Request:

Referring to Schedule MAL-12, please provide the following historical data on employees and vacancies over the five years prior to the Test Year in excel format, this information should be provided in the same 12-month period as the Test Year:

- a. Number of employees, differentiating by full-time employees, temporary employees, and seasonal employees.
- b. Number of vacancies.
- c. Salaries/wages, differentiating by full-time, temporary, and seasonal employees.

Response:

- a. Please see Attachment DIV 9-6-1 for the number of full-time, temporary, and seasonal employees as of June 30 for the five years prior to the Test Year (2012 2016) for The Narragansett Electric Company and National Grid USA Service Company, Inc.
- b. Please see Attachment DIV 9-6-2 for the number of vacancies as of June 30 for the five years prior to the Test Year (2012 2016) for The Narragansett Electric Company and National Grid USA Service Company, Inc.
- c. Please see Attachment DIV 9-6-3 for the annual base salary for full-time, temporary, and seasonal employees as of June 30 for the five years prior to the Test Year (2012 2016) for The Narragansett Electric Company and National Grid USA Service Company, Inc.

THE NARRAGANSETT ELECTRIC COMPANY d/b/a NATIONAL GRID RIPUC Docket No. 4770 Attachment DIV 9-6-1 Page 1 of 1

The Narragansett Electric Company					
Headcounts as of June 30					
	2012	2013	2014	2015	2016
Full Time Management Electric Regular	34.0	51.0	38.0	40.0	43.0
Full Time Management Electric Temporary	0.0	1.0	0.0	0.0	1.0
Full Time Management Gas Regular	21.0	6.0	15.0	14.0	13.0
Full Time Management Gas Temporary	0.0	0.0	0.0	1.0	0.0
Full Time Union Electric Regular	371.0	372.0	384.0	387.0	343.0
Full Time Union Electric Temporary	9.0	10.0	27.0	24.0	22.0
Full Time Union Gas Regular	297.0	306.0	321.0	327.0	328.0
Full Time Union Gas Temporary	8.0	7.0	1.0	4.0	8.0

National Grid USA Service Company Headcounts as of June 30					
	2012	2013	2014	2015	2016
Full Time Management Regular	3,474.0	3,373.0	3,575.0	3,772.0	4,050.0
Full Time Management Temporary	71.0	109.0	111.0	122.0	133.0
Full Time Union Regular	1,794.0	1,780.0	1,338.0	1,396.0	1,326.0
Full Time Union Temporary	49.0	42.0	11.0	1.0	5.0

*The company does not distinguish between seasonal and temporary employees, therefore seasonals are included in with the temporary employees

THE NARRAGANSETT ELECTRIC COMPANY d/b/a NATIONAL GRID RIPUC Docket No. 4770 Attachment DIV 9-6-2 Page 1 of 1

The Narragansett Electric Co Vacancies as of June 30	mpany				
	2012*	2013	2014	2015	2016
Management Electric	N/A	16.0	11.0	20.0	15.0
Management Gas	N/A	5.0	12.0	7.0	3.0
Union Electric	N/A	87.0	113.0	131.0	106.0
Union Gas	N/A	83.0	52.0	46.0	47.0

National Grid USA Service Cor	npany				
Vacancies as of June 30					
	2012*	2013	2014	2015	2016
Management	N/A	33	265	168	509
Union	N/A	125	801	430	734

*2012 data is not available

The Narragansett Electric Company Base Salaries as of June 30

	2012	2013	2014	2015	2016
Full Time Management Electric Regular	\$3,070,894	\$4,721,635	\$3,598,923	\$3,844,264	\$4,481,192
Full Time Management Electric Temporary	\$0	\$34,216	\$0	\$0	\$34,216
Full Time Management Gas Regular	\$2,121,479	\$621,285	\$1,539,296	\$1,574,927	\$1,220,448
Full Time Management Gas Temporary	\$0	\$0	\$0	\$36,462	\$0
Full Time Union Electric Regular	\$30,378,999	\$31,222,369	\$33,126,159	\$31,650,507	\$29,256,677
Full Time Union Electric Temporary	\$324,655	\$362,950	\$925,964	\$839,862	\$841,214
Full Time Union Gas Regular	\$22,617,181	\$23,954,981	\$25,707,134	\$23,893,251	\$24,565,468
Full Time Union Gas Temporary	\$305,376	\$271,160	\$34,466	\$141,357	\$295,131

National Grid USA Service Company Base Salaries as of June 30

Dase Galaries as of Guile SU					
	2012	2013	2014	2015	2016
Full Time Management Regular	\$353,603,153	\$343,446,283	\$364,245,471	\$393,647,389	\$420,071,304
Full Time Management Temporary	\$2,392,102	\$4,136,173	\$4,175,406	\$4,705,466	\$4,550,370
Full Time Union Regular	\$132,957,427	\$131,265,092	\$95,803,863	\$99,377,627	\$96,661,657
Full Time Union Temporary	\$1,305,774	\$1,110,663	\$345,933	\$38,938	\$184,527

Request:

Referring to PUC IR 3.38, please additionally provide a breakout of the workers expected to retire by position, gas or electric division, years of experience, and level of seniority.

Response:

Attachment DIV 9-7 shows the details of gas and electric workers expected to retire by position along with average years of service for these employee groups within the Company.

The Company's retirement projections are based on a number of criteria, such as historical retirement rates, particular union locals, whether employees are union or management, and age range, all of which result in factors that are applied to the existing employee population to develop a retirement forecast. However, the Company's forecast of retirements is not derived at an individual employee level, and therefore the years of experience or level of seniority of individual retirees is not identifiable or available. A position level view of cumulative retirement projections has been provided in Attachment DIV 9-7.

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 4770 Attachment DIV 9-7 Page 1 of 1

				C	Cumulative	Retiremer	t Projectio	n
	Position	FTE	Avg. Years of	Jul 17-18	Jul 18-19	Jul 19-20	Jul 20-21	Jul 21-22
	Electric Overhead Worker	159	18.9	1	4	7	11	16
Electric M&C	Electric Underground Worker	32	18.8	1	1	2	3	4
Electric Mac	Electric Substation Worker	43	14.1	0	1	2	3	4
	Electric Protection & Telecom Worker	27	14.4	1	2	2	3	4
	Meter Services Representative	54	15.2	1	2	4	6	8
	Metering Clerk	2	30.1	0	1	1	1	2
Electric CMS	Metering Manager	1	21.5	0	0	0	0	0
Electric CM3	Metering Process Manager	1	0.8	0	0	0	0	0
	Metering Supervisor	5	21.2	0	0	1	1	2
	Working Leader	4	32.6	0	1	1	1	2
	Gas Mechanic / Technician	91	11.6	2	4	6	9	10
	Gas Auxiliary Operations	14	13.7	0	1	1	2	2
	Field Supervisor Gas	14	13.8	0	0	0	1	1
	Gas Maintenance & Construction Laborer/Helper	6	1.5	0	0	0	0	0
	Gas Inspector	4	39.9	1	2	3	3	3
	Clerk	3	25.7	1	1	1	1	2
Gas M&C	Gas Analyst	3	10.7	0	0	0	0	0
	Gas Tool Technician	1	29.0	1	1	1	1	1
	Process Manager Gas	1	1.2	0	0	0	0	0
	Gas Trainer	1	34.7	0	0	0	1	1
	Gas Director Maintenance & Construction	1	10.0	0	0	0	0	0
	Gas Manager Maintenance & Construction	1	26.3	0	0	0	0	0
	Gas Safety Advocate	1	36.2	0	0	1	1	1
	Meter Services Representative	132	9.2	3	7	9	12	14
Gas CMS	Metering Clerk	1	22.1	0	0	0	0	0
Gas Civis	Metering Supervisor	7	21.3	0	0	0	1	1
	Working Leader	4	31.9	1	1	2	2	2

Request:

Referring to the Joint Pre-filed Testimony of Rosario, Jr., Amaral III, and Constable, please explain what initiatives the Company has undertaken to promote current staff to new or vacant senior positions rather than hiring externally. How many of the senior positions that are vacant or new does the Company expect will be filled from existing staff in the Rate Year?

Response:

Both management and union positions are filled with a learned skill development. For union employees, learned skill development includes progression through training and on the job time to learn the skills to be proficient in the next position level. Hiring and promotions for new or vacant union positions are also governed by the terms and conditions of the local union contract. Hiring and promotions for new or vacant management positions is managed by the Company's Recruiting organization through a job-posting process, which includes a review of proficiency and knowledge for promotion to more senior positions. The job-posting process is designed to support the needs of the business, the career development of employees, and a continuing commitment to equal opportunity for all employees in a cost effective manner. Please see Attachment DIV 9-8, which outlines the recruitment and hiring processes included in the Company's Internal Job Posting Policy. Because the management positions will be filled through the job-posting process, the Company cannot forecast which individuals or how many of the vacant or new positions will be filled from existing staff in the Rate Year.

NATIONAL GRID PLC

Human Resources Policy Guidelines – US

Internal Job Posting Policy

1. Objective

National Grid is committed to providing an Internal Job Posting process that supports our business needs, the career development of our employees and our continuing commitment to equal employment opportunities for all qualified employees. To facilitate the internal movement of employees, National Grid provides managers and supervisors with a process by which they can identify qualified employees for open positions. Additionally, National Grid provides employees with the opportunity to advance their careers and develop new skills by self-nominating for open positions.

To ensure that this process is administered in a fair and equitable manner, US Talent Acquisition, in conjunction with the HR Business Partners, directs the process and ensures that all managers, supervisors and employees are aware of Internal Posting policies and practices. Employees are encouraged to actively participate in development discussions and discuss their career goals with their supervisor in advance of applying for open positions.

2. Scope

This policy covers all National Grid US management employees and management positions and those global or corporate functions with management employees and management positions based in the US.

3. Policy/Implementation Framework:

Positions are posted every Monday on the National Grid Careers website.

https://nationalgrid.taleo.net/careersection/1/jobsearch.ftl?lang=en

The internal job posting will remain active for at least 7 days. Internal candidates will be reviewed first. Positions may also be posted on external websites simultaneous with the internal posting.

• All posted positions will have a job description of the position including responsibilities, qualifications, location and band.

Limited exceptions to the posting process may occur due to business needs, promotions, employee development and succession planning. The exceptions are managed through Functional Leadership in conjunction with Recruiting and HR Business Partners. Officer level positions (Band A and B) and some Director level positions (Band C) may not be posted internally or externally.

There are occasionally situations when a job is filled and then an identical position becomes available within a short time period (i.e., 30 days). At the discretion of the Hiring Manager and Recruiter, the position may not need to be re-posted.

Management employees in good standing are eligible to apply to internal postings as long as they meet the following eligibility requirements:

- Management employees must be in current role for a minimum of 12 months prior to posting for an open position.
- Management employees must meet the minimum qualifications as stated in the job posting.
- Management employees must be in good standing with no disciplinary actions and/or performance improvement plans active or pending.

Exceptions to the above eligibility requirements must be reviewed and approved by the employee's supervisor and HRBP, prior to application for an internal position.

4. Responsibilities

- A. Employee
 - Employees must apply for Internal Positions via the Internal Posting Process on Connect2Grid. Applications received outside of the process will not be considered.
 - Employees must apply within the posting period noted on the NationalGrid Careers website.
 - Employees who are on an excused or approved absence from work during the entire posting period will be allowed to submit an application on the first day they return, if the position has not already been filled.
 - Employees are expected to discuss their interest in an open position with their supervisor. However, supervisor approval is not required to submit an application if the employee meets all eligibility requirements. Note:
 - i. If an employee is uncomfortable speaking with their supervisor regarding applying for a position, they are encouraged to reach out to their HRBP.
 - ii. When an employee is selected to interview for an opening, the employee is notified to let their immediate supervisor know they are being considered.
- B. Recruiting
 - The Recruiter will review/screen all applications that meet the initial screening requirements. Qualified candidates will be referred to the hiring manager/supervisor.
 - Candidates not selected for continuation in the selection process will be notified at the conclusion of the screening process.

- Candidates will be evaluated based upon their qualifications for the job being filled without regard to race, color, religion, sex, and national origin, status as an individual with a disability, protected veteran, genetic information or on the basis of any other protected status.
- Consideration will be based upon experience, competencies, credentials and overall good standing in current position (as stated in the eligibility requirements).
- The Recruiter and the hiring manager will advise candidates of the anticipated decision-making and feedback timeframe for the selection process.
- C. Hiring Manager
- It is the responsibility of the hiring manager and the releasing manager to mutually agree on the start date for the new position. It is anticipated that start dates will be no longer than 4 weeks from date of offer.
- Note: if the selected employee is assigned to a project or program (i.e., USFP) with a specified end date, the start date may be adjusted beyond the 4 week standard to ensure that all project responsibilities are completed successfully and to the satisfaction of the project leadership.
- It is the responsibility of the hiring manager to return fully completed interview guides and evaluation forms promptly to the Recruiter and to update dispositions in Connect2Grid or return a completed applicant tracking log. National Grid has an obligation to maintain these records to satisfy audits and/or legal proceedings.
- 5. Related Corporate Policies/Procedures and Other Documents
 - Employment Policy
 - Management Internal Movement Policy, rev 12/2013
 - Internal Posting Process
- 6. Key Contacts
 - Owner: VP, US Talent Acquisition
 - Expert: US Talent Acquisition
 - First point of contact: Talent Acquisition Operations
- 8. Timing

Date the policy/procedure came into effect – October 2012 Date the policy/procedure was updated – June 2017 Next Review – April 2018

Request:

Referring to Schedule MAL-12, pages 1 and 2, line 19, please provide a description of the major cost items that are included in the "Administrative and General Expenses" category for the Test Year (Per Books), Normalizing Adjustments to Test Year, Test Year (as Adjusted), and Pro forma Adjustments.

Response:

Please see below for a description of the major cost items on Schedule MAL-12, Pages 1 and 2, Line 19 (Bates Pages 136 and 137 of Book 9):

Test Year (Per books) – Please see the Code of Federal Regulations (CFR), Part 101, Page 521 for Account 920 – Administrative & General Salaries. A. "This account shall include the compensation (salaries, bonuses, and other consideration for services, but not including directors' fees) of officers, executives, and other employees of the utility properly chargeable to utility operations and not chargeable directly to a particular operating function. B. This account may be subdivided in accordance with a classification appropriate to the departmental or other functional organization of the utility." Test Year amounts primarily consist of charges from the Finance, Operations, Information Systems, Regulatory, Human Resources, Procurement and Legal departments.

Normalizing Adjustments to Test Year – Please see Schedule MAL-12, Page 5 (Bates Page 140 of Book 9) for a list of normalizing adjustments affecting multiple regulatory accounts. The Administrative and General Expenses (A&G) category was primarily normalized for a \$6.8 million regulatory account reclass from distribution operations to A&G associated with the segment reclassification reflected on Lines 25 through 27; the removal of \$2.7 million in (IFA) Integrated Facilities Agreement charges represented on Lines 2 through 4; and a \$0.8 million reduction to normalize variable pay Test Year payouts to target shown on Lines 9 through 14.

Test Year (as Adjusted) – Calculated as Test Year (Per Books) less Normalizing Adjustments to Test Year.

Proforma Adjustments – Please refer to Schedule MAL-12, Pages 6 through 11 (Bates Pages 141-146 of Book 9). Proforma adjustments represent the adjustments necessary to bring the Test Year (as Adjusted) labor dollars up to the calculated Rate Year labor expense. The prefiled direct testimony of Company Witness Melissa A. Little describes the calculation of Rate Year labor expense in detail (Bates Pages 31-38 of Book 8). The major cost items in the A&G category mirror those of the Test Year (as Adjusted).

Request:

Referring to MAL-12, page 1, columns (a), (b), and (c), please provide historical labor O&M expense data for the five years prior to the Test Year in excel format. Please provide this information in the same 12-month period as the Test Year.

Response:

Please refer to Attachment DIV 9-10 for Labor O&M expense detail. The information in this response is presented consistent with the information provided in the Company's response to PUC 1-31 Supplemental, except that it contains one additional year (2011) because this request is seeking information for five years prior to the Test Year.

The data for this response is not readily available for the previous five years on the same basis as the 12-month period used for the Test Year. Therefore, the Company is presenting the information on a calendar year basis.

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 4770 Attachment DIV 9-10 Page 1 of 2

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 4770 Attachment PUC 1-31 CORRECTED Page 1 of 2

		Calendar Year	% of Annual Total	Calendar Year	% of Annual Total	Calendar Year	% of Annual Total	Calendar Year	% of Annual Total	Calendar Year	% of Annual Total	Test Year	% of Annual Total
	Cost Type	2011		2012		2013		2014		2015		July 2016 - June 2017	
CAPITAL	Pay Overtime	9,323,687.87	6.63%	9,623,733.47	7.18%	12,283,426.78	8.15%	13,027,228.15	8.54%	12,847,784.73	8.49%	12,946,117.99	7.81%
	Normal Time	27,567,889.16	19.62%	34,543,578.91	25.76%	27,096,092.72	17.98%	37,412,002.22	24.52%	37,019,779.25	24.46%	43,158,199.08	26.03%
	Time Not Worked	6,487,996.95	4.62%	\$5,631,768.83	4.20%	7,045,281.00	4.67%	9,293,869.68	6.09%	8,774,102.06	5.80%	10,264,024.63	6.19%
	Variable Pay	5,492,450.79	3.91%	\$2,064,919.48	1.54%	2,837,028.14	1.88%	3,215,721.30	2.11%	3,515,651.85	2.32%	3,604,910.64	2.17%
	Total CAPITAL	48,872,024.77	34.77%	51,864,000.70	38.68%	49,261,828.65	32.68%	62,948,821.35	41.26%	62,157,317.90	41.07%	69,973,252.34	42.20%
OPEX													
	Pay Overtime	14,461,080.33	10.29%	\$13,754,227.60	10.26%	17,675,559.75	11.73%	10,744,144.96	7.04%	10,100,282.34	6.67%	10,347,921.42	6.24%
	Normal Time	55,696,808.91	39.63%	\$52,268,817.39	38.98%	62,068,249.03	41.18%	54,022,950.18	35.41%	58,282,502.64	38.51%	63,988,918.58	38.59%
	Time Not Worked	12,049,428.57	8.57%	\$10,731,281.27	8.00%	13,943,925.09	9.25%	13,001,208.21	8.52%	12,393,237.93	8.19%	13,082,603.67	7.89%
	Variable Pay	9,461,674.60	6.73%	5,463,428.16	4.07%	7,778,363.86	5.16%	11,842,772.26	7.76%	8,397,864.14	5.55%	8,429,802.35	5.08%
	Total OPEX	91,668,992.41	65.23%	82,217,754.43	61.32%	101,466,097.73	67.32%	89,611,075.61	58.74%	89,173,887.04	58.93%	95,849,246.02	57.80%
	Grand Total	140,541,017.18	100.00%	134,081,755.13	100%	150,727,926.38	100%	152,559,896.96	100%	151,331,204.94	100%	165,822,498.36	100%

NECO Labor (Receiving View)

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The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 4770 Attachment DIV 9-10 Page 2 of 2

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 4770 Attachment PUC 1-31 CORRECTED Page 2 of 2

