Division 7-48

Request:

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:

a. Please see the following attached documents:

Attachment DIV 7-48-1: Niagara Mohawk Power Corporation (NMPC) Direct Testimony and Exhibits of Gas Infrastructure and Operations Panel – excerpts relating to the subject matter of the Gas Business Enablement Program.

Attachments DIV 7-48-2, DIV 7-48-6, DIV 7-48-7, and DIV 7-48-19: NMPC Direct Testimony of the Revenue Requirements Panel – excerpts relating to the subject matter of the Gas Business Enablement Program

Attachment DIV 7-48-3: NMPC Direct Testimony of Gas Safety Panel – excerpts relating to the subject matter of the Gas Business Enablement Program

Attachment DIV 7-48-4: NMPC Direct Testimony and Exhibits of Information Services Panel – excerpts relating to the subject matter of the Gas Business Enablement Program

Attachment DIV 7-48-5: Staff Gas Infrastructure and Operations Panel Testimony and Exhibits - excerpts relating to the subject matter of the Gas Business Enablement Program

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Attachments DIV 7-48-8, DIV 7-48-9, and DIV 7-48-10: Staff Information Services Panel Exhibits – excerpts relating to the subject matter of the Gas Business Enablement Program

Attachment DIV 7-48-11: Staff Gas Rates Panel - excerpts relating to the subject matter of the Gas Business Enablement Program

Attachment DIV 7-48-12: Testimony and Attachments of Simi Rose George (Environmental Defense Fund) – excerpts relating to the subject matter of the Gas Business Enablement Program

Attachments DIV 7-48-13 and DIV 7-48-14: Staff Gas Business Enablement Panel Testimony and Exhibits

Attachment DIV 7-48-15: Testimony of John Holst (Staff) - excerpts relating to the subject matter of the Gas Business Enablement Program

Attachment DIV 7-48-16: Staff Information Services Panel Testimony

Attachment DIV 7-48-17: Staff Policy Panel - excerpts relating to the subject matter of the Gas Business Enablement Program

Attachment DIV 7-48-18: Testimony of Kenneth D. Daly (NMPC) - excerpts relating to the subject matter of the Gas Business Enablement Program

Attachment DIV 7-48-20: Staff Gas Safety Panel - excerpts relating to the subject matter of the Gas Business Enablement Program

Attachment DIV 7-48-21: NMPC Revenue Requirements Panel Rebuttal Testimony and Exhibits – excerpts relating to the subject matter of the Gas Business Enablement Program

Attachment DIV 7-48-22: NMPC Corrections and Updates Testimony of the Revenue Requirements Panel - excerpts relating to the subject matter of the Gas Business Enablement Program

Attachment DIV 7-48-23: Direct Testimony of Utility Intervention Unit Rates Panel - excerpts relating to the subject matter of the Gas Business Enablement Program

Attachment DIV 7-48-24: NMPC Rebuttal Testimony of the Gas Safety Panel - excerpts

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relating to the subject matter of the Gas Business Enablement Program

Attachment DIV 7-48-25: NMPC Rebuttal Testimony and Exhibits of Information Services Panel - excerpts relating to the subject matter of the Gas Business Enablement Program

Attachment DIV 7-48-26: NMPC Corrections and Updates Testimony of the Gas Infrastructure and Operations Panel – excerpts relating to the subject matter of the Gas Business Enablement Program

Attachment DIV 7-48-28: NMPC Rebuttal Testimony and Exhibits of Johnny Johnston

b. Please see Attachments DIV 7-48-30 through DIV 7-48-103 for information request responses and their respective attachments relating to the subject matter of the Gas Business Enablement Program, as listed on the table beginning on the next page of this response.

c. There are no transcripts of live testimony relating to the subject matter of the Gas Business Enablement Program.

[The table referenced in part b. above follows on the next page]

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NY Rate Case Information Request	Response	PDF Attachment	XLS Attachment
DPS-732 AT-18	Attachment DIV 7-48-76	Attachment DIV 7-48-77 Attachment DIV 7-48-78 Attachment DIV 7-48-79 Attachment DIV 7-48-80	Attachment DIV 7-48-100 Attachment DIV 7-48-101 Attachment DIV 7-48-102 Attachment DIV 7-48-103
DPS-660 AT-14	Attachment DIV 7-48-72 Response and PDF Attachment(s) included	Attachment DIV 7-48-70 Attachment DIV 7-48-71	Attachment DIV 7-48-97 Attachment DIV 7-48-98
DPS-688 AAM-39	Attachment DIV 7-48-73 Response and PDF Attachment(s) included	Attachment DIV 7-48-74	Attachment DIV 7-48-99
DPS-654 AT-8	Attachment DIV 7-48-61 Response and PDF Attachment(s) included	Attachment DIV 7-48-62	Attachment DIV 7-48-93
DPS-633 AAM-34	Attachment DIV 7-48-57 Response and PDF Attachment(s) included	Attachment DIV 7-48-58	Attachment DIV 7-48-91
DPS-658 AT-12	Attachment DIV 7-48-68 Response and PDF Attachment(s) included	Attachment DIV 7-48-67	Attachment DIV 7-48-96
DPS-657 AT-11	Attachment DIV 7-48-66 Response and PDF Attachment(s) included		Attachment DIV 7-48-95

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NY Rate Case Information Request	**Response**	**PDF Attachment**	**XLS Attachment**
DPS-656 AT-10	Attachment DIV 7-48-65 Response and PDF Attachment(s) included	Attachment DIV 7-48-64	Attachment DIV 7-48-94
DPS-602 MA-6	Attachment DIV 7-48-53	Attachment DIV 7-48-54 Attachment DIV 7-48-55 Attachment DIV 7-48-56	Attachment DIV 7-48-88 Attachment DIV 7-48-89 Attachment DIV 7-48-90
DPS-643 MP-20	Attachment DIV 7-48-59 Response and PDF Attachment(s) included	Attachment DIV 7-48-60	Attachment DIV 7-48-92
DPS-278 IS-7	Attachment DIV 7-48-42	Attachment DIV 7-48-41	Attachment DIV 7-48-84
DPS-447 AAM-21	Attachment DIV 7-48-51 Response and PDF Attachment(s) included	Attachment DIV 7-48-49 Attachment DIV 7-48-50	Attachment DIV 7-48-86 Attachment DIV 7-48-87
DPS-430 AT-3	Attachment DIV 7-48-45 Response and PDF Attachment(s) included	Attachment DIV 7-48-44	Attachment DIV 7-48-85
EDF-1 NK-5	Attachment DIV 7-48-82		
EDF-1 NK-6	Attachment DIV 7-48-83 Response and PDF Attachment(s) included		
EDF-1 NK-4	Attachment DIV 7-48-81		

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NY Rate Case Information Request	Response	PDF Attachment	XLS Attachment
DPS-689 AT-15	Attachment DIV 7-48-75		
DPS-659 AT-13	Attachment DIV 7-48-69		
DPS-655 AT-9	Attachment DIV 7-48-63		
DPS-566 MP-11	Attachment DIV 7-48-52		
DPS-433 AT-6	Attachment DIV 7-48-48 Response and PDF Attachment(s) included		
DPS-432 AT-5	Attachment DIV 7-48-47 Response and PDF Attachment(s) included		
DPS-431 AT-4	Attachment DIV 7-48-46 Response and PDF Attachment(s) included		
DPS-329 MP-4	Attachment DIV 7-48-43		
DPS-275 IS-4	Attachment DIV 7-48-36	Attachment DIV 7-48-32 Attachment DIV 7-48-33 Attachment DIV 7-48-34 Attachment DIV 7-48-35	

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NY Rate Case Information Request	Response	PDF Attachment	XLS Attachment
DPS-275 IS-4 SUPPLEMENTAL	Attachment DIV 7-48-37 Response and PDF Attachment(s) included		
DPS-276 IS-5	Attachment DIV 7-48-40	Attachment DIV 7-48-38 Attachment DIV 7-48-39	
DPS-094 MOA-1	Attachment DIV 7-48-31		

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Niagara Mohawk Power Corporation
d/b/a National Grid

PROCEEDING ON MOTION OF THE COMMISSION AS TO THE RATES, CHARGES, RULES AND REGULATIONS OF NIAGARA MOHAWK POWER CORPORATION FOR ELECTRIC AND GAS SERVICE

Testimony and Exhibits of:

Gas Infrastructure and Operations Panel

Book 8

April 28, 2017

Submitted to:
New York State Public Service Commission
Case 17-E-____
Case 17-G-____

Submitted by:
Niagara Mohawk Power Corporation

nationalgrid

Testimony of
GIOP

Before the Public Service Commission

NIAGARA MOHAWK POWER CORPORATION d/b/a NATIONAL GRID

Direct Testimony

of

Gas Infrastructure and Operations Panel

Dated: April 28, 2017

Testimony of the Gas Infrastructure and Operations Panel

Q. Have you previously testified before the New York Public Service Commission ("Commission")?

A. Yes. I submitted pre-filed testimony in Cases 16-G-0058 and 16-G-0059 (the "2016 KEDLI and KEDNY Rate Cases").

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

A. My name is Johnny 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 Service Company. Effective January 1, 2016, I was appointed Senior Vice President for National Grid's Gas Business Enablement ("GBE") Program. Immediately prior to serving in my current role, I served as the Vice President of Customer Meter Services where I oversaw more than 2,400 personnel supporting National Grid's electric and gas distribution businesses in the U.S. With respect to the New York gas business, I was responsible for all field service personnel who provide gas emergency response, meter related activities (including meter installation and removal) and field operations related to billing (including meter reading, bill investigations and collections). My responsibilities also included overseeing the gas dispatch centers.

Testimony of the Gas Infrastructure and Operations Panel

Q. Does the Panel's testimony also address the Company's operations and maintenance ("O&M") programs?

A. Yes. In addition to capital investments in gas infrastructure, the Panel describes incremental labor (full time equivalent positions or "FTEs") and non-labor O&M expenses that the Company proposes in the Rate Year, the costs of which are not fully reflected in the twelve-month period beginning January 1, 2016 and ending December 31, 2016 ("Historic Test Year"). These expenses represent known and measureable changes from Historic Test Year expenses that are necessary to (i) improve system reliability, (ii) address new and emerging safety regulations, (iii) enhance customer service, and (iv) support the Company's capital investments. The Panel will also discuss the Company's staffing plan for the proposed new FTEs.

Q. Does the Panel address any other topics?

A. Yes. The Panel discusses the GBE Program, an initiative to develop and implement a comprehensive framework of new technology solutions and business process changes that will enhance gas safety, compliance, and customer service performance across National Grid's gas business. Among the core investments of the GBE Program are standardized asset and work management, scheduling, geographic information system ("GIS"), and field mobility solutions.

Exhibit __ (GIOP-8): GBE Program High-Level Roadmap Showing Phased Implementation and Capabilities

Exhibit __ (GIOP-9): GBE Program Description of the Specific Projects, Capabilities, and Benefits that will go In-Service in the Rate and Data Years for Niagara Mohawk

Exhibit __ (GIOP-10): Incremental Operating Expenses for the GBE Program Allocable to Niagara Mohawk in the Rate Year and Data Years

Exhibit __ (GIOP-11): Additional Run the Business Costs to Niagara Mohawk to Support the GBE Program Post-Implementation

Exhibit __ (GIOP-12): Total U.S. Type I and Type II Savings Estimates (Capital and O&M) and Niagara Mohawk Allocated Type I Savings Estimates Identified in Connection with the GBE Program

The capital expenditures presented throughout the testimony and in the exhibits include cost of removal ("COR"), as applicable.

Q. How is the Panel's testimony organized?

A. The testimony is organized into the following sections:

- Sections I and II are introductory sections outlining the Panel's testimony.
- Section III provides an overview of the Company's capital investment and O&M program priorities and objectives, including the retirement of leak

prone mains and services and other key investments in reliability and pipeline safety. This discussion includes justification for the Company's gas capital and O&M expenditures for these programs and the public interest considerations served by their implementation.

- Section IV provides details on the Company's proposed capital investment program for the Rate Year and Data Years, including the Company's spending rationales, categories of capital investment, and specific work activities within each category.
- Section V describes the Company's O&M programs, including those targeted at current and emerging safety regulations and those necessary to carry-out the Company's proposed capital programs. Section V also describes O&M costs for damage prevention.
- Section VI describes the Company's investment in the GBE Program.

III. Capital and O&M Plan Objectives and Priorities

Q. Please describe the overall objective of the Company's infrastructure and operations plans.

A. The Company's gas infrastructure and operations plans are designed to provide safe and reliable gas delivery service to customers at reasonable costs. As shown on Exhibit __ (GIOP-2), over the last several years, the Company

associated with this initiative total approximately $1.300 million in the Rate Year and in Data Year 1.

VI. GBE Program

Q. What is the GBE Program?

A. The GBE Program is a comprehensive framework of new technology solutions and business process changes necessary to strengthen and improve the performance of National Grid's U.S. gas business. Currently, the U.S. gas business faces a number of challenges. These challenges include the need to replace aged computer systems, drive continuous improvement in gas safety performance, deliver an expanding and increasingly complex capital investment program, and meet evolving customer expectations, including the increased demand for new customer connections.

The GBE Program was developed through a collaboration among National Grid's U.S. gas business and Information Services, Procurement, Customer, Finance, Shared Services, Customer Meter Services (electric and gas), and Human Resources functions, among others. The program has been designed as a holistic transformation of National Grid's U.S. gas business to deliver process improvements across people, systems, and technology to strengthen

operational and safety performance and build a platform that supports future growth and customer demands.

Q. Why is the GBE Program needed?

A. Before the end of the Rate Year, 94 percent of the systems used by National Grid's U.S. gas business will be at their end of life. The average age of these systems today is 14 years compared to an industry average of six. Because the age of these systems limits the ability to make modifications and increases the amount of time the systems are down, it is becoming increasingly difficult to support safe, compliant operations and meet ongoing regulatory obligations. In addition, the current systems, many of which still rely on paper records, no longer support the way today's gas companies need to work, manage performance, and provide employees with the right information and effective tools. Modern, supported solutions are also needed to help reliably deliver significant capital investment and growth.

Q. What are the benefits of the GBE Program?

A. The GBE Program provides numerous benefits such as:

Gas Safety. The GBE Program will strengthen in several respects the Company's ability to operate a safe, reliable gas distribution system. First, GBE will implement new GIS to improve the Company's ability to capture,

Testimony of the Gas Infrastructure and Operations Panel

store, access, and analyze geographical asset information concerning its gas distribution network. This will provide a single view of all assets, which will facilitate data-driven investment and maintenance decisions. The GBE Program investments will consolidate information on all required O&M work, rather than across multiple, manual spreadsheets. Finally, implementing modern, more reliable platforms will provide better records to document compliance and decreases the likelihood of system outages impacting the ability to deliver work.

National Grid's Pipeline Safety and Compliance organization has a central role in the GBE Program to ensure that GBE initiatives have a direct linkage to improving pipeline safety and compliance. For instance, the Company is in the process of implementing a Pipeline Safety Management System ("PSMS"), a process safety model based on employing and strengthening the ten essential elements of the American Petroleum Institute's recommended pipeline safety management standards (Recommended Practice 1173 ("API 1173")). GBE Program initiatives have been mapped to the ten elements of API 1173 for strong alignment to enhance safety and compliance upon implementation. Furthermore, the Company has enlisted a third party consultant (P-Pic) to independently validate that GBE Program initiatives will strengthen the Company's PSMS.

Testimony of the Gas Infrastructure and Operations Panel

Improved Operational Performance. The main objective of the GBE Program is to consolidate and replace many of the Company's disparate and aging systems, as well as the associated work processes to achieve a step change in operational performance. The GBE Program investments will also drive continuous improvement in regulatory compliance and transparency with more complete data capture and reporting, less reliance on paper, and greater visibility of required work.

Operations Support. The GBE program will support delivery of a longer term solution to the work management and productivity reporting recommendations from the Commission's Gas Management Audit (Case 13-G-0009); specifically, that National Grid develop a program to track and manage crew and individual worker productivity, including the standardization of business processes for enhanced visibility of work and more efficient scheduling.

Customer. Another benefit of the GBE Program is enhanced customer service through improved scheduling and dispatch. This includes enhanced appointment booking and an interactive customer framework (described below), as well as the ability for dispatch and field crews to create a consolidated view of past, scheduled, and potential future work for customers so they will be better equipped to answer customer questions.

Testimony of the Gas Infrastructure and Operations Panel

Q. What are the key elements of the GBE Program?

A. *Replacement of Aged, Core Systems.* Initially, the GBE Program will integrate, standardize, and simplify core delivery processes and systems onto a modern platform (comprising approximately 19 solution components, down from the 99 disparate applications used today). Specifically, the core systems GBE will design, standardize, and implement include:

- an industry-standard enterprise asset and work management platform;
- a scheduling platform to support optimized scheduling, work bundling, and routing of work;
- a GIS with accurate foundation maps and conversion of gas service records and sketches, available with mobile functionality;
- 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;
- a standardized enterprise project portfolio management platform for project routing and approval, with the ability to forecast cost, integrated with scheduling, and design;
- 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 will support a more holistic management of assets and administration of work. In addition, updating and integrating these core system will enable new tools such as a mobility solution for leak investigation and inspection work orders; drive improvement in gas

Testimony of the Gas Infrastructure and Operations Panel

safety performance; improve capital delivery effectiveness; and lead to better employee utilization, and ultimately customer service.

Customer & Employee Interaction Platforms. A flexible interface will be built on top of 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 allow customers to interact with the Company such as by receiving updates based on their preferences for appointments, addressing inquiries for new gas connections and conversions, and accessing information about work on their street or neighborhood. Similarly, an employee portal will be developed and further integrated with the work management, scheduling, dispatch, and GIS systems to provide call center representatives and field employees with a consolidated view of relevant information to support enhanced delivery of customer service. This interface also builds the capabilities necessary to rapidly adapt processes, capture data, and address developing channels for customer engagement in the evolving energy marketplace. Examples of the customer and employee improvements GBE will enable, include:

- self-service appointment scheduling and re-scheduling
- notification on service request progress and field crew location
- prompts for accurate capture of required information for compliance

- field mobile access to data, maps and process documentation
- instructor and video based training on mobile devices

Standardized Processes and Training. The GBE Program will also implement standardized operations processes and training that to this point has been fragmented due to the significant complexity of multiple supporting systems. This will reduce the level of requirements that would need to be designed, built, tested and trained, and as a result, mitigate the costs of the new technical solution. In addition, standardized processes and training will further support more consistent delivery and performance reporting.

Q. Please explain the Company's approach to implementing the GBE Program.

A. National Grid has established a project organization to support the development and implementation the GBE Program. There is a dedicated Senior Vice President (Mr. Johnston) overseeing the project delivery, schedule, and budget. National Grid worked with two of the top system integrators in the U.S., Accenture and PWC, to complete a high-level design and develop a roadmap that leverages modern system implementation approaches to minimize risk and maximize the likelihood that the desired business outcomes are successfully delivered. Detailed design and project

implementation will also be supported by a system integrator consultant experienced with similar, large-scale implementations.

Q. Please describe the planned implementation.

A. The initial focus of the GBE Program will be development of standardized processes, implementation of asset management, work management and scheduling applications along with an integrated mapping (*i.e.*, GIS) solution. The Company will focus on replacing aged, core applications and implementing updated solutions as quickly as possible to help reduce the risk associated with critical, unsupported applications. This will create the foundation for building incremental enhanced capabilities to support safety performance, operational efficiency, the customer experience, and a performance-oriented culture. Examples of such enhanced capabilities include advanced analytics on asset demographic, condition, health, and other information to provide a consolidated view of asset risk geospatially; the customer and employee interaction portals; advanced analytics for work forecasting and planning; and supervisor field mobile capabilities on viewing and tracking crew and work order progress spatially; and auto work notifications.

Testimony of the Gas Infrastructure and Operations Panel

The first release implementation will occur at National Grid's Rhode Island gas distribution company, The Narragansett Electric Company (gas segment), given its significant reliance today on paper-based operations and its manageable scale (*i.e.*, fewer operating yards). A stage-gate methodology will be employed to manage delivery and implementation in other service territories and operating companies once pre-defined thresholds of performance have been successfully demonstrated in Rhode Island. The GBE Program will implement agile development methods wherever it is appropriate to do so. Under this model, business and IS teams work collaboratively in short-cycles to prioritize functionality and get to a minimum viable product (*i.e.*, the simplest solution that can be implemented) allowing earlier release of initial functionality and reprioritization of enhancements based on learning.

Implementation is planned for Niagara Mohawk beginning in the Rate Year as shown in Exhibit __ (GIOP-8) with the following capabilities:

- Enterprise Asset Management integration with SAP and corrosion system;
- Initial work management for field collections and non-appointments;
- Basic scheduling and dispatching;
- Basic field data capture; and
- Standard GIS data model/improved data quality.

Q. Please describe how Software as a Service ("SaaS") is utilized by the GBE Program, and the benefits of its use.

A. The GBE Program is exploring the use of SaaS cloud solutions wherever options are available and best meet overall requirements. Examples are in the core systems like enterprise asset and work management, scheduling and dispatch, and field mobile as well as for data analytics and visualization.

Use of SaaS cloud solutions will provide several benefits including faster implementation and enhancement adoption, fewer upgrades to legacy infrastructure, easier upgrades when needed, reduced risk of obsolescence in the future, and the opportunity to enhance security. SaaS also provides strategic advantages by facilitating external interfaces with third party partners. SaaS can also be more easily scaled for additional capacity when required to enable growth

Q. How does the GBE Program address cyber security?

A. Protection of confidential customer information, asset data, and proprietary gas network information is essential to the success of the program. The program team is committed to meet or exceed National Grid's stringent cyber security requirements, which are based on best practices in the utility and other industries. National Grid's Digital Risk and Security department will

provide cyber security guidance in testing and development activities. Digital Risk and Security will also implement device and personnel authentication, monitoring for unauthorized access to information, cloud data security services, malware protection, and identity and access management control.

The program also has a Cyber Security Architect dedicated to the project beginning in April 2017. In addition, the system integrator, existing partner suppliers, and security analysts will serve as supplemental cyber security experts.

Q. Please describe the specific projects/capabilities that will go in-service in the Rate Year and Data Years for Niagara Mohawk.

A. Exhibit __ (GIOP-9) describes the specific projects and capabilities that will go in-service in the Rate Year and Data Years for Niagara Mohawk.

Q. What is the total cost of the GBE Program?

A. The total cost of the GBE program for National Grid's U.S. operating companies is currently estimated at approximately $458.1 million. Of this amount, approximately $293.6 million comprise capital costs, and $164.5 million comprise operating expense. 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 project complexity; this contingency has not been reflected in Niagara Mohawk's revenue requirement. While the GBE Program is ultimately expected to be delivered within the total budgeted costs, it is important to note that costs may shift between the Rate Year and Data Years as each of the projects completes detailed design.

Importantly, in February 2017, the GBE Program team received National Grid plc approval for the program's proposed $458.1 million budget (plus the incremental $61 million contingency). The GBE Program team is currently securing U.S. Sanctioning Committee approval as the final step in National Grid's approval process, while at the same time moving forward with program mobilization.

Q. What is the cost of the GBE Program to Niagara Mohawk?

A. Because the GBE Program is a shared National Grid investment, a portion of the total capital costs will be allocated to Niagara Mohawk in the form of an annual rent expense as part of the overall IS service rent expense charged to Niagara Mohawk. Niagara Mohawk's portion of the annual rent expense attributable to the GBE Program investment is $1.775 million, $3.881 million, and $5.939 million for the gas business in the Rate Year and Data Years,

respectively as shown in Exhibit __ (RRP-11), Workpapers to Exhibit __ (RRP-3), Schedule 9, Workpapers 3, 6, and 9. The annual rent expense attributable to the electric business is $0.537 million and $1.093 million in Data Year 1 and 2, respectively, as shown in Exhibit__(RRP-11), Workpapers to Exhibit__(RRP-3), Schedule 9, Workpapers 6 and 9.

Niagara Mohawk's share of the $164.5 million total incremental operating expense in the Rate Year, as shown in Exhibit __ (GIOP-10), is $9.631 million for the gas business and $0.198 million for the electric business. Exhibit __ (GIOP-10) also shows the forecast of incremental operating expense allocated to Niagara Mohawk for the Data Years.

Q. Please explain how costs for the GBE program will be allocated to Niagara Mohawk.

A. Most GBE Program costs will be allocated among all of National Grid's gas operating companies based on the number of gas retail customers. As shown in Exhibit __ (GIOP-9), Exhibit __ (GIOP-10), and Exhibit_____(RRP-11), Workpapers to RRP-3, Schedule 9, Workpapers 6 and 9, the costs of the Customer, Leak Investigation & Inspections and Company Driven Work: Collections and non-Appointment Offs initiatives will be split between the gas and electric business based on the number of Customer Meter Services Field

Technicians supporting each business because these projects implement process standardization, applications, and field devices for all Customer Meter Services gas and electric employees. The electric portion will be allocated among all electric operating companies based on the number of electric distribution customers.

Q. Please explain what costs comprise the incremental operating expense for Niagara Mohawk in the Rate Year and Data Years.

A. The incremental project operating expense included in Exhibit __ (GIOP-10) relates to end user training, data conversion from the legacy applications to the new GBE applications, business process documentation that is non-system related, and GBE Program management of schedule, resources, finance, risks, and performance.

Q. Does the Historic Test Year include costs for the GBE program?

A. Yes, the Historic Test Year includes certain non-recurring costs for the GBE Program related to the development of the business case, assessment of processes and applications, and high-level design for the GBE Program. Niagara Mohawk has made a normalizing adjustment of $0.643 million for the gas business to remove these non-recurring costs from the Rate Year.

