nationalgrid

Celia B. O'Brien
Assistant General Counsel and Director

June 18, 2018

VIA HAND DELIVERY AND ELECTRONIC MAIL

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

RE: Docket 4770 – Application of The Narragansett Electric Company d/b/a National Grid for Approval of a Change in Electric and Gas Base Distribution Rates
Supplemental Response to Division 7-49

Dear Ms. Massaro:

Enclosed is an original of the Company's[1] supplemental response to Division 7-49 in the above-referenced docket.

This filing includes a Motion for Protective Treatment of Confidential Information in accordance with Rule 1.2(g) of the PUC's Rules of Practice and Procedure and R.I. Gen. Laws § 38-2-2(4)(B) for the Company's supplemental response to data request Division 7-49.

The Company seeks protection from public disclosure of certain confidential information contained in Attachment DIV 7-49-10 CONFIDENTIAL, Attachment DIV 7-49-12 CONFIDENTIAL, Attachment DIV 7-49-13 CONFIDENTIAL, Attachment DIV 7-49-20 CONFIDENTIAL, Attachment DIV 7-49-23 CONFIDENTIAL, Attachment DIV 7-49-29 CONFIDENTIAL, and Attachment DIV 7-49-31 CONFIDENTIAL provided with the supplemental response to data request Division 7-49.

Accordingly, the Company has provided the PUC with one complete, unredacted copy of the confidential documents in a sealed envelope marked "**Contains Privileged and Confidential Information – Do Not Release**," and has included redacted copies of these documents for the public filing.

The supplemental response to Division 7-49 is listed in the enclosed discovery log and the enclosed table of contents.

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

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Thank you for your attention to this transmittal. If you have any questions, please contact me at 781-907-2153.

Very truly yours,

Celia B. O'Brien

Enclosures

cc: Docket 4770 Service List
Macky McCleary, Division
Jonathan Schrag, Division
John Bell, Division
Al Mancini, Division
Ron Gerwatowksi, Division
Leo Wold, Esq.

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
BEFORE THE PUBLIC UTILITIES COMMISSION

IN RE: THE NARRAGANSETT ELECTRIC COMPANY d/b/a NATIONAL GRID – ELECTRIC AND GAS DISTRIBUTION RATE FILING	)	Docket No. 4770

THE COMPANY'S MOTION
FOR PROTECTIVE TREATMENT OF CONFIDENTIAL INFORMATION

The Company[1] respectfully requests that the Rhode Island Public Utilities Commission (PUC) provide confidential treatment to and grant protection from public disclosure of certain confidential, competitively sensitive, and proprietary information submitted in this proceeding, as permitted by PUC Rule 1.2(g) and R.I. Gen. Laws § 38-2-2(4)(B). The Company also requests that, pending entry of that finding, the PUC preliminarily grant the Company's request for confidential treatment pursuant to Rule 1.2 (g)(2).

I. BACKGROUND

On June 18, 2018, the Company filed a supplemental response to data request Division 7-49, from the Rhode Island Division of Public Utilities and Carriers' (the Division) Seventh Set of Data Requests of the Division of Public Utilities and Carriers to National Grid dated January 5, 2018 (Division Set 7). Data Request Division 7-49 seeks copies of documents regarding the Gas Business Enablement Program from proceedings before the Massachusetts Department of Public Utilities, including pre-filed testimony, information request responses, and transcripts of live testimony.

The Company's supplemental response includes Attachment DIV 7-49-10, Attachment DIV 7-49-12, Attachment DIV 7-49-13, Attachment DIV 7-49-20, Attachment DIV 7-49-23,

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

Attachment DIV 7-49-29, and Attachment DIV 7-49-31, each of which contain commercial, consulting, and financial information detailing the Company's research and development of the Gas Enablement Business Program. Specifically, Attachment DIV 7-49-10, Attachment DIV 7-49-12, Attachment DIV 7-49-13, Attachment DIV 7-49-20, Attachment DIV 7-49-23, Attachment DIV 7-49-29, and Attachment DIV 7-49-31 include financial projections and calculations, safety assessments, consulting reports, and sensitive confidential commercial information regarding the Company's initiatives as part of its Gas Business Enablement Program, including confidential third-party vendor pricing information. The documents for which the Company seeks protective treatment received such treatment as part of the proceedings before the Massachusetts Department of Public Utilities. Therefore, Attachment DIV 7-49-10, Attachment DIV 7-49-12, Attachment DIV 7-49-13, Attachment DIV 7-49-20, Attachment DIV 7-49-23, Attachment DIV 7-49-29, and Attachment DIV 7-49-31 contain sensitive confidential commercial information that the Company has an obligation to protect from public disclosure.

Therefore, the Company requests that, pursuant to Rule 1.2(g), the PUC afford confidential treatment to the information contained in Attachment DIV 7-49-10, Attachment DIV 7-49-12, Attachment DIV 7-49-13, Attachment DIV 7-49-20, Attachment DIV 7-49-23, Attachment DIV 7-49-29, and Attachment DIV 7-49-31.

II. LEGAL STANDARD

PUC Rule 1.2(g) provides that access to public records shall be granted in accordance with the Access to Public Records Act (APRA), R.I. Gen. Laws § 38-2-1, *et seq.* Under the APRA, all documents and materials submitted in connection with the transaction of official business by an agency is deemed to be a "public record," unless the information contained in

such documents and materials falls within one of the exceptions specifically identified in R.I. Gen. Laws § 38-2-2(4). Therefore, to the extent that information provided to the PUC falls within one of the designated exceptions to the public records law, the PUC has the authority under the terms of the APRA to deem such information to be confidential and to protect that information from public disclosure.

In that regard, R.I. Gen. Laws § 38-2-2(4) (A) and (B) provide that the following types of records shall not be deemed public:

> Trade secrets and commercial or financial information obtained from a person, firm, or corporation which is of a privileged or confidential nature.

The Rhode Island Supreme Court has held that this confidential information exemption applies where disclosure of information would be likely either to (1) impair the Government's ability to obtain necessary information in the future; or (2) cause substantial harm to the competitive position of the person from whom the information was obtained. Providence Journal Company v. Convention Center Authority, 774 A.2d 40 (R.I. 2001).

The first prong of the test is satisfied when information is provided voluntarily to the governmental agency and that information is of a kind that would customarily not be released to the public by the person from whom it was obtained. Providence Journal, 774 A.2d at 47.

III. BASIS FOR CONFIDENTIALITY

Attachment DIV 7-49-10, Attachment DIV 7-49-12, Attachment DIV 7-49-13, Attachment DIV 7-49-20, Attachment DIV 7-49-23, Attachment DIV 7-49-29, and Attachment DIV 7-49-31 contain confidential pricing information and sensitive financial and commercial information, the terms of which would cause substantial harm to the Company's competitive position. Several of these documents are reports from a consulting company opining as to the Company's policies, procedures, and operations. The Company has an obligation to protect this

information from public disclosure. If the Company were required to make the information contained within these confidential attachments public, the Company's competitive position would be harmed. It is also the type of information that the Company ordinarily would not disclose to the public. Therefore, the Company is providing the unredacted versions of Attachment DIV 7-49-10, Attachment DIV 7-49-12, Attachment DIV 7-49-13, Attachment DIV 7-49-20, Attachment DIV 7-49-23, Attachment DIV 7-49-29, and Attachment DIV 7-49-31 on a voluntary basis to assist the PUC with its decision-making in this proceeding, but respectfully requests that the PUC provide confidential treatment to these attachments.

IV. CONCLUSION

Accordingly, the Company respectfully requests that the PUC grant protective treatment to Attachment DIV 7-49-10, Attachment DIV 7-49-12, Attachment DIV 7-49-13, Attachment DIV 7-49-20, Attachment DIV 7-49-23, Attachment DIV 7-49-29, and Attachment DIV 7-49-31.

WHEREFORE, the Company respectfully requests that the PUC grant this Motion for Protective Treatment.

Respectfully submitted,

THE NARRAGANSETT ELECTRIC COMPANY

By its attorneys,

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Dated: June 18, 2018

Certificate of Service

I hereby certify that a copy of the cover letter and/or any materials accompanying this certificate were electronically transmitted and/or hand delivered to the individuals listed below.

Najat Coye — June 18, 2018
Date

Docket No. 4770 - National Grid – Rate Application
Service list updated 6/5/2018

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Docket No. 4770
Seventh Set of Data Requests of the
Division of Public Utilities and Carriers to National Grid
January 5, 2018

Instruction: Each request for workpapers should be understood to include a request for all electronic spreadsheet files with all cell formulas and cell references in tact.

Regarding Gas Costs of Service and Rates

7-1. Re: the Direct Testimony of Witness Normand. Please provide electronic copies of workpapers relied upon by Witness Normand to generate his Class Cost of Service and rate design analyses presented in Schedules PMN-2 through PMN-9 including all supporting workpapers and electronic spreadsheet files used in the development of input data and allocation factors for the analyses presented in those exhibits.

Response can be found in Book 1 on Bates page(s) 1.

7-2. Re: the Direct Testimony of Witness Normand at page 9 of 31, lines 8-11. Please provide full documentation of each "special study" undertaken to replicate the intended use of specific plant or expenses.

Response can be found in Book 1 on Bates page(s) 2.

7-3. Re: the Direct Testimony of Witness Normand at page 9 of 31, lines 12-13. Please:

a. Provide the workpapers, data, analyses, studies, and assumptions relied upon as the basis for his assertion that "the cost of processing a computer generated bill is the same for all classes."

b. Provide an example of the current format for each gas service rate classification.

c. Detail all changes in billing format that will be required to implement the proposed rates for each gas rate classification.

d. Identify each element of billing information that must be processed to generate a bill for a customer in each rate classification.

e. Identify each element of billing information that is stored by the Company for bills rendered to customers in each rate class.

Response can be found in Book 1 on Bates page(s) 3-34.

7-4. Re: the Direct Testimony of Witness Normand at page 9 of 31, line 19, through page 10, line 3. Please provide an explanation of the ratemaking principal that supports the use of "***some rational basis***" as a substitute for a more cost causative relationship.

Response can be found in Book 1 on Bates page(s) 35.

7-5. Re: the Direct Testimony of Witness Normand at page 10 of 31. Please:

a. Identity the components of the costs that comprise Narragansett Gas' Intangible Plant.

b. Explain how the incurrence of costs for each component of Narragansett Gas' Intangible Plant costs is cost-causatively related to:

1. The Company's incurrence of its "total plant" costs;
2. The Company's incurrence of "total labor" costs.

Response can be found in Book 1 on Bates page(s) 36.

7-6. Re: the Direct Testimony of Witness Normand at page 11 of 31, lines 5-16; Schedule PMN-3, Rate Design, pages 43 and 44 of 74; and Schedule PMN-9, pages 1-8. Please provide the electronic spreadsheet files, data, analyses, and assumptions used to compute the Distribution RSUM allocator for each rate class that Witness Normand has used in this proceeding.

Response can be found in Book 1 on Bates page(s) 37.

7-7. Re: the Direct Testimony of Witness Normand at page 12 of 31, lines 8-10. Please identify and document each "factor" taken from:

a. Narragansett Gas' continuing property records;

b. Narragansett Gas' general accounting records;

c. Other available sources.

Response can be found in Book 1 on Bates page(s) 38.

7-8. Re: the Direct Testimony of Witness Normand at page 12 of 31, lines 13-15. Please provide the workpapers, data, analyses, and assumptions relied by to assess the "total number of services" for each rate class. Please include in the response to this request any and all information developed by or for the Company with respect to:

a. The numbers instances in which more than one account is served through a single service line;

b. The number accounts for each rate class that are served through shared service lines.

Response can be found in Book 1 on Bates page(s) 39.

7-9. Re: the Direct Testimony of Witness Normand at page 12 of 31, lines 15-17. Please provide the workpapers, data, analyses, and assumptions relied upon to assess "typical replacement costs for meters used to serve each rate class."

Response can be found in Book 1 on Bates page(s) 40.

7-10. Re: the Direct Testimony of Witness Normand at page 13 of 31, lines 8-10. Please identify and quantify the "capitalized labor" costs by FERC account that are included in the development of Witness Normand's LABOR allocator.

Response can be found in Book 1 on Bates page(s) 41.

7-11. Re: the Direct Testimony of Witness Normand at page 14 of 31, lines 8-10. Please:

a. Verify that non-firm margins are no longer subject to sharing for the Company's Rhode Island operations.

b. Explain why Non-Firm Service is not shown as a separate class within the Company's class cost of service allocation study.

c. Specific all criteria that the witness believes would need to be met to Non-Firm Service to be treated in the same manner as firm service rate classifications within the Company's class cost of service allocations.

Response can be found in Book 1 on Bates page(s) 42-43.

7-12. Re: the Direct Testimony of Witness Normand at page 14 of 31, lines 8-10. Please:

a. Identify and quantify all elements of non-firm revenue that the Company includes within the "non-firm revenue margins" that are allocated among rate classes on the distribution DISTR allocator.

b. Provide the workpapers, data, analyses, and assumptions relied upon to support the appropriateness of allocating non-firm revenue margins among the Company's firm gas service rate classifications.

Response can be found in Book 1 on Bates page(s) 44.

7-13. Re: the Direct Testimony of Witness Normand at page 15 of 31, lines 3-5. Please identify and quantify each element of Operation and Maintenance expenses that the witness classifies as "plant-related capacity expenses.

Response can be found in Book 1 on Bates page(s) 45.

7-14. Re: the Direct Testimony of Witness Normand at page 16 of 31, lines 5-7. Please explain the meaning of the phrase "existing and equalized revenue requirement levels" as it is used by the witness. If "equalized revenue requirement levels" are intended to reference revenue requirements at equalized class rates of return, so state. If a different meaning is intended, please explain the intended meaning and document the witness' determination of "equalized revenue requirement levels."

Response can be found in Book 1 on Bates page(s) 46.

7-15. Re: the Direct Testimony of Witness Normand at page 16 of 31, lines 15-19. Please:

a. Provide the witness' quantification of the rates of return that the residential low-income classes would generate if shown separately in the Company's Allocated Cost of Service Study.

b. Document and quantify the subsidies to low income residential classes (R11 and R13) that the witness has included in his cost studies.

Response can be found in Book 1 on Bates page(s) 47.

7-16. Re: the Direct Testimony of Witness Normand at page 20 of 31, lines 1-3 where reference is made to "some rather large increases." Please:

a. Identify all criteria used by Witness Normand to assess the acceptability of above average revenue increase percentages for each rate class.

b. Document and explain the witness' rationale for when in the context of the Company's overall revenue increase request in this proceeding an increase for an individual rate class becomes "rather large."

Response can be found in Book 1 on Bates page(s) 48.

7-17. Re: the Direct Testimony of Witness Normand at page 21 of 31, line 1. Please document and explain the derivation of the 1.15 multiplier used to establish the proposed cap for percentage increases in revenue requirements by class.

Response can be found in Book 1 on Bates page(s) 49.

7-18. Re: the Direct Testimony of Witness Normand at page 22 of 31. Please explain why the Proposed "Total Narragansett Gas" increase shown on the last line of Table 1 is less than the "Total Narragansett Gas" Increase to Uniform ROR shown on the same line.

Response can be found in Book 1 on Bates page(s) 50.

7-19. Re: the Direct Testimony of Witness Normand at page 22 of 31. Please:

a. Provide citation to, and the specific language of, the portion of the Commission's order in Narragansett Gas' 2012 Rate Case that approved the elimination of "all existing block structure" for gas service rate classes.

b. Verify that Narragansett Gas' current rates include blocked distribution charges for Residential Heat and Small C&I customers served under Rates 12, 13, and 21.

Response can be found in Book 1 on Bates page(s) 51.

7-20. Re: the Direct Testimony of Witness Normand at page 23 of 31, determination of proposed customer charges for gas service customers. Please:

a. Provide all actual cost data and analyses relied upon to assess the reasonableness and appropriateness of the $735 per month customer charge for Non-Firm customers.

b. Verify that the Company's current Gas Tariff includes three different levels of customer charges for Non-Firm Transportation (NFT) Service customers, and demonstrate the relationship between those current tariff charges and the $625 per month "Current" customer charge for Non-Firm shown in Table 2.

c. Explain how the proposed customer charge for Non-Firm customers considers the provisions of the Company's tariff that require that customers who take Non-Firm Transportation Service must have telemetering equipment in-place.

d. Explain how the proposed customer charge for Non-Firm customers the proposed requirement in Section 6, Transportation Terms and Conditions, Schedule C, Sheet 15, Item 2.02.0, Telemetering, that may require NFT customers to pay an "***initial lump sum fee***" for a meter equipped with a wireless module and pay an annual fee for a "data plan."

Response can be found in Book 1 on Bates page(s) 52-53.

7-21. Re: Schedule PMN-7, Rate Design, page 3 of 6. Please:

a. Provide the price elasticity analyses or other analyses relied upon by the Company to assess the expected impacts of the proposed changes in distribution charges on gas use for each rate class.

b. Provide the Company's assessment of the expected impacts of its proposed rates and charges on gas use by rate class, as well as all supporting workpapers for that assessment.

c. For C&I Small Sales and Transportation (FT-2) services, explain the rationale for the comparatively large percentage increases shown in Column (AA) for Off-Peak service and the comparatively small increases computed for On-Peak service.

Response can be found in Book 1 on Bates page(s) 54.

7-22. Re: Schedule PMN-9, page 2 of 136. Please:

a. Provide the full supporting detail for the witness' determination of the "billing days" by month shown in the second column from the left in the lower portion of the presentation on page 2 of 136 in Schedule PMN-9.

b. Document and explain the relationship between the "Normalized Sales (dth) Cycle Billed" shown in page 2 of 136 in Schedule PMN-9 and the "Normalized Sales (dth) Monthly Billed" shown on page 3 of 136.

c. Verify that the RSUM Allocation Factor development is premised on average daily use within each "billing" or "cycle" month and does not address fluctuations in daily use (e.g., daily peak requirements) with a "billing" or "cycle" month.

d. Please identify and explain the cost-causative relationship between normal weather daily average gas use by "billing month" and/or "cycle month" and the factors that determine the Company's sizing and costs for distribution mains.

Response can be found in Book 1 on Bates page(s) 55-57.

7-23. Re: the Direct Testimony of the Pricing Panel (Witnesses Leary and McCabe) at page 14 of 36, lines 15-16. For each of the last three years, please:

a. Provide the number of Account Restoration Charges billed to customers served under each gas rate classification.

b. Detail the Company's actual costs for Account Restoration activities.

c. Provide the number of Returned Check Charges billed to customers served under each gas rate classification.

d. Detail the Company's actual costs for processing Returned Checks.

Response can be found in Book 1 on Bates page(s) 58-59.

7-24. Re: the Direct Testimony of the Pricing Panel (Witnesses Leary and McCabe) at page 15 of 36, lines 14-18. For each of the last three years, please verify that the Company will have adequate AGT funding in the Rate Year to meet existing and anticipated AGT program commitments if the $300,000 currently embedded in its base distribution rates is eliminated, and if not, provide the Company's current best estimate of the amount of additional funding through the DAC that will be required to make existing and anticipated funding requirements.

Response can be found in Book 1 on Bates page(s) 60.

7-25. Re: the Direct Testimony of the Pricing Panel (Witnesses Leary and McCabe) at page 20 of 36, lines 7-11. Please provide the workpapers, data, and assumptions relied upon to assess the extent to which "[c]*easing the recovery of the discount through base distribution rates and eliminating the LIHEAP matching grant and Low Income Weatherization programs will* ***partially offset*** *the estimated annual discount during the Rate Year*.

Response can be found in Book 1 on Bates page(s) 61-63.

7-26. Re: the Direct Testimony of the Pricing Panel (Witnesses Leary and McCabe) at page 21 of 36, line 16, through page 22 of 36, line 5. For Narragansett Gas, please:

a. Verify that the proposed discount for low income gas service customers will apply equally to all months of the year.

b. Provide a comparison of the monthly distribution of benefits for a typical low income gas customer under the present low income programs and under the proposed rate discount.

Response can be found in Book 1 on Bates page(s) 64-70.

7-27. Re: the Direct Testimony of the Pricing Panel (Witnesses Leary and McCabe) at page 22 of 36, lines 3-5. Please provide the Company's assessment of the needs of Low Income gas customers in Rhode Island for gas service rate assistance and the extent to which the rate discount proposed (i.e., 15%) will address those needs.

Response can be found in Book 1 on Bates page(s) 71-72.

7-28. Re: the Direct Testimony of the Pricing Panel (Witnesses Leary and McCabe) at page 22 of 31, line 7. The table for Narragansett Gas shows an Estimated Annual Discount at 10% of $2,126,195. Footnote 5 at the bottom of the page indicates that a 10% discount in the 2012 Rate Case represented only $959,194. Please:

a. Reconcile these amounts and explain in detail the factors that have caused the costs of a 10% discount to more than double in roughly five years.

b. Provide the workpapers, data, analyses and assumptions that underlie the values for "Estimated Annual Discount" presented in the referenced table.

c. Provide the workpapers, data, analyses and assumptions relied upon to compute the value of a 10% discount in the 2012 rate case.

Response can be found in Book 1 on Bates page(s) 73-75.

7-29. Re: the Direct Testimony of the Pricing Panel (Witnesses Leary and McCabe) at page 22 of 36, the table for Narragansett Gas at line 7. Please explain why the low income weatherization funding is not included in the "Low Income Value Provided in 2012 Rate Case."

Response can be found in Book 1 on Bates page(s) 76.

7-30. Re: the Direct Testimony of The Pricing Panel (Witnesses Leary and McCabe) at page 23 of 36, lines 3-13. Please:

a. Provide the percentage discount approved in Massachusetts for National Grid's Low Income gas service customers.

b. Indicate whether the "percentage off of the total bill at full residential rates" for National Grid's Low Income customers in Massachusetts applies the discount to Gas Costs, and if so, whether gas cost discounts are recovered through a Distribution Adjustment Charge (DAC) or through a Gas Cost Recovery (GCR) mechanism.

c. Describe any and all changes in the Low Income rate discount program for National Grid customers in Massachusetts since its initial approval by the DPU in 2009.

Response can be found in Book 1 on Bates page(s) 77-78.

7-31. Re: the Direct Testimony of the Pricing Panel at page 35 of 36, lines 9-12. Please:

a. Provide documentation of the Company's costs for installation of an IP wireless service.

b. Provide documentation of the Company's costs for the "associated data plan for FT-1 transportation customers.

c. Identify the IP wireless service provider and provide a copy of the contract under which the referenced IP wireless services will be provided.

d. Indicate the term (in years and/or months) of the data plan that the Company will use for FT-1 customers.

e. Indicate whether a FT-! Transportation customer will have the options of:

1. Purchasing and installing their own IP wireless device;
2. Establishing IP wireless data service plans separate from the plan offered by the Company.

f. If FT-1 customers will not be provided the options of purchasing and installing their own IP wireless device and/or obtaining their own wireless data plans, please explain why the provision of such options is not reasonable and appropriate.

Response can be found in Book 1 on Bates page(s) 79-81.
Corrected and Supplemental Response can be found on Bates Page(s) 1-4.

7-32. Re: the Direct Testimony of the Pricing Panel (Witnesses Leary and McCabe) at page 36 of 36, lines 4-5. Please explain why the Company proposes to place its line extension policies in a separate section (Section 8) of its tariff rather than including those provisions in Section 1 General Rules and Regulations.

Response can be found in Book 1 on Bates page(s) 82.

7-33. Re: Schedule PP-1(a)-GAS, Development of Narragansett Gas Rate Year Distribution Revenue, page 2 of 2, line (25). Please:

a. Provide actual Non-Firm Margin revenue by month for each month of calendar year 2017 and each month of each of the three preceding calendar years on a customer-by-customer basis using a format comparable to that provided in Schedule SLN-6, pages 4 of 5 and 5 of 5, in Docket No. 4634.

b. Document the development of the "Normal" revenue amount for Non-Firm Transportation shown on line (25), Column (f), and explain in detail all factors

considered in the development of the "Normal" Non-Firm Margin shown.

c. If Test Year and/or Rate Year volumes (Dth) for Non-Firm Service customers are weather-normalized, provide the workpapers, data, analyses, and assumptions used to compute weather-normalized throughput volumes for the Company's non-firm gas service customers. If Test Year and/or Rate Year volumes (Dth) for Non-Firm Service customers are NOT weather-normalized, explain why the presentation of weather-normalize non-firm service volumes and revenues is not necessary or appropriate in the context of this proceeding.

Response can be found in Book 1 on Bates page(s) 83-98.

7-34. Re: Schedule PP-5-GAS, Section 1, Schedule A, Sheet 7, Item 12.0, Schedule of Administrative Fees and Charges, Schedules PP-3(a)-Gas, PP-3(b)-Gas and PP-3(c)-Gas. Please:

a. Provide the workpapers, data, assumptions, analyses, studies and other documents relied upon to support the development of input data used in the determination of:
   1. The Account Restoration Charge of $96.00;
   2. The "Paperless Billing Credit" for gas service customers of $0.37 per bill per month;
   3. The Return Check Charge of $7.00;
   4. The Daily Metered Equipment Fee of $1,239.00;
   5. The Daily Metered Data Plan Fee of $17.00;
   6. The AMR Opt-Out Fees
      i. $74.00 for Removal of AMR Meter/Installation of Non-AMR Meter,
      ii. $13.00 for Monthly Meter Reading Fee, and
      iii. $74.00 for Reinstallation of AMR Meter.
   7. The Residential and Non-Residential Credit Card Payment Fees including:
      i. Explanation and justification for the application of higher fees to Non-Residential Customers comparable size transactions;
      ii. The basis for the $600 threshold for application of additional fees to Residential customers;
      iii. The basis for the $1,000 threshold for application of additional fees to Non-Residential customers.

b. Document and explain why the Labor Overhead rate associated with Labor used for Account Restoration is 69.44% and the Labor Overhead rate associated with the installation of an IP Wireless Device is 95.88%.

Response can be found in Book 1 on Bates page(s) 99-116.

7-35. Re: Workpaper Schedule PP-1(a)-Gas. Please:

a. Provide the electronic spreadsheet files used to generate the referenced workpapers.

b. Provide a proof of revenue for each gas rate class (including the Company's Non-Firm Service rate classifications) for the Rate Year:

1. At present rates
2. At the Company's proposed rates.

Response can be found in Book 1 on Bates page(s) 117-118.

7-36. Re: Schedule PP-3(a), Account Restoration Fee, page 1 of 2. Please:

a. Document and explain the derivation of the "labor time" required for:

1. Meter Off Due to Non Payment;
2. Meter On Due to Customer Payment.

b. Provide the actual numbers of Account Restoration Fees billed by rate class by month for each month of the calendar year 2017 and each month of the three preceding calendar years.

c. Document the determination of the $8.22 average hourly rate that is used in the determination of Transportation Costs.

Response can be found in Book 1 on Bates page(s) 119-122.

7-37. Re: Schedule PP-3(b), page 1 of 2, Proposed Fee for IP Wireless Device. Please:

a. Document and explain the derivation of the "Incremental Cost of Meter Equipped with a Wireless Module.

b. Explain why it is necessary and appropriate for the Company to collect the proposed $1,285 incremental cost for a Meter Equipped with a Wireless Module and the costs associated with installation of such a meter through a "Lump Sum Fee."

c. Explain in detail how the capabilities of the referenced meter equipped with a wireless module differ from the capabilities of the Telemetering equipment required for Non-Firm Transportation Service customers.

d. With respect to the Cost of the Data Plan:

1. Provide the usage parameters for:
    i. The Low End plan

ii. The High End plan

2. Indicate the factors that would determine whether a customer requires a Low End plan, a High End plan, or a plan which is between the Low End plan and the High End plan.
3. Provide the workpapers, data, analyses and assumptions relied upon to compute:
    i. Average Travel Time
    ii. Average Install Time.
4. Indicate whether a customer with multiple gas and/or electric service accounts that require meters with wireless modules and data plans will require a separate data plan for each account, and if so, explain why separate data plans are necessary.
5. Document the development of the $39.62 Hourly Rate used and the cost components included in that rate. Also, explain why a separate hourly Transportation Cost is not shown.
6. Provide the workpapers, data, analyses, and assumptions relied upon to develop the "Weighting" factors used to compute the Weighted Average Monthly Cost.

Response can be found in Book 1 on Bates page(s) 123-126.

7-38. Re: Schedule PP-3(c)-Gas, page 1 of 2, Proposed Fee Returned Checks. Please:

a. Explain the acronym "JPCM."

b. Explain the roles of "JPCM" and "TransCentra" in the Company's processing of returned checks.

c. For calendar year 2017 and for each of the three immediately preceding calendar years, provide by rate class by month the numbers of returned checks processed by or for the Company.

d. Document the development of the Company Estimates for:

    1. Base Labor
    2. Labor Overheads.

e. Verify that the Total Cost on line (21) divided by the Test Year Returned Items on line (22) yields a result of $7.95 per item and explain why it is appropriate to truncate that result to a proposed Return Check Fee of $7.00.

f. Explain why the Internal Costs for processing Returned Checks for Narragansett Gas include Labor Overheads but the Internal Costs for Narragansett Electric do not include Labor Overheads.

Response can be found in Book 1 on Bates page(s) 127-131.

7-39. Re: Schedule PP-5-GAS, Section 1, Schedule A, Sheet 3, Item 3.1, System Pressure Factor. Please:

a. Indicate how, when, and in what forum the referenced "forecast of gas supply costs that are required to maintain pressure on the Company's distribution system" will be determined.

b. Explain why the methods for determining forecasted gas supply costs required to maintain pressure on the Company's distribution system" are not, and should not be, included in the Company's tariff.

Response can be found in Book 1 on Bates page(s) 132-133.

7-40. Re: Schedule PP-5-GAS, Section 1, Schedule A, Sheet 3, Item 3.1, System Pressure Factor, definition of "GCSP." Please identify the manner in which the Company identifies and determines the dollar amounts for:

a. Demand costs to be included in the GCSP;

b. Commodity costs to be included in the GCSP.

Response can be found in Book 1 on Bates page(s) 134.

7-41. Re: Schedule PP-5-GAS, Section 1, Schedule A, Sheets 4 and 5, Item 5.0 Service Supplied. Please explain why this section includes no reference to the Company's line extension policies and why at least a reference to those policies in this paragraph is not necessary and appropriate or at least helpful to customers trying to understand CIAC for main and service extensions.

Response can be found in Book 1 on Bates page(s) 135.

7-42. Re: Schedule PP-5-GAS, Section 1, Schedule B, Sheets 4 and 5. Please provide the monthly rates applicable for each of month of the last three calendar years for:

a. The "monthly short term borrowing rate defined as the Company's money pool rate" as part of the definition of "Hedge Collateral Carrying Costs;"

b. The Bank of America Prime Rate less 200 basis points as referenced in the definition of "Balance."

Response can be found in Book 1 on Bates page(s) 136-137.

7-43. Re: Schedule PP-5-GAS, Section 2, Gas Charge, Schedule A, Sheet 4, Total Fixed Costs, $TC_{FC.}$ Please:

a. Explain why it is necessary and appropriate that the level of supply-related local production and storage costs be determined in the Company's most recent general rate case, as opposed to have those costs determined in annual GCR proceedings.

b. Provide detailed documentation of the supply-related local production and storage costs for which the Company seeks approval in this proceeding.

c. Given outstanding considerations regarding long-term plans for replacement of supplies from the Cumberland LNG tank, explain the manner in which changes in the Company's current supply-related local production and storage costs will be addressed in future GCR and/or base rate proceedings.

Response can be found in Book 1 on Bates page(s) 138-139.

7-44. Re: Schedule PP-5-GAS, Section 2, Gas Charge, Schedule A, Sheet 4, Credits to Fixed Costs, $TR_{FC.}$ Please identify all "gas costs relating to **supplies** required to maintain system pressures on the Company's distribution system":

a. As its distribution system and its gas supply portfolio are presently configured;

b. As may be changed by any currently planned or proposed changes in its distribution system or portfolio of gas supply resources.

Response can be found in Book 1 on Bates page(s) 140.

7-45. Re: Schedule PP-5-GAS, Section 3, Distribution Adjustment Charge, Schedule A, Sheet 4, Item 3.2, AGT Factor. Please:

a. Explain in what forum the "Approved AGT budget" will be determined.

b. To the extent that the "Approved AGT budget" will be determined outside of a base rate case, does the Company accept an expansion of the language of the AGT Factor to address possible changes in future AGT budget amounts.

Response can be found in Book 1 on Bates page(s) 141-142.

7-46. Re: Schedule PP-5-GAS, Section 3, Distribution Adjustment Charge, Schedule B, Sheet 7, Target Revenue per Customer. Please:

a. Explain how the Target Revenue per Customer for the period beginning January 2018 will be determined prior to the conclusion of this proceeding (i.e., Docket No. 4770).

b. Noting that no change in this tariff provision would be effective prior to a final order in this proceeding, would the Company accept an alternative the definition for "*Target Revenue Per Customer" that reads, "The target revenue per customer for each rate class will be the Target Revenue per Customer established based on the Commission's Final Order in the Company's most recently decided base rate case*."

Response can be found in Book 1 on Bates page(s) 143.

7-47. Re: Schedule PP-5-GAS, Section 6, Non-Firm Transportation, Schedule A, Sheet 2, Distribution Charge. Please:

a. Provide the numbers of NFT customers billed in each usage category in each month of calendar year 2017 and in each month of each of the three immediately preceding calendar years.

b. Provide the results of the annual reviews of NFT customer usage performed after the August billing period in 2017 and in each of the three immediately preceding years indicating the numbers of customers that were moved from one usage category to another specifying the customers' former usage category and the usage category to which the customer was moved.

c. In the Company's annual review of NFT customer usage for 2017, identify any and all adjustments to customer usage that were made to reflect periods of service interruption or curtailment.

Response can be found in Book 1 on Bates page(s) 144-146.

Gas Business Enablement Program

7-48. Referring to the pending rate case of the Company's electric and gas distribution affiliate in upstate New York, Niagara Mohawk Power Corporation (Niagara Mohawk), in New York Public Service Commission Cases 17-E-0238 and 17-G-0239, please provide copies of

a. all pre-filed testimony filed by Niagara Mohawk and any other parties in that case relating to the subject matter of the Gas Business Enablement Program,

b. all information request responses of Niagara Mohawk and any other parties in that case relating to the subject matter of the Gas Business Enablement Program, and

c. any transcripts of live testimony relating to the subject matter of the Gas Business Enablement Program.

Response can be found in Book 2 part 1 on Bates page(s) 1-Book 2 part 6 on Bates pages(s) 200.
Supplemental response can be found in Book 1 on Bates page(s) 1-12.

7-49. Referring to the pending rate case of the Company's gas distribution affiliates in Massachusetts, Boston Gas Company and Colonial Gas Company (Gas Companies), in Department of Public Utilities docket 17-170, please provide copies of

a. all pre-filed testimony filed by the Gas Companies and any other parties in that case relating to the subject matter of the Gas Business Enablement Program,

b. all information request responses of the Gas Companies and any other parties in that case, relating to the subject matter of the Gas Business Enablement Program, and

c. any transcripts of live testimony relating to the subject matter of the Gas Business Enablement Program.

Response can be found in Book 2 part 6 on Bates page(s) 201-288.
Supplemental response can be found in Book 1 on Bates page(s) 1-207.
Second Supplemental response can be found in Book 1 part 1 on Bates page(s) 1-Book 1 part 28 on Bates page(s) 253.

REDACTED
Division 7-49 (Supplemental)

Request:

Referring to the pending rate case of the Company's gas distribution affiliates in Massachusetts, Boston Gas Company and Colonial Gas Company (Gas Companies), in Department of Public Utilities docket 17-170, please provide copies of

a. all pre-filed testimony filed by the Gas Companies and any other parties in that case relating to the subject matter of the Gas Business Enablement Program,

b. all information request responses of the Gas Companies and any other parties in that case, relating to the subject matter of the Gas Business Enablement Program, and

c. any transcripts of live testimony relating to the subject matter of the Gas Business Enablement Program.

Response:

a. Please see the following attachments for the requested information:

Attachment DIV 7-49-1: Pre-filed Direct Testimony of the Gas Business Enablement Panel;

Attachment DIV 7-49-2: Pre-filed Direct Testimony of Company Witness Daniel S. Dane (Revenue Requirement witness) relating to the subject matter of the Gas Business Enablement Program;

Attachment DIV 7-49-3: Exhibit NG-DSD-2-BOS, Schedule 33; and

Attachment DIV 7-49-4: Exhibit NG-DSD-2-COL, Schedule 33.

b. Boston Gas Company, Colonial Gas Company, nor any other party has filed any responses to information requests relating to the subject matter of the Gas Business Enablement Program in the Massachusetts Department of Public Utilities Docket No. D.P.U. 17-170. The D.P.U. 17-170 is in its early stages of discovery.

c. No transcripts of live testimony relating to the subject matter of the Gas Business Enablement Program are yet available with respect to D.P.U. 17-170, pending before the Massachusetts Department of Public Utilities. The evidentiary hearings are anticipated to occur in May 2018.

Prepared by or under the supervision of: Anthony Johnston and Christopher Connolly

Supplemental Response:

a. Please see the following attachments with corrected headers for the requested information:

Attachment DIV 7-49-1: Pre-filed Direct Testimony of the Gas Business Enablement Panel;

Attachment DIV 7-49-2: Pre-filed Direct Testimony of Company Witness Daniel S. Dane (Revenue Requirement witness) relating to the subject matter of the Gas Business Enablement Program;

Attachment DIV 7-49-3: Exhibit NG-DSD-2-BOS, Schedule 33; and

Attachment DIV 7-49-4: Exhibit NG-DSD-2-COL, Schedule 33.

b. Please see Attachment DIV 7-49-5 through Attachment DIV 7-49-31 for information request responses and their respective attachments relating to the subject matter of the Gas Business Enablement Program, as listed on the table below.

MA Rate Case Information Request	Response	PDF Attachment	XLS Attachment
DPU-NG 1-2	Attachment DIV 7-49-5		
DPU-NG 1-3	Attachment DIV 7-49-7		
DPU-NG 1-4	Attachment DIV 7-49-9		
DPU-NG 1-5	Attachment DIV 7-49-11		
DPU-NG 1-6	Attachment DIV 7-49-8	Attachment DIV 7-49-6	
DPU-NG 1-7	Attachment DIV 7-49-14	Attachment DIV 7-49-10 CONFIDENTIAL Attachment DIV 7-49-12 CONFIDENTIAL Attachment DIV 7-49-13 CONFIDENTIAL	
DPU-NG 1-8	Attachment DIV 7-49-15		
DPU-NG 1-9	Attachment DIV 7-49-16		
DPU-NG 1-10	Attachment DIV 7-49-18	Attachment DIV 7-49-17	
DPU-NG 1-11	Attachment DIV 7-49-19		

DPU-NG 1-12	Attachment DIV 7-49-21	Attachment DIV 7-49-20 CONFIDENTIAL	Attachment DIV 7-49-29 CONFIDENTIAL Attachment DIV 7-49-31 CONFIDENTIAL
DPU-NG 1-13	Attachment DIV 7-49-22		Attachment DIV 7-49-30
DPU-NG 1-14	Attachment DIV 7-49-24	Attachment DIV 7-49-23 CONFIDENTIAL	
DPU-NG 1-15	Attachment DIV 7-49-25		
DPU-NG 1-20	Attachment DIV 7-49-26		
DPU-NG 1-21	Attachment DIV 7-49-27		
DPU-NG 1-23	Attachment DIV 7-49-28		

Boston Gas Company
Colonial Gas Company
each d/b/a National Grid
D.P.U. 17-170
Exhibit NG-GBE-1
November 15, 2017
H.O._____

PRE-FILED DIRECT TESTIMONY

OF

THE GAS BUSINESS ENABLEMENT PANEL

Boston Gas Company
Colonial Gas Company
each d/b/a National Grid
D.P.U. 17-170
Exhibit NG-GBE-1
November 15, 2017
H.O._____

Table of Contents

I. Introduction

Q. Mr. Johnston, please state your full name and business address.

A. My name is Anthony H. Johnston. My business address is One MetroTech Center, Brooklyn, New York 11201.

Q. By whom are you employed and in what capacity?

A. I am employed by National Grid USA Service Company, Inc., a subsidiary of National Grid USA ("National Grid"). Effective April 1, 2016, I was appointed Senior Vice President for National Grid's Gas Business Enablement ("GBE") Program. In this role, I am accountable for the design, development and delivery of the Gas Business Enablement program and its anticipated benefits.