		Calendar Year	% of Annual Total	Calendar Year	% of Annual Total	Calendar Year	% of Annual Total	Calendar Year	% of Annual Total	Calendar Year	% of Annual Total	Calendar Year (Test Year)	% of Annual Total
	Cost Tyme	2011		2012		2013		2014		2015		Test Year July 2016 - June 2017	
CAPITAL	FAS106	1.282.837.06	1.99%	2.084.933.01	2.52%	5.357.808.80	736%	2.920.337.73	3.67%	4.888.009.49	6.47%	4.318.464.18	4.72%
	FAS112	526,312.89	0.81%	521,767.61	0.63%	495,527.82	0.68%	775,779.24	0.97%	(904,279.58)	-1.20%	(492, 160.98)	-0.54%
	Group Life Insurance	\$408,309.38	0.63%	\$466,271.49	0.56%	394,880.83	0.54%	746,861.22	0.94%	691,859.53	0.92%	829,252.11	0.91%
	Health Care	4,134,779.81	6.40%	5,197,616.28	6.27%	6,006,318.25	8.25%	8,186,840.88	10.29%	8,273,329.23	10.95%	9,439,069.62	10.32%
	Other Benefits		0:00%	(190,391.01)	-0.23%	(346,407.14)	-0.48%	(710,119.27)	-0.89%	(188.48)	0.00%	14, 137.25	0.02%
	Payroll Taxes	2,870,098.80	4.44%	2,847,332.89	3.44%	3,360,023.78	4.61%	4,738,000.47	5.95%	4,266,489.34	5.65%	5,312,516.18	5.81%
	Pension	4,409,770.99	6.83%	8,589,397.15	10.36%	9,897,416.74	13.59%	9,591,227.13	12.05%	14,323,298.98	18.96%	11,561,981.58	12.64%
	Thrift Plan	2,052,043.45	3.18%	2,044,966.65	2.47%	1,145,815.52	1.57%	1,812,924.64	2.28%	2,337,894.51	3.09%	2,860,760.70	3.13%
	Workers Comp	78,130.57	0.12%	918,478.91	1.11%	749,545.99	1.03%	1,472,025.41	1.85%	2,129,292.87	2.82%	1,959,993.31	2.14%
	Total CAPITAL	15,762,282.95	24.40%	22,480,372.98	27.12%	27,060,930.59	37.15%	29,533,877.45	37.12%	36,005,705.90	47.66%	35,804,013.95	39.13%
OPEA	×												
	FAS106	14,277,826.25	22.10%	\$11,516,195.70	13.89%	7,768,812.65	10.67%	8,936,854.98	11.23%	6,507,472.25	8.61%	7,914,078.41	8.65%
	FAS112	1,968,663.49	3.05%	\$2,710,407.39	3.27%	714,282.90	0.98%	207,806.51	0.26%	(2,316,636.16)	-3.07%	(572,559.14)	-0.63%
	Group Life Insurance	957,515.18	1.48%	\$395,670.37	0.48%	990,115.99	136%	1,391,559.75	1.75%	549,295.75	0.73%	927,316.17	1.01%
	Health Care	10,861,707.74	16.81%	\$13,908,948.44	16.78%	11,874,812.59	16.30%	8,206,617.06	10.31%	11,717,907.03	15.51%	12,354,027.74	13.50%
	Other Benefits	\$0:00	0:00%	\$1,787,473.34	2.16%	(7,009,227.95)	-9.62%	566,789.16	0.71%	429,071.21	0.57%	472,912.03	0.52%
	Payroll Taxes	967,669.46	1.50%	\$7,414,548.41	8.95%	6,115,364.16	8.40%	6,583,033.48	8.27%	6,486,840.12	8.59%	6,854,470.49	7.49%
	Pension	16,403,931.29	25.39%	\$18,836,565.23	22.73%	21,536,029.35	29.57%	20,017,112.72	25.16%	12,063,992.80	15.97%	22,252,597.48	24.32%
	Thrift Plan	1,830,662.94	2.83%	\$2,451,317.26	2.96%	2,039,606.96	2.80%	3,135,281.34	3.94%	3,248,024.02	4.30%	3,843,649.14	4.20%
	Workers Comp	1,576,076.06	2.44%	\$1,381,303.58	1.67%	1,741,994.72	2.39%	992,359.60	1.25%	860,282.43	1.14%	1,648,059.49	1.80%
	Total OPEX	\$48,844,052.41	75.60%	60,402,429.73	72.88%	45,771,791.37	62.85%	50,037,414.59	62.88%	39,546,249.44	52.34%	55,694,551.81	60.87%
	Grand Total	95 335 309 79	100.00%	82 882 802 71	100%	72,832,721.96	100%	70 262 123 62	100%	75 551 955 34	100%	01 498 565 76	100%

NECO Employee Benefits (Receiving View)

Request:

Referring to Schedule MAL-19, pages 1 and 2, line 19, please provide a description of the major cost items that are included in the "Administrative and General Expenses" category for the Test Year (Per Books), Normalizing Adjustments to Test Year, Test Year (as Adjusted), and Pro forma Adjustments.

Response:

Schedule MAL-19 reflects uninsured claims expense, primarily self-insured general liability expense and self-insured workers' compensation expense. All uninsured claims expenses were reflected in the "Administrative and General Expenses" category on Scheduled MAL-19 as these costs are recorded to Account 925 – Injuries and Damages. Please see below for a description of the amounts on Schedule MAL-19, Pages 1 and 2, Line 19 (Bates Pages 202 and 203 of Book 9):

Test Year (Per Books) - Please see the Code of Federal Regulations (CFR), part 201for Account 925 – Injuries & Damages for gas and part 101 for electric. "This account shall include the cost of insurance or reserve accruals to protect the utility against injuries and damages claims of employees or others, losses of such character not covered by insurance, and expenses incurred in settlement of injuries and damages claims. It shall also include the cost of labor and related supplies and expenses incurred in injuries and damages activities. Reimbursements from insurance companies or others for expenses charged hereto on account of injuries and damages and insurance dividends or refunds shall be credited to this account." Test Year amounts consist of Injuries and Damages expense relating to claims both paid and accrued.

Normalizing Adjustments - Please see Schedule MAL-19, Page 5 (Bates Page 206 of Book 9) for the breakdown of major cost items. The largest normalizing adjustments relate to the portion of Injuries and Damages billed to New England Power Company under the Integrated Facilities Agreement.

Test Year (as Adjusted) – Test Year (Per Books) amount less normalizing adjustments. These costs represent Injuries and Damages costs both paid and accrued.

Proforma Adjustments – Please refer to Schedule MAL-19, Pages 6 through 9 (Bates Pages 207-210 of Book 9). Proforma adjustments represent the adjustments necessary to bring the Test Year (as Adjusted) Injuries and Damages expense down to the five-year average amount of actual General and Auto and Workers Compensation claims paid. The major cost items on these pages are actual claims paid for General and Auto and Workers Compensation.

It should be noted that uninsured claims expense primarily represents the Company's best estimate of the amount of general liability claims and workers' compensation claims incurred during the year that will eventually be paid in the future to third parties and employees. Because the calculation of uninsured claims expense involves management judgment, regulators typically require that the allowance for uninsured claims expense for ratemaking purposes be based on actual claims paid or an average of actual claims paid, rather than the actual uninsured claims expense experienced in any given year.

Request:

Referring to MAL-19, page 1, columns (a), (b), and (c), please provide historical uninsured claims O&M expense data for the five years prior to the Test Year in excel format. Please provide this information in the same 12-month period as the Test Year.

Response:

FERC Account 925, Injuries and Damages, is the Company's uninsured claims expense. Uninsured claims expense per the Company's calendar year FERC Form 1s and FERC Form 3-Q reports for the six months ended June 30 is as follows:

		FERC Acco	ount 925 For 12 mor	nths ending:	
	June 30, 2016	June 30, 2015	June 30, 2014	June 30, 2013	June 30, 2012
Electric	\$ 3,844,931	\$ 645,144	\$ 2,635,751	\$ 6,481,326	\$ 6,090,030
Gas	\$ 579,086	\$ (1,025,872)	\$ 3,296,794	\$ 992,187	\$ 2,146,596
Total	\$ 4,424,017	\$ (380,728)	\$ 5,932,544	\$ 7,473,513	\$ 8,236,626

It should be noted that uninsured claims expense is essentially management's best estimate of the amount of claims that the Company will eventually incur for accidents and workers compensation incidents that occurred during the year. Because the calculation of uninsured claims expense involves management judgment, regulators typically require that the allowance for uninsured claims expense for ratemaking purposes be based on actual claims paid or an average of actual claims paid, rather than the actual uninsured claims expense experienced in any given year. Please refer to the Company's response to Division 9-1 for the information in Excel format.

Request:

Referring to MAL-22, page 1, columns (a), (b), and (c), please provide historical uncollectable accounts O&M expense data for the five years prior to the Test Year in excel format. Please provide this information in the same 12-month period as the Test Year.

Response:

The Company provided the requested information in Attachment DIV 2-38 and Attachment DIV 2-39, Column (b), Lines 1 through 9, in its responses to Division 2-38 and Division 2-39, respectively. The Company is providing these attachments in Excel format.

It should be noted that uncollectible account expense, which is recorded to FERC Account 904, represents the Company's best estimate of the amount of accounts receivable generated during the year that will eventually be uncollectible. Because the calculation of uncollectible accounts expense involves management judgment, regulators typically require that the allowance for uncollectible expense for ratemaking purposes be based on actual bad debt write-offs or an average of actual bad debt write-offs, rather than the actual uncollectible-account expense experienced in any given year.

At the PUC's request, for ease of reference, the Company is providing copies of its responses to Division 2-38 and Division 2-39 as Attachment DIV 9-14, at Page 1 and Page 2, respectively.

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 4770 Attachment DIV 9-14 Page 1 of 2

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 4770 Attachment DIV 2-38 Page 1 of 1

The Narragansett Electric Company Net Charge-Offs For the Twelve Months Ended June 30

	Beginning Balance <u>FERC 144</u> (a)	Adjustments to Reserve <u>FERC 904</u> (b)	Ending Balance <u>FERC 144</u> (c)	Net <u>Charge Offs</u> (d)
2017	\$13,417,438	\$8,952,665	\$11,887,487	\$10,482,616
2016	\$16,679,996	\$8,301,962	\$13,417,438	\$11,564,520
2015	\$17,238,242	\$13,874,128	\$16,679,996	\$14,432,374
2014	\$11,774,457	\$19,135,524	\$17,238,242	\$13,671,739
2013	\$8,377,701	\$14,432,689	\$11,774,457	\$11,035,934

(a) Per Company's Financial Statements

(b) Per Company's Financial Statements

(c) Per Company's Financial Statements

(d) Column (a) + Column (b) - Column (c)

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 4770 Attachment DIV 9-14 Page 2 of 2

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 4770 Attachment DIV 2-39 Page 1 of 1

The Narragansett Electric Company—Gas Division Net Charge-Offs For the Twelve Months Ended June 30

	Beginning Bal. Accum Prov. Uncollectible Accts <u>FERC 144</u> (a)	Uncollectible Accounts <u>FERC 904</u> (b)	Ending Bal. Accum Prov. Uncollectible Accts <u>FERC 144</u> (c)	Net <u>Charge Offs</u> (d)
2017	\$10,760,334	\$4,025,491	\$10,203,912	\$4,581,913
2016	\$13,330,476	\$3,877,343	\$10,760,334	\$6,447,486
2015	\$14,919,616	\$8,953,646	\$13,330,476	\$10,542,786
2014	\$18,617,723	\$3,282,393	\$14,919,616	\$6,980,499
2013	\$21,996,044	\$6,568,132	\$18,617,723	\$9,946,453

(a) Per Company's Financial Statements

(b) Per Company's Financial Statements

(c) Per Company's Financial Statements

(d) Column (a) + Column (b) - Column (c)

Request:

Referring to the Joint Pre-filed Testimony of Rosario, Jr., Amaral III, and Constable, page 75, please provide data that shows the Company's current truck availability and response time compared to its other service territories.

Response:

As stated on Page 75 of the joint pre-filed direct testimony of Company Witnesses Raymond J. Rosario, Jr., Alfred Amaral III, and Ryan M. Constable (Bates Page 78 of Book 4), the Company is proposing additional costs associated with the lease of three additional trouble trucks in this proceeding. After performing an analysis of the usage, fuel consumption, and maintenance for the existing trouble trucks in Rhode Island, the Company determined that it was using its trouble trucks significantly more than its Massachusetts's affiliates were using their trouble trucks. The analysis showed that the higher usage per truck impacted its reliability and increased the amount of time that the truck was out of service, which, in turn, could negatively impact crew productivity and the truck's availability for response activities. As part of this analysis, the Company also contacted several truck manufacturers for recommendations regarding the engine life of trucks to assist in determining the appropriate truck count for Rhode Island. This additional information was used, in part, to determine that three additional trouble trucks would be required in Rhode Island to have the necessary fleet available to provide safe and reliable service to customers.

	CY 2017		
Jurisdiction	Unavailable Hrs	Ideal Available Hrs	Availability %
MA	1,974.39	77,707.00	97.5%
NY	8,443.91	171,615.00	95.1%
RI	5,627.07	28,738.50	80.4%
Grand Total	16,045.37	278,060.50	94.2%

The table below provides National Grid's trouble truck availability for calendar year 2017.

As stated on Page 75 of the testimony, the Company leased trouble trucks in Fiscal Year 2017 and did not specifically track the response time of trouble trucks.

Request:

Referring to the Schedule JFI-1, please answer the following:

- a. Provide a Summary of Value of Benefits Provided to Income-Eligible Customers for calendar years 2012-2015 and 2017 (if the 2017 numbers are not final yet, provide an estimate) like calendar year 2016.
- b. Where in the Company's filing are the benefits paid through utility rates by program reflected in the Test Year (Per Books), Normalizing Adjustments to Test Year, and Pro forma Adjustments?

Response:

- a. Please see attachment DIV 9-16 for a Summary of Value of Benefits Provided to Income-Eligible Customers for years 2012-2015 and 2017.
- b. The benefits of low income assistance paid through base distribution rates as presented in Attachment DIV 9-16, Lines (1) through (4), is reflected in the Company's filing in the following locations:

The benefits of the Low Income Discount provided to eligible customers are inherent in the distribution revenue billed to those customers. The table below identifies where the discount is reflected in the electric and gas revenue schedules for the Test Year, Adjusted Test Year, and Rate Year in the case.

	Narragansett Electric		Narraganse	ett Gas
	Schedule	Bates Page	Schedule	Bates Page
	Reference	Reference	Reference	Reference
Test Year (Per Books)	Workpaper PP- 1(a)-ELEC, Page 1, Column (a), Lines (1), (2)	Bates Page 84 of Book 15	Schedule PP- 1(a)-GAS, Page 2, Column (d), Lines (2), (4)	Bates Page 49 of Book 15
Normalizing Adjustments to Test Year	Workpaper PP- 1(a)-ELEC, Page 1, Column (b) – Column (a), Lines (1), (2)	Bates Page 84 of Book 15	Schedule PP- 1(a)-GAS, Page 2, Column (f), Lines (2), (4)	Bates Page 49 of Book 15
Pro forma Adjustments	Workpaper PP- 1(a)-ELEC, Page	Bates Page 84 of Book	Schedule PP- 1(a)-GAS, Page	Bates Page 49 of Book

Prepared by or under the supervision of: John Isberg

1, Column (c),	15	2, Column (g),	15
Lines (1), (2)		Lines (2), (4)	

The benefits provided to eligible customers through the LIHEAP Matching Program and Low Income Weatherization Program, available only to Narragansett Gas customers, are not reflected in Narragansett Gas' revenue requirement or revenue schedules. Current base distribution rates provide the funding for these two programs from all customers. The benefits provided to eligible customers through the LIHEAP Match is a credit to an eligible customer's account in the "Payment/Adjustment" section of their bill and therefore all of the Company's rates and factors are billed out at their tariffed values. The revenue generated from the allowance in base distribution rates for the Low Income Weatherization Program is transferred to Narragansett Gas' Energy Efficiency Program and disbursed to eligible customers through the Energy Efficiency Program. Expenses associated with the Company's Energy Efficiency Programs are removed from the electric and gas cost of service schedules.

Finally, benefits provided to eligible customers through the LIHEAP Enhancement Plan are not included or otherwise reflected in the various schedules contained in this general rate case. Funding for the LIHEAP Enhancement Plan, which is established per statute¹ and approved annually by the Public Utilities Commission, occurs outside of base distribution rates, and creates a "fund" from which the enhancement grant is applied to eligible customers' bills.

¹ R.I. Gen. Laws § 39-1-27.12.

Summary of Value of Benefits Provided to Income-Eligible Electric Customers

	2012	2013	2014	2015	2016	2017
	(a)	(b)	(c)	(d)	(e)	(f)
Benefits Paid through Utility Rates						
(1) Low Income Rate Subsidy in Base Rates	\$4,100,979	\$6,250,997	\$6,446,453	\$6,446,453	\$6,446,453	\$6,446,453
(2) LIHEAP Match (Gas Only) in Base Rates	\$0	\$0	\$0	\$0	\$0	\$0
(3) LI Weatherization (Gas Only) in Base Rates	\$0	\$0	\$0	\$0	\$0	\$0
(4) LIHEAP Enhancement	\$4,796,586	\$4,898,443	\$4,318,835	\$4,360,774	\$4,336,302	\$4,839,667
(5) Total Funding	\$8,897,565	\$11,149,440	\$10,765,288	\$10,807,227	\$10,782,755	\$11,286,120
Benefits Received by LI Rate Customers						
(6) Low Income Discount	\$5,959,708	\$6,505,893	\$6,548,098	\$6,980,334	\$5,401,975	\$4,747,903
(7) LIHEAP Match (Gas Only)	\$0	\$0	\$0	\$0	\$0	\$0
(8) LIHEAP Enhancement	\$327,000	\$408,750	\$1,727,100	\$1,728,000	\$1,147,100	\$1,069,500
(9) Total	\$6,286,708	\$6,914,643	\$8,275,198	\$8,708,334	\$6,549,075	\$5,817,403
External Sources:						
(10) LIHEAP Grant	\$697,762	\$773,365	\$368,012	\$783,025	\$1,029,878	\$1,300,898
(11) Total Benefits	\$6,984,470	\$7,688,008	\$8,643,209	\$9,491,359	\$7,578,953	\$7,118,301
(12) Annual Low Income Charges on Regular Residential Rate	\$43,454,051	\$46,111,163	\$50,976,122	\$61,210,881	\$44,531,791	\$38,392,887
(13) Total Benefits	\$6,984,470	\$7,688,008	\$8,643,209	\$9,491,359	\$7,578,953	\$7,118,301
(14) Annual Low Income Billing After Benefits	\$36,469,580	\$38,423,155	\$42,332,912	\$51,719,522	\$36,952,838	\$31,274,585
(15) Effective Energy Cost (Low Income Billing ÷ Charges on Reg. Res. Rate)	83.9%	83.3%	83.0%	84.5%	83.0%	81.5%

(1) (a) Per rate case 4065, Schedule NG-HSG-6 © - 2nd Amendment page (2), Line (43)

- (1) (b) One month at rate case 4065 rate, 11 months at rate case 4323 rate
- (1) (c) (f) Per rate case 4323, Schedule JAL-4, page (2), Line(39)
- (2) n/a
- (3) n/a
- (4) Customer Billing System
- (5) Sum of Lines (1) theough (4)
- (6) Estimated Low Income discount based on number of A60 customers, A60 kwh usage and rates in effect for A60 and A16.
- (7) n/a

- (8) Customer Billing System (9) Sum of Lines (6) through (8)
- (10) Customer Billing System
- (11) Line (9) + Line (10)
- (12) Actual Low Income Billings plus estimated distribution revenue on Residential rates and estimated supply billings for customers receiving supply from non-regulated power producers.
- (13) Line (11)
- (14) Line (12) Line (13)
- (15) Line (14) / Line (12)

Summary of Value of Benefits Provided to Income-Eligible Gas Customers

	2012	2013	2014	2015	2016	2017
	(a)	(b)	(c)	(d)	(e)	(f)
Benefits Paid through Utility Rates						
(1) Low Income Rate Subsidy in Base Rates	\$792.453	\$945 121	\$959.000	\$959.000	\$959.000	\$959.000
(2) LIHEAP Match (Gas Only) in Base Rates	\$1,585,000	\$1.585.000	\$1.585.000	\$1.585.000	\$1.585.000	\$1.585.000
(3) LI Weatherization (Gas Only) in Base Rates	\$200.000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000
(4) LIHEAP Enhancement	\$2,466,511	\$2.551.176	\$2,265,169	\$2.311.562	\$2,306,744	\$2,585,995
(5) Total Funding	\$5,043,964	\$5,281,297	\$5,009,169	\$5,055,562	\$5,050,744	\$5,329,995
Benefits Received by LI Rate Customers						
(6) Low Income Discount	\$825.391	\$970.072	\$1.093.352	\$1.127.082	\$917.352	\$948.871
(7) LIHEAP Match (Gas Only)	\$895,681	\$2,066,932	\$1,941,251	\$1,367,396	\$1,545,351	\$1,480,016
(8) LIHEAP Enhancement	\$1,636,300	\$2,509,650	\$8,119,350	\$8,636,400	\$5,479,800	\$4,633,500
(9) Total	\$3,357,372	\$5,546,654	\$11,153,953	\$11,130,878	\$7,942,503	\$7,062,387
External Sources:						
(10) LIHEAP Grant	\$5,519,373	\$6,569,480	\$1,342,858	\$6,284,339	\$8,770,148	\$8,643,424
(11) Total Benefits	\$8,876,745	\$12,116,135	\$12,496,810	\$17,415,217	\$16,712,651	\$15,705,811
(12) Annual Low Income Charges on Regular Residential Rate	\$20,593,219	\$22,344,294	\$26,118,746	\$25,468,246	\$18,958,754	\$20,357,536
(13) Total Benefits	\$8,876,745	\$12,116,135	\$12,496,810	\$17,415,217	\$16,712,651	\$15,705,811
(14) Annual Low Income Billing After Benefits	\$11,716,474	\$10,228,159	\$13,621,935	\$8,053,029	\$2,246,103	\$4,651,725
(15) Effective Energy Cost (Low Income Billing ÷ Charges on Reg. Res. Rate)	56.9%	45.8%	52.2%	31.6%	11.8%	22.9%

(1)	(a) Per rate case 3943	(8) Customer Billing System
	(b) One month at rate case 3943 rate, 11 months at rate case 4323 rate	(9) Sum of Lines (6) through (8)
	(c) - (f) Per rate case 4323	(10) Customer Billing System
(2)	Customer Billing System	(11) Line (9) + Line (10)
(3)	Customer Billing System	(12) Actual Low Income Revenues plus estimated distribution revenue on
(4)	Customer Billing System	Residential rates
(5)	Sum of Lines (1) theough (4)	(13) Line (11)
(6)	Estimated Low Income discount based on number of customers, kwh usge and rates in effect.	(14) Line (12) - Line (13)
(7)	n/a	(15) Line (14) / Line (12)

Request:

Referring to the Schedule JFI-3, tab Summary, please respond to the following:

- a. How much has the Company spent on "Direct outreach" or customer education and outreach in each of the last five years?
- b. Provide an explanation for why the costs lines 11-13 are not already accounted for in lines 4 and 7.