Q. Are there any incremental post-implementation run the business costs associated with GBE?

A. Yes. As shown in Exhibit__(GIOP-11), the Company will incur additional run the business costs to support the GBE Program post-implementation. These costs include (i) a team to support business functions in the use of the new systems, design new processes to take full advantage of the new system, and monitor business controls embedded in the system; (ii) hardware, software, and mobile solutions license maintenance fees and subscriptions; and (iii) support costs to maintain certain legacy applications following implementation until these legacy applications are replaced or maintained in an upgraded future state, as appropriate.

Support costs for the legacy applications will decrease from the Rate Year to the Data Years. Additional support costs will be required for legacy applications that will continue to remain after full implementation due to, regulatory reporting needs and outstanding legal hold obligations.

As legacy software systems are retired due to functional replacement as part of the GBE Program, the run the business costs for operating the servers, software systems, and field devices will be eliminated. As shown in

Exhibit__(GIOP-11), the Company has netted these costs against the forecast run the business costs expected in the Rate Year.

Q. What are the incremental post-implementation run the business costs associated with GBE in the Rate Year and Data Years?

A. As shown in Exhibit __ (GIOP-11), Niagara Mohawk's allocated share of these costs is $1.2 million. Niagara Mohawk's allocated share of these costs in the Data Years is $2.608 million and $3.095 million, respectively, as shown in Exhibit __ (GIOP-11).

Q. Has the Company quantified the benefits associated with the GBE Program?

A. Yes. As explained earlier, the main objective of the GBE Program is to consolidate the many duplicate and aging applications and systems across the enterprise. As essentially an asset replacement program, the primary benefit is a reduction in operational risk.

The new asset, work, and mobility systems will lay the foundation for enhanced capabilities that will drive a broad range of operational benefits and performance improvements, some of which are anticipated to result in cost

Testimony of the Gas Infrastructure and Operations Panel

reductions. Specifically, implementation of enhanced capabilities could provide the following benefits:

Type I (Spend Reduction) – the benefit has a direct, quantifiable and sustainable impact in reducing costs. For example, the GBE Program investments are anticipated to deliver increased clerical and back office productivity beginning in Data Year 2 as a result of automation of some manual tasks (*e.g.*, time entry), elimination of paper based processes, as well as streamlining of data updates performed by clerical staff.

Type II (Capacity Savings) – the benefit is a process improvement that consists of resources freed up or future cost or increased potential for penalty avoidance as enhanced capabilities are embedded. For example, the work and asset management will provide improved scheduling, bundling of work, and enhanced, prescriptive routing for field technicians. In turn, these enhancements will allow optimization of drive time and existing resources freeing additional resource capacity (*i.e.*, additional jobs completed per shift).

Q. Have forecast cost reductions associated with the GBE Program been reflected in this filing?

A. Yes. While it is unknown if the savings estimates can be achieved, Niagara Mohawk has made an adjustment to the Rate Year and Data Years for its gas business to reflect its allocated share of the estimated Type I savings from the GBE Program initiatives. The adjustment reduces the revenue requirement by $0.007 million in the Rate Year, $0.158 million Data Year 1, and $1.025 million in Data Year 2. No adjustment is being made for Type II savings because they do not result in a direct cost reduction, but rather increase capacity for work that otherwise would not be completed. No adjustment is being made for penalty avoidance savings since penalties are not recovered from customers.

Exhibit __ (GIOP-12), Page 1 provides the total U.S. benefits (Type I and Type II, and capital and operating expense benefits) for the GBE Program. As reflected in Exhibit __ (GIOP-12) Page 1, the majority of benefits will be realized after Data Year 2. Once the enhanced capabilities are fully embedded, which is expected by FY 2024, the GBE Program estimates total potential combined Type I and II benefits of $39.615 million annually.

Q. How were initiatives that targeted capital related savings treated in the filing?

A. With respect to initiatives estimated to result in capital savings, those savings are embedded in the capital plan and not reflected as separate adjustments in the revenue requirement.

Q. What training will be delivered as part of the GBE Program?

A. 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 will be delivered using various media such as computer-based instruction, video, classroom, mobile and written help guides.

Q. How will the program team assess the readiness of the business to begin using the various functional parts of a project?

A. Early in the process, working with gas business leadership, the GBE team will identify business readiness requirements and develop business readiness checklists and go/no go checkpoints to ensure business readiness by geography.

Q. Does this conclude your testimony?

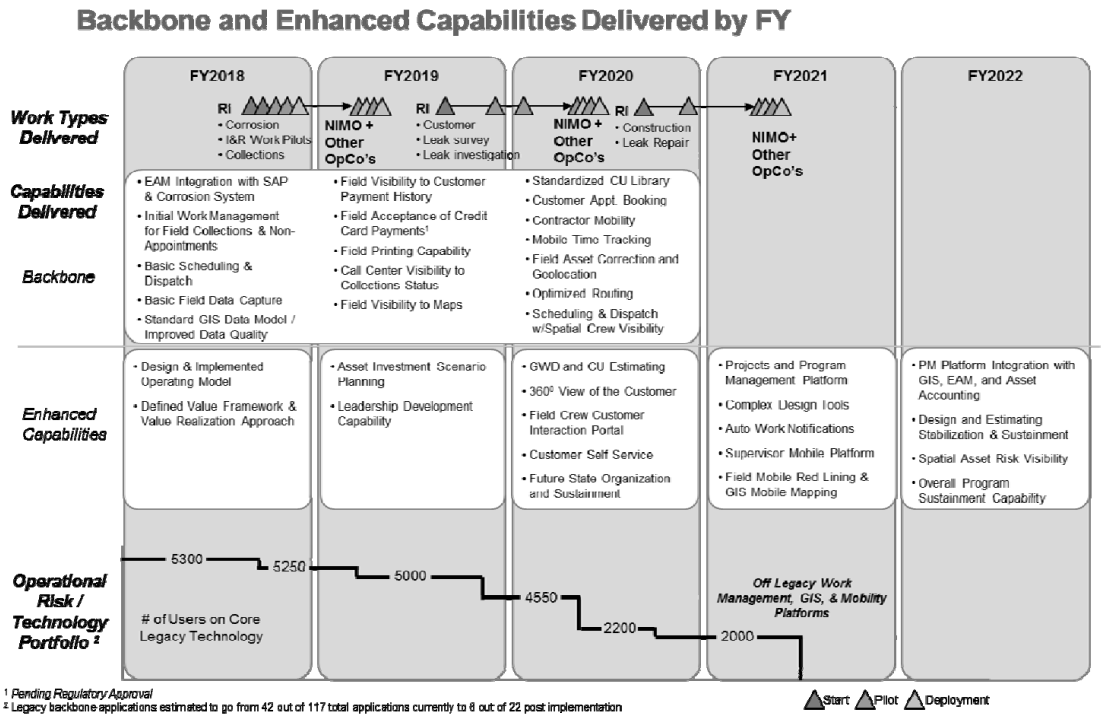
A. Yes, it does.

Testimony of Gas Infrastructure and Operations Panel

Exhibit __ (GIOP-8)

GBE Program High-Level Roadmap Showing Phased Implementation and Capabilities

High Level Roadmap of Capabilities to be Delivered Over Five Years



[1] *Pending Regulatory Approval*
[2] Legacy backbone applications estimated to go from 42 out of 117 total applications currently to 6 out of 22 post implementation

Exhibit__ (GIOP-9)

Testimony of Gas Infrastructure and Operations Panel

Exhibit __ (GIOP-9)

GBE Program Description of the Specific Projects, Capabilities, and Benefits that will go In-Service in the Rate and Data Years for Niagara Mohawk

GAS BUSINESS ENABLEMENT INVESTMENTS – CAPABILITIES/ CUSTOMER BENEFITS

FY2018 - Investments In-Service

PowerPlan Architecture Enhancements (November 2017)
Description/Capabilities/Customer Benefits

- Removes the "real-time" dependency of the Enterprise Asset Management ("EAM") Platform on PowerPlan for the Work Order creation process by creating direct interfaces to SAP
- Establishes a batch schedule on which SAP (back office system) feeds all work order, operation and cost data, to PowerPlan
- Simplifies real time work order creation process
- Removes the delay in updates to the work order estimates in SAP
- Foundational component to deliver the Gas Business Enablement systems

Comprehensive Integration Service (Enhancement) (December 2017)
Description/Capabilities/Customer Benefits:

- Facilitates the process of developing, securing, and monitoring the integrations between applications whether on premise or in the cloud
- Foundational component to deliver the Gas Business Enablement systems

Application (Environment) Infrastructure Upgrades (December 2017)
Description/Capabilities/Customer Benefits:

- Defines and establishes infrastructure environments (on-premises and cloud) to enable the implementation of Enterprise Asset Management, Scheduling and Dispatch, Mobility, Analytics, Data Management, GIS, and Asset Investment Planning application platforms and products
- Foundational component to deliver the Gas Business Enablement systems

Data Management Implementation (Quality & Cleansing) (December 2017)
Description/Capabilities/Customer Benefits

- Platform (suite) of technologies for data management of critical gas operations data throughout its lifecycle: from when the data is created until it is deleted. The platform (suite) of technology covers architecture, platforms, and applications necessary to successfully enable a data management practice that will include the following: profiling; cleansing; enriching; transforming; migrating; monitoring and reporting; archiving; and deleting activities. Includes cloud based integration tools for large data movement to cloud based platforms
- Establishes data operations processes that would manage the Common Data Model, manage the movement of data from the source application, cleaning the data, conversion of the data and preparing the data for loading into target system(s). establish the data retention policies (Business, Regulatory, and Legal holds), data archiving policies, and the data deletion and destruction policies
- Improves accessibility of data to support employee interactions internally and externally
- Improves data accuracy
- Improves record-keeping

Risk Management (Tx Mains & Dx Mains) (December 2017)
Description/Capabilities/Customer Benefits

- A commercial off-the-shelf (COTS) solution to enhance the capabilities of the integrity management program for transmission and distribution assets, replacing current home-grown solutions in use
- Includes integrations for GIS, EAM, and Data Historian
- Flexible processes to accommodate evolving business and PHMSA needs
- Makes a clear delineation of the system of record for asset information
- Training for Engineers and Managers in advanced statistical reliability models and applications working with National Grid Advanced Data Analytics group
- Strengthens gas safety efforts and priorities
- Improves the process and timeframe for closing work orders and capturing updated asset and facility records

Business Architecture Design (December 2017)
Description/Capabilities/Customer Benefits:

- Detailed business process designs for Asset Management, Work Management and Customer processes
- Defines the standard business processes for work performed by internal and contracted resources
- Defines the Asset Hierarchy for the gas assets as the basis for the subsequent EAM and GIS initiatives
- Key design decisions and business requirements regarding EAM, Scheduling, Mobility, GIS, Finance, Supply Chain and operationally-related Customer Interactions

RATE YEAR – Investments In Service

Operations/Systems Monitoring (August 2018)
Description/Capabilities/Customer Benefits:

- Installs and configures monitoring software so that application events, outages, security incidents are routed to ServiceNow (SNOW)
- Minimizes system downtime
- Improves data security

Corrosion and I&R Work (October 2018)
Description/Capabilities/Customer Benefits:

- Implements EAM platform with base capabilities including work order creation/updates, job plans, asset lifecycle management (i.e., creation/maintenance of assets and locations), inventory management (*i.e.*, issue/transfer of materials, storerooms setup), reports, and preventative maintenance
- Implements a schedule and dispatch platform with base capabilities that include schedule/dispatch work, work bundling, view/update crew structure, view work/field crew location spatially, work progress tracking, and view resource skills and classification
- Implements a field mobility platform with base capabilities that include view work assignment, electronic work package, view attachments, attach pictures, initiate work, update work status, view maps (legacy maps) and capture work completion data
- Increases visibility to work lifecycle
- Improved schedule and dispatch
- Improves work completion data quality
- Increases visibility to work progress/work completed by contractors

CU Governance & Library – process (November 2018)
Description/Capabilities/Customer Benefits

- Builds and implements a common Compatible Unit library utilized by engineers and designers incorporating standard design, material, labor, equipment and accounting information
- Drives the use of standardized construction and material standards enabling more efficient and consistent execution of work across National Grid field operations and external alliance partners/contractors working under a master services agreement (MSA)
- Improves estimate accuracy to drive improved forecasting and budget management

Asset Investment Planning and Management ("AIPM") Tool – Enhancements (December 2018)
Description/Capabilities/Customer Benefits:

- Allows development of a multi-year pipeline of asset investments/work (capital, maintenance, emergency, and customer)
- Facilitates setting up of multi-year programs and associated projects
- Allows tracking of asset risk and prioritization at the asset level
- Provides the ability to evaluate different investment options and evaluate CapEx and OpEx tradeoffs
- Forecast blanket work including emergency work, customer growth, municipal/city/state requests based on historical/projected data and to establish placeholder annual blanket budgets
- Facilitates identification of opportunities for bundling projects based on asset type, geography, asset risk factor, category (*e.g.,* growth, end-of-life maintenance capital, regulatory driven, mandatory, non-mandatory, O&M)
- Allows development of rolling multi-year repair vs. replace vs. run to failure vs. maintain decision process
- Improved work planning and scheduling

Additional Integrity Management ("IM") Modules (February 2019)
Description/Capabilities/Customer Benefits:

- Implements additional Integrity Management Modules to support Maximum Allowed Operating Pressure ("MAOP") Management, In-Line Inspection Data Management, and Leak Finder. These applications provide enhanced capabilities to import SCADA data (*i.e.,* system operating pressure data) and integrity management data captured utilizing various direct and indirect assessment tools)
- Enhances gas system safety and reliability

Data Remediation, GIS Upgrade/ Migration & GIS Mobility (March 2019)
Description/Capabilities/Customer Benefits:

- Landbase - provides a consistent base map across the enterprise that includes a street centerline and aerial imagery
- Data Conversion - conversion of gas service records to GIS including conversion of street centerline maps of NYC and graphic (scanned) sketches and the associated record attributes noted on the sketch and from various legacy systems
- Conflation – realignment of the gas GIS linear and non-linear assets to a more spatially accurate landbase allowing for integration with outside data sets
- GIS Upgrade Migration and Mobility - consolidated GIS platform to ESRI/Schneider and up-to-date view of the GIS data in a portal and mobile viewer available to National Grid's field and office employees
- Improves ability to model and estimate customer work
- Strengthens gas safety efforts
- Improves compliance

Enable the Data Archival Process (March 2019)
Description/Capabilities/Customer Benefits:

- Defines the data archival process that adheres to the Record Retention Policies with the necessary quality control and quality assurance steps
- Defines and implements system decommissioning, moving data to a low cost storage solution
- Improves record-keeping

DATA YEAR 1 CAPABILITIES AND CUSTOMER BENEFITS

EAM-FIN Integration (June 2019)
Description/Capabilities/Customer Benefits

- Process and solution enhancements to integrate AIPM tool with EAM and Corporate Finance (FIN)
- Implements automatic updates to the asset hierarchy in AIPM from EAM
- Integrate with FIN to obtain actual project cost (as constructed) to inform defer/accelerate decisions of future work in the Annual Work Plan
- Run reports to identify projects outside of budget and schedule tolerances and variances of actual costs from estimates
- Improves accessibility and visibility to investment planning and capital execution process

CxT Portal & Channel Management (June 2019)
Description/Capabilities/Customer Benefits:

- Implementation of digital interactive support tools to enable simple and effective interactions between National Grid and the customer based on customer channel preferences
- Enhances core customer community foundation (e.g. website and mobile applications) including login, registration and general User Interface (UI) / User Experience (UX) enhancements

Regulatory / Compliance (September 2019)
Description/Capabilities/Customer Benefits:

- Implements modern, more reliable platform(s) that will decrease the likelihood of system outages impacting the ability to deliver work
- Improves electronic field data capture with prompts and controls developed within the solution to drive accurate and complete capture of required information, and will enhance records to document compliance with less reliance on paper
- Improves field access to customer and asset data with enhanced visibility utilizing maps and process documentation on mobile devices to provide employees with the right information to comply with regulatory requirements
- Improved training and job aids such as instructor and video-based training on mobile devices to improve operational performance

Integrity Management Integrations (October 2019)
Description/Capabilities/Customer Benefits

- Implements integration with EAM, GIS, Data Historian on risk management to decrease manual data entry and promote 'one source of the truth, 'eliminate the time needed to extract and import files, and increase the frequency of the ability to plan/model the network
- Improved data accuracy

Company Driven Work: Collections and non-Appointment Offs – ELECTRIC/GAS
(October 2019)
Description/Capabilities/Customer Benefits:

- Implements additional capabilities of scheduling and field mobility along with integration between customer information systems (CIS), and customer relationship management system (CRM)
- Enhances scheduling and dispatch tool capabilities which include schedule/dispatch of collections and collections offs work orders
- Enhances field mobility platform with additional capabilities to include the ability to view customer balances and payments due, capture credit card payments, scan checks and print receipts for customer
- Implements capability for Call Center Representative to view status and progress of Collections orders and provide accurate updates when customers inquire

Customer, Leak Investigation & Inspections – ELECTRIC/GAS (October 2019)
Description/Capabilities/Customer Benefits:

- Enhances integrations between EAM with Scheduling, Field Mobile, SAP Labor & Time, SAP Accounts Payable, SAP Accounts Receivable, SAP ERP (*i.e.*, Supply Chain - Materials Management & Procurement), Document Management system and customer information systems
- Data conversions including additional work orders (i.e., history and in progress), relevant assets/locations (*i.e.,* premise, meters, main, valves), job plans, tools, materials catalog, and customer data
- Implements supervisor field mobile capabilities, which include view of multiple crew work assignments, initiate work, field audit, view attachments, attach pictures, view/update work status
- Enhances real time scheduling and dispatch tool capabilities to include adding an appointment calendar for booking customer work, schedule/dispatch of Customer, Leak Investigation and Inspection work orders
- Provides contractors with mobility capabilities, which includes sending work completion data, and record materials
- Enhanced scheduling of customer appointments
- Improves process and timeframe for work order completion
- Strengthens gas safety efforts and process

Employee Support Interaction (Release 1 – October 2019, Release 2 - July 2020)
Description/Capabilities/Customer Benefits:

- Interactive support tool leveraging the existing CRM platform specifically focused on creating visibility for National Grid Employees about field activities to make them more effective in managing field work
- Provides National Grid employees with:
    - Enhanced, real-time communications between Call Center, Dispatch, field employees and other customer support groups (peer to peer)
    - Ability to view, schedule and adjust appointments
    - Ability to set appointment reminders based on customer preference
    - Ability to receive customer photos (e.g. meter read) to support quicker problem resolution
    - Ability to view status of a customer-driven work request and status of field work impacting customers (*i.e.*, construction progress)
    - Ability to view location of crews in the vicinity
- Provides National Grid Field Employees information to:
    - Send email/text message to the customer with tailored information based on channel preferences (i.e. links to National Grid web pages)

Customer Interaction (Release 1 – October 2019, Release 2 - January 2021)
Description/Capabilities/Customer Benefits:

- Leverages the CxT Portal and enhances the core customer processes to significantly improve the self-service customer experience
- Provide Customers with:
    - Ability to schedule appointments with National Grid on customers' own terms for home or business – and change appointments as required to better fit the customer's schedule
    - Ability to receive reminders from National Grid about appointments and other activities
    - Ability to submit photos to National Grid to describe issue or problem.
    - Ability to follow up on progress of work requests / appointments and status
    - Ability to view website and understand if National Grid's crew(s) are in the vicinity

DATA YEAR 2 CAPABILITIES AND CUSTOMER BENEFITS

Customer Relationship Management (CRM) / Contact Center (June 2020)
Description/Capabilities/Customer Benefits:

- Further enhances the existing interactive support tool delivering the full 360 degree view of customer contacts, interactions and account history in one place on the CRM platform
- Provides a platform for National Grid employees to handle customer interactions including:
    - Ability to find information about how to establish gas service, the cost for the service (i.e. CIAC)
    - Ability to perform account inquiries including billing issues, service suspension, etc.
    - Ability to create and adjust payment arrangements
    - Ability to escalate compliments / complaints
    - Ability to view outage status and customers impacted in one location
- Enhances analytics and in-app reporting and dashboards to more effectively drive business performance

PowerPlan Integration & Enhancements (June 2020)
Description/Capabilities/Customer Benefits:

- Configuration of application and business rules in PowerPlan to support strengthening and creating visibility of the funding approval processes
- Enhanced integrations between EAM, SAP Finance, and PowerPlan to reduce manual processes

Large Commercial & Landlord Interaction (July 2020)
Description/Capabilities/Customer Benefits:

- Allows large commercial and property owners to
    - Bundle appointments to help manage time more effectively
    - View status and progress of requests and appointments
    - Delegate communication and interaction preferences (e.g., delegate point of contact for each property)
    - Receive notifications/alerts about an issue at one of the premises assigned
    - More efficient and flexible scheduling and service to customers

Design (GWD), Estimating (CU), & Mobility (September 2020)
Description/Capabilities Customer Benefits:

- Develops, refines, and standardizes the Engineering design and estimation processes and technology. All work will be designed with graphical work design (GWD) and estimated with compatible units (CUs)
- Integrates Field Mobile and EAM

- Implements an integrated set of design tools that can be used by all design employees and that will incorporate the same standards across all operating companies
- Drives opportunity for more accurate estimates of customer work cost due to greater integration of cost components.
- Graphical designs (i.e. electronic work packages) available to field employees More effective dispatching of work based on integration of mobile capability

Construction Work & Leak Repair (September 2020)
Description/Capabilities/Customer Benefits:

- This release is set up to implement additional capabilities of EAM, Scheduling, and Field Mobility along with integration to GIS and Asset Accounting (PowerPlan). This release will also implement Construction and Leak Repair work orders on a mobility solution
- Work orders include New Service, Service Relocation, Service Replacements, Fitting (Ops), Customer Outages (Ops), Leak Repair, Main Replacement, Encroachments, New Mains, Valve Inspection, Restoration Repairs, Service Cut Offs, Service Valve Installations, Leak Survey (Contractor - OPS), and Leak Surveillance (Ops)
- Implements integration between EAM, GIS, and Asset Accounting (PowerPlan). Enhance integrations between EAM and Project Accounting (Enterprise Finance)
- Enhances scheduling & dispatch tool capabilities which include schedule/dispatch of Construction and Leak Repair work orders
- Improves ability to schedule customer work orders and ensure that customer appointments are met
- Better communication with customers regarding work orders affecting them and their neighborhoods

Asset Analytics Integration (December 2020)
Description/Capabilities/Customer Benefits:

- Process and solution enhancements to integrate with Asset Management and Resource Planning
- Enhances ability to prioritize asset investments according to various risk factors including asset risk. Strong emphasis on utilizing asset analytics for determining asset risk
- Capability to monetize asset risk per dollar of asset investment
- Capability to provide current and future levels of asset risk after asset investment
- More effective asset value and risk assessment, ensuring best cost scenario for customers

GIS (GWD/CU) – Project Portfolio Management ("PPM") Integration (December 2020)
Description/Capabilities/Customer Benefits:

- Accepts inputs on project estimates from the GWD/CU and Computer Aided Design (CAD)/Estimating Software ESW libraries, and provides consolidated and individual views for people, material, and equipment needs

- Enhanced bundling capability to spatially visualize project location and to bundle and unbundle based on location
- Incorporates work volumes tied with financials for the 5-10-year plan (maintenance and capital work) for both project and blanket estimates (e.g. emergency work budgets, corporate requests with changes in spend/budget, maintenance program, etc.)
- Integrates with PPM to proactively understand potential project overrun issues in advance and take corrective action. Utilize Earned Value (EV), Estimate to Complete (ETC), Estimate at Completion (EAC), Budget Variance (BV), Schedule Variance (SV), etc.
- Optimizes the investment plan under resource (labor, equipment, materials, etc.), financial (CapEx and OpEx), regulatory and network constraints and to identify and compare tradeoffs between investment options, including but not limited to risk reduction, cost, and resource use
- Ability to translate projects into supply/demand forecasts for resources (people, material, and equipment) and to communicate the information
- Drives opportunity for more accurate estimates of customer work cost due to greater integration of cost components
- More effective long term plans (5 – 10 years) due to enhanced long term modeling

Test Automation Implementation (December 2020)
Description/Capabilities/Customer Benefits:

- Develops Test Automation Capabilities including the following:
    - Test automation best practices and framework to increase test coverage and reliability, shorten the testing and regression cycles, and mitigate risks for product version upgrades
    - Defines usage of testing tools
    - Facilitates capture of test cases with individual work streams
    - Identifies testing automation limitations for each platform and application
    - Maintains tool environment and facilitates efficient use

GIS-EAM Integration (December 2020)
Description/Capabilities/Customer Benefits:

- Integration of GIS and EAM systems allowing all asset information to be viewed across all applicable functional groups at varying levels of detail (spatial, technical and financial)
- Changes to asset information will be updated across the two applications, without retaining redundant information. EAM and GIS will achieve a tight integration such that information will pass back and forth between them to keep each up to date. EAM will contain all of the asset information, including maintenance records, manufacturer, etc. while GIS will contain location and connectivity characteristics about the asset
- More consistent and accurate information across all information systems, which are used to provide information to customers.

- Faster response to customers' requests for information or quote, due to consistency of information across systems.