Q. Please describe your educational background and professional experience.

A. I earned a Master of Engineering Science from Oxford University in 2002 and a Master of Business Administration from Cranfield University in 2006. I am also a Chartered Professional Engineer. I started with National Grid in 1997 and have held a number of technical positions in system operations and network design, based in the United Kingdom. I subsequently moved to the United States to join GridAmerica LLC, a wholly-owned subsidiary of National Grid based in Cleveland, OH, where I was engaged in transmission planning. In 2006, I

returned to the United Kingdom to work in National Grid's UK gas distribution business, where I was responsible for network design, including renewable gas projects. In 2010, I was promoted to the position of Vice President of Customer Operations. In this role, I had responsibility for the gas call centers, resource planning, and dispatch and mapping teams. Beginning in 2012, I served as Chief of Staff for the Company's former global Chief Executive Officer, Steve Holliday.

In 2014, I relocated to the United States as the Vice President of Customer Meter Services, where I had responsibility for more than 2,400 personnel supporting National Grid's electric and gas distribution businesses in the United States. With respect to the Massachusetts gas business, I had oversight responsibility for all field service personnel providing gas emergency response, meter-related activities (including meter installation and removal), meter reading, bill investigations, collections and other field operations related to billing. I was also responsible for overseeing the gas dispatch centers. I held this role until assuming my current position in April 2016.

Q. Have you previously testified before any regulatory commissions?

A. Yes. I submitted pre-filed testimony to the New York Public Service Commission ("NYPSC") in the 2016 KeySpan Energy Delivery NY and Long

Island ("KEDNY & KEDLI") Rate Case 16-G-0058/0059 and 2017 Niagara Mohawk Power Company ("NMPC") Rate Case 17-E-0238 and 17-G-0239.

Q. Ms. Irani-Famili, please state your full name and business address.

A. My name is Reihaneh Irani-Famili. My business address is 404 Wyman Street, Waltham, MA 02451.

Q. By whom are you employed and in what capacity?

A. I am employed by National Grid. I joined National Grid in August 2016 as Vice President of Business Readiness and Design for the GBE Program. In this role, I am responsible for readiness of the business, sustainment of the solution and defining new ways of working from governance to performance management for the gas business. To fulfill this responsibility I have a number of functions, among which is the Change Management function of GBE. Change Management involves the implementation of process and technology changes across the organization through stakeholder management, training and communication. Field Technical Training, Change Leadership and operating model design are other functions under my provision.

Q. Please describe your educational background and professional experience.

A. I earned a Master of Science in Engineering from the University of Calgary in 2004 and a Master of Business Administration from the University of Calgary in 2011. I have worked in the energy industry for approximately 16 years in various capacities. I started my career as a process engineer in the oil and gas industry in Calgary, Alberta, Canada designing gas pipelines and gas-treatment facilities, as well as thermal heavy oil production facilities and multiphase pipelines. In 2011, I became a management consultant, where I worked on developing operational excellence frameworks for the energy industry, as well as strategic assessment engagements and technology deployment initiatives for large oil companies. In 2012, I joined Devon Energy, where I led operations project teams, managed facility turnarounds, and led strategic initiatives such as capital management optimization and enterprise data management. I was then hired by National Grid in 2016 to serve in my current position.

Q. Have you previously testified before any regulatory commissions?

A. No, I have not previously testified before this or any other regulatory commission.

Q. What is the purpose of this joint testimony?

A. The purpose of this joint testimony is to present an overview of the Company's multi-year, enterprise-wide, gas-business program referred to as the Gas Business

Enablement ("GBE") program, as well as the Company's proposal for associated cost recovery. The GBE program will accomplish the implementation of three, inter-related, core operating capabilities necessary to support National Grid's U.S. gas distribution business, which are Work Management, Asset Management and Customer Enablement. National Grid estimates that it currently relies on approximately 117 sub-systems, applications, databases or spreadsheet systems across the U.S. gas business to perform the work processes that will support these capabilities. With full implementation, this number will be reduced by over 75% to less than 30 systems, sub-systems and/or applications across six gas companies operating in three jurisdictions (Massachusetts, Rhode Island and New York). In Massachusetts, specifically, National Grid estimates that implementation of the GBE program will reduce the number of systems, applications, databases and spreadsheet systems from 55 to 26. Exhibit NG-GBE-2 shows an illustrative view of the current and future state of these systems, applications, and databases.

The GBE program will accomplish a number of important, customer-focused objectives. From a functional perspective, the GBE program will streamline processes and create a single set of integrated applications for core operating systems, significantly improving the ability of employees to perform their job functions effectively. The GBE program is also designed to improve the

Company's ability to achieve and maintain compliance with state and federal regulatory requirements across all three jurisdictions by improving work management and the flow of information necessary for compliance. However, at its heart, the GBE program is aimed at improving the customer experience to meet the relatively high customer expectations that exist in today's operating environment, and which are simply not possible to meet using today's operating processes. Fundamentally, the implementation of GBE will improve the Company's ability to provide safe, reliable and cost-effective delivery of natural gas to its customers.

For reasons that we will discuss in this joint testimony, implementation of the GBE program represents a critical step-change in the Company's operating platform that will require substantial investment across all three operating jurisdictions over a multi-year period (i.e., annually through 2023). Because the annual cost of capital investment by the Service Company is charged to its operating affiliates as expense, recovering the incremental expense change in each year of the GBE program implementation will be necessary to support the program.

Accordingly, this testimony is designed to: (1) provide the Department with detailed information about the GBE program and the reasons for its implementation; and (2) support the Company's request for a rate adjustment that will allow recovery of the reasonable and prudent costs of making a step-change improvement for the direct benefit of customers.

Q. Why is it necessary for the Department to consider allowing cost recovery for the GBE program in this proceeding?

A. The total anticipated investment in GBE is approximately $478.3 million across the U.S. gas distribution business, which involves three operating jurisdictions – Massachusetts, Rhode Island and New York, serving 3.5 million gas customers. GBE will be implemented in stages starting with Rhode Island, followed by Massachusetts, then followed by NMPC in upstate New York, and finishing with KEDLI/KEDNY in downstate New York.

For the Massachusetts component, the estimated investment of $127 million will take place beginning in FY2017 and continuing through FY2023. To accomplish implementation, National Grid will incur both capital costs and operating and maintenance ("O&M") expense in each year of the program. The incremental annual cost will be significant, but will be commensurate with the value gained by customers in relation to gas safety, reliability and efficiency. Without a rate

adjustment to accommodate these year-to-year changes and support program implementation for the benefit of customers, the Company will need to consider filing a petition for a base rate case on an annual basis. For example, for Massachusetts, the incremental annual expense associated with the GBE program from FY 2017 through FY 2021[1] is projected as follows:

Fiscal Period	Revenue Requirement for Capital Costs	O&M	Estimated Total Annual Expense Charged to the Company
FY 2017		$5,123,646	$5,123,646
FY 2018	$8,245	$3,478,499	$3,486,744
FY 2019	$2,324,709	$12,620,355	$14,945,064
FY 2020	$8,600,422	$6,889,900	$15,490,342
FY 2021	$9,965,549	$2,927,167	$12,892,716
TOTAL ANNUAL EXPENSE – (2017-2021)			$51,938,512

Given the ramp-up of annual expense as the GBE program is implemented, it will be difficult to set a representative level of expense in base rates without either locking in an annual amount that is at the highpoint and inordinately large as a line item in the revenue requirement (approximately $15.4 million in FY 2020), thereby imposing rate recovery on customers that is not aligned with actual

[1] This table reflects costs to be incurred to implement the GBE program between FY2017-FY2021 in order to show the significant ramp up of costs during that time. Please note that the Company anticipates it will incur additional GBE program implementation costs through FY2023.

program costs, or locking in at an amount that understates and broadly under-collects the investment made in the GBE program. Moreover, program implementation (and the associated cost) is scheduled to commence in 2018, while this case is pending before the Department, making it difficult to capture costs in the related rate decision.

Given the overriding fact that the GBE program is a unique, transformative initiative providing direct and tangible benefits to customers, the Company is requesting the Department's consideration of a discrete cost-recovery proposal that would provide support for the program within the context of the current base-rate proceeding. Consideration of the GBE program costs in this docket is warranted and appropriate because: (1) the GBE program involves the replacement of systems that support three major, core operating capabilities on an integrated basis, rather than sequential basis, because it is cost-effective to take this approach; (2) the GBE program extends across seven gas utilities operating in three jurisdictions, with differing timelines for rate cases and rate-recovery mechanisms applying in each jurisdiction; and (3) program implementation spans a relatively extended timeline of up to five years with substantial incremental expense in each year.

As discussed below, the development of work management, asset management and customer-enablement capabilities reorganized onto a single, operating platform is critically needed due to the fact that the current systems, sub-systems and/or applications relied on by National Grid's U.S. gas business are difficult for employees to navigate, are no longer supported by vendors, or are otherwise unsuitable to support gas operations into the future. Implementation of the three major capabilities encompassed within the GBE program on an integrated basis in all three jurisdictions will cost customers less than implementing the same systems one at a time by jurisdiction because it will avoid costs that would arise with work completed on differing timelines, with potentially differing vendors. For these reasons, it is imperative that the Company obtain revenue support for the GBE program in this case to be able to continue to implementation in Massachusetts, which will ensure customers will receive improved safe and reliable gas service with significantly improved customer service.

Q. Are you presenting any exhibits in addition to this joint testimony in support of the Company's request relating to the GBE program?

A. Yes. In addition to this joint testimony, we are sponsoring the following exhibits in support of the Company's request for cost recovery in relation to the GBE program.

Exhibit Designation	Description
Exhibit NG-GBE-1	Joint Testimony of GBE Panel
Exhibit NG-GBE-2	Depiction of Current and Future State Systems in Massachusetts
Exhibit NG-GBE-3	Key Initiatives By GBE Workstream
Exhibit NG-GBE-4	GBE Corporate Governance Structure
Exhibit NG-GBE-5	GBE Roadmap
Exhibit NG-GBE-6	Example of Gas Operations Capabilities with GBE
Exhibit NG-GBE-7	Example of Customer Experience Capabilities with GBE

Q. How is your testimony organized?

A. Section I of this testimony is the Introduction. Section II discusses the operating challenges that are creating the imperative for development and execution of the GBE program. Section III discusses the GBE program governance structure and procurement process to assure program costs are reasonable and prudently incurred. Section IV describes the process changes that will result from program implementation and identifies the efficiency improvements and customer benefits that will result from program implementation. Section V reviews the Company's proposal for cost recovery to support program implementation.

II. Imperative for Development of the GBE Program

Q. What is the genesis of the GBE program?

A. In the course of day-to-day operations, employees are facing substantial challenges in scheduling and completing work, communicating both externally

and internally regarding customer service needs, capturing and accessing data necessary for the various business processes, and discerning whether, when and how work is getting done. These challenges arise from the fact that employees must navigate numerous, disparate, inefficient and/or manual systems and processes within the gas distribution business in order to perform critical functions for gas operations and provide quality field service to gas customers. In Massachusetts, this state of affairs made it extremely difficult to implement the Department's mandate to institute a four-hour appointment window instead of the six-hour window for service appointments, for example.

All work streams that would normally be associated with an overarching Work Management, Asset Management and Customer Enablement system are performed by employees relying on a less-than-adequate work and asset management system resting on a combination of software applications, databases, and spreadsheets that are used in parallel with or to facilitate existing manual processes to manage the business. National Grid has used these systems for as long as possible to support business operations. However, at this point, the need for a broad-based software solution providing a stronger operating platform is an imperative because there is risk involved in continuing to rely on the current

processes and sub-systems to support safe and reliable operations while meeting customer expectations.

Q. What is creating the imperative for the Customer Enablement component of the GBE program?

As National Grid is confronting the challenge of establishing a new platform for the work management and asset management systems, the landscape for serving utility customers is undergoing unprecedented change in relation to digital technology and escalating customer expectations. The electric and gas distribution industries are experiencing pressure to meet customer expectations that are being formed by customer experiences with other goods and services vendors increasingly supported by digital technology allowing for quick and easy customer-service interfaces, among other advancements.

For example, many of the Company's customers transact business with other vendors that offer customer-service features such as the ability for customers to choose their communication preference with the vendor; (e.g. to communicate with the vendor on service visits through text messages; and to make use of shorter appointment windows). Many service providers now have easy-to-use web portals and customer apps that offer greater scheduling and rescheduling options. Customers frequently have the option with other vendors to make and/or

reschedule service appointments by taking a few moments to log in online through a mobile device and choose another time for the appointment, without ever having to interact on a personal basis with the vendor's customer-service department.

For gas utility services, the same customer would have no alternative for scheduling or rescheduling an appointment than to place a telephone call to customer service and get back in the queue for the next available appointment with no direct line of sight into the options available as only the customer service representatives have access to the appointment schedule. Customers expect to have the same level of ease and convenience with their gas or electric utility as they do with other household vendors. As a result, it is necessary for the Company to accomplish a step-change in the delivery of customer service that can only be achieved with a technological solution that constitutes a fundamental upgrade from the systems relied on to provide service today.

Collectively, these two dynamics – the resolution of operating risk in relation to the sub-systems relied on to perform work functions and the need for improvement in customer-contact alternatives -- create an indisputable imperative for formation of the GBE program. It is clear that National Grid must make a

step-change to create the platform that will enable more effective front-line field operations and customer service. It is also clear that the intensifying pressure to create a digital platform for customer's interacting with the Company needs to be addressed through the development of digital solutions. Therefore, National Grid has launched the GBE program to meet the imperative and will accomplish a major step-change in the operating platform for the U.S. gas business with program completion.

Q. What are the specific factors creating operating risk in relation to front-line business processes?

A. Fundamentally, National Grid's U.S. gas business is in an unsustainable position in terms of meeting operating and customer-service requirements with current, legacy systems within the rapidly changing external environment. Approximately 94 percent of the "front office" systems relied on by the U.S. gas distribution business will reach the end of useful life within two years, making it increasingly difficult to maintain the reliability of critical, core operating systems.

In particular, the ability to make modifications to the software to adapt to new needs or regulations is severely limited, if possible at all. Many of these systems are no longer supported by the vendor and the software is written in older code that is not flexible or modifiable and therefore cannot be used to address changing

regulatory and customer expectations. The age of the existing applications drives risk of system outage as reliability of the old systems dwindle. The cost to update/upgrade the existing systems individually would be higher and would not result in the benefits envisioned with GBE program, which will replace the existing environment with a holistic solution on a new modern platform to address risk, reliability efficiency and customer interaction.

Q. Are there any other considerations that impact the reliability of these systems in supporting operating activities?

A. Yes. Over time, as the gas distribution business has evolved, work processes have moved forward through reliance on successive stages of "work arounds," which have made those work processes more and more complex. Few of the legacy company practices and processes are standardized, particularly in relation to data storage, asset records and mapping systems. The sub-systems/applications are databases, applications and/or manual processes tracked through spreadsheets with severely limited connectivity to each other. This complex patchwork of applications makes it very difficult for various operating units to work together or to have visibility of the work performed in the field or at a customer's home. Many of the processes are highly dependent on manual processes to track whether procedures are followed and work is completed in compliance with applicable

requirements. In addition, it is becoming increasingly difficult and costly to maintain these disparate systems and to engage employees in the work necessary to navigate successfully the challenges imposed by this situation.

By replacing the existing sub-systems, applications and databases with three core systems, the entire U.S. gas business can be reorganized onto a single operating platform, within three overarching systems to perform day-to-day work and customer interactions with greater effectiveness than is possible today.

Q. Will the implementation of GBE help to improve the Company's ability to achieve compliance with regulatory requirements and expectations?

A. Gas safety for customers and employees is of paramount importance. Aging, disparate and duplicative systems impede the Company's ability to demonstrate compliance, manage performance and lack the flexibility to address a changing regulatory and customer environment. Gas-safety compliance challenges arise not only as a result of system and data gaps, but also due to the difficulty of providing effective technical training to employees on complicated work methods and procedures that are necessitated by the less-than-adequate work processes associated with legacy systems. Implementation of the GBE program will assist in addressing these considerations.

In addition, although regulatory requirements and expectations have been rapidly increasing since the 2010 San Bruno incident in the San Francisco area and events in Allentown, PA and East Harlem, NY, the current systems cannot be modified to meet increasing requirements, thereby creating the need for manual work processes to achieve compliance. GBE will provide consistent applications throughout the business and provide the necessary tools to accurately track, store and report on gas operations data. These items include data compilation and retention in relation to leak and corrosion repair work, Distribution Integrity Management Plan requirements and assistance in satisfying the 10 key elements of AP RPI 1173. Historic and future compliance issues are arising due to the existence of dis-jointed, disparate, outdated systems that make it difficult to keep up with and demonstrate current compliance obligations.

Q. Does the customer experience provided today through current systems meet the expectations of customers?

A. No. As mentioned above, without the replacement of the current systems, National Grid cannot adapt to the way customers expect to conduct business with a gas utility. Customers today have different expectations of customer service. In particular, the expectation of fast, easy, mobile applications and solutions is shared by all customers, particularly as relatively younger customers join the

customer base. Interactions with other industries are setting customer expectations and preferences and gas and electric utilities cannot meet these expectations without new systems. Customers expect to have access to mobile applications that can be used to set-up or reschedule service appointments, find out status of their request or find out information about outages. Having mobile access and interactions with the utility that include text messages and information regarding service technicians that will be arriving to a customer's premise not only represents helpful information for customers, but reduces unable to complete work due to customer availability and also constitutes a level of service and security that is unattainable in the absence of these technological solutions.

Q. What are some other examples of how customer expectations changing?

A. Today, customers of a gas or electric utility can use mobile applications to request a car for pick-up at a designated location and are almost instantly provided with the name, type of car and picture of the person performing the pick-up, with payment made simultaneously through the same application. Customers are also able to easily use mobile applications or websites to order groceries or other goods and have those goods delivered right to front door within one day, or even sometimes the same day. When customers experience such a high level of service

and ease of service in one area of their commercial transactions, they begin to expect that level of ease with other services they use.

For example, applications that allow customers to easily access information regarding the deployment of resources teach customers to have the expectation that all deployed resources can easily be tracked electronically. However, if a customer called National Grid today to ask why a National Grid truck was working at the end of the customer's street, it would not be a simple task to get that answer. The customer would need to call Customer Service and speak with a representative who would need to research the situation because the representative would not have visibility to the reason that work is being performed at the end of the customer's street. By the time an answer is provided to the customer it may be of no use as the truck could already be gone from the area. With a single, streamlined work-management system in place across National Grid's operating jurisdictions, the Customer Service representative and others involved in the work process would have complete visibility into this information and could provide information to customers almost instantaneously.

Q. Are there other examples of how the front-line work processes and customer-service delivery can be improved through the GBE program?

A. There are numerous examples of how the Company's operations would be made more efficient and cost effective and the customer experience improved as a result of GBE program implementation. Implementation of the GBE program and the establishment of an enterprise-wide Work Management, Asset Management and Customer Enablement system will result in the upgrade of gas and customer processes conducted by the Company to perform day-to-day operations. The new systems will provide more complete data capture and enable associated data reporting; eliminate over-reliance on paper records; create greater visibility of work requirements, and improve the effectiveness of field work and customer interactions. To the customer, these changes will translate into the ability for National Grid employees to obtain information in the field regarding the customer's facilities and service requirements on a real-time basis without resorting to paper records; the ability to schedule work at one time that may otherwise have required multiple visits to the customer's premise; the ability to take and store pictures of the customer's facilities to track atmospheric corrosion and other conditions rather than relying on written notes, and the ability to instantly update mapping systems rather than waiting for data entry back at the office.

More formally, the GBE program will design, standardize and implement core systems to support operations and customer-service delivery in Massachusetts, Rhode Island and New York. This includes:

1. Implementation of an enterprise-wide asset and work-management platform for the U.S. gas business;

2. Establishment of a scheduling platform to support optimized scheduling, work bundling, and routing of work;

3. Development of an integrated Geographic Information System ("GIS") with accurate land-based maps and conversion of gas-service records and sketches, available with mobile functionality;

4. Implementation of a field mobility solution with base capabilities that include views of work assignment, electronic work packages, capture of work status and completion data, and capabilities to initiate work, attach pictures, and view legacy maps;

5. Implementation of the Customer Experience solution that will be deployed to the Customer Contact Center to support improved customer interactions with Contact Center Representatives along with a web based self-service customer portal.

6. Establishment of an enterprise-wide program portfolio management platform for program routing and approval, with the ability to forecast cost, integrated with scheduling, and design; and

7. Development of an Asset Investment Planning and Management tool (*i.e.*, software application) to perform asset condition assessment and risk ranking/prioritization of asset replacement.

The integration of these core systems housing records relating to gas distribution and gas transmission assets and various transactional data will support a more simplified approach to asset management and work administration. In addition,

the integrated implementation of the core work, asset and customer enablement systems will make available valuable tools such as a mobility solution for leak investigation and inspection work orders and enhanced employee utilization.

The GBE program will also implement standardized operations processes and training in a number of areas, which have not previously been standardized due to the complexities inherent in relying on multiple supporting systems. Some of the key work-process improvements would include:

1. Improved methods of Employee training on new standardized processes and technology and a modernized approach to field technical training;

2. Establishment of data-management principles and governance processes that would manage the relationships among defined sets of data (on assets, people, work orders, etc.), the movement, cleansing and conversion of data from a source application to a target system, data retention policies (business, regulatory, and legal holds), data archiving policies, data deletion and destruction policies; and digitization of records;

3. Specification of an organizational design including role descriptions, accountabilities, span-of-control analysis, retirement and attrition analysis, role title rationalization, and diagnostic recommendations;

4. Delineation of the standard processes for work performed by internal and contract resources;

5. End-to-end work processes will include the Pipeline Safety Management System API 1173 framework to support compliance driven requirements;

6. Identification of best practices for warehouse and transportation operations to increase material readiness and create inventory certainty; and

7. Standardization and improvement of the processes and related, procedures between supply chain and gas operations functions.

Exhibit NG-GBE-3 identifies key initiatives within the GBE program and the workstreams associated with each initiative.

Q. Please describe how GBE will address the customer experience.

A. Another key element of GBE is that it will provide improvements to customer and employee interaction. A flexible interface will be integrated with the core systems to allow customers, call center and field employees to operate on a common platform and more easily access data. An application portal will be developed and integrated with work management and scheduling solutions that allows customers to interact with the Company by receiving updates based on their preferences for appointments, addressing inquiries for new gas connections and conversions and having access to information about work on their streets or in their neighborhoods.

Similarly, an employee application portal will be developed and further integrated with the work management, scheduling, dispatch and GIS to support one view of relevant information, such as asset and field data including past transactions for call center representatives and field employees to better communicate with customers and meet their needs. This interface also builds the capabilities

necessary to rapidly adapt processes, capture data, and address developing channels for customer engagement in the evolving future energy marketplace.

III. GBE Governance and Procurement

GBE Governance Framework

Q. How is National Grid approaching the management of the GBE program given the broad scope, complexity and cost of the program?

A. Given the broad scope, complexity and cost of the GBE program, National Grid has proceeded with program development using a well-defined management structure with defined leadership roles and accountabilities as depicted in Exhibit NG-GBE-4. In that context, National Grid has made a number of decisions in structuring the GBE governance framework to incorporate lessons learned from the past. For example, the planning assumptions for the GBE program avoid a "Big Bang" approach to implementation and, instead, adopt a phased approach reflecting process, technology and organizational limitations and opportunities.

In addition, National Grid is planning to deploy "off-the-shelf" capabilities to the maximum extent possible to minimize the customization of the system and preserve the flexibility and functionality of the system as designed. In addition, the GBE program has developed a well-defined program roadmap to reduce risk in implementation and to provide clear visibility of critical path dependencies to

assure successful implementation as each phase progress. This roadmap is provided as Exhibit NG-GBE-5. Lastly, National Grid has initiated a rigorous, competitive and analytical process to identify third-party partners to design, plan and execute the GBE program subject to clearly defined contractual parameters and performance requirements.

This GBE Governance Framework and the rigorous procurement process employed to identify third-party partners to assist in developing the GBE program are significant management tools to make sure that program costs are reasonably and prudently incurred in the course of achieving the identified program benefits for customers. In particular, National Grid has limited the risk associated with implementation through a fixed-cost arrangement with the program-delivery vendors and clearly defined requirements and work-scopes within the contracts developed jointly by the National Grid team and vendors during the procurement process.

Q. Please provide an overview of the GBE governance framework, team and delivery partners?

A. There are several components to the GBE governance framework, as shown in Exhibit NG-GBE-4. These components include the following:

The **Steering Group** will have ultimate authority over, and responsibility for, the completion of the GBE program on a reasonable and prudent basis. The Steering Group consists of the U.S. Chief Executive Officer, U.S. Chief Financial Officer, Executive Vice President of Network Operations, Safety and Capital Development, Senior Vice President and U.S. Chief Information Officer, Senior Vice President of Human Resources and Chief Diversity Officer, Global Chief Procurement Officer, Group Director of Business Excellence, and Senior Vice President of Regulatory Affairs. The Steering Group will focus on program delivery and will provide strategic advice and guidance, address resource requirements, maintain prioritization of the work effort among other operational needs, and manage escalated issues (including changes to the portfolio anchors, potential increases in program costs and review of unplanned customizations).

The **Senior Vice President of Gas Business Enablement** reports to National Grid's Executive Vice President of Network Operations, Safety and Capital Development with accountability to the Steering Group for the successful delivery of the GBE program and its anticipated benefits.

The National Grid **GBE Leadership Team** includes the Vice President of Business Process and Requirements, the Vice President of Solution Development and Delivery, the Vice President of Business Design & Readiness and the Head of

the Portfolio Management Office. Each of these business leaders has a defined role in the process, establishing accountability for: (1) defining the standard "to be" business processes, embedding data management and governance and capturing and delivering the business requirements; (2) developing and delivering the information systems solution to meet gas business operating requirements and the ongoing support model; (3) the future gas operating model, developing and implementing a change program to deliver the process, system and cultural changes; (4) developing and deploying a refreshed approach to technical field training; and (5) keeping the GBE program to time and budget goals, and maintaining compliance with program objectives.

The **Design Authority** consists of the Senior Vice President of Gas Process and Engineering along with vice presidents from the gas business, including each jurisdictional group and work functions intrinsically related to, and affected by, the GBE program. This group works with the GBE Leadership Team and ensures that business leaders are informed on progress and key issues, sign-off on business decisions, endorse business requirements, and take responsibility for delivery of business benefits.

Independent, third-party **Delivery Partners** will work with National Grid as the program design and deployment leads to execute work on pre-designated work streams and will assist in building change leadership capability at all levels in the gas business so that employees (who are deeply immersed in the current practices and processes engendered by legacy systems) are prepared to realize the full capabilities and competencies of the GBE program, once implemented. To ensure success of the program for National Grid's customers a value assurance partner has been chosen as an independent quality assurance function, monitoring the performance of the GBE program and its workstreams and reporting to the steering committee progress and recommendations for improvement. **Value Assurance** function will be performed by an independent, third party to ensure not only successful delivery of the program but also achievement of the anticipated benefits.

The GBE Program is subject to an **annual sanctioning process** before the U.S. Sanctioning Committee ("USSC"), and the U.S. Senior Executive Sanctioning Committee ("SESC") through which approval of the annual budgets and any associated modifications will be reviewed and approved.

Q. Please describe what types of changes or outcomes will require approval from the Steering Group or other executive leadership.

A. The GBE Program requires annual review by the USSC, and the SESC, including annual approval of the budget for each fiscal year. In addition to the annual sanctioning process, any changes to the major portfolio anchors of the program, increase in program costs or unplanned worked requires the review and approval of the Steering Group. Lastly, the external Delivery Partners have executed fixed-price contracts for this program with specified program performance parameters. This structure provides for a process that will have less instances of large change in program costs over the course of the implementation and holds the external partners accountable for successful implementation of the portions of the program for which they are responsible.

Q. How will the GBE program team assess the readiness of the business to begin using components of the GBE program, as those components become functional?

A. The GBE Leadership Team will work with the Design Authority that is comprised of the Vice Presidents across the gas business, supporting functions, and jurisdictions to identify, by geography and functional group, readiness of their function to begin use of the GBE components as they become available. This will be accomplished by evaluating jointly developed readiness criteria at identified go/no go checkpoints to ensure that the functional group is prepared to proceed.

In addition, performance will be monitored throughout the "go live" process and beyond to identify any problem areas that need to be addressed. The readiness criteria will include, but are not limited to, system readiness (including functionality and technical infrastructure) determined through user testing, people readiness determined through training delivery and leadership observations, and business readiness determined through review of processes and procedures.

Q. What is the purpose and value of "Change Management" within the GBE program?

A. The best technology available to the Company will not deliver the potential value achievable for customers without the commitment of our employees to leverage the capabilities of the technology to drive performance. As a result, training and other "change management" strategies will be utilized to engage employees in the implementation of the GBE program. GBE's Change Management strategy is designed to build leadership capability, define and reinforce new mindsets and behaviors to create a culture of focus and accountability and to transition the organization to new ways of working and better serving customers aligned with their increasing expectations. Change management will also help to facilitate rapid adoption of new processes and work tools following program implementation.

As part of the change-management process, comprehensive training will be provided to all users of the systems, both field and office workers as well as first line and upper levels of management. Training materials and training exercises will be tailored to the audience, and the training will be delivered using various media such as computer-based instruction, video, classroom, mobile and written help guides.

Although there is cost and time involved in training employees to levels adequate to not only operate, but optimize the functionality of the GBE program components, there is great value that will be produced by this training. National Grid recognizes the significance of this aspect of the GBE program and has created the change management office responsible for stakeholder engagement, training development and deployment prior to implementation of the systems.

GBE Procurement Process for Delivery Partners and Value Assurance

Q. Please describe the scoping and authorization process for the GBE program and associated procurement.

A. In November 2015, the conceptual basis for the GBE program was brought to the Group Executive Committee for review, approval and initial funding. This authorization was necessary to initiate the process to scope the solution and create the overarching strategy for procurement, implementation, and governance. The

Group Executive Committee approved the concept for GBE and created the GBE Steering Group. Funding in the amount of $25 million was authorized to perform an assessment of program alternatives and commence program planning. The GBE Steering Group was charged with reviewing and approving the initial program scope and procurement strategy. Mr. Johnston was appointed Senior Vice President of GBE on January 1, 2016 and formally moved into the position in April 2016.

From there, Mr. Johnston began to build a competent, experienced program team dedicated exclusively to GBE program implementation, with the expectation that independent, third-party service providers would be procured to assist in design, planning and implementation of the GBE program components. Once assembled, the program team worked for five to six months to evaluate each jurisdiction to identify current operating challenges and to begin to develop an effective and efficient end-state vision. Members of the program teams also visited other utility companies to learn about their experiences and gather input on lessons learned. In addition, National Grid conducted a detailed software review process.

The result of this Phase I strategic assessment helped to develop an efficient roadmap, an appropriate project scope and a reliable cost estimate. This

information was the basis of the procurement process to select partners for the second phase of the program, to implement the roadmap.

Q. How does National Grid plan to assure successful program management and a productive partnership with its external consultants?

A. In the first phase of program development, National Grid relied on a "Design Assurance" partnership to obtain independent advice on the quality of the program roadmap by testing whether the roadmap was complete and able to be successfully delivered. In addition the estimates of potential costs and benefits associated with the program were evaluated.

Following a comprehensive procurement process in the second phase of program development, two vendors were selected to assist in moving the program forward. These vendors were PricewaterhouseCoopers ("PWC") (as the overall Delivery Partner) and Accenture (as the SalesForce Integrator). PwC will serve as the lead system integrator for the GBE program, with responsibility for development and deployment of standard processes and solutions for Work Management, Asset Management, GIS implementation and Data Management supporting each of the workstreams, along with overall delivery through the Portfolio Office and Change Management activities. Accenture is responsible for development and deployment of the field mobility and customer contact center solutions along with

development of the end to end customer processes and other elements of the Customer Engagement model. Kotter International, a world-leading change consultancy based in Cambridge, MA, was selected to perform the Strategic Change Management role and PA Consulting was chosen to provide a third-party, independent view of the progress of the program to the Steering Group (Value Assurance).

Q. How will this intensive program-management structure help to control costs and achieve effective and timely implementation?

A. The fundamental purpose of the competitive procurement process is to develop the components of the GBE program using capable and experienced third-party vendors that have the competency to deliver the program on time, on budget, and with the stated capabilities. The Value Assurance function, independent of both the Company and the other third party vendors, will ensure that the program effectively meets its functionality and financial goals throughout the development process, and will have a direct line to program management. A rigorous process was followed to develop detailed Statements of Work for each workstream, as well as to develop Module Plans and an Integrated Program Plan to correlate the work efforts of the two System Integrators.

Thus, the key features of the contractual arrangements that will help to control program costs are the following:

- A carefully delineated Statement of Work by workstream for program completion;
- A complementary cultural fit between National Grid and its selected Delivery Partners;
- An integrated project plan aligned across workstreams and Delivery Partners;
- Alignment of goals and incentives between the National Grid team and its Delivery Partners;
- Negotiated fixed-cost contracts; and
- Utilization of a Value Assurance partner, reporting directly to the Steering Group, for independent oversight and control.

This approach will assure that the costs that are incurred to fully implement the GBR program are reasonable and prudently incurred in achieving the benefits available for customers through program implementation.

IV. Perspective on the Before and After Scenarios

Q. Please describe the planned implementation.

A. National Grid is implementing GBE in phases by breaking down the program by work types and geography, beginning with the Rhode Island jurisdiction, which is highly reliant upon paper-based operations, and where implementation risk can be mitigated given the system's relatively smaller footprint. Initial focus for

implementation will be the replacement of outdated and unsupported core applications and implementation of updated solutions as quickly as possible to help reduce the risk associated with those critical, unsupported applications.

This strategy will create a foundation for building incremental enhanced capabilities supporting safety performance, operations effectiveness, and customer experience. The first release implementation will occur in FY 2018 for National Grid's Rhode Island gas distribution operations, the Narragansett Electric Company. Following the release in Rhode Island, the Company will begin to deliver and implement GBE in other service territories. Exhibit NG-GBE-5 provides the roadmap regarding implementation of the key initiatives encompassed within the GBE program. As shown in that exhibit, implementation for Massachusetts is set to begin in FY 2019.

Q. Please describe some of the specific programs/capabilities that will go in-service for Boston Gas and Colonial Gas.

A. As mentioned above, the first phase of implementation in Massachusetts will occur in FY 2019. This first phase in Massachusetts would involve the implementation of the work-management functionalities supporting the Instrumentation and Regulation and Corrosion functions, as well as processes for field collections and customer meter services activities, basic scheduling,

dispatching, and field data capture. In addition, the asset-management system will be placed in service for the Gas Transmission and Distribution Integrity Management Processes, which will standardize and improve data accuracy and enhance gas system safety and reliability.

The next phase of implementation in FY 2020 for Massachusetts would include systems and capabilities to enhance the customer experience. These capabilities would include field visibility to customer payment history, field acceptance of credit card payments, field printing, call center visibility to collections status, and field visibility to maps. This phase will also involve full deployment of capabilities across Field Mobile applications to support all customer meter services activities, including real-time communications between call center, dispatch, field employees and other customer support groups. Lastly, the standard GIS data model will be fully utilized in Massachusetts at this time.

The next phase to occur in FY 2021 for Massachusetts would include systems and capabilities to enhance gas construction and leak-repair activities. These capabilities would include a standardized unit cost library enabling more accurate cost estimates, contractor mobility, customer appointment booking, mobile time tracking, and field asset correction and geographic location. Once these backbone

systems are delivered in Massachusetts over the three-year period (FY 2019 through FY 2021), the enhanced capabilities will begin functioning during FY 2021 and FY 2022. These enhanced capabilities will include items such as customer self-service, field crew/customer interaction portal, complex design tool for construction, and asset risk visibility.

Q. Please describe how National Grid's gas operations currently function, from an overall perspective.

A. Today, gas operations operate from an inefficient patch-work of legacy systems and manual spreadsheets to perform critical gas operation activities. The current sub-systems and applications operate on older, unsupported operating systems and are accessed in the field from older hardware (i.e. Truck mounted laptops) that are beyond their useful life. These field devices require regular maintenance, causing inefficiency and necessary work arounds while these devices are being serviced. Procuring parts for these devices is becoming increasingly difficult due to the fact that manufacturers no longer support the products.

The disparate systems make it difficult for employees to navigate the systems, and are prone to human error, missing data, delays in information, lack of visibility among functions and lack of ability to adapt to future regulatory expectations. For example, the many systems used today require manual controls, local

tracking, and follow up as part of scheduling required work activity in the field including warning tags. Scheduling, dispatching, and tracking of gas work today requires many manual controls across different systems, making full visibility of work required and how it is performed difficult.

For perspective of the volume of work, National Grid responds to approximately 2,300 service appointments *per day* across its three operating jurisdictions, which creates a significant challenge for National Grid to meet its current operations goals.

Q. How will these circumstances differ once GBE is fully implemented?

A. Once the GBE program is fully implemented, the U.S. gas distribution business will operate from a standard suite of integrated software applications comprised of three core systems utilized by employees to execute critical work activities. These systems will include modern software applications with the ability to configure, integrate and enhance in order to adapt to future operational, regulatory and customer expectations. There will no longer be reliance on manual controls and/or multiple spreadsheets, but rather will allow for full visibility of work required, scheduling and performance across functions. The work force will be trained on the new systems in a uniform way making work consistent across the company, subject to varying regulatory compliance requirements.

All work will be contained in an integrated suite of systems with pre-defined rules that will automatically schedule work in advance of a due date, and there will be central visibility to ensure all mandated activities are completed in a timely fashion. One example would be all field workers having mobile devices that will allow warning tags to be completed electronically and printed in the field, which will enable validation of information as the tag is completed, and will give the Company an electronic copy of the tag. It will also enable follow up work to be automatically scheduled, significantly reducing the reliance on manual processes and controls, also provides the call center visibility to tag information and enables better customer service for customer follow up calls.