Response:

- a. Historically, the Company has not spent any targeted dollars on direct outreach or customer education for income-eligible customers. However, during the second half of 2017, the Company spent \$33,221.65 on mailings to raise awareness on potential offerings available to income-eligible customers, and educating customers around enrollment procedures to participate in these offerings.
- b. The costs on Lines 11-13 of Schedule JFI-3 (Bates Pages 139 146 of Book 4) are not already accounted for in Lines 4 and 7 of that schedule as they are anticipated costs that are expected to be incremental and specific to the Home Energy Monitoring Demonstration Project. These costs were broken out in Schedule JFI-3 in the interest of transparency and clarity to provide a complete picture into the full set of anticipated costs associated with the Home Energy Monitoring Demonstration Project.

The costs identified in Lines 4 and 7 of that schedule represent separate requested expenditures related to a broader set of income-eligible customer outreach and education activities. The nature of these activities and intended messaging and targets are summarized at Pages 16 - 26 of the pre-filed direct testimony of Company Witness John F. Isberg (Bates Pages 103 - 113 of Book 4).

Request:

Referring to page 9, lines 13-14 of the Joint Pre-filed Testimony of Johnston and Connolly that states "Gas Business Enablement Program is a unique transformative initiative providing direct and tangible benefits to customers":

- a. Please provide a detailed list of all the "direct and tangible benefits" that Narragansett Gas & Narragansett Electric customers will receive from the Gas Business Enablement Program including projected cost savings by year based on when the Company will achieve such savings.
- b. For each benefit that cannot not be articulated as a projected cost savings, please provide the expected improvement in the form of a metric that captures the tangible benefit above current service levels that Narragansett customers will receive as well as the date that Narragansett Gas & Narragansett Electric customers will begin to realize such benefit.
- c. Please provide the same response to (a) and (b) above for customers in NY and Massachusetts's service areas.

Response:

a. Attachment DIV 9-18-1 provides the estimated benefits for Rhode Island customers. Page 1 provides the estimates of total U.S. benefits (Type I and Type II, and capital and operating expense) to be delivered by the Gas Business Enablement Program. Page 2 provides the estimates for Rhode Island operations.

Type I benefits are *direct* cost savings anticipated to result from full implementation of the Gas Business Enablement Program.

Type II benefits are *indirect* cost savings that are not necessarily susceptible to direct quantification, but are anticipated to result from circumstances such as more efficient deployment of work resources; the availability of increased resource capacity due to process efficiencies; future cost avoidance resulting in the ability to complete more work with the same resources; or, increased potential for penalty avoidance.

The estimates on Page 2 reflect operation and maintenance (O&M) savings for both Type I and Type II benefit categories.

b. It is not necessarily feasible to articulate a "metric" for each process improvement arising from implementation of the Gas Business Enablement Program because the program will affect virtually all aspects of the Company's core gas business. However, the Company's

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response to PUC 5-22 identified the "Value Lever" associated with each component of the Gas Business Enablement Program. A copy of PUC 5-22 is provided as Attachment DIV 9-18-2 for ease of reference.

In addition, with respect to "tangible" customer benefits, the Gas Business Enablement Program is expected to deliver the following:

- <u>Enhanced Customer Information</u>. Increased information will be available to customers from the Company's call center representatives, who will have more information on field activities, such as the status of customer-driven work requests or the locations of field crews.
- <u>Self-Serve Information</u>. Customers will have the ability to access more information without the need to call the call centers through self-service routes, which will enable quick and convenient provision of information. The Company's website and customer applications will provide this enhanced functionality.
- <u>Appointment Booking</u>. An enhanced ability to book appointments for work will exist, as appointment availability will be linked directly to resource capacity and a scheduling engine as compared to the manual process today.
- <u>Appointment Management</u>. The flexibility to manage appointments either through the call center or directly through self-service channels will be developed. Because the appointments will be linked to actual availability, it will be much easier to reschedule appointments in real-time.
- <u>Customer Notifications</u>. Improved customer notifications from the Company will be available in relation to work that is being completed, including providing the name(s) of the technician(s) performing the work. These notifications will keep customers informed of the status of work, particularly when there is an unforeseen delay, and will also provide them with enhanced security as they will know who to expect from the Company.
- <u>Appointment Windows</u>. Potential for more appointment windows and reduced timeframe for current 4- and 8-hour customer commitment windows through the enhanced scheduling platform.

The Company expects that the delivery of these customer benefits will be evidenced through customer satisfaction and employee-engagement scores, as the program is implemented in each jurisdiction.

Benefits will begin to be realized as the Gas Business Enablement capabilities are delivered in each jurisdiction according to the Program Roadmap (see Schedule GBE-4,

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Page 1 provided with the joint pre-filed direct testimony of Company Witnesses Anthony H. Johnston and Christopher J. Connolly). Realization of the total anticipated benefit is expected to occur upon full delivery of the solutions. The schedule for each jurisdiction is as follows:

- The Company: Start of benefit delivery October 2018; full implementation of solutions September 2020.
- Boston Gas Company and Colonial Gas Company: Start of benefit delivery December 2018; full implementation of solutions September 2020.
- Niagara Mohawk Power Corporation: Start of benefit delivery April 2019; full implementation of solutions September 2020.
- The Brooklyn Union Gas Company: Start of benefit delivery July 2019; full implementation of solutions September 2020.
- KeySpan Gas East Corporation: Start of benefit delivery October 2019; full implementation of solutions September 2020.
- c. Please refer to Attachment DIV 9-18 for the estimated benefits for the New York and Massachusetts operating companies. Page 3 provides estimated benefits for Boston Gas Company. Page 4 provides estimated benefits for Colonial Gas Company. Page 5 provides estimated benefits for Niagara Mohawk Power Corporation. Page 6 provides estimated benefits for The Brooklyn Union Gas Company. Page 7 provides estimated benefits for KeySpan Gas East Corporation. The benefits available to the Massachusetts and New York jurisdictions are the same as Rhode Island. Specifically, Type I benefits are direct cost savings that the Gas Business Enablement Program will deliver. Type II benefits are defined as indirect savings because these benefits do take the form of direct, quantitative cost reductions, but rather reflect increased capacity for work that otherwise would not be completed or increased potential for penalty avoidance, for example. The estimates on Pages 3-7 reflect O&M benefits for both Type I and Type II benefit categories.

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 4770 Attachment DIV 9-18-2 Page 1 of 3 The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 4770 Responses to Commission's Fifth Set of Data Requests Issued January 5, 2018

PUC 5-22

Request:

Please explain what qualitative costs and benefits were considered by the Service Company and/or the distribution companies other than direct cost savings.

Response:

The Gas Business Enablement Program business case outlined a number of Type II benefits in addition to the Type I direct cost savings that the program would deliver. The Type II benefits are defined as indirect savings that do not impact National Grid USA Service Company, Inc.'s financial statements. These benefits consist of expenses resulting from reassignment of resources to more effectively manage the work, increased resource capacity due to process efficiencies, and/or future cost avoidance resulting in the ability to complete more work with the same resources. The following Type II benefits were included in the business case:

Initiative	Initiative Value Lever Value Lever Detail		Type of Work
Data Management	Reduction in Data Cleansing / Scrubbing - Analysts	Data Analysts, Supervisors, Engineers – All Departments	All Functions
Asset Management	Improved Engineering Productivity	Gas Process & Engineering	Complex Engineering Jobs
, , , , , , , , , , , , , , , , , , ,	Automate as-Builts	Distribution Support Services	Maps & Records
	Reduced Drive Time	CMS - Non-Emergency, Non-Collections	CMS - Planned Jobs - Appointment and non- Appointment
Work Management & Field Enablement	Reduced Mileage	CMS - Non-Emergency, Non-Collections	CMS - Planned Jobs - Appointment and non- Appointment
	Reduced Drive Time	CMS - Collections	CMS - Collections Jobs Only
	Reduced Mileage	CMS - Collections	CMS - Collections Jobs Only
	Reduced Available Time / Auto Dispatch	CMS - Non-Emergency, Non-Collections	CMS - Planned Jobs - Appointment and non- Appointment
	Reduce UTCs / Improved Information	CMS - Non-Emergency, Non-Collections	CMS - Non-Emergency, Non- Collections
	Improved Field Data Capture	CMS - Meter Verification	CMS - Meter Verification Jobs Only
	Simplified / Automated Communications	CMS - Non-Emergency, Non-Collections	CMS - Planned Jobs - Appointment and non- Appointment
Customer Interaction	Reduced non-Move Call Volume through Self Service	Customer Contact Center - Non-Move Calls	Call Center - Internal

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 4770 Attachment DIV 9-18-2 Page 2 of 3 The Narragansett Electric Company

Responses to Commission's Fifth Set of Data Requests Issued January 5, 2018

	Reduced Move Call Volume through Self Service	Customer Contact Center – Move Calls	Call Center - Internal
Integrated Supply & Demand Planning - Construction Planning	Improved Project Delivery - Construction	Field Operations – Maintenance & Construction	Maintenance & Construction - All Construction Jobs
Compliance & Technical Training	Reduced Compliance and Gas Safety Penalties	Field Operations – Maintenance & Construction	All Functions

Additionally, there are significant non-financial operational benefits to be achieved through the implementation of the enhanced capabilities of the Gas Business Enablement Program.

Operational Benefits:

- *Improved System Availability*: Reducing the risk of system failures that require manual workarounds, reduce effectiveness, and increase the risk of human error in the operation.
- *Asset Risk Reduction*: Robust asset investment planning capabilities, tools, and analytics that will enable more effective asset replacement and maintenance prioritization, thus reducing asset risk for each dollar spent.
- *Simplified Planning*: Visibility to all work in one core platform coupled with seamless, electronic integration of work demand with other key platforms (<u>e.g.</u>, Human Resources, supply chain), thus reducing planning complexity.
- *Regulatory Relationship*: Simplified regulatory reporting and improved safety and compliance performance, which will enhance our regulatory relationships.
- *Safety*: Advanced and consistent technical training that will improve employee technical skills and simplified work methods that will reduce ambiguity in the field leading to increased safety performance.
- *Employee Engagement and Retention*: Robust software applications and tools, standardized processes, and simplified work methods that will make it easier for employees to do their jobs, thus leading to improved engagement, morale, and retention.

The enhanced capabilities the Program will deliver will also drive non-financial benefits to provide enhanced customer experience utilizing the full capabilities of the solution. In some cases, decisions to increase staff to support greater scheduling capacity for customer appointments may be necessary.

Customer Benefits:

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- *Ability to Convert to Gas*: Increased ability to meet the demand for new gas connections and conversion requests reducing customer energy costs by approximately \$1,500 per year.
- *Customer Engagement Benefits*: Robust self-service platform that will allow customers to interact with the Company via the internet thereby reducing the customer's interaction time with the Company; consolidated customer information to allow us to respond quickly and accurately to customer inquiries. Improved schedule adherence for customer appointments and ability to manage customer expectations through proactive communications and alerts.
- *Customer Service Quality*: Improved scheduling capabilities will allow the potential for customer appointments for more work types and potentially a reduction in customer appointment windows providing the opportunity to save time for customers.

Gas Business Enablement provides tools that support the delivery of the gas main replacement program for Narragansett Gas that provides further benefits to customers.

Tertiary Benefits:

• *Reliability*: Reduced number of leaks and potential disruptions our customers may face.

Request:

Please provide a description and any studies or analysis the Company performed or had performed comparing the options prior to selecting the solution set for the Gas Business Enablement Project

Response:

There are no options to the "solution set" for the Gas Business Enablement Program. For the Program, the term "solution set" refers to the core operating processes of:

- Work Management System (resource deployment)
- Asset Management System (infrastructure management)
- Customer Engagement (customer-side enablement)
- Geospatial (mapping and tracking)

However, the capabilities inherent in each of these core operating processes could be achieved through several possible alternative strategies for systems development. Options for achieving the necessary capabilities of each of these systems are discussed in detail in the Company's response to PUC 5-7, a copy of which is provided as Attachment DIV 9-19-1 for ease of reference. As discussed in response to PUC 5-7, five options were considered. The fourth option (Value Oriented, Jurisdictional Deployment) was selected. For the four options not selected, a high-level cost estimate was developed. Attachment DIV 9-19-1 provides the high-level cost estimates for options not selected.

Once the overall approach for achieving the necessary capabilities was identified (<u>i.e.</u>, the Value Oriented, Jurisdictional Deployment option), National Grid turned its attention to the task of identifying the appropriate strategy for achieving the objectives of the selected approach. For this effort, National Grid sought the expertise of external service providers with experience in systems development and industry practices. More specifically, National Grid conducted a Request For Information process and a Request For Proposals process; performed industry research (<u>e.g.</u> Gartner); obtained industry expertise from Accenture and PriceWaterhouseCoopers; participated in vendor demonstrations, and consulted with National Grid's information systems experts. This broad range of perspectives resulted in a view of the optimal investment path from a functional, technical, and commercial perspective.

Through this process, National Grid identified that the possible technological alternatives for achieving the capabilities sought with the Value Oriented, Jurisdictional Deployment option, included the following:

Potential technological candidates for the Work Management system included:

- IBM Maximo Scheduler
- CGI PragaCad
- ABB Service Suite
- Click Software Field Service (semifinalist)
- Salesforce Service Cloud (finalist)
- Oracle Field Service

Potential technological candidates for the Asset Management system included:

- IBM Maximo (final selection)
- SAP Asset Management (semifinalist)
- CGI Logica
- ABB Asset Suite

Potential technological candidates for the Customer Engagement system included:

- SAP CRM (semifinalist)
- Salesforce CRM (finalist)

For the Geospatial system, National Grid previously evaluated its needs and decided to leverage Environmental Systems Research Institute (ESRI). ESRI is the market leader and is the best functional match for complex geospatial use cases. The work to migrate to ESRI was included in Gas Business Enablement because of schedule and delivery synergies.

Please also see the Company's response to PUC 5-10, a copy of which is provided as Attachment DIV 9-19-2 for ease of reference, explaining whether Gas Business Enablement is comprised of software packages or software as a service. As explained in that response, the program's core systems (i.e., those that provide customer and end-user benefit) will function as either Software as a Service (SaaS) or using Infrastructure as a Service (IaaS). SaaS and IaaS have the benefit of shifting the technical complexity of installation, operations, maintenance, and upgrades of the platform from National Grid to a vendor partner having technical expertise for the underlying service. This in turn will allow the Gas Business Enablement Program to focus on delivering business capability more efficiently by being unburdened by deep technical complexity. Further,

SaaS and IaaS solutions are highly scalable, meaning that expansion and contraction of use of the service can be accomplished with relative ease as compared with in-house software and infrastructure.

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<u>PUC 5-7</u>

Request:

Please explain each of the options that were considered in deciding to move forward with the Gas Business Enablement proposal and for each proposal not chosen, explain why. What were the incremental costs and benefits of each option?

Response:

Below is a brief summary of each of the options considered in deciding to move forward with the Gas Business Enablement Program.

Option 1: Tech Stabilization - Rejected

<u>Description</u>: The Tech Stabilization option would continue to extend the life of National Grid's current systems by (1) sourcing incremental system support, where available, for the systems that are no longer fully supported; and (2) updating the supporting infrastructure and devices where possible.

<u>*Project Scope*</u>: No existing solutions would be replaced. This option would involve a number of tactical investments.

Delivery/Time Frame: This would be on-going until the systems were ultimately replaced.

<u>Reasons Rejected</u>: The Tech Stabilization option would have a limited positive impact on system down time due to the overall age of the current systems, which limits the availability of support and the ability to upgrade infrastructure. There are no anticipated incremental associated benefits with this option, since no work processes would be upgraded and there would be no improvement in software application functionality. This option would simply defer the necessary investments to upgrade already near obsolete and unsupported systems and would not be a sustainable solution. For these reasons, the Tech Stabilization option was rejected early in the strategic assessment phase of the program in August 2016 and only a high level cost estimate and implementation schedule were developed. The decision to reject this option was not based
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on a cost or benefit basis, but rather on the sustainability of the solution, and the continuing need to invest in replacement of the aging software applications.

Option 2: Like for Like Replacements - Rejected

<u>Description</u>: This option is the minimum required investment to upgrade or replace current core unsupported and aging information systems to modern, supported equivalents with no focus on enhancing capability.

<u>*Project Scope/Delivery*</u>: The main solutions that would be upgraded or replaced for National Grid include Mwork and Storms for work delivery, iScheduler for scheduling, and the Gas Asset Management System (GAMS) for asset management and engineering.

<u>Delivery/Time Frame</u>: This option would be delivered over at least four years using waterfall techniques where a solution is not delivered until all business requirements have been designed and developed.

<u>Reasons Rejected</u>: This option would be a pure technology remediation project and would not align processes, increase integration between systems, or address the broader challenges and opportunities that National Grid's gas business faces. There would be a moderate improvement in application availability, but very limited other improvements. Specifically, this option would not address a number of the current gas safety and compliance challenges that require process improvements, systems integration, technical training, and data improvements. As a result, this option was rejected early in the strategic assessment in August 2016 and only a high-level cost estimate and implementation schedule were developed. The decision to reject this option was not based on a cost or benefit basis, but rather on the fact that the option would not deliver any significant business process improvement, nor would it address customer service improvements that are needed today. Finally, this option would not position National Grid to meet changing customer and regulatory requirements into the future.

Option 3: Backbone – Rejected

<u>Description</u>: This option is the minimum required investment to address the system requirements to meet the current gas safety and compliance challenges and mitigate key risk. It should be noted that this option does not address all elements of the current gas safety and

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compliance challenges, nor does it enable many of the improvement opportunities, but it would improve system downtime and data sharing between teams and enable more consistent reporting.

<u>Project Scope</u>: The Backbone option would focus on replacing the multiple legacy work and asset management systems with a core enterprise work and asset management system (EAM). It would deliver process, integration, and capability improvements limited to the work and asset management systems. The main solutions upgraded or replaced for National Grid would be Mwork, Storms, Public Building, and Cascade (gas) for work delivery; iScheduler for resource scheduling; GAMs, Meter Inventory Tracking System (MITS), Pictometry, MapFrame, and Gas Leak Tracking for asset management and engineering; Fortis for document management; and Smallworld for GIS. The legacy systems will be replaced with Maximo for work and asset management, ESRI for GIS, and a Scheduling/Dispatch/Mobile application.

<u>Delivery/Time Frame</u>: The backbone only option would be implemented over 3.5 years using the more traditional waterfall implementation method on premise (<u>i.e.</u>, no Software as a a Service or cloud solutions).

<u>Reasons Rejected</u>: The backbone option would be a largely technology implementation-focused project. Specifically, it would not fully address the current gas safety and compliance challenges that require behavioral/technical training, data improvements such as mapping of services that are performed with paper-based methods today, and the focus on change management to support the organization through implementation. The backbone only option does not address giving the Customer Contact Center visibility of work or the customer experience elements. It also does not fully integrate asset management and work management solutions including supporting graphical electronic data capture in the field. Other capabilities that would not be delivered include advanced analytics for work and asset management, supply chain, and strategic change, which help to mitigate operational and technical risk of implementation. With the reduced focus on the operating model and change management, it is anticipated that any financial benefits would be offset by inefficient and inconsistent use of the new systems. This option was further developed in terms of timeline and costs leveraging some input from Accenture's model but was ultimately rejected by the Steering Group in December 2016 for the reasons noted above.

