to '16)	-1.0%	0.0%	0.0%
Compound Avg. 5 yr ('11 to '16)	-1.8%	-0.6%	-0.5%
Compound Avg. 5 yr ('16 to '21)		0.0%	0.1%
Compound Avg. 10 yr ('16 to '26)		0.3%	0.3%
Compound Avg. 15 yr ('16 to '31)		0.4%	0.4%

Rhode Island Winter Peaks (Actuals and 50/50, & 95/5 Weather-Adjusted Cases)
after Energy Efficiency Reductions

	Actuals		Normal 50-50		Extreme 95-5	
YEAR	(MW)	(% Grwth)	(MW)	(% Grwth)	(MW)	(% Grwth)
2003	1,389		1,278		1,382	
2004	1,394	0.4%	1,457	14.0%	1,561	13.0%
2005	1,329	-4.6%	1,319	-9.4%	1,424	-8.8%
2006	1,329	0.0%	1,306	-1.0%	1,411	-0.9%
2007	1,352	1.7%	1,303	-0.2%	1,408	-0.2%
2008	1,305	-3.5%	1,327	1.8%	1,431	1.7%
2009	1,294	-0.8%	1,354	2.1%	1,459	1.9%
2010	1,315	1.6%	1,216	-10.2%	1,321	-9.5%
2011	1,243	-5.5%	1,258	3.4%	1,362	3.2%
2012	1,320	6.2%	1,268	0.8%	1,373	0.8%
2013	1,328	0.7%	1,321	4.2%	1,425	3.8%
2014	1,275	-4.0%	1,208	-8.5%	1,313	-7.9%
2015	1,223	-4.1%	1,182	-2.1%	1,287	-2.0%
2016			1,184	0.2%	1,290	0.2%
2017			1,178	-0.5%	1,284	-0.4%
2018			1,173	-0.4%	1,279	-0.4%
2019			1,167	-0.5%	1,273	-0.5%
2020			1,161	-0.5%	1,267	-0.5%
2021			1,159	-0.1%	1,266	-0.1%
2022			1,159	0.0%	1,267	0.0%
2023			1,161	0.1%	1,268	0.1%
2024			1,163	0.2%	1,271	0.2%
2025			1,167	0.3%	1,275	0.3%
2026			1,172	0.4%	1,281	0.4%
2027			1,177	0.4%	1,286	0.4%
2028			1,182	0.5%	1,292	0.5%
2029			1,188	0.5%	1,299	0.5%
2030			1,195	0.5%	1,305	0.5%

Compound Avg. 10 yr ('05 to '15)	-0.8%	-1.1%	-1.0%
Compound Avg. 5 yr ('10 to '15)	-1.5%	-0.6%	-0.5%
Compound Avg. 5 yr ('15 to '20)		-0.4%	-0.3%
Compound Avg. 10 yr ('15 to '25)		-0.1%	-0.1%
Compound Avg. 15 yr ('15 to '30)		0.1%	0.1%

** year is Dec. of year posted plus Jan. & Feb. of following year. (ex: year = 2014 is Dec.2014, Jan 2015, Feb 2015)*

Winter