National Grid will be able to track and manage crew and individual worker productivity, including the standardization of business processes for enhanced visibility of work and more efficient scheduling. GBE will also include a new GIS to improve the Company's ability to capture, store, access and analyze geographical asset information concerning its gas distribution and transmission network. The GIS will provide a single view of all assets, which will facilitate data-driven investment and maintenance decisions. This will strengthen the Company's ability to operate a safe, reliable gas distribution and transmission system and drive continuous improvement in regulatory compliance and

transparency with more complete data capture and reporting. Exhibit NG-GBE-6 illustrates the gas system capabilities post-GBE implementation.

Q. Please describe what the National Grid customer experience is like prior to GBE implementation?

A. Today, a customer does not have many options in engaging with the Company other than a phone call placed to customer service or limited interaction through the website. For example, to make a service appointment today, a customer must contact the call center and speak to a customer representative to schedule an appointment. In addition, any question about repair work or other service questions would require a phone call to the call center and significant follow up to determine the status of work and/or why work is being performed in a customer's neighborhood.

Q. How will the customer experience differ after GBE program implementation?

A. The GBE program will provide enhanced customer service through improved scheduling and dispatch, with enhanced appointment booking and frequent communications with customers according to their media preferences, as well as the ability to create a 360-degree view of past, scheduled, and potential future work for customers. Following GBE implementation, in addition to contacting the call center, the customer will have the option of using the web to make the

appointment, and will be presented with a screen showing the available appointment windows. The customer will also have the option to receive a call or text when the field worker leaves for the appointment. Finally, if a customer called to find out what work was being done on their street they would be able to receive an accurate answer from the call center in real-time. Exhibit NG-GBE-7 illustrates the customer experience capabilities after GBE program implementation.

V. Proposal for Ratemaking Treatment

Q. What is the anticipated cost of the GBE program on an overall basis?

A. The total cost of the GBE program for National Grid's U.S. gas distribution business is currently estimated at approximately $478.3 million over the period FY 2017 to FY 2023. Of this amount, approximately $315.1 million represents capital costs and $163.2 million represents one-time operating expenses necessary to complete the GBE initiatives. Although delivery of the GBE Program initiatives is expected to occur within the total costs stated herein, it is important to note that program costs may shift between the years as each of the programs completes detailed design. Therefore, an additional $61 million has been budgeted as contingency in the event of unforeseen scope changes, changing

market conditions affecting vendor and procurement costs, and unanticipated program complexity; this contingency has not been reflected in the Company's revenue requirement. However, if any portion of the contingency amount is used the Company will include it for purposes of recovery when the GBE fund amounts are reconciled in the next base rate proceeding.

Q. What is the anticipated cost of the GBE program for the Company?

A. Because the GBE program is a shared investment, only a portion of the total investment would be allocated to Boston Gas and Colonial Gas. Further, since the program will be implemented over a multi-year period, the costs for Boston Gas and Colonial Gas will be incurred at various points in time over the next few years. The allocation would be in the form of rent expense as part of the overall IS service rent expense allocated to Boston Gas and Colonial Gas. The total costs for GBE attributable to Boston Gas and Colonial Gas are $31.8 million in operating expense and $95.3 million in Service Company capital costs allocated to Boston Gas and Colonial Gas as rent expense.[2]

[2] This includes the depreciation of $71.5 million and return of $23.8 million over the full life of the assets (through FY 2033).

Q. Please explain how costs for the GBE program will be allocated to Boston Gas and Colonial Gas.

A. In general, GBE Program costs will be allocated using the customer cost causation allocator under the guidelines of the Service Company Cost Allocation Manual. The majority of the program will be allocated among the gas operating companies, with the exception of two workstreams: (i) Scheduling, Dispatch, and Mobility and (ii) Customer Engagement. These two workstreams will provide benefits to the electric distribution companies and therefore the costs associated with them will be shared with the Company's electric distribution affiliates. The current expectation is that the allocation proportions among the jurisdictions for overall GBE costs will be approximately 24 percent to Massachusetts operating affiliates; seven percent to Rhode Island operating affiliates; and 68 percent to New York affiliates.

Q. How does the Company propose to recover the expenses associated with GBE program implementation?

A. Based on the timing and scope of the GBE initiatives, the Company anticipates that GBE Program investments will increase substantially beginning in the Rate Year over the test year and post-test year costs. As a result, the Company's historical costs are not representative of the actual costs the Company will incur in the Rate Year and beyond.

The Company is seeking to recover the costs of GBE implementation without the creation of a separate cost recovery mechanism. The Company is requesting that the Department allow an annual rent expense in the revenue requirement approved in this proceeding that would recover a portion of the overall anticipated cost, subject to reconciliation in a future rate case. The annual rent expense would be set based on planned GBE investment for those GBE initiatives that will be placed in service during the period FY 2018 through FY 2023, along with a proportionate share of total one-time GBE O&M expenses. Specifically, the Company proposes to include $9.4 million for Boston Gas and $2.7 million for Colonial Gas collected through base distribution rates, annually over a five-year period. These amounts reflect the estimated revenue requirement on planned GBE investment over that period. The calculations are set forth in the Company's Revenue Requirements Exhibit NG-DSD-2-Schedule 33.

This annual rent expense or amortization "proxy" will allow for the funding of the program throughout the implementation period. The Company will defer and reconcile the amounts collected through this amortization "proxy" to actual capital investment and one-time GBE-related O&M expense in a future base-rate proceeding and, at that time, will present verification of the total costs that were incurred by the Service Company and support for the allocation of costs to the

Company. To the extent that all GBE investment and one-time GBE costs have not been incurred prior to the establishment of future base rates, it may be necessary to propose a subsequent annual proxy that would be reconciled as part of a subsequent base rate proceeding.

Q. Why is this type of rate allowance necessary?

A: The Company has carefully, thoughtfully and diligently identified the scope of this operating challenge, the process for developing and implementing the solution, and the plan for effecting change across the organization to make optimal use of the solution. The results of this effort and implementation of the new system will transform the way the Company is able to perform critical functions in gas operations and provide a better customer experience that meets customer expectations of today and in the future. The cost to implement the GBE program is in the interest of customers because they will be the direct beneficiaries of the major operational changes and improvements.

Given the prolonged development and implementation schedule and the magnitude of the costs, the recovery of the annual proxy expense over a multi-year period will provide a more stable rate path for customers and will enable the Company to offset its share of project costs during the implementation phase and in-service dates for the Company. This proposed rate recovery would also help to

avoid frequent rate case filings in the next several years in order to recover the significant dollars being invested on this program. The Company needs to move this initiative forward and bring improved operations and customer service to its customers, but will need revenue support given the magnitude of the incremental cost changes from year to year.

Q. What is the ratemaking treatment that the Company is anticipating will apply in New York and Rhode Island?

A. In New York, the Company is currently in settlement discussions with the NYPSC for the NMPC base-rate proceeding, which encompasses an amount of recovery for the GBE program in upstate New York. The downstate New York companies, KEDNY and KEDLI, may seek recovery of their portion of GBE program costs when the next base-rate proceeding is filed. The Company is requesting recovery of the Rhode Island portion of the GBE program costs in the upcoming base-rate proceeding for the Narragansett Electric Company.

Both Rhode Island and New York have a ratemaking structure that allows National Grid's operating affiliates to recover future costs as part of base-rate proceedings. The Department's ratemaking framework does not readily incorporate recovery of substantial, up-coming costs, and therefore, the need for the annual proxy expense is necessary. Without this rate adjustment, the

Company will need to decide whether to file sequential rate cases to allow for cost recovery, or delay implementation in Massachusetts to align with a future rate case. This would have significant impact to customers as overall cost of design and deployment is likely to increase.

Moreover, it will be very difficult to match up the anticipated annual charges to the ratemaking process so that customers are not paying any more or less than the actual annual expense, which is why the placeholder amount over the five-year period will help get the program completed without the constant need for base rate proceedings or an external tracking mechanism, improving administrative efficiency. While the coordinated enterprise wide approach to the implementation of this program results in many moving pieces, it also achieves a more cost-effective implementation, ultimately benefitting customers.

Q. Does this conclude your testimony?

A. Yes.

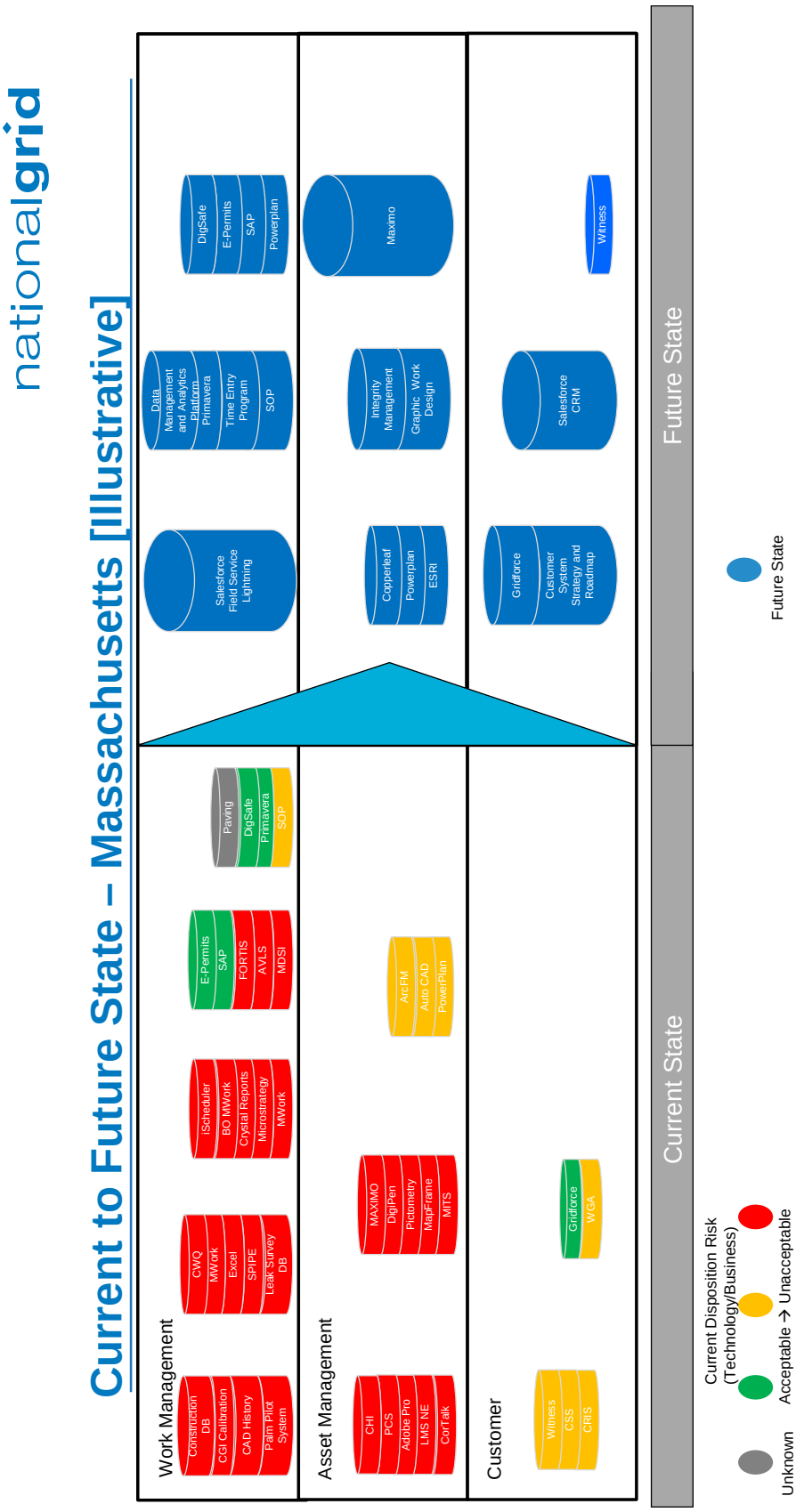
Boston Gas Company
Colonial Gas Company
each d/b/a National Grid
D.P.U. 17-170
Exhibit NG-GBE-1
November 15, 2017
H.O. _____

Index of Exhibits

Boston Gas Company
Colonial Gas Company
each d/b/a National Grid
D.P.U. 17-170
Exhibit NG-GBE-2
November 15, 2017
H.O. _____

Exhibit NG-GBE-2

Depiction of Current and Future State Systems in Massachusetts


nationalgrid
Current to Future State – Massachusetts [Illustrative]
Work Management
Asset Management
Customer
Current State
Future State
Construction DB
CGI Calibration
CAD History
Palm Pilot System
CWQ
MWork
Excel
SPIPE
Leak Survey DB
iScheduler
BO MWork
Crystal Reports
Microstrategy
MWork
E-Permits
SAP
FORTIS
AVLS
MDSI
Paving
DigSafe
Primavera
SOP
CHI
PCS
Adobe Pro
LMS NE
ConTalk
MAXIMO
DigiPen
Pictometry
MapFrame
MITS
ArcFM
Auto CAD
PowerPlan
Gridforce
WGA
Witness
CSS
CRIS
Gridforce
Customer System Strategy and Roadmap
Copperleaf
Powerplan
ESRI
Salesforce Field Service Lightning
Data Management and Analytics Platform
Primavera
Time Entry Program
SOP
Integrity Management
Graphic Work Design
Salesforce CRM
DigSafe
E-Permits
SAP
Powerplan
Maximo
Witness
Future State
Current Disposition Risk (Technology/Business)
Unknown
Acceptable → Unacceptable

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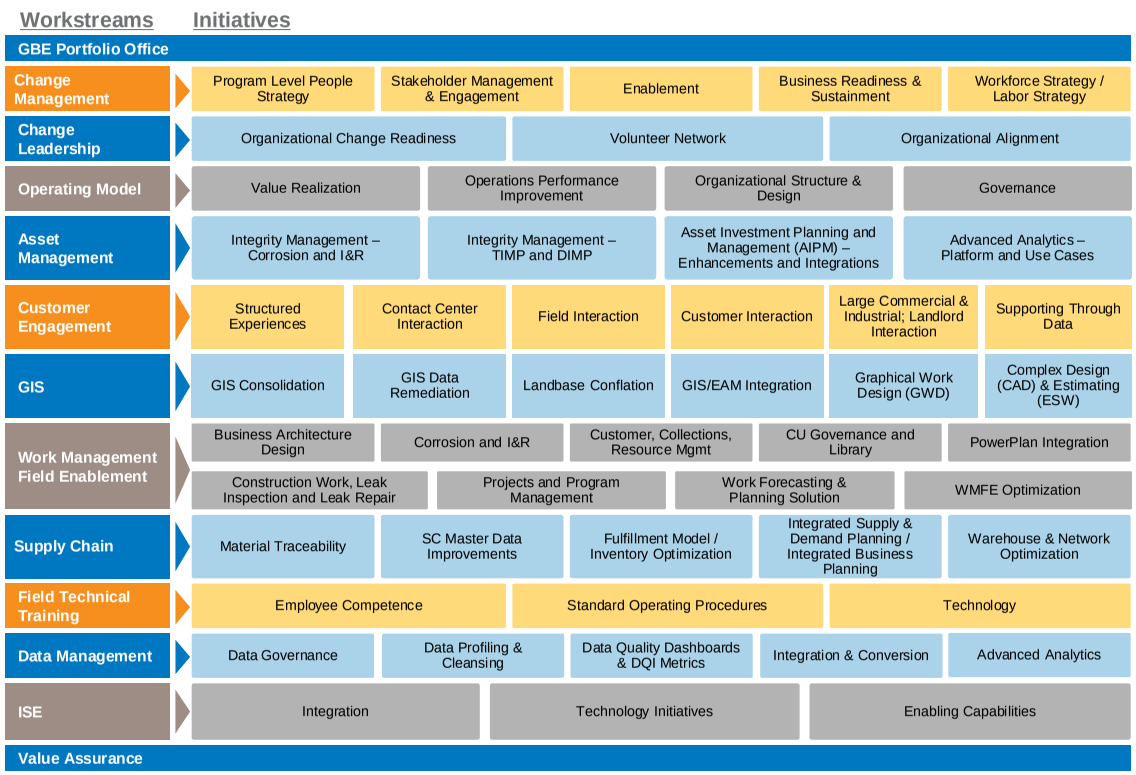
D.P.U. 17-170
Exhibit NG-GBE-3
November 15, 2017
H.O. _____

Exhibit NG-GBE-3

Key Initiatives By GBE Workstream

Key Initiatives



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D.P.U. 17-170
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November 15, 2017
H.O. _____

Exhibit NG-GBE-4

GBE Corporate Governance Structure

GBE governance framework, team and delivery partners:

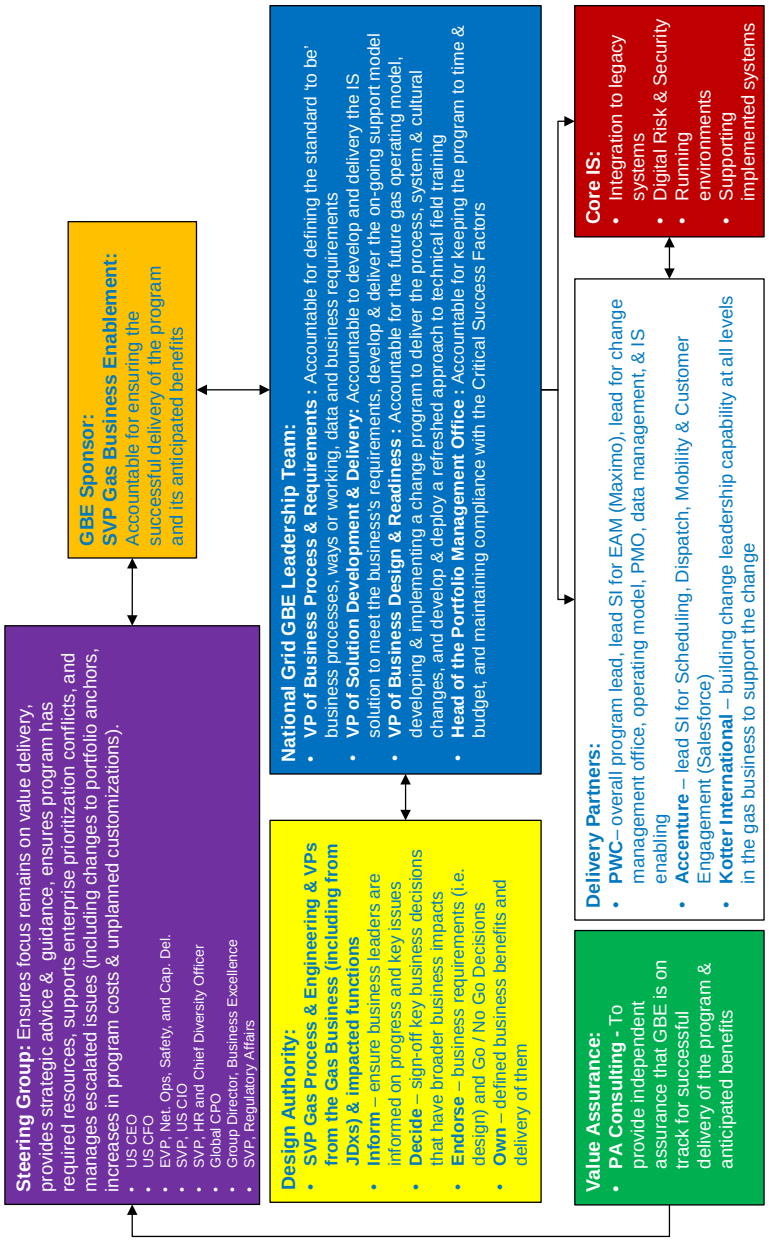

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Exhibit NG-GBE-5

GBE Roadmap

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D.P.U. 17-170
Exhibit NG-GBE-5
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nationalgrid | gas business enablement

High-Level GBE Program Roadmap

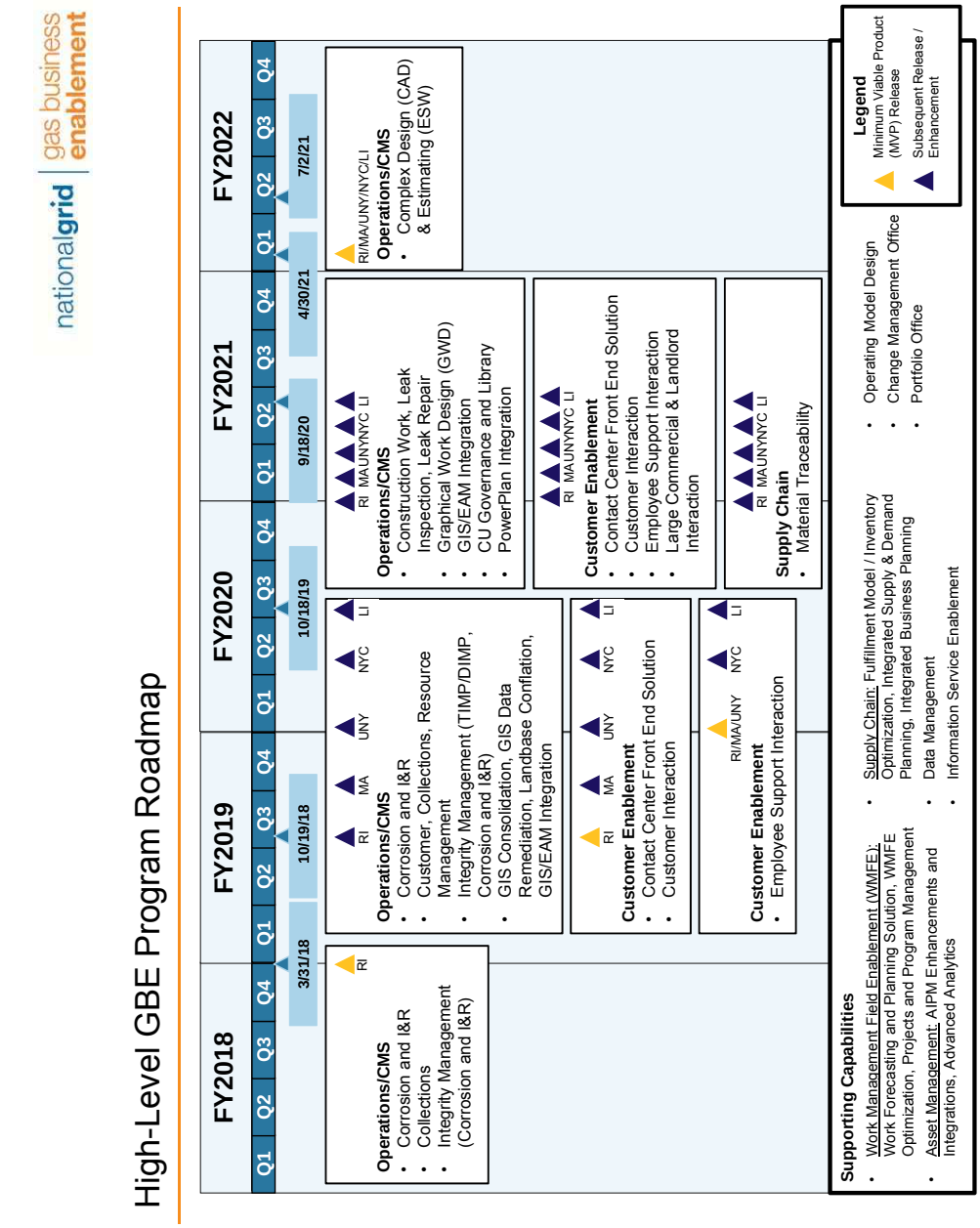

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Exhibit NG-GBE-6

Example of Gas Operations Capabilities with GBE

Boston Gas Company
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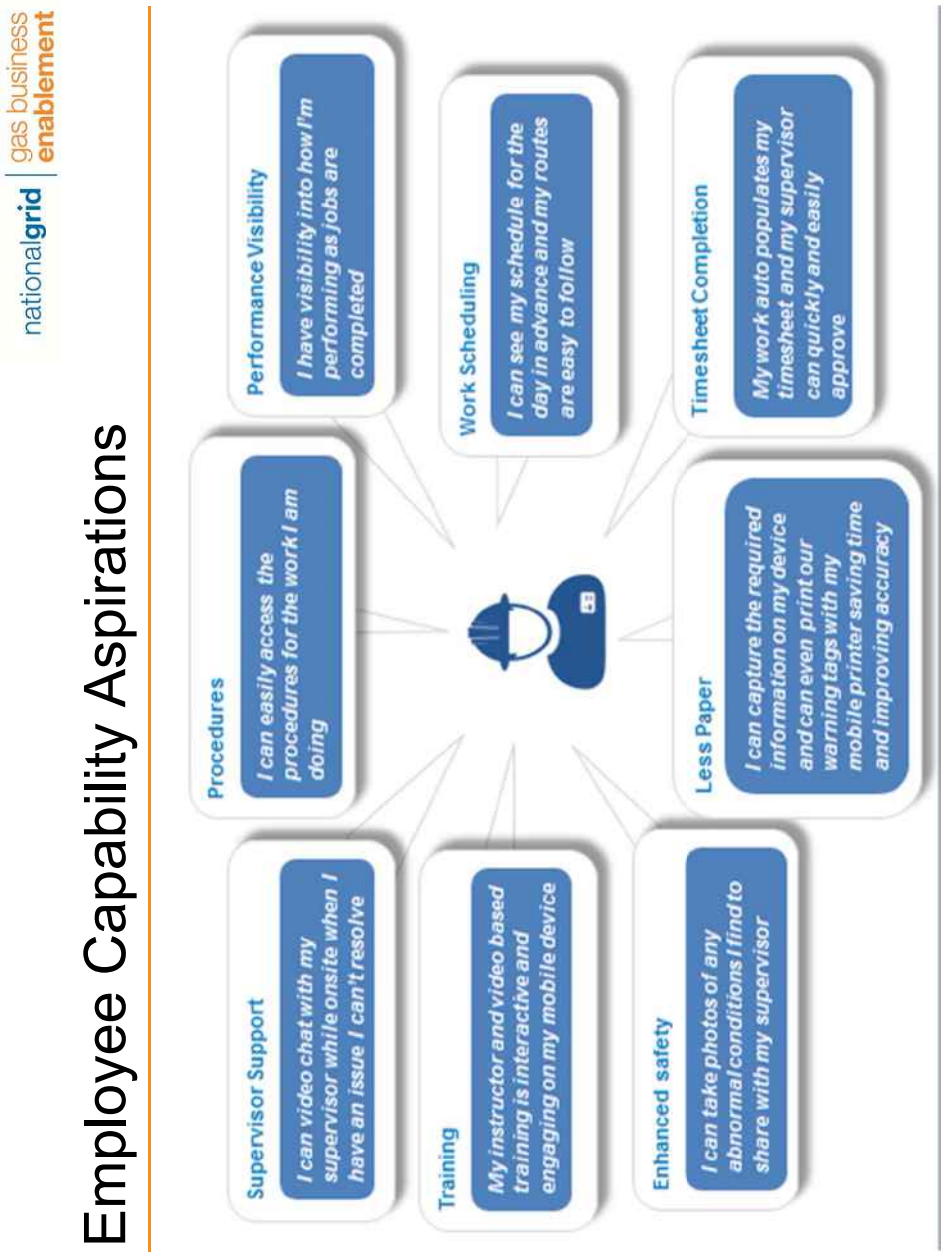

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Exhibit NG-GBE-7

Example of Customer Experience Capabilities with GBE

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Customers Capability Aspirations

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D.P.U. 17-170
Exhibit NG-DSD-1
November 15, 2017
H.O. _____

PRE-FILED DIRECT TESTIMONY

OF

DANIEL S. DANE

I. Introduction

Q. Please state your name and business address.

A. My name is Daniel S. Dane. My business address is 293 Boston Post Road West, Suite 500, Marlborough, Massachusetts 01752.

Q. By whom are you employed and in what position?

A. I am a Vice President with Concentric Energy Advisors, Inc. ("Concentric"), and the Financial and Operations Principal of CE Capital, Inc., a FINRA-member subsidiary of Concentric. My curriculum vitae and testimony listing are included as Attachment 1 to my pre-filed testimony.

Q. Please describe your professional background, education and professional licenses.

A. Concentric provides financial and economic advisory services to many and various energy and utility clients across North America. Our regulatory, economic, and market analysis services include utility ratemaking and regulatory advisory services; energy market assessments; market entry and exit analysis; corporate and business unit strategy development; demand forecasting; resource planning; and energy contract negotiations. As a Vice President at Concentric, my responsibilities include assisting clients in identifying and addressing business issues. My primary areas of focus have been regulatory, financial and accounting related issues.

I have an MBA from Boston College in Chestnut Hill, Massachusetts, and a BA in Economics from Colgate University in Hamilton, New York. I am a certified public

removed through a normalizing adjustment totaling $6,463,657 for Boston Gas and $1,893,435 for Colonial Gas.

Q. What was the normalizing adjustment to Test Year O&M expenses to remove those expenses associated with the Gas Business Enablement Program?

A. That adjustment was made by the Companies to remove O&M expenses incurred during the Test Year associated with the GBE Program, as the Companies are seeking to recover those costs through a known and measurable adjustment, as discussed in Section VIII. That program is described more fully in the testimony of the GBE Panel. The total normalizing adjustment was a reduction in O&M expenses of $1,204,449 for Boston Gas and $269,437 for Colonial Gas.

Q. What was the normalizing adjustment to remove all expenses related to the write off of certain capital work orders that had been charged to plant in prior years?

A. The Companies made a normalizing adjustment to Test Year O&M expenses to remove pre-Test Year expenses related to a March 2016 adjustment booked to the Companies' financial statements in which the Companies wrote off certain capital work orders that had been charged to plant in years prior to the Test Year but that the Companies determined should have been charged to expense. Since the entire write off was booked in 2016 but reflected amounts that the Companies should have expensed in prior years, the pre-Test Year expenses (totaling $6,074,629 for Boston Gas and $547,582 for Colonial Gas) were removed through this normalizing adjustment.

Q. Did the normalizing adjustments that affected multiple O&M expenses, discussed earlier in your testimony, affect any of the Other O&M accounts?

A. Yes. For instance, the normalizing adjustments to remove expenses related to the cancelled systems conversion project and to remove those expenses associated with the GBE Program affected multiple of those accounts. In addition, there was an adjustment made to Other O&M to reflect local production and storage costs and gas acquisition costs. Furthermore, there were discrete normalizing and known and measurable adjustments made to certain of the Other O&M accounts, as discussed below.

Q. What was the normalizing adjustment to reflect local production and storage costs and gas acquisition costs in O&M?

A. That adjustment to O&M expenses reflects offsetting entries that correspond to the transfer to revenues of credits made to O&M expenses related to production and storage costs and gas acquisition costs. That transfer is discussed in the testimony of the Pricing Panel. The total normalizing adjustments were $12,306,576 for Boston Gas and $6,768,277 for Colonial Gas.

Q. What normalizing adjustment was made to consultants?

A. Consultants expense was adjusted to reclassify consultant expenses that were charged to other expense accounts during the Test Year, namely insurance premium and property tax accounts.

Q. What normalizing adjustment was made to donations?

A. A minor amount of donations (*i.e.*, approximately $76,000 for Boston Gas and approximately $18,000 for Colonial Gas) were recorded to O&M expense accounts during the Test Year. The entirety of those amounts was removed from the revenue requirement via a normalizing adjustment.

Q. What normalizing adjustment was made to employee expenses?

A. In addition to a normalizing adjustment that was made to employee expenses related to the cancelled systems conversion project (described above), the Companies also made a normalizing adjustment to remove costs from the revenue requirement related to senior executive employee expenses.

Q. What adjustment was made related to other expenses?

A. In addition to the normalizing adjustments described above that were made to other expenses related to the cancelled systems conversion project, the removal of GBE O&M costs, and the work order write off assessment, there were also costs reclassified from labor to other O&M related to the meter abandonment credits (also described above) and costs reclassified from other O&M to insurance related to insurance premiums. In addition, the Companies removed approximately $100,000 of penalty and marketing/advertising expenses that were booked to both Boston Gas's and Colonial Gas's O&M accounts during the Test Year.

relative number of post-Test Year hires at each company. The total costs included in the revenue requirement for this initiative are $700,267 for Boston Gas and $36,241 for Colonial Gas. See Exhibit NG-DSD-2, Schedule 34.

Q. What is the proposed rate recovery for the new operator qualification training and testing process?

A. The Companies propose to recover the cost of this new process, which is approximately $314,000 in total (approximately $211,000 for Boston Gas and $103,000 for Colonial Gas), as shown in Exhibit NG-DSD-2, Schedule 36.

VIII. Gas Business Enablement

Q. Please describe the known and measurable adjustment associated with the Companies' GBE Program.

A. The Companies' proposed known and measurable adjustment to the Test Year cost of service represents the sum of the return of and on capital investments in the GBE Program, as well as GBE O&M expenses, over the period October 2018 through September 2023, amortized over a five-year period. For Boston Gas, the known and measurable adjustment is $9,377,319, and for Colonial Gas the amount is $2,687,246. Those calculations and the supporting data are provided in Exhibit NG-DSD-2, Schedule 33. The Companies' GBE Program is discussed more fully in the testimony of the GBE Panel.

Boston Gas Company d/b/a National Grid
New Initiative
Gas Business Enablement

		Test Year Ended December 31, 2016 (Per Books)	Normalizing Adjustments to Test Year	Test Year Ended December 31, 2016 (as Adjusted)
		Gas	Gas	Gas
		(a)	(b)	(c)
	Provider Company:			
1	Boston Gas Company	$0	$0	$0
2	National Grid USA Service Company	$0	$0	$0
3	All Other Companies	$0	$0	$0
4	Total	$0	$0	$0
5				
6				
7	Operation:			
8	Production Expenses	$0	$0	$0
9	Power Production Expenses	$0	$0	$0
10	Natural Gas Storage, Terminaling	$0	$0	$0
11	and Processing Exp.			
12	Transmission Expenses	$0	$0	$0
13	Regional Market Expenses	$0	$0	$0
14	Distribution Expenses	$0	$0	$0
15	Customer Accounts Expenses	$0	$0	$0
16	Customer Service and	$0	$0	$0
17	Informational Expenses			
18	Sales Expenses	$0	$0	$0
19	Administrative & General Expenses	$0	$0	$0
20	Sub Total	$0	$0	$0
21				
22	Maintenance:			
23	Transmission Expenses	$0	$0	$0
24	Distribution Expenses	$0	$0	$0
25	Administrative & General Expenses	$0	$0	$0
26	Sub Total	$0	$0	$0
27				
28	TOTAL	$0	$0	$0
		$0	$0	$0

Boston Gas Company d/b/a National Grid
New Initiative
Gas Business Enablement

		Test Year Ended December 31, 2016 (as Adjusted)	Known & Measurable Adjustments	Rate Year Ending September 30, 2019
		Gas	Gas	Gas
		(a)	(b)	(c)
	Provider Company:			
1	Boston Gas Company	$0	$0	$0
2	National Grid USA Service Company	$0	$9,377,319	$9,377,319
3	All Other Companies	$0	$0	$0
4	Total	$0	$9,377,319	$9,377,319
5				
6				
7	Operation:			
8	Production Expenses	$0	$0	$0
9	Power Production Expenses	$0	$0	$0
10	Natural Gas Storage, Terminaling	$0	$0	$0
11	and Processing Exp.			
12	Transmission Expenses	$0	$0	$0
13	Regional Market Expenses	$0	$0	$0
14	Distribution Expenses	$0	$0	$0
15	Customer Accounts Expenses	$0	$0	$0
16	Customer Service and	$0	$0	$0
17	Informational Expenses			
18	Sales Expenses	$0	$0	$0
19	Administrative & General Expenses	$0	$9,377,319	$9,377,319
20	Sub Total	$0	$9,377,319	$9,377,319
21				
22	Maintenance:			
23	Transmission Expenses	$0	$0	$0
24	Distribution Expenses	$0	$0	$0
25	Administrative & General Expenses	$0	$0	$0
26	Sub Total	$0	$0	$0
27				
28	TOTAL	$0	$9,377,319	$9,377,319
		$0	$0	$0

Line Notes

2(b) Page 3, Line 2

Boston Gas Company d/b/a National Grid
New Initiative
Gas Business Enablement

			Provider Company	Total
	Explanation of Adjustments:			
1	Page 1	Known and Measurable		
2		Gas Business Enablement	National Grid USA Service Company	$9,377,319
3				$0
4				$0
5				$0
6				$0
7				$0
8				$0
9				$0
10				$9,377,319

Line Notes

(2) Page 4, Line 13 (d)

Boston Gas Company d/b/a National Grid
New Initiative
Gas Business Enablement

		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)
		HTY	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	Boston Gas Total	
1	Return on investment	$0	$2,998	$813,649	$2,805,210	$2,954,479	$2,873,219	$2,352,572	$1,936,411	$1,582,397	$1,248,417	$914,455	$580,540	$255,261	$91,261	$17,904	$17	$0	$ 18,428,792	
2	Depreciation	$0	$3,728	$987,831	$3,925,775	$4,783,518	$5,529,830	$5,532,294	$5,532,294	$5,532,294	$5,532,294	$5,532,294	$5,528,566	$4,544,463	$1,606,519	$748,776	$2,464	$0	$ 55,322,940	
3	Operating expense	$4,904,028	$2,448,590	$9,757,689	$5,327,069	$2,263,200	($13,307)	$137,986	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$ 24,825,256	**44.87%**
4																				
5	Total Revenue Requirement	$4,904,028	$2,455,316	$11,559,169	$12,058,055	$10,001,198	$8,389,742	$8,022,853	$7,468,705	$7,114,691	$6,780,711	$6,446,749	$6,109,106	$4,799,724	$1,697,780	$766,680	$2,481	$0	$98,576,988	
6																				
7																				
8																				
9																				
10																				
11					Boston															
12		5 years		$46,886,594																
13		Annual recovery			**$9,377,319**															
14																				
15																				
16																				
17																				
18																				
19																				

Line Notes

1 Pages 5 through 8, Column (a)
2 Pages 5 through 8, Column (b)
3 Forecasted project spend
14 Pages 5 & 6, Column (e), Lines 7 through 66
15 Line 14 divided by 5
17 Pages 5 & 6, Column (e), Lines 7 through 42
18 Line 17 divided by 3
20 Pages 5 & 6, Column (e), Lines 7 through 30
21 Line 20 divided by 2

Column Note

(s) Line 3(r) divided by Line 2(r)

Boston Gas Company d/b/a National Grid
New Initiative
Gas Business Enablement
Service Company Rent Expense and Operating Expense
Allocated to Boston Gas Company