Option 4: Value Oriented – Jurisdiction Deployment - Selected

Description: This option was selected as the minimum required investment to address the risk of the legacy systems, current gas pipeline safety and compliance challenges, improvements in

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business performance, enhancements in the customer experience, and creation of a platform for the future. Specifically, the Value Oriented – Jurisdiction Deployment includes the scope of Option 3 (Backbone) with additional enhanced capabilities such as:

- Advanced asset management capabilities to enable graphical work design and electronic field data capture. This will improve record accuracy and increase the speed to update maps with new assets. It also will link the EAM to an Asset Investment Planning and Management (AIPM) tool to enable prioritizing asset investments across a number of criteria including risk;
- Advanced work management capabilities that include integrating resource management and planning to improve the effectiveness of delivered work;
- A customer interaction layer that places the front line employee, dispatch, the Customer Contact Center and ultimately the customer on the same platform to provide visibility of the work to all stakeholders and enable customers the flexibility to book and reschedule service appointments, and obtain information on appointments using their preferred communication channel. This also includes a new Customer Contact Center front end so that customer service representatives have visibility to the work in the field;
- Change management capabilities reflecting lessons learned from past programs and industry best practices that (1) are delivered throughout the program lifecycle; (2) engage users in the actual process of developing the solution; and (3) involve support from the program team, business leadership, and support organizations such as Supply Chain and Information Services (IS);
- Field training via multiple media (including mobile) to improve employees' technical skills and simplify work methods resulting in enhanced field employees' capabilities to consistently deliver work safely for customers, follow the correct procedures and record the required information accurately;
- Supply chain integration to the EAM to improve effectiveness of the supply chain in supporting capital project delivery;
- Automated testing capabilities that would enable agile development techniques to be used; and

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• Cloud and Software as a Service solutions, where available, to move solutions onto modern platforms that will make it easier for National Grid to keep the solutions up-to-date and supported against the latest cyber security threats.

<u>Project Scope</u>: The main solutions to be upgraded or replaced for National Grid include Mwork, Storms, Public Building, and Cascade (gas) for work delivery; iScheduler for resource scheduling; GAMS; Toolwatch; MITS; Pictometry; MapFrame; Gas Leak Tracking and Gas Valve Inventory for asset management and engineering; Fortis for document management; Smallworld for GIS; and Customer Service System (CSS) for Customer Contact Center terminals only. The solutions will be replaced with integrated versions of Maximo for work and asset management, Copperleaf for asset investment planning and management, ESRI for GIS and Salesforce for scheduling, dispatch, mobility, Customer Contact Center terminals, and customer interaction.

<u>Delivery/Time Frame</u>: The Value Oriented – Jurisdiction Deployment option will be delivered using predominately cloud solutions and hybrid agile development techniques over five years. Under the agile development methodology, business and IS development teams work collaboratively in short-cycles to prioritize functionality and get to a minimum viable product (<u>i.e.</u>, the simplest solution that can be implemented) allowing earlier release of initial functionality and reprioritization of enhancements based on learning. It should be noted that, despite the overall longer five-year implementation timeframe of the enhanced capabilities in this option, implementation of the enhanced capabilities will not extend the 3.5 year timeframe of the backbone capabilities as the focus remains on risk-prioritized replacement of the core systems.

<u>*Reasons Selected*</u>: This option would be a broader transformation project focused on people, process, and technology designed to address gas pipeline safety and compliance, customer experience, and improved business performance. Solutions will be developed on a modern technical architecture to support the business for a long period of time.

This was the minimum cost solution to deliver the desired program outcomes. For all of the reasons described above, this option was recommended by the Steering Group in December 2016, and includes the most refined timeline and cost modeling. Importantly, National Grid looked at developing the solutions independently for each operating company, rather than consolidated as an enterprise-wide solution, but ruled out that approach because it was more costly (requiring duplicative design and development and testing of core functionality) than

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implementing an enterprise-wide solution with individual releases across the operating companies as functionality is demonstrated.

Option 5: Value Oriented – Accelerated Deployment – Rejected

<u>Description/Project Scope/Delivery/Time Frame</u>: The Value Oriented – Accelerated Deployment looked to implement the same scope as Option 4 described above, but on an accelerated implementation timeframe for four and a half years.

<u>Reasons Rejected</u>: Accelerated deployment increased delivery costs as well as implementation risks. This option was further developed similar to Option 4 in terms of timeline and costs utilizing the detailed cost model developed with Accenture. However, the option was ultimately rejected by the Steering Group in December 2016 given higher delivery costs, implementation risk, and recognition that implementation of a complex program such as Gas Business Enablement requires a measured approach, allowing sufficient time for comprehensive change management and system/regression testing.

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PUC 5-10

Request:

Please explain whether Gas Business Enablement is comprised of software packages or software as a service. Please explain how software as a service is utilized by the Gas Business Enablement program and the benefits of its use.

Response:

Gas Business Enablement leverages a mix of Software as a Service (commonly referred to as SaaS), Infrastructure as a Service (commonly referred to as IaaS), and more traditional software packages.

The program's core systems—those that provide customer and end user benefit—are being leveraged as either Software as a Service (Saas) or using Infrastructure as a Service (IaaS). SaaS and IaaS have the benefit of shifting the technical complexity of installation, operations, maintenance, and upgrades of the platform from National Grid to a vendor partner having technical expertise for the underlying service. This in turn allows the Gas Business Enablement Program to focus on delivering business capability more efficiently by being unburdened by deep technical complexity. Further, SaaS and IaaS solutions are highly scalable, meaning that expansion and contraction of use of the service can be accomplished with relative ease as compared with in-house software and infrastructure.

Software as a Service is an arrangement where the technical infrastructure and the software itself is installed, operated, maintained, and upgraded by the service provider. In other words, all technical responsibility for the capability is owned by the SaaS provider.

• The Gas Business Enablement Program is leveraging a SaaS model for Salesforce and Maximo.

Infrastructure as a Service, on the other hand, is an arrangement where the "service" extends to only the underlying technical infrastructure layer and not to the software installed within it. In other words, the customer consumes the infrastructure service but is responsible for installing, operating, maintaining, and upgrading the software deployed within that infrastructure. Despite

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having to retain the technical activities related to the software, the consumer of IaaS is relieved of significant technical complexity related to infrastructure. This approach is being used in cases where the software package itself is not available in a SaaS arrangement.

• The Gas Business Enablement Program is leveraging IaaS for ESRI, which is not available in a SaaS model.

Certain traditional software packages are being used by the program for project management, version control, and release management. These software packages tend to be easier to install and maintain, and having these packages installed within the National Grid network allows for integration with other internal National Grid tools.

Request:

Please describe all steps that the Company has taken or has required its vendors to take to ensure the expected benefits are achieved on time and on budget.

Response:

National Grid started its Gas Business Enablement Program with a strategic assessment aimed at: (1) clearly defining the scope of the program, (2) identifying the initiatives required to deliver that program scope, and (3) creating a deliverable roadmap to implement the program. To provide additional assurance during the strategic assessment phase, National Grid engaged a separate business assurance partner to further assure that the solution was 'fit for purpose,' the roadmap was deliverable and the cost estimates were appropriate.

Following the strategic assessment phase, National Grid conducted a competitive procurement process. Through this process, National Grid required vendors to accept fixed price contracts, which included pre-defined milestones linked to the delivery roadmap. Each milestone has a fixed scope and fixed payments tied to it. If the program starts to fall behind, then vendor payments will slow as well, therefore providing vendors a strong incentive to keep the program on track. Having fixed price contracts significantly reduces the risk of the program going over budget.

Finally, in the commercial framework with the delivery partners, National Grid requires that a proportion of the vendor fees are tied to the delivery of business benefits. This means that if the expected benefits are not delivered by the fixed end of the program, the vendors will not receive their full fee. This structure incentivizes vendors both to deliver the technology on time, and to ensure that the promised business benefits of the program are achieved.

Request:

Referring to page 18, lines 16-18 of the Joint Pre-filed Testimony of Johnston and Connolly that states "Historic and future compliance issues are arising because of the existence of dis-jointed, disparate, outdated systems" p. 18, please provide:

- a. A schedule detailing all historic compliance issues by operational jurisdiction that were a direct result of inadequacies of the systems and for each provide the results of any route cause analysis performed by the Company.
- b. A description of any future compliance issues by operational jurisdiction that the Company is aware of

Response:

- a. Please refer to Attachment DIV 9-21 for a five-year history of compliance issues for Narragansett Gas. The root cause of the listed compliance issues is alleged failure to conduct work or document a mandated activity in accordance with the Company's standards and procedures. The Company's response to part b. below provides examples of areas that the Gas Business Enablement Program solutions will address.
- b. The Company endeavors to operate in a safe and compliant manner working with the limitations of the existing systems and the absence, in many respects, of systems to support the work. The Company's processes include manual efforts to ensure mandated activities (e.g. surveys, inspections, and preventative maintenance) are conducted in accordance with the Company's standards and procedures. The following are examples of areas that the Gas Business Enablement Program solutions will address:
 - 1. Failure to conduct a mandated activity Asset/Work Management System will automatically schedule preventative maintenance work for mandated activities such as surveys, as well as follow-up work such as leak repair rechecks. This also includes abandonment of inactive services, meter changes, etc.
 - 2. Failure to document a mandated activity The field data will be captured electronically in the mobile software solution and will be populated in the asset and work management system. Paper-based forms will be eliminated to avoid information being lost. The electronic information will be more easily made available for review by supervisors and/or compliance analysts to view and validate the information.

- 3. Failure to conduct a mandated activity Current procedures and processes rely on human review to ensure due dates for mandated activities are met. The asset and work management software solution will remove the reliance on human intervention, automating scheduling of recurring activities. Work completion information will be captured electronically in the mobile software solution and saved with the asset record in the asset and work management system.
- 4. Failure to properly document a mandated activity Electronic field forms within the mobile software solution will be "smart". Required information must be entered before a worker can complete a form. In some cases, a supervisor would need to review the data entered in the electronic forms before we can "file" the information. All forms will be used across the territories, so any supervisor can review the information.
- 5. Failure to conduct a mandated activity Field personnel will be able to capture all investigation work completed, as required, in the mobile software solution. Work requiring a follow-up activity will be automatically routed to the organization responsible for remediation and easily tracked through life cycle of the work order.
- 6. Failure to conduct a mandated activity The mobile software solution will have "smart" forms to enable a field worker to accurately document the dates of work performed and will have the capability to print forms, notices, and/or tags to be left at the customer premises for required follow-up activity. The asset and work management system will track this work and schedule the follow-up activity in accordance with policies and procedures. Tracking the work and the customer contacts will allow for more timely decision making of next steps to accomplish mandated work.

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NOPV	Date Received	Date of Incident	Location	Description	System of Record
12-3	5/21/2012	5/1/2012	61 Seminole Trail, Cranston	Alleged failure to cut-off services within due date	Paper records / Excel spreadsheets
12-4	10/16/2012	9/19/2012	Audit of Service Abandonment Program	Alleged failure to cut-off services within due date	Paper records / Excel spreadsheets
12-5	11/1/2012	9/19/2012	Audit of Critical Valve Maintenance Program	Alleged failure to perform maintenance within due date	Paper records / Excel spreadsheets
13-2	9/18/2013	8/27/2013	Audit of Service Abandonment Program	Alleged failure to cut-off services within due date	Paper records / Excel spreadsheets
13-3	10/3/2013	10/2/2013	Audit of Rectifier Program	Alleged failure to inspect and maintain rectifiers in operation	Paper records / Excel spreadsheets
14-1	9/3/2014	5/7/2014	Salve Regina University	Alleged failure to cut-off services within due date	Paper records / Excel spreadsheets
14-3	10/9/2014	9/25/2014	50-52 Windsor RD, Cranston	Alleged failure to cut-off service within due date	Paper records / Excel spreadsheets
15-2	7/2/2015	6/30/2015	Inactive Service Program	Alleged failure to cut-off services within due date	Paper records / Excel spreadsheets
15-3	11/27/2015	11/11/2015	39 Jones ST, Cumberland	Alleged failure to lock off meter	CSS
16-1	2/10/2016	9/30/2015	Various	Alleged failure to Inspect bridge piping 2001, 2004, 2007, 2010, 2013 - Corrosion	Paper records / Excel spreadsheets
16-2	4/11/2016	3/21/2016	100 Manton AV, Providence	Alleged failure to abandon a gas line as required in 5 years	Paper records / Excel spreadsheets
16-6	11/30/2016	10/13/2016	Various	Buildings of Public Assembly Inspection Program – Institute SPECIAL Survey - Distribution Integrity Management Program	Paper records / Excel spreadsheets
16-7	12/20/2016	11/30/2016	Rockland ST @ Morse ST, Woonsocket	Alleged failure to maintain I&R critical valve	Paper records / Excel spreadsheets

<u>Request</u>:

Referring to page 6, lines 8-10 of the Joint Pre-filed Testimony of Johnston and Connolly, what percent of the 37 systems identified in use in Rhode Island are end of life and not currently on vendor supported software platforms?

Response:

Of the 37 systems in use in Rhode Island, 17 (46 percent) are not currently on vendor-supported software platforms.

Request:

Referring to page 25, lines 16-17 of the Joint Pre-filed Testimony of Johnston and Connolly, please provide a list of the "Clearly defined contractual parameters and performance requirements" for each vendor engaged by the Company in the Gas Business Enablement Project.

Response:

During the procurement process, National Grid divided the scope of Gas Business Enablement into modules. For each module awarded to a vendor, National Grid developed a five-year module plan with a defined scope of work to be delivered at a fixed price throughout the program. Each module plan contains milestones that divide the scope of work into deliverable pieces, and each milestone contains a fixed scope of work and a fixed price. Using this approach, vendors focus on delivering the required scope of work for a fixed price on time because they may be penalized if they vary from that path and will not receive payment until each of the acceptance criteria for each milestone is met.

In addition, National Grid incorporated the following provisions into its contracts with the selected vendors:

- 1. A collaboration holdback, where National Grid will withhold fees if a vendor is not demonstrating that it is collaborating with National Grid and the other vendors to support a successful delivery of the vendor's scope of work for the benefit of National Grid and its customers.
- 2. A technical holdback, where National Grid will withhold fees following technical implementations if the solution is not delivering as required because of major defects. This provision is intended to incentivize our vendors to deliver solutions that work and, to the extent there are issues, to resolve them quickly.
- 3. A business case holdback, where National Grid will withhold fees if the business case benefits are not delivered, measured using the operational baseline. This provision is intended to focus our vendors on not only implementing technology successfully, but also on the requirement of supporting the business to move its performance forward as anticipated.

Request:

For the Gas Business Enablement project, please provide a definition of change in scope as it relates to each fixed priced contract that could potentially lead to an increase in the contract price.

Response:

The Gas Business Enablement Program has established fixed price contracts with its System Integrators, PricewaterhouseCoopers LLP (PwC) and Accenture LLP, and its Change Leadership partner, Kotter International (consultants). These contracts define the cost to National Grid for the delivery of a defined set of functionality in an agreed upon timeframe under a given set of assumptions about organizational size, technical platforms, regulatory requirements, etc. Although these contracts provide commercial stability and predictability, there may be scenarios when it is necessary or advantageous to increase contract prices. These scenarios include:

1) Increase or decrease in the functionality to be delivered

There may be times when the addition of functionality to the Gas Business Enablement delivery scope could provide additional customer benefit for a nominal additional cost to the program. Analysis of this type of change would include definition and analysis of various options for delivery of the additional functionality. The analysis would evaluate costs, benefits, risks, and value to the customer. An example of this scenario could be the decision to add new functionality to the program as an alternative to sanctioning an entirely new program. Alternately, a decision to decrease program functionality could be made because another program provided a more cost effective way to deliver the same customer benefit.

2) Change in the Gas Business Enablement Program timeline

Changes to the program timeline could lead to an increase of contract prices. Lengthening the overall program timeline beyond that agreed to in the fixed price contract could add costs by requiring consultants to stay onsite longer, especially those in core roles, such as program management, leadership, and technology support. Changing the length of specific activities or phases could have the same effect. Examples of this scenario could include the delay of a go-live to mitigate risk of business disruption or certain funding constraints which limit annual program funding but extend the time required to deliver the agreed upon scope of work and customer benefit. Before this type of contract change is initiated, analysis would first establish whether the cause of the delay is beyond the control of the consultant and would identify opportunities to mitigate the cost impact through alternative staffing and scheduling strategies.

3) Increase or decrease the organizational scope of the Gas Business Enablement Program

The fixed price contracts are based on the assumption that the defined scope of work will be delivered to the US gas business and its employees. Increasing the number of organizational elements and employees would change a number of estimating factors and assumptions that could increase contract prices. An example of this scenario could include delivery of Gas Business Enablement functionality to electric business units. Before this type of change is initiated a detailed impact analysis will be performed to determine the specific cost impacts based on the functionality to be delivered and number of organizations and employees to be supported. Options to mitigate the impact would be defined and evaluated.

4) Address an externally driven change in regulatory requirements

Changes to regulations taking effect subsequent to the establishment of the Gas Business Enablement fixed price contracts would be analyzed for their impact on the program functionality and delivery timelines, and for any impact on the consultants' management overhead to administer and support the contract. Before this type of change is initiated, a detailed analysis to confirm and quantify the impact would be performed. Options to mitigate the impact would be defined and evaluated.

5) Address a change to the contract assumptions or constraints provided by National Grid

As part of the competitive procurement process, National Grid provided its best available data and assumptions on size, capabilities, current state technology, and other information needed by the consultants to develop complete and accurate cost proposals. Changes to this information could require re-estimation of the level of effort and cost to deliver the agreed upon scope of work. An example of this scenario could include an underestimation of the processing speed of certain components of the legacy network, which could require an unplanned upgrade before implementation of the Gas Business Enablement solution. Before this type of change is initiated, a detailed analysis of the actual impact of the changed information and a study of alternative solutions would be performed.

The Gas Business Enablement Program has created a change management process with clearly defined delegations of authority. Certain types of changes impacting our fixed price contracts must be escalated through the Program Sponsor and approved by the Steering Group. These include:

- a) Changes which will increase/decrease the total cost of the contract;
- b) Changes to the delivery date of major releases or "program anchors"; and
- c) Major changes to the functionality to be delivered in a major release.

Request:

What specific accountability metrics are the SVP of Gas Business Enablement being held accountable for by the Steering Group?

Response:

The Senior Vice President of Gas Business Enablement is accountable for the overall successful implementation of the Gas Business Enablement Program and the ultimate demonstration of the business benefits from it. The Steering Group is charged with evaluating the Senior Vice President's performance and receives a broad range of inputs to perform this evaluation.

The key metrics by which the Senior Vice President's performance will be judged are as follows:

Annual Budget Performance: In addition to reviewing overall program costs, the Steering Group analyzes the annual program budget monthly and holds the Senior Vice President of Gas Business Enablement accountable for managing costs on a month-by-month basis.

Portfolio Anchor Delivery: The Senior Vice President's performance is measured against seven "Portfolio Anchors." Portfolio Anchors are project milestones designated in the project roadmap, representing key delivery points against which progress is reported and measured. This process provides the Steering Group direct line of sight into the status and progress of the work effort. The Senior Vice President is allowed a degree of flexibility in the day-to-day delivery activities, but must remain focused on the key project delivery points to achieve the anticipated customer benefits. For example, the first Portfolio Anchor is due to be delivered at the end of March 2018, when the first functionality for Collections, Corrosion, and Instrumentation and Regulation goes into service in Rhode Island.

Critical Success Factors: National Grid developed a framework of eight Critical Success Factors to assure the successful delivery of the Gas Business Enablement Program. The project team has closely adhered to the designed Critical Success Factors since the beginning of the program and continually checks performance against the factors. The Critical Success Factors are listed below.

Regulatory Support and Cost Recovery: Regulatory support and cost recovery is essential to enable delivery of the Gas Business Enablement Program. The Senior Vice President is accountable for securing cost recovery from the regulators for the Gas Business Enablement Program across National Grid's jurisdictions.

Operational Benefits Delivery: The Steering Group's key expectation for the Senior Vice President is delivery of the operational efficiencies and anticipated benefits for customers. Prior to deployment, the project team has developed a baseline measurement of operational performance and identified target improvements in safety and compliance, operational performance, and customer experience. As capabilities are released into the business, the Steering Group will be following these improvements closely to ensure that the Senior Vice President is delivering the anticipated program outcomes.