Complex Design (CAD) & Estimating (ESW) (March 2021)
Description/Capabilities/Customer Benefits:

- Develops, refines, and standardizes the Engineering design and estimation processes and technology. All work will be designed with CAD and estimated with ESW
- Greater reliability of design due to standardization of engineering design and consistent CAD design
- Greater reliability of design estimates due to standardization of estimation methodology

Use Case No.1 - Asset Risk (March 2021)
Description/Capabilities/Customer Benefits:

- Provides the capability to aggregate multiple data sources of asset demographic, condition, health, and other information to provide a consolidated view of asset risk within and across asset classes
- Provides the ability to view assess asset risk geospatially
- Facilitates asset planning management, and asset information management. Includes the capability to allow Asset Managers to better bundle, coordinate outages/customer interruption
- Improved maintenance scheduling and the consequent improvement in reliability

PROGRAMMATIC SUPPORT (These initiatives comprised multiple releases across the Rate and Data Years as required for design, testing, and implementation activities of the GBE Program investments)

AM Program Leadership

- Includes the program leader and supporting management team to lead and support the Asset Management work stream throughout its lifecycle, including establishment of direction and priorities, program oversight to insure delivery of scope within established budget, schedule and quality requirements, and issue and risk management
- Supports cross-portfolio integration and provides input and recommendations to the Portfolio Leadership Team as appropriate

Program Learning Management

- Defines the overall Program Learning Strategy
- Coordinates learning standards, facility, infrastructure and support needs with National Grid's Learning & Development organization
- Coordinates standard, consistent leading approaches to learning across all technology / process initiatives
- Serves a learning solution architect and coordination role, ensuring that standards and leading practices are being uniformly adopted across initiatives, especially with regard to agile learning approaches
- Ensures the sustainability of the Program Learning content and capabilities

Supply Chain Program Leadership

- Includes the program leader and supporting management team to lead and support the Supply Chain work stream throughout its lifecycle
- Support includes establishment of direction and priorities, program oversight to insure delivery of scope within established budget, schedule and quality requirements, and issue and risk management with appropriate escalations to the Portfolio Leadership Team
- Close collaboration with the Work Management Field Enablement (WMFE) Team to align the future state processes, manage integrations and dependencies between the work management application and the existing SAP supply chain solution

Program Business Sustainment

- Coordinates business readiness activities
- Aligns the scope and timing of the changes to the impact on each organization, business resource requirements and the development of Readiness Action Plans that demonstrate business preparedness to receive upcoming changes
- Works closely with deployment teams and initiative-level agile change management and training efforts to assess readiness and facilitate go-live decisions

Program Transformational Change Office

- Program level office focused on enablement, coordination, and standardization in collaboration with all program portfolios
- Defines and manages the overall change architecture of the program, including defining tailored interventions for each workgroup and driving leadership engagement and alignment across the program
- Defines and executes a comprehensive communications strategy to engage and align employees.

Data Management & Governance Program Leadership

- Leads and supports the Data Management & Governance work stream throughout its lifecycle including establishment of direction and priorities, program oversight to insure delivery of scope within established budget, schedule and quality requirements, and issue and risk management
- Supports cross portfolio integration

Development Operations & BPA Enablement

- Standardizes agile process/delivery methods
- Deployment of tools, techniques, processes for Requirement Management and Continuous Deployment of code
- Deployment of Test Automation Software
- Creates the Business Process Analysis tools for process capture, modeling, and a repository for business process analysts to continuously update information

Mobility CoE & End-User Computing

- Establishes standard hardware and software components, packaging and assembly, and policies (including security) for the field mobile platform
- Addresses the management of the mobile deployment process including the refresh cycle to ensure all employees adhere to standards

SAP and Application Integration Development

- Includes development for integrating the new core Gas Business Enablement applications (Enterprise Asset and Work Management Scheduling/Dispatch and Field Mobility) with existing applications that will remain in the US Gas Operations portfolio. Examples include SAP, Business Intelligence Environments, Customer Information Systems, and other applications as required
- Includes changes to existing applications to prepare them to integrate with the new Gas Business Enablement applications

Solution Architects & Agile Coaches

- Develops standards and guidelines and provides subject matter expertise to program teams to insure that technical solutions and deployment methodologies are delivered in a consistent and integrated manner
- Ensures that Gas Business Enablement objectives are aligned to National Grid's strategic intent for its technical landscape and service model
- Solution Architects – manage the business solution blueprint and coordinate across the development teams to provide an "end-to-end" view of the processes and systems
- Agile Coaches – provide standards and guidance for implementing agile methodology across the multiple teams operating within the overall program

Portfolio Management Leadership

- Overall responsibility for accomplishment of all GBE objectives within sanctioned budgets and timelines and at the level of quality and completeness required to deliver the GBE business case
- Provides the planning, analytical and oversight capabilities required to develop milestone and integration plans, budgets, resource models and program charters
- Establishes and maintains the management and governance framework that insures that GBE programs operate consistently and efficiently and provides visibility to GBE performance, risks, issues, changes and opportunities

WMFE Program Leadership

- Includes the program leader and supporting management team to lead and support the WMFE work stream throughout its lifecycle including establishment of direction and priorities, program oversight to ensure delivery of scope within established budget, schedule and quality requirements, and issue and risk management
- Supports cross-portfolio integration

Customer Experience Program Leadership

- Includes the program leader and supporting management team to lead and support the Customer Experience work stream throughout its lifecycle including establishment of direction and priorities, program oversight to ensure delivery of scope within established budget, schedule and quality requirements, and issue and risk management
- Supports cross-portfolio integration

Exhibit__ (GIOP-10)

Testimony of Gas Infrastructure and Operations Panel

Exhibit __ (GIOP-10)

Incremental Operating Expenses for the GBE Program Allocable to

Niagara Mohawk in the Rate Year and Data Years

Niagara Mohawk Power Corporation d/b/a National Grid
Gas Business Enablement
Incremental Operating Expenses

Line	Investment Name	Program/Release Description	Segment	12-Months Ending March 31, 2019	12-Months Ending March 31, 2020	12-Months Ending March 31, 2021	Total OPEX Spend
1	AIPM	Enhancements	Gas	$31.6	$0.0	$0.0	$31.6
2	AM Program Leadership	AM Program Leadership - 2	Gas	$1,196.0	$0.0	$0.0	$1,196.0
3	AM Program Leadership	AM Program Leadership - 3	Gas	$0.0	$1,225.0	$0.0	$1,225.0
4	AM Program Leadership	AM Program Leadership - 4	Gas	$0.0	$0.0	$311.8	$311.8
5	Asset - Advanced Analytics	Use Case No.1 - Asset Risk	Gas	$0.0	$0.0	$189.0	$189.0
6	Customer Experience Program Leadership	Customer Experience Program Leadership - 1	Gas	$780.7	$0.0	$0.0	$780.7
7	Customer Experience Program Leadership	Customer Experience Program Leadership - 2	Gas	$0.0	$798.8	$0.0	$798.8
8	Customer Experience Program Leadership	Customer Experience Program Leadership - 3	Gas	$0.0	$0.0	$609.5	$609.5
9	Customer Interaction	Customer Interaction	Gas	$93.7	$158.7	$0.0	$252.4
10	Customer Interaction	Customer Interaction - Second Release	Gas	$0.0	$0.0	$105.8	$105.8
11	Customer Interaction	CxT Portal & Channel Management	Gas	$351.6	$273.4	$0.0	$625.0
12	Customer Interaction	Large Commercial & Landlord Interaction	Gas	$0.8	$1.0	$74.3	$76.1
13	Data Management	Building An Advanced Analytics Capability	Gas	$0.0	$0.0	$453.7	$453.7
14	Data Management	Building Score Cards & Metrics Capability	Gas	$0.0	$0.0	$453.7	$453.7
15	Data Management	Data Enrichment Through Record Digitization	Gas	$0.0	$30.0	$1,057.8	$1,087.8
16	Data Management	Data Management Implementation (Quality & Cleansing)	Gas	$7,770.4	$6,762.7	$4,905.0	$19,438.0
17	Data Management	Enable the Data Archive Process	Gas	$234.7	$7.5	$0.0	$242.2
18	Data Management & Governance Program Leadership	Data Management & Governance Program Leadership - 2	Gas	$263.9	$0.0	$0.0	$263.9
19	Data Management & Governance Program Leadership	Data Management & Governance Program Leadership - 3	Gas	$0.0	$269.1	$0.0	$269.1
20	Enabling Capabilities	Development Operations & BPA Enablement - 2	Gas	$428.6	$0.0	$0.0	$428.6
21	Enabling Capabilities	Development Operations & BPA Enablement - 3	Gas	$0.0	$329.1	$0.0	$329.1
22	Enabling Capabilities	Development Operations & BPA Enablement - 4	Gas	$0.0	$0.0	$332.2	$332.2
23	Enabling Capabilities	IS Operating Model (Delivery / Support, Run)	Gas	$0.0	$0.0	$693.9	$693.9
24	Enabling Capabilities	Testing Center of Excellence	Gas	$258.7	$190.9	$72.0	$521.6
25	Engineering, Design, Estimating & Mobility	Complex Design (CAD) & Estimating (ESW)	Gas	$0.0	$0.0	$154.3	$154.3
26	Engineering, Design, Estimating & Mobility	Data Remediation, GIS Upgrade/ Migration & GIS Mobility	Gas	$10,514.9	$6,952.7	$0.0	$17,467.7
27	Engineering, Design, Estimating & Mobility	Design (GWD), Estimating (CU), & Mobility	Gas	$192.1	$546.7	$355.7	$1,094.6
28	Gas Business Enablement Portfolio Management Office	Portfolio Management Leadership - 2	Gas	$6,433.4	$0.0	$0.0	$6,433.4
29	Gas Business Enablement Portfolio Management Office	Portfolio Management Leadership - 3	Gas	$0.0	$6,483.7	$0.0	$6,483.7
30	Gas Business Enablement Portfolio Management Office	Portfolio Management Leadership - 4	Gas	$0.0	$0.0	$5,567.7	$5,567.7
31	Integrated Supply & Demand Planning	Construction Planning	Gas	$0.0	$806.8	$0.0	$806.8
32	Integrated Supply & Demand Planning	Maintenance & Inspection Planning	Gas	$788.1	$0.0	$0.0	$788.1
33	Integrated Supply & Demand Planning	Program and Project Management Planning	Gas	$788.1	$0.0	$0.0	$788.1
34	Integrated Supply Feasibility Evaluation and Strategy	Integrated Supply Feasibility Assessment	Gas	$260.2	$0.0	$0.0	$260.2
35	Integrity Management	Additional IM Modules	Gas	$39.4	$12.5	$0.0	$51.9
36	Inventory Optimization	Inventory Optimization	Gas	$677.2	$0.0	$0.0	$677.2
37	Inventory Optimization	Inventory Strategy	Gas	$406.3	$0.0	$0.0	$406.3
38	Operating Model & Value Framework	Business Architecture - Organization Design & Transition	Gas	$2,537.0	$152.7	$0.0	$2,689.7
39	Operating Model & Value Framework	Leadership Capability Development	Gas	$1,566.6	$169.9	$0.0	$1,736.6
40	Operating Model & Value Framework	Operations Performance, Governance & Value Realization	Gas	$1,022.9	$227.7	$173.3	$1,424.0
41	Operating Model & Value Framework	Skills/ Capability Assessment & Curriculum Redesign	Gas	$556.9	$171.6	$0.0	$728.5
42	Program Business Readiness & Sustainment	Knowledge Transition & Collaboration Strategy	Gas	$613.2	$0.0	$0.0	$613.2
43	Program Business Readiness & Sustainment	Program Business Readiness	Gas	$1,232.9	$1,126.7	$464.6	$2,824.2
44	Program Business Readiness & Sustainment	Program Business Sustainment - 1	Gas	$208.8	$0.0	$0.0	$208.8
45	Program Business Readiness & Sustainment	Program Business Sustainment - 2	Gas	$0.0	$0.0	$665.3	$665.3
46	Program Level People Strategy	Labor Contract Strategy & Implementation Support	Gas	$76.4	$78.5	$80.6	$235.4

Niagara Mohawk Power Corporation d/b/a National Grid
Gas Business Enablement
Incremental Operating Expenses

Line	Investment Name	Program/Release Description	Segment	12-Months Ending March 31, 2019	12-Months Ending March 31, 2020	12-Months Ending March 31, 2021	Total OPEX Spend
47	Program Level People Strategy	Program Learning Management - 2	Gas	$390.6	$0.0	$0.0	$390.6
48	Program Level People Strategy	Program Learning Management - 3	Gas	$0.0	$519.2	$0.0	$519.2
49	Program Level People Strategy	Program Learning Management - 4	Gas	$0.0	$0.0	$587.2	$587.2
50	Program Level People Strategy	Program Transformational Change Office - 2	Gas	$2,642.4	$0.0	$0.0	$2,642.4
51	Program Level People Strategy	Program Transformational Change Office - 3	Gas	$0.0	$1,806.0	$0.0	$1,806.0
52	Program Level People Strategy	Program Transformational Change Office - 4	Gas	$0.0	$0.0	$678.0	$678.0
53	Program Level People Strategy	Workforce Strategy Planning & Implementation Support	Gas	$784.6	$176.2	$58.9	$1,019.7
54	Projects & Program Management	Core Projects & Program Management	Gas	$0.0	$0.0	$348.2	$348.2
55	Regulatory/ Compliance	Regulatory/ Compliance	Gas	$9,000.0	$6,350.0	$500.0	$15,850.0
56	SC - Business Architecture Design	SC - Business Architecture Design	Gas	$445.9	$0.0	$0.0	$445.9
57	Solution Architects & Agile Coaches	Solution Architects & Agile Coaches - 2	Gas	$440.5	$0.0	$0.0	$440.5
58	Solution Architects & Agile Coaches	Solution Architects & Agile Coaches - 3	Gas	$0.0	$313.8	$0.0	$313.8
59	Supply Chain Master Data Improvements	Data Cleansing Execution	Gas	$543.1	$0.0	$0.0	$543.1
60	Supply Chain Master Data Improvements	Defined Data Cleansing Approach	Gas	$362.1	$0.0	$0.0	$362.1
61	Supply Chain Program Leadership	Supply Chain Program Leadership - 1	Gas	$1,695.1	$0.0	$0.0	$1,695.1
62	Supply Chain Program Leadership	Supply Chain Program Leadership - 2	Gas	$0.0	$705.8	$0.0	$705.8
63	Support Interaction	CRM / Contact Center	Gas	$800.0	$200.0	$0.0	$1,000.0
64	Support Interaction	Employee Support Interaction	Gas	$203.8	$214.9	$0.0	$418.6
65	Support Interaction	Employee Support Interaction - Second Release	Gas	$0.0	$0.0	$15.4	$15.4
66	Supporting through Data	Campaign Management	Gas	$0.0	$0.0	$38.5	$38.5
67	Supporting through Data	Channel Analytics	Gas	$0.0	$0.0	$78.5	$78.5
68	Technology Initiatives	Operations/System Monitoring	Gas	$29.4	$0.0	$0.0	$29.4
69	Warehousing and Network Optimization	Networking Transportation & Optimization Analysis	Gas	$1,083.5	$0.0	$0.0	$1,083.5
70	Warehousing and Network Optimization	Networking Transportation & Optimization Implementation	Gas	$1,083.5	$0.0	$0.0	$1,083.5
71	Warehousing and Network Optimization	Warehousing Optimization	Gas	$406.3	$0.0	$0.0	$406.3
72	WMFE Program Leadership	WMFE Program Leadership - 2	Gas	$1,691.1	$0.0	$0.0	$1,691.1
73	WMFE Program Leadership	WMFE Program Leadership - 3	Gas	$0.0	$1,785.0	$0.0	$1,785.0
74	WMFE Program Leadership	WMFE Program Leadership - 4	Gas	$0.0	$0.0	$465.2	$465.2
75	Work Management & Field Enablement	Company Driven Work: Collections and non-Appointment Offs - ELECTRIC	Electric	$2.3	$0.0	$0.0	$2.3
76	Work Management & Field Enablement	Company Driven Work: Collections and non-Appointment Offs - GAS	Gas	$4.2	$0.0	$0.0	$4.2
77	Work Management & Field Enablement	Construction Work & Leak Repair	Gas	$0.0	$592.8	$1,190.9	$1,783.7
78	Work Management & Field Enablement	Corrosion and I&R Work	Gas	$1,667.4	$0.0	$0.0	$1,667.4
79	Work Management & Field Enablement	CU Governance & Library - process	Gas	$184.3	$0.0	$0.0	$184.3
80	Work Management & Field Enablement	Customer, Leak Investigation & Inspections - ELECTRIC	Electric	$460.9	$615.5	$0.0	$1,076.5
81	Work Management & Field Enablement	Customer, Leak Investigation & Inspections - GAS	Gas	$856.0	$1,143.1	$0.0	$1,999.1
82	Work Management & Field Enablement	PowerPlan Integration & Enhancements	Gas	$0.0	$101.7	$114.6	$216.3
83	Work Management & Field Enablement	WMFE Optimization	Gas	$0.0	$38.5	$331.6	$370.2
84	Work Management & Field Enablement	Work Forecasting & Planning - solution	Gas	$0.0	$0.0	$189.8	$189.8
85		Total Fiscal Year O&M Spend for Gas Business Enablement		$64,102.0	$41,338.5	$21,317.1	$126,757.6
86		Less: To remove Base Labor and overheads included in Labor & Benefits		$6,667.2	$6,916.9	$6,884.7	$20,468.8
87		Adjusted Total Fiscal Year O&M Spend for Gas Business Enablement		$57,434.8	$34,421.7	$14,432.3	$106,288.8
88							

Niagara Mohawk Power Corporation d/b/a National Grid
Gas Business Enablement
Incremental Operating Expenses

Line	Investment Name	Program/Release Description	Segment	12-Months Ending March 31, 2019	12-Months Ending March 31, 2020	12-Months Ending March 31, 2021	Total OPEX Spend
89				FY 19	FY20	FY21	Total
90		Total Gas Operating Expenses		$57,019.78	$33,909.13	$14,432.34	$105,361.2
91							
92		Company Description	% of Retail Customers (C-210)				
93		Niagara Mohawk Power Corp. - Gas	16.89%	$9,630.6	$5,727.25	$2,437.6	$17,795.5
94		KeySpan Energy Delivery New York	34.87%	$19,882.8	$11,824.11	$5,032.6	$36,739.5
95		KeySpan Energy Delivery Long Island	16.27%	$9,277.1	$5,517.02	$2,348.1	$17,142.3
96		Boston Gas Company	19.02%	$10,845.2	$6,449.52	$2,745.0	$20,039.7
97		Colonial Gas Company	5.58%	$3,181.7	$1,892.13	$805.3	$5,879.2
98		Narragansett Gas Company	7.37%	$4,202.4	$2,499.10	$1,063.7	$7,765.1
99							
100							
101		Total Electric Operating Expenses		$415.0	$512.5	$0.0	$927.5
102		Company Description	% of Retail Customers (C-198)				
103		Niagara Mohawk Power Corp.- Electric Distr.	47.71%	$198.0	$244.5	$0.0	$442.5
104		Massachusetts Electric Company	37.69%	$156.4	$193.2	$0.0	$349.6
105		Nantucket Electric Company	0.38%	$1.6	$1.9	$0.0	$3.5
106		Narragansett Electric Company	14.22%	$59.0	$72.9	$0.0	$131.9
107							
108							
109		Total Allocated to NMPC, Gas, Exhibit___(RRP-3), Schedule 27		$9,630.6	$5,727.3	$2,437.6	$17,795.5
110							
111		Total Allocated to NMPC, Electric, Exhibit____(RRP-3), Schedule 27		$198.0	$244.5	$0.0	$442.5

Line 85: Sum of Lines 1-84
Line 87: Line 84 - Line 86
Line 90: Sum of Gas Segment Lines 1-84 - Line 86 * Ratio (Sum of Gas Segment Lines 1-84 / Line 85)
Line 101: Sum of Electric Segment Lines 1-84 - Line 86 * Ratio (Sum of Electric Segment Lines 1-84 / Line 85)
Line 109: Equals Line 93
Line 111: Equals Line 103

Exhibit__ (GIOP-11)

Testimony of Gas Infrastructure and Operations Panel

Exhibit __ (GIOP-11)

Additional Run the Business Costs to Niagara Mohawk to Support
the GBE Program Post-Implementation

Exhibit_____(GIOP-11)
Schedule 1
Page 1 of 1

Niagara Mohawk Power Corporation d/b/a National Grid
Gas Business Enablement (GBE)
Incremental Run the Business (RTB) Operating Expenses

Line	Description Of Run the Business (RTB) Costs	For 12-Months Ending March 31, 2019	For 12-Months Ending March 31, 2020	For 12-Months Ending March 31, 2021
1	Software License Maintenance / Subscriptions	$3,396,499	$7,933,079	$10,851,487
2	Hardware License Maintenance / Mobile Subscription	$1,615,176	$3,772,506	$5,160,330
3	GBE team to support systems and applications	$2,817,960	$5,635,920	$5,635,920
4	Subtotal of Additional RTB for GBE Applications	$7,829,635	$17,341,505	$21,647,737
5	Legacy Application Support (Replace)	$2,177,811	$1,662,399	$650,780
6	Legacy Application Support (Future State - non-Replace base)	$985,250	$985,250	$985,250
7	Legacy Application Support (Future State - Increase)	$49,263	$98,525	$147,788
8	Subtotal of Legacy RTB Costs	$3,212,324	$2,746,174	$1,783,818
9	Total of RTB Costs	$11,041,958	$20,087,680	$23,431,555
10	Current RTB Costs	$3,937,137	$4,647,841	$5,105,040
11	Total Incremental RTB Costs due to GBE Applications	$7,104,821	$15,439,839	$18,326,515
12	Allocation to Niagara Mohawk, Gas, Exhibit___(RRP-3), Schedule 27	$1,200,004	$2,607,789	$3,095,348

Allocation to Companies:

	Company Description	% of Customers
13	Niagara Mohawk Power Corp. - Gas	16.89%
14	KeySpan Energy Delivery New York	34.87%
15	KeySpan Energy Delivery Long Island	16.27%
16	Boston Gas Company	19.02%
17	Colonial Gas Company	5.58%
18	Narragansett Gas Company	7.37%

Line 4: Sum of Lines 1-3
Line 8: Sum of Lines 5-7
Line 9: Line 4 + Line 8
Line 11: Line 9 - Line 10
Line 12: Line 11 * Line 13

Exhibit__ (GIOP-12)

Testimony of Gas Infrastructure and Operations Panel

Exhibit __ (GIOP-12)

Total U.S. Type I and Type II Savings Estimates (Capital and O&M) and Niagara Mohawk Allocated Type I Savings Estimates Identified in Connection with the GBE Program

Niagara Mohawk Power Corporation 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	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	Type I	$0	$0	$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	Type I	$143,315	$573,259	$573,259	$573,259	$573,259	$573,259	$573,259	$573,259	$573,259
Work Management & Field Enablemen	Clerical / Back Office Productivity Improvemen	Type I	$0	$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 Enablemen	Damage Prevention - Reduced Travel Mileage	Type I	$0	$37,275	$49,700	$49,700	$49,700	$49,700	$49,700	$49,700	$49,700
Work Management & Field Enablemen	M&C Productivity Improvements - Base	Type I	$0	$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	Type II	$0	$0	$0	$0	$642,130	$906,536	$906,536	$906,536	$906,536
Customer Interaction	Reduce Non-Move Call Volume through Self-Service	Type II	$0	$0	$61,278	$502,480	$588,270	$588,270	$588,270	$588,270	$588,270
Data Management	Reduction in Data Cleansing / Scrubbing Effort - Analyst	Type II	$0	$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	Type II	$0	$0	$4,886	$302,941	$351,803	$351,803	$351,803	$351,803	$351,803
Engineering, Design, Estimating & Mobility	Complex Jobs - Estimating Accuracy Fine Avoidance	Type II	$0	$0	$0	$45,833	$550,000	$550,000	$550,000	$550,000	$550,000
Engineering, Design, Estimating & Mobility	Reduction in Mappers via Field Data Entry	Type II	$0	$8,934	$553,899	$643,238	$643,238	$643,238	$643,238	$643,238	$643,238
Integrated Supply & Demand Planning	Improved Project Delivery - Construction	Type II	$0	$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	Type II	$0	$0	$0	$0	$629,809	$889,142	$889,142	$889,142	$889,142
Regulatory/ Compliance	Reduced Compliance and Gas Safety Penalties	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 Enablemen	CMS Collections Jobs - Reduction in Mileage	Type II	$0	$0	$0	$0	$117,384	$165,718	$165,718	$165,718	$165,718
Work Management & Field Enablemen	CMS Collections Jobs - Reduction in Travel Time	Type II	$0	$0	$0	$0	$561,142	$792,200	$792,200	$792,200	$792,200
Work Management & Field Enablement	CMS Planned Jobs - Reduction in Available Time via Autodispatch	Type II	$0	$202,349	$269,798	$269,798	$269,798	$269,798	$269,798	$269,798	$269,798
Work Management & Field Enablemen	CMS Planned Jobs - Reduction in Mileage	Type II	$0	$83,430	$111,240	$111,240	$111,240	$111,240	$111,240	$111,240	$111,240
Work Management & Field Enablemen	CMS Planned Jobs - Reduction in Travel Time	Type II	$0	$252,363	$336,484	$336,484	$336,484	$336,484	$336,484	$336,484	$336,484
Work Management & Field Enablemen	CMS Planned Jobs - Reduction in UTCs	Type II	$0	$38,760	$51,680	$51,680	$51,680	$51,680	$51,680	$51,680	$51,680
Work Management & Field Enablemen	Damage Prevention - Reduced Travel Time	Type II	$0	$90,007	$120,009	$120,009	$120,009	$120,009	$120,009	$120,009	$120,009
Work Management & Field Enablemen	Inspections - Reduced Travel Mileage	Type II	$0	$0	$0	$0	$3,718	$5,249	$5,249	$5,249	$5,249
Work Management & Field Enablemen	Inspections - Reduced Travel Time	Type II	$0	$0	$0	$0	$19,064	$26,914	$26,914	$26,914	$26,914
Work Management & Field Enablemen	M&C and CMS Jobs - Reduced Summonses	Type II	$0	$0	$0	$0	$2,037,959	$4,446,457	$4,446,457	$4,446,457	$4,446,457
Work Management & Field Enablemen	Reduction in Field Tech Communication	Type II	$0	$99,566	$265,511	$265,511	$265,511	$265,511	$265,511	$265,511	$265,511
Work Management & Field Enablemen	Reduction in Meter Verification Jobs	Type II	$0	$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