		(a)	(b)	(c)	(e)
		TOTAL GBE			
	Date	Boston Return	Boston Depr	Boston Opex	Totals
1	11/01/2017	$676	$746	$335	$1,757
2	12/01/2017	$592	$746	$335	$1,673
3	01/01/2018	$584	$746	$335	$1,665
4	02/01/2018	$576	$746	$335	$1,657
5	03/01/2018	$568	$746	$335	$1,649
6	04/01/2018	$560	$746	$335	$1,641
7	05/01/2018	$552	$746	$335	$1,633
8	06/01/2018	$544	$746	$335	$1,625
9	07/01/2018	$536	$746	$335	$1,617
10	08/01/2018	$528	$746	$335	$1,609
11	09/01/2018	$520	$746	$335	$1,601
12	10/01/2018	$16,634	$18,517	$8,309	$43,461
13	11/01/2018	$14,624	$18,517	$8,309	$41,451
14	12/01/2018	$14,425	$18,517	$8,309	$41,252
15	01/01/2019	$277,985	$309,268	$138,779	$726,032
16	02/01/2019	$245,026	$309,268	$138,779	$693,074
17	03/01/2019	$241,711	$309,268	$138,779	$689,759
18	04/01/2019	$238,396	$309,268	$138,779	$686,444
19	05/01/2019	$252,775	$328,773	$147,532	$729,080
20	06/01/2019	$247,263	$328,773	$147,532	$723,567
21	07/01/2019	$243,738	$328,773	$147,532	$720,043
22	08/01/2019	$240,214	$328,773	$147,532	$716,519
23	09/01/2019	$236,690	$328,773	$147,532	$712,995
24	10/01/2019	$233,166	$328,773	$147,532	$709,471
25	11/01/2019	$229,642	$328,773	$147,532	$705,947
26	12/01/2019	$226,118	$328,773	$147,532	$702,423
27	01/01/2020	$222,594	$328,773	$147,532	$698,899
28	02/01/2020	$219,069	$328,773	$147,532	$695,374
29	03/01/2020	$215,545	$328,773	$147,532	$691,850
30	04/01/2020	$213,861	$330,802	$148,442	$693,105
31	05/01/2020	$210,109	$330,802	$148,442	$689,353
32	06/01/2020	$280,396	$412,191	$184,964	$877,552
33	07/01/2020	$267,680	$412,191	$184,964	$864,835
34	08/01/2020	$263,262	$412,191	$184,964	$860,417
35	09/01/2020	$258,843	$412,191	$184,964	$855,999
36	10/01/2020	$254,425	$412,191	$184,964	$851,580
37	11/01/2020	$250,009	$412,191	$184,964	$847,164
38	12/01/2020	$245,595	$412,191	$184,964	$842,750
39	01/01/2021	$241,181	$412,191	$184,964	$838,336
40	02/01/2021	$236,766	$412,191	$184,964	$833,922
41	03/01/2021	$232,352	$412,191	$184,964	$829,508
42	04/01/2021	$269,496	$460,203	$206,509	$936,208
43	05/01/2021	$259,920	$460,203	$206,509	$926,632
44	06/01/2021	$255,015	$460,203	$206,509	$921,727
45	07/01/2021	$250,785	$461,024	$206,877	$918,687
46	08/01/2021	$245,796	$461,024	$206,877	$913,698
47	09/01/2021	$240,883	$461,024	$206,877	$908,785
48	10/01/2021	$236,020	$461,024	$206,877	$903,922
49	11/01/2021	$231,208	$461,024	$206,877	$899,109
50	12/01/2021	$226,392	$461,024	$206,877	$894,294
51	01/01/2022	$222,400	$461,024	$206,877	$890,302
52	02/01/2022	$219,234	$461,024	$206,877	$887,136
53	03/01/2022	$216,069	$461,024	$206,877	$883,970

Boston Gas Company d/b/a National Grid
New Initiative
Gas Business Enablement
Service Company Rent Expense and Operating Expense
Allocated to Boston Gas Company

		(a)	(b)	(c)	(e)
		TOTAL GBE			
	Date	Boston Return	Boston Depr	Boston Opex	Totals
54	4/1/2022	$212,903	$461,024	$206,877	$880,804
55	5/1/2022	$209,792	$461,024	$206,877	$877,694
56	6/1/2022	$206,737	$461,024	$206,877	$874,638
57	7/1/2022	$203,681	$461,024	$206,877	$871,583
58	8/1/2022	$200,626	$461,024	$206,877	$868,528
59	9/1/2022	$197,571	$461,024	$206,877	$865,472
60	10/1/2022	$194,515	$461,024	$206,877	$862,417
61	11/1/2022	$191,460	$461,024	$206,877	$859,362
62	12/1/2022	$188,405	$461,024	$206,877	$856,306
63	1/1/2023	$185,350	$461,024	$206,877	$853,251
64	2/1/2023	$182,294	$461,024	$206,877	$850,196
65	3/1/2023	$179,239	$461,024	$206,877	$847,141
66	4/1/2023	$176,189	$461,024	$206,877	$844,091
67	5/1/2023	$173,145	$461,024	$206,877	$841,046
68	6/1/2023	$170,331	$461,024	$206,877	$838,232
69	7/1/2023	$167,748	$461,024	$206,877	$835,649
70	8/1/2023	$165,165	$461,024	$206,877	$833,067
71	9/1/2023	$162,582	$461,024	$206,877	$830,484
72	10/1/2023	$159,999	$461,024	$206,877	$827,901
73	11/1/2023	$157,416	$461,024	$206,877	$825,318
74	12/1/2023	$154,834	$461,024	$206,877	$822,735
75	1/1/2024	$152,251	$461,024	$206,877	$820,152
76	2/1/2024	$149,668	$461,024	$206,877	$817,569
77	3/1/2024	$147,084	$461,024	$206,877	$814,986
78	4/1/2024	$144,631	$461,024	$206,877	$812,533
79	5/1/2024	$142,308	$461,024	$206,877	$810,209
80	6/1/2024	$139,984	$461,024	$206,877	$807,886
81	7/1/2024	$137,663	$461,024	$206,877	$805,564
82	8/1/2024	$135,344	$461,024	$206,877	$803,245
83	9/1/2024	$133,024	$461,024	$206,877	$800,926
84	10/1/2024	$130,705	$461,024	$206,877	$798,607
85	11/1/2024	$128,386	$461,024	$206,877	$796,288
86	12/1/2024	$126,067	$461,024	$206,877	$793,969
87	1/1/2025	$123,748	$461,024	$206,877	$791,649
88	2/1/2025	$121,429	$461,024	$206,877	$789,330
89	3/1/2025	$119,109	$461,024	$206,877	$787,011
90	4/1/2025	$116,790	$461,024	$206,877	$784,692
91	5/1/2025	$114,471	$461,024	$206,877	$782,373
92	6/1/2025	$112,152	$461,024	$206,877	$780,053
93	7/1/2025	$109,833	$461,024	$206,877	$777,734
94	8/1/2025	$107,513	$461,024	$206,877	$775,415
95	9/1/2025	$105,194	$461,024	$206,877	$773,096
96	10/1/2025	$102,875	$461,024	$206,877	$770,777
97	11/1/2025	$100,556	$461,024	$206,877	$768,458
98	12/1/2025	$98,237	$461,024	$206,877	$766,138
99	1/1/2026	$95,918	$461,024	$206,877	$763,819
100	2/1/2026	$93,598	$461,024	$206,877	$761,500
101	3/1/2026	$91,279	$461,024	$206,877	$759,181
102	4/1/2026	$88,960	$461,024	$206,877	$756,862
103	5/1/2026	$86,641	$461,024	$206,877	$754,543
104	6/1/2026	$84,322	$461,024	$206,877	$752,223
105	7/1/2026	$82,003	$461,024	$206,877	$749,904
106	8/1/2026	$79,683	$461,024	$206,877	$747,585
107	9/1/2026	$77,364	$461,024	$206,877	$745,266

Boston Gas Company d/b/a National Grid
New Initiative
Gas Business Enablement
Service Company Rent Expense and Operating Expense
Allocated to Boston Gas Company

		(a)	(b)	(c)	(e)
		TOTAL GBE			
	Date	Boston Return	Boston Depr	Boston Opex	Totals
108	10/1/2026	$75,045	$461,024	$206,877	$742,947
109	11/1/2026	$72,726	$461,024	$206,877	$740,627
110	12/1/2026	$70,407	$461,024	$206,877	$738,308
111	1/1/2027	$68,087	$461,024	$206,877	$735,989
112	2/1/2027	$65,768	$461,024	$206,877	$733,670
113	3/1/2027	$63,449	$461,024	$206,877	$731,351
114	4/1/2027	$61,130	$461,024	$206,877	$729,032
115	5/1/2027	$58,811	$461,024	$206,877	$726,712
116	6/1/2027	$56,492	$461,024	$206,877	$724,393
117	7/1/2027	$54,172	$461,024	$206,877	$722,074
118	8/1/2027	$51,853	$461,024	$206,877	$719,755
119	9/1/2027	$49,534	$461,024	$206,877	$717,436
120	10/1/2027	$47,215	$461,024	$206,877	$715,116
121	11/1/2027	$44,898	$460,279	$206,543	$711,719
122	12/1/2027	$42,582	$460,279	$206,543	$709,404
123	1/1/2028	$40,267	$460,279	$206,543	$707,088
124	2/1/2028	$37,951	$460,279	$206,543	$704,773
125	3/1/2028	$35,636	$460,279	$206,543	$702,457
126	4/1/2028	$33,321	$460,279	$206,543	$700,142
127	5/1/2028	$31,005	$460,279	$206,543	$697,827
128	6/1/2028	$28,690	$460,279	$206,543	$695,511
129	7/1/2028	$26,374	$460,279	$206,543	$693,196
130	8/1/2028	$24,059	$460,279	$206,543	$690,880
131	9/1/2028	$21,743	$460,279	$206,543	$688,565
132	10/1/2028	$19,473	$442,507	$198,568	$660,548
133	11/1/2028	$17,247	$442,507	$198,568	$658,322
134	12/1/2028	$15,022	$442,507	$198,568	$656,097
135	1/1/2029	$13,531	$151,756	$68,098	$233,385
136	2/1/2029	$12,776	$151,756	$68,098	$232,630
137	3/1/2029	$12,020	$151,756	$68,098	$231,874
138	4/1/2029	$11,264	$151,756	$68,098	$231,118
139	5/1/2029	$10,558	$132,251	$59,346	$202,155
140	6/1/2029	$9,901	$132,251	$59,346	$201,497
141	7/1/2029	$9,244	$132,251	$59,346	$200,840
142	8/1/2029	$8,587	$132,251	$59,346	$200,183
143	9/1/2029	$7,929	$132,251	$59,346	$199,526
144	10/1/2029	$7,272	$132,251	$59,346	$198,869
145	11/1/2029	$6,615	$132,251	$59,346	$198,212
146	12/1/2029	$5,958	$132,251	$59,346	$197,555
147	1/1/2030	$5,301	$132,251	$59,346	$196,898
148	2/1/2030	$4,644	$132,251	$59,346	$196,241
149	3/1/2030	$3,987	$132,251	$59,346	$195,584
150	4/1/2030	$3,335	$130,223	$58,435	$191,993
151	5/1/2030	$2,688	$130,223	$58,435	$191,346
152	6/1/2030	$2,247	$48,833	$21,913	$72,993
153	7/1/2030	$2,012	$48,833	$21,913	$72,758
154	8/1/2030	$1,776	$48,833	$21,913	$72,523
155	9/1/2030	$1,541	$48,833	$21,913	$72,287
156	10/1/2030	$1,306	$48,833	$21,913	$72,052
157	11/1/2030	$1,070	$48,833	$21,913	$71,817
158	12/1/2030	$835	$48,833	$21,913	$71,581
159	1/1/2031	$600	$48,833	$21,913	$71,346

Boston Gas Company d/b/a National Grid
New Initiative
Gas Business Enablement
Service Company Rent Expense and Operating Expense
Allocated to Boston Gas Company

		(a)	(b)	(c)	(e)
		TOTAL GBE			
	Date	Boston Return	Boston Depr	Boston Opex	Totals
160	2/1/2031	$364	$48,833	$21,913	$71,110
161	3/1/2031	$129	$48,833	$21,913	$70,875
162	4/1/2031	$9	$821	$369	$1,199
163	5/1/2031	$6	$821	$369	$1,196
164	6/1/2031	$2	$821	$369	$1,192
165	7/1/2031	$0	$0	$0	$0
166	8/1/2031	$0	$0	$0	$0
167	9/1/2031	$0	$0	$0	$0
168	10/1/2031	$0	$0	$0	$0
169	11/1/2031	$0	$0	$0	$0
170	12/1/2031	$0	$0	$0	$0
171	1/1/2032	$0	$0	$0	$0
172	2/1/2032	$0	$0	$0	$0
173	3/1/2032	$0	$0	$0	$0
174	4/1/2032	$0	$0	$0	$0
175	5/1/2032	$0	$0	$0	$0
176	6/1/2032	$0	$0	$0	$0
177	7/1/2032	$0	$0	$0	$0
178	8/1/2032	$0	$0	$0	$0
179	9/1/2032	$0	$0	$0	$0
180	10/1/2032	$0	$0	$0	$0
181	11/1/2032	$0	$0	$0	$0
182	12/1/2032	$0	$0	$0	$0
183	1/1/2033	$0	$0	$0	$0
184	2/1/2033	$0	$0	$0	$0
185	**Totals**	**$18,428,792**	**$55,322,940**	**$24,825,256**	**$98,576,988**

Colonial Gas Company d/b/a National Grid
New Initiative
Gas Business Enablement

		Test Year Ended December 31, 2016 (Per Books)	Normalizing Adjustments to Test Year	Test Year Ended December 31, 2016 (as Adjusted)
		Gas	Gas	Gas
		(a)	(b)	(c)
	Provider Company:			
1	Colonial Gas Company	$0	$0	$0
2	National Grid USA Service Company	$0	$0	$0
3	All Other Companies	$0	$0	$0
4	Total	$0	$0	$0
5				
6				
7	Operation:			
8	Production Expenses	$0	$0	$0
9	Power Production Expenses	$0	$0	$0
10	Natural Gas Storage, Terminaling	$0	$0	$0
11	and Processing Exp.			
12	Transmission Expenses	$0	$0	$0
13	Regional Market Expenses	$0	$0	$0
14	Distribution Expenses	$0	$0	$0
15	Customer Accounts Expenses	$0	$0	$0
16	Customer Service and	$0	$0	$0
17	Informational Expenses			
18	Sales Expenses	$0	$0	$0
19	Administrative & General Expenses	$0	$0	$0
20	Sub Total	$0	$0	$0
21				
22	Maintenance:			
23	Transmission Expenses	$0	$0	$0
24	Distribution Expenses	$0	$0	$0
25	Administrative & General Expenses	$0	$0	$0
26	Sub Total	$0	$0	$0
27				
28	TOTAL	$0	$0	$0
		$0	$0	$0

Colonial Gas Company d/b/a National Grid
New Initiative
Gas Business Enablement

		Test Year Ended December 31, 2016 (as Adjusted)	Known & Measurable Adjustments	Rate Year Ending April 30, 2019
		Gas	Gas	Gas
		(a)	(b)	(c)
	Provider Company:			
1	Colonial Gas Company	$0	$0	$0
2	National Grid USA Service Company	$0	$2,687,246	$2,687,246
3	All Other Companies	$0	$0	$0
4	Total	$0	$2,687,246	$2,687,246
5				
6				
7	Operation:			
8	Production Expenses	$0	$0	$0
9	Power Production Expenses	$0	$0	$0
10	Natural Gas Storage, Terminaling	$0	$0	$0
11	and Processing Exp.			
12	Transmission Expenses	$0	$0	$0
13	Regional Market Expenses	$0	$0	$0
14	Distribution Expenses	$0	$0	$0
15	Customer Accounts Expenses	$0	$0	$0
16	Customer Service and	$0	$2,687,246	$2,687,246
17	Informational Expenses			
18	Sales Expenses	$0	$0	$0
19	Administrative & General Expenses	$0	$0	$0
20	Sub Total	$0	$2,687,246	$2,687,246
21				
22	Maintenance:			
23	Transmission Expenses	$0	$0	$0
24	Distribution Expenses	$0	$0	$0
25	Administrative & General Expenses	$0	$0	$0
26	Sub Total	$0	$0	$0
27				
28	TOTAL	$0	$2,687,246	$2,687,246
		$0	$0	$0

Line Notes

2(b) Page 3, Line 2

Colonial Gas Company d/b/a National Grid
New Initiative
Gas Business Enablement

		Provider Company	Total
1	Known and Measurable		
2	Gas Business Enablement	National Grid USA Service Company	$2,687,246
3			$0
4			$0
5			$0
6			$0
7			$0
8			$0
9			$0
10			$2,687,246

Line Notes

(2) Page 4, Line 13 (d)

Colonial Gas Company d/b/a National Grid
New Initiative
Gas Business Enablement

		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(s)	(t)
		HTY	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	Colonial Gas Total	
1	Return on investment	$0	$677	$236,477	$777,718	$853,717	$848,471	$694,641	$570,204	$466,421	$368,969	$271,522	$174,085	$79,084	$29,741	$5,655	$4	$0	$5,377,388	
2	Depreciation	$0	$842	$286,751	$1,091,738	$1,373,835	$1,613,751	$1,614,286	$1,614,286	$1,614,286	$1,614,286	$1,614,286	$1,613,444	$1,327,535	$522,548	$240,451	$535	$0	$16,142,863	
3	Operating expenses	$219,618	$1,029,909	$2,862,666	$1,562,831	$663,967	($69,965)	$725,479	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$6,994,506	**43.33%**
4																				
5	Total Revenue Requirement	$219,618	$1,031,429	$3,385,895	$3,432,287	$2,891,519	$2,392,258	$3,034,407	$2,184,491	$2,080,707	$1,983,255	$1,885,808	$1,787,529	$1,406,619	$552,289	$246,106	$539	$0	$28,514,756	
6																				
7																				
8																				
9																				
10																				
11					Colonial															
12		5 years	$13,436,232																	
13		Annual recovery			**$2,687,246**															
14																				
15																				
16																				
17																				
18																				
19																				

Line Notes

1	Pages 5 through 8, Column (a)	17	Pages 5 & 6, Column (e), Lines 7 through 42
2	Pages 5 through 8, Column (b)	18	Line 17 divided by 3
3	Forecasted project spend	20	Pages 5 & 6, Column (e), Lines 7 through 30
14	Pages 5 & 6, Column (e), Lines 7 through 66	21	Line 20 divided by 2
15	Line 14 divided by 5		

Column Note

(s) Line 3(r) divided by Line 2(r)

Colonial Gas Company d/b/a National Grid
New Initiative
Gas Business Enablement
Service Company Rent Expense and Operating Expense
Allocated to Colonial Gas Company

		(a)	(b)	(c)	(d)
		TOTAL GBE			
	Date	Colonial Return	Colonial Depr	Colonial Opex	Totals
1	11/01/2017	$153	$168	$73	$394
2	12/01/2017	$134	$168	$73	$375
3	01/01/2018	$132	$168	$73	$373
4	02/01/2018	$130	$168	$73	$372
5	03/01/2018	$128	$168	$73	$370
6	04/01/2018	$127	$168	$73	$368
7	05/01/2018	$125	$168	$73	$366
8	06/01/2018	$123	$168	$73	$364
9	07/01/2018	$121	$168	$73	$363
10	08/01/2018	$119	$168	$73	$361
11	09/01/2018	$118	$168	$73	$359
12	10/01/2018	$3,835	$4,269	$1,850	$9,954
13	11/01/2018	$3,372	$4,269	$1,850	$9,490
14	12/01/2018	$3,326	$4,269	$1,850	$9,444
15	01/01/2019	$81,940	$90,978	$39,420	$212,337
16	02/01/2019	$72,124	$90,978	$39,420	$202,522
17	03/01/2019	$71,149	$90,978	$39,420	$201,547
18	04/01/2019	$70,173	$90,978	$39,420	$200,571
19	05/01/2019	$69,198	$90,978	$39,420	$199,596
20	06/01/2019	$68,223	$90,978	$39,420	$198,621
21	07/01/2019	$67,248	$90,978	$39,420	$197,646
22	08/01/2019	$66,273	$90,978	$39,420	$196,671
23	09/01/2019	$65,297	$90,978	$39,420	$195,695
24	10/01/2019	$64,322	$90,978	$39,420	$194,720
25	11/01/2019	$63,347	$90,978	$39,420	$193,745
26	12/01/2019	$62,372	$90,978	$39,420	$192,770
27	01/01/2020	$61,397	$90,978	$39,420	$191,795
28	02/01/2020	$60,421	$90,978	$39,420	$190,819
29	03/01/2020	$59,446	$90,978	$39,420	$189,844
30	04/01/2020	$58,471	$90,978	$39,420	$188,869
31	05/01/2020	$57,496	$90,978	$39,420	$187,894
32	06/01/2020	$82,111	$119,188	$51,643	$252,942
33	07/01/2020	$77,958	$119,188	$51,643	$248,788
34	08/01/2020	$76,680	$119,188	$51,643	$247,511
35	09/01/2020	$75,403	$119,188	$51,643	$246,233
36	10/01/2020	$74,125	$119,188	$51,643	$244,956

Colonial Gas Company d/b/a National Grid
New Initiative
Gas Business Enablement
Service Company Rent Expense and Operating Expense
Allocated to Colonial Gas Company

		(a)	(b)	(c)	(d)
		TOTAL GBE			
	Date	Colonial Return	Colonial Depr	Colonial Opex	Totals
37	11/01/2020	$72,848	$119,188	$51,643	$243,678
38	12/01/2020	$71,571	$119,188	$51,643	$242,402
39	01/01/2021	$70,295	$119,188	$51,643	$241,125
40	02/01/2021	$69,018	$119,188	$51,643	$239,849
41	03/01/2021	$67,741	$119,188	$51,643	$238,572
42	04/01/2021	$79,625	$134,346	$58,210	$272,180
43	05/01/2021	$76,713	$134,346	$58,210	$269,269
44	06/01/2021	$75,281	$134,346	$58,210	$267,837
45	07/01/2021	$73,998	$134,524	$58,288	$266,810
46	08/01/2021	$72,548	$134,524	$58,288	$265,359
47	09/01/2021	$71,114	$134,524	$58,288	$263,925
48	10/01/2021	$69,691	$134,524	$58,288	$262,503
49	11/01/2021	$68,281	$134,524	$58,288	$261,092
50	12/01/2021	$66,869	$134,524	$58,288	$259,681
51	01/01/2022	$65,703	$134,524	$58,288	$258,515
52	02/01/2022	$64,784	$134,524	$58,288	$257,595
53	03/01/2022	$63,864	$134,524	$58,288	$256,675
54	04/01/2022	$62,944	$134,524	$58,288	$255,756
55	05/01/2022	$62,025	$134,524	$58,288	$254,836
56	06/01/2022	$61,105	$134,524	$58,288	$253,917
57	07/01/2022	$60,186	$134,524	$58,288	$252,997
58	08/01/2022	$59,266	$134,524	$58,288	$252,078
59	09/01/2022	$58,347	$134,524	$58,288	$251,158
60	10/01/2022	$57,427	$134,524	$58,288	$250,238
61	11/01/2022	$56,507	$134,524	$58,288	$249,319
62	12/01/2022	$55,588	$134,524	$58,288	$248,399
63	01/01/2023	$54,668	$134,524	$58,288	$247,480
64	02/01/2023	$53,749	$134,524	$58,288	$246,560
65	03/01/2023	$52,829	$134,524	$58,288	$245,640
66	04/01/2023	$51,910	$134,524	$58,288	$244,721
67	05/01/2023	$50,990	$134,524	$58,288	$243,801
68	06/01/2023	$50,150	$134,524	$58,288	$242,961
69	07/01/2023	$49,390	$134,524	$58,288	$242,201
70	08/01/2023	$48,630	$134,524	$58,288	$241,441
71	09/01/2023	$47,870	$134,524	$58,288	$240,682
72	10/01/2023	$47,110	$134,524	$58,288	$239,922

Colonial Gas Company d/b/a National Grid
New Initiative
Gas Business Enablement
Service Company Rent Expense and Operating Expense
Allocated to Colonial Gas Company

		(a)	(b)	(c)	(d)
		TOTAL GBE			
	Date	Colonial Return	Colonial Depr	Colonial Opex	Totals
73	11/01/2023	$46,351	$134,524	$58,288	$239,162
74	12/01/2023	$45,591	$134,524	$58,288	$238,402
75	01/01/2024	$44,831	$134,524	$58,288	$237,642
76	02/01/2024	$44,071	$134,524	$58,288	$236,883
77	03/01/2024	$43,311	$134,524	$58,288	$236,123
78	04/01/2024	$42,592	$134,524	$58,288	$235,404
79	05/01/2024	$41,915	$134,524	$58,288	$234,726
80	06/01/2024	$41,237	$134,524	$58,288	$234,048
81	07/01/2024	$40,560	$134,524	$58,288	$233,371
82	08/01/2024	$39,883	$134,524	$58,288	$232,695
83	09/01/2024	$39,206	$134,524	$58,288	$232,018
84	10/01/2024	$38,530	$134,524	$58,288	$231,341
85	11/01/2024	$37,853	$134,524	$58,288	$230,664
86	12/01/2024	$37,176	$134,524	$58,288	$229,988
87	01/01/2025	$36,500	$134,524	$58,288	$229,311
88	02/01/2025	$35,823	$134,524	$58,288	$228,634
89	03/01/2025	$35,146	$134,524	$58,288	$227,958
90	04/01/2025	$34,469	$134,524	$58,288	$227,281
91	05/01/2025	$33,793	$134,524	$58,288	$226,604
92	06/01/2025	$33,116	$134,524	$58,288	$225,927
93	07/01/2025	$32,439	$134,524	$58,288	$225,251
94	08/01/2025	$31,763	$134,524	$58,288	$224,574
95	09/01/2025	$31,086	$134,524	$58,288	$223,897
96	10/01/2025	$30,409	$134,524	$58,288	$223,220
97	11/01/2025	$29,732	$134,524	$58,288	$222,544
98	12/01/2025	$29,056	$134,524	$58,288	$221,867
99	01/01/2026	$28,379	$134,524	$58,288	$221,190
100	02/01/2026	$27,702	$134,524	$58,288	$220,514
101	03/01/2026	$27,025	$134,524	$58,288	$219,837
102	04/01/2026	$26,349	$134,524	$58,288	$219,160
103	05/01/2026	$25,672	$134,524	$58,288	$218,483
104	06/01/2026	$24,995	$134,524	$58,288	$217,807
105	07/01/2026	$24,319	$134,524	$58,288	$217,130
106	08/01/2026	$23,642	$134,524	$58,288	$216,453
107	09/01/2026	$22,965	$134,524	$58,288	$215,777
108	10/01/2026	$22,288	$134,524	$58,288	$215,100

Colonial Gas Company d/b/a National Grid
New Initiative
Gas Business Enablement
Service Company Rent Expense and Operating Expense
Allocated to Colonial Gas Company

		(a)	(b)	(c)	(d)
		TOTAL GBE			
	Date	Colonial Return	Colonial Depr	Colonial Opex	Totals
109	11/01/2026	$21,612	$134,524	$58,288	$214,423
110	12/01/2026	$20,935	$134,524	$58,288	$213,746
111	01/01/2027	$20,258	$134,524	$58,288	$213,070
112	02/01/2027	$19,582	$134,524	$58,288	$212,393
113	03/01/2027	$18,905	$134,524	$58,288	$211,716
114	04/01/2027	$18,228	$134,524	$58,288	$211,040
115	05/01/2027	$17,551	$134,524	$58,288	$210,363
116	06/01/2027	$16,875	$134,524	$58,288	$209,686
117	07/01/2027	$16,198	$134,524	$58,288	$209,009
118	08/01/2027	$15,521	$134,524	$58,288	$208,333
119	09/01/2027	$14,845	$134,524	$58,288	$207,656
120	10/01/2027	$14,168	$134,524	$58,288	$206,979
121	11/01/2027	$13,492	$134,355	$58,215	$206,061
122	12/01/2027	$12,816	$134,355	$58,215	$205,386
123	01/01/2028	$12,140	$134,355	$58,215	$204,710
124	02/01/2028	$11,464	$134,355	$58,215	$204,034
125	03/01/2028	$10,788	$134,355	$58,215	$203,358
126	04/01/2028	$10,112	$134,355	$58,215	$202,682
127	05/01/2028	$9,436	$134,355	$58,215	$202,006
128	06/01/2028	$8,760	$134,355	$58,215	$201,330
129	07/01/2028	$8,085	$134,355	$58,215	$200,655
130	08/01/2028	$7,409	$134,355	$58,215	$199,979
131	09/01/2028	$6,733	$134,355	$58,215	$199,303
132	10/01/2028	$6,067	$130,255	$56,438	$192,760
133	11/01/2028	$5,412	$130,255	$56,438	$192,105
134	12/01/2028	$4,757	$130,255	$56,438	$191,450
135	01/01/2029	$4,321	$43,546	$18,868	$66,735
136	02/01/2029	$4,104	$43,546	$18,868	$66,518
137	03/01/2029	$3,888	$43,546	$18,868	$66,301
138	04/01/2029	$3,671	$43,546	$18,868	$66,084
139	05/01/2029	$3,454	$43,546	$18,868	$65,867
140	06/01/2029	$3,237	$43,546	$18,868	$65,651
141	07/01/2029	$3,020	$43,546	$18,868	$65,434
142	08/01/2029	$2,804	$43,546	$18,868	$65,217
143	09/01/2029	$2,587	$43,546	$18,868	$65,000
144	10/01/2029	$2,370	$43,546	$18,868	$64,784
145	11/01/2029	$2,153	$43,546	$18,868	$64,567

Colonial Gas Company d/b/a National Grid
New Initiative
Gas Business Enablement
Service Company Rent Expense and Operating Expense
Allocated to Colonial Gas Company

		(a)	(b)	(c)	(d)
		TOTAL GBE			
	Date	Colonial Return	Colonial Depr	Colonial Opex	Totals
146	12/01/2029	$1,936	$43,546	$18,868	$64,350
147	01/01/2030	$1,720	$43,546	$18,868	$64,133
148	02/01/2030	$1,503	$43,546	$18,868	$63,916
149	03/01/2030	$1,286	$43,546	$18,868	$63,700
150	04/01/2030	$1,069	$43,546	$18,868	$63,483
151	05/01/2030	$853	$43,546	$18,868	$63,266
152	06/01/2030	$707	$15,336	$6,645	$22,688
153	07/01/2030	$633	$15,336	$6,645	$22,614
154	08/01/2030	$559	$15,336	$6,645	$22,540
155	09/01/2030	$485	$15,336	$6,645	$22,465
156	10/01/2030	$410	$15,336	$6,645	$22,391
157	11/01/2030	$336	$15,336	$6,645	$22,317
158	12/01/2030	$262	$15,336	$6,645	$22,243
159	01/01/2031	$188	$15,336	$6,645	$22,169
160	02/01/2031	$114	$15,336	$6,645	$22,095
161	03/01/2031	$40	$15,336	$6,645	$22,020
162	04/01/2031	$2	$178	$77	$258
163	05/01/2031	$1	$178	$77	$257
164	06/01/2031	$0	$178	$77	$256
165	07/01/2031	$0	$0	$0	$0
166	08/01/2031	$0	$0	$0	$0
167	09/01/2031	$0	$0	$0	$0
168	10/01/2031	$0	$0	$0	$0
169	11/01/2031	$0	$0	$0	$0
170	12/01/2031	$0	$0	$0	$0
171	01/01/2032	$0	$0	$0	$0
172	02/01/2032	$0	$0	$0	$0
173	03/01/2032	$0	$0	$0	$0
174	04/01/2032	$0	$0	$0	$0
175	05/01/2032	$0	$0	$0	$0
176	06/01/2032	$0	$0	$0	$0
177	07/01/2032	$0	$0	$0	$0
178	08/01/2032	$0	$0	$0	$0
179	09/01/2032	$0	$0	$0	$0
180	10/01/2032	$0	$0	$0	$0
181	11/01/2032	$0	$0	$0	$0
182	12/01/2032	$0	$0	$0	$0
183	01/01/2033	$0	$0	$0	$0
184	02/01/2033	$0	$0	$0	$0
	Totals	$5,377,388	$16,142,863	$6,994,505	**$28,514,756**

Information Request DPU-NG-1-2

Request:

Refer to the prefiled testimony of the Gas Business Enablement Panel, NG-GBE-2. Please describe, and define all acronyms, for each current state system, application, and database, and specify its current business uses. Further, explain which future state system, application, and database will replace each current system, application, and database, for those that the Companies propose to eliminate.

Response:

Please note that, in the course of preparing this response, the Company identified that some of the systems originally depicted in Exhibit NG-GBE-2 should have been classified differently between the Asset Management and Work Management rows.

With reference to Exhibit NG-GBE-2, the systems noted below should be reclassified as follows:

- CGI Calibration from Work Management to Asset Management
- CAD History from Work Management to Asset Management
- SPIPE from Work Management to Asset Management
- FORTIS from Work Management to Asset Management
- Maximo from Asset Management to Work Management
- DigiPen from Asset Management to Work Management

These reclassifications are reflected in the tables below. The tables are organized by functional system category. Each table shows the current state system or data base ("DB"), current business use, and corresponding future state system or DB that will replace the current state systems and processes.

Acronyms are expanded in parenthesis where applicable.

Prepared by or under the supervision of: Anthony H. Johnston and Reihaneh Irani-Famili

Work Management

Current State	Current Business Use	Future State
Construction DB	Tracks the status of construction projects	IBM Maximo
Paving	Manages paving orders	
Adobe Pro	Editing construction forms	
Leak Survey DB	Tracks the progress of mandated programs such as walking survey, mobile survey, inside service inspections, business public assembly survey, and others	
IBM Maximo (out of support version)	Work management for maintenance and construction crews	
DigiPen	Capture quality control observations and checks for observed crews	
LMS NE (Leak Management System for New England)	Tracks leak repairs and follow up work	

Work Management / Scheduling and Dispatch to Field Crews

Current State	Current Business Use	Future State
iScheduler	Schedules customer work to field crews	Salesforce Field Service Lightning
CWQ (Common Work Queue)	Schedules customer work to field crews	
MWork	Completion of field orders	
MDSI (MDSI's Advantex)	Completion of field orders	
AVLS (Trackstar's Automated Vehicle Tracking System)	Tracks company vehicle location	
Palm Pilot System	Hand held device and software for field crews	
WGA (Work Group Availability)	Determines field work capacity for a particular area	

Work Management / Reporting

Current State	Current Business Use	Future State
BO MWork (Business Objects for the MWork application)	Creates reports	Data Management and Analytics Platform
Crystal Reports	Creates reports	
Microstrategy	Creates reports	

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Asset Management

Current State	Current Business Use	Future State
MITS (Meter Inventory Tracking System)	Tracks meter assets and meter testing	IBM Maximo
CHI DB (Developed by CHI Engineering)	Tracks pressure regulating station asset information and inspections	
Mapframe	Displays asset information to field crews	
PCS Compliance (American Innovations software application)	Tracks corrosion testing information	
SPIPE (Service Pipe)	Tracks gas service information such as material, age, and length	
CorTalk (Mobiltex's CorTalk)	Remote cathodic monitoring	

Asset Management / Capital Planning and Engineering Integrity Management

Current State	Current Business Use	Future State
Internally developed DIMP & TIMP algorithms locally managed on Excel tracking spreadsheets	Manage Distribution Integrity Management (DIMP) and Transmission Integrity Management (TIMP)	TBD - Integrity Management Software Application integrated with asset and work management application
Manually created and updated Excel spreadsheets	Capital planning and engineering processes	Copperleaf

Asset Management / Geospatial and Graphic Work Design

Current State	Current Business Use	Future State
Fortis	Stores scanned records such as service cards, historical records, and main construction notes	Esri ArcGIS/ArcFM
Pictometry	Stores aerial imagery	
Esri ArcGIS/ArcFM	Geospatial information system (GIS) for utility network (distribution and transmission systems)	
AutoCAD	computer aided design for complex engineered plans	AutoCAD
Redline drawing in ArcFM for proposed new assets	Standard "simple" design work packages such as new/replacement distribution mains or services	Graphic Work Design Application (GWD) integrated with Esri ArcGIS/ArcFM

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Asset Management / Reporting

Current State	Current Business Use	Future State
CAD History	Creates reports	Data Management and Analytics Platform

Customer / Customer Work Orders and Customer Data

Current State	Current Business Use	Future State
CSS (Customer Service System)	Manages customer orders	Salesforce CRM (Customer Relationship Management) Note: that only portions of the current state systems will be replaced (i.e., CRIS will not be replaced, but certain functions and capabilities will be handled by Salesforce CRM
CRIS (Customer Related Information System)	Manages customer orders	
Gridforce	Portal for new customers to request service	Gridforce
Witness	Voice recording in the call centers	Witness