The eight Critical Success Factors applicable to the Gas Business Enablement Program are as follows:

1. Active Sponsors – Performance for the sponsor is linked to success of the project.

- The Steering Group includes senior executives from National Grid and National Grid plc. The Steering Group meets periodically with the Program Sponsor to exercise oversight, including on budget and timing, over the Gas Business Enablement Program and to provide guidance and access to resources as required.
- A full time Program Sponsor has been appointed to lead the program and ensure alignment and focus on strategic business priorities and outcomes.
- The Program Sponsor and Leadership Team's success is directly tied to the achievement of the Gas Business Enablement Program as well as budget and timing.

2. **Carefully Managed Scope** – Project scope is realistic and achievable.

- High level design workshops with participation from business subject matter experts and leadership were conducted. These workshops served to focus the program scope on business need and opportunity, tightly aligned with the business case, and supported by the business.
- Prior to the start of work, the Gas Business Enablement Program will roll out a comprehensive change control process and educate all team members on their responsibilities in scope management process.

3. <u>Clear Success Criteria – Project outcomes are clear and compelling.</u>

- Clear ambitions are set for this program to reduce operational risk, improve operational performance, and create a flexible platform for the future.
- National Grid has developed a value framework to baseline, measure, and track improvements in operational performance metrics as a result of Gas Business Enablement.

4. **Readied Business** – An informed, engaged business is ready to successfully implement the change.

- Change management and business engagement activities will occur continuously throughout the program's lifecycle and have been planned and resourced with the same rigor as the systems delivery work streams.
- Business resources will participate in all phases of the work including design, development, testing and deployment. This will facilitate smooth handover from the Program team to the business user community.

5. **<u>Rigorous Stage Gating – Tightly defined criteria must be met for projects to move between stages.</u>**

- Stage gating is built into program plans and management frameworks.
- The program will use a scaled agile development methodology that is performance data driven and includes regular planning workshops to evaluate progress, quality, risk, and outcomes achieved.

6. <u>Good Governance – Established governance groups, supported to operate effectively.</u>

- A comprehensive Gas Business Enablement Program Handbook has been developed including processes, tools, templates, roles and responsibilities. The Handbook supports integrated program planning, resource and finance management, scope control, risk and issues management, commercial management, quality assurance, performance management, and governance support.
- The Program engages independent reviewers to provide feedback on deliverable quality, process compliance, alignment to business case and strategic business objectives and priorities.

7. <u>Well Managed Partners – The right partners/resources fit for the Program, held accountable to deliver</u>.

- A rigorous sourcing process is underway to retain highly capable consulting partners at competitive rates.
- Service levels and incentives are tied to achievement of the National Grid business benefit case and captured in contracts.
- Contracts with experienced delivery partners are being established, it is expected that these will be on a fixed price basis, supported by rigorous oversight and change control processes.

- The Gas Business Enablement Portfolio Office has established the capability to manage all program consulting and service contracts.
- 8. High Performing Teams One team, the right people, highly motivated.
 - The Gas Business Enablement Program is competitively recruiting all team members for the right mix of capabilities, skills and experience, as well as alignment with National Grid and program values and culture.
 - Program "ways of working" are designed to foster a "badge-less, one team" culture between employees and consultants.

Request:

What portion of Gas Business Enablement budget in each year is directly associated with change management and training activities?

Response:

Please see Attachment DIV 9-26 for the change management and training costs for Fiscal Year 2018 through Fiscal Year 2023. Total costs for this period are approximately \$40 million, which represents nine percent of the overall total Gas Business Enablement Program cost of approximately \$458 million.

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National Grid - Gas Business Enablement FY2018-FY2023 Total Costs for Change Management and Training Activities All values in \$MMs

The Narragansett Electric Company d/b/a National Grid Gas Business Enablement Total Forecasted Change Management and Training Costs For Fiscal Years Ending March 31, 2018 through March 31, 2023

Work Stream	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	TOTAL
Change Management and Training Activities	4.57	14.50	10.26	7.23	2.73	0.70	39.99
	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	TOTAL
	84.53	168.74	118.79	65.07	19.40	1.61	458.14
Change Management and Training Activities as % of Total Program Costs	5%	9%	9%	11%	14%	44%	9%

Request:

Please provide the assessment of program alternatives described on page 31, line 21 of the Joint Pre-filed Testimony of Johnston and Connolly?

Response:

Please see the Company's response to PUC 5-7 for the requested information, a copy of which is provided as Attachment DIV 9-27 for ease of reference.

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<u>PUC 5-7</u>

Request:

Please explain each of the options that were considered in deciding to move forward with the Gas Business Enablement proposal and for each proposal not chosen, explain why. What were the incremental costs and benefits of each option?

Response:

Below is a brief summary of each of the options considered in deciding to move forward with the Gas Business Enablement Program.

Option 1: Tech Stabilization - Rejected

<u>Description</u>: The Tech Stabilization option would continue to extend the life of National Grid's current systems by (1) sourcing incremental system support, where available, for the systems that are no longer fully supported; and (2) updating the supporting infrastructure and devices where possible.

<u>*Project Scope*</u>: No existing solutions would be replaced. This option would involve a number of tactical investments.

Delivery/Time Frame: This would be on-going until the systems were ultimately replaced.

<u>Reasons Rejected</u>: The Tech Stabilization option would have a limited positive impact on system down time due to the overall age of the current systems, which limits the availability of support and the ability to upgrade infrastructure. There are no anticipated incremental associated benefits with this option, since no work processes would be upgraded and there would be no improvement in software application functionality. This option would simply defer the necessary investments to upgrade already near obsolete and unsupported systems and would not be a sustainable solution. For these reasons, the Tech Stabilization option was rejected early in the strategic assessment phase of the program in August 2016 and only a high level cost estimate and implementation schedule were developed. The decision to reject this option was not based

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on a cost or benefit basis, but rather on the sustainability of the solution, and the continuing need to invest in replacement of the aging software applications.

Option 2: Like for Like Replacements - Rejected

<u>Description</u>: This option is the minimum required investment to upgrade or replace current core unsupported and aging information systems to modern, supported equivalents with no focus on enhancing capability.

<u>*Project Scope/Delivery*</u>: The main solutions that would be upgraded or replaced for National Grid include Mwork and Storms for work delivery, iScheduler for scheduling, and the Gas Asset Management System (GAMS) for asset management and engineering.

<u>Delivery/Time Frame</u>: This option would be delivered over at least four years using waterfall techniques where a solution is not delivered until all business requirements have been designed and developed.

<u>Reasons Rejected</u>: This option would be a pure technology remediation project and would not align processes, increase integration between systems, or address the broader challenges and opportunities that National Grid's gas business faces. There would be a moderate improvement in application availability, but very limited other improvements. Specifically, this option would not address a number of the current gas safety and compliance challenges that require process improvements, systems integration, technical training, and data improvements. As a result, this option was rejected early in the strategic assessment in August 2016 and only a high-level cost estimate and implementation schedule were developed. The decision to reject this option was not based on a cost or benefit basis, but rather on the fact that the option would not deliver any significant business process improvement, nor would it address customer service improvements that are needed today. Finally, this option would not position National Grid to meet changing customer and regulatory requirements into the future.

Option 3: Backbone – Rejected

<u>Description</u>: This option is the minimum required investment to address the system requirements to meet the current gas safety and compliance challenges and mitigate key risk. It should be noted that this option does not address all elements of the current gas safety and

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compliance challenges, nor does it enable many of the improvement opportunities, but it would improve system downtime and data sharing between teams and enable more consistent reporting.

<u>Project Scope</u>: The Backbone option would focus on replacing the multiple legacy work and asset management systems with a core enterprise work and asset management system (EAM). It would deliver process, integration, and capability improvements limited to the work and asset management systems. The main solutions upgraded or replaced for National Grid would be Mwork, Storms, Public Building, and Cascade (gas) for work delivery; iScheduler for resource scheduling; GAMs, Meter Inventory Tracking System (MITS), Pictometry, MapFrame, and Gas Leak Tracking for asset management and engineering; Fortis for document management; and Smallworld for GIS. The legacy systems will be replaced with Maximo for work and asset management, ESRI for GIS, and a Scheduling/Dispatch/Mobile application.

<u>Delivery/Time Frame</u>: The backbone only option would be implemented over 3.5 years using the more traditional waterfall implementation method on premise (<u>i.e.</u>, no Software as a a Service or cloud solutions).

<u>Reasons Rejected</u>: The backbone option would be a largely technology implementation-focused project. Specifically, it would not fully address the current gas safety and compliance challenges that require behavioral/technical training, data improvements such as mapping of services that are performed with paper-based methods today, and the focus on change management to support the organization through implementation. The backbone only option does not address giving the Customer Contact Center visibility of work or the customer experience elements. It also does not fully integrate asset management and work management solutions including supporting graphical electronic data capture in the field. Other capabilities that would not be delivered include advanced analytics for work and asset management, supply chain, and strategic change, which help to mitigate operational and technical risk of implementation. With the reduced focus on the operating model and change management, it is anticipated that any financial benefits would be offset by inefficient and inconsistent use of the new systems. This option was further developed in terms of timeline and costs leveraging some input from Accenture's model but was ultimately rejected by the Steering Group in December 2016 for the reasons noted above.

Option 4: Value Oriented – Jurisdiction Deployment - Selected

Description: This option was selected as the minimum required investment to address the risk of the legacy systems, current gas pipeline safety and compliance challenges, improvements in

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business performance, enhancements in the customer experience, and creation of a platform for the future. Specifically, the Value Oriented – Jurisdiction Deployment includes the scope of Option 3 (Backbone) with additional enhanced capabilities such as:

- Advanced asset management capabilities to enable graphical work design and electronic field data capture. This will improve record accuracy and increase the speed to update maps with new assets. It also will link the EAM to an Asset Investment Planning and Management (AIPM) tool to enable prioritizing asset investments across a number of criteria including risk;
- Advanced work management capabilities that include integrating resource management and planning to improve the effectiveness of delivered work;
- A customer interaction layer that places the front line employee, dispatch, the Customer Contact Center and ultimately the customer on the same platform to provide visibility of the work to all stakeholders and enable customers the flexibility to book and reschedule service appointments, and obtain information on appointments using their preferred communication channel. This also includes a new Customer Contact Center front end so that customer service representatives have visibility to the work in the field;
- Change management capabilities reflecting lessons learned from past programs and industry best practices that (1) are delivered throughout the program lifecycle; (2) engage users in the actual process of developing the solution; and (3) involve support from the program team, business leadership, and support organizations such as Supply Chain and Information Services (IS);
- Field training via multiple media (including mobile) to improve employees' technical skills and simplify work methods resulting in enhanced field employees' capabilities to consistently deliver work safely for customers, follow the correct procedures and record the required information accurately;
- Supply chain integration to the EAM to improve effectiveness of the supply chain in supporting capital project delivery;
- Automated testing capabilities that would enable agile development techniques to be used; and

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• Cloud and Software as a Service solutions, where available, to move solutions onto modern platforms that will make it easier for National Grid to keep the solutions up-to-date and supported against the latest cyber security threats.

<u>Project Scope</u>: The main solutions to be upgraded or replaced for National Grid include Mwork, Storms, Public Building, and Cascade (gas) for work delivery; iScheduler for resource scheduling; GAMS; Toolwatch; MITS; Pictometry; MapFrame; Gas Leak Tracking and Gas Valve Inventory for asset management and engineering; Fortis for document management; Smallworld for GIS; and Customer Service System (CSS) for Customer Contact Center terminals only. The solutions will be replaced with integrated versions of Maximo for work and asset management, Copperleaf for asset investment planning and management, ESRI for GIS and Salesforce for scheduling, dispatch, mobility, Customer Contact Center terminals, and customer interaction.

<u>Delivery/Time Frame</u>: The Value Oriented – Jurisdiction Deployment option will be delivered using predominately cloud solutions and hybrid agile development techniques over five years. Under the agile development methodology, business and IS development teams work collaboratively in short-cycles to prioritize functionality and get to a minimum viable product (<u>i.e.</u>, the simplest solution that can be implemented) allowing earlier release of initial functionality and reprioritization of enhancements based on learning. It should be noted that, despite the overall longer five-year implementation timeframe of the enhanced capabilities in this option, implementation of the enhanced capabilities will not extend the 3.5 year timeframe of the backbone capabilities as the focus remains on risk-prioritized replacement of the core systems.

<u>*Reasons Selected*</u>: This option would be a broader transformation project focused on people, process, and technology designed to address gas pipeline safety and compliance, customer experience, and improved business performance. Solutions will be developed on a modern technical architecture to support the business for a long period of time.

This was the minimum cost solution to deliver the desired program outcomes. For all of the reasons described above, this option was recommended by the Steering Group in December 2016, and includes the most refined timeline and cost modeling. Importantly, National Grid looked at developing the solutions independently for each operating company, rather than consolidated as an enterprise-wide solution, but ruled out that approach because it was more costly (requiring duplicative design and development and testing of core functionality) than

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implementing an enterprise-wide solution with individual releases across the operating companies as functionality is demonstrated.

Option 5: Value Oriented – Accelerated Deployment – Rejected

<u>Description/Project Scope/Delivery/Time Frame</u>: The Value Oriented – Accelerated Deployment looked to implement the same scope as Option 4 described above, but on an accelerated implementation timeframe for four and a half years.

<u>Reasons Rejected</u>: Accelerated deployment increased delivery costs as well as implementation risks. This option was further developed similar to Option 4 in terms of timeline and costs utilizing the detailed cost model developed with Accenture. However, the option was ultimately rejected by the Steering Group in December 2016 given higher delivery costs, implementation risk, and recognition that implementation of a complex program such as Gas Business Enablement requires a measured approach, allowing sufficient time for comprehensive change management and system/regression testing.

Request:

Please provide all reports, presentations or other updates provided by PA Consulting to the Steering Committee in the course of its role as the 3rd party, independent Value Assurance provider for the Gas Business Enablement Program. This is an ongoing request.

Response:

The attachments listed below are the first three reports provided by PA Consulting to the Gas Business Enablement Steering Group.

Attachment DIV 9-28-1 – report dated October 23, 2017 Attachment DIV 9-28-2 – report dated November 28, 2017 Attachment DIV 9-28-3 – report dated January 16, 2017

Future reports will be provided following completion.

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NATIONAL GRID GAS BUSINESS ENABLEMENT VALUE ASSURANCE

Phase 1 - "Set Up for Success"

Assessment Report v04

Steering Group Summary

October 23, 2017 (original submission on September 27, 2017)

PA CONFIDENTIAL - Between PA and National Grid

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Contents

- 1. Background and Executive Summary
- 2. Detailed Assessment Findings
- 3. Recommendation Summary
- A. Appendix A "Deep Dive" Document Reviews
 - Business Case
 - Change Management Strategy
 - Change Management Plan
 - Communication Strategy
 - Stakeholder Map
- B. Appendix B Program Maturity Assessment

Distribution of the report and report approval

A draft of this report was delivered to the Program Sponsor on September 27, 2017 with the final draft delivered to the Steering Group during or after the week of October 2, 2017. Although feedback from the Program Sponsor was considered, PA's recommendations reflect its independent analysis and is ultimately working in the service of the Steering Group.





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PA Consulting has kicked off it Value Assessment Partner role with this first "Set up for Success" assessment

Value	 Provide risk prioritized and focused assurance services across the relevant elements of the portfolio of Gas Business Enablement programs, projects and initiatives, focused on assuring the successful delivery of the program and its anticipated business benefits
Mission	 Effectively serve as an "insurance policy", acting as an external set of eyes to observe and monitor program progress and value delivery, identify potential risk areas, and provide recommendations on issue avoidance and remediation

Value Assurance Timeline

							Sept			Oct				Nov			Dec				Jan	2018	018		Feb		Mar				Apr			٦
#	Step	Торіс	Start	End	8/28	9/4	9/11	9/18	10/2	10/9	10/16	10/23	11/6	11/13	11/20	11/27	12/4	12/18	12/25	1/1	1/8	1/15	1/29	2/5	2/12	2/19	3/5	3/12	3/19	3/26	4/2	4/9 4/16	4/23	ł
1	Program Kickoff		8/28/17	8/28/17																														
2	GBE Set Up for Success	GBE Program Readiness	9/4/17	9/29/17																														
3	Quality Gate Review #1	Portfolio Office, Business Enhancement, OCM	10/30/17	11/17/17																														
3a	Attend PI2 Planning	Business Architecture, Data Model, ISE	11/27/17	11/28/17																														
4	Quality Gate Review #2	Business Architecture, Data Model, ISE	12/11/17	1/5/18																														
5	Deep Dive #1	Operating Model (or other TBD)	1/29/18	2/9/18																														
6	Project Health Monitoring	Ongoing monitoring	8/28/17	3/30/18																											TBD			1

Program Timeline

					Sep	ot			Oct			N	vc		D	2C		Ja	n 20:	18		F	eb		Μ	ar		A	pr	
# Step	Торіс	Start	End	8/28	9/4 9/11	9/18	9/25	10/9	10/16	10/23	11/6	11/13	11/20	12/4	12/11	12/18	12/25	1/8	1/15	1/22	2/5	2/12	2/19	3/5	3/12	3/19	3/20	4/9	4/16	4/23
PA 1	Program Anchor 1	9/12/17	3/31/18																											
PI 1	Program Increment 1	9/18/17	11/28/17																											
PI 2	Program Increment 2	11/29/17	2/6/18																											
PI3 - Application Test	Appication Testing	11/27/17	3/23/18																											
PI3 - E2E, UAT	End-to-end and User Acceptance testing	11/27/17	3/23/18																											
Cutover	Cut over to new MVP solution	3/26/18	3/30/18																										۰	
PA 1 Go-live	MVP solution go-live	3/30/18	3/30/18																								43	/30		
Support	Support released MVP	4/2/18	5/25/18																											



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PA's approach for this assessment



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GBE is well positioned to move to PA-1, though further work is needed to ensure effective execution

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Program	Solution	Business Readiness	Commercial	People
Business Case	Requirements	Target Operating Model	Sourcing	GBE Program Team
Governance	Architecture and Design	Change	Vendor Management	Business
Controls	Data	Support		IT
Management	Implementation			Supplier
Scope	Migration		K	ey
	Infrastructure		No add	ditional equired
	Security	Release Management	Poten	tial risk attention
	Testing	Disaster Recovery & BCP	Critica requ immedia	al item iiring ite action
	Environmental Management	Support	Not appli reviewe sta	cable/not d at this age

Value Assurance Framework

Overall, the project is under control with a strong sense of purpose and enthusiasm

- There appears to be strong support from the gas business, particularly in regards to the technology solutions outlined in the project scope
- Enthusiasm within the project team is high
- ! The PI-1 event (week of Sept. 11) went a long way to address many initial uncertainties observed in early September

However, there are several potential risk areas that require attention

- **People** concerns about IT capability, capacity and engagement
- **Data** concerns that the Data Management workstream may not be prepared for the daunting tasks ahead
- Management concerns about Agile adoption, clarity on the PMO role and keeping pace with the staffing plan in light of competition for resources

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Recommendations Summary Top Priority

Area	Issues	Recommendations
People: IT	 There are concerns about IT capability, capacity and engagement to effectively support the GBE program Gaps are already impacting the program in terms of delays (particularly in acquiring software / tools), and will continue to impact decision-making, confidence, and ultimately the program schedule if not addressed 	 Immediately address gaps in IT capability, capacity and engagement. IT needs to become more engaged, more accessible and responsive to GBE needs Immediately address any software procurement issues that are currently creating a schedule risk
Solution: Data	 We share several GBE team members' concern that <i>the Data Management workstream may be unprepared for the daunting task</i> of data remediation, including agreed-upon data quality standards and many data decisions that will be needed. The approach and concepts are sound and need to be put into practice. Data management challenges (data quality, integration, remediation and migration) present one of the most common causes of program challenges and benefit "misses" 	 Dedicate an Agile coach to the Data Management team and make sure they have the right capacity to support all the teams and planned roadmap Verify that the data management team is well integrated with the development teams and positioned to anticipate data needs, rather than only respond reactively to data requests Use architecture spikes to flush out potential problems with data as early as possible
Program: Management	 Adoption of Agile, with its fundamentally different way of thinking, and steep learning curve, may present significant management challenges Lack of clarity around the role of the PMO in an Agile world will create confusion and inefficiency, possibly leading to bottlenecks, sub-optimal decision-making and program delays Concern has been raised about the ability to bring resources on fast enough to meet program demands – the program is running slightly behind the staffing plan at the moment and resource competition will increase with other global programs 	 Closely monitor agile adoption progress. Any finding of slow adoption or roadblock should be escalated to the Program Sponsor, and remediation plans should be put in place. Clarify and communicate the role of the PMO to the project teams. Clearly define expectations that the PMO has of the project teams, and the that project teams have of the PMO. Provide clarity (decision type, ownership, escalation) on decision authority. Establish metrics to measure and monitor performance and progress Review staffing plan, determine an "escalation threshold" and take remedial action if the threshold is reached. Coordinate staffing plans with the other global programs

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Next Steps

Conduct Value Assurance "Quality Gate Review #1"

- Timing: Oct. 30 Nov. 17
- Focus: Portfolio Office, Business Enhancement, Change Management
- Quality Gate Review #1 will follow our 3-step approach similar to the "Set Up for Success" review

Mobilize • Gather background material • Resolve logistical Issues	Gathe neede hypoth	r the evi d to test neses	ider t the	lı nce	ıve	stig	ate E U T	Exam Inder Test I Evide	nine rstai hypo nce	evia nd if	den s n	ce nea s aç	to nin jain	g ist				•	Re rec De rec	Re con elive	COI e nme er fi nme	mm enda ndir enda	atio ngs atio	ns and ns	ł			þ	
Value Assurance Timeline			—	Sep	et			Dct		P	lov			Dec			Jan	201	8		Fe	≥b		N	1ar			Apr	
# Step Topic	Start	End	8/28	9/4 9/11	9/18	9/25 10/2	10/9	10/16	10/30	11/6	11/20	11/27	12/4	12/11 12/18	12/25	1/1	1/8	1/15	1/22	2/5	2/12	2/19	2/26	3/12	3/19	3/26	4/2	4/16	4/23
1 Program Kickoff	8/28/17	8/28/17																											
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3a Attend PI2 Planning Business Architecture, Data Mo	del, ISE 11/27/17	7 11/28/17									T.																		
4 Quality Gate Review #2 Business Architecture, Data Mo	del, ISE 12/11/17	7 1/5/18																											
5 Deep Dive #1 Operating Model (or other TBD)	1/29/18	2/9/18											10																
6 Project Health Monitoring Ongoing monitoring	8/28/17	3/30/18																								т	вD		



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tracking...