Exhibit_____(GIOP-12)
Schedule 1
Page 2 of 2

Niagara Mohawk Power Corporation d/b/a National Grid
Gas Business Enablement
Customer Benefits - Forecasted for Niagara Mohawk Power Corporation
For Rate Year Ending March 31, 2019 and Data Years Ending March 31, 2020 and 2021

Line	Benefit Description	Benefit Type	12-Months Ending March 31, 2019	12-Months Ending March 31, 2020	12-Months Ending March 31, 2021
1	Clerical / Back Office Productivity Improvement	Type I	$0	$1,706	$105,767
2	Damage Prevention - Reduced Travel Mileage	Type I	$0	$4,627	$6,169
3	M&C Productivity Improvements - Base	Type I	$0	$124,375	$883,064
4	Reduction / Redirection in Opex via AIPM	Type I	$0	$0	$2,279
5	Reduction in Damages due to Data Quality Errors	Type I	$6,937	$27,748	$27,748
6	CMS Planned Jobs - Reduction in Available Time via Autodispatch	Type II	$0	$2,517	$3,356
7	CMS Planned Jobs - Reduction in Mileage	Type II	$0	$18,436	$24,582
8	CMS Planned Jobs - Reduction in Travel Time	Type II	$0	$62,225	$82,967
9	CMS Planned Jobs - Reduction in UTCs	Type II	$0	$5,168	$6,890
10	Complex Jobs - Engineering Productivity Improvement	Type II	$0	$0	$125
11	Damage Prevention - Reduced Travel Time	Type II	$0	$12,156	$16,208
12	Improved Project Delivery - Construction	Type II	$0	$571	$35,372
13	Reduce Non-Move Call Volume through Self-Service	Type II	$0	$0	$12,945
14	Reduced Compliance and Gas Safety Penalties	Type II	$512,037	$2,962,500	$5,595,833
15	Reduction in Data Cleansing / Scrubbing Effort - Analysts	Type II	$0	$13,082	$92,880
16	Reduction in Field Tech Communications	Type II	$0	$21,859	$58,291
17	Reduction in Mappers via Field Data Entry	Type II	$0	$276	$17,110
18	Reduction in Meter Verification Jobs	Type II	$0	$29,427	$39,236
19			$518,974	$3,286,674	$7,010,824
20					
21	All Type I Benefits Included in Revenue Requirement, Exhibit____(RRP-3), Schedule 27		$6,937	$158,456	$1,025,028

Niagara Mohawk Power Corporation

d/b/a National Grid

PROCEEDING ON MOTION OF THE COMMISSION AS TO THE RATES, CHARGES, RULES AND REGULATIONS OF NIAGARA MOHAWK POWER CORPORATION FOR ELECTRIC AND GAS SERVICE

Testimony and Exhibits of:

Revenue Requirements Panel
Exhibit __ (RRP-3)

Book 12

April 28, 2017

Submitted to:
New York State Public Service Commission
Case 17-E-____
Case 17-G-____

Submitted by:
Niagara Mohawk Power Corporation

nationalgrid

Niagara Mohawk Power Corporation d/b/a National Grid
Operating Expenses by Component
Consultants
($000's)

Explanation of Adjustments:		Provider Company	Source Workpaper	Total	Electric	Gas
Page 1	Adjustments: (to normalize Historic Year)					
	To remove Ticonderoga Line Costs	Niagara Mohawk Power Corporation	Workpaper 5	$ (55.4)	$ (55.4)	$ -
	Reclass Rate Case Expense	National Grid USA Service Company	Workpaper 3	(49.1)	(41.3)	$ (7.8)
	Test Year Analysis Adjustments	National Grid USA Service Company	RPP-2, Schedule 1	(86.4)	(72.5)	(13.9)
	To exclude Gas Business Enablement Expense	National Grid USA Service Company	Workpaper 2	(625.6)	-	(625.6)
	Removal of Unrecoverable SIR Deferral Amounts	Niagara Mohawk Power Corporation	Workpaper 4	(22.5)	(19.1)	(3.4)
	Allocation adjustment for common facilities charges	Niagara Mohawk Power Corporation	Workpaper 6	-	(4.0)	4.0
				$ (838.9)	$ (192.2)	$ (646.7)
Page 2	Adjustments: (to reflect conditions in the Rate Year)					
	General inflation %					
	4.9542%			$ 1,305.2	$ 1,002.4	$ 302.8
	TOTAL			$ 1,305.2	$ 1,002.4	$ 302.8
Page 3 & 4	Adjustments: (to reflect conditions in Data Year 1)					
	General inflation %					
	2.7232%			$ 753.0	$ 578.3	$ 174.7
	TOTAL			$ 753.0	$ 578.3	$ 174.7
Page 3 & 4	Adjustments: (to reflect conditions in Data Year 2)					
	General inflation %					
	2.3988%			$ 681.3	$ 523.3	$ 158.1
	TOTAL			$ 681.3	$ 523.3	$ 158.1

Niagara Mohawk Power Corporation d/b/a National Grid
Operating Expenses by Component
Contractors
($000's)

		Provider Company	Source Workpaper	Total	Electric	Gas
Explanation of Adjustments:						
Page 1	Adjustments: (to normalize Historic Year)					
	To remove Major Storm Costs	Niagara Mohawk Power Corporation	Workpaper 3	$ (2,053.3)	$ (2,053.3)	$ -
	To remove Ticonderoga Line Costs	Niagara Mohawk Power Corporation	Workpaper 5	(4.8)	(4.8)	-
	Test Year Analysis Adjustments	National Grid USA Service Company	RRP-2, Schedule 1	-		
	To exclude Gas Business Enablement Expense	Niagara Mohawk Power Corporation	Workpaper 2	(3.7)	-	(3.7)
	To remove expensed Gas Corrosion Costs	Niagara Mohawk Power Corporation	Workpaper 4	(294.7)	-	(294.7)
	Allocation adjustment for common facilities charges	Niagara Mohawk Power Corporation	Workpaper 6	-	(369.3)	369.3
	TOTAL			$ (2,356.5)	$ (2,427.4)	$ 70.9
Page 2	Adjustments: (to reflect conditions in the Rate Year)					
	General inflation %					
	4.9542%			$ 5,031.0	$ 3,958.0	$ 1,073.0
	TOTAL			$ 5,031.0	$ 3,958.0	$ 1,073.0
Page 3 & 4	Adjustments: (to reflect conditions in Data Year 1)					
	General inflation %					
	2.7232%			$ 2,902.5	$ 2,283.4	$ 619.1
	TOTAL			$ 2,902.5	$ 2,283.4	$ 619.1
Page 3 & 4	Adjustments: (to reflect conditions in Data Year 2)					
	General inflation %					
	2.3988%			$ 2,626.3	$ 2,066.2	$ 560.2
	TOTAL			$ 2,626.3	$ 2,066.2	$ 560.2

Niagara Mohawk Power Corporation d/b/a National Grid
Operating Expenses by Component
Employee Expenses
($000's)

		Provider Company	Source Workpaper	Total	Electric	Gas
Explanation of Adjustments:						
Page 1	Adjustments: (to normalize Historic Year)					
	Test Year Analysis Adjustments	Niagara Mohawk Power Corporation	RRP-2, Schedule 1	$ (22.6)	$ (16.7)	$ (5.9)
	Test Year Analysis Adjustments	National Grid USA Service Company	RRP-2, Schedule 1	(59.2)	(48.4)	(10.7)
	Test Year Analysis Adjustments	All Other Companies	RRP-2, Schedule 1	(0.1)	(0.0)	(0.0)
	To exclude Gas Business Enablement Expense	Niagara Mohawk Power Corporation	Workpaper 2	(10.6)	-	(10.6)
	To remove Major Storm Costs	Niagara Mohawk Power Corporation	Workpaper 3	(0.7)	(0.7)	-
	To remove Major Storm Costs	National Grid USA Service Company	Workpaper 3	(8.0)	(8.0)	-
	To remove Ticonderoga Line Costs	Niagara Mohawk Power Corporation	Workpaper 4	(0.1)	(0.1)	-
	To remove Band A Employee Expenses	Niagara Mohawk Power Corporation	RRP-2, Schedule 1	(55.6)	(47.7)	(7.9)
	Allocation Adjustment for Common Facilities charges	Niagara Mohawk Power Corporation	Workpaper 5	-	(0.8)	0.8
				$ (156.8)	$ (122.6)	$ (34.3)
Page 2	Adjustments: (to reflect conditions in the Rate Year)					
	General inflation %					
	4.9542%			$ 423.3	$ 355.6	$ 67.7
	TOTAL			$ 423.3	$ 355.6	$ 67.7
Page 3 & 4	Adjustments: (to reflect conditions in Data Year 1)					
	General inflation %					
	2.7232%			$ 244.2	$ 205.2	$ 39.0
	TOTAL			$ 244.2	$ 205.2	$ 39.0
Page 3 & 4	Adjustments: (to reflect conditions in Data Year 2)					
	General inflation %					
	2.3988%			$ 221.0	$ 185.6	$ 35.3
	TOTAL			$ 221.0	$ 185.6	$ 35.3

Niagara Mohawk Power Corporation d/b/a National Grid
Operating Expenses by Component
Hardware Expenses
($000's)

		Provider Company	Source Workpaper	Total	Electric	Gas
Explanation of Adjustments:						
Page 1	Adjustments: (to normalize Historic Year)					
	To exclude Gas Business Enablement Expense	Niagara Mohawk Power Corporation	Workpaper 2	$ (0.3)	$ -	$ (0.3)
	Allocation adjustment for common facilities charges	Niagara Mohawk Power Corporation	Workpaper 3	-	(0.0)	0.0
				$ (0.3)	$ (0.0)	$ (0.3)
Page 2	Adjustments: (to reflect conditions in the Rate Year)					
	General inflation %					
	4.9542%			$ 20.5	$ 17.7	$ 2.8
	TOTAL			$ 20.5	$ 17.7	$ 2.8
Page 3 & 4	Adjustments: (to reflect conditions in Data Year 1)					
	General inflation %					
	2.7232%			$ 11.8	$ 10.2	$ 1.6
	TOTAL			$ 11.8	$ 10.2	$ 1.6
Page 3 & 4	Adjustments: (to reflect conditions in Data Year 2)					
	General inflation %					
	2.3988%			$ 10.7	$ 9.2	$ 1.5
	TOTAL			$ 10.7	$ 9.2	$ 1.5

Exhibit_____(RRP-3)
Schedule 6
Page 5 of 5

Niagara Mohawk Power Corporation d/b/a National Grid
Operating Expenses by Component
Software Expenses
($000's)

		Provider Company	Source Workpaper	Total	Electric	Gas
Explanation of Adjustments:						
Page 1	Adjustments: (to normalize Historic Year)					
				$ -	$ -	
	To exclude Gas Business Enablement Expense	Niagara Mohawk Power Corporation	Workpaper 2	(0.1)	-	(0.1)
				-	-	
				$ (0.1)	$ -	$ (0.1)
Page 2	Adjustments: (to reflect conditions in the Rate Year)					
	General inflation %					
	4.9542%			$ 703.1	$ 587.8	$ 115.3
	TOTAL			$ 703.1	$ 587.8	$ 115.3
Page 3	Adjustments: (to reflect conditions in Data Year 1)					
	General inflation %					
	2.7232%			$ 405.7	$ 339.1	$ 66.5
	TOTAL			$ 405.7	$ 339.1	$ 66.5
Page 3	Adjustments: (to reflect conditions in Data Year 2)					
	General inflation %					
	2.3988%			$ 367.1	$ 306.9	$ 60.2
	TOTAL			$ 367.1	$ 306.9	$ 60.2

Exhibit_____(RRP-3)
Schedule 7
Page 5 of 5

Niagara Mohawk Power Corporation d/b/a National Grid
Operating Expenses by Component
Other Expenses
($000's)

		Provider Company	Source Workpaper	Total	Electric	Gas
Explanation of Adjustments:						
Page 1	Adjustments: (to normalize Historic Year)					
	To adjust allocation of Verizon costs	National Grid USA Service Company	Workpaper 7	$ (3,077.4)	$ (3,430.1)	$ 352.7
	To reclass Incentives to separate schedule	Niagara Mohawk Power Corporation	Workpaper 6	(762.8)	-	$ (762.8)
	To remove Ticonderoga Line Costs	Niagara Mohawk Power Corporation	Workpaper 5	0.6	0.6	-
	To exclude Gas Business Enablement Expense	Niagara Mohawk Power Corporation	Workpaper 2	(1.7)	-	(1.7)
	To remove Major Storm Costs	Niagara Mohawk Power Corporation	Workpaper 3	(3.8)	(3.8)	-
	Removal of Unrecoverable SIR Deferral Amounts	Niagara Mohawk Power Corporation	Workpaper 4	(4.3)	(3.7)	(0.6)
	Test Year Analysis Adjustments	National Grid USA Service Company	RRP-2, Schedule 1	(420.4)	(2.9)	(417.6)
	To reclass Economic Development Grants	National Grid USA Service Company	Workpaper 8	(15,094.6)	(14,924.3)	(170.3)
	Allocation adjustment for common facilities charges	Niagara Mohawk Power Corporation	Workpaper 9	-	(15.9)	15.9
	TOTAL			$ (19,364.3)	$ (18,379.9)	$ (984.4)
Page 2	Adjustments: (to reflect conditions in the Rate Year)					
	General inflation %					
	4.9542%			$ 1,303.6	$ 1,029.4	$ 274.2
	TOTAL			$ 1,303.6	$ 1,029.4	$ 274.2
Page 3	Adjustments: (to reflect conditions in Data Year 1)					
	General inflation %					
	2.7232%			$ 752.1	$ 593.9	$ 158.2
	TOTAL			$ 752.1	$ 593.9	$ 158.2
Page 3	Adjustments: (to reflect conditions in Data Year 2)					
	General inflation %					
	2.3988%			$ 680.5	$ 537.4	$ 143.1
	TOTAL			$ 680.5	$ 537.4	$ 143.1

Exhibit_____(RRP-3)
Schedule 9
Page 6 of 9

Niagara Mohawk Power Corporation d/b/a National Grid
Operating Expenses by Component
Service Company Rents - Summary

Line	Rent Type	Adjusted Test Year Electric	Adjusted Test Year Gas	Rate Year 19 Expense Electric	Rate Year 19 Expense Gas	Data Year 20 Expense Electric	Data Year 20 Expense Gas	Data Year 21 Expense Electric	Data Year 21 Expense Gas
1	Facilities	$ 1,822,979	$ 430,805	$ 1,674,044	$ 390,928	$ 1,372,755	$ 329,892	$ 1,032,106	$ 258,400
2	Information Systems	26,282,541	4,261,864	39,529,973	8,788,330	45,687,729	12,126,644	56,623,796	15,952,222
3	Total Service Company Rent Expense	$ 28,105,520	$ 4,692,669	$ 41,204,017	$ 9,179,258	$ 47,060,484	$ 12,456,536	$ 57,655,902	$ 16,210,622
4									
5	IS and Facilities Test Year per Books	$ 31,185,799	$ 5,589,472						
6									
7	Normalizing Adjustment	$ (3,080,280)	$ (896,803)	$ 13,098,497	$ 4,486,589	$ 5,856,467	$ 3,277,278	$ 10,595,418	$ 3,754,086

Niagara Mohawk Power Corporation d/b/a National Grid
Operating Expenses by Component
Service Company Rents - Summary by Rent Type/Program

		Historic Test Year Expense		Rate Year Expense		Data Year 1 Expense		Data Year 2 Expense	
Line	Rent Type	Electric	Gas	Electric	Gas	Electric	Gas	Electric	Gas
1	Existing IS Projects	$26,282,541	$4,261,864	$24,050,522	$4,254,858	$22,081,240	$3,932,792	$20,513,331	$3,600,740
2	*Total Existing IS Projects*	$26,282,541	$4,261,864	$24,050,522	$4,254,858	$22,081,240	$3,932,792	$20,513,331	$3,600,740
3									
4	Cyber Security (IS)	-	-	1,391,946	267,076	1,882,247	361,152	2,046,338	392,636
5	FY18 Plan (SSP)	-	-	6,778,031	1,138,215	7,741,409	1,665,367	7,268,007	2,339,728
6	Growth Playbook	-	-	87,303	19,896	779,395	220,456	842,201	250,230
7	PSC Mandate (SSP)	-	-	1,498,999	301,765	1,411,469	299,225	1,335,587	282,804
8	Other Mandates (IS)	-	-	719,810	196,937	1,709,141	405,933	2,660,290	582,481
9	Physical Security (IS)	-	-	194,516	37,146	278,028	53,087	358,145	68,380
10	Tech Modernization (IS)	-	-	1,548,366	297,089	3,661,796	702,599	5,777,548	1,108,553
11	REV / Grid Mod Projects (ECP, AMI, IS, EIOP)	-	-	3,260,480	499,938	5,605,509	604,899	14,728,952	1,387,366
12	Gas Business Enablement (GIOP)	-	-	-	1,775,409	537,495	3,881,134	1,093,397	5,939,303
13	*Total Forecasted IS Projects*	$0	$0	$15,479,451	$4,533,472	$23,606,489	$8,193,852	$36,110,464	$12,351,482
14									
15	Existing Facilities Projects	1,822,979	430,805	1,649,830	386,395	1,339,695	323,702	990,889	250,683
16	Forecasted Facilities Projects	-	-	24,214	4,533	33,060	6,190	41,217	7,717
17	*Total Facilities Projects*	$1,822,979	$430,805	$1,674,044	$390,928	$1,372,755	$329,892	$1,032,106	$258,400
18									
19	Total Service Company Rent Expense	$28,105,520	$4,692,669	$41,204,017	$9,179,258	$47,060,484	$12,456,536	$57,655,902	$16,210,622

Exhibit_____(RRP-3)
Schedule 9
Page 8 of 9

Niagara Mohawk Power Corporation d/b/a National Grid
Operating Expenses by Component
Service Company Rents - Information Systems Projects

Line	Project Name	Work Order/Program	Historic Test Year Electric	Historic Test Year Gas	Rate Year 19 Expense Electric	Rate Year 19 Expense Gas	Data Year 20 Expense Electric	Data Year 20 Expense Gas	Data Year 21 Expense Electric	Data Year 21 Expense Gas
1	Existing IS Projects									
2	DMS/OMS Replacement	90000098917	$ 5,673,734	$ -	$ 4,946,231	$ -	$ 4,713,159	$ -	$ 4,480,088	$ -
3	USFP-Testing -R1	90000107542	2,036,009	390,654	1,840,767	353,193	1,753,993	336,543	1,667,219	319,894
4	USFP Test SS	90000117367	1,529,944	293,554	1,383,231	265,404	1,318,026	252,893	1,252,820	240,382
5	EHR1 - Supply Chain	90000148059	917,451	176,034	802,869	154,049	765,022	146,787	727,175	139,525
6	USFP-Build & Unit Test -R1	90000107541	888,026	170,388	799,813	153,462	762,125	146,231	724,437	139,000
7	USFP-Hardware & Software-R1	90000107551	777,224	149,128	702,693	134,828	669,568	128,472	636,443	122,116
8	EHR1 - BPS	90000148063	735,488	141,120	605,966	225,180	573,837	213,241	546,474	203,073
9	USFP - Process & Design-DD	90000104646	579,408	111,173	641,181	123,025	610,968	117,228	580,755	111,431
10	USFP R3 Finance	90000142411	542,590	104,108	523,846	100,512	499,152	95,774	474,458	91,036
11	EHR1 - Finance	90000148060	492,948	94,583	480,697	92,233	462,987	88,835	445,277	85,437
12	INVP 1356A US Retail Web Customer &	90000100058	428,333	116,276	429,741	82,456	409,491	78,570	389,241	74,685
13	USFP-PMO - R1	90000107539	441,065	84,628	383,274	104,044	363,248	98,608	361,173	69,299
14	Other Existing IS Projects	Various	11,240,320	2,430,217	10,510,212	2,466,473	9,179,664	2,229,611	8,227,771	2,004,863
15	Total Existing IS Projects		$ 26,282,541	$ 4,261,864	$ 24,050,522	$ 4,254,858	$ 22,081,240	$ 3,932,792	$ 20,513,331	$ 3,600,740
16										
17	Forecasted IS Projects									
18	Load and DER Forecasting (Acquisition of Remote Sensing Data - NY)	NY REV / Grid Mod	$ -	$ -	$ 1,345,532	$ 499,938	$ 1,225,430	$ 455,313	$ 1,149,899	$ 427,249
19	US CNI-EMS Lifecycle Hardware and Software Upgrade	FY18 Plan	-	-	1,758,464	-	1,601,503	-	1,502,792	
20	DRMS for C&I Demand Response	NY REV / Grid Mod	-	-	1,280,788	-	1,192,832	-	1,100,000	
21	INVP 3932 Customer Contact Center	FY18 Plan	-	-	713,078	264,984	1,313,711	488,183	1,213,400	450,906
22	INVP 4307 US Win 7 Refresh Ph 3	FY18 Plan	-	-	534,976	102,647	503,480	96,604	480,122	92,122
23	INVP 3839A NY Retail Access Ph2	PSC Mandate	-	-	435,981	161,942	405,164	150,495	383,842	142,575
24	INVP 3614D1 Ent Network Security	Cyber Security	-	-	453,338	86,983	420,842	80,748	398,359	76,434
25	Plant Information Historian	NY REV / Grid Mod	-	-	474,053	-	978,713	-	904,239	-
26	Corrosion and I&R Work	GBE- Work Management	-	-	-	426,812	-	726,557	-	668,400
27	INVP 4448 Low Income Order CSS	PSC Mandate	-	-	294,952	109,811	274,247	102,103	259,922	96,769
28	S005242 M112 Systemic Improvement	FY18 Plan	-	-	295,562	56,710	278,619	53,459	267,307	51,289
29	INVP 4124 Auto Remote Net Meter	PSC Mandate	-	-	345,040	-	320,480	-	303,488	
30	Other Forecasted IS Projects	Various	-	-	7,547,686	2,823,645	15,091,467	6,040,390	28,147,094	10,345,736
31	Total Forecasted IS Projects		$ -	$ -	$ 15,479,451	$ 4,533,472	$ 23,606,489	$ 8,193,852	$ 36,110,464	$ 12,351,482
32										
33	Total Combined IS Rent Expense		$ 26,282,541	$ 4,261,864	$ 39,529,973	$ 8,788,330	$ 45,687,729	$ 12,126,644	$ 56,623,796	$ 15,952,222

Niagara Mohawk Power Corporation d/b/a National Grid
Operating Expenses by Component
Materials Outside Vendor
($000's)

		Provider Company	Workpaper Reference	Total	Electric	Gas
Explanation of Adjustments:						
Page 1	Adjustments: (to normalize Historic Year)					
	To exclude Gas Business Enablement Expense	Niagara Mohawk Power Corporation	Workpaper 2	$ (1.4)	$ -	$ (1.4)
	Allocation adjustment for common facilities charges	Niagara Mohawk Power Corporation	Workpaper 3	-	(14.5)	14.5
	TOTAL			$ (1.4)	$ (14.5)	$ 13.1
Page 2	Adjustments: (to reflect conditions in the Rate Year)					
	General inflation %					
	4.9542%			$ 577.9	$ 427.7	$ 150.2
	TOTAL			$ 577.9	$ 427.7	$ 150.2
Page 3 & 4	Adjustments: (to reflect conditions in Data Year 1)					
	General inflation %					
	2.7232%			$ 333.4	$ 246.7	$ 86.7
	TOTAL			$ 333.4	$ 246.7	$ 86.7
Page 3 & 4	Adjustments: (to reflect conditions in Data Year 2)					
	General inflation %					
	2.3988%			$ 301.7	$ 223.3	$ 78.4
	TOTAL			$ 301.7	$ 223.3	$ 78.4

Niagara Mohawk Power Corporation d/b/a National Grid
Operating Expenses by Component
Other Initiatives
($000's)