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

Initiative Description	Benefit Description	Detail	Benefit Type	12-Months Ending March 31, 2019	12-Months Ending March 31, 2020	12-Months Ending March 31, 2021	12-Months Ending March 31, 2022	12-Months Ending March 31, 2023	12-Months Ending March 31, 2024	12-Months Ending March 31, 2025	12-Months Ending March 31, 2026	12-Months Ending March 31, 2027
Asset - Advanced Analytics	Reduction / Redirection in Opex via AIPM	O&M Savings for utilizing Capital and reducing same or more asset risk.	Type I	$ -	$ -	$ 13,750	$ 1,223,750	$ 1,980,000	$ 1,980,000	$ 1,980,000	$ 1,980,000	$ 1,980,000
Engineering, Design, Estimating & Mobility	Reduction in Damages due to Data Quality Errors	Reduction in number of damages due to mismarks through better data/record quality.	Type I	$ 143,315	$ 573,259	$ 573,259	$ 573,259	$ 573,259	$ 573,259	$ 573,259	$ 573,259	$ 573,259
Work Management & Field Enablement	Clerical / Back Office Productivity Improvement	Reduction in manual tasks such as time entry, work package compilation, information updates, etc. completed by clerks.	Type I	$ -	$ 29,603	$ 1,835,367	$ 2,131,393	$ 2,131,393	$ 2,131,393	$ 2,131,393	$ 2,131,393	$ 2,131,393
Work Management & Field Enablement	Damage Prevention - Reduced Travel Mileage	Reduction in miles driven associated with travel time reduction.	Type I	$ -	$ 37,275	$ 49,700	$ 49,700	$ 49,700	$ 49,700	$ 49,700	$ 49,700	$ 49,700
Work Management & Field Enablement	M&C Productivity Improvements - Base	Increased field worker productivity through better technology - work management, scheduling, field mobility, etc.	Type I	$ -	$ 1,024,595	$ 7,274,626	$ 7,377,085	$ 7,377,085	$ 7,377,085	$ 7,377,085	$ 7,377,085	$ 7,377,085
Customer Interaction	Reduce Move Call Volume through Self-Service	Reduction in external handled move calls through introducing the ability to self schedule appointments on customer portal.	Type II	$ -	$ -	$ -	$ -	$ 642,130	$ 906,536	$ 906,536	$ 906,536	$ 906,536
Customer Interaction	Reduce Non-Move Call Volume through Self-Service	Reduction in internally handled calls through introducing the ability to self schedule appointments and check for status updates on customer portal.	Type II	$ -	$ -	$ 61,278	$ 502,480	$ 588,270	$ 588,270	$ 588,270	$ 588,270	$ 588,270
Data Management	Reduction in Data Cleansing / Scrubbing Effort - Analysts	Improved data quality leads to reduce need to scrub and cleanse data to perform analyses.	Type II	$ -	$ 105,749	$ 750,821	$ 761,396	$ 761,396	$ 761,396	$ 761,396	$ 761,396	$ 761,396
Engineering, Design, Estimating & Mobility	Complex Jobs - Engineering Productivity Improvement	Increased productivity resulting from a decrease in administrative activities through deployment of new integrated work and asset management systems	Type II	$ -	$ -	$ 4,886	$ 302,941	$ 351,803	$ 351,803	$ 351,803	$ 351,803	$ 351,803
Engineering, Design, Estimating & Mobility	Complex Jobs - Estimating Accuracy Fine Avoidance	Avoided penalties resulting from improved estimate accuracy for complex jobs. NY (NMPC)	Type II	$ -	$ -	$ -	$ 45,833	$ 550,000	$ 550,000	$ 550,000	$ 550,000	$ 550,000
Engineering, Design, Estimating & Mobility	Reduced in mapping cycle time via digital field data entry	Reduction in mapping effort and time with deployment of graphic work design and redlining capabiity on field mobile devices.	Type II	$ -	$ 8,934	$ 553,899	$ 643,238	$ 643,238	$ 643,238	$ 643,238	$ 643,238	$ 643,238
Integrated Supply & Demand Planning	Improved Project Delivery - Construction	Improved efficiency with respect to capital jobs due to improved supply chain delivery of materials (reduced or eliminated delays, false starts, and material expedites).	Type II	$ -	$ 35,278	$ 2,187,222	$ 2,540,000	$ 2,540,000	$ 2,540,000	$ 2,540,000	$ 2,540,000	$ 2,540,000
Customer Interaction	Reduction in Service Quality Penalties	Avoidance of service quality penalties through increased visibility to jobs and status, better scheduling, and improved overall customer experience. MA (BGC & CGC), NY (KedLI & NMPC)	Type II	$ -	$ -	$ -	$ -	$ 629,809	$ 889,142	$ 889,142	$ 889,142	$ 889,142
Regulatory/ Compliance	Reduced Compliance and Gas Safety Penalties	Improved compliance / gas safety is addressed by many facets of the program	Type II	$ 876,348	$ 5,070,300	$ 9,577,233	$ 13,207,819	$ 13,520,800	$ 13,520,800	$ 13,520,800	$ 13,520,800	$ 13,520,800
Work Management & Field Enablement	CMS Collections Jobs - Reduction in Mileage	Reduction in miles driven associated with travel time reduction.	Type II	$ -	$ -	$ -	$ -	$ 117,384	$ 165,718	$ 165,718	$ 165,718	$ 165,718
Work Management & Field Enablement	CMS Collections Jobs - Reduction in Travel Time	Reduction in travel time via better scheduling, bundling of work, and optimized routing.	Type II	$ -	$ -	$ -	$ -	$ 561,142	$ 792,200	$ 792,200	$ 792,200	$ 792,200
Work Management & Field Enablement	CMS Planned Jobs - Reduction in Available Time via Autodispatch	Reduction in idle time through improved auto-dispatch when a technician is available.	Type II	$ -	$ 202,349	$ 269,798	$ 269,798	$ 269,798	$ 269,798	$ 269,798	$ 269,798	$ 269,798
Work Management & Field Enablement	CMS Planned Jobs - Reduction in Mileage	Reduction in miles driven associated with travel time reduction.	Type II	$ -	$ 83,430	$ 111,240	$ 111,240	$ 111,240	$ 111,240	$ 111,240	$ 111,240	$ 111,240
Work Management & Field Enablement	CMS Planned Jobs - Reduction in Travel Time	Reduction intravel time via better scheduling, bundling of work, and optimized routing.	Type II	$ -	$ 252,363	$ 336,484	$ 336,484	$ 336,484	$ 336,484	$ 336,484	$ 336,484	$ 336,484
Work Management & Field Enablement	CMS Planned Jobs - Reduction in UTCs	Reduction in UTCs due to proactive appointment confirmations and preferred channels.	Type II	$ -	$ 38,760	$ 51,680	$ 51,680	$ 51,680	$ 51,680	$ 51,680	$ 51,680	$ 51,680
Work Management & Field Enablement	Damage Prevention - Reduced Travel Time	Reduction in travel time via better scheduling, bundling of work, and optimized routing.	Type II	$ -	$ 90,007	$ 120,009	$ 120,009	$ 120,009	$ 120,009	$ 120,009	$ 120,009	$ 120,009
Work Management & Field Enablement	Inspections - Reduced Travel Mileage	Reduction in miles driven associated with travel time reduction. MA (BGC & CGC)	Type II	$ -	$ -	$ -	$ -	$ 3,718	$ 5,249	$ 5,249	$ 5,249	$ 5,249
Work Management & Field Enablement	Inspections - Reduced Travel Time	Reduction in travel time via better scheduling, bundling of work, and optimized routing. MA (BGC & CGC)	Type II	$ -	$ -	$ -	$ -	$ 19,064	$ 26,914	$ 26,914	$ 26,914	$ 26,914
Work Management & Field Enablement	M&C and CMS Jobs - Reduced Summonses	Improved work scheduling, technical training, and performance management lowers permit based summons. NY (KedNY and KedLI)	Type II	$ -	$ -	$ -	$ -	$ 2,037,959	$ 4,446,457	$ 4,446,457	$ 4,446,457	$ 4,446,457
Work Management & Field Enablement	Reduction in Field Tech Communications	Reduction in the communications from the technician to the customer through automation (e.g., auto call ahead, text, etc.).	Type II	$ -	$ 99,566	$ 265,511	$ 265,511	$ 265,511	$ 265,511	$ 265,511	$ 265,511	$ 265,511
Work Management & Field Enablement	Reduction in Meter Verification Jobs	Reduction in meter verification jobs via capturing meter information in the field via pictures attached to the service order and available to call center reps.	Type II	$ -	$ 121,024	$ 161,365	$ 161,365	$ 161,365	$ 161,365	$ 161,365	$ 161,365	$ 161,365
Total of Benefits Forecasted as a result of GBE Implementation				$ 1,019,663	$ 7,772,492	$ 24,198,128	$ 30,674,982	$ 36,394,237	$ 39,615,248	$ 39,615,248	$ 39,615,248	$ 39,615,248

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

Initiative Description	Benefit Description	Detail	Benefit Type	12-Months Ending March 31, 2019	12-Months Ending March 31, 2020	12-Months Ending March 31, 2021	12-Months Ending March 31, 2022	12-Months Ending March 31, 2023	12-Months Ending March 31, 2024	12-Months Ending March 31, 2025	12-Months Ending March 31, 2026	12-Months Ending March 31, 2027
Asset - Advanced Analytics	Reduction / Redirection in Opex via AIPM	O&M Savings for utilizing Capital and reducing same or more asset risk.	Type I	$ -	$ -	$ 4,367	$ 388,642	$ 628,814	$ 628,814	$ 628,814	$ 628,814	$ 628,814
Customer Interaction	Reduction in Service Quality Penalties	Avoidance of service quality penalties through increased visibility to jobs and status, better scheduling, and improved overall customer experience. MA (BGC & CGC), NY (KedLI & NMPC)	Type I	$ -	$ -	$ -	$ -	$ 28,938	$ 40,854	$ 40,854	$ 40,854	$ 40,854
Engineering, Design, Estimating & Mobility	Reduction in Damages due to Data Quality Errors	Reduction in number of damages due to mismarks through better data/record quality.	Type I	$ 18,865	$ 75,459	$ 75,459	$ 75,459	$ 75,459	$ 75,459	$ 75,459	$ 75,459	$ 75,459
Work Management & Field Enablement	Clerical / Back Office Productivity Improvement	Reduction in manual tasks such as time entry, work package compilation, information updates, etc. completed by clerks.	Type I	$ -	$ 7,847	$ 486,528	$ 565,000	$ 565,000	$ 565,000	$ 565,000	$ 565,000	$ 565,000
Work Management & Field Enablement	Damage Prevention - Reduced Travel Mileage	Reduction in miles driven associated with travel time reduction.	Type I	$ -	$ 5,726	$ 7,635	$ 7,635	$ 7,635	$ 7,635	$ 7,635	$ 7,635	$ 7,635
Work Management & Field Enablement	M&C Productivity Improvements - Base	Increased field worker productivity through better technology - work management, scheduling, field mobility, etc.	Type I	$ -	$ 134,073	$ 951,915	$ 965,322	$ 965,322	$ 965,322	$ 965,322	$ 965,322	$ 965,322
Customer Interaction	Reduce Move Call Volume through Self-Service	Reduction in external handled move calls through introducing the ability to self schedule appointments on customer portal.	Type II	$ -	$ -	$ -	$ -	$ 225,898	$ 318,915	$ 318,915	$ 318,915	$ 318,915
Customer Interaction	Reduce Non-Move Call Volume through Self-Service	Reduction in internally handled calls through introducing the ability to self schedule appointments and check for status updates on customer portal.	Type II	$ -	$ -	$ 12,873	$ 105,557	$ 123,579	$ 123,579	$ 123,579	$ 123,579	$ 123,579
Data Management	Reduction in Data Cleansing / Scrubbing Effort - Analysts	Improved data quality leads to reduce need to scrub and cleanse data to perform analyses.	Type II	$ -	$ 28,841	$ 204,773	$ 207,657	$ 207,657	$ 207,657	$ 207,657	$ 207,657	$ 207,657
Engineering, Design, Estimating & Mobility	Complex Jobs - Engineering Productivity Improvement	Increased productivity resulting from a decrease in administrative activities through deployment of new integrated work and asset management systems	Type II	$ -	$ -	$ 534	$ 33,114	$ 38,455	$ 38,455	$ 38,455	$ 38,455	$ 38,455
Engineering, Design, Estimating & Mobility	Reduced in mapping cycle time via digital field data entry	Reduction in mapping effort and time with deployment of graphic work design and redlining capability on field mobile devices.	Type II	$ -	$ 1,049	$ 65,028	$ 75,516	$ 75,516	$ 75,516	$ 75,516	$ 75,516	$ 75,516
Integrated Supply & Demand Planning	Improved Project Delivery - Construction	Improved efficiency with respect to capital jobs due to improved supply chain delivery of materials (reduced or eliminated delays, false starts, and material expedites).	Type II	$ -	$ 1,068	$ 66,223	$ 76,904	$ 76,904	$ 76,904	$ 76,904	$ 76,904	$ 76,904
Regulatory/ Compliance	Reduced Compliance and Gas Safety Penalties	Improved compliance / gas safety is addressed by many facets of the program	Type II	$ 35,328	$ 204,400	$ 386,090	$ 532,450	$ 545,068	$ 545,068	$ 545,068	$ 545,068	$ 545,068
Work Management & Field Enablement	CMS Collections Jobs - Reduction in Mileage	Reduction in miles driven associated with travel time reduction.	Type II	$ -	$ -	$ -	$ -	$ 29,102	$ 41,085	$ 41,085	$ 41,085	$ 41,085
Work Management & Field Enablement	CMS Collections Jobs - Reduction in Travel Time	Reduction in travel time via better scheduling, bundling of work, and optimized routing.	Type II	$ -	$ -	$ -	$ -	$ 148,232	$ 209,268	$ 209,268	$ 209,268	$ 209,268
Work Management & Field Enablement	CMS Planned Jobs - Reduction in Available Time via Autodispatch	Reduction in idle time through improved auto-dispatch when a technician is available.	Type II	$ -	$ 4,713	$ 6,284	$ 6,284	$ 6,284	$ 6,284	$ 6,284	$ 6,284	$ 6,284
Work Management & Field Enablement	CMS Planned Jobs - Reduction in Mileage	Reduction in miles driven associated with travel time reduction.	Type II	$ -	$ 17,074	$ 22,766	$ 22,766	$ 22,766	$ 22,766	$ 22,766	$ 22,766	$ 22,766
Work Management & Field Enablement	CMS Planned Jobs - Reduction in Travel Time	Reduction intravel time via better scheduling, bundling of work, and optimized routing.	Type II	$ -	$ 56,318	$ 75,091	$ 75,091	$ 75,091	$ 75,091	$ 75,091	$ 75,091	$ 75,091
Work Management & Field Enablement	CMS Planned Jobs - Reduction in UTCs	Reduction in UTCs due to proactive appointment confirmations and preferred channels.	Type II	$ -	$ 6,326	$ 8,435	$ 8,435	$ 8,435	$ 8,435	$ 8,435	$ 8,435	$ 8,435
Work Management & Field Enablement	Damage Prevention - Reduced Travel Time	Reduction in travel time via better scheduling, bundling of work, and optimized routing.	Type II	$ -	$ 16,201	$ 21,601	$ 21,601	$ 21,601	$ 21,601	$ 21,601	$ 21,601	$ 21,601
Work Management & Field Enablement	Inspections - Reduced Travel Mileage	Reduction in miles driven associated with travel time reduction. MA (BGC & CGC)	Type II	$ -	$ -	$ -	$ -	$ 1,866	$ 2,635	$ 2,635	$ 2,635	$ 2,635
Work Management & Field Enablement	Inspections - Reduced Travel Time	Reduction in travel time via better scheduling, bundling of work, and optimized routing. MA (BGC & CGC)	Type II	$ -	$ -	$ -	$ -	$ 9,569	$ 13,510	$ 13,510	$ 13,510	$ 13,510
Work Management & Field Enablement	Reduction in Field Tech Communications	Reduction in the communications from the technician to the customer through automation (e.g., auto call ahead, text, etc.).	Type II	$ -	$ 20,114	$ 53,636	$ 53,636	$ 53,636	$ 53,636	$ 53,636	$ 53,636	$ 53,636
Work Management & Field Enablement	Reduction in Meter Verification Jobs	Reduction in meter verification jobs via capturing meter information in the field via pictures attached to the service order and available to call center reps.	Type II	$ -	$ 15,403	$ 20,537	$ 20,537	$ 20,537	$ 20,537	$ 20,537	$ 20,537	$ 20,537
Boston Gas share of GBE Benefits				$ 54,193	$ 594,611	$ 2,469,771	$ 3,241,604	$ 3,961,362	$ 4,144,024	$ 4,144,024	$ 4,144,024	$ 4,144,024
		All Type I Benefits	Type I	$ 18,865	$ 223,105	$ 1,525,903	$ 2,002,058	$ 2,271,168	$ 2,283,084	$ 2,283,084	$ 2,283,084	$ 2,283,084
		All Type II Benefits	Type II	$ 35,328	$ 371,507	$ 943,868	$ 1,239,546	$ 1,690,194	$ 1,860,940	$ 1,860,940	$ 1,860,940	$ 1,860,940

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

Initiative Description	Benefit Description	Detail	Benefit Type	12-Months Ending March 31, 2019	12-Months Ending March 31, 2020	12-Months Ending March 31, 2021	12-Months Ending March 31, 2022	12-Months Ending March 31, 2023	12-Months Ending March 31, 2024	12-Months Ending March 31, 2025	12-Months Ending March 31, 2026	12-Months Ending March 31, 2027
Asset - Advanced Analytics	Reduction / Redirection in Opex via AIPM	O&M Savings for utilizing Capital and reducing same or more asset risk.	Type I	$ -	$ -	$ 597	$ 53,152	$ 85,999	$ 85,999	$ 85,999	$ 85,999	$ 85,999
Customer Interaction	Reduction in Service Quality Penalties	Avoidance of service quality penalties through increased visibility to jobs and status, better scheduling, and improved overall customer experience. MA (BGC & CGC), NY (KedLI & NMPC)	Type I	$ -	$ -	$ -	$ -	$ 5,058	$ 7,140	$ 7,140	$ 7,140	$ 7,140
Engineering, Design, Estimating & Mobility	Reduction in Damages due to Data Quality Errors	Reduction in number of damages due to mismarks through better data/record quality.	Type I	$ 4,141	$ 16,564	$ 16,564	$ 16,564	$ 16,564	$ 16,564	$ 16,564	$ 16,564	$ 16,564
Work Management & Field Enablement	Clerical / Back Office Productivity Improvement	Reduction in manual tasks such as time entry, work package compilation, information updates, etc. completed by clerks.	Type I	$ -	$ 1,933	$ 119,869	$ 139,203	$ 139,203	$ 139,203	$ 139,203	$ 139,203	$ 139,203
Work Management & Field Enablement	Damage Prevention - Reduced Travel Mileage	Reduction in miles driven associated with travel time reduction.	Type I	$ -	$ 2,083	$ 2,777	$ 2,777	$ 2,777	$ 2,777	$ 2,777	$ 2,777	$ 2,777
Work Management & Field Enablement	M&C Productivity Improvements - Base	Increased field worker productivity through better technology - work management, scheduling, field mobility, etc.	Type I	$ -	$ 21,275	$ 151,053	$ 153,180	$ 153,180	$ 153,180	$ 153,180	$ 153,180	$ 153,180
Customer Interaction	Reduce Move Call Volume through Self-Service	Reduction in external handled move calls through introducing the ability to self schedule appointments on customer portal.	Type II	$ -	$ -	$ -	$ -	$ 40,812	$ 57,616	$ 57,616	$ 57,616	$ 57,616
Customer Interaction	Reduce Non-Move Call Volume through Self-Service	Reduction in internally handled calls through introducing the ability to self schedule appointments and check for status updates on customer portal.	Type II	$ -	$ -	$ 2,826	$ 23,171	$ 27,127	$ 27,127	$ 27,127	$ 27,127	$ 27,127
Data Management	Reduction in Data Cleansing / Scrubbing Effort - Analysts	Improved data quality leads to reduce need to scrub and cleanse data to perform analyses.	Type II	$ -	$ 6,452	$ 45,808	$ 46,453	$ 46,453	$ 46,453	$ 46,453	$ 46,453	$ 46,453
Engineering, Design, Estimating & Mobility	Complex Jobs - Engineering Productivity Improvement	Increased productivity resulting from a decrease in administrative activities through deployment of new integrated work and asset management systems	Type II	$ -	$ -	$ 119	$ 7,408	$ 8,602	$ 8,602	$ 8,602	$ 8,602	$ 8,602
Engineering, Design, Estimating & Mobility	Reduced in mapping cycle time via digital field data entry	Reduction in mapping effort and time with deployment of graphic work design and redlining capabiity on field mobile devices.	Type II	$ -	$ 235	$ 14,547	$ 16,893	$ 16,893	$ 16,893	$ 16,893	$ 16,893	$ 16,893
Integrated Supply & Demand Planning	Improved Project Delivery - Construction	Improved efficiency with respect to capital jobs due to improved supply chain delivery of materials (reduced or eliminated delays, false starts, and material expedites).	Type II	$ -	$ 239	$ 14,814	$ 17,203	$ 17,203	$ 17,203	$ 17,203	$ 17,203	$ 17,203
Regulatory/ Compliance	Reduced Compliance and Gas Safety Penalties	Improved compliance / gas safety is addressed by many facets of the program	Type II	$ 7,903	$ 45,725	$ 86,369	$ 119,110	$ 121,932	$ 121,932	$ 121,932	$ 121,932	$ 121,932
Work Management & Field Enablement	CMS Collections Jobs - Reduction in Mileage	Reduction in miles driven associated with travel time reduction.	Type II	$ -	$ -	$ -	$ -	$ 6,388	$ 9,019	$ 9,019	$ 9,019	$ 9,019
Work Management & Field Enablement	CMS Collections Jobs - Reduction in Travel Time	Reduction in travel time via better scheduling, bundling of work, and optimized routing.	Type II	$ -	$ -	$ -	$ -	$ 32,539	$ 45,937	$ 45,937	$ 45,937	$ 45,937
Work Management & Field Enablement	CMS Planned Jobs - Reduction in Available Time via Autodispatch	Reduction in idle time through improved auto-dispatch when a technician is available.	Type II	$ -	$ 1,054	$ 1,406	$ 1,406	$ 1,406	$ 1,406	$ 1,406	$ 1,406	$ 1,406
Work Management & Field Enablement	CMS Planned Jobs - Reduction in Mileage	Reduction in miles driven associated with travel time reduction.	Type II	$ -	$ 3,748	$ 4,997	$ 4,997	$ 4,997	$ 4,997	$ 4,997	$ 4,997	$ 4,997
Work Management & Field Enablement	CMS Planned Jobs - Reduction in Travel Time	Reduction intravel time via better scheduling, bundling of work, and optimized routing.	Type II	$ -	$ 12,362	$ 16,483	$ 16,483	$ 16,483	$ 16,483	$ 16,483	$ 16,483	$ 16,483
Work Management & Field Enablement	CMS Planned Jobs - Reduction in UTCs	Reduction in UTCs due to proactive appointment confirmations and preferred channels.	Type II	$ -	$ 1,389	$ 1,852	$ 1,852	$ 1,852	$ 1,852	$ 1,852	$ 1,852	$ 1,852
Work Management & Field Enablement	Damage Prevention - Reduced Travel Time	Reduction in travel time via better scheduling, bundling of work, and optimized routing.	Type II	$ -	$ 5,893	$ 7,858	$ 7,858	$ 7,858	$ 7,858	$ 7,858	$ 7,858	$ 7,858
Work Management & Field Enablement	Inspections - Reduced Travel Mileage	Reduction in miles driven associated with travel time reduction. MA (BGC & CGC)	Type II	$ -	$ -	$ -	$ -	$ 179	$ 252	$ 252	$ 252	$ 252
Work Management & Field Enablement	Inspections - Reduced Travel Time	Reduction in travel time via better scheduling, bundling of work, and optimized routing. MA (BGC & CGC)	Type II	$ -	$ -	$ -	$ -	$ 916	$ 1,293	$ 1,293	$ 1,293	$ 1,293
Work Management & Field Enablement	Reduction in Field Tech Communications	Reduction in the communications from the technician to the customer through automation (e.g., auto call ahead, text, etc.).	Type II	$ -	$ 4,415	$ 11,774	$ 11,774	$ 11,774	$ 11,774	$ 11,774	$ 11,774	$ 11,774
Work Management & Field Enablement	Reduction in Meter Verification Jobs	Reduction in meter verification jobs via capturing meter information in the field via pictures attached to the service order and available to call center reps.	Type II	$ -	$ 3,381	$ 4,508	$ 4,508	$ 4,508	$ 4,508	$ 4,508	$ 4,508	$ 4,508
Colonial Gas share of GBE Benefits				$ 12,044	$ 126,748	$ 504,220	$ 643,992	$ 770,703	$ 806,069	$ 806,069	$ 806,069	$ 806,069
		All Type I Benefits	Type I	$ 4,141	$ 41,855	$ 290,860	$ 364,876	$ 402,781	$ 404,863	$ 404,863	$ 404,863	$ 404,863
		All Type II Benefits	Type II	$ 7,903	$ 84,893	$ 213,360	$ 279,115	$ 367,922	$ 401,206	$ 401,206	$ 401,206	$ 401,206

Boston Gas Company and Colonial Gas Company
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Information Request DPU-NG-1-3
January 31, 2018
H.O. Pieper
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Information Request DPU-NG-1-3

Request:

Refer to the prefiled testimony of the Gas Business Enablement Panel, NG-GBE-1, at 10, lines 4-5, and NG-GBE-2. Please explain which systems and applications are difficult for employees to navigate. Further, list the systems and applications no longer supported by vendors.

Response:

Please note that, in the course of preparing this response, the Company identified that some of the systems originally depicted in Exhibit NG-GBE-2 should have been classified differently between the Asset Management and Work Management rows.

With reference to Exhibit NG-GBE-2, the systems noted below should be reclassified as follows:

- CGI Calibration from Work Management to Asset Management
- CAD History from Work Management to Asset Management
- SPIPE from Work Management to Asset Management
- FORTIS from Work Management to Asset Management
- Maximo from Asset Management to Work Management
- DigiPen from Asset Management to Work Management

These reclassifications are reflected in the tables below.

It is important to note that the systems listed in Exhibit NG-GBE-2 are used as individual components within the current, end-to-end business process. As individual systems, some of the systems listed are commonly used platforms, consistently updated and supported by vendors. However, within an end-to-end process, these systems (such as EXCEL) are used as "sub-systems," facilitating largely manual processes that are disconnected from each other. The sub-systems (such as EXCEL) are not integrated with other systems within the end-to-end business process, preventing ease of navigation for the user in attempting to accomplish related business processes. In addition, the use of these disparate ancillary systems makes it difficult to capture quality data; to share data among differing processes; to enforce user adherence to process; to enforce compliance; and to manage from a cyber security perspective.

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With this in mind, the systems listed in the table below are systems that are currently utilized, but that have little or no vendor support and/or are difficult for system users to navigate *in relation to the end-to-end business process*. The age of the systems, which were implemented at different times, and the lack of integration among the systems, causes users to need to access multiple systems to accomplish a single end-to-end process. This causes frustration for system users and is prone to data inaccuracies. Resolving the integration issue is very difficult or impossible at this time due to the lack of vendor support.

Work Management Systems	**Asset Management Systems**	**Customer Systems**
AVLS	Adobe Pro	CRIS
BO MWork	CHI	CSS
CAD History	CorTalk	WGA
Construction DB	FORTIS	
Crystal Reports	LMS NE	
CWQ	MapFrame	
DigiPen	MITS	
Excel	PCS	
iScheduler	Pictometry	
Leak Survey DB	SPIPE	
Maximo		
MDSI Advantex		
Microstrategy		
MWork		
Palm Pilot System		

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Boston Gas Company and Colonial Gas Company
each d/b/a National Grid
D.P.U. 17-170
Information Request DPU-NG-1-6
January 30, 2018
H.O. Pieper

Information Request DPU-NG-1-6

Request:

Refer to the prefiled testimony of the Gas Business Enablement Panel, NG-GBE-1, at 7, 22-24, 40-43, and NG-GBE-3. Please provide estimated cost savings, or the value gained by customers in relation to efficiency, from the implementation of the Gas Business Enablement ("GBE") Program (e.g., customer service cost savings from a customer's ability to reschedule an appointment on the web).

Response:

Please see Attachment DPU-NG-1-6-1 for the benefits forecasted as a result of Gas Business Enablement implementation, including benefits for the overall Gas Business Enablement Program, as well as for Boston Gas Company and Colonial Gas Company. Attachment DPU-NG-1-6-1 identifies two types of benefits: Type 1 benefits, which are direct cost savings that the Gas Business Enablement Program is expected to deliver; and Type 2 benefits, which are defined as indirect savings that do not impact the National Grid USA service company financial statements. The first page of Attachment DPU-NG-1-6-1 shows total forecasted Gas Business Enablement benefits, and includes both O&M and capital benefits. Pages 2 and 3, which are for Boston Gas Company and Colonial Gas Company, respectively, include only O&M benefits.

Below are a series of tables that describe the value to customers and employees that will be created by implementation of the Gas Business Enablement Program.

Customer Experience

Opportunities & Challenges	**Capability Aspirations**
Customer service appointment windows are not optimized to serve our customers.	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.
Customers do not receive appointment confirmations or work progress updates via their communications channel of preference (email, call, and/or text)	Ability to receive appointment confirmation and/or reminders, updates on status, identify the level of communication wanted and/or update their communication channel preference

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Opportunities & Challenges	Capability Aspirations
Customers have little or no self-service options to request or monitor field work.	Ability to schedule/change appointments, submit photos, view crews in the vicinity, and/or track progress of work
Call centers have limited view of field activities	Ability to view status of work requests, provide real time updates, and reach the field worker if needed
Call centers have no view of construction activities	Ability to view crew location in the customer vicinity and determine status of work
All employees have limited view of customer contacts, interaction, and history in one place	Full 360-degree view of the customer and their entire history
Customers that own multiple properties receive multiple uncoordinated communications and requests for access	Ability to bundle appointments, select communication preferences, and/or receive alerts about issues at properties

Work Improvement

Opportunities & Challenges	Capability Aspirations
Field workers are not always aware of all mandated work due at a given address or street	Ability for the dispatcher and field worker to see all pending work at a location
During gas outages, the Company is not always able to quickly identify which customers are impacted, and which customers have been restored	The dispatch system will have all service information available to generate meter "off" for safety and meter "on" for restoration
Data collection and Regulatory Reporting capabilities vary by region, making consistent reporting a challenge. Additionally, new report requests require technical programmer time that delays delivery	All regions will be collecting information in a standard manner, which then populates one reporting database that can generate reliable, timely, consistent regulatory reporting
The Company would like to meet all customer expectations regarding Customer Appointments	Standard systems in all regions, availability of real time status of all field staff, map locations for all work, street level routing will provide more effective scheduling tools

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Opportunities & Challenges	Capability Aspirations
Field supervisors spend additional time in the office to perform tasks such as reviewing map updates, approving timesheets	Field supervisors, with access to the systems remotely, will spend more time coaching and counseling for safety and efficiency
Assignment of First Responders is based on last known location based on field laptop timestamps	New systems allow dispatchers to see REAL-TIME location and staff of field workers to determine the most appropriate choice of first responder

Work Improvement / Customer Experience

Opportunities & Challenges	Capability Aspirations
Current mapping system does not include all service lines. Accuracy of asset location within mapping system relative to street centerline, and land base needs improvement.	New mapping system will include updated landbase and conflation of assets along with service information being made available within the application.
Asset information is currently stored in various non-integrated systems with no ability to quickly reference a "map view" of gas assets. Relating maintenance and inspection data to assets is manual and time consuming. Field work is currently managed in separate systems, limiting our ability to manage multiple crew types in a single view.	New Enterprise Asset Management System will become the one location for all work activities, including maintenance and inspection, and associated data to exist.
Current design tools are outdated and not standardized. Difficulty in creating accurate job estimates as a result of non-integrated systems.	Implementation of a standard tool for design work and standard process will create consistent construction designs.
Data analysis to support integrity management programs are largely manual and inconsistent across asset classes (i.e., Distribution, Transmission, and Pressure Regulating Facilities).	New Enterprise Asset Management system will become the one location for all work, including maintenance and inspection, and associated data to exist and allow for analytical tools to analyze data.

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Opportunities & Challenges	Capability Aspirations
Portfolio management of investment projects is largely a manual process, requiring input from various non-integrated systems. Difficulty in monitoring current projects regarding level of completion, and cost variance to estimate.	Implementation of an Asset Investment Planning and Management tool along with integration to Enterprise Asset Management will provide a single view of planned work and in-progress work.

Work Improvement / Customer Experience

Opportunities & Challenges	Capability Aspirations
Planning and Engineering employees are spending too much of their time gathering, consolidating, and cleaning data from multiple sources.	Ability for employees to easily access gas operations data (archived, historical, and current data) for reporting capabilities.
	Ability for employees to improve asset (including geospatial data) and work order data accuracy to improve our asset management strategies.
	Ability for employees to more effectively manage data from creation to completion by improving digital record-keeping.
Field Crews inaccurately or incompletely document work performed	Ability to increase work completion data quality by implementing electronic validation rules on work completion data entered and attaching photos of completed work.
Mandated work currently managed through spreadsheets to meet compliance deadlines	Ability to view all work in one system and prioritize/bundle according to location, work type, customer appointment, compliance deadline, etc.
Limited integration with work plans from different departments	Ability to schedule customer work (CMS) and improve customer communication in conjunction with Construction and Maintenance work (C&M).
Field records need to be more readily available electronically in GIS	Ability to capture work completion data (main locations, service locations, etc.) electronically and reduce time to get field data into GIS for viewing.
Unique processes and data due to different systems in different jurisdictions	Having a standard suite of systems allow for consistent processes and consistent information collected and reported.
Work Standards and Procedures need to be more easily accessible by Field Crews	Ability to provide training and job aids such as video-based training on mobile devices.

Prepared by or under the supervision of: Anthony H. Johnston and Reihaneh Irani-Famili

Training

Opportunities & Challenges	**Capability Aspirations**
Training is OQ rather than competency focused. Underfunded relative to industry benchmarking.	Separate OQ from training Fund Academy appropriately to develop and deliver needed training.
Learning councils had been ineffective in aligning training to business needs.	Align training to business needs via new governance model.
Training materials not always up to industry standards (currently developed by instructors).	Build rigorous/repeatable curriculum design, development, and measurement process. Emphasize hire to retire approach: new hire, OJT, refresher. Company developed training shared with and used by contractors.
Ineffective implementation of 70/20/10 training model (OJT, coaching/mentoring, and classroom training) leading to unmeasured and inconsistent training results.	Implement structured OJT/coaching with updated curriculum Extend training into the field where it's measured and tracked electronically
Limited use of technology in training. Management and reuse of materials is costly/inefficient and limited/no access for students to training or supporting materials.	Improve use of existing/ implement new technologies such as content development/management, virtual learning, training effectiveness, and records.
Difficulty hiring and retaining qualified instructors.	Instructor excellence program to provide tools, resources, and opportunities to grow.

Prepared by or under the supervision of: Anthony H. Johnston and Reihaneh Irani-Famili

Information Request DPU-NG-1-4

Request:

Refer to the prefiled testimony of the Gas Business Enablement Panel, NG-GBE-1, at 16, line 2-4. Please explain whether the Companies estimated the costs to update and/or upgrade the existing systems individually, and provide cost estimates in total and by each operating affiliate.

Response:

The potential for upgrading individual systems on a system-by-system basis was evaluated during the Strategic Assessment phase of the program. However, this approach was rejected early in the process because it did not achieve the objectives for Gas Business Enablement or for the gas business, and therefore a detailed cost estimate by each operating affiliate was not developed.

During the Strategic Assessment phase of the program, to support developing the right scope and selecting the best option, National Grid set three strategic objectives aligned to creation of long term value for customers:

1. Reduce risk, by improving application availability, supporting improved gas safety and compliance performance, and supporting the growing capital program;

2. Improve business performance by improving operational effectiveness, customer experience, data management, visibility and data provisioning to regulators, and support for a continuous improvement culture; and

3. Create a platform for the future, by creating a common platform with consistent processes, flexibility to enhance systems and processes for the future, and an ability to potentially expand to the electric business.

Due to their vintage, upgrading individual systems would not be possible in many cases, and even if replaced on a like-for-like basis, this approach would not fully address any of the strategic objectives, including the standardization of business processes across the operating companies to facilitate compliance and improve service. The potential for individual upgrades does not address consolidation of duplicative systems and integration of systems to drive efficiencies in the workforce in areas such as consistent data capture, better performance management and reporting. Without integration of systems, the ability to improve data quality would continue to be a challenge and making data/information easily available to employees to support the tasks being performed would not improve. From a

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technology perspective, this alternative did not leverage the advancements in new software platforms to enable more reliable, efficient operations with enhancements in field and consumer technology to better serve our customers. Lastly, the continued lack of system and process integration would not create a platform for the future that would enable the Company to respond to changing business and regulatory conditions.

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GAS ENABLEMENT PROGRAM

Software Solution: Recommendation

November 18, 2016

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The selected software solution will need to support the IT vision to standardize and rationalize the tools across all regions

Current situation

Objectives

1. **Standardize** system, processes and data across all regions
2. Select **common platforms** for the US gas operations group
3. **Rationalize** the number of tools
4. Conform to National Grid **procurement guidelines** to assure recovery
5. Ensure identified solutions are aligned with **National Grid IS vision**

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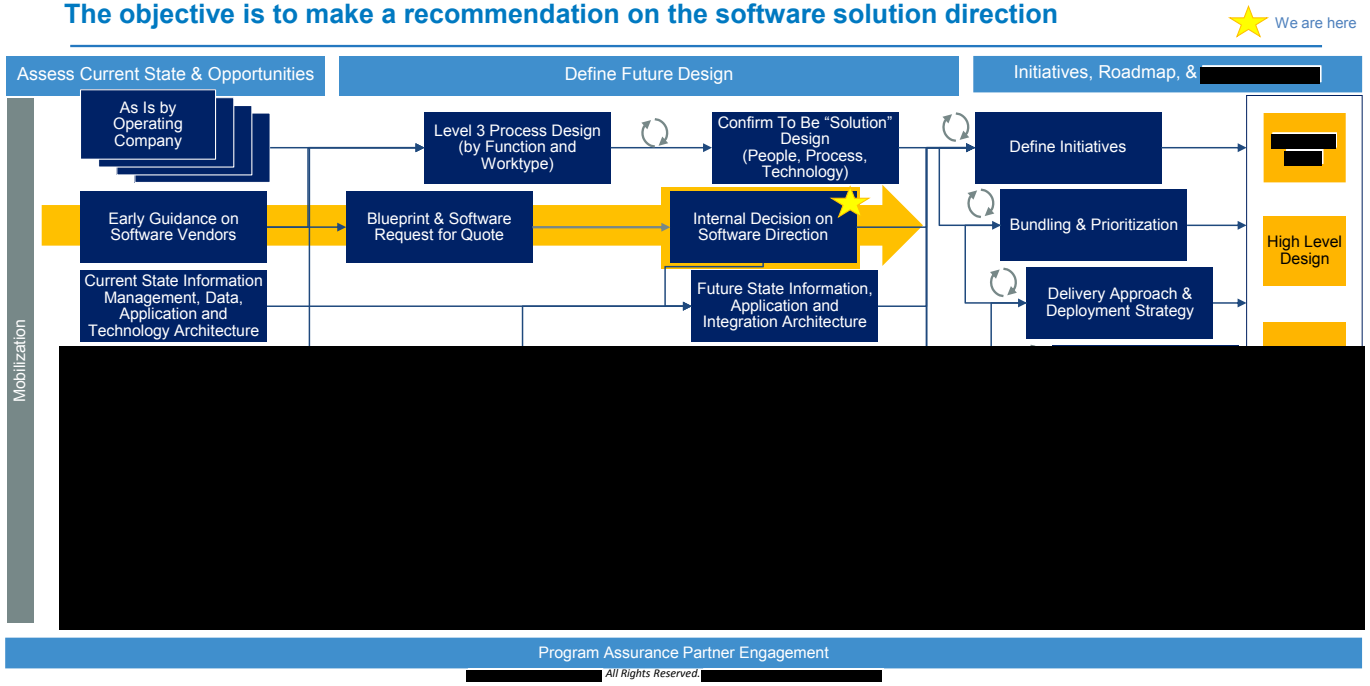
The objective is to make a recommendation on the software solution direction



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Executive Summary

- A team made of National Grid business, IT and [redacted] developed a recommendation for use in support of the Gas Business Enablement program.
- Leading software vendors were evaluated against the National Grid business and technical requirements to formulate the software recommendation.
- The team recommends two primary software stacks to RFP for finalization.
  - [redacted]
  - [redacted]
- The objective for this recommendation is to make an internal National Grid decision on the software direction.