GBE team taking findings, turning recommendations into actions and

Penort	Finding Area	Pof	Agreed Actions	Owner	Target Dat
Report		1	Work with Andi K, Anuraag B & HR to fill IS VP role on program as soon as possible (Note external resourcing event underway)	JI & CM	12/1/17
		2	Speak with Andy Shoener to get direct and candid feedback on readiness of IT and what additional suppport is needed	11	Completed
	People: IT	3	Speak with Chris Murphy/Anuraag B to get their support in required areas	11	Completed
		4	Provide NGLT with an update on where we are on all our software procurement and any current risk areas that need focus	LM	10/30/17
		5	Conduct a lessons learnt review of the kick-off software procurement challenges and ensure appropriate lessons have been learnt	КС	11/15/17
		6	Discuss with Chris C the concerns raised about agile coach support for Data Management to address with NR & PWC	11	Completed
rccess	Solution: Data	7	Speak with Nick Raad about integration of the data management team with the other modules, and get his feedback on what is working, and where deficiencies exist	CC	11/1/17
For St	Solution. Data	8	Review Data Management resourcing and ensure that staffing levels are adequate to serve the whole program	CC	11/1/17
iet Up		9	Nick Raad to discuss architecture spikes with Stephen Kerr to better understand how they can help flush out potential problems; build plan as necessary post that conversation	NR	11/1/17
hase 1: S		10	Instruct Agile coaches to identify, describe, document and report to PLT and coach as neccessary any persistent Agile adoption issues (tool usage, team operation, decision making, other); consolidate this information and reinforce coaching on any areas of non- compliance	КС	11/1/17
4		11	Consider conducting an "Agile Audit", in addition to the normal retrospectives, near the end of PI- 1 to further measure and ensure compliance across multiple dimensions of Agile adoption	11	12/1/17
	Program: Management	12	Discuss findings with Stephen Kerr on the 'lack of clarity around the role of the PMO in an agile world' and agree on how this can be clearly and simply documented. Communicate the key responsibilities and expectations of the PMO with module leads, product owners and product managers.	КС	11/17/17
		13	Check on status (availability, access, use, single source of truth, ownership, user responsibilities) of all program management tools to ensure all are in place and are actively being used.	PA Con	11/17/17
		14	Check program staffing plan to see if program is on track to on-board resources as required. Establish and escalation threshold for all key resources. I.e. if resource gap remains 2 weeks (or some other defined threshold) after plan called for resource, escalate to PLT and /or Steering Group).	КС	12/1/17

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NATIONAL GRID GAS BUSINESS ENABLEMENT VALUE ASSURANCE

Value Assurance Review #1

Assessment Report Summary for GBE Steering Group

November 28, 2017



The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 4770 Attachment DIV 9-28-2 Page 2 of 2

GBE has transitioned effectively from planning to implementation, however improvements can be made to ensure successful ongoing delivery

Program	Solution	Business Readiness	Commercial	People
Business Case	Requirements	Target Operating Model	Sourcing	GBE Program Team
Governance	Architecture and Design	Change	Vendor Management	Business
Controls	Data	Support		IT
Management	Implementation			Supplier
Scope	Migration		K	ey
	Infrastructure		addition requ	al action uired
	Security	Release Management	Risk re atte	equiring ntion
	Testing	Disaster Recovery& BCP	Critica requ immedia	al item uiring ate action
	Environmental Management	Support	Not appli reviewe this r	eview

Value Assurance Framework

GBE has made an effective transition to implementation

- This Value Assurance review confirms that GBE is high performing and is making good progress toward the PA1 goal
- Enthusiasm and dedication continue to be high and there is solid evidence of a high quality outcome for PA1

However, there are risk areas that require attention

- Controls While there is acceptable visibility into progress and quality performance at this stage of the program, fully established Agile methods will allow for an even higher degree of visibility and control. Without that improved visibility, program controls will become increasingly difficult to monitor and manage as the program progresses.
- Management GBE leadership is still establishing operating norms, but should spend more time looking ahead, anticipating, and removing blockers before they impact program success
- Management GBE has done well absorbing resource gaps during PI1, but looking further ahead, key resource gaps in training and testing will become critical in January 2018
- Solution The solution is on a solid foundation and making good progress. Execution performance is well managed and in line with expectation, but lack of instrumentation means there is a risk that GBE could be 2 weeks behind the PA1 delivery schedule. GBE has suffered from prior technical debt and should continue to flush out any other impactful technical debts in the NG environment.





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NATIONAL GRID GAS BUSINESS ENABLEMENT VALUE ASSURANCE

Value Assurance Review #3 v2.0 January 16, 2018





The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 4770 Attachment DIV 9-28-3 Page 2 of 5

gas business enablement

1

PA Consulting has continued it's Value Assurance Partner role with this "Value Assurance Review #3" assessment

Value	 Provide risk prioritized and focused assurance services across the relevant elements of the portfolio of Gas Business Enablement programs, projects and initiatives, focused on assuring the successful delivery of the program and its anticipated business benefits
Mission	 Effectively serve as an "insurance policy" acting as an external set of eyes to observe and monitor program progress, identify potential risk areas, and provide recommendations on issue avoidance and remediation

Value Assurance Timeline

						Sep	t			Oct			Ν	ov		D	ес		Ja	n 20	18		Fe	b		N	/lar			Apr	
#	Step	Торіс	Sta rt	End	8/28 9/4	11/6	9/18	9/25	10/9	10/16	10/23	11/6	11/13	11/20	11/27	12/11	12/18	12/25	1/8	1/15	1/22	2/5	2/12	2/19	3/5	3/12	3/19	3/2.6	4/2	4/9	4/23
1	Program Kickoff		8/28/17	8/28/17																											
2	GBE Set Up for Success	GBE Program Readiness	9/4/17	9/29/17																											
3	Value Assurance Review #2	Portfolio Office, OCM, Solution	10/30/17	11/17/17																											
3a	Attend PI2 Planning	Agile Process Adoption	11/27/17	11/28/17																											
4	Value Assurance Review #3	Solution, Security, Management	12/11/17	1/5/18																											
5	Value Assurance Review #4	Operating Model (or other TBD)	2/5/18	2/16/18																											
6	Project Health Monitoring	Ongoing monitoring	8/28/17	3/30/18																								1	вD		

Program Timeline

					Sep	t			Oct			N	ov		D	ec		Ja	n 20	18		F	eb		1	Mar			Apr	
# Step	Торіс	Start	End	8/28 9/4	11/6	9/18	9/25	10/9	10/15	10/23	11/6	11/13	11/20	11/27	11/21	12/18	12/25	1/8	1/15	1/22	1/29	2/12	2/19	2/26	3/5	3/19	3/26	4/2	4/9	4/23
PA 1	Program Anchor 1	9/12/17	3/31/18																											
PI 1	Program Increment 1	9/18/17	11/28/17																											
PI 2	Program Increment 2	11/29/17	2/6/18																											
PI3 - Application Test	Appication Testing	11/27/17	3/23/18																											
PI3 - EZE, UAT	End-to-end and User Acceptance testing	11/27/17	3/23/18																											
Cutover	Cut over to new MVP solution	3/26/18	3/30/18																											
PA 1 Go-live	MVP solution go-live	3/30/18	3/30/18																								4	3/30	,	
Support	Support released MVP	4/2/18	5/25/18																											

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The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 4770 Attachment DIV 9-28-3 Page 3 of 5

GBE is currently on track to achieve its first release at the end of March, however some critical risks are looming over the nationalgrid enablement horizon



GBE has achieved key improvements since PA's last Value Assurance review

- Significant improvement has been made implementing tools for monitoring project progress, particularly related to the IPP
- Progress has been made toward resolving management related issues, particularly around filling resource gaps and effective and efficient execution of PLT meetings
- The PI2 Planning event demonstrated a large improvement over the first PI planning event

However, there is one critical item and one risk area that require attention

IS – The long-standing vacancy in the VP of IS role will jeopardize the success of GBE as more delivery dependencies are placed on IS with each program anchor

Vendor Management – Success of the GBE solution depends on support from key vendors, namely Salesforce and IBM. More rigorous vendor management practices should be employed to ensure adequate support. In the case of Salesforce, the product evolution should be closely monitored and managed to ensure required functionality is realized per the GBE timeline.

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 4770 Attachment DIV 9-28-3 Page 4 of 5

Recommendation Summary

nationalgrid gas business enablement

Area	Issues	Recommendations
People (IS)	 IS Leadership: The long-vacant VP of IS role now compounded with the departure of the US CIO – will jeopardize the success of the GBE program if not addressed promptly. An ongoing absence of IS leadership creates multiple risks: IS security direction and decision making Legacy IS integration work and prioritization decisions Internal and external IS support and vendor management IS staffing, load balancing, and IS employee morale 	 Build a multi-layered mitigation and contingency plan to address the situation: Identify and place interim leaders in the two vacant roles immediately, ideally people who are well respected in the business (already under way); consider relieving interim leaders of all other duties until some stabilization criteria is met Engage in an aggressive campaign to find permanent leaders to fill the roles. While external candidates with the right skills should certainly be considered, internal, well-respected leaders should also be strongly considered, even if they are not career IS people Consider and fully explore other ways to fill some or all of the gaps, such as the use of contracted resources, etc.
Vendor Management	 Salesforce: There is growing concern that emerging solution requirements coming out of the development process may be difficult to achieve with the Salesforce solution (either through out-of- the-box capability or future Salesforce product enhancements), and/or may result in solution elements that don't meet functional or usability objectives. IBM / Maximo: SLA terms are not clear and widely understood by the GBE team, and may be insufficient to fully support GBE needs. 	 Salesforce: Review and fully understand the emerging solution needs coming out of the development process, determine the criticality of these solution needs, and determine how any critical needs may best be addressed. If the current Salesforce development path leads to significant gaps between functional needs and solution capabilities, develop and critically weigh alternatives. Determine a go / no-go / redirect decision framework such that any deviation decision from the current path is made as early as possible. IBM / Maximo: For all major suppliers, GBE should write "guides" that clearly articulate the service levels that GBE is entitled to as a customer. This effort was started for the IBM Maximo contract, and should be picked up again for IBM and other major suppliers. Have Salesforce and IBM/Maximo leadership report out to the Steering Group on a periodic basic (guidetry) to drive accountability.

3

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 4770 Attachment DIV 9-28-3 Page 5 of 5

Next Steps

national**grid** gas business enablement

Conduct "Value Assurance Review #4"

- Timing: ~ Feb 5 Feb 16
- Focus: Operating Model Design, GIS Status, Release Readiness
- Value Assurance Review #4 will follow our 3-step approach similar to previous reviews

•	Mobilize Gather background material Resolve logistical Issues	 Gather needed hypoth 	the evi d to test eses	denc the	lr e	ives	stig	ate u T	xa nde es vid	mine ersta t hyp lence	e ev and ooth e	ider its r ese	nce to meani es aga	ng inst				•	Re rec De rec	fine om live	r fir	nm enda ndin enda	en ation ation	d ns and ns					
Value Assura	nce Timeline				Sep	ot			Oct			No			Dec			an 20	018			Feb			Mar			Ар	r
# Step	Торіс	Start	End	8/28	11/6	9/18	3/25	10/9	10/16	10/23 10/30	31/6	11/13		11/21	12/18	12/25	1/1	1/15	1/22	1/29	2/5	2/19	2/26	3/5	3/12	3/26	4/2	4/9	4/16 4/23
1 Program Kickoff		8/28/17	8/28/17																										
2 GBE Set Up for Succes	GBE Program Readiness	9/4/17	9/29/17																										
3 Value Assurance Revie	ew #2 Portfolio Office, OCM, Solution	10/30/17	11/17/17																										
a Attend PI2 Planning	Agile Process Adoption	11/27/17	11/28/17																										
4 Value Assurance Revie	ew #3 Solution, Security, Management	12/11/17	1/5/18																										
5 Value Assurance Revie	ew #4 Operating Model (or other TBD)	2/5/18	2/16/18																										
6 Project Health Monito	oring Ongoing monitoring	8/28/17	3/30/18																								TBD		

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4

Request:

Referring to page 36, lines 7 - 21 of the Joint Pre-filed Testimony of Johnston and Connolly, how does the Company plan to ensure that the Narragansett Gas and Narragansett Electric continues to receive additional capabilities over the duration of the Gas Business Enablement Program as quickly as possible after "initial implementation of the first minimum viable product solutions" and they are not deprioritized due to a shift in focus to "deliver and implement Gas Business Enablement in other service territories"?

Response:

The Gas Business Enablement Program is delivering an enterprise-wide solution. The sequencing of the program roadmap calls for delivery of the new software applications as a minimum viable product to the Company first. The program roadmap was provided as Schedule GBE-4, Page 1 (Bates Page 134 of Book 7) in the joint pre-filed direct testimony of Company Witnesses Anthony H. Johnston and Christopher J. Connolly. Further, subsequent capability releases of the software applications are planned for deployment to the Company first. As enhancements to the solutions are deployed, the Company will receive those new capabilities at the same time as other jurisdictions.

National Grid developed the program roadmap very carefully to deliver early benefits to customers and minimize the risks associated with implementation of a program of this magnitude. The entire project plan was built around this roadmap, and changes to the roadmap and its sequencing could have a major impact on the schedule. Further, once the full capabilities of the Gas Business Enablement solutions have been implemented across the enterprise, the cloud-based nature of the solutions enable future enhancements to be available at the same time to users in all jurisdictions to maintain process consistency across the enterprise.

Request:

Referring to page 39, lines 5-6 of the Joint Pre-filed Testimony of Johnston and Connolly, what is the breakdown by operating company of the 2,300 service appointments that National Grid responds to per day?

Response:

Please see the table below for the requested information.

Jurisdiction	Operating Company(s)	Approximate Annual	Average Appointments	Percentage
		Appointments Dispatched	Per Day	
RI	Narragansett Electric	23400	90	3.7%
RI	Narragansett Gas	22000	85	3.5%
MA	Massachusetts Electric Operating Companies	99000	381	15.7%
MA	Massachusetts Gas Operating Companies	168500	648	26.8%
NY	Niagara Mohawk Power Corporation (NMPC)	2500	10	0.4%
NY	The Brooklyn Union Gas Company (KEDNY)	252800	972	40.2%
NY	KeySpan Gas East Corporation (KEDLI)	60800	234	9.7%
TOTAL		629000	2419	100%
Notes:				
1. NMPC only	v includes two- hour appointment windows.			
2. Average ap	pointments per day is based on five-day work week	over 52 weeks (26	60 working days).	

Request:

Please provide a description of the source of the savings estimates referred to on page 47, lines 1-5 of the Joint Pre-filed Testimony of Johnston and Connolly and identify any additional savings expected to be achieved at the operating company level from Gas Business Enablement project?

Response:

Please refer to Attachment DIV 9-31 for a list of forecasted benefits for the Company along with the calculations used for the analysis.

The Narragansett Electric Company d/b/a National Grid Gas Business Enablement (GBE) Total Narragansett Electric Company Benefits Forecasted as a Result of GBE Implementation For Fiscal Years Ending March 31, 2019 through 2027

Initiative Description	Benefit Description	Benefit Calculation and Baseline	Benefit Type
Asset - Advanced Analytics	Reduction / Redirection in Opex via AIPM	0.8% redirection of annual addressable O&M spend to other spend (Opex or Capex); Base is FY2017 Controllable O&M budget of \$13.5M.	Type I
Engineering, Design, Estimating & Mobility	Reduction in Damages due to Data Quality Errors	44% reduction in mismark damages due to record errors; Average annual damage cost for mismarks due to record errors is \$ \$529,602. 20% reduction in mismark damages due to locator errors (internal); Average annual damage cost for mismarks due to locator errors is \$2,513	Type I
Work Management & Field Enablement	Clerical / Back Office Productivity Improvement	25% Improvement in productivity; 15 clerks @ rate of \$25.09/Hr	Type I
Work Management & Field Enablement	Damage Prevention - Reduced Travel Mileage	2.5% reduction in travel distance; Base of 61,581 jobs x 4.17 miles per job = 257,094 miles; 6,427 miles reduction @ \$0.69/mile	Type I
Work Management & Field Enablement	M&C Productivity Improvements - Base	3.0% Improvement in Productivity; Base of 366,822 Straight Time Hours; 11,005 Hours Benefit (15 Minutes per Day) @ OT Rate of \$52.40/Hr. Note: benefits taken on OT.	Type I
Customer Interaction	Reduce Move Call Volume through Self-Service	15% reduction in move call volumes; Base of 83,304 yearly calls @ \$4.25/call	Type II
Customer Interaction	Reduce Non-Move Call Volume through Self-Service	10% reduction in non-move call volumes; Base of 144,724 field related calls of which 61% are addressable; 8,792 avoided calls @ an average of \$4.54/call	Type II
Data Management	Reduction in Data Cleansing / Scrubbing Effort - Analysts	7.5% Improvement in productivity; Base of 7 FTE @ rate of \$32.44/Hr	Type II
Engineering, Design, Estimating & Mobility	Complex Jobs - Engineering Productivity Improvement	6.3% Improvement in productivity in NE ; Base of 40 FTE; 3763 hours saved per year @rate of \$52.53/Hr. 21% of this NE benefit calculation applied to Narragansett	Type II
Engineering, Design, Estimating & Mobility	Reduced in mapping cycle time via digital field data entry	30% reduction in FTEs associated with manual mapping; Base is 2 FTEs serving the gas business @ \$64,302/year.	Type II
Integrated Supply & Demand Planning	Improved Project Delivery - Construction	10% cost reduction of addressable supply chain costs in construction project delivery. Addressable costs: 2% in cost associated with construction work delayed by Supply Chain; Base is \$1.237B in project spend. Using general allocator, 7.41% of this Enterprise wide benefit calculation applied to Narragansett	Туре II
Regulatory/ Compliance	Reduced Compliance and Gas Safety Penalties	100% reduction in gas safety and compliance penalties; Base of \$187,133 average penalties over the past 3 years	Type II
Work Management & Field Enablement	CMS Collections Jobs - Reduction in Mileage	14% reduction in travel distance (assumed equal to travel time reduction); Base of 87,838 jobs/year x 2.30 miles per job = 202,366 miles; 28,331 miles reduction @ \$0.69/miles	Type II
Work Management & Field Enablement	CMS Collections Jobs - Reduction in Travel Time	14% reduction in Travel Time (Analysis Conducted on CMS Data using OptimoRoute Software); Base of 87,838 jobs/year with an average travel time of 13 min; 1,134,014 minutes of total travel time; 158,762 minutes benefit @ rate of \$34,93/Hr	Type II
Work Management & Field Enablement	CMS Planned Jobs - Reduction in Available Time via Autodispatch	3.1% Improvement in productivity; Base of 14,950 work days (All Operating Companies - number of CMS Field Techs both Gas & Electric) with 43+ minutes available (i.e. the time required to complete another job on average) @ \$18.05/job. Using general allocator, 7.41% of this Enterprise wide benefit calculation applied to Narragansett	Type II
Work Management & Field Enablement	CMS Planned Jobs - Reduction in Mileage	2.5% reduction in travel distance; Base of 153,731 jobs/year x 4.17 miles per job = 570,779 miles; 14,269 miles reduction @ \$0.69/mile	Type II
Work Management & Field Enablement	CMS Planned Jobs - Reduction in Travel Time	2.5% reduction in travel time; Base of 153,731 jobs/year with an average travel time of 13 min; 33,206 hours of total travel time; 830 hours benefit @ rate of \$34.93/Hr	Туре ІІ
Work Management & Field Enablement	CMS Planned Jobs - Reduction in UTCs	2.5% reduction in Unable To Complete (UTC) jobs; Base of 17,014 UTC jobs with an average job time of 7 min; 127,249 minutes of total travel time; 3,181 minutes benefit @ rate of \$34.93/Hr	Type II
Work Management & Field Enablement	Damage Prevention - Reduced Travel Time	2.5% reduction in travel time; Base of 61,581 jobs; 12 mins of travel time per job; 738,972 minutes of total travel time; 18,474 minutes benefit @ rate of \$34.93/Hr	Type II
Work Management & Field Enablement	Reduction in Field Tech Communications	25% reduction in # of call aheads placed by technicians; 153,731 jobs x 1 min/call x 1 call/job; 38,433 minutes benefits @rate of \$34.93/Hr	Туре ІІ
Work Management & Field Enablement	Reduction in Meter Verification Jobs	37.5% reduction in number of meter verification jobs; Base of 1,218 jobs; 37,126 minutes of total time to complete meter verifications annually (including travel time); 13,922 minutes benefits @ rate of \$34.93/Hr	Type II

Request:

Has the company taken into account efficiency gains from Gas Enablement in their staffing request? If so, please explain.