		Provider Company	Source Workpaper	Total	Electric	Gas
Explanation of Adjustments:						
Page 1	Adjustments: (to normalize Historic Year)					
				$ -	$ -	$ -
				$ -	$ -	$ -
Page 2	Adjustments: (to reflect conditions in the Rate Year)					
	Opex associated with Capex - Dist	NMPC	WP 1	$ 4,643.8	$ 4,643.8	$ -
	Opex associated with Capex - Tran	NMPC	WP 1	6,015.4	6,015.4	-
	Transmission I&M	NMPC	EIOP-12	4,191.6	4,191.6	-
	Distribution Veg Mgmt	NMPC	EIOP-12	10,000.0	10,000.0	-
	Electric FTE's	NMPC	Page 10	1,347.1	1,347.1	-
	Gas FTE's	NMPC	Page 10	304.1	-	304.1
	Distribution REV	NMPC	Page 9	36,449.5	36,449.5	-
	Electric Opex Other	NMPC	EIOP-12	426.4	426.4	-
	Transmission Line Removal	NMPC	EIOP-12	2,312.4	2,312.4	-
	NWA Evaluation	NMPC	EIOP-12	750.0	750.0	-
	Transmission I&M	NGRID USA Service Co.	EIOP-12	-	-	-
	Distribution Veg Mgmt	NGRID USA Service Co.	EIOP-12	-	-	-
	Electric FTE's	NGRID USA Service Co.	Page 10	6,594.9	6,594.9	-
	Gas FTE's	NGRID USA Service Co.	Page 10	4,372.0	-	4,372.0
	Electric GBE	NMPC	GIOP-10	198.0	198.0	-
	Electric RD&D	NMPC	EIOP-15	213.0	213.0	-
	Gas Opex Workload	NMPC	GIOP-5	9,256.4	-	9,256.4
	Gas Opex/Capex	NMPC	GIOP-5	331.5	-	331.5
	Gas Opex Safety	NMPC	GIOP-5	2,066.4	-	2,066.4
	Gas Non-pipe Alternative	NMPC	Page 9	3,481.9	-	3,481.9
	Customer - Outreach	NGRID USA Service Co.	WP-2	800.0	664.0	136.0
	Customer - Bill Design	NGRID USA Service Co.	WP-3	545.5	398.2	147.3
	Energy Efficiency Labor	NGRID USA Service Co.	WP-4	1,185.3	543.2	642.0
	Electric IS RTB	NGRID USA Service Co.	ISP-3	6,764.0	6,764.0	-
	Gas IS RTB	NGRID USA Service Co.	ISP-3	1,297.8	-	1,297.8
	Gas Opex/GBE	NMPC	GIOP-10	10,823.7	-	10,823.7
	General Inflation Rate					
	4.9542%	NMPC				
	TOTAL			$ 114,370.6	$ 81,511.6	$ 32,859.1
Page 3 & 4	Adjustments: (to reflect conditions in Data Year 1)					
	Opex associated with Capex - Dist	NMPC	WP 1	$ 1,588.5	$ 1,588.5	$ -
	Opex associated with Capex - Tran	NMPC	WP 1	(53.6)	(53.6)	-
	Transmission I&M	NMPC	EIOP-12	-	-	-
	Distribution Veg Mgmt	NMPC	EIOP-12	-	-	-
	Electric FTE's	NMPC	Page 10	316.2	316.2	-
	Gas FTE's	NMPC	Page 10	6.7	-	6.7
	Distribution REV	NMPC	Page 9	7,006.5	7,006.5	-
	Electric Opex Other	NMPC	EIOP-12	-	-	-
	Transmission Line Removal	NMPC	EIOP-12	(476.0)	(476.0)	-
	NWA Evaluation	NMPC	EIOP-12	-	-	-
	Transmission I&M	NGRID USA Service Co.	EIOP-12	-	-	-
	Distribution Veg Mgmt	NGRID USA Service Co.	EIOP-12	-	-	-
	Electric FTE's	NGRID USA Service Co.	Page 10	2,168.3	2,168.3	-
	Gas FTE's	NGRID USA Service Co.	Page 10	981.1	-	981.1
	Electric GBE	NMPC	GIOP-10	46.5	46.5	-
	Electric RD&D	NMPC	EIOP-15	8.4	8.4	-
	Gas Opex Workload	NMPC	GIOP-5	(1,563.8)	-	(1,563.8)
	Gas Opex/Capex	NMPC	GIOP-5	1,277.0	-	1,277.0
	Gas Opex Safety	NMPC	GIOP-5	(209.0)	-	(209.0)
	Gas Non-pipe Alternative	NMPC	Page 9	913.8	-	913.8
	Customer - Outreach	NGRID USA Service Co.	WP-2	-	-	-
	Customer - Bill Design	NGRID USA Service Co.	WP-3	-	-	-
	Energy Efficiency Labor	NGRID USA Service Co.	WP-4	(156.4)	(121.7)	(34.7)
	Electric IS RTB	NGRID USA Service Co.	ISP-3	770.8	770.8	-
	Gas IS RTB	NGRID USA Service Co.	ISP-3	147.9	-	147.9
	Gas Opex/GBE	NMPC	GIOP-10	(2,647.1)	-	(2,647.1)
	General Inflation Rate					
	2.7232%	NMPC		1,012.8	656.1	356.7
	TOTAL			$ 11,138.6	$ 11,910.0	$ (771.4)

Niagara Mohawk Power Corporation d/b/a National Grid
Operating Expenses by Component
Other Initiatives
($000's)

	Provider Company	Source Workpaper	Total	Electric	Gas
Explanation of Adjustments:					
Page 3 & 4 Adjustments: (to reflect conditions in Data Year 2)					
Opex associated with Capex - Dist	NMPC	WP 1	$ 1,221.9	1,221.9	$ -
Opex associated with Capex - Tran	NMPC	WP 1	1,025.4	1,025.4	-
Transmission I&M	NMPC	EIOP-12	-	-	-
Distribution Veg Mgmt	NMPC	EIOP-12	-	-	-
Electric FTE's	NMPC	Page 10	99.6	99.6	-
Gas FTE's	NMPC	Page 10	6.8	-	6.8
Distribution REV	NMPC	Page 9	2,928.5	2,928.5	-
Electric Opex Other	NMPC	EIOP-12	-	-	-
Transmission Line Removal	NMPC	EIOP-12	(1,920.0)	(1,920.0)	-
NWA Evaluation	NMPC	EIOP-12	-	-	-
Transmission I&M	NGRID USA Service Co.	EIOP-12	-	-	-
Distribution Veg Mgmt	NGRID USA Service Co.	EIOP-12	-	-	-
Electric FTE's	NGRID USA Service Co.	Page 10	1,467.3	1,467.3	-
Gas FTE's	NGRID USA Service Co.	Page 10	124.7	-	124.7
Electric GBE	NMPC	GIOP-10	(244.5)	(244.5)	-
Electric RD&D	NMPC	EIOP-15	8.6	8.6	-
Gas Opex Workload	NMPC	GIOP-5	(4,198.6)	-	(4,198.6)
Gas Opex/Capex	NMPC	GIOP-5	(93.0)	-	(93.0)
Gas Opex Safety	NMPC	GIOP-5	(550.0)	-	(550.0)
Gas Non-pipe Alternative	NMPC	Page 9	565.3	-	565.3
Customer - Outreach	NGRID USA Service Co.	WP-2	-	-	-
Customer - Bill Design	NGRID USA Service Co.	WP-3	-	-	-
Energy Efficiency Labor	NGRID USA Service Co.	WP-4	(161.1)	(125.4)	(35.8)
Electric IS RTB	NGRID USA Service Co.	ISP-3	(4,042.7)	(4,042.7)	-
Gas IS RTB	NGRID USA Service Co.	ISP-3	(775.7)	-	(775.7)
Gas Opex/GBE	NMPC	GIOP-10	(3,668.6)	-	(3,668.6)
General Inflation Rate					
2.3988%	NMPC		23.0	22.8	0.2
TOTAL			$ (8,183.2)	$ 441.6	$ (8,624.7)

Niagara Mohawk Power Corporation d/b/a National Grid
Operating Expenses by Component
Other Initiatives
($000's)

Program Description		Electric Rate Year Ending March 31, 2019	Electric Data Year Ending March 31, 2020	Electric Data Year Ending March 31, 2021	Gas Rate Year Ending March 31, 2019	Gas Data Year Ending March 31, 2020	Gas Data Year Ending March 31, 2021	Source Exhibit / Workpaper
Opex associated with Capex								
Dist Opex Assoc with Capex		2,934.6	4,161.8	4,950.3	-	-	-	WP-1
Sub-Tran Opex Assoc with Capex		1,709.2	2,070.5	2,504.0	-	-	-	WP-1
Tran Opex Assoc with Capex		6,015.4	5,961.8	6,987.3	-	-	-	WP-1
	Sub-total	10,659.2	12,194.1	14,441.5	-	-	-	
Transmission I&M								
Transmission Tower Painting		2,046.0	2,046.0	2,046.0	-	-	-	EIOP-12
Transmission Footers		-	-	-	-	-	-	EIOP-12
Sub-Transmission Tower Painting		734.3	734.3	734.3	-	-	-	EIOP-12
Sub-transmission Footers		247.3	247.3	247.3	-	-	-	EIOP-12
Station Painting		800.0	800.0	800.0	-	-	-	EIOP-12
HVB 362kV GCB NERC Level 1 Alert		364.0	364.0	364.0	-	-	-	EIOP-12
	Sub-total	4,191.6	4,191.6	4,191.6	-	-	-	
Distribution Veg Mgmt								
Dist - EAB		10,000.0	10,000.0	10,000.0	-	-	-	EIOP-12
Transmission Line Removal								
Ticondiroga Line Removal		2,312.4	1,836.4	(83.6)	-	-	-	EIOP-12
Electric Opex Other								
Osmose Rate Increase		426.4	426.4	426.4	-	-	-	EIOP-12
NWA Evaluation								
NWA Evaluation (External Contractor)		750.0	750.0	750.0	-	-	-	EIOP-12
Electric FTE's								
FTE's - EIOP		5,889.2	8,041.9	9,493.5	-	-	-	Page 10
FTE's - EIOP		989.1	1,297.4	1,389.0	-	-	-	Page 10
FTE's - GIOP		-	-	-	-	-	-	Page 10
FTE's - SSP		85.7	87.6	89.5	-	-	-	Page 10
FTE's - GCP		-	-	-	-	-	-	Page 10
FTE's - SLP		138.0	141.0	144.1	-	-	-	Page 10
FTE's - Arangio		45.2	46.2	47.2	-	-	-	Page 10
FTE's - ECP		567.6	580.2	592.9	-	-	-	Page 10
FTE's - ECP		227.1	232.1	237.1	-	-	-	Page 10
	Sub-total	7,941.9	10,426.4	11,993.3	-	-	-	
Distribution REV								
Electric New Energy Solutions		8,345.5	8,370.5	8,265.5	-	-	-	Page 9
Electric REV Demo Projects		1,585.8	-	-	-	-	-	Page 9
Electric REV DSIP Grid Mod Projects		5,359.4	7,106.1	8,867.1	-	-	-	Page 9
AMI Electric		1,341.2	5,790.9	6,991.1	-	-	-	Page 9
IS Projects		19,817.6	22,188.4	22,260.8	-	-	-	Page 9
	Sub-total	36,449.5	43,456.0	46,384.5	-	-	-	
Electric RD&D								
Research, development and demonstration		213.0	221.4	230.0	-	-	-	EIOP-15
Electric GBE								
Incremental Elec GBE Opex		198.0	244.5	-	-	-	-	GIOP-10
Gas FTE's								
FTE's - EIOP		-	-	-	40.5	41.4	42.3	Page 10
FTE's - EIOP		-	-	-	-	-	-	Page 10
FTE's - GIOP		-	-	-	4,331.4	5,311.7	5,435.5	Page 10
FTE's - SSP		-	-	-	31.7	32.4	33.1	Page 10
FTE's - GCP		-	-	-	113.5	116.0	118.6	Page 10
FTE's - SLP		-	-	-	-	-	-	Page 10
FTE's - Arangio		-	-	-	158.9	162.4	165.9	Page 10
FTE's - ECP		-	-	-	-	-	-	Page 10
FTE's - ECP		-	-	-	-	-	-	Page 10
	Sub-total	-	-	-	4,676.1	5,664.0	5,795.4	
Gas Non-pipe Alternative								
Gas New Energy Solutions		-	-	-	2,955.1	2,243.3	2,565.7	Page 9
AMI Gas		-	-	-	498.3	2,023.1	2,265.1	Page 9
IS Projects		-	-	-	28.5	129.3	130.2	Page 9
	Sub-total	-	-	-	3,481.9	4,395.7	4,961.0	

Niagara Mohawk Power Corporation d/b/a National Grid
Operating Expenses by Component
Other Initiatives
($000's)

Program Description	Electric Rate Year Ending March 31, 2019	Electric Data Year Ending March 31, 2020	Electric Data Year Ending March 31, 2021	Gas Rate Year Ending March 31, 2019	Gas Data Year Ending March 31, 2020	Gas Data Year Ending March 31, 2021	Source Exhibit / Workpaper
Gas Opex Workload							
CMS- Ipads	-	-	-	775.0	150.0	150.0	GIOP-5
Gas Transmission Engineering- IMP/IVP Inspections (PHSMA)	-	-	-	2,639.9	992.9	1,045.9	GIOP-5
Pressure Regulation Eng- Tran Station Integrity Mgmt Prog	-	-	-	798.0	798.0	798.0	GIOP-5
Enhance Pipeline Compliance System ("PCS")	-	-	-	500.0	-	-	GIOP-5
Gas Work Methods & Standards- Traditional Gas RD&D	-	-	-	55.0	58.0	60.0	GIOP-5
Damage Prevention- Damage Prevention Advisor Program	-	-	-	345.0	355.4	366.0	GIOP-5
Damage Prevention- Ticket Risk Assessment Costs	-	-	-	32.6	34.2	35.9	GIOP-5
I&R- Increased Pipeline Survey	-	-	-	1,000.0	1,000.0	1,000.0	GIOP-5
I&R- Vegetation Management Gas Maintenance	-	-	-	113.9	101.1	38.1	GIOP-5
Geographic Information system ("GIS"), Mapping Gas Services	-	-	-	2,997.0	4,203.0	-	GIOP-5
AMF- Advanced Metering Functionality	-	-	-	-	1,120.0	880.0	GIOP-5
Elevated Pressure Metering Program Maintenance	-	-	-	47.0	96.0	147.0	GIOP-5
Gas Operations- Tools	-	-	-	100.0	100.0	100.0	GIOP-5
I&R- Dry line Heater Flushing	-	-	-	7.5	7.5	7.5	GIOP-5
I&R- Field Tests & Training Lab	-	-	-	25.0	27.0	31.0	GIOP-5
I&R- Gas Regulator Station Security	-	-	-	8.0	32.0	55.0	GIOP-5
I&R- Odorant Injection Pump Air Supply	-	-	-	86.0	156.0	221.0	GIOP-5
I&R- Portable Compressed Natural Gas (CNG)	-	-	-	43.0	55.0	59.0	GIOP-5
I&R- Portable Temporary Regulator Station	-	-	-	15.0	15.0	15.0	GIOP-5
GPSC - Residential Methane Detector Pilot	-	-	-	150.0	150.0	150.0	GIOP-5
GPSC - Public Awareness Inside Inspections	-	-	-	12.0	12.0	12.0	GIOP-5
GPSC - 1st Responder - Mobile Hands on Training	-	-	-	500.4	311.4	311.4	GIOP-5
GPSC - 1st Responder - Train the Trainer	-	-	-	74.0	54.0	54.0	GIOP-5
Damage Prevetion- GPS Location of Transmission Pipeline	-	-	-	1,300.0	1,300.0	-	GIOP-5
Damage Prevetion- Wrapping Company Vehicles	-	-	-	30.0	30.0	30.0	GIOP-5
I&R- Agricultural Depth Survey	-	-	-	-	-	750.0	GIOP-5
Sub-total	-	-	-	11,654.3	11,158.4	6,316.8	
Gas Business Enablement							
GBE Incremental Opex	-	-	-	9,630.6	5,727.3	2,437.6	GIOP-10
GBE Customer Benefit	-	-	-	(6.9)	(158.5)	(1,025.0)	GIOP-12
GBE Incremental Run the Business	-	-	-	1,200.0	2,607.8	3,095.3	GIOP-11
Sub-total	-	-	-	10,823.7	8,176.6	4,507.9	
Customer - Outreach							
Outreach & Education	664.0	664.0	664.0	136.0	136.0	136.0	WP-2
Customer - Bill Design							
Bill Redesign - Color Printing	398.2	398.2	398.2	147.3	147.3	147.3	WP-3
Energy Efficiency Labor							
Forecast of Electric Labor in Base Rates	543.2	421.5	296.2				WP-4
Forecast of Gas Labor in Base Rates				642.0	607.3	571.5	WP-4
Information Systems RTB							
Electric IS RTB	6,764.0	7,534.8	3,492.1	-	-	-	ISP-3
Gas IS RTB	-	-	-	1,297.8	1,445.7	670.0	ISP-3
Sub-total	81,511.6	92,765.5	93,184.3	32,859.1	31,730.9	23,106.0	
Inflation	-	656.1	678.9	-	356.7	356.9	
Total	81,511.6	93,421.6	93,863.2	32,859.1	32,087.7	23,462.9	

Niagara Mohawk Power Corporation d/b/a National Grid
Operating Expenses by Component
Summary of Changes - ELECTRIC
($000's)

		ELECTRIC	
		Test Year	**Rate Year 2019**
1	Beginning Balance	$ 810,154	$ 835,366
	Adjustments to Reflect Conditions in Rate Year		
2	Accounting Change for Corrosion work	-	
3	Adjust allocation % between electric and gas	(405)	
4	Adjust benefit capitalization % & allocation from Serv Co	3,785	
5	Adjust HTY FAS 112	145	
6	Economic Development Funding	-	(3,924)
7	Energy Efficiency		190,337
8	Energy Efficiency Labor		543
9	Facilities Rent forecast		(149)
10	GBE Opex		198
11	General Inflation		15,641
12	Health Care		(2,618)
13	Incentive Programs	-	-
14	Incremental Customer Opex		1,062
15	Incremental FTE's		7,942
16	Incremental OPEX		10,659
17	Injuries & Damages	(90)	
18	IT Incremental RTB Costs		6,764
19	Labor	11,505	
20	Low Income Discount Program	10,874	45,720
21	NWA		750
22	OPEB Allowance		25,244
23	Paperless Savings at E- Bill account Volume	1,259	
24	Payroll Inflation		15,901
25	Pension Allowance		16,567
26	PPE Reclass	662	
27	Productivity		(6,336)
28	Rate Case Expense	(167)	706
29	RD&D		213
30	Reclass expense to below the line	(263)	
31	Regulatory Assessments	3,948	(12,789)
32	Rent Expenses	994	(595)
33	REV Proposals		36,450
34	Savings	(230)	(4,092)
35	Service Company IS Rent Expenses	(3,080)	13,247
36	SIR	(16,353)	-
37	Storm Costs	(2,066)	
38	Storm Fund	29,000	(6,000)
39	Test Year Analysis Adjustments	(5,315)	
40	Thrift Plan		585
41	Transmission I&M		4,192
42	Transmission Line Removal	(60)	2,312
43	Transportation	246	2,374
44	Uncollectibles	(2,882)	(597)
45	Vegetation Management	(6,294)	10,000
46	Total Adjustments to Reflect Conditions in Rate Year	25,212	370,306
47	Ending Balance	$ 835,366	$ 1,205,672

Niagara Mohawk Power Corporation d/b/a National Grid
Operating Expenses by Component
Summary of Changes - GAS
($000's)

		GAS	
		Test Year	**Rate Year 2019**
1	Beginning Balance	$ 175,793	$ 181,476
	Adjustments to Reflect Conditions in Rate Year		
2	Accounting Change for Corrosion work	(314)	
3	Adjust allocation between electric and gas	405	
4	Adjust benefit capitalization % & allocation from Serv Co	(195)	
5	Adjust HTY FAS 112	19	
6	Economic Development Funding	(0)	830
7	Energy Efficiency		2,668
8	Energy Efficiency Labor		642
9	Facilities Rent forecast		(40)
10	GBE costs	(643)	
11	GBE Opex		10,824
12	General Inflation		3,142
13	Health Care		(499)
14	Incentive Programs	(0)	237
15	Incremental FTE's		4,676
16	Incremental Opex - Customer		283
17	Incremental Opex and Gas Safety		11,654
18	Injuries & Damages	(1,681)	
19	IT Incremental RTB Costs		1,298
20	Savings		(714)
21	Labor	2,912	
22	Low Income Discount Program	9,253	5,652
23	Non-Pipe Alternative		3,482
24	OPEB Allowance		2,446
25	Paperless Savings at E- Bill account Volume	466	
26	Payroll Inflation		3,390
27	Pension Allowance		2,984
28	PEX Savings	(25)	
29	Productivity		(1,355)
30	Rate Case Expense	(34)	134
31	Reclass expense to below the line	(57)	
32	Regulatory Assessments	-	(4,954)
33	Rent Expenses	171	(187)
34	PPE Costs	84	
35	Service Company IS Rent Expenses	(897)	4,527
36	SIR	(2,886)	1,402
37	Test Year Analysis Adjustments	(79)	
38	Thrift Plan		112
39	Transportation	(135)	485
40	Uncollectibles	(680)	1,210
41	Total Adjustments to Reflect Conditions in Rate Year	5,683	54,328
42	Ending Balance	$ 181,476	$ 235,805

Before the Public Service Commission

NIAGARA MOHAWK POWER CORPORATION d/b/a NATIONAL GRID

Direct Testimony

of

Gas Safety Panel

Dated: April 28, 2017

("Data Year 1"), and the 12 months ending March 31, 2021 ("Data Year 2") (Data Year 1 and Data Year 2 are collectively referred to as the "Data Years"). Specifically, the Panel's testimony addresses: (1) the Company's proposals for enhanced or incremental gas safety and compliance programs; (2) the Company's proposals with respect to gas safety performance metrics; and (3) the Company's response to the Commission's Service Line Proceeding.

Q. Before discussing the specific programs presented in this rate filing, please discuss the Company's performance and commitment to safety and compliance.

A. Niagara Mohawk's number one priority is the safety of the public and the Company's employees and this focus on safety is shared by customers, regulators, and other stakeholders. To that end, the Company strives for continuous improvement in safety performance by identifying, assessing, and managing risks on the gas system – and making prudent and necessary investments in gas infrastructure to address these risks. As discussed by the Gas Infrastructure and Operations Panel ("GIOP"), Niagara Mohawk will invest more than $620 million in gas infrastructure in the Rate Year and Data Years to maintain and improve the safety and reliability of its gas distribution system, including the retirement of a cumulative total of at

least 150 miles of leak prone pipe ("LPP") during that period. Importantly, investments in the gas system must be supported by technology and processes that enable the Company to manage its assets and meet customer expectations. Accordingly, as discussed by the GIOP, National Grid has undertaken a comprehensive effort to evaluate the technology and business processes that support its gas businesses (referred to as the Gas Business Enablement ("GBE") Program). Among the core investments of the GBE Program are new asset and work management, scheduling, geographic information system ("GIS"), and field mobility solutions designed to improve the Company's gas safety and operational performance, update aged technology, and enhance communication, work scheduling and tracking.

Despite the need for technology investments and increasing work plan requirements, Niagara Mohawk achieved all gas safety reliability metrics in 2016. Specifically, the Company achieved its LPP replacement, emergency response time, total leak backlog reduction, and damage prevention targets. With the limited exception of certain damage prevention metrics in 2015, the Company has historically performed well and met all targets. The Company is committed to meeting its performance targets and is continuously working to outperform.

Each year, the Department of Public Service Staff ("Staff") issues an annual report on Local Distribution Companies' ("LDC") gas reliability performance (the "Report") as measured by each LDC's performance in relation to established metrics. The 2015 Report highlighted that the Company outperformed emergency response targets, significantly reduced its total leak backlog, reduced damages due to Company or contractor errors, and maintained performance of damages due to excavator error. The Report, however, also identified the Company's challenges in failing to achieve two damage prevention metrics associated with mismarks and overall damages. The Report noted that the Company experienced the second largest increase in the volume of requests for locator mark-outs among all LDCs. Further, the Report noted that the Company's locator mark-out contractor was acquired by another company in 2015. Indeed, the Company worked with the contractor and certain resource limitations were identified and addressed in an improvement plan that was implemented mid-2015. The effectiveness of the improvement plan is evident in the Company's achievement of all damage prevention metrics in 2016.

In addition to achieving all gas reliability safety metrics in 2016, the Company has also been successful in addressing a backlog of work

associated with inactive accounts. Prior to April 2015, the Company had a backlog of nearly 9,000 inactive accounts that required meters to be locked or services physically disconnected. Within 23 months, the Company reduced its inactive account inventory to only six accounts. Concurrently, the Company implemented new processes for inactive accounts to ensure issues do not recur prospectively.

Despite the Company's strong performance with respect to the gas safety reliability metrics, Niagara Mohawk acknowledges that further improvement is still needed, particularly with respect to certain compliance requirements. Each year, Staff audits the Company's performance in the field as well as the Company's records and documentation. While the Company continues to perform well in its field audits, the Company is not satisfied with the findings relating to records and documentation. Niagara Mohawk has implemented improvements and is making progress; however, more work is required. To that end, the Company proactively engaged an industry expert specializing in compliance to provide an independent assessment ("IA") of all processes. The consultant assessed National Grid's gas businesses across all jurisdictions with regard to federal and state safety requirements, procedures, work practices, and training. The IA also evaluated the

Company's work practices and procedures against the American Petroleum Institute's ("API") recommended pipeline safety management standards (Recommended Practice 1173 ("RP 1173")), which is a holistic approach to pipeline safety that applies key process safety principles to existing risk control programs. As discussed in more detail in the GIOP testimony, the Company is in the process of adopting this program, which will support a comprehensive framework for identifying and managing risks on the Company's gas system.

The consultant's suggestions for improvement are consistent with, and reflected in, the Company's implementation of API RP 1173, investments in the GBE Program, and efforts to enhance training and simplify procedures and practices in the field. Recognizing the value of the IA, and in furtherance of its commitment to continuous improvement, the Company will continue annual reviews and periodic assessments prospectively. The Company is confident that the suggestions to date from the IA will advance the Company's efforts to improve performance and position it well for success in the future.