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Software categories assessed for the proposed solution

Enterprise Asset Management (EAM)	Consolidate all asset data and track construction, maintenance and inspection work on the network.
Resource Management	Ensure optimal utilization of the resources by forecasting, planning, scheduling, dispatching and monitoring the field work.
Mobility	Provide field workers a platform to receive, document and close the work assigned to them.
Geospatial Information System (GIS)	Document the location of all assets and leaks on the network.
Asset Investment Planning (AIP)	Ensure the right investments are made on the right assets to effectively reduce risk.
Graphical Work Design	Design electronically new segments of the network for future construction activities.
Integrity Management	Accurately identify and evaluate asset and operational risks to mitigate them.
Analytics	Leverage asset, work and customer data to improve all aspect of the business.
Customer Experience	Provide a service to customer that facilitate their interactions with the utility
Customer Telephony	Use telephony to provide communication channel between the customer and the utility

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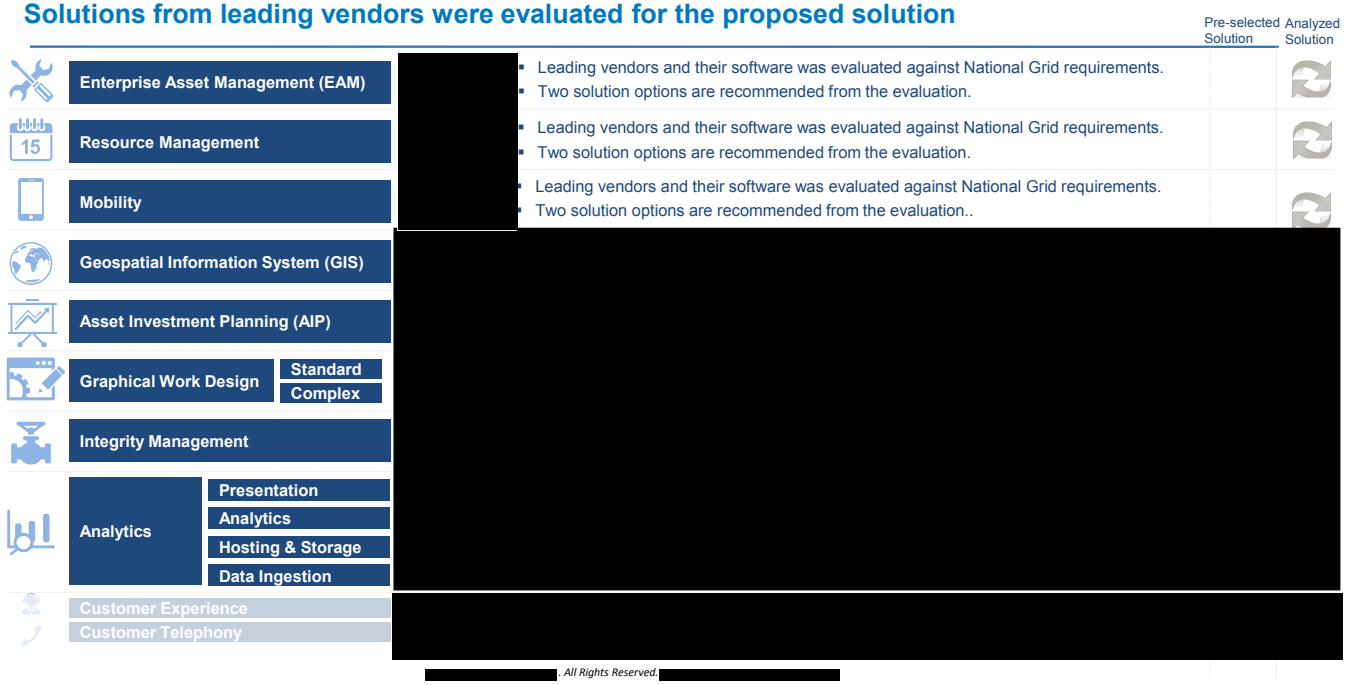
Solutions from leading vendors were evaluated for the proposed solution



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Information on vendors and their software was analyzed to develop the recommendation

1. Establish Early Guidance on Software Vendors

Identify all software categories to assess

[redacted]

Identify leading vendors in each categories

[redacted]

2. Develop Request for Information

Identify evaluation criteria for each software category…

[redacted]

… and define the weight of each criteria

Issue request for information to obtain information on solutions capabilities and software and vendor costs

[redacted] [redacted]

3. Analyze RFI responses and Make final recommendation

Fit-Gap Analysis

[redacted]

Comparison and ranking

[redacted]

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The following guiding principles were used to drive the recommendation

Industry leading solutions with continued **history of excellence** and **vision of innovation**

Solution can deliver innovation at a **high velocity**

Cloud-based software capabilities with **Software as a Service (SaaS)** available

Capable of **iterative releases**

Solution with **intuitive user interface**

[redacted]. *All Rights Reserved.* [redacted]

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The recommended software solution

[redacted]

- Enterprise Asset Management (EAM)
- Resource Management
- Mobility
- Geospatial Information System (GIS)
- Asset Investment Planning (AIP)
- Graphical Work Design
  - Standard
  - Complex
- Integrity Management
- Analytics
  - Presentation
  - Analytics
  - Hosting & Storage
  - Data Ingestion
- Customer Experience
- Customer Telephony

[redacted]

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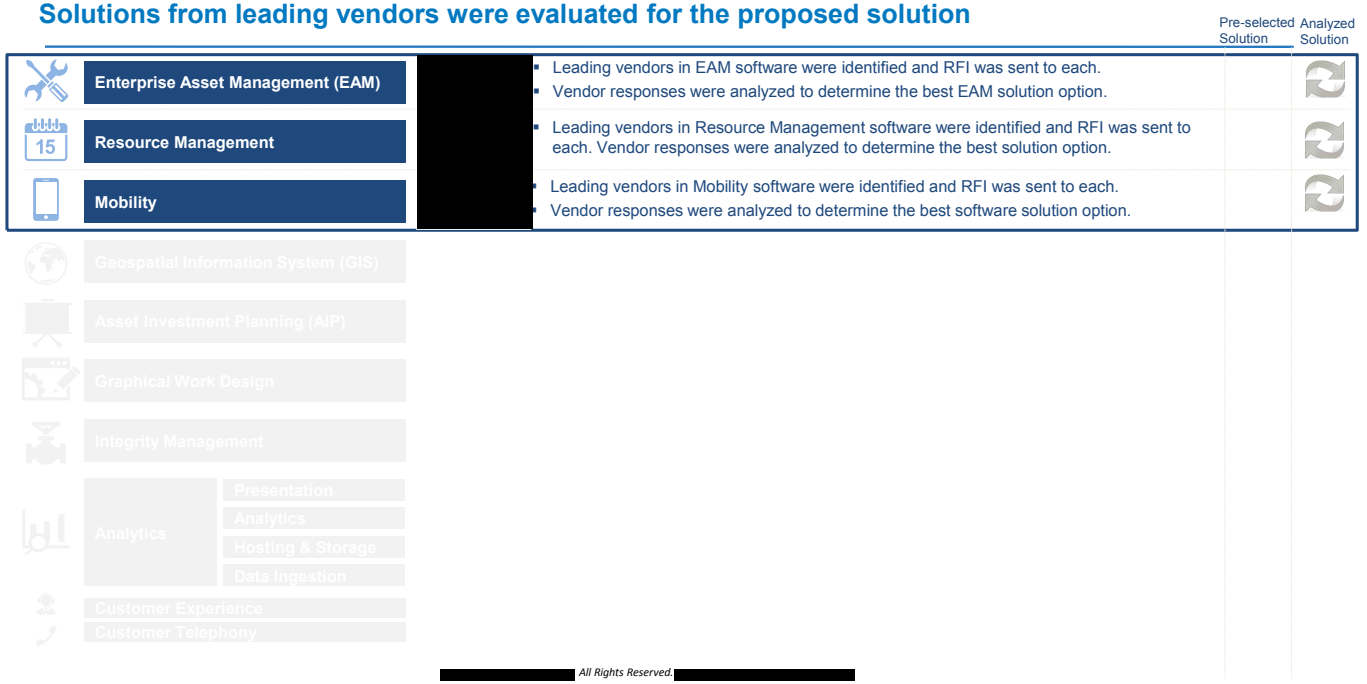
Solutions from leading vendors were evaluated for the proposed solution



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Each vendor and their software was ranked against National Grid requirements

Enterprise Asset Management (EAM)

Rank	Vendor	Solution	Key Differentiator
[redacted]	[redacted]	[redacted]	Drives innovation with flexible asset management, usability, and scalability.
[redacted]	[redacted]	[redacted]	Experienced industry leader with capable asset management and scalability.
[redacted]	[redacted]	[redacted]	Meets base business requirements with limited functional scalability.

[redacted]

Rank	Vendor	Solution	Key Differentiator
[redacted]	[redacted]	[redacted]	Industry leader with advanced resource management and scheduling.
[redacted]	[redacted]	[redacted]	Drives innovation with advanced resource management and scheduling; leading system for user and employee experience.
[redacted]	[redacted]	[redacted]	Meets base business requirements with limited functional scalability.

[redacted]

Rank	Vendor	Solution	Key Differentiator
[redacted]	[redacted]	[redacted]	High velocity of innovation with mobile development platform and provides 360 degree customer view out of box.
[redacted]	[redacted]	[redacted]	Enhanced capabilities when coupled with [redacted].
[redacted]	[redacted]	[redacted]	Offers a mobile development platform that can be used with [redacted] to reduce integration complexity.

[redacted]

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Option 1 is the preferred solution as it combines all best of breed software

Enterprise Asset Management software

[redacted]

- Drives Innovation with flexible asset management
- Best scalability and usability

Resource Management software

[redacted]

- Drives innovation with advanced resource management and scheduling
- Ability to be system of engagement for user and employee experience
- Utilizes [redacted] as the scheduling engine providing all functionality of the [redacted] cloud based solution
- National Grid uses [redacted] for unscheduled call out work in some jurisdictions. Recommendation is to build out this solution and integrate with [redacted]

Mobility software solution

[redacted]

- High velocity of innovation with mobile development platform
- Provides 360 degree customer view out of box
- Mobile application development leader

[redacted]

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Option 2 is a good alternative [redacted]

Enterprise Asset Management software

[redacted]
- Experienced industry leader
- Highly capable asset management

Resource Management software

[redacted]
- Utilities Niche
- Industry leader with advanced resource management and scheduling
- National Grid uses [redacted] for unscheduled call out work in some jurisdictions. Recommendation is to build out this solution and integrate with [redacted]

Mobility software

[redacted]
- Experienced vendor in Utilities
- Industry focused mobile solution with SaaS capability

Alignment with Guiding Principles

[redacted]

[redacted] *All Rights Reserved.* [redacted]

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Enterprise Asset Management Assumptions [redacted]

Option 1

[redacted]

Option 2

[redacted]

Enterprise Asset Management

[redacted]

[redacted] [redacted]

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Resource Management and Mobility Assumptions [redacted]

Option 1

[redacted]

Option 2

[redacted]

[redacted]

Work Management

[redacted]

[redacted]

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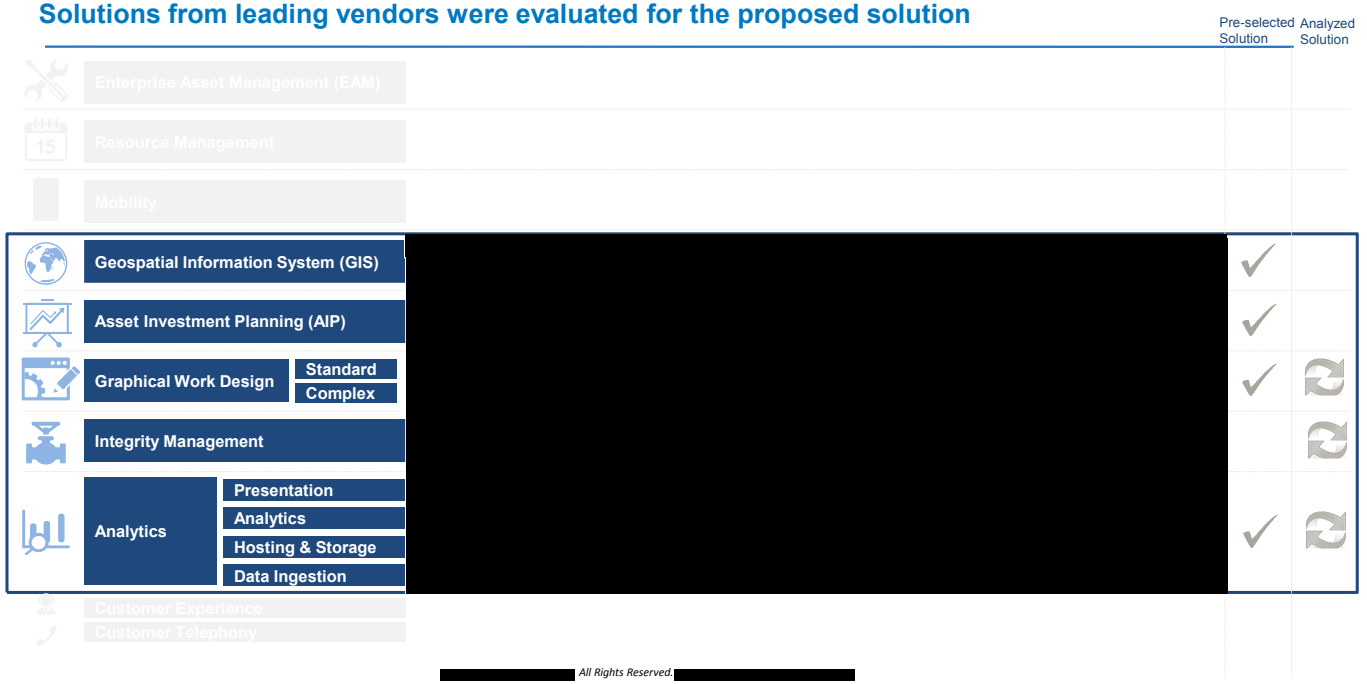
Solutions from leading vendors were evaluated for the proposed solution



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Graphical Work Design

Standard Design - Graphical Work Design

[redacted]

Complex Design - Graphical Work Design

[redacted]

[redacted] *All Rights Reserved.* [redacted]

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Integrity Management

Integrity Management

[redacted]

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A complementary set of tools can be used to implement advanced analytics for U.S. Gas Operations [redacted]

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An analytics solution is composed on multiple layer using different software

Potential Big Data Compliments for [redacted]

Financial Reporting	Analytics	Data Scientist
[redacted]		

Presentation
best of breed self-service BI and Geo-spatial visualization

Analytics
building blocks for modeling & processing analytics applications

Hosting and Storage
cloud architecture and other validated storage

Data Ingestion
integrates data preparation and extraction tools

[redacted] *All Rights Reserved.* [redacted]

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Non-functional requirements (High Level Design) Data Management Tools

The Future State Application, Information and Technology Deliverable will define high level data management tool requirements that cover such topics as:

- Security
- System Availability (Data Requirements)
- Usability Requirements
- Batch Processing Times
- Interfacing Requirements
- Data Requirements
- Data Classification
- Data Maintenance
- Data Accessibility
- Performance Requirements

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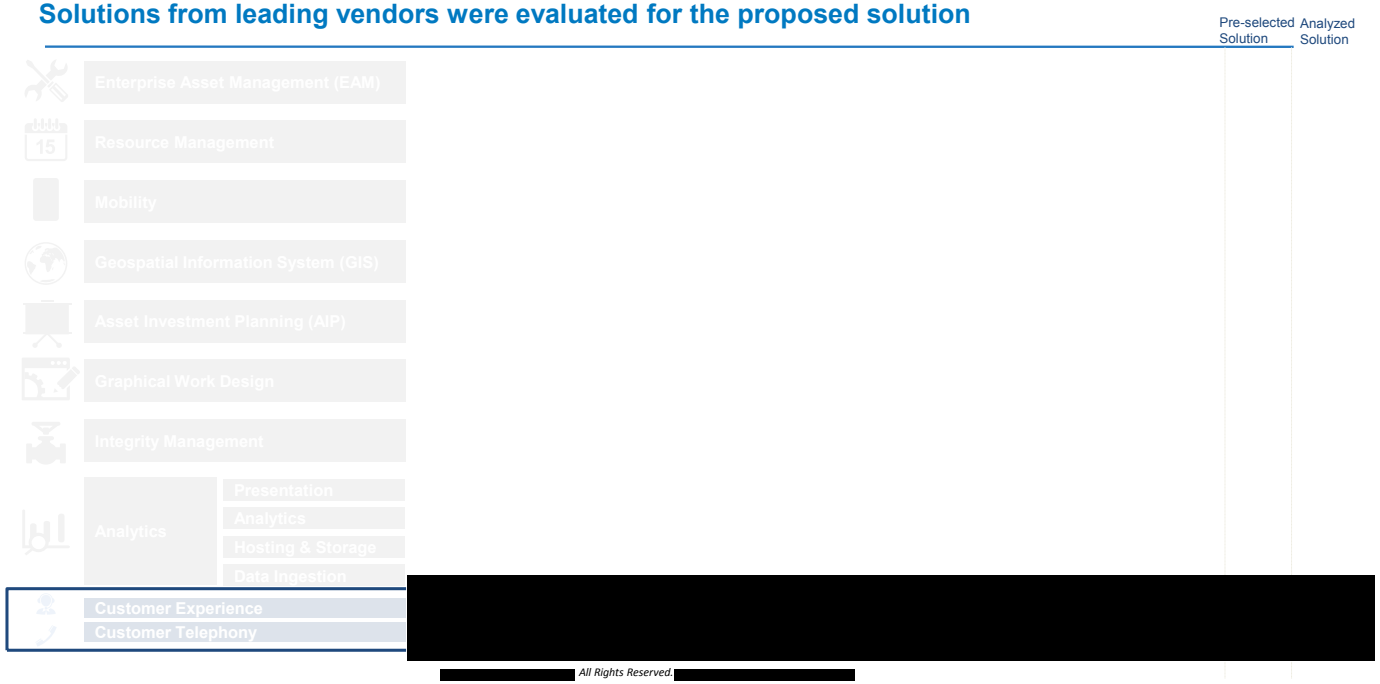
Solutions from leading vendors were evaluated for the proposed solution



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Next Steps

- [redacted]
- [redacted]
- Make internal decision on software direction
- [redacted]

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Appendix – Software analysis supporting documents

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RFI Evaluation Results

Enterprise Asset Management

Vendors	General requirements	Functional Requirements	Technical Requirements	TOTAL	Rank
[redacted]					

Resource Manangement

Vendors	General requirements	Functional Requirements	Technical Requirements	TOTAL	Rank
[redacted]					

Mobility

Vendors	General requirements	Functional Requirements	Technical Requirements	TOTAL	Rank
[redacted]					

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RFQ Results

License Type	# of licenses	Total License Cost (US$)
EAM Admin	[redacted]	[redacted]
EAM Function Specific		
EAM Express		
Resource Mgmt Admin		
Forecast		
Plan		
Schedule		
Mobility Admin		
Mobility		
Sub-Total License		

Total Estimated by the vendor	# of licenses	[redacted]
EAM	[redacted]	
Resource Management		
Mobility		
Total Cost		

Assumptions: [redacted]

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Enterprise Asset Management (EAM)

Description

An Enterprise Asset Management solution includes:
- asset registry, asset management through tracking components
- routine work generation
- work management
- work initiation and routine maintenance work initiation
- reporting and tracking for the executed work.

Key Capabilities
- Asset Records Management
- Routine Work Generation
- Project Management
- Design Standards
- Work Planning & Estimating
- Work Initiation
- Work Management & Tracking
- Work Reporting & Closing

[redacted]

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Mobile Workforce Management – Resource Management and Mobility

Description

- Receive work orders initiated in external systems
- Support either short-cycle work or long-cycle work
- Support construction order types with embedded information about assets
- Support manual and automated assignment and dispatching of work, tracking and close-out
- Provide access to information from back-end systems [redacted] in a useful mobile context
- Support forecasting and planning of the work for up to a one-year period

Key Capabilities

- Work Forecasting
- Work Planning
- Work Scheduling
- Work Dispatching
- Mobile Field Force
- Mobile Platform Services

[redacted]

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Mobility Application Platform

Description

- The mobile application platform refers to development of applications on the mobility software solution.
- This includes user interface and ease of developing additional applications on the current mobility software.

Key Capabilities

- Mobile Field Force
- Mobile Platform Services

[redacted]

All

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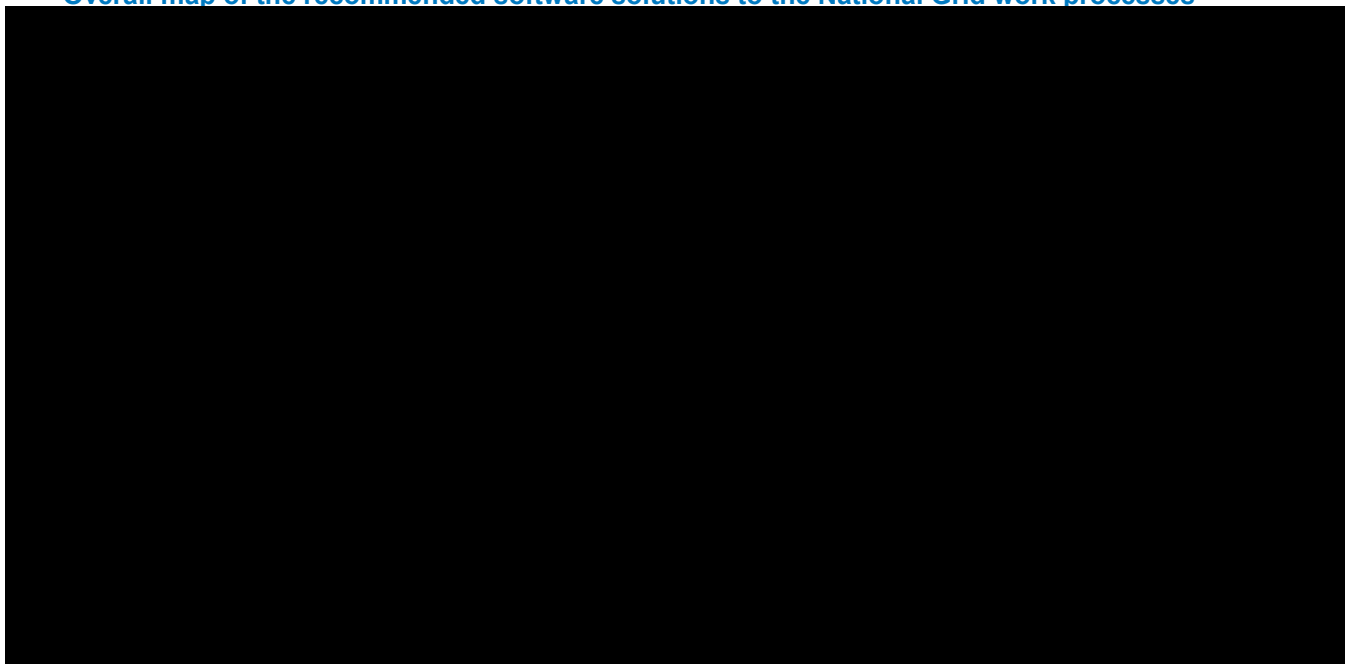
Overall map of the recommended software solutions to the National Grid work processes



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Overall map of the recommended software solutions to the National Grid work processes

Boston Gas Company and Colonial Gas Company
each d/b/a National Grid
D.P.U. 17-170
Information Request DPU-NG-1-5
January 30, 2018
H.O. Pieper
Page 1 of 3

Information Request DPU-NG-1-5

Request:

Refer to the prefiled testimony of the Gas Business Enablement Panel, NG-GBE-1, at 18, lines 9-10. Please explain and list the ten key elements of AP RPI 1173.

Response:

This recommended practice ("RP") establishes a pipeline safety management systems ("PSMS") framework for organizations that operate hazardous liquids and gas pipelines under the jurisdiction of the U.S. Department of Transportation.

The RP provides pipeline operators with safety management system requirements that, when applied, provide a framework to reveal and manage risk, promote a learning environment, and continuously improve pipeline safety and integrity. At the foundation of the PSMS is the operator's existing pipeline safety system, including the operator's pipeline safety processes and procedures. This RP defines the elements needed to identify and address safety for a pipeline's life cycle. These safety management system requirements identify what is to be done, and leaves the details associated with implementation and maintenance of the requirements to the individual pipeline operators.

The RP presents the holistic approach of "Plan-Do-Check-Act" and is the American National Standard for pipeline safety management systems.

10 Key Elements

Energy pipeline operations are complex and frequently require the coordinated efforts of many different people and organizations. API RP 1173 describes 10 essential elements for the comprehensive and systematic management of safety-related activities for energy pipeline operations and explains how these 10 elements can be used as part of a logical, repeatable, and consistent approach to ensure safe pipeline operations across a potentially complex operating organization.

The 10 key elements are listed as follows:

1. Leadership and management commitment
   Leadership from management, including top management, is essential for the success of a PSMS and for improved safety performance. The commitment to a PSMS from both management and employees should make communication, risk reduction, and continuous improvement routine for the organization.

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2. Stakeholder engagement
Communication with internal and external stakeholders is needed to raise safety concerns, identify risks and generate additional recommendations for safety improvements.

3. Risk management
Risk management is used to understand, evaluate and reduce threats to a pipeline operator. Preventing and mitigating risks reduces the likelihood and consequences of an incident.

4. Operational controls
Operating and maintenance procedures help minimize human error and promote consistently safe employee actions. Quality control procedures ensure adherence to established standards for pipeline materials, equipment and construction. Management of change procedures is needed to identify potential risks associated with a given change and the approvals and actions necessary to manage those potential risks.

5. Incident investigation, evaluation, and lessons learned
Learning from experience is a core value within the pipeline industry and a vital component of improving safety performance through a PSMS.

6. Safety assurance
An operator shall demonstrate both the proper application of its PSMS to its practices and how these practices improve risk management and pipeline safety performance, using audits, evaluations, and other performance measures to provide this vital information.

7. Management review and continuous improvement
Management review of PSMS and safety performance results is necessary to provide management awareness of progress in achieving performance goals and objectives. Top management shall, at least annually, review and approve the output of management reviews.

8. Emergency preparedness and response
Operators shall maintain procedures for preparing for and effectively responding to a pipeline incident.

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9. Competence, awareness, and training
A pipeline operator shall assure that personnel have an appropriate level of competence in terms of education, training, knowledge and experience. Where contractors are used, the pipeline operator shall assure that they also have the requisite competence.

10. Documentation and record keeping
A pipeline operator shall identify, distribute and control documents and records required to fulfill the elements of the PSMS. Procedures created shall specify responsibilities for document approval and re-approval and shall identify the controls needed to assure that the documents required by the PSMS, including revisions, translations, and updates comply with the requirements of the PSMS.

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Software Recommendation

for Enterprise Asset Management and Workforce Management

February 17, 2016

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Executive Summary

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Four vendors were down-selected to participate in the software demonstrations with the objective to identify the best solution for National Grid

Context

- Four vendors were down-selected to participate in the software demonstrations.

Enterprise Asset Management (EAM)	Workforce Management (WFM)
[redacted]	[redacted]

- Demonstration scripts were created and shared with the vendors to ensure a fair comparison of the solutions based on common criteria.
- A detailed pricing sheet was completed by each vendor to provide a high level pricing summary.

Objective

- To select an EAM solution and a Workforce Management solution that will align with the National Grid's Gas Business Enablement vision [redacted].

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Recommendation Summary

The Team recommends [redacted] for Enterprise Asset Management.

Further analysis is required prior to recommending a Workforce Management solution.

Enterprise Asset Management (EAM)	Workforce Management (WFM)
[redacted]	[redacted]

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Recommendation Summary

	Enterprise Asset Management		Workforce Management	
Preferred Option	[redacted]			
5-Year SaaS Price (based on the vendor submission)	[redacted]	[redacted]	[redacted]	[redacted]
Solution strengths	[redacted]	[redacted]	[redacted]	[redacted]
Other considerations	[redacted]	[redacted]	[redacted]	[redacted]

* Price may increase based on environment needs.
** Gaps are listed on slide 18.

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Pricing Summary

	Enterprise Asset Management (EAM)				Workforce Management (WFM)			
	SaaS		*On premise*		*SaaS*		*On premise*	
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Licenses	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Environments / Instances	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Options	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Maintenance Cost	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Total Cost (at full deployment)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
5-Year Cost	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
10-Year Cost	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

[redacted]

Legend
Cost estimate needing further analysis

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Next steps

- **Enterprise Asset Management (EAM)**
  - [redacted]
  - Start the negotiations with the vendors
  - Confirm SLAs and RACI for environments management and technical architecture of the EAM SaaS vendors

- **Workforce Management**
  - Identify all solution gaps and communicate these gaps to the vendors to define a remediation strategy
  - Confirm National Grid vision to define if the focus is on customer interactions or “out of the box” solutions [redacted]
  - [redacted]
  - Issue the SI RFP with a request for the SI to partner with a software vendor ([redacted]) for resource management and mobility and to identify the gaps and propose a strategy to close them or mitigate the impact.

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Software Selection Approach

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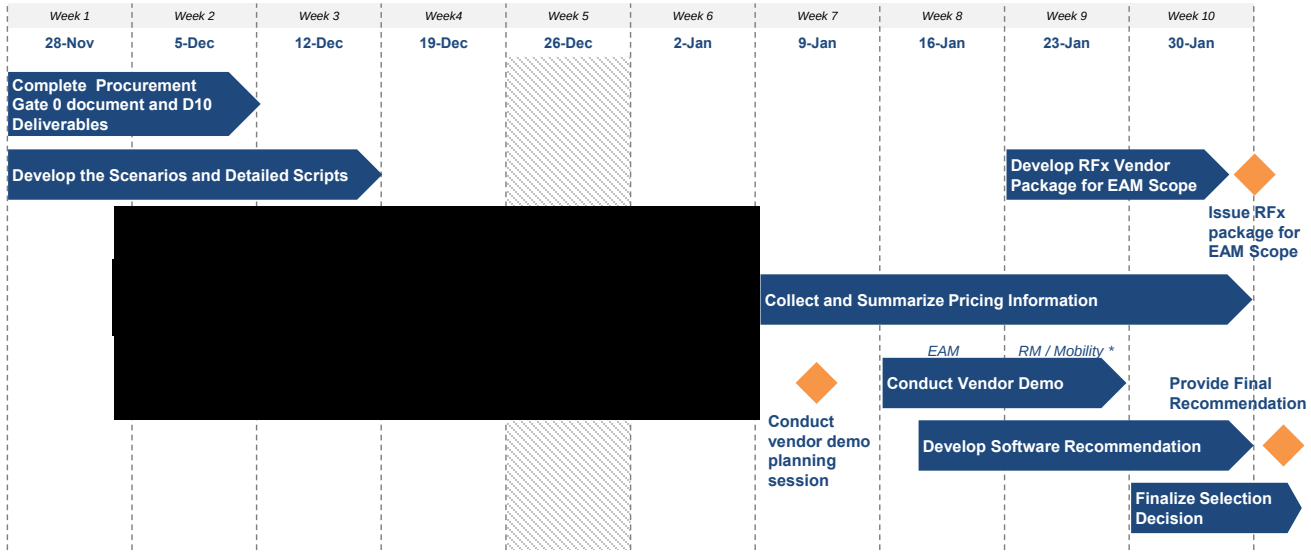
Software Selection Timeline



* RM: Resource Management

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Software Selection Approach for Vendor Demonstration

The software selection approach is based on four elements: [redacted]

[redacted]

Final Software Recommendation

The 3 components of the software demo scoring are listed below.

[redacted] Scoring	[redacted] Scoring	[redacted] Ranking
[redacted]	[redacted]	[redacted]

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Enterprise Asset Management (EAM) – Software Recommendation Analysis

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[redacted]

Option 1: [redacted]

Data sync integrations are "out of the box"

Option 2: [redacted]

Data sync integrations are NOT "out of the box"

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Overall [redacted] capabilities are better suited to National Grid needs

	[redacted]	Neutral	Rationale
Asset Management			
Asset Repository			[redacted]
Linear Asset Management			Visual representation of the work on the linear asset
Asset Creation			N/A – both solutions are equivalent
Meter Asset Management			Better aligned to National Grid current process
Regulatory Compliance Management			N/A – both solutions are equivalent
Work Management			
Design and Estimating			Versioning capabilities
Work Initiation			Additional flexibility
Pre-requisite management			N/A – both solutions are equivalent
Work Documentation			N/A – both solutions are equivalent
Leak Management			Better special integration to identify leak location
Work Closing			N/A – both solutions are equivalent
Agile Development			
Code Deployment Process			Fast, Online and Easy to use

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[redacted] had multiple functionalities that were key differentiators

Key Differentiators	[redacted]	[redacted]	Differentiator description
User Interface	[redacted]	[redacted]	• [redacted] • [redacted]
Configuration capabilities	[redacted]	[redacted]	• [redacted]
Spatial Integration [redacted]	[redacted]	[redacted]	• [redacted]
Asset Repository	[redacted]	[redacted]	• [redacted]
Linear Asset Management	[redacted]	[redacted]	• [redacted]
Meter Asset Management	[redacted]	[redacted]	• [redacted]
Design and Estimating	[redacted]	[redacted]	• [redacted]

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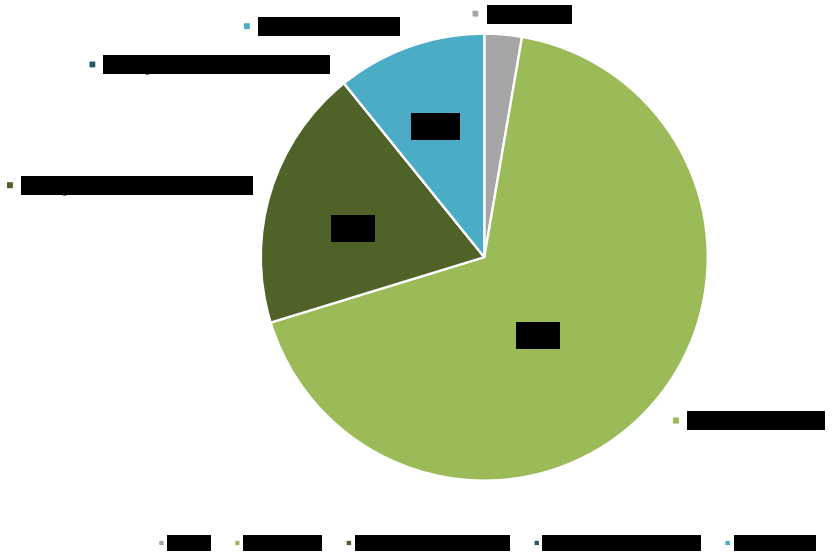
86% of the audience preferred [redacted]



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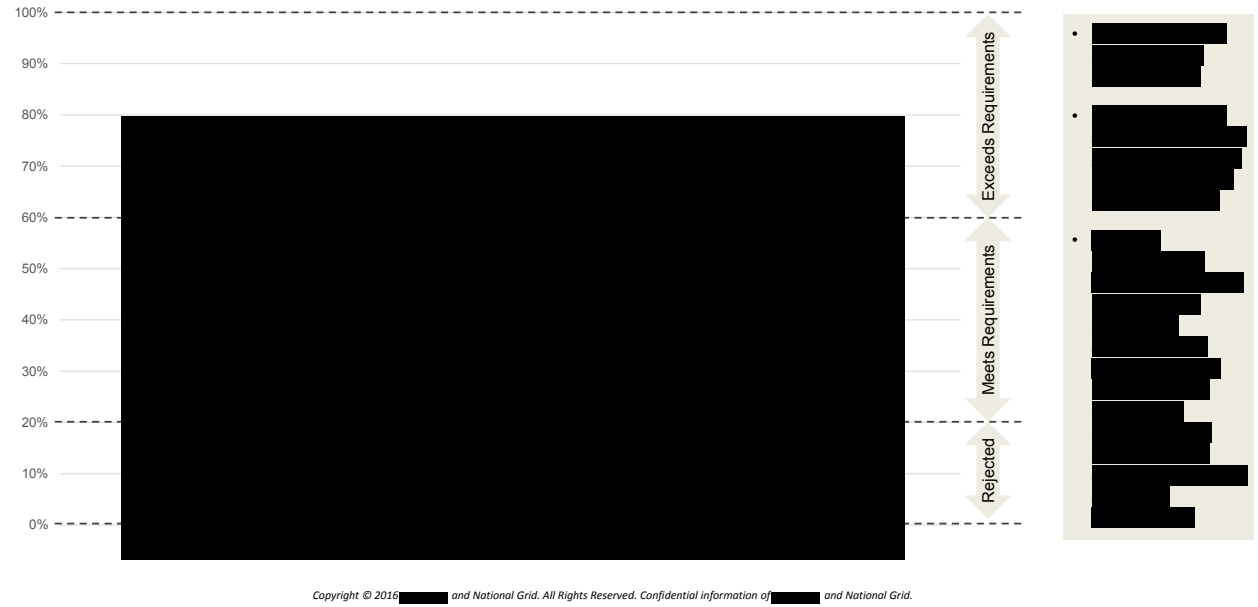
[redacted] exceeded the functional requirements in the demonstration



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Workforce Management – Software Recommendation Analysis

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[redacted]

[redacted]

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Each solution key differentiators offset each other in the composite scoring

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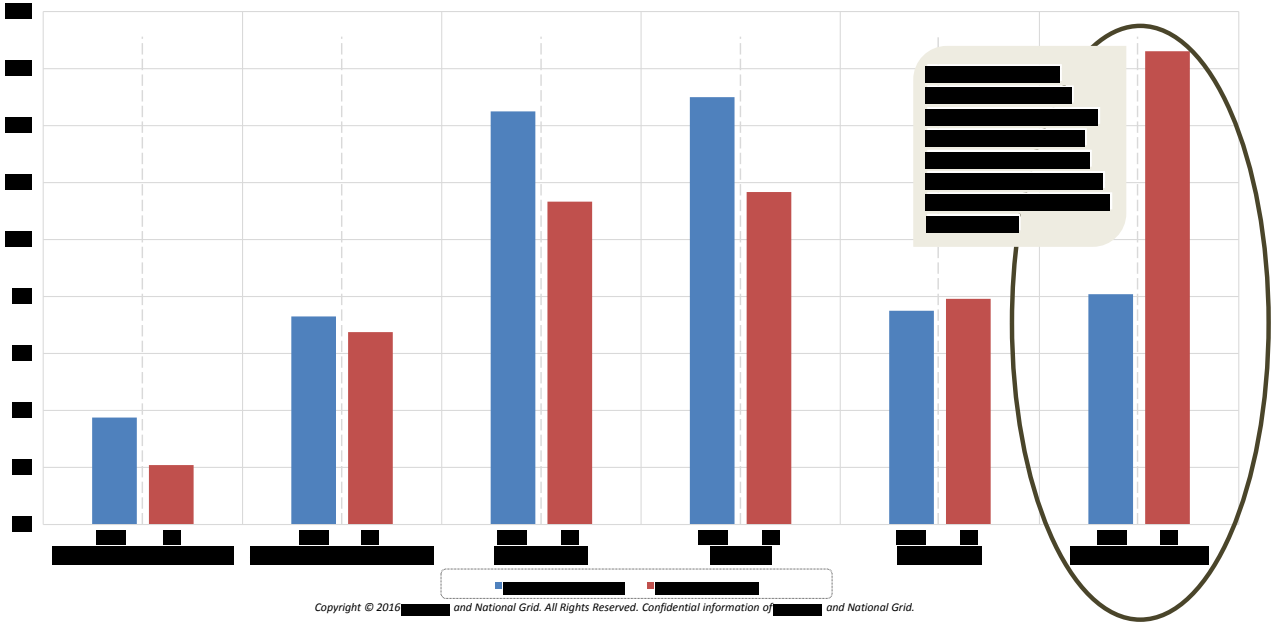
The strengths of [redacted] in scheduling and dispatching were offset by the strengths of [redacted] in agile capabilities and the mobile development platform



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Appendix A – Vendor Demonstration Software Selection Approach

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Description of the demo scripts

Software Category	Area	Scenario Name	Scenario Overview
EAM	Functional	Capital Construction Work	[redacted]
EAM	Functional	Inspection and Leak Management	
EAM	Functional	Meter Asset Management	
RM/Mobility	Functional	Capital Construction Work	
RM/Mobility	Functional	Customer Work	
RM/Mobility	Functional	Inspection	
EAM/ RM/Mobility	Technical	Code Deployment	

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Demo Schedules

Enterprise Asset Management			
Topic	**Duration**	**Start**	**End**
Kickoff and Introduction	0:10	8:00 AM	8:10 AM
Vendor Overview	0:30	8:10 AM	8:40 AM
Scenario 1: Capital Construction Work	2:00	8:40 AM	10:40 AM
Q&A	0:30	10:40 AM	11:10 AM
Break	0:10	11:10 AM	11:20 AM
Scenario 2: Code Deployment Process	1:00	11:20 AM	12:20 PM
Lunch / Q&A	0:40	12:20 PM	1:00 PM
Scenario 3: Inspection and Leak Management	1:30	1:00 PM	2:30 PM
Q&A	0:30	2:30 PM	3:00 PM
Break	0:10	3:00 PM	3:10 PM
Scenario 4: Meter Asset Management	1:00	3:10 PM	4:10 PM
Q&A	0:30	4:10 PM	4:40 PM
Break	0:10	4:40 PM	4:50 PM
Key Elements Highlight	0:30	4:50 PM	5:20 PM
Closing Statement	0:10	5:20 PM	5:30 PM
Post-Demo Evaluation (Internal)	1:00	5:30 PM	6:30 PM

Resource Management and Mobility			
Topic	**Duration**	**Start**	**End**
Kickoff and Introduction	0:10	8:00 AM	8:10 AM
Vendor Overview	0:30	8:10 AM	8:40 AM
Scenario 1: Customer Work (Short Cycle)	2:30	8:40 AM	11:10 AM
Q&A	0:30	11:10 AM	11:40 AM
Break	0:10	11:40 AM	11:50 AM
Scenario 2: Code Deployment Process	1:00	11:50 AM	12:50 PM
Lunch / Q&A	0:40	12:50 PM	1:30 PM
Scenario 3: Capital Construction Work (Long Cycle)	1:30	1:30 PM	3:00 PM
Q&A	0:30	3:00 PM	3:30 PM
Break	0:10	3:30 PM	3:40 PM
Scenario 4: Inspection	1:00	3:40 PM	4:40 PM
Q&A	0:30	4:40 PM	5:10 PM
Break	0:10	5:10 PM	5:20 PM
Key Elements Highlight	0:30	5:20 PM	5:50 PM
Closing Statement	0:10	5:50 PM	6:00 PM
Post-Demo Evaluation (Internal)	1:00	6:00 PM	7:00 PM

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EAM Capabilities evaluated as part of the demo scripts

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Redacted

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Resource Management and Mobility Capabilities evaluated as part of the demo scripts

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[redacted] Scoring

[redacted]

Each evaluated capability [redacted] will be evaluated.