Response:

The forecasted Type I O&M savings were subtracted from the Gas Business Enablement revenue requirements. No other specific adjustments were made in the cost of service for efficiency gains associated with the Gas Business Enablement Program. Please refer to Attachment PUC 5-21, Page 2 provided with the Company's response to PUC 5-21 for a list of the Company-specific Type I O&M savings. A copy of Attachment PUC 5-21, Page 2 is provided as Attachment DIV 9-32 for ease of reference.

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 4770 Attachment DIV 9-32 Page 1 of 1

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 4770 Attachment PUC 5-21 Page 2 of 2

The Narragansett Electric Company d/b/a National Grid Gas Business Enablement (GBE) Total Benefits Forceasted as a Result of GBE Implementation For Fiscal Years Ending March 31, 2019 through 2027

			12-Mo	onths Ending	12-Months Ending	12-Months Endi	ng <u>12</u> -	-Months Ending	12-Months Ending				
Initiative Description	Benefit Description	Benefit Type	Marc	h 31, 2019	March 31, 2020	March 31, 2021	N N	March 31, 2022	March 31, 2023	March 31, 2024	March 31, 2025	March 31, 2026	March 31, 2027
Asset - Advanced Analytics	Reduction / Redirection in Opex via AIPM	Type I	\$	-	\$ -	\$ 77	3 \$	68,834	\$ 111,371	\$ 111,371	\$ 111,371	\$ 111,371	\$ 111,371
Engineering, Design, Estimating & Mobility	Reduction in Damages due to Data Quality Errors	Type I	\$	31,928	\$ 127,713	\$ 127,71	3 \$	127,713	\$ 127,713	\$ 127,713	\$ 127,713	\$ 127,713	\$ 127,713
Work Management & Field Enablement	Clerical / Back Office Productivity Improvement	Type I	\$	-	\$ 2,957	\$ 183,32	9 \$	212,899	\$ 212,899	\$ 212,899	\$ 212,899	\$ 212,899	\$ 212,899
Work Management & Field Enablement	Damage Prevention - Reduced Travel Mileage	Type I	\$	-	\$ 2,694	\$ 3,59	2 \$	3,592	\$ 3,592	\$ 3,592	\$ 3,592	\$ 3,592	\$ 3,592
Work Management & Field Enablement	M&C Productivity Improvements - Base	Type I	\$	-	\$ 44,045	\$ 312,71	9 \$	317,124	\$ 317,124	\$ 317,124	\$ 317,124	\$ 317,124	\$ 317,124
Customer Interaction	Reduce Move Call Volume through Self-Service	Type II	\$	-	\$ -	\$-	\$	-	\$ 37,624	\$ 53,116	\$ 53,116	\$ 53,116	\$ 53,116
Customer Interaction	Reduce Non-Move Call Volume through Self-Service	Type II	\$	-	\$ -	\$ 4,08	8 \$	33,524	\$ 39,248	\$ 39,248	\$ 39,248	\$ 39,248	\$ 39,248
Data Management	Reduction in Data Cleansing / Scrubbing Effort - Analysts	Type II	\$	-	\$ 3,860	\$ 27,40	17 \$	27,793	\$ 27,793	\$ 27,793	\$ 27,793	\$ 27,793	\$ 27,793
Engineering, Design, Estimating & Mobility	Complex Jobs - Engineering Productivity Improvement	Type II	\$	-	\$ -	\$ 17	0 \$	10,536	\$ 12,235	\$ 12,235	\$ 12,235	\$ 12,235	\$ 12,235
Engineering, Design, Estimating & Mobility	Reduction in Mappers via Field Data Entry	Type II	\$	-	\$ 189	\$ 11,70	2 \$	13,590	\$ 13,590	\$ 13,590	\$ 13,590	\$ 13,590	\$ 13,590
Integrated Supply & Demand Planning	Improved Project Delivery - Construction	Type II	\$	-	\$ 340	\$ 21,07	0 \$	24,468	\$ 24,468	\$ 24,468	\$ 24,468	\$ 24,468	\$ 24,468
Regulatory/ Compliance	Reduced Compliance and Gas Safety Penalties	Type II	\$	12,129	\$ 70,175	\$ 132,55	3 \$	182,801	\$ 187,133	\$ 187,133	\$ 187,133	\$ 187,133	\$ 187,133
Work Management & Field Enablement	CMS Collections Jobs - Reduction in Mileage	Type II	\$	-	\$ -	\$-	\$	-	\$ 13,847	\$ 19,549	\$ 19,549	\$ 19,549	\$ 19,549
Work Management & Field Enablement	CMS Collections Jobs - Reduction in Travel Time	Type II	\$	-	\$ -	\$-	\$	-	\$ 65,040	\$ 91,821	\$ 91,821	\$ 91,821	\$ 91,821
Work Management & Field Enablement	CMS Planned Jobs - Reduction in Available Time via Autodispatch	Type II	\$	-	\$ 1,499	\$ 1,99	9 \$	1,999	\$ 1,999	\$ 1,999	\$ 1,999	\$ 1,999	\$ 1,999
Work Management & Field Enablement	CMS Planned Jobs - Reduction in Mileage	Type II	\$	-	\$ 6,646	\$ 8,86	1 \$	8,861	\$ 8,861	\$ 8,861	\$ 8,861	\$ 8,861	\$ 8,861
Work Management & Field Enablement	CMS Planned Jobs - Reduction in Travel Time	Type II	\$	-	\$ 19,573	\$ 26,09	8 \$	26,098	\$ 26,098	\$ 26,098	\$ 26,098	\$ 26,098	\$ 26,098
Work Management & Field Enablement	CMS Planned Jobs - Reduction in UTCs	Type II	\$	-	\$ 1,250	\$ 1,66	7 \$	1,667	\$ 1,667	\$ 1,667	\$ 1,667	\$ 1,667	\$ 1,667
Work Management & Field Enablement	Damage Prevention - Reduced Travel Time	Type II	\$	-	\$ 6,534	\$ 8,71	2 \$	8,712	\$ 8,712	\$ 8,712	\$ 8,712	\$ 8,712	\$ 8,712
Work Management & Field Enablement	Reduction in Field Tech Communications	Type II	\$	-	\$ 7,551	\$ 20,13	7 \$	20,137	\$ 20,137	\$ 20,137	\$ 20,137	\$ 20,137	\$ 20,137
Work Management & Field Enablement	Reduction in Meter Verification Jobs	Type II	\$	-	\$ 6,078	\$ 8,10	4 \$	8,104	\$ 8,104	\$ 8,104	\$ 8,104	\$ 8,104	\$ 8,104
Narragansett Electric Company Gas share of GB	E Benefits		\$	44,057	\$ 301,105	\$ 900,69	5 \$	1,098,451	\$ 1,269,254	\$ 1,317,229	\$ 1,317,229	\$ 1,317,229	\$ 1,317,229
	All Type I Benefits	Type I	\$	31,928	\$ 177,410	\$ 628,12	8 \$	730,162	\$ 772,699	\$ 772,699	\$ 772,699	\$ 772,699	\$ 772,699
	All Type II Benefits	Type II	\$	12,129	\$ 123,696	\$ 272,56	7 \$	368,289	\$ 496,555	\$ 544,530	\$ 544,530	\$ 544,530	\$ 544,530

Request:

Are there costs allocated to RI (related to the new or existing systems) that are redundant as a result of the Company having to maintain multiple systems while waiting for the new Gas Business Enablement Systems to be fully implemented in other jurisdictions?

<u>Revised Request</u>: As it relates to Gas Business Enablement:

- (a) In what instances are the costs of the existing legacy systems and new replacement systems being recovered simultaneously in the rate year or data years and what is the allocated cost to RI?
- (b) To the extent there are instances of simultaneous recovery, what is driving the need for overlap of recovery of systems and how much of that need is related to services provided to RI customers?

Response:

The response to parts (a) and (b) is provided below:

Of the core existing systems, there is overlap in their usage across jurisdictions, and the jurisdictional overlaps themselves vary depending on the underlying business process. The nature of these overlaps is a key input into the jurisdictional and end-to-end business process rollout design for the Gas Business Enablement Program.

Although there are costs for keep both existing and new systems running concurrently for the duration of the program, the jurisdictional roadmap design significantly reduces risk as opposed to a deploying all end-to-end processes in a "big bang" cutover from existing systems to new systems on a per jurisdiction basis.

Additionally, the costs of the existing systems decreases throughout the duration of the program as existing systems are incrementally retired.

Please see Attachment DIV 9-33, which illustrates the incremental costs due to new systems per year as well as the incremental decrease in costs due to the retirement of existing systems per year.

GBE RTB Schedule

	FY18	FY19	FY20	FY21	FY22	FY23
Software License Maintenance / Subscriptions	\$ 1,085,149	\$ 3,396,499	\$ 7,933,079	\$ 10,851,487	\$ 10,851,487	\$ 10,851,487
Hardware License Maintenance / Mobile Subscription	\$ 516,033	\$ 1,615,176	\$ 3,772,506	\$ 5,160,330	\$ 5,160,330	\$ 5,160,330
Labor	\$ -	\$ 2,817,960	\$ 5,635,920	\$ 5,635,920	\$ 5,635,920	\$ 5,635,920
[Subtotal] New RTB Costs : Additional RTB Costs for the new GBE applications	\$ 1,601,182	\$ 7,829,635	\$ 17,341,505	\$ 21,647,737	\$ 21,647,737	\$ 21,647,737
Legacy Application Support (Replace)	\$ 2,419,790	\$ 2,177,811	\$ 1,662,399	\$ 650,780	\$ -	\$ -
Legacy Application Support (Future State - non-Replace base)	\$ 985,250	\$ 985,250	\$ 985,250	\$ 985,250	\$ 985,250	\$ 985,250
Legacy Application Support (Future State - Increase)	\$ -	\$ 49,263	\$ 98,525	\$ 147,788	\$ 147,788	\$ 147,788
[Subtotal] Legacy RTB Costs: RTB costs for the Legacy Application Support	\$ 3,405,040	\$ 3,212,324	\$ 2,746,174	\$ 1,783,818	\$ 1,133,038	\$ 1,133,038
Total RTB Costs	\$ 5,006,222	\$ 11,041,958	\$ 20,087,680	\$ 23,431,555	\$ 22,780,775	\$ 22,780,775
Baseline - Current RTB Costs (projection based on past data)	\$ 3,575,040	\$ 3,937,137	\$ 4,647,841	\$ 5,105,040	\$ 5,105,040	\$ 5,105,040
RTB cost increase from baseline	\$ 1,431,182	\$ 7,104,821	\$ 15,439,839	\$ 18,326,515	\$ 17,675,735	\$ 17,675,735

Key Assumptions Hardware purchase and acqusition costs are not included here (considered an initial expense - not RTB)

EAM, WFM, DevOps, Data Management and Reporting solutions are SaaS and thus have recurring license fees uncluded in "Software License Maintenance / Subscriptions"

Labor consist of a small IS Team of 12 FTE (1200 ADR) in Steady State, and of a team of 31 (293) External FTE from the Application Service Management group.

Grade of increase in support costs follows a 10%, 21% , 42%, and 27% to Steady State for HW and SW Annual Spend Grade of Labor Adoption is 50% and than 100%

The support costs for the legacy applications that will remain (Future State Legacy Applications) will increase by 5% until steady state. Overall cost increase is 115%.

The support costs for legacy applications replaced will follow a negative ramp

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 4770 Attachment DIV 9-33 Page 2 of 2

The Narragansett Electric Company d/b/a National Grid Gas Business Enablement (GBE) Incremental Run the Business (RTB) Operating Expenses

	For 12-Months Ending					
Description Of Run the Business (RTB) Costs	March 31, 2018	March 31, 2019	March 31, 2020	March 31, 2021	March 31, 2022	March 31, 2023
Software License Maintenance / Subscriptions	\$79,975	\$250,322	\$584,668	\$799,755	\$799,755	\$799,755
Hardware License Maintenance / Mobile Subscription	\$38,032	\$119,038	\$278,034	\$380,316	\$380,316	\$380,316
GBE team to support systems and applications	\$0	\$207,684	\$415,367	\$415,367	\$415,367	\$415,367
Subtotal of Additional RTB for GBE Applications	\$118,007	\$577,044	\$1,278,069	\$1,595,438	\$1,595,438	\$1,595,438
Legacy Application Support (Replace)	\$178,339	\$160,505	\$122,519	\$47,963	\$0	\$0
Legacy Application Support (Future State - non-Replace base)	\$72,613	\$72,613	\$72,613	\$72,613	\$72,613	\$72,613
Legacy Application Support (Future State - Increase)	\$0	\$3,631	\$7,261	\$10,892	\$10,892	\$10,892
Subtotal of Legacy RTB Costs	\$250,951	\$236,748	\$202,393	\$131,467	\$83,505	\$83,505
Total of RTB Costs	\$368,959	\$813,792	\$1,480,462	\$1,726,906	\$1,678,943	\$1,678,943
Current RTB Costs	\$263,480	\$290,167	\$342,546	\$376,241	\$376,241	\$376,241
Total Incremental RTB Costs due to GBE Applications	\$105,478	\$523,625	\$1,137,916	\$1,350,664	\$1,302,702	\$1,302,702
Allocation to Narragansett Electric Company	\$105,478	\$523,625	\$1,137,916	\$1,350,664	\$1,302,702	\$1,302,702

Allocation to Companies:

9	of
-	
Company Description Cust	omers
Niagara Mohawk Power Corp Gas 16	93%
KeySpan Energy Delivery New York 34	83%
KeySpan Energy Delivery Long Island 16	13%
Boston Gas Company 19	15%
Colonial Gas Company 5.	59%
Narragansett Gas Company 7.	37%

Request:

What additional upgrades and other costs are anticipated over the useful life of the Gas Business Enablement Systems related to maintaining or upgrading the system and how are these costs factored into the proposed cost treatment and cost allocation?

Response:

The set of systems comprising Gas Business Enablement will undergo periodic upgrades to remain current with the underlying software and Software as a Service (SaaS) solutions. National Grid also expects the solution set to undergo periodic minor functional enhancements to optimize functionality for operations and to stay current within the industry. Additionally, mandated regulatory changes will be implemented as those changes are mandated or requested.

Please refer to Attachment DIV 9-33 for the Run the Business (RTB) Costs for Fiscal Year 2018 to Fiscal Year 2023. Run the Business costs are those costs required to keep the maintain the systems after implementation, such as installing new software releases and making minor changes, whether to accommodate regulatory changes or to enhance the operation of the system. Run the Business costs do not include funding for any substantive changes to the software. The first page reflects overall Gas Business Enablement costs. Row 14 shows the total yearly incremental Run the Business costs, which is reduced by the cost of the current applications that will continue after the Gas Business Enablement implementation. The second page reflects the same information for Narragansett Gas. These costs will be allocated based on number of gas retail customers as compared with the other jurisdictions.

Request:

What useful life does the Company expect to get in practice out of its investment in the Gas Business Enablement Systems? In other words, when would the Company expect to need to re-invest in the systems implemented as part of this project?

Response:

From an accounting perspective, National Grid is assuming that it will get 10 years useful life from these systems, similar to other large system implementations it has completed in the past.

Operationally, National Grid intends to continue to invest in these systems and, when prudent to do so, upgrade them, as upgrades become available. Using this strategy, there may be an opportunity to extend their lives with these incremental investments, although this is impossible to tell with the current pace of change in technology.

It is also worth noting that, in the future, National Grid anticipates that it should not be necessary to replace all of the systems at once. National Grid is using a more open architecture that will facilitate the replacement of individual components of the system when they reach end of life.

Request:

Referring to the Joint Pre-filed Testimony of Johnston and Connolly page 5, line 21 through page 6, line 12:

- a. What does "with full implementation" mean in terms of real versus elapsed time?
- b. What percentage of full implementation must be reached before NGRID-RI employees will be able to effectively benefit from at least a 50% reduction in sub-systems?
- c. Alternatively, what are the core subsystems among the resulting 30 systems, subsystems, and/or applications across the six gas distribution companies must be operational at the same time in order for NGRID-RI employees to effective benefit from the implementation of the Gas Business Enablement Program?
- d. How does this compare to roll out in the other two states jurisdictions?
- e. Does the Company's plans to implement these three inter-related core operating capabilities (Work Management, Asset Management, and Customer Enablement) revise existing sub-systems, applications, databases or spreadsheet systems, or replace then with entirely new systems?
- f. Does the planned implementation provide benefits in terms of fewer management and user support positions required to maintain them, whether at the utility operating division level or the service company level? If so, how are these savings represented in this filing?
- g. Does the planned implementation allow elimination of transposition error as employees use the resulting 30 systems, subsystems and applications? If so, how is this reduction in transposition error in use guaranteed by system design and how will it be verified after it is in use?
- h. How will NGRID confirm that the databases included in the final GBE implementation will meet all criteria for database normalization?
- i. Does the planned implementation provide benefits in terms of reduced labor and travel costs associated with improved dispatch and scheduling capabilities, whether at the utility operating division level or the service company level? If so, how are these savings represented in the filing?

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j. Does the planned implementation provide benefits in terms of reduced customer call center costs or operational delivery costs as a result of customer self-service capabilities, whether at the utility operating division level or the service company level? If so, how are these savings represented in this filing?

Response:

- a. The timeline for implementation is shown in the Gas Business Enablement roadmap, indicating the program's phased implementation through five major releases beginning in March 2018, with the fifth release scheduled to be placed in service in calendar year 2021. A copy of the roadmap is provided as Schedule GBE-4, Page 1 (Bates Page 134 of Book 7) with the joint pre-filed direct testimony of Company Witnesses Anthony H. Johnston and Christopher J. Connolly.
- b. The Gas Business Enablement roadmap shows three primary releases for the Company and its Rhode Island customers:
 - (1) March 2018 Minimum viable product releases of the asset and work management solution integrated with the field mobile software solution to: Instrumentation and Regulation, Corrosion, and Customer Meter Services - Collections and Dispatch and Scheduling. This initial release will impact the work processes of approximately 125 employees supporting the Company.
 - (2) October 2018 Enhanced releases of the asset and work management solution (IBM Maximo) integrated with the field mobile software solution (Salesforce Field Service Lightning) with enhanced capabilities delivered to: Instrumentation and Regulation, Corrosion, and Customer Meter Services - Collections and Dispatch and Scheduling. This release includes expanded capabilities to include all Customer Meter Services work types, which expands the functionality for Dispatch and Scheduling. A new Graphical Information System (Esri GIS) application will be deployed and integrated with the work and asset management system with this release providing new functionality and capability to the broader employee base supporting the Company including: Maintenance and Construction, Engineering and Asset Management, Distribution Support Services, and Customer among other supporting departments. This release will be delivered to the majority of employees supporting the Company. Customer Meter Services, Dispatch and Scheduling, Customer Contact Center, Distribution Support Services, Engineering and Asset Management, and Customer will primarily work from the new software platforms. These new solutions will be implemented alongside existing, legacy sub-systems that will continue to exist along with some interim processes (e.g. leak management), largely for Maintenance and Construction. At this stage of the Gas Business Enablement Program, the new

solutions are deployed to a majority of the employees supporting the Company with an estimated 50 percent reduction in the need for the sub-systems.