II. Enhanced or Incremental Gas Safety and Compliance Programs

Q. Please describe the Company's proposed enhanced or incremental gas safety and compliance programs.

A. As the gas industry has intensified the focus on safe operations over the last several years, Niagara Mohawk has increased its efforts to assess system risks and deliver programs designed to enhance safety and increase the public's awareness of gas safety issues. For example, to mitigate the risk that deep frost poses to subsurface infrastructure, the Company proactively worked with the Gas Technology Institute to develop an enhanced winter leak patrol whereby the Company continuously surveys its cast iron main to identify and repair leaks during the winter months. In addition, the Company remains committed to enhancing the effectiveness of its public awareness efforts and strives to achieve public engagement with respect to natural gas safety. Indeed, the Company has participated in industry collaboratives, improved its traditional outreach, and implemented innovative e-learning modules. The Company, however, recognizes that a number of its programs require enhancements. As discussed in the GIOP testimony, the Company proposes to enhance or implement a number of safety and compliance related programs or initiatives in the Rate Year, the costs of which are set forth in Exhibit __

(GIOP-5). Specifically, the Company proposes to enhance or implement programs in the following areas:

(i) Training

(ii) Quality Assurance/Quality Control

(iii) Damage Prevention

(iv) First Responder Training

(v) Customer Safety - Methane Detection

A. <u>Training Program</u>

Q. Please describe the training enhancements the Company proposes in the Rate Year.

A. Proper training, support, and oversight for employees and contractors are fundamental to the Company's ability to safely operate its gas system. While the Company invests significant resources and time in training its employees and overseeing its contractors, the IA, recent instances of non-compliance and feedback from employees indicate that there is room for improvement.

With respect to training for its field employees, the Company is proposing to revise its curriculum and utilize new technology. The Company is also seeking to increase staffing with four instructors who will provide daily

support to new and less experienced field employees. Through individual field oversight, these instructors will provide training and guidance on executing field tasks and proper documentation. In addition, the Company will update and revise training curriculum and emphasize the rationales that underlay processes and procedures and incorporate skill building for customer interaction, communication, and leadership. Importantly, the training program will also be enhanced to increase hands-on training with equipment that is used in the field. Technology improvements will be made to increase efficiency and engagement and the Company will seek employee feedback to monitor effectiveness and identify opportunities for improvement.

Recent issues relating to operator qualifications of third-party contractors highlight the importance of robust oversight programs. In response, the Company is proposing to enhance its oversight program with four full time equivalents ("FTE") who will primarily assess contractor training and performance. Specifically, these employees will:

- Develop standardized assessment criteria;
- Identify training program strengths and weaknesses;

- Evaluate each contractor training program to ensure that it is consistent with Company guidelines and that personnel have construction skills meeting National Grid's standards;
- Continuously monitor and evaluate each contractor's training program to ensure corrective actions are effectively implemented;
- Work as a partner with contractor trainers to share best practices and communicate policies and procedure changes that will impact training modules; and
- Ensure that contractor personnel operator qualifications are current.

For the long term, National Grid is launching an effort to review and assess its contractor on-boarding program and to identify best practices to be implemented on a company-wide basis, including evaluation of contractor knowledge of various activities specific to National Grid policy and procedures through quality checks of contractor training modules.

The incremental FTEs associated with the enhanced training program are set forth in Exhibit __ (GIOP-6). The non-labor costs associated with the enhanced training program are included in Exhibit __(GIOP-10) and

Exhibit __ (RRP-11), Workpapers to Exhibit __ (RRP-3), Schedule 9, Workpapers 6 and 9 (Regulatory/Compliance).

B. <u>Quality Assurance Quality Control ("QA/QC") Program</u>

Q. Please describe the proposed enhancements to the QA/QC program in the Rate Year.

A. The Company currently conducts field inspections and assessments of work performed by in-house and contractor crews, including a successful "re-dig" program whereby newly constructed underground facilities are exposed and inspected to evaluate workmanship and compliance. QA/QC is an integral component in assessing compliance with safety related procedures and work methods, pipeline safety, and regulatory requirements. The Company proposes to hire four QA/QC inspectors to expand the scope of the current program to include the areas of damage prevention, leak survey, and corrosion control. The FTEs associated with the enhanced program are set forth in Exhibit __ (GIOP-6).

C. <u>Damage Prevention Program</u>

Q. Please describe the Company's Damage Prevention Program.

Before the Public Service Commission

NIAGARA MOHAWK POWER CORPORATION d/b/a NATIONAL GRID

Direct Testimony

of

Information Services Panel

Dated: April 28, 2017

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investments and vendor contracts, implementation of vendor sourcing strategy activities, and refinements to its service delivery model to establish strategic, internal expertise, support and capabilities to better meet customer and business needs.

V. <u>Rate Year IS Capital Projects and Initiatives</u>

Q. How are IS capital investments presented in these rate filings?

A. Exhibit __ (ISP-3) lists the IS capital investment projects included in the Rate Year and Data Years. The exhibit breaks out the projects by program (*e.g.*, cyber security, FY 2018 plan, NY REV/grid modernization projects, Gas Business Enablement). Although a number of Company witnesses discuss the need for various IS investments, the costs of all IS capital investment projects included in the Rate Year and Data Years are supported by this Panel and are included in Exhibit __ (ISP-3). Exhibit __ (RRP-3), Schedule 9, Page 7, to the Revenue Requirements Panel's testimony further breaks out the IS investments reflected in these rate filings..

The following Company witnesses discuss various IS capital investments:

- Electric Customer Panel (Residential Solar Marketplace, E-Commerce Marketplace, and Demand Response Management System);

- Electric Infrastructure and Operations Panel (supervisory control and data acquisition system ("SCADA") system and a Demand Management System for Control Center operators and Distributed Generation Interconnection Online Application Portal);
- Gas Infrastructure and Operations Panel (Gas Business Enablement);
- Shared Services Panel (Call Center Customer Contact Center/SDC Technology Upgrade Implement Solution and proposed system changes for recent orders in the Low Income proceeding, Case 14-M-0565);
- Outdoor Lighting Panel (Outdoor Lighting Inventory Portal); and
- Advanced Metering Infrastructure Panel

This Panel discusses the need for and benefits of the following IS investments:

- Technology Modernization
- Projects to Support System Modernization
- Cyber Security
- Physical Security
- HRIS

Q. What are the projected total rent expenses for IS projects and investments to Niagara Mohawk in the Rate Year and Data Years?

A. In the Historic Test Year, Niagara Mohawk's existing IS service company rent expense balance was $26.283 million for electric and $4.262 million for gas. The rent expense to Niagara Mohawk's electric and gas business in the Rate Year and Data Years is shown in the Revenue Requirement Panel's Exhibit __ (RRP-11), Workpapers to Exhibit __ (RRP-3), Schedule 9, Workpapers 3, 6 and 9. As shown in Exhibit RRP-3, Schedule 9, Page 6, the Company is forecasting IS rent expense of $39.530 million and $8.788 million in the Rate Year for the electric and gas business, respectively, of which $24.051 million and $4.255 million, respectively, represents the portion of Historic Test Year rent expense continued into the Rate Year. The level of Rate Year IS investment is projected to continue into the Data Years.

A. <u>Technology Modernization</u>

Q. Please describe the IS Technology Modernization Program.

A. The IS Technology Modernization Program is a multi-year investment program that will (i) upgrade aged IS infrastructure to address reliability concerns, sustain high operational efficiency and ensure business continuity; (ii) modernize critical applications to improve health and

availability, deliver new capabilities, and simplify application landscape; and (iii) update operational technology networks to enable distribution automation, monitoring, and metering. Specifically, the IS Technology Modernization Program will deliver the following benefits:.

- With respect to applications, the program will:
  - upgrade applications at end of life to current and supported versions;
  - retire at risk applications;
  - consolidate core systems to simplify application landscape;
  - develop architecture that allows reuse and easy application "plug-in";
  - develop new tools to manage applications and automate business process monitoring;
  - roll out agile development practices at scale for effective and timely delivery; and
  - and reduce cyber risk through upgrades to operating systems and/or applications

- With respect to infrastructure, the program will:
  - remediate high risk, failure-prone assets to ensure business continuity;
  - improve network capabilities to enable cloud and mobile adoption, improve cyber-security, and ease maintainability;
  - modernize the end user environment to provide new and flexible collaboration capabilities (internally and externally); and
  - adopt strategic data centers to mitigate risk and enable robust, scalable infrastructure solutions.

- With respect to operational technology networks, the program will:
  - improve asset management and operation; and
  - enable operational effectiveness through retirement of dated assets as well as enhanced connectivity,

monitoring, automation, and improved procurement processes.

Initiatives proposed as part of the IS Technology Modernization Program are also necessary to enable and support the capabilities for the Gas Business Enablement Program, system modernization, and the upgrade work required for customer experience solutions, including Outage Management System ("OMS") server upgrades, Customer Service System billing upgrades, and online self-service portals and updates to National Grid's work management systems, Storms and Maximo, for customers to request Distributed Generation ("DG") interconnections and new electric and gas connections.

Q. What projects are included in the IS Technology Modernization Program?

A. The capital projects included in the IS Technology Modernization Program for the Rate Year and Data Years, and their benefits, are described in Exhibit __ (ISP-4).

Testimony of the Information Services Panel

Exhibit __ (ISP-3)

IS capital projects and investments

Exhibit__(ISP-3)
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Niagara Mohawk Power Corporation d/b/a National Grid
ISP-3 Information Services (IS) Capital Projects

In-flight projects

Investment Name	Programs	INVP #	Bill Pool	In Service Date	Amortization Period	Inception To Date + FY18	FY19 CAPEX	FY20 CAPEX	FY21 CAPEX	Total US CapEx Spend
INVP 3614D1 Ent Network Security	Cyber Security	3614D1	G020	6/30/17	84	9,478,590	-	-	-	9,478,590
INVP 3614B7 CNI Network Security	Cyber Security	3614B7	G020	12/31/17	84	4,829,586	-	-	-	4,829,586
INVP 3614E4 US CNI Security I&E	Cyber Security	3614E4	G020	12/31/17	84	1,207,045	-	-	-	1,207,045
INVP 4045 Double Pole Mgmt DB	FY18 Plan	4045	G198	2/18/17	84	482,153		-	-	482,153
INVP 4373 Contingent Labor Admin Replacement	FY18 Plan	4373	G020	2/20/17	84	250,692	-	-	-	250,692
INVP 3955 EJ Ward Upgrade	FY18 Plan	3955	G235	2/28/17	84	646,004	-	-	-	646,004
INVP 4188 Aging System Stabilize	FY18 Plan	4188	G148	3/31/17	84	782,710	-	-	-	782,710
INVP 4280 US VSTIG Bandwidth Ph2	FY18 Plan	4280	G020	3/31/17	84	1,998,645	-	-	-	1,998,645
INVP 4307 US Win 7 Refresh Ph 3	FY18 Plan	4307	G020	3/31/17	84	11,562,999	-	-	-	11,562,999
INVP 4364 Wireless Network	FY18 Plan	4364	G020	3/31/17	84	2,303,959	-	-	-	2,303,959
S005242 M112 Systemic Improvement	FY18 Plan	N/A	G020	3/31/17	120	8,000,000	-	-	-	8,000,000
INVP 4289 US Network Improvement	FY18 Plan	4289	G020	3/31/17	84	978,717	-	-	-	978,717
INVP 2577C ArcFM Software Upgrade	FY18 Plan	2577C	G112	4/7/17	84	2,087,188	-	-	-	2,087,188
INVP 4631 Box Enablement	FY18 Plan	4631	G020	4/30/17	84	254,000	-	-	-	254,000
INVP 4170 Time Transformation	FY18 Plan	4170	G020	5/1/17	84	3,917,000	-	-	-	3,917,000
INVP 4420 US CNI OMSFocalPoint Infrastructure Upgrade	FY18 Plan	4420	G198	5/1/17	84	1,366,563	-	-	-	1,366,563
INVP 4274 VSTIG Hardware Refresh	FY18 Plan	4274	G020	5/31/17	84	608,000	-	-	-	608,000
INVP 4464 Data Visualization	FY18 Plan	4464	G020	7/31/17	84	4,440,000	-	-	-	4,440,000
INVP 4461 Unix51 Interface Migration	FY18 Plan	4461	G020	9/1/17	84	1,386,701	-	-	-	1,386,701
INVP 4287 Active Directory Upgrade	FY18 Plan	4287	G020	9/30/17	84	804,825	-	-	-	804,825
INVP 4408 Doc Mgmt Systems Replacement Delivery	FY18 Plan	4408	G149	11/1/17	84	3,617,542	-	-	-	3,617,542
INVP 3486 US MDS-Itron Enterprise Edition (IEE)	FY18 Plan	3486	G186	3/31/18	84	670,943	-	-	-	670,943
INVP 4390 Plastic Fusion II	FY18 Plan	4390	G207	3/31/18	84	506,000	-	-	-	506,000
INVP 4397 Ariba TLS and CI Update	FY18 Plan	4397	G020	3/31/18	120	1,462,000	-	-	-	1,462,000
Call Center Customer Contact Center/SDC Technology Upgrade Implement Solution	FY18 Plan	3932	C175	8/31/18	84	24,205,719	3,519,000	-	-	27,724,719
INVP 4398 Storms/ISched Upgrade	FY18 Plan	4398	G160	12/15/18	84	9,523,867	432,000	-	-	9,955,867
INVP 3737 US CNI GMS SCADA Upgrade &	FY18 Plan	3737	C210	3/31/20	84	16,555,091	6,354,200	3,021,000	-	25,930,291
INVP 3882 NYS Pipeline Safety CMS	Other Mandates	3882	G207	3/17/17	84	1,308,000	-	-	-	1,308,000
INVP 3851 Consolidated Voice Recorder for US Electric Control Rooms	Other Mandates	3851	G181	3/31/17	84	1,234,000	-	-	-	1,234,000
Physical Security Replacements - FY17	Physical Security	N/A	G020	3/31/17	84	906,050	-		-	906,050
Physical Security Replacements - FY18	Physical Security	N/A	G020	3/31/18	84	950,000	-	-	-	950,000
All NIMO Physical Security Replacements - FY18	Physical Security	N/A	G114	3/31/18	84	490,000	-	-	-	490,000
Physical Security Replacements - FY19	Physical Security	N/A	G020	3/31/19	84	-	825,000	-	-	825,000
All NIMO Physical Security Replacements - FY19	Physical Security	N/A	G114	3/31/19	84	-	275,000	-	-	275,000
Physical Security Replacements - FY20	Physical Security	N/A	G020	3/31/20	84	-	-	835,000	-	835,000
All NIMO Physical Security Replacements - FY20	Physical Security	N/A	G114	3/31/20	84	-	-	282,000	-	282,000
Physical Security Replacements - FY21	Physical Security	N/A	G020	3/31/21	84	-	-	-	860,000	860,000
All NIMO Physical Security Replacements - FY21	Physical Security	N/A	G114	3/31/21	84	-	-	-	290,000	290,000
INVP 4451 Gas Transportation System Phase II	PSC Mandate	4451	G225	5/31/17	84	1,629,117	-	-	-	1,629,117
INVP 4347 NYC Leave on for Landlord Program	PSC Mandate	4347	5220G	7/31/17	84	870,095	-	-	-	870,095
INVP 4124 Auto Remote Net Meter	PSC Mandate	4124	C198	8/31/17	84	3,584,165	-	-	-	3,584,165
INVP 3839A NY Retail Access Ph2	PSC Mandate	3839A	C170	10/31/17	84	5,356,231	-	-	-	5,356,231
INVP 4411AB Distributed Generation Portal	PSC Mandate	4411A+B	C198	11/30/17	84	3,347,611	-	-	-	3,347,611
INVP 4383 NY Community Choice Aggregation	PSC Mandate	4383	C170	12/31/17	84	551,447	-	-	-	551,447
INVP 4448 Low Income Order CRIS	PSC Mandate	4448	5220G	12/31/17	84	2,207,590	-	-	-	2,207,590
INVP 4448 Low Income Order CSS	PSC Mandate	4448	C195	12/31/17	84	2,489,410	-	-	-	2,489,410
INVP 4411C New Electric Connections	PSC Mandate	4411C	C198	4/30/18	84	698,000	-	-	-	698,000
INVP 4411D New Gas Connections	PSC Mandate	4411D	C210	10/31/18	84	36,000	860,000	-	-	896,000

Exhibit__(ISP-3)
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Investment Name	Programs	INVP #	Bill Pool	In Service Date	Amortization Period	Inception To Date + FY18	FY19 CAPEX	FY20 CAPEX	FY21 CAPEX	Total US CapEx Spend
Planned Projects										
Cloud Security	Cyber Security	3683	G020	5/1/17	84	1,460,000	-	-	-	$1,460,000
Risk Based Authentication - 2FA token alternative	Cyber Security	3683	G020	6/1/17	84	235,080				$235,080
Threat Behavior Modeling	Cyber Security	3683	G020	8/1/17	84	800,000	-	-	-	$800,000
Identity & Access Management :Role Base Access Management (RBAC)	Cyber Security	3683	G020	10/1/17	84	1,650,000	-	-	-	$1,650,000
Enhanced DLP Gateway and Endpoint	Cyber Security	3683	G020	12/1/17	84	2,238,480	-	-	-	$2,238,480
US CNI Intrusion Detection/Prevention Phase 1	Cyber Security	3683	G020	3/31/18	84	550,000	-	-	-	$550,000
Identity & Access Management: Fine Grain Access Management	Cyber Security	3683	G020	3/31/18	84	1,650,000	-	-	-	$1,650,000
vStig Scaling Upgrades	Cyber Security	3683	G020	8/1/18	84	1,000,000	-	-	-	$1,000,000
IT/OT Discovery and Implementation Phase 1	Cyber Security	3683	G020	10/1/18	84	3,300,000	2,200,000	-	-	$5,500,000
Security Research Lab	Cyber Security	3683	G020	10/1/18	84	325,000	-	-	-	$325,000
US CNI Security Enhancements Phase 1	Cyber Security	3683	G020	11/1/18	84	1,650,000	-	-	-	$1,650,000
Identity & Access Management: Privileged Access Management	Cyber Security	3683	G020	3/31/19	84	-	1,740,000	-	-	$1,740,000
Domain Based Security Phase 1	Cyber Security	3683	G020	3/31/19	84	-	800,000	-	-	$800,000
Security Incident Event Management Phase 4	Cyber Security	3683	G020	5/1/19	84	633,150	633,150	-	-	$1,266,300
Big Data Security Analytics Phase 1	Cyber Security	3683	G020	5/1/19	84	2,310,776	2,310,776	-	-	$4,621,552
US CNI Intrusion Detection/Prevention Phase 2	Cyber Security	3683	G020	3/31/20	84	-	300,000	500,000	-	$800,000
Identity & Access Management: Shared Area Access Management	Cyber Security	3683	G020	3/31/20	84	-	-	1,740,000	-	$1,740,000
Security Incident Event Management Phase 5	Cyber Security	3683	G020	5/1/20	84	-	-	733,150	-	$733,150
Domain Based Security Phase 2	Cyber Security	3683	G020	3/31/21	84	-	-	3,000,000	3,000,000	$6,000,000
Security Incident Event Management (SIEM) 6	Cyber Security	3683	G020	5/1/21	84	-	-	-	733,150	$733,150
Big Data Security Analytics - Phase 2	Cyber Security	3683	G020	5/1/21	84	-	-	3,466,164	2,310,776	$5,776,940
IT/OT Discovery and Implementation: Phase 2	Cyber Security	3683	G020	10/1/21	84	-	-	3,769,230	3,230,770	$7,000,000
US CNI Security Enhancements - Phase 2	Cyber Security	3683	G020	11/1/21	84	-	-	2,640,000	1,320,000	$3,960,000
Data Visualization	Cyber Security	3683	G020	12/1/21	84	-	-	-	1,000,000	$1,000,000
HANA License Costs	FY18 Plan	4649	G020	3/31/17	84	3,500,000	-	-	-	$3,500,000
Microsoft ELA Renewal	FY18 Plan	4642	G020	3/31/17	84	1,900,000	-	-	-	$1,900,000
Mobile Device Refresh - FY17	FY18 Plan	4671	G020	3/31/17	84	4,546,000	-	-	-	$4,546,000
Zscaler	FY18 Plan	4681	G020	3/31/17	84	2,100,000	-	-	-	$2,100,000
US Video Conferencing upgrade for RW	FY18 Plan	4632	G020	6/1/17	84	1,330,000	-	-	-	$1,330,000
Hix D/C Improvement Server Refresh	FY18 Plan	4676	G020	7/1/17	84	1,000,000	-	-	-	$1,000,000
Mobility - (MDM) Mobile Device	FY18 Plan	3430	G020	7/31/17	84	1,162,000				$1,162,000
Changes to ACIS for PMCC Civil Vendor Billing	FY18 Plan	4487	G186	8/2/17	84	382,000	-	-	-	$382,000
US Control-Gas System Operating Procedure (SOP) Upgrade	FY18 Plan	4480	G210	10/2/17	84	542,000	-	-	-	$542,000
Enterprise Labs	FY18 Plan	4693	G020	10/30/17	84	668,000	-	-	-	$668,000
Cascade Electric Application Upgrade Project	FY18 Plan	3986	G198	10/31/17	84	375,000	-	-	-	$375,000
WIFI for Fleet Services Diagnostic Laptops	FY18 Plan	3956	G352	11/1/17	84	838,000	-	-	-	$838,000
Gas Service Database - UNY	FY18 Plan	3949	5210G	12/1/17	84	325,000	-	-	-	$325,000
Gas Service Database - DNY (LI and NYC)	FY18 Plan	3948	G225	12/4/17	84	300,000	-	-	-	$300,000
Substation Monitoring-DobleARMS	FY18 Plan	3982	G381	1/1/18	84	622,000	-	-	-	$622,000
Gas Capital Investment Planning Tool	FY18 Plan	4466	G210	1/17/18	84	572,000	-	-	-	$572,000
Computapole Enhancements to Support Inspection Types	FY18 Plan	4462	G186	3/1/18	84	450,000	-	-	-	$450,000
Travel & Expense Management (T&E) and Global Master Service Provider (MSP) Strategy	FY18 Plan	4578	G020	3/1/18	84	1,232,000	-	-	-	$1,232,000
Ageing System Stabilization/Upgrades - FY18	FY18 Plan	4389	G148	3/15/18	84	1,500,000	-	-	-	$1,500,000
US Mobile Device Refresh	FY18 Plan	4395	G020	3/31/18	84	5,000,000	-	-	-	$5,000,000
US SAP: Infrastructure Landscape	FY18 Plan	4348	G020	3/31/18	84	4,603,000	-	-	-	$4,603,000
US CNI Tech Services-Network Equipment Lifecycle Replacements	FY18 Plan	4570	G186	3/31/18	84	250,000	-	-	-	$250,000
US CNI-EMS Lifecycle Hardware and Software Upgrade	FY18 Plan	4568	U186	3/31/18	84	13,348,000	-	-	-	$13,348,000
Network Transformation Completion - CEMS	FY18 Plan	4647	G020	3/31/18	84	250,000	-	-	-	$250,000
Application monitoring, Network/IDS, Operations monitoring	FY18 Plan	4677	G020	3/31/18	84	750,000	-	-	-	$750,000
Aged Printer refresh	FY18 Plan	4689	G020	3/31/18	84	50,000				$50,000
RSA Token refresh	FY18 Plan	4683	G020	3/31/18	84	200,000				$200,000
Acquisition of Remote Sensing Data - Mass	FY18 Plan	4670	C310	3/31/18	84	4,112,000	-	-	-	$4,112,000
INVP4449 - EPA File	FY18 Plan	4449	C170	3/31/18	84	700,000				$700,000
Informatica Upgrade/Microstrategy Replacement Program	FY18 Plan	4469	G020	5/1/18	84	3,287,000	229,000	-	-	$3,516,000