Capability	Priority	Priority Value	Average Scores	Composite Score	Average Scores	Composite Score
[redacted]	H	3				
	M	2				
	L	1				

Each capability has a priority from which a weight is derived to calculate the composite scoring.
H: 3x the score
M: 2x the score
L; 1x the score

Each participant scores each capability based on the requirement rating scale listed beside.

The average score calculated is the average of the score provided by all participants [redacted]

Requirement Rating Scale	Rating Definition	Rating Score
[redacted]		

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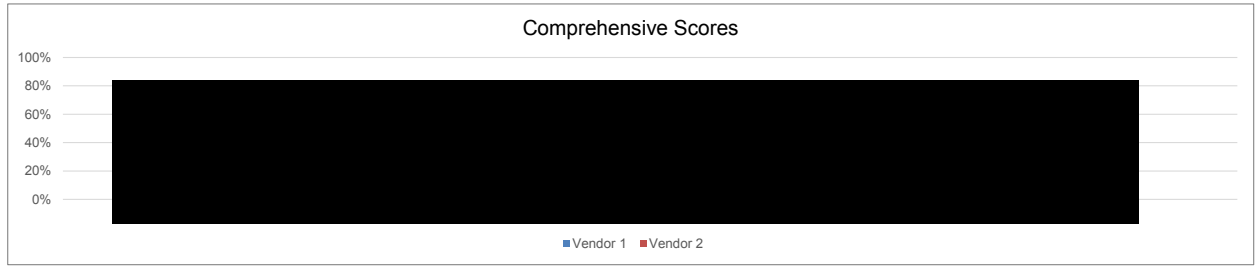
[redacted] Scoring Results (Example)

Graph to summarize the scoring of each vendor per group [redacted]



The weighting can be adjusted for each category

[redacted]	Weighting	Possible Score*	Vendor 1	Vendor 2	Vendor 1	Vendor 2	Vendor 1	Vendor 2	Vendor 1	Vendor 2
[redacted]										
[redacted]										
[redacted]										
[redacted]										
[redacted]										
[redacted]										
TOTAL										

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[redacted] Ranking

Vendor	Strengths	Weaknesses
[redacted]		

For each vendor, a consolidated list of strengths and weaknesses will be built based on the participants inputs.

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Appendix B – Detailed Vendor Demonstration Scoring Results

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Detailed EAM vendor demonstration scores [redacted]

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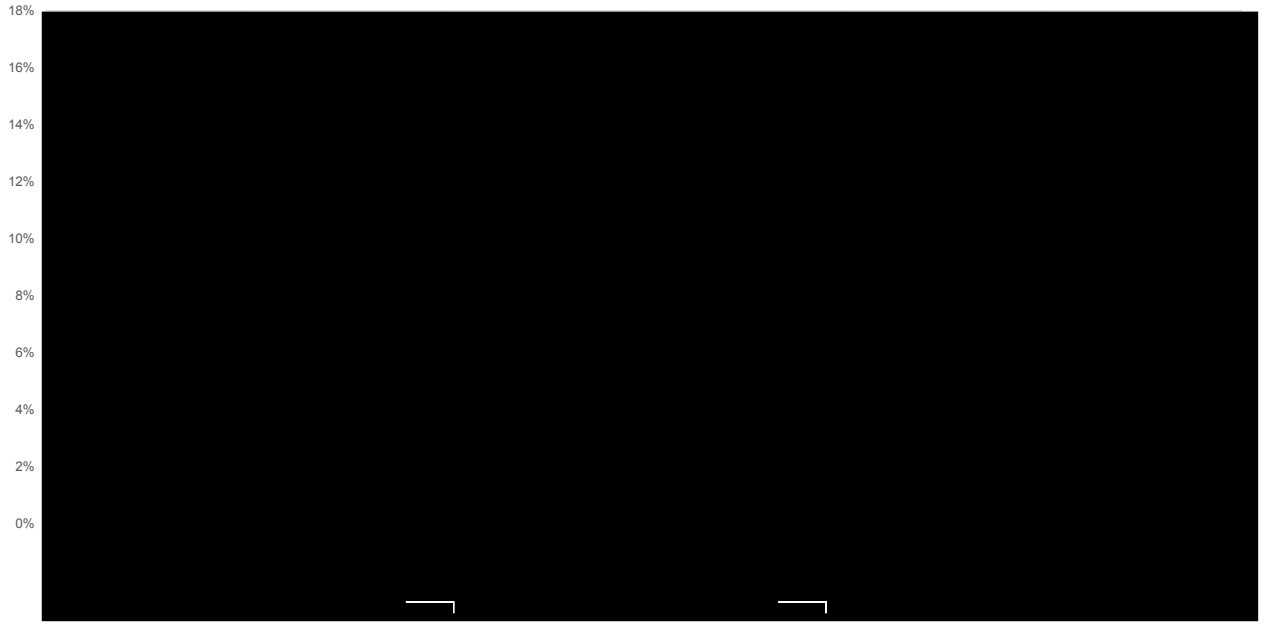
Detailed WFM vendor demonstration scores [redacted]



REDACTED

Solution Integrator final round submissions by [redacted] and [redacted]

REDACTED

[redacted]

KEY QUESTIONS

- ❑ Explain your reasons for choosing either [redacted] Identify the impact to your proposal for both options including bench strength, rates, etc.
- ❑ Please provide your proposed resource structure and management, detailing the skills available from the proposed team and the ability to scale to meet National Grid's requirements including:
  - ❑ Full resource model for onshore and offshore resources by name, with three named alternatives for each role, and detailed experience levels for each person
  - ❑ Proposed program structure, required roles at NG, and how your resources align to NG resources
  - ❑ Identification of sub-contractor use
  - ❑ Transition / succession / management plan for resource turnover and change
- ❑ Provide your POV on the most effective and efficient way to bundle work
- ❑ [redacted] Propose your approach for resource management and HR information management such as payroll, time-off, training, qualifications etc.
- ❑ Elaborate on your scheduling process and data migration / management approach
- ❑ Identify all parts of the proposed solution model where NG would not be able to build the internal capability over time and would require ongoing supplier resources to support
- ❑ National Grid has selected [redacted] a Business Process Mapping tool. Describe how you would utilize this tool and provide Visio exports when required.
- ❑ Elaborate on the tools/process you would use to gather information and run process design workshops with the business. Please provide a detailed example.

[redacted]

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REDACTED

REDACTED

WM QUESTION 18

Explain your reasons for choosing either [redacted] Identify the impact to your proposal for both options including bench strength, rates, etc.

Source: Wave 3 2nd Bundle

Answer

[redacted]

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REDACTED

[redacted] ***Work Management questions*** [redacted]

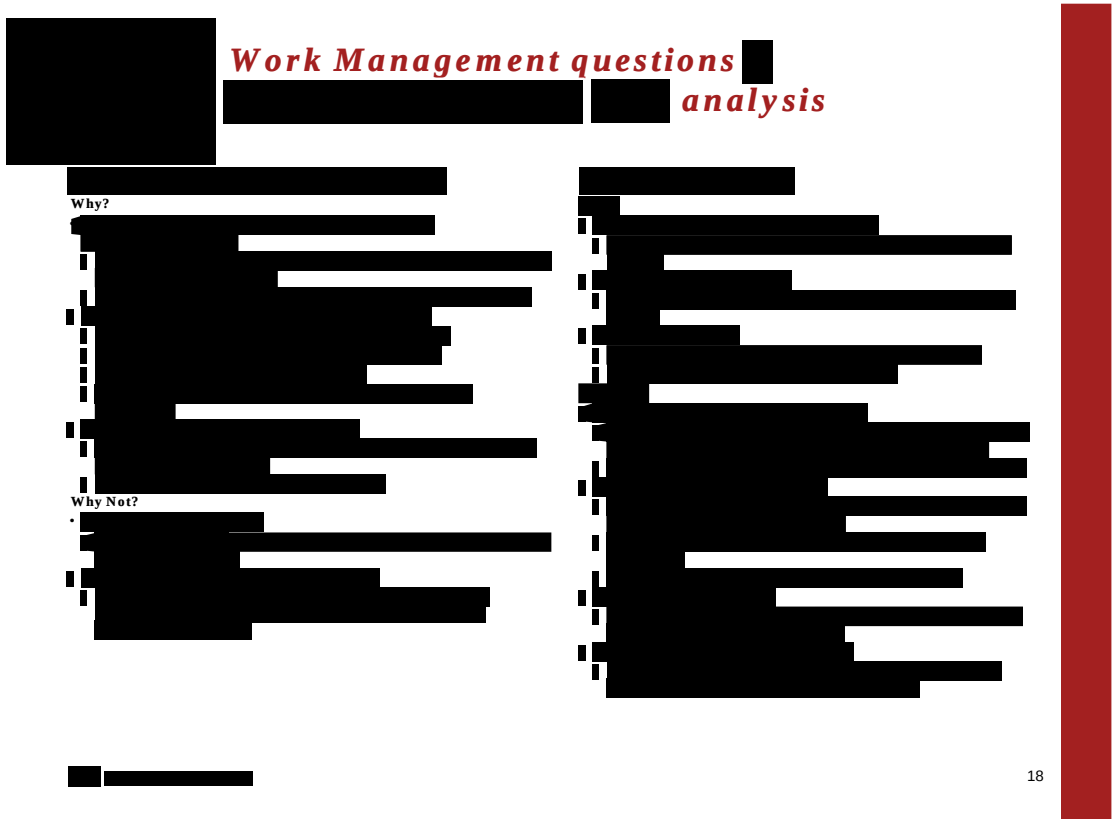
Questions being addressed

1. Explain your reasons for choosing either [redacted] Identify the impact to your proposal for both options including bench strength, rates, etc.

[redacted]

17

REDACTED



REDACTED

[redacted]

Work Management questions [redacted] recommendation

Recommendation: [redacted]

Reasoning:

- [redacted]

Proposal impact:

- [redacted]

[redacted]

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Boston Gas Company and Colonial Gas Company
d/b/a National Grid
D.P.U. 17-170
Information Request DPU-NG-1-7
January 31, 2018
H.O. Pieper
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Information Request DPU-NG-1-7

Request:

Refer to the prefiled testimony of the Gas Business Enablement Panel, NG-GBE-1, at 33, line 16. Please provide complete and detailed documentation supporting National Grid's detailed software review process.

Response:

National Grid's process to identify, evaluate and select the software that would be implemented through the Gas Business Enablement program was conducted in multiple stages and in coordination with external vendors having significant expertise in the implementation of the type of systems architecture necessary to achieve the program objectives. The process to identify the appropriate external vendors for the program was executed over three phases, involving: (1) an initial Request for Proposal ("RFP") from possible external vendors; (2) internal evaluations by National Grid; and (3) System Integrator recommendations.

Request for Information

To initiate the project-development process, National Grid conducted industry research and conducted a RFP solicitation to gain an understanding of the universe of potential vendors with the expertise and experience to execute on the objective of Gas Business Enablement program. The purpose of the process was to narrow the field of potential project candidates based on criteria such as: fit-for-purpose, market presence and cost.

Please see Attachment DPU-NG-1-7-1 CONFIDENTIAL for a copy of the RFP issue on November 18, 2016.

National Grid Evaluations

National Grid conducted a series of on-site meetings with the semifinalist vendors from the RFP process involving multi-day product demonstrations that identified the system architecture and software systems proposed to be utilized to achieve the objectives of the Gas Business Enablement program. The vendor demonstrations were performed using a pre-designated set of scenarios identified by National Grid to achieve comparability for evaluation purposes across vendors. The attendees of the demonstrations included National Grid Gas Operations and Information Services representatives. The sessions allowed the

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vendors to demonstrate how they would deliver the required functionality and engendered in-depth discussion of the proposed capabilities.

A scorecard process was utilized to evaluate each vendor on a number of criteria, resulting in an overall score per vendor.

Please see Attachment DPU-NG-1-7-2 CONFIDENTIAL for a copy of the analysis developed for Software review and evaluation.

System Integrator Recommendations

The final step in the process was the validation of National Grid's recommendation by our partner systems integrators for the Gas Business Enablement program.
This staged software review process and approach allowed National Grid to incorporate the insight of our system integrator and to identify the product set that best matched the objective of the Gas Business Enablement program.

Please see Attachment DPU-NG-1-7-3 CONFIDENTIAL for a copy the System Integrator responses to the question regarding best suited software for the GBE program.

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Information Request DPU-NG-1-8

Request:

Refer to the prefiled testimony of the Gas Business Enablement Panel, NG-GBE-1, at 40, lines 5-8. Of the 2,300 service appointments per day across its three operating jurisdictions, please provide the number of National Grid's daily service appointments in Massachusetts for Boston Gas and for Colonial Gas.

Response:

The average number of daily service appointments in Massachusetts is 648. Boston Gas represents 78% of the total or an average of 505 daily service appointments. Colonial Gas represents 22% of the total or an average of 143 daily service appointments.

Information Request DPU-NG-1-9

Request:

Refer to the prefiled testimony of the Gas Business Enablement Panel, NG-GBE-1, at 42-43, and NG-GBE-7. Please describe the functionality and capabilities of the proposed mobile app.

Response:

The Salesforce Field Service Lightning ("FSL") software application will be deployed to all field employees and supervisors on new, modern tablet devices connected remotely to National Grid information technology systems through standard wireless service providers (e.g. Verizon or AT&T). Field employees will receive electronic notifications of assigned work, retrieve job information, and complete all work in FSL utilizing the mobile device. Employees will also have the capability to generate new or follow-up work orders directly in the field from the device.

Data will be captured electronically through the FSL mobile application and asset data will be stored with the asset record through the integration with the work and asset management system (IBM Maximo). The FSL application will have validation rules for data capture to improve data quality, and requirements to enter complete field information to complete a work order. The data capture capability in FSL will also utilize the functionality of the mobile device to take pictures and scan barcodes to improve data quality and improve customer satisfaction.

The software application will also have the capability to provide turn by turn directions to the job location with live traffic information, which will allow for route optimization to minimize travel between job locations and improve emergency response time.

Employee time entry will be captured electronically according to the orders worked through integration between the existing time reporting application and the new Maximo and FSL software applications.

A new Graphical Information System (Esri GIS) application will be deployed and integrated with FSL, allowing access to asset information, including customer service and premise information in the GIS application on the mobile devices through the FSL application.

Supervisors and Dispatchers will have dashboards to manage employees with the capability to view available resources and their associated skills and qualifications to better schedule and dispatch work orders. Additionally, FSL will provide visibility to the work order

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lifecycle with alerts to highlight upcoming jobs and associated due dates. Supervisors and Dispatchers will also have the capability to view the locations of field employees on a map with real-time status of the job.

Lastly, a key feature of the FSL application will be the capability to allow visibility to job information and complete data capture in locations where a wireless signal is not present. The FSL application will store the data locally on the device and synchronize with National Grid information technology systems once a wireless signal becomes available.

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Boston Gas Company
and Colonial Gas Company
each d/b/a National Grid
D.P.U 17-170
Attachment DPU-NG 1-10-1
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Gas Business Enablement
Total foreasted GBE Program spend by jurisdiction

Line	Portfolio Anchor	Workstream	Allocation Code	Total US GBE Investment (recorded on the books of the Service Company)		
				Total US CapEx Spend	Total US Non-CapEx Spend	Total US Spend
	Cap Ex Investment					
1	PA1-3	Asset Management	C-210	$ 27,740,204	$ -	$ 27,740,204
2	PA1-3	Asset Management / GIS	C-210	$ 57,094,854	$ -	$ 57,094,854
3	PA1-3	Work Management (Maximo)	C-210	$ 77,789,270	$ -	$ 77,789,270
4	PA4	Asset Management	C-210	$ 11,194,992	$ -	$ 11,194,992
5	PA4	Asset Management / GIS	C-210	$ 11,593,919	$ -	$ 11,593,919
6	PA4	Work Management (Maximo)	C-210	$ 23,162,044	$ -	$ 23,162,044
7	PA5	Asset Management	C-210	$ 7,543,962	$ -	$ 7,543,962
8	PA5	Asset Management / GIS	C-210	$ 5,708,998	$ -	$ 5,708,998
9	PA5	Work Management (Maximo)	C-210	$ 8,821,682	$ -	$ 8,821,682
10	PA6	Asset Management	C-210	$ 3,430,354	$ -	$ 3,430,354
11	PA6	Asset Management / GIS	C-210	$ 2,426,260	$ -	$ 2,426,260
12	PA6	Work Management (Maximo)	C-210	$ 2,669,104	$ -	$ 2,669,104
13	PA1-3	Customer Engagement	C-175	$ 21,662,720	$ -	$ 21,662,720
14	PA4	Customer Engagement	C-175	$ 5,375,307	$ -	$ 5,375,307
15	PA1-3	WM-SDM	C-175	$ 21,241,751	$ -	$ 21,241,751
16	PA4	WM-SDM	C-210	$ 7,223,210	$ -	$ 7,223,210
17	PA5	WM-SDM	C-210	$ 704,896	$ -	$ 704,896
18	PA6	WM-SDM	C-210	$ 566,330	$ -	$ 566,330
19	PA1-3	Supply Chain	C-210	$ 8,802,068	$ -	$ 8,802,068
20	PA4	Supply Chain	C-210	$ 2,299,468	$ -	$ 2,299,468
21	PA1-3	Hardware (CapEx)	C-175	$ 4,979,300	$ -	$ 4,979,300
22	PA4	Hardware (CapEx)	C-210	$ 1,348,500	$ -	$ 1,348,500
23	PA5	Hardware (CapEx)	C-210	$ 1,050,000	$ -	$ 1,050,000
24	PA6	Hardware (CapEx)	C-210	$ -		$ -
25	PA1-3	PP Enhancements (CapEx)	G-012	$ 990,833	$ -	$ 990,833
	Non-Cap Ex Investment					
26		Business Enablement & Change Management	C-210	$ -	$ 12,833,790	$ 12,833,790
27		Data Management	C-210	$ -	$ 1,367,967	$ 1,367,967
28		IS Enabling	C-210	$ -	$ 8,306,845	$ 8,306,845
29		Operating Model	C-210	$ -	$ 1,426,405	$ 1,426,405
30		Portfolio Office	C-210	$ -	$ 35,089,803	$ 35,089,803
31		Strategic BECM	C-210	$ -	$ 11,617,248	$ 11,617,248
32		Software	C-210	$ -	$ 13,868,273	$ 13,868,273
33		Hardware	C-210	$ -	$ 3,767,200	$ 3,767,200
34		PP Enhancements	C-210	$ -	$ 1,840,119	$ 1,840,119
35		Tech Training - Labor	C-210	$ -	$ 19,750,000	$ 19,750,000
36		Data Migration	C-210	$ -	$ 713,574	$ 713,574
37		Value Assurance	C-210	$ -	$ 2,600,000	$ 2,600,000
38		Phase 1	C-210	$ -	$ 6,130,746	$ 6,130,746
39		Asset Management	C-210	$ -	$ 1,823,624	$ 1,823,624
40		Asset Management / GIS	C-210	$ -	$ 2,190,698	$ 2,190,698
41		Work Management (Maximo)	C-210	$ -	$ 6,455,987	$ 6,455,987
42		Customer Engagement	C-210	$ -	$ 2,072,189	$ 2,072,189
43		WM-SDM	C-210	$ -	$ 7,980,079	$ 7,980,079
44		Supply Chain	C-210	$ -	$ 2,887,559	$ 2,887,559
45		FY17 Non-CapEx Investment	G-210	$ -	$ 20,142,307	$ 20,142,307
46		**Totals**		**$ 315,420,028**	**$ 162,864,413**	**$ 478,284,440**

Fiscal Year 2018 Bill Pool Allocators

All US Electric and Gas Distribution Companies--Number of Customers	C-175	All Retail Companies	100.00%
All US Gas Distribution Companies--Number of Customers	C-210	All Gas Retail Companies	100.00%
All US Electric and Gas Distribution Companies--General 3-Point Allocator (1)	G-012	All Companies	100.00%

(1) 3-Point Allocator is based on weighting of each company's (1) Net Plant, (2) Net Margin & (3) Net Operations & Maintenance Expense

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Gas Business Enablement
Total foreasted GBE Program spend by jurisdiction

Line	Portfolio Anchor	Workstream	Allocation Code	MA-Electric Share CapEx	MA-Electric Share Non-CapEx	MA-Electric Share Total MA Electric
	Cap Ex Investment					
1	PA1-3	Asset Management	C-210	$ -	$ -	$ -
2	PA1-3	Asset Management / GIS	C-210	$ -	$ -	$ -
3	PA1-3	Work Management (Maximo)	C-210	$ -	$ -	$ -
4	PA4	Asset Management	C-210	$ -	$ -	$ -
5	PA4	Asset Management / GIS	C-210	$ -	$ -	$ -
6	PA4	Work Management (Maximo)	C-210	$ -	$ -	$ -
7	PA5	Asset Management	C-210	$ -	$ -	$ -
8	PA5	Asset Management / GIS	C-210	$ -	$ -	$ -
9	PA5	Work Management (Maximo)	C-210	$ -	$ -	$ -
10	PA6	Asset Management	C-210	$ -	$ -	$ -
11	PA6	Asset Management / GIS	C-210	$ -	$ -	$ -
12	PA6	Work Management (Maximo)	C-210	$ -	$ -	$ -
13	PA1-3	Customer Engagement	C-175	$ 4,029,266	$ -	$ 4,029,266
14	PA4	Customer Engagement	C-175	$ 999,807	$ -	$ 999,807
15	PA1-3	WM-SDM	C-175	$ 3,950,966	$ -	$ 3,950,966
16	PA4	WM-SDM	C-210	$ -	$ -	$ -
17	PA5	WM-SDM	C-210	$ -	$ -	$ -
18	PA6	WM-SDM	C-210	$ -	$ -	$ -
19	PA1-3	Supply Chain	C-210	$ -	$ -	$ -
20	PA4	Supply Chain	C-210	$ -	$ -	$ -
21	PA1-3	Hardware (CapEx)	C-175	$ 926,150	$ -	$ 926,150
22	PA4	Hardware (CapEx)	C-210	$ -	$ -	$ -
23	PA5	Hardware (CapEx)	C-210	$ -	$ -	$ -
24	PA6	Hardware (CapEx)	C-210	$ -	$ -	$ -
25	PA1-3	PP Enhancements (CapEx)	G-012	$ 202,724	$ -	$ 202,724
	Non-Cap Ex Investment					
26		Business Enablement & Change Management	C-210	$ -	$ -	$ -
27		Data Management	C-210	$ -	$ -	$ -
28		IS Enabling	C-210	$ -	$ -	$ -
29		Operating Model	C-210	$ -	$ -	$ -
30		Portfolio Office	C-210	$ -	$ -	$ -
31		Strategic BECM	C-210	$ -	$ -	$ -
32		Software	C-210	$ -	$ -	$ -
33		Hardware	C-210	$ -	$ -	$ -
34		PP Enhancements	C-210	$ -	$ -	$ -
35		Tech Training - Labor	C-210	$ -	$ -	$ -
36		Data Migration	C-210	$ -	$ -	$ -
37		Value Assurance	C-210	$ -	$ -	$ -
38		Phase 1	C-210	$ -	$ -	$ -
39		Asset Management	C-210	$ -	$ -	$ -
40		Asset Management / GIS	C-210	$ -	$ -	$ -
41		Work Management (Maximo)	C-210	$ -	$ -	$ -
42		Customer Engagement	C-210	$ -	$ -	$ -
43		WM-SDM	C-210	$ -	$ -	$ -
44		Supply Chain	C-210	$ -	$ -	$ -
45		FY17 Non-CapEx Investment	G-210	$ -	$ -	$ -
46		**Totals**		**$ 10,108,913**	**$ -**	**$ 10,108,913**

Fiscal Year 2018 Bill Pool Allocators		MA Electric/Nantucket Electric
All US Electric and Gas Distribution Companies--Number of Customers	C-175	18.60%
All US Gas Distribution Companies--Number of Customers	C-210	0.00%
All US Electric and Gas Distribution Companies--General 3-Point Allocator (1)	G-012	20.46%

(1) 3-Point Allocator is based on weighting of each company's (1) Net Plant, (2) Net Margin & (3) Net Operations & Maintenance Expense

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Gas Business Enablement
Total foreasted GBE Program spend by jurisdiction

Line	Portfolio Anchor	Workstream	Allocation Code	MA-Gas Share CapEx	MA-Gas Share Non-CapEx	MA-Gas Share Total RI Gas
	Cap Ex Investment					
1	PA1-3	Asset Management	C-210	$ 6,862,927	$ -	$ 6,862,927
2	PA1-3	Asset Management / GIS	C-210	$ 14,125,267	$ -	$ 14,125,267
3	PA1-3	Work Management (Maximo)	C-210	$ 19,245,065	$ -	$ 19,245,065
4	PA4	Asset Management	C-210	$ 2,769,641	$ -	$ 2,769,641
5	PA4	Asset Management / GIS	C-210	$ 2,868,336	$ -	$ 2,868,336
6	PA4	Work Management (Maximo)	C-210	$ 5,730,290	$ -	$ 5,730,290
7	PA5	Asset Management	C-210	$ 1,866,376	$ -	$ 1,866,376
8	PA5	Asset Management / GIS	C-210	$ 1,412,406	$ -	$ 1,412,406
9	PA5	Work Management (Maximo)	C-210	$ 2,182,484	$ -	$ 2,182,484
10	PA6	Asset Management	C-210	$ 848,670	$ -	$ 848,670
11	PA6	Asset Management / GIS	C-210	$ 600,257	$ -	$ 600,257
12	PA6	Work Management (Maximo)	C-210	$ 660,336	$ -	$ 660,336
13	PA1-3	Customer Engagement	C-175	$ 2,742,500	$ -	$ 2,742,500
14	PA4	Customer Engagement	C-175	$ 680,514	$ -	$ 680,514
15	PA1-3	WM-SDM	C-175	$ 2,689,206	$ -	$ 2,689,206
16	PA4	WM-SDM	C-210	$ 1,787,022	$ -	$ 1,787,022
17	PA5	WM-SDM	C-210	$ 174,391	$ -	$ 174,391
18	PA6	WM-SDM	C-210	$ 140,110	$ -	$ 140,110
19	PA1-3	Supply Chain	C-210	$ 2,177,632	$ -	$ 2,177,632
20	PA4	Supply Chain	C-210	$ 568,888	$ -	$ 568,888
21	PA1-3	Hardware (CapEx)	C-175	$ 630,379	$ -	$ 630,379
22	PA4	Hardware (CapEx)	C-210	$ 333,619	$ -	$ 333,619
23	PA5	Hardware (CapEx)	C-210	$ 259,770	$ -	$ 259,770
24	PA6	Hardware (CapEx)	C-210	$ -	$ -	$ -
25	PA1-3	PP Enhancements (CapEx)	G-012	$ 109,685	$ -	$ 109,685
	Non-Cap Ex Investment					
26		Business Enablement & Change Management	C-210	$ -	$ 3,175,080	$ 3,175,080
27		Data Management	C-210	$ -	$ 338,435	$ 338,435
28		IS Enabling	C-210	$ -	$ 2,055,114	$ 2,055,114
29		Operating Model	C-210	$ -	$ 352,893	$ 352,893
30		Portfolio Office	C-210	$ -	$ 8,681,217	$ 8,681,217
31		Strategic BECM	C-210	$ -	$ 2,874,107	$ 2,874,107
32		Software	C-210	$ -	$ 3,431,011	$ 3,431,011
33		Hardware	C-210	$ -	$ 932,005	$ 932,005
34		PP Enhancements	C-210	$ -	$ 455,245	$ 455,245
35		Tech Training - Labor	C-210	$ -	$ 4,886,150	$ 4,886,150
36		Data Migration	C-210	$ -	$ 176,538	$ 176,538
37		Value Assurance	C-210	$ -	$ 643,240	$ 643,240
38		Phase 1	C-210	$ -	$ 1,516,747	$ 1,516,747
39		Asset Management	C-210	$ -	$ 451,165	$ 451,165
40		Asset Management / GIS	C-210	$ -	$ 541,979	$ 541,979
41		Work Management (Maximo)	C-210	$ -	$ 1,597,211	$ 1,597,211
42		Customer Engagement	C-210	$ -	$ 512,659	$ 512,659
43		WM-SDM	C-210	$ -	$ 1,974,271	$ 1,974,271
44		Supply Chain	C-210	$ -	$ 714,382	$ 714,382
45		FY17 Non-CapEx Investment	G-210	$ -	$ 1,485,947	$ 1,485,947
46		**Totals**		**$ 71,465,771**	**$ 36,795,396**	**$ 108,261,167**

Fiscal Year 2018 Bill Pool Allocators		MA Gas
All US Electric and Gas Distribution Companies--Number of Customers	C-175	12.66%
All US Gas Distribution Companies--Number of Customers	C-210	24.74%
All US Electric and Gas Distribution Companies--General 3-Point Allocator (1)	G-012	11.07%

(1) 3-Point Allocator is based on weighting of each company's (1) Net Plant, (2) Net Margin & (3) Net Operations & Maintenance Expense

Boston Gas Company
and Colonial Gas Company
each d/b/a National Grid
D.P.U 17-170
Attachment DPU-NG 1-10-1
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Gas Business Enablement
Total foreasted GBE Program spend by jurisdiction

Line	Portfolio Anchor	Workstream	Allocation Code	RI Share Total RI	NY Share Total NY	NGUSA Parent Co.	Total GBE
	Cap Ex Investment						
1	PA1-3	Asset Management	C-210	$ 2,044,453	$ 18,832,825	$ -	$ 27,740,204
2	PA1-3	Asset Management / GIS	C-210	$ 4,207,891	$ 38,761,696	$ -	$ 57,094,854
3	PA1-3	Work Management (Maximo)	C-210	$ 5,733,069	$ 52,811,135	$ -	$ 77,789,270
4	PA4	Asset Management	C-210	$ 825,071	$ 7,600,280	$ -	$ 11,194,992
5	PA4	Asset Management / GIS	C-210	$ 854,472	$ 7,871,112	$ -	$ 11,593,919
6	PA4	Work Management (Maximo)	C-210	$ 1,707,043	$ 15,724,712	$ -	$ 23,162,044
7	PA5	Asset Management	C-210	$ 555,990	$ 5,121,596	$ -	$ 7,543,962
8	PA5	Asset Management / GIS	C-210	$ 420,753	$ 3,875,839	$ -	$ 5,708,998
9	PA5	Work Management (Maximo)	C-210	$ 650,158	$ 5,989,040	$ -	$ 8,821,682
10	PA6	Asset Management	C-210	$ 252,817	$ 2,328,867	$ -	$ 3,430,354
11	PA6	Asset Management / GIS	C-210	$ 178,815	$ 1,647,188	$ -	$ 2,426,260
12	PA6	Work Management (Maximo)	C-210	$ 196,713	$ 1,812,055	$ -	$ 2,669,104
13	PA1-3	Customer Engagement	C-175	$ 2,320,077	$ 12,570,876	$ -	$ 21,662,720
14	PA4	Customer Engagement	C-175	$ 575,695	$ 3,119,291	$ -	$ 5,375,307
15	PA1-3	WM-SDM	C-175	$ 2,274,992	$ 12,326,588	$ -	$ 21,241,751
16	PA4	WM-SDM	C-210	$ 532,351	$ 4,903,837	$ -	$ 7,223,210
17	PA5	WM-SDM	C-210	$ 51,951	$ 478,554	$ -	$ 704,896
18	PA6	WM-SDM	C-210	$ 41,739	$ 384,481	$ -	$ 566,330
19	PA1-3	Supply Chain	C-210	$ 648,712	$ 5,975,724	$ -	$ 8,802,068
20	PA4	Supply Chain	C-210	$ 169,471	$ 1,561,109	$ -	$ 2,299,468
21	PA1-3	Hardware (CapEx)	C-175	$ 533,283	$ 2,889,488	$ -	$ 4,979,300
22	PA4	Hardware (CapEx)	C-210	$ 99,384	$ 915,497	$ -	$ 1,348,500
23	PA5	Hardware (CapEx)	C-210	$ 77,385	$ 712,845	$ -	$ 1,050,000
24	PA6	Hardware (CapEx)	C-210	$ -	$ -	$ -	$ -
25	PA1-3	PP Enhancements (CapEx)	G-012	$ 111,171	$ 409,809	$ -	$ 833,390
	Non-Cap Ex Investment						
26		Business Enablement & Change Management	C-210	$ 945,850	$ 8,712,860	$ -	$ 12,833,790
27		Data Management	C-210	$ 100,819	$ 928,713	$ -	$ 1,367,967
28		IS Enabling	C-210	$ 612,215	$ 5,639,517	$ -	$ 8,306,845
29		Operating Model	C-210	$ 105,126	$ 968,386	$ -	$ 1,426,405
30		Portfolio Office	C-210	$ 2,586,118	$ 23,822,467	$ -	$ 35,089,803
31		Strategic BECM	C-210	$ 856,191	$ 7,886,950	$ -	$ 11,617,248
32		Software	C-210	$ 1,022,092	$ 9,415,170	$ -	$ 13,868,273
33		Hardware	C-210	$ 277,643	$ 2,557,552	$ -	$ 3,767,200
34		PP Enhancements	C-210	$ 135,617	$ 1,249,257	$ -	$ 1,840,119
35		Tech Training - Labor	C-210	$ 1,455,575	$ 13,408,275	$ -	$ 19,750,000
36		Data Migration	C-210	$ 52,590	$ 484,445	$ -	$ 713,574
37		Value Assurance	C-210	$ 191,620	$ 1,765,140	$ -	$ 2,600,000
38		Phase 1	C-210	$ 451,836	$ 4,162,163	$ -	$ 6,130,746
39		Asset Management	C-210	$ 134,401	$ 1,238,058	$ -	$ 1,823,624
40		Asset Management / GIS	C-210	$ 161,454	$ 1,487,265	$ -	$ 2,190,698
41		Work Management (Maximo)	C-210	$ 475,806	$ 4,382,970	$ -	$ 6,455,987
42		Customer Engagement	C-210	$ 152,720	$ 1,406,809	$ -	$ 2,072,189
43		WM-SDM	C-210	$ 588,132	$ 5,417,675	$ -	$ 7,980,079
44		Supply Chain	C-210	$ 212,813	$ 1,960,364	$ -	$ 2,887,559
45		FY17 Non-CapEx Investment	G-210	$ 5,715,184	$ 12,852,145	$ 89,031	$ 20,142,307
46		**Totals**		**$ 16,233,803**	**$ 109,746,183**	**$ 89,031**	**$ 478,126,997**

Fiscal Year 2018 Bill Pool Allocators		Total RI	Total NY	
All US Electric and Gas Distribution Companies--Number of Customers	C-175	10.71%	58.03%	
All US Gas Distribution Companies--Number of Customers	C-210	7.37%	67.89%	
All US Electric and Gas Distribution Companies--General 3-Point Allocator (1)	G-012	11.22%	41.36%	15.89%

(1) 3-Point Allocator is based on weighting of each company's (1) Net Plant,
(2) Net Margin & (3) Net Operations & Maintenance Expense

Gas Business Enablement
Key Project Implementation Dates

Line	Portfolio Anchor	Workstream	RI-Electric	RI-Gas	MA	NMPC	KEDNY	KEDLI
	Cap Ex Investment							
1	PA1-3	Asset Management	Oct-18	Oct-18	Jan-19	Apr-19	Jul-19	Oct-19
2	PA1-3	Asset Management / GIS	Oct-18	Oct-18	Jan-19	Apr-19	Jul-19	Oct-19
3	PA1-3	Work Management (Maximo)	Mar-18	Mar-18	Jan-19	Apr-19	Jul-19	Oct-19
4	PA4	Asset Management	Apr-20	Apr-20	Jun-20	Apr-19	Jul-19	Oct-19
5	PA4	Asset Management / GIS	Apr-20	Apr-20	Jun-20	Jul-20	Aug-20	Sep-20
6	PA4	Work Management (Maximo)	Apr-20	Apr-20	Jun-20	Jul-20	Aug-20	Sep-20
7	PA5	Asset Management	Apr-21	Apr-21	Apr-21	Apr-21	Apr-21	Apr-21
8	PA5	Asset Management / GIS	Apr-21	Apr-21	Apr-21	Apr-21	Apr-21	Apr-21
9	PA5	Work Management (Maximo)	Apr-21	Apr-21	Apr-21	Apr-21	Apr-21	Apr-21
10	PA6	Asset Management	Jul-21	Jul-21	Jul-21	Jul-21	Jul-21	Jul-21
11	PA6	Asset Management / GIS	Jul-21	Jul-21	Jul-21	Jul-21	Jul-21	Jul-21
12	PA6	Work Management (Maximo)	Jul-21	Jul-21	Jul-21	Jul-21	Jul-21	Jul-21
13	PA1-3	Customer Engagement	Oct-18	Oct-18	Jan-19	Apr-19	Jul-19	Oct-19
14	PA4	Customer Engagement	Apr-20	Apr-20	Jun-20	Jul-20	Aug-20	Sep-20
15	PA1-3	WM-SDM	Oct-18	Oct-18	Jan-19	Apr-19	Jul-19	Oct-19
16	PA4	WM-SDM	Apr-20	Apr-20	Jun-20	Jul-20	Aug-20	Sep-20
17	PA5	WM-SDM	Apr-21	Apr-21	Apr-21	Apr-21	Apr-21	Apr-21
18	PA6	WM-SDM	Jul-21	Jul-21	Jul-21	Jul-21	Jul-21	Jul-21
19	PA1-3	Supply Chain	Oct-18	Oct-18	Jan-19	Apr-19	Jul-19	Oct-19
20	PA4	Supply Chain	Apr-20	Apr-20	Jun-20	Jul-20	Aug-20	Sep-20
21	PA1-3	Hardware (CapEx)	Oct-18	Oct-18	Jan-19	Apr-19	Jul-19	Oct-19
22	PA4	Hardware (CapEx)	Apr-20	Apr-20	Jun-20	Jul-20	Aug-20	Sep-20
23	PA5	Hardware (CapEx)	Apr-21	Apr-21	Apr-21	Apr-21	Apr-21	Apr-21
24	PA6	Hardware (CapEx)	Jul-21	Jul-21	Jul-21	Jul-21	Jul-21	Jul-21
25	PA1-3	PP Enhancements (CapEx)	Aug-17	Aug-17	Aug-17	Aug-17	Aug-17	Aug-17

Gas Business Enablement
Service Company Allocation Codes Utilized

Allocation Codes

All US Electric and Gas Distribution Companies--Number of Customers	C-175
All US Gas Distribution Companies--Number of Customers	C-210
All US Electric and Gas Distribution Companies--General 3-Point Allocator (1)	G-012
All US Gas Distribution Companies--General 3-Point Allocator (1)	G-210

(1) 3-Point Allocator is based on weighting of each companies' (1) Net Plant, (2) Net Margin and (3) Net Operations & Maintenance Expense

Fiscal Year 2018 Allocation Percentages	C-175	C-210	G-012
RIELEC	6.94%	0.00%	8.37%
RIGAS	3.77%	7.37%	2.85%
RI	**10.71%**	**7.37%**	**11.22%**
BOS	9.80%	19.15%	9.03%
COL	2.86%	5.59%	2.04%
MECO/NANT	18.60%	0.00%	20.46%
MA	**31.26%**	**24.74%**	**31.53%**
NMPC	31.95%	16.93%	20.47%
KEDNY	17.83%	34.83%	12.38%
KEDLI	8.25%	16.13%	8.51%
NY	**58.03%**	**67.89%**	**41.36%**
Parent/NonRegulated Companies			**15.89%**
	100.00%	100.00%	100.00%

Fiscal Year 2017 Allocation Percentages	G-210
RIELEC	0.00%
RIGAS	7.41%
RI	**7.41%**
BOS	23.29%
COL	5.21%
MECO/NANT	0.00%
MA	**28.50%**
NMPC	12.44%
KEDNY	30.10%
KEDLI	21.55%
NY	**64.09%**
	100.00%

Information Request DPU-NG-1-10

Request:

Refer to the prefiled testimony of the Gas Business Enablement Panel, NG-GBE-1, at 45, lines 3-4 and 10-12. Please explain how the Companies calculate the customer cost causation allocator, and provide complete and detailed documentation supporting the determination that 24 percent of overall GBE costs will be allocated to Massachusetts operating affiliates.