- (3) April 2020 Enhanced releases of the asset and work management solution, field mobile solution, and GIS application will be deployed to all groups in the Company with a minimum viable product release of construction capabilities to Maintenance and Construction. With this release, most of the legacy sub-systems will no longer be needed including the paper-based operations that exist today. As remaining solution enhancements are delivered over the approximately 6-month period to September 2020, *all legacy sub-systems will be retired*.
- c. The list of 30 systems is a list of both existing systems and new systems that are being implemented as part of the Gas Business Enablement Program. The reduction in the number of overall systems will be achieved by retiring legacy systems that will be displaced by the new systems implemented through the program.

Company employees will begin to realize benefits of the Gas Business Enablement Program at the first release, scheduled for March 2018. The realized benefits will be achieved by efficiencies inherent with the new asset and work management system (IBM Maximo) and the field mobile software application-based capabilities (Salesforce Field Service Lightning) with integration to existing systems.

- d. The sequencing of the Gas Business Enablement Program implementation across the other jurisdictions is consistent with the Company releases with the three core systems delivering the enterprise solution with the same functionality and capabilities to the same groups in those jurisdictions. The timing of the three primary releases in the other jurisdictions will trail behind the Company as identified in the Program roadmap, but enhancements to the software solutions will be released across all jurisdictions at the same time. In each of the jurisdictions, the existing, legacy sub-systems and applications will be retired as the capabilities are delivered consistent with part (b), above.
- e. The three core operating capabilities predominately replace redundant and overlapping legacy systems. For example, National Grid currently utilizes an outdated, unsupported version of Maximo in some of the jurisdictions to manage a subset of the asset management capability. Therefore, there has been a need to augment the asset management capability with several other "workaround" applications, such as Excel spreadsheets and Access databases. These disparate, work-around systems will be displaced and retired by the single asset -management capability with the deployment of the new, enterprise Maximo instance.

f. The Gas Business Enablement Program identifies benefits to the Company through efficiencies that will be achieved with the delivery of the new solutions and supporting capabilities.

As for management and support positions relating to the gas business, the benefits case for the program identified Type II benefits for productivity and efficiency improvements. It is important to note that the Program does not include in the benefits case a reduction in employees to support the Company. The additional capacity gained through more efficient operations will support greater labor productivity, <u>i.e.</u>, will have the effect of accomplishing more that the Company is able to accomplish with the existing bundle of systems, as opposed to reducing the need for labor resources. Additionally, the Company does not anticipate reductions in management and support positions relating to Information Services.

- g. There is a term "data authoring" that is used to describe the point at which new data is captured, and it typically is associated user data entry. The planned implementation will greatly reduce data authoring errors due to a number of factors:
 - (1) Many legacy applications allowed for free form text data entry where users are trained to enter only certain values. This is only as robust as the training and adherence to training by the users. Modern applications have more sophisticated user interfaces that avoid free form text, which greatly reduces error.
 - (2) The new core Gas Business Enablement systems have robust, configurable rules to guide and ensure optimal data entry depending on the context of the business itself.
 - (3) The Gas Business Enablement Program has an embedded Data Management work stream that is delivering a data governance process to define data rules and monitor the quality of data over time. The monitoring scorecards are a key auditing technique for verifying that the solution's data accuracy and quality.
- h. Data normalization is a best practice of Information Architecture and database design. The Gas Business Enablement Program has embedded Information Architecture resources responsible for design and governance of information and database design across the solution.
- i. Yes, the Gas Business Enablement Program identified Type I and Type II benefits associated to improved scheduling and dispatching of capabilities. Type I savings are represented as a reduction in the revenue requirement in the filing. Below, is the list of benefits identified through the implementation of new work management and field mobile software applications.

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Benefit Description	Detail
Damage Prevention - Reduced	Reduction in miles driven associated with travel time reduction.
Travel Mileage	
M&C Productivity	Increased field worker productivity through better technology -
Improvements - Base	work management, scheduling, field mobility, etc.
CMS Collections Jobs -	Reduction in miles driven associated with travel time reduction.
Reduction in Mileage	
CMS Collections Jobs -	Reduction in travel time via better scheduling, bundling of
Reduction in Travel Time	work, and optimized routing.
CMS Planned Jobs - Reduction	Reduction in idle time through improved auto-dispatch when a
in Available Time via	technician is available.
Autodispatch	
CMS Planned Jobs - Reduction	Reduction in miles driven associated with travel time reduction.
in Mileage	
CMS Planned Jobs - Reduction	Reduction intravel time via better scheduling, bundling of work,
in Travel Time	and optimized routing.
CMS Planned Jobs - Reduction	Reduction in UTCs due to proactive appointment confirmations
in UTCs	and preferred channels.
Reduction in Field Tech	Reduction in the communications from the technician to the
Communications	customer through automation (e.g., auto call ahead, text, etc.).

j. Yes, the Gas Business Enablement Program identified Type II benefits associated with implementation of customer self-service capabilities. Below, is the list of benefits identified through the implementation of customer-related, self-service capabilities.

Benefit Description	Detail
Reduce Move Call Volume	Reduction in external handled move calls through introducing
through Self-Service	the ability to self-schedule appointments on customer portal.
Reduce Non-Move Call	Reduction in internally handled calls through introducing the
Volume through Self-Service	ability to self-schedule appointments and check for status
	updates on customer portal.

Request:

Please refer to the Pre-filed Testimony of Howard S. Gorman, preamble, and provide a copy of the following in fully functioning Excel format from Docket No. 4323 as approved by the Commission:

- a. Allocated Class Cost of Service Study
- b. Revenue Allocations
- c. Rate Design Model

Response:

Please see the Excel files accompanying this response. The Allocated Cost of Service Study (ACOSS) is the Excel file named "RI-Electric 2012 ACOS (Compliance)" and the supporting Allocator study is the Excel file named "RI-Electric 2012 Allocators (Compliance)." The final revenue allocation and rate design model are both contained in the Excel file named "Sch JAL 1_3_4-S (Compliance)."

Please note the ACOSS model uses VBA-Visual Basic for Applications, which is a programming language developed for Excel and other applications. Because of the iterative nature of the calculations, the model should be calculated only under control of the VBA-code, and not by using the F9 key in Excel. Please contact Narragansett Electric if changes to the ACOSS model are needed or if you would like Narragansett Electric to run allocation scenarios.

Request:

Please refer to the Pre-filed Testimony of Howard S. Gorman, page 2, and provide a copy of the following in fully functioning Excel format with all rows and columns labeled and defined:

- a. Allocated Class Cost of Service Study
- b. Revenue Allocations
- c. Rate Design Model
- d. the bill impact analysis

Response:

Narragansett Electric provided the requested files in its initial filing with the Rhode Island Public Utilities Commission on November 27, 2017 in this docket.

Request:

Please refer to the responses to questions 37(a) and 38(a), above. Identify, quantify, and justify any changes between the last approved study and the one currently proposed for the following:

- a. Allocators
- b. Classifications
- c. Functionalization
- d. Allocations

Response:

Below are the changes in selection of allocators from the Allocated Cost of Service Study (ACOSS), which Narragansett Electric filed with the Public Utilities Commission in compliance with its order in RIPUC Docket No. 4323 and the ACOSS filed for the current rate case. The allocation factor values for RIPUC Docket No. 4323 are shown in Schedules HSG-2A, HSG-2B, and HSG-2C in RIPUC Docket No. 4323; the allocation factor values for the current rate case are shown in Schedules HSG-1G-2, HSG-1G-3, and HSG-1G-4 in this case (See Bates Pages 121-130 of Book 12).

The line references indicated in the table below refer to Schedule HSG-1G-4 in the current case.

	Docket No.		
Description	4323	Current Case	Reason
<u>Line Transformers</u> - Cost (Account 368, line 18) and Maintenance expense (Account 595, line 85)	NCP Pri-Sec	Xfmr_Cost	 NCP Pri-Sec was an estimate Xfmr_Cost assigns cost of each transformer among classes that use it, based on their average peak use per customer
Depreciation Reserve (Account 108; lines 33-48) and Depreciation Expense (Account 108; lines 121-135)	All plant grouped	Detailed by asset	More precise
Unamortized Debt Cost (line 52)	Plant	Rate base	Debt is incurred for all rate base elements

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Description	Docket No.	Cumont Casa	Deccor
Description	4323	Current Case	Reason
Materials and Supplies (line 53)	Plant	Operating expense	Better match to cost causation
Accumulated Deferred Income Tax (line 56)	Plant	Net plant	Better match to cost causation
Municipal Tax Expense (Account 408.140, line 139)	Plant	Net plant	Better match to cost causation
Other tax, Regulatory deferrals (Account 408.170, line 141)	Plant	Rate base	Better match to cost causation, due to Deferrals
Forfeited Discounts revenue (line 154)	Late payment charges	Total delivery revenue	To match allocation of Uncollectible accounts

Request:

Please refer to the responses to questions 37(b) and 38(b), above. Identify, quantify, and justify any changes between the last approved allocation and the one currently proposed for the following:

- a. Adherence to the results of the allocated cost of service study
- b. Mitigation of extreme rate impacts

Response:

Narragansett Electric measured the appropriateness of its revenue allocation in the current rate case using the same metrics as in its prior general rate case in RIPUC Docket No. 4323. These metrics are:

• Progress Toward Unity, which measures how closely the proposed revenue allocation reflects the ACOSS results.

Progress Toward Unity	Residential A-16/A-60	Small C&I C-06	General C&I G-02	200 kW Demand G-32	5000 kW Demand G-62	Lighting	Propulsion X-01
Docket No. 4323	97%	70%	72%	73%	57%	65%	60%
Current Case	97%	94%	102%	101%	97%	83%	53%

• Relative increases, which compares the revenue changes for individual classes to the average change.

Relative Increase	Residential A-16/A-60	Small C&I C-06	General C&I G-02	200 kW Demand G-32	5000 kW Demand G-62	Lighting	Propulsion X-01
Docket No. 4323	1.18 X	0.29 X	0.23 X	0.23 X	0.48 X	3.77 X	3.76 X
Current Case	1.42 X	1.14 X	0.52 X	0.00 X	1.60 X	0.00 X	0.00 X

In both of these rate cases, Narragansett Electric balanced the objective of following the ACOSS results, with mitigating extreme impacts on individual rate classes.

Request:

Please refer to the responses to questions 37(c) and 38(c), above. Other than the changes discussed in Gorman's testimony pages 23 to 45, identify and discuss any other changes between the last approved rate design and the one currently proposed.

Response:

Other than changes discussed in Narragansett Electric's responses to Division 9-37 and Division 9-38, and those discussed in Mr. Gorman's testimony on pages 23 to 45 (Bates Pages 27 through 49 of Book 12), Narragansett Electric is not proposing any other changes to rate design.

Request:

Please refer to the Pre-filed Testimony of Howard S. Gorman, and respond to the following:

- a. Identify each rate class where the Company proposes to increase the customer charge with fixed costs.
- b. For each rate class identified above, quantify how much of the fixed costs are allocated to energy and how much is allocated to the customer charge. Provide your response and all supporting workpapers and data in working Excel files, with all rows and columns labeled and identified.
- c. For each allocation identified above, reference the part of the allocated cost of service study that supports the allocation.

Response:

- a. Narragansett Electric has proposed increases to the customer charges for rate classes A-16, A-60, C-06, G-02, G-32/B-32, X-01, and M-1.
- b. The customer-related portion of each class' revenue requirement is shown on Schedule HSG-1C-1, Line 18, and the demand-related portion is shown on Line 5. The unitized customer-related costs are shown on Line 23.

The Excel file for the allocated cost of service study was provided with Narragansett Electric's initial filing on November 27, 2017 and in response to Division 9-38. The derivation of the customer charge for each rate class is discussed in the pre-filed direct testimony of Company Witness Howard S. Gorman. Any customer-related costs not recovered in the customer charge are recovered in the kWh-based or demand-based charges.

c. Please refer to the Excel file with the filename "NECo17- ACOS" submitted by Narragansett Electric on November 27, 2017 and accompanying the response to Division 9-38.

Request:

Please refer to the Pre-filed Testimony of Howard S. Gorman, page 24, and respond to the following:

- a. Provide a copy of current rate A-60, low income tariff.
- b. Discuss the qualifications to receive the low-income rate in the current tariff and how the qualifications are set.
- c. Please provide a copy of any studies the Company has done on qualifications for the lowincome rate class.
- d. Please provide a copy of any recent low-income customer data analysis in working Excel format with all supporting data, work papers and assumptions that supports the homogeneity of this customer class. If no current analysis has been performed, please state when the Company last studied this class.

Response:

- a. Please see Attachment DIV 9-43 for a copy of the currently effective Rate A-60 tariff.
- b. As described in the availability provision of the Low-Income Rate (Rate A-60) retail delivery service tariff provision, this rate class is available only to currently qualified customers for all domestic purposes in an individual private dwelling or an individual apartment, providing such customer meets both of the following criteria:
 - 1. Must be the head of a household or principal wage earner.
 - 2. Must be presently receiving Supplemental Security Income from the Social Security Administration, be eligible for the low-income home energy assistance program, or one of the following from the appropriate Rhode Island agencies: Medicaid, Food Stamps, General Public Assistance or Family Independence Program.

It is the responsibility of the customer to annually certify, by forms provided by the Company, continued compliance with the foregoing provisions.

Rate A-60 (and its predecessor rate, Residential Service Low Income (A-65)) has been in effect as far back as 1993, based upon Narragansett Electric's records, and likely was in effect before 1993. At that time, the criteria was as follows:

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- 1. Must be the head of a household or principal wage earner.
- 2. Must be presently receiving Supplemental Security Income from the Social Security Administration or one of the following from the appropriate Rhode Island agencies: Medicaid, Food Stamps, General Public Assistance or Aid to Families with Dependent Children.

In Docket No. 2930 as part of the Eastern Utility Associates merger rate plan settlement in 2000, the parties agreed that Rate A-60 be expanded to include all customers who are eligible for assistance through the federally-funded LIHEAP program. In addition to including LIHEAP eligibility, effective May 1, 2000, the eligibility criteria also changed, broadening the availability of the rate by allowing customers to only be eligible to receive benefits from one of the Rhode Island agencies listed above.

- c. Narragansett Electric has not conducted any studies on the qualifications for the lowincome rate class.
- d. The homogeneity of customers receiving service on Narragansett Electric's Rate Classes A-16 and A-60 can be evidenced by the following:

Month	kWh Deliveries		Custo	omers	Per Customer	
	A 16	A 60	A 16	A 60	A 16	A 60
Sep-2018	254,750,096	20,973,642	402,920	36,336	632	577
Oct-2018	195,608,523	16,076,853	403,055	36,349	485	442
Nov-2018	185,915,385	15,253,496	403,190	36,361	461	420
Dec-2018	225,723,704	18,483,449	403,325	36,373	560	508
Jan-2019	255,533,524	20,907,904	403,461	36,386	633	575
Feb-2019	236,415,886	19,322,648	405,164	36,541	584	529
Mar-2019	222,197,134	18,173,399	405,697	36,589	548	497
Apr-2019	195,801,702	16,030,504	403,866	36,423	485	440
May-2019	187,143,868	15,365,185	404,001	36,435	463	422
Jun-2019	196,955,648	16,197,933	404,138	36,446	487	444
Jul-2019	267,594,160	22,034,857	404,272	36,460	662	604
Aug-2019	299,588,902	24,676,929	404,407	36,472	741	677
Total	2,723,228,532	223,496,799	4,847,496	437,171	562	511
Peak					741	677
Load Factor	•				75.8%	75.6%

• The rate classes have similar load factors, as shown in the table below:

• Narragansett Electric installs similar, if not identical, meters at service locations of customers on both rate classes.

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- The nature and cost of a service drop for both rate classes is similar.
- Customers often move between the two rate classes as individual customers qualify for Rate A-60 and, in some cases, lose their qualification for Rate A-60. The customers on Rate A-60 may begin service with Narragansett Electric on Rate A-16 until they qualify for Rate A-60 or their circumstances change years later and they become qualified for Rate A-60.

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 4770 Attachment DIV 9-43 Page 1 of 2 R.I.P.U.C. No. 2101 Sheet 1 Canceling R.I.P.U.C. No. 2083

THE NARRAGANSETT ELECTRIC COMPANY LOW INCOME RATE (A-60) RETAIL DELIVERY SERVICE

AVAILABILITY

Service under this rate is available only to currently qualified customers for all domestic purposes in an individual private dwelling or an individual apartment, providing such customer meets <u>both</u> of the following criteria:

- 1. Must be the head of a household or principal wage earner.
- 2. Must be presently receiving Supplemental Security Income from the Social Security Administration, be eligible for the low-income home energy assistance program, or one of the following from the appropriate Rhode Island agencies: Medicaid, Food Stamps, General Public Assistance or Family Independence Program

It is the responsibility of the customer to annually certify, by forms provided by the Company, the continued compliance with the foregoing provisions.

The Company may under unusual circumstances permit more than one set of living quarters to be served through one meter under this rate, but if so, the kilowatt-hours eligible for the credit described below shall be multiplied by the number of separate living quarters so served.

MONTHLY CHARGE

The Monthly Charge will be the sum of the applicable Retail Delivery Service Charges set forth in R.I.P.U.C. No. 2095, Summary of Retail Delivery Rates .

RATE ADJUSTMENT PROVISIONS

Transmission Service Charge Adjustment

The prices under this rate as set forth under "Monthly Charge" may be adjusted from time to time in the manner described in the Company's Transmission Service Cost Adjustment Provision.

Transition Charge Adjustment

The prices under this rate as set forth under "Monthly Charge" may be adjusted from time to time in the manner described in the Company's Non-Bypassable Transition Charge Adjustment Provision.

Standard Offer Adjustment

All Customers served on this rate must pay any charges required pursuant to the terms of the Company's Standard Offer Adjustment Provision, whether or not the Customer is taking or has taken Standard Offer Service

Energy Efficiency Programs

The amount determined under the preceding provisions shall be adjusted in accordance with the Company's Energy Efficiency Program Provision as from time to time effective in accordance with law.
The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 4770 Attachment DIV 9-43 Page 2 of 2 R.I.P.U.C. No. 2101 Sheet 2 Canceling R.I.P.U.C. No. 2083

THE NARRAGANSETT ELECTRIC COMPANY LOW INCOME RATE (A-60) RETAIL DELIVERY SERVICE

Infrastructure, Safety and Reliability Provision

The amount determined under the preceding provisions shall be adjusted in accordance with the Company's Infrastructure, Safety and Reliability Provision as from time to time effective in accordance with law.

Customer Credit Provision

The amount determined under the preceding provisions shall be adjusted in accordance with the Company's Customer Credit Provision as from time to time effective in accordance with law.

LIHEAP Enhancement Plan Provision

The amount determined under the preceding provisions shall be adjusted in accordance with the Company's LIHEAP Enhancement Plan Provision as from time to time effective in accordance with law.

Revenue Decoupling Mechanism Provision

The amount determined under the preceding provisions shall be adjusted in accordance with the Company's Revenue Decoupling Mechanism Provision as from time to time effective in accordance with law.

Net Metering Provision and Qualifying Facilities Power Purchase Rate

The amount determined under the preceding provisions shall be adjusted in accordance with the Company's Net Metering Provision and Qualifying Facilities Power Purchase Rate as from time to time effective in accordance with law.

Pension Adjustment Mechanism Provision

The amount determined under the preceding provisions shall be adjusted in accordance with the Company's Pension Adjustment Mechanism Provision as from time to time effective in accordance with law.

STANDARD OFFER SERVICE

Any Customer served under this rate who is eligible for Standard Offer Service shall receive such service pursuant to the Standard Offer Service tariff.

GROSS EARNINGS TAX

A Rhode Island Gross Earnings Tax adjustment will be applied to the charges determined above in accordance with Rhode Island General Laws.

TERMS AND CONDITIONS

The Company's Terms and Conditions in effect from time to time, where not inconsistent with any specific provisions hereof, are a part of this rate.