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Investment Name	Programs	INVP #	Bill Pool	In Service Date	Amortization Period	Inception To Date + FY18	FY19 CAPEX	FY20 CAPEX	FY21 CAPEX	Total US CapEx Spend
US MDS-Energy Accounting System (EAS) migration to Wholesale Settlement Application (WSA)	FY18 Plan	4481	G186	10/1/18	84	1,543,000	617,000	-	-	$2,160,000
General Ledger Interface CRIS SAP	FY18 Plan	4486	C343	3/1/19	84	900,000	300,000	-	-	$1,200,000
STORMS Capital Cost Estimates	FY18 Plan	4467	G148	3/1/19	84	-	776,000	-	-	$776,000
CRIS Data Archival	FY18 Plan	4485	C343	3/31/19	84	800,000	500,000	-	-	$1,300,000
US CNI Tech Services-Network Equipment Lifecycle Replacements	FY18 Plan	4570	G186	3/31/19	84	-	250,000	-	-	$250,000
Inventory Management Handheld Devices	FY18 Plan		G020	3/31/19	84	75,000	-	-	-	$75,000
Customer Bill Redesign	FY18 Plan	4704Q	H173	3/31/19	84	175,679	1,932,468	-	-	$2,108,147
Cisco Prime	FY18 Plan	4679	G020	3/31/21	84		216,000	216,000	216,000	$648,000
Contractor Management Modernization	FY18 Plan	4151	G327	10/15/21	84	-	750,000	3,000,000	2,160,000	$5,910,000
Risk Management (Tx Mains & Dx Mains)	GBE- Asset Management		G210	12/1/17	120	2,110,800	-	-	-	$2,110,800
AM Program Leadership-1	GBE- Asset Management		G210	3/1/18	120	277,124	-	-	-	$277,124
Enhancements	GBE- Asset Management		G210	12/1/18	120	2,059,930	600,945	-	-	$2,660,875
Additional IM Modules	GBE- Asset Management		G210	2/1/19	120	-	604,233	112,606	-	$716,840
AM Program Leadership-2	GBE- Asset Management		G210	3/1/19	120	-	398,676	-	-	$398,676
Data Remediation, GIS Upgrade/ Migration & GIS Mobility	GBE- Asset Management		G210	3/1/19	120	2,426,395	5,983,122	2,902,242	-	$11,311,759
EAM-FIN Integration	GBE- Asset Management		G210	6/1/19	120	-	979,407	798,695	-	$1,778,102
Integrity Management Integrations	GBE- Asset Management		G210	10/1/19	120	-	371,868	716,243	-	$1,088,112
AM Program Leadership-3	GBE- Asset Management		G210	3/1/20	120	-	-	408,336	-	$408,336
Design (GWD), Estimating (CU), & Mobility	GBE- Asset Management		G210	9/1/20	120	-	1,729,295	4,920,570	3,201,244	$9,851,109
Asset Analytics Integration	GBE- Asset Management		G210	12/1/20	120	-	-	-	1,764,202	$1,764,202
GIS (GWD/CU) - PPM Integration	GBE- Asset Management		G210	12/1/20	120	-	-	-	844,849	$844,849
GIS-EAM Integration	GBE- Asset Management		G210	12/2/20	120	-	1,250,000	3,286,424	3,282,332	$7,818,756
AM Program Leadership-4	GBE- Asset Management		G210	3/1/21	120	-	-	-	103,929	$103,929
Use Case No.1 - Asset Risk	GBE- Asset Management		G210	3/1/21	120	-	-	-	3,591,031	$3,591,031
Complex Design (CAD) & Estimating (ESW)	GBE- Asset Management		G210	3/1/21	120	-	-	-	2,389,087	$2,389,087
Program Learning Management-1	GBE- Business Enablement		G210	3/1/18	120	117,297	-	-	-	$117,297
Program Transformational Change Office-1	GBE- Business Enablement		G210	3/1/18	120	689,043	-	-	-	$689,043
Program Business Sustainment-1	GBE- Business Enablement		G210	3/1/19	120	-	69,617	-	-	$69,617
Program Learning Management-2	GBE- Business Enablement		G210	3/1/19	120	-	130,211	-	-	$130,211
Program Transformational Change Office -2	GBE- Business Enablement		G210	3/1/19	120	-	1,516,310	-	-	$1,516,310
Program Learning Management-3	GBE- Business Enablement		G210	3/1/20	120	-	-	173,060	-	$173,060
Program Transformational Change Office-3	GBE- Business Enablement		G210	3/1/20	120	-	-	368,704	-	$368,704
Program Business Sustainment-2	GBE- Business Enablement		G210	3/1/21	120	-	-	-	221,771	$221,771
Program Learning Management-4	GBE- Business Enablement		G210	3/1/21	120	-	-	-	195,721	$195,721
Program Transformational Change Office-4	GBE- Business Enablement		G210	3/1/21	120	-		-	169,648	$169,648
Customer Experience Program Leadership-1	GBE- Customer Engagement		G210	3/1/19	120	-	260,229	-	-	$260,229
CxT Portal & Channel Management	GBE- Customer Engagement		G210	6/1/19	120	-	6,679,688	5,195,313	-	$11,875,000
Customer Interaction - First Release	GBE- Customer Engagement		G210	10/1/19	120	-	1,780,471	3,016,074	-	$4,796,546
Employee Support Interaction - First Release	GBE- Customer Engagement		G210	10/1/19	120	-	3,871,396	4,082,735	-	$7,954,131
Customer Experience Program Leadership-2	GBE- Customer Engagement		G210	3/1/20	120	-	-	266,277	-	$266,277
CRM / Contact Center	GBE- Customer Engagement		G210	6/1/20	120	-	15,200,000	3,800,000	-	$19,000,000
Large Commercial & Landlord Interaction	GBE- Customer Engagement		G210	7/1/20	120	-	15,723	19,653	1,411,132	$1,446,508
Employee Support Interaction - Second Release	GBE- Customer Engagement		G210	7/1/20	120		-	-	292,791	$292,791
Customer Interaction - Second Release	GBE- Customer Engagement		G210	1/1/21	120		-	-	2,010,254	$2,010,254
Customer Experience Program Leadership-3	GBE- Customer Engagement		G210	3/1/21	120	-	-	-	203,177	$203,177
Data Management Implementation (Quality & Cleansing)	GBE- Data Management		G210	12/1/17	120	11,100,000	-	-	-	$11,100,000
Data Management & Governance Program Leadership-1	GBE- Data Management		G210	3/1/18	120	58,890	-	-	-	$58,890
Enable the Data Archive Process	GBE- Data Management		G210	3/1/19	120	-	2,111,916	67,564	-	$2,179,480
Data Management & Governance Program Leadership-2	GBE- Data Management		G210	3/1/19	120	-	87,954	-	-	$87,954
Data Management & Governance Program Leadership-3	GBE- Data Management		G210	3/1/20	120	-	-	89,713	-	$89,713
Powerplan Remediation	GBE- Information Services Enabling		G210	11/1/17	120	6,080,111	-	-	-	$6,080,111
Comprehensive Integration Services (Enhancements)	GBE- Information Services Enabling		G210	12/1/17	120	78,624	-	-	-	$78,624
Application (Environment) Infrastructure	GBE- Information Services Enabling		G210	12/1/17	120	2,174,410	-	-	-	$2,174,410
Development Operations & BPA Enablement-1	GBE- Information Services Enabling		G210	3/1/18	120	2,903,920	-	-	-	$2,903,920
SAP and Application Integration Development- Release 1-1	GBE- Information Services Enabling		G210	3/1/18	120	4,765,187	-	-	-	$4,765,187
Mobility CoE & End-User Computing-1	GBE- Information Services Enabling		G210	3/1/18	120	604,790	-	-	-	$604,790
Operations/System Monitoring	GBE- Information Services Enabling		G210	8/1/18	120	500,000	557,768	-	-	$1,057,768
Development Operations & BPA Enablement-2	GBE- Information Services Enabling		G210	3/1/19	120	-	2,562,011	-	-	$2,562,011
SAP and Application Integration Development- Release 1-2	GBE- Information Services Enabling		G210	3/1/19	120	-	4,548,168	-	-	$4,548,168
SAP and Application Integration Development- Release 2-1	GBE- Information Services Enabling		G210	3/1/19	120	-	5,055,712	-	-	$5,055,712
Mobility CoE & End-User Computing-2	GBE- Information Services Enabling		G210	3/1/19	120	-	920,536	-	-	$920,536
Development Operations & BPA Enablement-3	GBE- Information Services Enabling		G210	3/1/20	120	-	-	2,164,144	-	$2,164,144
SAP and Application Integration Development- Release 1-3	GBE- Information Services Enabling		G210	3/1/20	120	-	-	600,000	-	$600,000
SAP and Application Integration Development- Release 2-2	GBE- Information Services Enabling		G210	3/1/20	120	-	-	4,397,065	-	$4,397,065

Investment Name	Programs	INVP #	Bill Pool	In Service Date	Amortization Period	Inception To Date + FY18	FY19 CAPEX	FY20 CAPEX	FY21 CAPEX	Total US CapEx Spend
SAP and Application Integration Development- Release 3-1	GBE- Information Services Enabling		G210	3/1/20	120	-	-	85,915	-	$85,915
Mobility CoE & End-User Computing-3	GBE- Information Services Enabling		G210	3/1/20	120	-	-	1,031,843	-	$1,031,843
Test Automation Implementation	GBE- Information Services Enabling		G210	12/1/20	120	490,509	1,034,882	763,643	288,018	$2,577,052
Development Operations & BPA Enablement-4	GBE- Information Services Enabling		G210	3/1/21	120	-	-	-	2,176,436	$2,176,436
SAP and Application Integration Development- Release 1-4	GBE- Information Services Enabling		G210	3/1/21	120	-	-	-	600,000	$600,000
SAP and Application Integration Development- Release 3-2	GBE- Information Services Enabling		G210	3/1/21	120	-	-	-	2,326,606	$2,326,606
Mobility CoE & End-User Computing-4	GBE- Information Services Enabling		G210	3/1/21	120	-	-	-	952,793	$952,793
Portfolio Management Leadership-1	GBE- Portfolio Office		G210	3/1/18	120	1,645,919	-	-	-	$1,645,919
Solution Architects & Agile Coaches-1	GBE- Portfolio Office		G210	3/1/18	120	1,958,277	-	-	-	$1,958,277
Portfolio Management Leadership-2	GBE- Portfolio Office		G210	3/1/19	120	-	2,144,482	-	-	$2,144,482
Solution Architects & Agile Coaches-2	GBE- Portfolio Office		G210	3/1/19	120	-	3,964,632	-	-	$3,964,632
Portfolio Management Leadership-3	GBE- Portfolio Office		G210	3/1/20	120	-	-	2,161,221	-	$2,161,221
Solution Architects & Agile Coaches-3	GBE- Portfolio Office		G210	3/1/20	120	-	-	2,824,290	-	$2,824,290
Portfolio Management Leadership-4	GBE- Portfolio Office		G210	3/1/21	120	-	-	-	1,855,901	$1,855,901
Regulatory/ Compliance	GBE- Regulatory and Compliance		G210	9/1/19	120	750,000	1,500,000	750,000	-	$3,000,000
Supply Chain Program Leadership	GBE- Supply Chain		G210	3/1/19	120	-	565,045	-	-	$565,045
Supply Chain Program Leadership	GBE- Supply Chain		G210	3/1/20	120	-	-	235,258	-	$235,258
Business Architecture Design	GBE- Work Management		G210	12/1/17	120	3,004,085	-	-	-	$3,004,085
WMFE Program Leadership-1	GBE- Work Management		G210	3/1/18	120	234,013	-	-	-	$234,013
Corrosion and I&R Work	GBE- Work Management		G210	7/1/18	120	7,001,291	17,676,960	1,801,402	-	$26,479,653
CU Governance & Library - process	GBE- Work Management		G210	11/1/18	120	-	1,658,439	-	-	$1,658,439
WMFE Program Leadership-2	GBE- Work Management		G210	3/1/19	120	-	563,692	-	-	$563,692
Company Driven Work: Collections and non-Appointment Offs - Gas	GBE- Work Management		G210	10/1/19	120	2,366,407	1,773,327	1,170,911	-	$5,310,645
Company Driven Work: Collections and non-Appointment Offs- Electric	GBE- Work Management		G198	10/1/19	120	1,274,219	954,868	630,490	-	$2,859,577
Customer, Leak Investigation & Inspections - Gas	GBE- Work Management		G210	10/1/19	120	1,191,154	8,895,256	10,288,028	-	$20,374,438
Customer, Leak Investigation & Inspections - Electric	GBE- Work Management		G198	10/1/19	120	641,390	4,789,753	5,539,707	-	$10,970,850
WMFE Program Leadership-3	GBE- Work Management		G210	3/1/20	120	-	-	595,004	-	$595,004
PowerPlan Integration & Enhancements	GBE- Work Management		G210	6/1/20	120	-	-	915,441	1,031,426	$1,946,867
Construction Work & Leak Repair	GBE- Work Management		G210	9/1/20	120	-	1,832,544	7,167,604	10,718,386	$19,718,534
WMFE Program Leadership-4	GBE- Work Management		G210	3/1/21	120	-	-	-	155,062	$155,062
Work Forecasting & Planning - solution	GBE- Work Management		G210	5/1/21	120	-	-	-	1,708,505	$1,708,505
Core Projects & Program Management	GBE- Work Management		G210	6/1/21	120	-	-	-	3,134,061	$3,134,061
WMFE Optimization	GBE- Work Management		G210	3/1/22	120	-	-	346,828	2,984,574	$3,331,402
Customer Experience Transformation-Communication Preference Management	Growth Play Book-CXT	4426	C175	3/31/19	84	1,200,000	800,000	-	-	$2,000,000
Customer Experience Transformation-MyAccount Portal	Growth Play Book-CXT	4427	C175	6/1/19	84	1,000,000	6,000,000	1,500,000	-	$8,500,000
Governance Risk & Compliance (GRC) Optimization/Upgrade	Growth Play Book-Finance	4222	G020	3/1/19	84	-	1,540,000	-	-	$1,540,000
US SAP: Business Planning	Growth Play Book-Finance	4217	G020	3/31/19	84	-	4,643,000	-	-	$4,643,000
US SAP: FERC on Hana (FOH)	Growth Play Book-Finance	4563	G020	3/31/19	84	-	1,315,000	-	-	$1,315,000
DRMS for C&I Demand Response	NY REV/grid modernization		5210E	5/1/17	36	3,429,633	-	-	-	$3,429,633
Load and DER Forecasting (Acquisition of Remote Sensing Data - NY)	NY REV/grid modernization	4729	C113	3/31/18	84	8,632,000	-	-	-	$8,632,000
Plant Information Historian	NY REV/grid modernization	4704K	G198	9/30/18	84	-	11,427,818	-	-	$11,427,818
E-Commerce Marketplace	NY REV/grid modernization	4704D	C113	3/31/19	84	-	915,837	-	-	$915,837
AMI - Telecoms	NY REV/grid modernization	4704I	5210E	3/31/19	84	-	1,580,151	-	-	$1,580,151
DG IOAP Tactical (Phase 2)	NY REV/grid modernization	4704P	5210E	3/31/19	84	-	1,764,000	-	-	$1,764,000
AMI - CSS Enhancements	NY REV/grid modernization	4704A	C113	3/31/20	84	-	5,319,147	2,756,391	-	$8,075,538
Green Button Connect	NY REV/grid modernization	4704C	C113	3/31/20	84	-	-	3,072,759	-	$3,072,759
AMI - Telecoms	NY REV/grid modernization	4704I	5210E	3/31/20	84	-	-	1,409,719	-	$1,409,719
Outdoor Lighting Inventory Portal	NY REV/grid modernization	4704O	5210E	3/31/20	84	-	500,000	1,100,000	-	$1,600,000
DRMS for C&I Demand Response (Renewal)	NY REV/grid modernization		5210E	5/1/20	12	-	-	-	1,200,000	$1,200,000
DSP - DG IOAP	NY REV/grid modernization	4704F	5210E	9/30/20	84	-	9,120,628	5,714,643	-	$14,835,271
Grid MOD - ABB/ADMS & D-SCADA	NY REV/grid modernization	4704G	5210E	3/31/21	84	-	9,345,188	12,966,609	6,917,501	$29,229,298
AMI - Telecoms	NY REV/grid modernization	4704I	5210E	3/31/21	84	-	-	-	1,962,336	$1,962,336
AMI - Enterprise Service Bus & API Integration	NY REV/grid modernization	4704J	C113	3/31/21	84	-	1,690,216	2,765,398	490,757	$4,946,371
AMI - Enterprise Service Bus & API Integration	NY REV/grid modernization	4704J	5210E	3/31/21	84		3,762,093	6,155,240	1,092,330	$11,009,664
AMI - Info Mgt & Advanced Analytics	NY REV/grid modernization	4704L	C113	3/31/21	84	-	1,720,346	1,009,376	649,100	$3,378,822
AMI - Info Mg & Advanced Analytics	NY REV/grid modernization	4704L	5210E	3/31/21	84		8,399,335	4,928,129	3,169,136	$16,496,601
IS-Cloud Computing & Data Lake	NY REV/grid modernization	4704M	C113	3/31/21	84	-	432,445	311,985	433,806	$1,178,236
IS-Cloud Computing & Data Lake	NY REV/grid modernization	4704M	5210E	3/31/21	84		2,111,349	1,523,222	2,117,995	$5,752,565
Cyber Security	NY REV/grid modernization	4704N	C113	3/31/21	84	-	6,514,334	3,195,298	1,831,420	$11,541,052
Cyber Security	NY REV/grid modernization	4704N	5210E	3/31/21	84		9,771,502	4,792,946	2,747,131	$17,311,579
Annual HR & Payroll Mandatory Service Pack Upgrade (HRSP) - FY18	Other Mandates	4400	G020	12/31/17	84	1,126,000	-	-	-	$1,126,000
Regulatory Mandates - FY18	Other Mandates		G020	3/31/18	84	5,071,622	-	-	-	$5,071,622
US Control-Gas Electronic Bulletin Board (EBB) Upgrade	Other Mandates	4479	G210	5/1/18	84	2,455,000	545,000	-	-	$3,000,000
Regulatory Mandates - FY19	Other Mandates		G020	3/31/19	84	-	18,595,000	-	-	$18,595,000
Regulatory Mandates - FY20	Other Mandates		G020	3/31/20	84	-	-	20,000,000	-	$20,000,000
Regulatory Mandates - FY21	Other Mandates		G020	3/31/21	84	-	-	-	20,000,000	$20,000,000

Exhibit__(ISP-3)
Page 5 of 5

Investment Name	Programs	INVP #	Bill Pool	In Service Date	Amortization Period	Inception To Date + FY18	FY19 CAPEX	FY20 CAPEX	FY21 CAPEX	Total US CapEx Spend
CPE Buyback	Tech. Modernization	4684	G020	3/31/17	84	5,140,000	-	-	-	$5,140,000
Active Directory Improvements	Tech. Modernization	4489	G020	11/30/17	84	275,000	-	-	-	$275,000
Application Performance Management (APM)	Tech. Modernization	4490	G020	1/31/18	84	375,000	-	-	-	$375,000
RAS/VPN Re-Platform/Mobile	Tech. Modernization	4269	G020	3/16/18	84	600,000	-	-	-	$600,000
US Network Programme	Tech. Modernization	4496	G020	3/31/18	84	3,025,000	-	-	-	$3,025,000
US VSTIG Programme	Tech. Modernization	4498	G020	3/31/18	84	2,700,000	-	-	-	$2,700,000
US Wireless Programme	Tech. Modernization	4499	G020	3/31/18	84	1,950,000	-	-	-	$1,950,000
Monitoring and Alerting	Tech. Modernization	4493	G020	3/31/18	84	450,000	-	-	-	$450,000
RSA Re-platform	Tech. Modernization	4270	G020	3/31/18	84	280,000	-	-	-	$280,000
Cloud Broker - Hybrid Enablement	Tech. Modernization	3899	G020	3/31/18	84	250,000	-	-	-	$250,000
Office 2010 Upgrade	Tech. Modernization	4265	G020	3/31/18	84	800,000	-	-	-	$800,000
Citrix Infrstructure Upgrade (Xenapp and NetScaler)	Tech. Modernization	4279	G020	3/31/18	84	500,000	-	-	-	$500,000
Business Innovation Projects 1	Tech. Modernization	4707	G020	3/31/18	84	3,368,613	-	-	-	$3,368,613
Data Security	Tech. Modernization	4710	G020	3/31/18	84	1,575,000	-	-	-	$1,575,000
Orchestration and Self Service	Tech. Modernization	4726	G020	3/31/18	84	750,000	-	-	-	$750,000
Virtual Desktop - DaaS	Tech. Modernization	4727	G020	3/31/18	84	550,000	-	-	-	$550,000
SCI connections	Tech. Modernization	4495	G020	3/31/18	84	100,000				$100,000
US SAP: Dynamic Storage Tiering	Tech. Modernization	4560	G020	7/5/18	84	-	1,355,000	-	-	$1,355,000
ICE Replacement	Tech. Modernization	4491	G020	10/31/18	84	3,316,000	-	-	-	$3,316,000
US Network Programme	Tech. Modernization	4496	G020	3/31/19	84	-	2,075,000	-	-	$2,075,000
US VSTIG Programme	Tech. Modernization	4498	G020	3/31/19	84	-	1,700,000	-	-	$1,700,000
US Wireless Programme	Tech. Modernization	4499	G020	3/31/19	84	-	1,500,000	-	-	$1,500,000
Data Visualisation Expansion	Tech. Modernization	4606	G020	3/31/19	84	1,000,000	1,800,000	-	-	$2,800,000
US SAP: Business Warehouse (BW) Consolidation to HANA Enterprise Cloud (HEC)	Tech. Modernization	4562	G020	3/31/19	84	-	2,366,000	-	-	$2,366,000
Monitoring and Alerting	Tech. Modernization	4493	G020	3/31/19	84	-	1,000,000	-	-	$1,000,000
MWORK and Netmotion Risk Avoidance	Tech. Modernization	4725	G020	3/31/19	84	-	500,000	-	-	$500,000
Improving End User Experience- Cloud based DMZ Service Platform	Tech. Modernization	4723	G020	3/31/19	84	-	300,000	-	-	$300,000
Mobile Broadband POC	Tech. Modernization		G020	3/31/19	84		100,000	-	-	$100,000
FY19 Edge Projects	Tech. Modernization	4717	G020	3/31/19	84	-	1,000,000	-	-	$1,000,000
FY19 Network Projects	Tech. Modernization	4718	G020	3/31/19	84	-	1,000,000	-	-	$1,000,000
Digital Asset Management (DAM)	Tech. Modernization	4711	G020	3/31/19	84	-	500,000	-	-	$500,000
Business Innovation Projects 1	Tech. Modernization	4707	G020	3/31/19	84	-	3,973,236	-	-	$3,973,236
Business Innovation Projects 2	Tech. Modernization	4708	G020	3/31/19	84	-	3,368,613	-	-	$3,368,613
Business Innovation Projects 3	Tech. Modernization	4728	G020	3/31/19	84	-	3,368,613	-	-	$3,368,613
EUC, network, and data center strategy	Tech. Modernization	4715	G020	3/31/19	84	771,429	771,429	-	-	$1,542,858
Data Security	Tech. Modernization	4710	G020	3/31/19	84	-	1,575,000	-	-	$1,575,000
FY19 Data Centre Projects	Tech. Modernization	4716	G020	3/31/19	84	-	2,000,000	-	-	$2,000,000
1327 Interfaces - 523 FTS, 340 RDX, 245 MQSI, 253 JCAPS, 44 PM4D, 7 VB	Tech. Modernization	4706	G020	3/31/19	84	2,600,000	700,000	-	-	$3,300,000
US Video Conference Programme	Tech. Modernization	4497	G020	6/1/19	84	200,000	1,350,000	100,000	-	$1,650,000
IS Tools	Tech. Modernization	4513	G020	3/24/20	84	-	200,000	200,000	-	$400,000
US SAP: Enhancement Pack 9 Upgrade	Tech. Modernization	4564	G020	3/31/20	84	-	3,493,000	5,328,000	-	$8,821,000
US Network Programme	Tech. Modernization	4496	G020	3/31/20	84	-	-	1,575,000	-	$1,575,000
US VSTIG Programme	Tech. Modernization	4498	G020	3/31/20	84	-	-	700,000	-	$700,000
US Wireless Programme	Tech. Modernization	4499	G020	3/31/20	84	-	-	1,500,000	-	$1,500,000
Monitoring and Alerting	Tech. Modernization	4493	G020	3/31/20	84	-	-	1,000,000	-	$1,000,000
Service Now - Release 3	Tech. Modernization	4261	G020	3/31/20	84	400,000	1,500,000	1,500,000	-	$3,400,000
FY20 Edge Projects	Tech. Modernization	4720	G020	3/31/20	84	-	-	2,000,000	-	$2,000,000
FY20 Network Projects	Tech. Modernization	4721	G020	3/31/20	84	-	-	4,000,000	-	$4,000,000
EMM Licenses	Tech. Modernization	4713	G020	3/31/20	84	-	660,000	660,000	-	$1,320,000
Business Innovation Projects 2	Tech. Modernization	4708	G020	3/31/20	84	-	-	3,973,236	-	$3,973,236
Business Innovation Projects 3	Tech. Modernization	4728	G020	3/31/20	84	-	-	3,979,236	-	$3,979,236
Data Security	Tech. Modernization	4710	G020	3/31/20	84	-	-	1,575,000	-	$1,575,000
Hardware and Software Upgrades	Tech. Modernization	4722	G020	3/31/20	84	500,000	6,000,000	1,000,000	-	$7,500,000
Data Centre Consolidation efforts	Tech. Modernization	4709	G020	3/31/20	84	2,000,000	1,000,000	500,000	-	$3,500,000
FY20 Data Centre Projects	Tech. Modernization	4719	G020	3/31/20	84	-	-	4,000,000	-	$4,000,000
Enterprise Data Management Platform	Tech. Modernization	4582	G020	6/1/20	84	-	2,500,000	1,230,000	1,000,000	$4,730,000
Business Innovation Projects 2	Tech. Modernization	4708	G020	3/31/21	84	-	-	-	4,491,484	$4,491,484
Business Innovation Projects 3	Tech. Modernization	4728	G020	3/31/21	84	-	-	-	4,491,484	$4,491,484

BEFORE THE
STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

In the Matter of

Niagara Mohawk Power Corporation d/b/a National Grid

Cases 17-E-0238 and 17-G-0239

August 2017

Prepared Testimony of:

Staff Gas Infrastructure and
Operations Panel

Aric Rider
Utility Supervisor

Michael C. Tushaj
Assistant Engineer (Mechanical)

Michael Pasinella
Utility Engineer 2 (Safety)

Office of Electric, Gas and
Water
State of New York
Department of Public Service
Three Empire State Plaza
Albany, New York 12223-1350

that other methods could not achieve comparable risk reduction at a lower cost.

Q. Does the Panel recommend an adjustment to the I&R – Increased Pipeline Survey program FY 2019 budget?

A. Yes. Based on the concerns we just described, we recommend that this program be eliminated in the Rate Year.

Q. Describe the Customer Meter Services (CMS) - iPads project.

A. As explained on page 81 of the Company's Gas Infrastructure and Operations Panel Direct Testimony, gas repair orders currently are in paper format. This program would provide an interim solution to link the Company's work management systems in electronic format. The iPads will be used for digital form entry and provide a means of mobile access to maps, service records, and procedures.

Q. Did the Company provide a cost breakdown of the project?

A. Yes. In the response to IR DPS-623, the Company estimated hardware expense of $375,240, a one-time programing cost of $250,000, and an annual

licensing and data plan cost of $168,960.