Response:

The customer cost causation allocators are calculated based on the number of retail customers for the respective distribution companies. As shown in Attachment DPU-NG 1-10-1, the allocation codes used for GBE costs are based on workstream and "Portfolio Anchor". Depending on the work stream for which the costs are incurred, the costs will be allocated either using the C-210 code for all US gas distribution companies (number of customers), the C-175 code for all US gas and electric distribution companies (number of customers) or the G-012 code, which uses a general three-point allocator based on a weighting of each company's (1) net plant, (2) net margin, and (3) net operations and maintenance expense for all US gas and electric distribution companies.

The 24 percent referenced in NG-GBE-1, at 45, lines 10-12 was a high-level estimate of the overall GBE cost allocation among the jurisdictions. Please see Attachment DPU-NG 1-10-1 for the detailed allocations of the GBE costs among the jurisdictions and Massachusetts operating affiliates.

This attachment provides a breakdown of the $478.3 million Gas Business Enablement investment by its capitalized and non-capitalized components. The capitalized components are further broken down by workstream and "Portfolio Anchor" designation. The timing of the implementation of each workstream/portfolio anchor designation by jurisdiction is shown on Page 5 of the attachment. The costs that are not eligible to be capitalized in accordance with generally accepted accounting principles are detailed on Lines 26 through 45 on Page 1 of the attachment. In addition, the breakdown of the $478.3 million Gas Business Enablement investment and the components described above by jurisdiction is provided on Pages 2 through 4 of the attachment. The distribution of these costs by jurisdiction will be spread by the use of allocation codes. The percentages shown on the attachment are the current percentages in effect for Fiscal Year 2018. These allocation percentages are updated each fiscal year.

Prepared by or under the supervision of: Anthony H. Johnston and Reihaneh Irani-Famili

Information Request DPU-NG-1-11

Request:

Refer to the prefiled testimony of the Gas Business Enablement Panel, NG-GBE-1, at 45, lines 10-12. Please explain how the Companies further allocate the 24 percent of overall Gas Business Enablement costs between Boston Gas and Colonial Gas.

Response:

Please see the response and attachment to Information Request DPU-NG 1-10.

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and Colonial Gas Company
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Attachment DPU-NG-1-12-2
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National Grid - Gas Business Enablement

Total CapEx by Work Stream (Roll Up)

	FY18	FY19	FY20	FY21	FY22	FY23	TOTAL
Asset Management (AM)	$	$				$ -	$
Geographic Information Systems (GIS)	$	$					$
Change Management Office (CMO)	$	$					$
Customer Engagement (CE)	$						$
Data Management (DM)	$					$ -	$
Information Services Enablement (ISE)	$					$ -	$
Operating Model (OM)	$	$				$ -	$
Portfolio Office (PO)	$			$ -	$ -	$ -	$
Change Leadership & Development (CLD)	$	$	$			$ -	$
Supply Chain (SC)	$	$	$	$	$ -	$ -	$
Work Management - Scheduling, Dispatch & Mobility (WM-SDM)	$	$	$	$	$	$ -	$
Work Management - Maximo (WM(M))	$	$	$	$	$	$ -	$
Hardware	$ 1,745,000	$ 2,816,400	$ 716,400	$ 2,100,000	$ -	$ -	$ 7,377,800
Software	$ 6,759,000	$ 1,185,000	$ -	$ -	$ -	$ -	$ 7,944,000
Legacy Interfaces & Development	$	$	$	$	$ -	$ -	$
PowerPlan Enhancements	$	$ -	$ -	$ -	$ -	$ -	$
Technical Training (TT)	$ -	$	$	$ -	$ -	$ -	$
Solution SMEs	$ -	$	$	$	$ -	$ -	$
AFUDC	$ 1,649,301	$ 3,390,985	$ 2,529,755	$ 1,364,623	$ 432,325	$ 16,145	$ 9,383,134
Total	$						

Total OpEx by Work Stream by Cost Type (Roll Up)

Asset Management (AM)

	FY18	FY19	FY20	FY21	FY22	FY23	TOTAL
Systems Integrators	$	$	$	$	$	$	$
NG Labor (Base)	$ 452,036	$ 713,694	$ 697,206	$ 638,634	$ 249,346	$ -	$ 2,750,917
NG Labor (Burdens)	$ 287,104	$ 556,682	$ 543,821	$ 498,135	$ 194,490	$ -	$ 2,080,231
NG Labor (Emp. Exp.)	$ 47,042	$ 71,369	$ 69,721	$ 63,863	$ 24,935	$ -	$ 276,930
Contractors	$ -	$	$	$ -	$ -	$ -	$
Total	$						

Geographic Information Systems (GIS)

	FY18	FY19	FY20	FY21	FY22	FY23	TOTAL
Systems Integrators	$	$	$	$	$	$	$
NG Labor (Base)	$ -	$ 178,597	$ 154,158	$ 102,996	$ 61,313	$ -	$ 497,065
NG Labor (Burdens)	$ -	$ 139,306	$ 120,243	$ 80,337	$ 47,824	$ -	$ 387,711
NG Labor (Emp. Exp.)	$ -	$ 17,860	$ 15,416	$ 10,300	$ 6,131	$ -	$ 49,706
Contractors	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total	$					$ -	$

Change Leadership & Development (CLD)

	FY18	FY19	FY20	FY21	FY22	FY23	TOTAL
Systems Integrators	$	$ -	$ -	$ -	$ -	$ -	$
NG Labor (Base)	$ 129,988	$ -	$ 298,361	$ 176,325	$ 180,734	$ 65,529	$ 850,935
NG Labor (Burdens)	$ 82,316	$ -	$ 232,721	$ 137,534	$ 140,972	$ 51,113	$ 644,656
NG Labor (Emp. Exp.)	$ 13,324	$ -	$ 29,836	$ 17,633	$ 18,073	$ 6,553	$ 85,419
Contractors	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total	$						

Change Management Office (CMO)

	FY18	FY19	FY20	FY21	FY22	FY23	TOTAL
Systems Integrators	$	$	$	$	$	$	$
NG Labor (Base)	$ 300,630	$ 817,523	$ 1,749,794	$ 1,682,222	$ 726,488	$ 176,112	$ 5,452,769
NG Labor (Burdens)	$ 183,978	$ 637,668	$ 1,364,839	$ 1,312,133	$ 566,660	$ 137,367	$ 4,202,646
NG Labor (Emp. Exp.)	$ 30,653	$ 81,752	$ 174,979	$ 168,222	$ 72,649	$ 17,611	$ 545,867
Contractors	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total	$						

Customer Engagement (CE)

	FY18	FY19	FY20	FY21	FY22	FY23	TOTAL
Systems Integrators	$	$	$	$	$ -	$ -	$
NG Labor (Base)	$ 281,934	$ 639,751	$ 560,987	$ 332,722	$ -	$ -	$ 1,815,395
NG Labor (Burdens)	$ 179,423	$ 499,006	$ 437,570	$ 259,523	$ -	$ -	$ 1,375,523
NG Labor (Emp. Exp.)	$ 29,628	$ 63,975	$ 56,099	$ 33,272	$ -	$ -	$ 182,974
Contractors	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total	$				$ -	$ -	$

Data Management (DM)

	FY18	FY19	FY20	FY21	FY22	FY23	TOTAL
Systems Integrators	$	$	$	$	$	$ -	$
NG Labor (Base)	$ 385,144	$ 829,800	$ 912,940	$ 798,896	$ 307,215	$ -	$ 3,233,994
NG Labor (Burdens)	$ 244,724	$ 647,244	$ 712,093	$ 623,139	$ 239,628	$ -	$ 2,466,827
NG Labor (Emp. Exp.)	$ 40,152	$ 82,980	$ 91,294	$ 79,890	$ 30,721	$ -	$ 325,037
Contractors	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total	$					$ -	$

Information Services Enabling (ISE)

	FY18	FY19	FY20	FY21	FY22	FY23	TOTAL
Systems Integrators	$	$	$	$	$	$ -	$
NG Labor (Base)	$ 909,848	$ 2,128,856	$ 2,378,426	$ 1,858,387	$ 464,908	$ -	$ 7,740,425
NG Labor (Burdens)	$ 577,112	$ 1,660,508	$ 1,855,172	$ 1,449,542	$ 362,628	$ -	$ 5,904,962
NG Labor (Emp. Exp.)	$ 94,007	$ 212,886	$ 237,843	$ 185,839	$ 46,491	$ -	$ 777,065
Contractors	$ -	$	$ -	$ -	$ -	$ -	$ 206,975
Total	$					$ -	$

Operating Model (OM)

	FY18	FY19	FY20	FY21	FY22	FY23	TOTAL
Systems Integrators	$	$	$	$ -	$ -	$ -	$
NG Labor (Base)	$ 56,715	$ 183,297	$ 126,031	$ -	$ -	$ -	$ 366,044
NG Labor (Burdens)	$ 35,938	$ 142,972	$ 98,304	$ -	$ -	$ -	$ 277,215
NG Labor (Emp. Exp.)	$ 5,812	$ 18,330	$ 12,603	$ -	$ -	$ -	$ 36,745
Contractors	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total	$			$ -	$ -	$ -	$

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Boston Gas Company
and Colonial Gas Company
each d/b/a National Grid
D.P.U. 17-170
Attachment DPU-NG-1-12-2
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Portfolio Office (PO)		FY18	FY19	FY20	FY21	FY22	FY23	TOTAL
	Systems Integrators	$ [redacted]	$ -	$ -	$ -	$ -	$ -	$ [redacted]
	NG Labor (Base)	$ 840,025	$ -	$ 2,130,267	$ 1,954,546	$ 621,679	$ -	$ 5,546,517
	NG Labor (Burdens)	$ 533,186	$ -	$ 1,661,608	$ 1,524,546	$ 484,910	$ -	$ 4,204,250
	NG Labor (Emp. Exp.)	$ 87,189	$ -	$ 213,027	$ 195,455	$ 62,168	$ -	$ 557,838
	Contractors	$ [redacted]	$ [redacted]	$ [redacted]	$ [redacted] 0	$ -	$ -	$ [redacted]
Total		$ [redacted]	[redacted]	[redacted]	[redacted]	[redacted]	$ -	$ [redacted]

Supply Chain (SC)		FY18	FY19	FY20	FY21	FY22	FY23	TOTAL
	Systems Integrators	$ [redacted]	[redacted]	[redacted]	[redacted]	$ -	$ -	$ [redacted]
	NG Labor (Base)	$ -	$ 220,909	$ 235,193	$ -	$ -	$ -	$ 456,102
	NG Labor (Burdens)	$ -	$ 172,309	$ 183,450	$ -	$ -	$ -	$ 355,759
	NG Labor (Emp. Exp.)	$ -	$ 22,091	$ 23,519	$ -	$ -	$ -	$ 45,610
	Contractors	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total		$ [redacted]	[redacted]	[redacted]	[redacted]	$ -	$ -	$ [redacted]

Work Management - Scheduling, Dispatch & Mobility (WM-SDM)		FY18	FY19	FY20	FY21	FY22	FY23	TOTAL
	Systems Integrators	$ [redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-	$ [redacted]
	NG Labor (Base)	$ -	$ 838,168	$ 944,630	$ 665,455	$ 340,953	$ -	$ 2,789,207
	NG Labor (Burdens)	$ -	$ 653,771	$ 736,812	$ 519,055	$ 265,943	$ -	$ 2,175,581
	NG Labor (Emp. Exp.)	$ -	$ 83,817	$ 94,463	$ 66,546	$ 34,095	$ -	$ 278,921
	Contractors	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total		$ [redacted]	[redacted]	[redacted]	[redacted]	[redacted]	$ -	$ [redacted]

Work Management - Maximo (WM(M))		FY18	FY19	FY20	FY21	FY22	FY23	TOTAL
	Systems Integrators	$ [redacted]	[redacted]	[redacted]	[redacted]	[redacted]	$ -	$ [redacted]
	NG Labor (Base)	$ 1,132,526	$ 1,054,194	$ 1,089,649	$ 858,257	$ 477,113	$ -	$ 4,611,738
	NG Labor (Burdens)	$ 719,923	$ 822,271	$ 849,926	$ 669,440	$ 372,148	$ -	$ 3,433,708
	NG Labor (Emp. Exp.)	$ 118,432	$ 105,419	$ 108,965	$ 85,826	$ 47,711	$ -	$ 466,353
	Contractors	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total		$ [redacted]	[redacted]	[redacted]	[redacted]	[redacted]	$ -	$ [redacted]

Hardware								
	Hardware	$ 1,745,000	$ 2,816,400	$ 716,400	$ 2,100,000	$ -	$ -	$ 7,377,800
Total		$ 1,745,000	$ 2,816,400	$ 716,400	$ 2,100,000	$ -	$ -	$ 7,377,800

Software								
	Software	$ 6,759,000	$ 1,185,000	$ -	$ -	$ -	$ -	$ 7,944,000
Total		$ 6,759,000	$ 1,185,000	$ -	$ -	$ -	$ -	$ 7,944,000

Legacy Interfaces & Development								
	Consultants - Other	$ [redacted]	[redacted]	[redacted]	[redacted]	$ -	$ -	$ [redacted]
Total		$ [redacted]	[redacted]	[redacted]	[redacted]	$ -	$ -	$ [redacted]

PowerPlan Enhancements								
	Consultants - Other	$ [redacted]	[redacted]	$ -	$ -	$ -	$ -	$ [redacted]
Total		$ [redacted]	-	$ -	$ -	$ -	$ -	$ [redacted]

Technical Training								
	Consultants - Other	$ -	[redacted]	[redacted]	$ -	$ -	$ -	$ [redacted]
Total		$ -	[redacted]	[redacted]	$ -	$ -	$ -	$ [redacted]

Solution SMEs								
	Consultants - Other	$ -	[redacted]	[redacted]	[redacted]	$ -	$ -	$ [redacted]
Total		$ -	[redacted]	[redacted]	[redacted]	$ -	$ -	$ [redacted]

AFUDC								
	Other	$ 1,649,301	$ 3,390,985	$ 2,529,755	$ 1,364,623	$ 432,325	$ 16,145	$ 9,383,134
Total		$ 1,649,301	$ 3,390,985	$ 2,529,755	$ 1,364,623	$ 432,325	$ 16,145	$ 9,383,134

Grand Total								
		$ [redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Information Request DPU-NG-1-12

Request:

Refer to the Companies' response to information request AG 1-1, Revised Atts. at Exh. NG-DSD-2-BOS Sch. 33, at 5-8. Please provide all supporting documents, workpapers, and calculations used to determine the monthly amounts in columns (a) through (c).

Response:

Please refer to Attachment DPU-NG-1-12-1, which provides the underlying calculations for NG-DSD-2-BOS, Sch. 33, at 5-8, columns (a) through (c) and Attachment DPU-NG-1-12-2 CONFIDENTIAL, which provides the schedule of consolidated Gas Business Enablement capital expenditures that form the basis of the monthly amounts in NG-DSD-2-BOS, Sch. 33, at 5-8, columns (a) and (b). Please refer to the Company's response to DPU-NG-1-14 for the supporting schedule for Gas Business Enablement operating expenses, which are presented in NG-DSD-2-BOS, Sch. 33, at 5-8, column (c).

In preparing this response, the Company noticed that an incorrect allocation percentage was used for operating expenses in Attachment DPU-NG-1-12-1, the correction of which has slightly increased the annual revenue requirement amount in Exhibit NG-DSD-2-BOS, Schedule 33, page 4. Attachment DPU-NG-1-12-1 provides the updated operating expense amounts allocated to Boston Gas Company.

Prepared by or under the supervision of: Anthony H. Johnston, Reihaneh Irani-Famili and Daniel S. Dane

Information Request DPU-NG-1-13

Request:

Refer to the Companies' response to information request AG 1-1, Revised Atts. at Exh. NG-DSD-2-COL, Sch. 33, at 5-9. Please provide all supporting documents, workpapers, and calculations used to determine the monthly amounts in columns (a) through (c).

Response:

Please refer to Attachment DPU-NG-1-13-1, which provides the underlying calculations for NG-DSD-2-COL, Sch. 33, at 5-9, columns (a) through (c), and Attachment DPU-NG-1-12-2 CONFIDENTIAL, which provides the schedule of consolidated Gas Business Enablement capital expenditures that form the basis of the monthly amounts in NG-DSD-2-COL, Sch. 33, at 5-9, columns (a) and (b). Please refer to the Company's responses to DPU-NG-1-14 for the supporting schedule for Gas Business Enablement operating expenses, which are presented in NG-DSD-2-COL, Sch. 33, at 5-9, column (c).

Prepared by or under the supervision of: Anthony H. Johnston, Reihaneh Irani-Famili and Daniel S. Dane

REDACTED

D.P.U. 17-170
Attachment DPU-NG-1-14-1
Page 1 of 3

National Grid - Gas Business Enablement
IR Response: DPU-NG-1-14

Total OpEx by Work Stream (Roll Up)

	FY18	FY19	FY20	FY21	FY22	FY23	TOTAL
Asset Management (AM)	$						
Geographic Information Systems (GIS)	$						
Change Management Office (CMO)	$						
Customer Engagement (CE)	$						
Data Management (DM)	$						
Information Services Enablement (ISE)	$						
Operating Model (OM)	$			-	$ -	$ -	$
Portfolio Office (PO)	$		$		$	$	$
Change Leadership & Development (CLD)	$						
Supply Chain (SC)	$				$ -	$ -	$
Work Management - Scheduling, Dispatch & Mobility (WM-SDM)	$					$ -	$
Work Management - Maximo (WM(M))	$					$ -	$
Data Migration / Other	$	$ -	$ -	$ -	$ -	$ -	$
Hardware - Infrastructure as a Service (IaaS)	$ -	$ 1,883,600	$ 1,883,600	$ -	$ -	$ -	$ 3,767,200
Software - Software as a Service (SaaS)	$ 2,090,088	$ 7,398,204	$ 3,265,581	$ 557,200	$ 557,200	$ -	$ 13,868,273
Phase 1 OpEx	$	$ -	$ -	$ -	$ -	$ -	$
PowerPlan Enhancements	$	$ -	$ -	$ -	$ -	$ -	$
Technical Training (TT)	$ 1,993,381	$ 7,500,000	$ 5,850,000	$ 4,406,619	$ -	$ -	$ 19,750,000
Value Assurance (VA)	$ -	$	$	$	$	$	$
Total	**$**	**$**	**$**	**$**	**$**	**$**	**$**

Total OpEx by Work Stream by Cost Type (Roll Up)

Asset Management (AM)

	FY18	FY19	FY20	FY21	FY22	FY23	TOTAL
Systems Integrators	$						
NG Labor (Base)	$ 57,964	$ 44,430	$ 174,301	$ 159,659	$ 62,337	$ -	$ 498,690
NG Labor (Burdens)	$ 36,815	$ 34,655	$ 135,955	$ 124,534	$ 48,623	$ -	$ 380,581
NG Labor (Emp. Exp.)	$ 6,032	$ 4,443	$ 17,430	$ 15,966	$ 6,234	$ -	$ 50,105
Contractors	$ -	$ 13,239	$ 17,381	$ -	$ -	$ -	$ 30,620
Total	**$**						

Geographic Information Systems (GIS)

	FY18	FY19	FY20	FY21	FY22	FY23	TOTAL
Systems Integrators	$					$ -	$
NG Labor (Base)	$ -	$ 9,400	$ 38,539	$ 25,749	$ 15,328	$ -	$ 89,017
NG Labor (Burdens)	$ -	$ 7,332	$ 30,061	$ 20,084	$ 11,956	$ -	$ 69,433
NG Labor (Emp. Exp.)	$ -	$ 940	$ 3,854	$ 2,575	$ 1,533	$ -	$ 8,902
Contractors	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total	**$**					**$ -**	**$**

Change Leadership & Development (CLD)

	FY18	FY19	FY20	FY21	FY22	FY23	TOTAL
Systems Integrators	$						
NG Labor (Base)	$ 251,749	$ 494,765	$ 74,590	$ 44,081	$ 45,183	$ 16,382	$ 926,751
NG Labor (Burdens)	$ 159,424	$ 385,917	$ 58,180	$ 34,383	$ 35,243	$ 12,778	$ 685,926
NG Labor (Emp. Exp.)	$ 25,805	$ 49,477	$ 7,459	$ 4,408	$ 4,518	$ 1,638	$ 93,305
Contractors	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total	**$**						

Change Management Office (CMO)

	FY18	FY19	FY20	FY21	FY22	FY23	TOTAL
Systems Integrators	$						
NG Labor (Base)	$ 474,461	$ 1,552,108	$ 437,448	$ 420,556	$ 181,622	$ 44,028	$ 3,110,223
NG Labor (Burdens)	$ 290,358	$ 1,210,645	$ 341,210	$ 328,033	$ 141,665	$ 34,342	$ 2,346,253
NG Labor (Emp. Exp.)	$ 48,378	$ 155,211	$ 43,745	$ 42,056	$ 18,162	$ 4,403	$ 311,954
Contractors	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total	**$**						0

Customer Engagement (CE)

	FY18	FY19	FY20	FY21	FY22	FY23	TOTAL
Systems Integrators	$	$	$	$	$ -	$ -	$
NG Labor (Base)	$ 44,954	$ 33,671	$ 140,247	$ 83,181	$ -	$ -	$ 302,052
NG Labor (Burdens)	$ 28,608	$ 26,263	$ 109,393	$ 64,881	$ -	$ -	$ 229,145
NG Labor (Emp. Exp.)	$ 4,724	$ 3,367	$ 14,025	$ 8,318	$ -	$ -	$ 30,434
Contractors	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total	**$**	**$**	**$**	**$**	**$ -**	**$ -**	**$** 9

Data Management (DM)

	FY18	FY19	FY20	FY21	FY22	FY23	TOTAL
Systems Integrators	$	$	$	$ 5	$	$ -	$
NG Labor (Base)	$ 32,110	$ 16,935	$ 228,235	$ 199,724	$ 76,804	$ -	$ 553,808
NG Labor (Burdens)	$ 20,405	$ 13,209	$ 178,023	$ 155,785	$ 59,907	$ -	$ 427,329
NG Labor (Emp. Exp.)	$ 3,348	$ 1,693	$ 22,824	$ 19,972	$ 7,680	$ -	$ 55,518
Contractors	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total	**$**	**$**	**$**	**$**	**$**	**$ -**	**$**

REDACTED

Information Services Enabling (ISE)		FY18	FY19	FY20	FY21	FY22	FY23	TOTAL
	Systems Integrators	$ [redacted]	$ [redacted]	$ [redacted]	$ [redacted]	$ [redacted]	$ -	$ [redacted]
	NG Labor (Base)	$ 181,383	$ 618,055	$ 594,606	$ 464,597	$ 116,227	$ -	$ 1,974,868
	NG Labor (Burdens)	$ 115,050	$ 482,083	$ 463,793	$ 362,385	$ 90,657	$ -	$ 1,513,969
	NG Labor (Emp. Exp.)	$ 18,741	$ 61,806	$ 59,461	$ 46,460	$ 11,623	$ -	$ 198,089
	Contractors	$ -	$ 60,089	$ -	$ -	$ -	$ -	$ 60,089
Total		$ [redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Operating Model (OM)		FY18	FY19	FY20	FY21	FY22	FY23	TOTAL
	Systems Integrators	$ [redacted]	$ [redacted]	$ [redacted]	$ -	$ -	$ -	$ [redacted]
	NG Labor (Base)	$ 32,035	$ 4,700	$ 31,508	$ -	$ -	$ -	$ 68,243
	NG Labor (Burdens)	$ 20,300	$ 3,666	$ 24,576	$ -	$ -	$ -	$ 48,542
	NG Labor (Emp. Exp.)	$ 3,283	$ 470	$ 3,151	$ -	$ -	$ -	$ 6,904
	Contractors	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total		$ [redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Portfolio Office (PO)		FY18	FY19	FY20	FY21	FY22	FY23	TOTAL
	Systems Integrators	$ [redacted]	$ [redacted]	$ [redacted]	$ [redacted]	$ [redacted]	$ -	$ [redacted]
	NG Labor (Base)	$ 269,943	$ 2,420,349	$ 532,567	$ 488,637	$ 155,420	$ -	$ 3,866,915
	NG Labor (Burdens)	$ 171,340	$ 1,887,872	$ 415,402	$ 381,137	$ 121,227	$ -	$ 2,976,978
	NG Labor (Emp. Exp.)	$ 28,018	$ 242,035	$ 53,257	$ 48,864	$ 15,542	$ -	$ 387,715
	Contractors	$ 178,463	$ 1,018,918	$ 980,628	$ 992,256	$ 546,000	$ 113,400	$ 3,829,665
	Other	$ 890,213	$ 1,182,596	$ 1,101,633	$ 729,098	$ 479,603	$ 278,083	$ 4,661,225
Total		$ [redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Supply Chain (SC)		FY18	FY19	FY20	FY21	FY22	FY23	TOTAL
	Systems Integrators	$ [redacted]	$ [redacted]	$ [redacted]	$ [redacted]	$ -	$ -	$ [redacted]
	NG Labor (Base)	$ -	$ 65,911	$ 58,798	$ -	$ -	$ -	$ 124,710
	NG Labor (Burdens)	$ -	$ 51,411	$ 45,863	$ -	$ -	$ -	$ 97,273
	NG Labor (Emp. Exp.)	$ -	$ 6,591	$ 5,880	$ -	$ -	$ -	$ 12,471
	Contractors	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total		$ [redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Work Management - Scheduling, Dispatch & Mobility (WM-SDM)		FY18	FY19	FY20	FY21	FY22	FY23	TOTAL
	Systems Integrators	$ [redacted]	$ [redacted]	$ [redacted]	$ [redacted]	$ [redacted]	$ -	$ [redacted]
	NG Labor (Base)	$ -	$ 222,804	$ 236,158	$ 166,364	$ 85,238	$ -	$ 710,564
	NG Labor (Burdens)	$ -	$ 173,787	$ 184,203	$ 129,764	$ 66,486	$ -	$ 554,240
	NG Labor (Emp. Exp.)	$ -	$ 22,280	$ 23,616	$ 16,636	$ 8,524	$ -	$ 71,056
	Contractors	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total		$ [redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Work Management - Maximo (WM(M))		FY18	FY19	FY20	FY21	FY22	FY23	TOTAL
	Systems Integrators	$ [redacted]	$ [redacted]	$ [redacted]	$ [redacted]	$ [redacted]	$ -	$ [redacted]
	NG Labor (Base)	$ 223,078	$ 150,599	$ 272,412	$ 214,564	$ 119,278	$ -	$ 979,932
	NG Labor (Burdens)	$ 141,806	$ 117,467	$ 212,481	$ 167,360	$ 93,037	$ -	$ 732,152
	NG Labor (Emp. Exp.)	$ 23,328	$ 15,060	$ 27,241	$ 21,456	$ 11,928	$ -	$ 99,013
	Contractors	$ -	$ -	$ -	$ -	$ -		$ -
Total		$ [redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Data Migration / Other		FY18	FY19	FY20	FY21	FY22	FY23	TOTAL
	Consultants - Other	$ [redacted]	$ -	$ -	$ -	$ -	$ -	$ [redacted]
Total		$ [redacted]	$ -	$ -	$ -	$ -	$ -	$ [redacted]

Hardware - Infrastructure as a Service (IaaS)		FY18	FY19	FY20	FY21	FY22	FY23	TOTAL
	Hardware	$ -	$ 1,883,600	$ 1,883,600	$ -	$ -	$ -	$ 3,767,200
Total		$ -	$ 1,883,600	$ 1,883,600	$ -	$ -	$ -	$ 3,767,200

Software - Software as a Service (SaaS)		FY18	FY19	FY20	FY21	FY22	FY23	TOTAL
	Software	$ 2,090,088	$ 7,398,204	$ 3,265,581	$ 557,200	$ 557,200	$ -	$ 13,868,273
Total		$ 2,090,088	$ 7,398,204	$ 3,265,581	$ 557,200	$ 557,200	$ -	$ 13,868,273

PowerPlan Enhancements		FY18	FY19	FY20	FY21	FY22	FY23	TOTAL
	Consultants - Other	$ [redacted]	$ -	$ -	$ -	$ -	$ -	$ [redacted]
Total		$ [redacted]	$ -	$ -	$ -	$ -	$ -	$ [redacted]

Technical Training (TT)		FY18	FY19	FY20	FY21	FY22	FY23	TOTAL
	Technical Training	$ 1,993,381	$ 7,500,000	$ 5,850,000	$ 4,406,619	$ -	$ -	$ 19,750,000
Total		$ 1,993,381	$ 7,500,000	$ 5,850,000	$ 4,406,619	$ -	$ -	$ 19,750,000

REDACTED

Value Assurance (VA)		FY18	FY19	FY20	FY21	FY22	FY23	TOTAL
	Consultants - Other	$ -	$ [redacted]					
Total		**$ -**	**$** [redacted]					

Phase 1 OpEx		FY18	FY19	FY20	FY21	FY22	FY23	TOTAL
	NG Labor (Base)	$ 1,614,085	$ -	$ -	$ -	$ -	$ -	**$ 1,614,085**
	NG Labor (Burdens)	$ 1,043,894	$ -	$ -	$ -	$ -	$ -	**$ 1,043,894**
	NG Labor (Emp. Exp.)	$ 173,254	$ -	$ -	$ -	$ -	$ -	**$ 173,254**
	Consultants	$ [redacted]						
	Contractors	$ 111,051	$ -	$ -	$ -	$ -	$ -	**$ 111,051**
	Other Expenses	$ 164,911	$ -	$ -	$ -	$ -	$ -	**$ 164,911**
	Software	$ 201,004	$ -	$ -	$ -	$ -	$ -	**$ 201,004**
Total		**$** [redacted]						

Grand Total		**$** [redacted]						

Information Request DPU-NG-1-14

Request:

Refer to the prefiled testimony of Daniel S. Dane, NG-DSD-2-BOS, Sch. 33, at 4, line 3. Please provide all supporting documents, workpapers, and calculations used to determine the forecasted project spend for operating expenses.

Response:

Please refer to Attachment DPU-NG 1-14-1 CONFIDENTIAL for the schedule of consolidated Gas Business Enablement operating expenses that was the basis for NG-DSD-2-BOS, Sch. 33, at 4, line 3. Attachment DPU-NG 1-14-1 CONFIDENTIAL shows operating expenses by fiscal year for FY18 - FY23 by work stream and cost type. The "Total OpEx by Work Stream (Roll Up)" section of the schedule presents a fiscal year total by work stream. The "Total OpEx by Work Stream by Cost Type (Roll Up)" section of the schedule presents a further work stream breakdown by cost type. Attachment DPU-NG 1-12-1 provides the underlying calculations for NG-DSD-2-BOS, Sch. 33, at 4, line 3.

Please note that the Gas Business Enablement program calculated total project costs, and the Company's accounting policies then determined what costs should be treated as capital costs and what costs should be treated as operating costs.

Prepared by or under the supervision of: Anthony H. Johnston, Reihaneh Irani-Famili and Daniel S. Dane

Boston Gas Company and Colonial Gas Company
each d/b/a National Grid
D.P.U. 17-170
Information Request DPU-NG-1-15
January 31, 2018
H.O. Pieper
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Information Request DPU-NG-1-15

Request:

Refer to the prefiled testimony of Daniel S. Dane, NG-DSD-2-COL, Sch. 33, at 4, line 3. Please provide all supporting documents, workpapers, and calculations used to determine the forecasted project spend for operating expenses.

Response:

Please refer to Attachment DPU-NG 1-14-1 CONFIDENTIAL for the schedule of consolidated Gas Business Enablement operating expenses that was the basis for NG-DSD-2-COL, Sch. 33, at 4, line 3. Attachment DPU-NG 1-13-1 provides the underlying calculations for NG-DSD-2-COL, Sch. 33, at 4, line 3.

Please note that the Gas Business Enablement program calculated total project costs and the Company's accounting policies then determined what costs should be treated as capital costs and what costs should be treated as operating costs.

Prepared by or under the supervision of: Anthony H. Johnston, Reihaneh Irani-Famili and Daniel S. Dane

Information Request DPU-NG-1-20

Request:

Refer to the prefiled testimony of the Gas Business Enablement Panel, NG-GBE-1, at 46, line 7. Please confirm that "FY" is an acronym for "Fiscal Year" and define the Companies' fiscal year.

Response:

"FY" is an acronym utilized for "Fiscal Year". The Companies' fiscal year begins on April 1, and ends on March 31. For example, FY2018 began on April 1, 2017 and will end on March 31, 2018.

Information Request DPU-NG-1-21

Request:

Refer to the prefiled testimony of the Gas Business Enablement Panel, NG-GBE-1, at 46, line 7 ("during the period FY 2018 through FY 2023") and lines 10-11 ("collected through base distribution rates, annually over a five-year period"). Please explain whether the Companies are requesting to recover annual costs associated with five years or six years.

Response:

The Company is requesting to recover an amount collected annually for five years based on the proposed Gas Business Enablement (GBE) investment to be placed into service over a six-year period from FY 2018 through FY 2023.

Prepared by or under the supervision of: Anthony H. Johnston, Reihaneh Irani-Famili and Daniel S. Dane

Information Request DPU-NG-1-23

Request:

Refer to the prefiled testimony of the Gas Business Enablement Panel, NG-GBE-1, at 46, line 5-13, and the Companies' responses to information requests DPU-NG 1-21 and DPU-NG 1-22 above. Please explain whether the proposed annual rent expense is based on costs that will be incurred during FY 2018 through FY 2023, or some other period.

Response:

The proposed annual rent expense is based on capital investment and O&M expenses that will be incurred from FY 2018 through FY 2023 (including, as shown on Exhibit NG-DSD-2-BOS, Schedule 33, page 4 and NG-DSD-2-COL, Schedule 33, page 4, an amount of O&M expenses incurred during the historical test year and FY 2017). As discussed in Exhibit NG-GBE-1, at 46, lines 11-12, the annual rent expense reflects the estimated revenue requirement on planned GBE investment. That revenue requirement uses a ten-year life for the GBE assets as well as a ten-year amortization period for the associated O&M expenses related to those assets. Please see the responses to DPU-NG-1-18 and DPU-NG-1-19 for further discussion of the calculation related to O&M expenses for the GBE Program.

Prepared by or under the supervision of: Anthony H. Johnston, Reihaneh Irani-Famili and Daniel S. Dane

Confidential Attachment DIV 7-49-29 – REDACTED INFORMATION

Confidential Attachment DIV 7-49-29 contains a spreadsheet of projected capital expenditures and operating expenses for the Gas Business Enablement Program, for which the Company's affiliates, Boston Gas Company and Colonial Gas Company, sought and obtained confidential treatment before the Massachusetts Department of Public Utilities. The Company has requested protective treatment of this document in its entirety.

Confidential Attachment DIV 7-49-31 – REDACTED INFORMATION

Confidential Attachment DIV 7-49-31 contains a spreadsheet of projected Gas Business Enablement Service Company Assets, for which the Company's affiliates, Boston Gas Company and Colonial Gas Company, sought and obtained confidential treatment before the Massachusetts Department of Public Utilities. The Company has requested protective treatment of this document in its entirety.