Q. How do CMS employees currently access information in the field?

A. They use laptops.

Q. Does the Panel have any concerns with the proposed CMS iPad Project?

A. Yes. Based on Company responses to IRs DPS-622 and DPS-623, we have three concerns. First, the CMS employees will be using two devices, laptops and iPads, in the field. Second, the Project should yield savings that offset the costs, but the Company has not identified savings. Finally, the one-time programing cost is unsupported.

Q. Based on these concerns, do you have any recommendations regarding the CMS iPad Project?

A. Yes. The Company should delay its replacement of laptops with iPads until it can coordinate this replacement with implementation of the Gas Business Enablement program. It is more appropriate, based on a holistic approach, to delay the iPad deployment until the Gas Business Enablement Program is implemented. Accordingly, we eliminated this expense in the Rate Year.

optimized."

Increased OpEx Workload

Q. Explain the type and number of positions the Company proposed to hire under the category Increased OpEx Workload.

A. As shown on Company Exhibit___(GIOP-6CU), Niagara Mohawk proposed seven incremental FTEs under the categories: CMS – Service Representative (2 FTEs); Damage Prevention – Supervisor (1 FTE); and Field Personnel & Contractor Training – Senior Instructors (4 FTEs).

Q. Does the Panel believe that the Company's projected number of FTEs in the Increased OpEx Workload category is appropriate?

A. No.

Q. Please explain.

A. We reviewed the response to IR DPS-235, which asked the Company for a detailed description of the need and timing for each FTE. The Company responded generically that each department sponsoring incremental FTEs evaluated the existing staffing levels and forecast incremental O&M workloads. We also reviewed the

1 response to IR DPS-533, and are concerned with
2 the timing and need of CMS – Service
3 Representative and Field Personnel & Contractor
4 Training – Senior Instructors. Based on these
5 IR responses, it is unclear how the Company's
6 training plans are changing, or why the
7 indicated FTEs are needed in the Rate Year.
8 Moreover, the Liberty Report stated that the
9 Company had a stable LPP replacement program,
10 Gas O&M spending forecasts did not have the same
11 rigor as their electric counterparts, and
12 Management also encountered difficulty in
13 producing gas operations functional breakdowns
14 per components of work that most gas companies
15 use for internal purposes. We also believe that
16 the Company's Gas Business Enablement project
17 will impact many facets of the gas business,
18 which may change the future need for these
19 positions.
20 Q. What does the Panel recommend for the Rate Year?
21 A. We conclude that one FTE in each category is
22 reasonable to improve the Company's OpEx
23 workload performance in the Rate Year.
24 Q. Is it your opinion that the three FTEs should

have a positive impact on the Company's operations?

A. Yes. The FTEs should produce positive benefits including, for instance, improving workforce efficiency. We informed the Staff Policy Panel of our recommendation that these FTEs should produce Rate Year savings that need to be incorporated into the case.

<u>OpEx Related to CapEx</u>

Q. Explain the type and number of positions the Company proposed to hire under the category OpEx Related to CapEx.

A. As shown on Niagara Mohawk Exhibit___(GIOP-6CU), the Company proposed 52 incremental FTEs in the Rate Year due to CapEx increases. New FTEs are proposed under the categories of analysts, engineers, estimators, trainers, technicians, managers, clerical, supervisors, coordinators, and designers.

Q. Explain how the Company's proposed Rate Year capital investment plan has increased from FY 2018.

A. As shown in Company Exhibit___(GIOP-1), Niagara Mohawk is operating under a $124.502 million FY

and that accelerated pipeline replacement was the primary driver of FTE increases over the period examined. It found that the Company's staffing levels were within the expected range for its facilities, and the Company has gaps in welders and instrument and regulation workers (who install, operate, and maintain pressure regulating, system automation and monitoring, and gas quality and conditioning facilities). According to the Liberty Report, these shortages are partially driven by an increase in transmission and pipeline work due to the San Bruno incident.

Q. Do you believe the Gas Business Enablement project may impact the future number of Company FTEs?

A. Yes. When all of the Gas Business Enablement programs are fully integrated, the Company should realize efficiencies that positively impact it.

Q. Based on the foregoing, how many incremental FTEs do you recommend the Commission allow in the OpEx related to CapEx category?

A. We recommend 20 new FTEs. The Company has not

BEFORE THE
STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

In the Matter of

Niagara Mohawk Power Company d/b/a National Grid

Cases 17-E-0238 & 17-G-0239

August 2017

Prepared Exhibits of:

Staff Gas Infrastructure and
Operations Panel

Aric Rider
Utility Supervisor

Michael C. Tushaj
Associate Engineer (Mechanical)

Michael Pasinella
Utility Engineer 2 (Safety)

Office of Electric, Gas and
Water
State of New York
Department of Public Service
Three Empire State Plaza
Albany, New York 12223-1350

Date of Request: July 20, 2017
Due Date: July 31, 2017

Request No. DPS-622 AR-7
NMPC Req. No. NM-1242

NIAGARA MOHAWK POWER CORPORATION d/b/a NATIONAL GRID
Case No. 17-E-0238 and 17-G-0239 –
Niagara Mohawk Power Corporation d/b/a National Grid – Electric and Gas Rates

Request for Information

FROM: DPS Staff, Aric Rider

TO: National Grid, Gas Infrastructure and Operations Panel

SUBJECT: **OPEX – CMS IPADS**

Request:

In these interrogatories, all requests for data, workpapers, or supporting calculations should be construed as requesting any Word, Excel, or other computer spreadsheet models in original electronic format with all formulae intact.

With reference to Exhibit__(GIOP-5) – CMS iPads:

1. What is the current annual cost of licensing and data plans for the CMS laptops that are scheduled to be replaced with iPads?

2. Provide the projected annual cost of licensing and data plans for the CMS iPads.

Response:

1. The CMS laptops are not scheduled to be replaced with iPads in the near term. The CMS iPads will supplement the CMS laptops to (i) replace the current paper-based data collection and (ii) improve compliance with company procedures. The CMS iPads are an interim solution until replacement of the laptops is accomplished through the Gas Business Enablement program. The current annual cost of licensing and data plans for the CMS laptops is $134,000.

2. The projected annual cost of licensing and data plans for the CMS iPads is $150,000.

Name of Respondent:
Daniel D Eletto

Date of Reply:
July 31, 2017

Form 103

Date of Request: July 20, 2017
Due Date: July 31, 2017

Request No. DPS-623 AR-8
NMPC Req. No. NM-1243

NIAGARA MOHAWK POWER CORPORATION d/b/a NATIONAL GRID
Case No. 17-E-0238 and 17-G-0239 –
Niagara Mohawk Power Corporation d/b/a National Grid – Electric and Gas Rates

Request for Information

FROM: DPS Staff, Aric Rider

TO: National Grid, Gas Infrastructure and Operations Panel

SUBJECT: **OPEX – CMS**

Request:

In these interrogatories, all requests for data, workpapers, or supporting calculations should be construed as requesting any Word, Excel, or other computer spreadsheet models in original electronic format with all formulae intact.

With reference to Exhibit__(GIOP-5) – CMS iPads and Exhibit__(GIOP-6) – CMS – Service Representatives:

1. Provide a cost breakdown of the costs associated with CMS – iPads.

2. Explain why each cost identified in response to the preceding question is not included in the normal replacement of equipment.

3. Explain why each cost identified in response to DPS-623(1) is not capitalized.

4. Explain how the workload has increased sufficiently to justify the need for two FTEs.

5. Why hasn't the Company hired the CMS service representatives to date?

Response:

1. See Attachment 1.

2. Please see the Company's response to DPS-622, part 1.

3. The costs are not capitalized because the cost per unit is below the capitalization threshold.

4. Please see Attachment 1 to the Company's response to DPS-533 which provides the workload increase to justify the additional FTEs.

5. Please see Attachment 1 to the Company's response to DPS-533 which describes why FTEs have not been hired to date.

Name of Respondent:
Dan D Eletto
Brian Sano

Date of Reply:
July 31, 2017

Hardware (One time Expense)	Price	CMS Crews	Estimated Cost
Apple iPad Air 2 / Silver w/128 GB / 9.7"	$ 600	352	$ 211,200
AppleCare+	$ 130	352	$ 45,756
Vehicle Power Adapter	$ 54	352	$ 19,008
OtterBox Defender Series Case / Black	$ 150	352	$ 52,800
Subtotal	$ 934	352	$ 328,764
Spares	$ 934	20	$ 18,680
Tax	$ 75	372	$ 27,796
Total			**$ 375,240**

Programing (One time Expense)	Price	CMS Crews	Estimated Cost
IT Estimate	$ 250,000	N/A	**$ 250,000**

Licensing & Data Plan (Annual Reoccurring Expense)	Price	CMS Crews	Estimated Cost
iPad Application License - Formotus (Monthly Fee)	$ 25	352	$ 105,600
Monthly Wi-Fi + Cellular (Monthly Fee)	$ 15	352	$ 63,360
Total	$ 40	352	**$ 168,960**

Niagara Mohawk Power Corporation d/b/a National Grid

PROCEEDING ON MOTION OF THE COMMISSION AS TO THE RATES, CHARGES, RULES AND REGULATIONS OF NIAGARA MOHAWK POWER CORPORATION FOR ELECTRIC AND GAS SERVICE

Testimony and Exhibits of:

Revenue Requirements Panel
Exhibit __ (RRP-11)
Schedule 1 – 7 of Workpapers for Exhibit __(RRP-3)

Book 14

April 28, 2017

Submitted to:
New York State Public Service Commission
Case 17-E-____
Case 17-G-____

Submitted by:
Niagara Mohawk Power Corporation

nationalgrid

Niagara Mohawk Power Corporation d/b/a National Grid
Consultants
Removal of Gas Business Enablement Expense
Historic Year Ended December 31, 2016

Jurisdictional Entity	NIMOG			
Sum of OPEX - Actual $				
L02 Cost Type	L03 Cost Type	Order Key	WBS Element Key	Total
Consultants	Consultant	XG210016643	Y073336.AG0016	$ -
		XG210016644	Y073342.AG0016	$ 401,554
		XG210016645	Y073348.AG0016	$ 81,414
		XG210016646	Y073354.AG0016	$ 114,275
		XG210016647	Y073360.AG0016	$ 28,335
Contractors	General/Other	XG210016647	Y073360.AG0016	$ 3,715
Employee Expenses	Other Employee Expenses	XG210016643	Y073336.AG0016	$ 1,262
		XG210016644	Y073342.AG0016	$ 1,058
		XG210016645	Y073348.AG0016	$ 131
		XG210016646	Y073354.AG0016	$ 6,997
		XG210016647	Y073360.AG0016	$ 1,128
Materials	Outside Vendor	XG210016643	Y073336.AG0016	$ 28
		XG210016644	Y073342.AG0016	$ 1,221
		XG210016647	Y073360.AG0016	$ 104
Other Expenses	Hardware	XG210016644	Y073342.AG0016	$ 324
	Other Expense	XG210016643	Y073336.AG0016	$ 121
		XG210016644	Y073342.AG0016	$ 348
	Software	XG210016646	Y073354.AG0016	$ 136
	Telecommunications	XG210016643	Y073336.AG0016	$ 27
		XG210016644	Y073342.AG0016	$ 371
		XG210016645	Y073348.AG0016	$ 52
		XG210016646	Y073354.AG0016	$ 681
		XG210016647	Y073360.AG0016	$ 45
		XG210016648	Y073366.AG0016	$ 11
Grand Total				$ 643,338

Niagara Mohawk Power Corporation d/b/a National Grid
Contractors
Removal of Gas Business Enablement Expense
Historic Year Ended December 31, 2016

Jurisdictional Entity	NIMOG			
Sum of OPEX - Actual $				
L02 Cost Type	L03 Cost Type	Order Key	WBS Element Key	Total
Consultants	Consultant	XG210016643	Y073336.AG0016	$ -
		XG210016644	Y073342.AG0016	$ 401,554
		XG210016645	Y073348.AG0016	$ 81,414
		XG210016646	Y073354.AG0016	$ 114,275
		XG210016647	Y073360.AG0016	$ 28,335
Contractors	General/Other	XG210016647	Y073360.AG0016	$ 3,715
Employee Expenses	Other Employee Ex	XG210016643	Y073336.AG0016	$ 1,262
		XG210016644	Y073342.AG0016	$ 1,058
		XG210016645	Y073348.AG0016	$ 131
		XG210016646	Y073354.AG0016	$ 6,997
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		XG210016644	Y073342.AG0016	$ 371
		XG210016645	Y073348.AG0016	$ 52
		XG210016646	Y073354.AG0016	$ 681
		XG210016647	Y073360.AG0016	$ 45
		XG210016648	Y073366.AG0016	$ 11
Grand Total				$ 643,338

Exhibit_____(RRP-11)
Workpapers to RRP-3
Schedule 5
Workpaper 2
Page 1 of 1

Niagara Mohawk Power Corporation d/b/a National Grid
Hardware Expenses
Removal of Gas Business Enablement Expense
Historic Year Ended December 31, 2016

Jurisdictional Entity	NIMOG			
Sum of OPEX - Actual $				
L02 Cost Type	L03 Cost Type	Order Key	WBS Element Key	Total
Consultants	Consultant	XG210016643	Y073336.AG0016	$ -
		XG210016644	Y073342.AG0016	$ 401,554
		XG210016645	Y073348.AG0016	$ 81,414
		XG210016646	Y073354.AG0016	$ 114,275
		XG210016647	Y073360.AG0016	$ 28,335
Contractors	General/Other	XG210016647	Y073360.AG0016	$ 3,715
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		XG210016644	Y073342.AG0016	$ 1,058
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		XG210016646	Y073354.AG0016	$ 6,997
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Materials	Outside Vendor	XG210016643	Y073336.AG0016	$ 28
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		XG210016644	Y073342.AG0016	$ 348
	Software	XG210016646	Y073354.AG0016	$ 136
	Telecommunications	XG210016643	Y073336.AG0016	$ 27
		XG210016644	Y073342.AG0016	$ 371
		XG210016645	Y073348.AG0016	$ 52
		XG210016646	Y073354.AG0016	$ 681
		XG210016647	Y073360.AG0016	$ 45
		XG210016648	Y073366.AG0016	$ 11
Grand Total				$ 643,338

Niagara Mohawk Power Corporation d/b/a National Grid
Software Expenses
Removal of Gas Business Enablement Expense
Historic Year Ended December 31, 2016

Jurisdictional Entity	NIMOG			
Sum of OPEX - Actual $				
L02 Cost Type	L03 Cost Type	Order Key	WBS Element Key	Total
Consultants	Consultant	XG210016643	Y073336.AG0016	$ -
		XG210016644	Y073342.AG0016	$ 401,554
		XG210016645	Y073348.AG0016	$ 81,414
		XG210016646	Y073354.AG0016	$ 114,275
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		XG210016644	Y073342.AG0016	$ 1,221
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	Other Expense	XG210016643	Y073336.AG0016	$ 121
		XG210016644	Y073342.AG0016	$ 348
	Software	XG210016646	Y073354.AG0016	$ 136
	Telecommunications	XG210016643	Y073336.AG0016	$ 27
		XG210016644	Y073342.AG0016	$ 371
		XG210016645	Y073348.AG0016	$ 52
		XG210016646	Y073354.AG0016	$ 681
		XG210016647	Y073360.AG0016	$ 45
		XG210016648	Y073366.AG0016	$ 11
Grand Total				$ 643,338

Niagara Mohawk Power Corporation d/b/a National Grid

PROCEEDING ON MOTION OF THE COMMISSION AS TO THE RATES, CHARGES, RULES AND REGULATIONS OF NIAGARA MOHAWK POWER CORPORATION FOR ELECTRIC AND GAS SERVICE

Testimony and Exhibits of:

Revenue Requirements Panel
Exhibit __ (RRP-11)
Schedule 8 – 23 of Workpapers for Exhibit __(RRP-3)

Book 15

April 28, 2017

Submitted to:
New York State Public Service Commission
Case 17-E-____
Case 17-G-____

Submitted by:
Niagara Mohawk Power Corporation

nationalgrid

Niagara Mohawk Power Corporation d/b/a National Grid
Service Company Rents
Forecasted Service Company Capital Software allocated to Operating Companies as Rent Expense
For the Rate Year ended March 31, 2019

Line	Investment Name	Programs	INVP #	Bill Pool	FY19 Total Spend	In Service Date	Amortization Period	4/1/2018 4/1/2018 Balance	3/31/2019 3/31/2019 Balance	Average Balance	9.9061% Service Co Return	Year Return	Return on Accum Taxes	Total Return
1	Cloud Security	Cyber Security	3683	G020	$ 1,460,000	5/1/2017	84	$ 1,268,810	$ 1,060,238	$ 1,164,524	9.9061%	$ 115,359	$ (33,454)	$ 81,905
2	Risk Based Authentication - 2FA token alternative	Cyber Security	3683	G020	$ 235,080	6/1/2017	84	$ 207,094	$ 173,511	$ 190,303	9.9061%	$ 18,852	$ (5,498)	$ 13,354
3	INVP 3614D1 Ent Network Security	Cyber Security	3614D1	G020	$ 9,478,590	6/30/2017	84	$ 8,463,027	$ 7,108,943	$ 7,785,985	9.9061%	$ 771,286	$ (226,176)	$ 545,110
4	Threat Behavior Modeling	Cyber Security	3683	G020	$ 800,000	8/1/2017	84	$ 723,810	$ 609,524	$ 666,667	9.9061%	$ 66,041	$ (19,469)	$ 46,572
5	Identity & Access Management :Role Base Access Management (RBAC)	Cyber Security	3683	G020	$ 1,650,000	10/1/2017	84	$ 1,532,143	$ 1,296,429	$ 1,414,286	9.9061%	$ 140,100	$ (41,719)	$ 98,382
6	Enhanced DLP Gateway and Endpoint	Cyber Security	3683	G020	$ 2,238,480	12/1/2017	84	$ 2,131,886	$ 1,812,103	$ 1,971,994	9.9061%	$ 195,347	$ (58,720)	$ 136,627
7	INVP 3614B7 CNI Network Security	Cyber Security	3614B7	G020	$ 4,829,586	12/31/2017	84	$ 4,657,101	$ 3,967,160	$ 4,312,130	9.9061%	$ 427,163	$ (128,980)	$ 298,183
8	INVP 3614E4 US CNI Security I&E	Cyber Security	3614E4	G020	$ 1,207,045	12/31/2017	84	$ 1,163,936	$ 991,501	$ 1,077,719	9.9061%	$ 106,760	$ (32,236)	$ 74,524
9	US CNI Intrusion Detection/Prevention Phase 1	Cyber Security	3683	G020	$ 550,000	3/31/2018	84	$ 550,000	$ 471,429	$ 510,714	9.9061%	$ 50,592	$ (11,577)	$ 39,015
10	Identity & Access Management: Fine Grain Access Management	Cyber Security	3683	G020	$ 1,650,000	3/31/2018	84	$ 1,650,000	$ 1,414,286	$ 1,532,143	9.9061%	$ 151,775	$ (34,730)	$ 117,046
11	vStig Scaling Upgrades	Cyber Security	3683	G020	$ 1,000,000	8/1/2018	84	$ -	$ 904,762	$ 452,381	9.9061%	$ 44,813	$ (18,015)	$ 26,799
12	IT/OT Discovery and Implementation Phase 1	Cyber Security	3683	G020	$ 5,500,000	10/1/2018	84	$ -	$ 5,107,143	$ 2,553,571	9.9061%	$ 252,959	$ (101,687)	$ 151,272
13	Security Research Lab	Cyber Security	3683	G020	$ 325,000	10/1/2018	84	$ -	$ 301,786	$ 150,893	9.9061%	$ 14,948	$ (6,009)	$ 8,939
14	US CNI Security Enhancements Phase 1	Cyber Security	3683	G020	$ 1,650,000	11/1/2018	84	$ -	$ 1,551,786	$ 775,893	9.9061%	$ 76,861	$ (30,897)	$ 45,963
15	Identity & Access Management: Privileged Access Management	Cyber Security	3683	G020	$ 1,740,000	3/31/2019	84	$ -	$ 1,740,000	$ 870,000	9.9061%	$ 86,183	$ (20,787)	$ 65,396
16	Domain Based Security Phase 1	Cyber Security	3683	G020	$ 800,000	3/31/2019	84	$ -	$ 800,000	$ 400,000	9.9061%	$ 39,624	$ (9,557)	$ 30,067
17	Security Incident Event Management Phase 4	Cyber Security	3683	G020	$ 1,266,300	5/1/2019	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
18	Big Data Security Analytics Phase 1	Cyber Security	3683	G020	$ 4,621,552	5/1/2019	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
19	US CNI Intrusion Detection/Prevention Phase 2	Cyber Security	3683	G020	$ 300,000	3/31/2020	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
20	Identity & Access Management: Shared Area Access Management	Cyber Security	3683	G020	$ -	3/31/2020	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
21	Security Incident Event Management Phase 5	Cyber Security	3683	G020	$ -	5/1/2020	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
22	Domain Based Security Phase 2	Cyber Security	3683	G020	$ -	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
23	Security Incident Event Management (SIEM) 6	Cyber Security	3683	G020	$ -	5/1/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
24	Big Data Security Analytics - Phase 2	Cyber Security	3683	G020	$ -	5/1/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
25	IT/OT Discovery and Implementation: Phase 2	Cyber Security	3683	G020	$ -	10/1/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
26	US CNI Security Enhancements - Phase 2	Cyber Security	3683	G020	$ -	11/1/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
27	Data Visualization	Cyber Security	3683	G020	$ -	12/1/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
29	INVP 4045 Double Pole Mgmt DB	FY18 Plan	4045	G198	$ 482,153	2/18/2017	84	$ 407,534	$ 338,655	$ 373,095	9.9061%	$ 36,959	$ (13,435)	$ 23,524
30	INVP 4373 Contingent Labor Admin Replacement	FY18 Plan	4373	G020	$ 250,692	2/20/2017	84	$ 211,895	$ 176,082	$ 193,988	9.9061%	$ 19,217	$ (6,986)	$ 12,231
32	INVP 4188 Aging System Stabilize	FY18 Plan	4188	G148	$ 782,710	3/31/2017	84	$ 670,895	$ 559,079	$ 614,987	9.9061%	$ 60,921	$ (21,027)	$ 39,894
33	INVP 4280 US VSTIG Bandwidth Ph2	FY18 Plan	4280	G020	$ 1,998,645	3/31/2017	84	$ 1,713,125	$ 1,427,604	$ 1,570,364	9.9061%	$ 155,562	$ (53,693)	$ 101,868
34	INVP 4307 US Win 7 Refresh Ph 3	FY18 Plan	4307	G020	$ 11,562,999	3/31/2017	84	$ 9,911,142	$ 8,259,285	$ 9,085,214	9.9061%	$ 899,989	$ (310,638)	$ 589,351
35	INVP 4364 Wireless Network	FY18 Plan	4364	G020	$ 2,303,959	3/31/2017	84	$ 1,974,822	$ 1,645,685	$ 1,810,253	9.9061%	$ 179,325	$ (61,895)	$ 117,430
36	S005242 M112 Systemic Improvement	FY18 Plan		G020	$ 8,000,000	3/31/2017	120	$ 7,200,000	$ 6,400,000	$ 6,800,000	9.9061%	$ 673,614	$ (235,399)	$ 438,215
37	INVP 4289 US Network Improvement	FY18 Plan	4289	G020	$ 978,717	3/31/2017	84	$ 838,900	$ 699,083	$ 768,992	9.9061%	$ 76,177	$ (26,293)	$ 49,884
38	HANA License Costs	FY18 Plan	4649	G020	$ 3,500,000	3/31/2017	84	$ 3,000,000	$ 2,500,000	$ 2,750,000	9.9061%	$ 272,417	$ (94,027)	$ 178,391
39	Microsoft ELA Renewal	FY18 Plan	4642	G020	$ 1,900,000	3/31/2017	84	$ 1,628,571	$ 1,357,143	$ 1,492,857	9.9061%	$ 147,884	$ (51,043)	$ 96,841
40	Mobile Device Refresh - FY17	FY18 Plan	4671	G020	$ 4,546,000	3/31/2017	84	$ 3,896,571	$ 3,247,143	$ 3,571,857	9.9061%	$ 353,831	$ (122,127)	$ 231,704
41	Zscaler	FY18 Plan	4681	G020	$ 2,100,000	3/31/2017	84	$ 1,800,000	$ 1,500,000	$ 1,650,000	9.9061%	$ 163,450	$ (56,416)	$ 107,034
43	INVP 4631 Box Enablement	FY18 Plan	4631	G020	$ 254,000	4/30/2017	84	$ 220,738	$ 184,452	$ 202,595	9.9061%	$ 20,069	$ (5,820)	$ 14,249
44	INVP 4170 Time Transformation	FY18 Plan	4170	G020	$ 3,917,000	5/1/2017	84	$ 3,404,060	$ 2,844,488	$ 3,124,274	9.9061%	$ 309,493	$ (89,753)	$ 219,741
45	INVP 4420 US CNI OMSFocalPoint Infrastructure Upgrade	FY18 Plan	4420	G198	$ 1,366,563	5/1/2017	84	$ 1,187,608	$ 992,385	$ 1,089,997	9.9061%	$ 107,976	$ (31,313)	$ 76,663
46	INVP 4274 VSTIG Hardware Refresh	FY18 Plan	4274	G020	$ 608,000	5/31/2017	84	$ 535,619	$ 448,762	$ 492,190	9.9061%	$ 48,757	$ (14,220)	$ 34,537
47	US Video Conferencing upgrade for RW	FY18 Plan	4632	G020	$ 1,330,000	6/1/2017	84	$ 1,171,667	$ 981,667	$ 1,076,667	9.9061%	$ 106,656	$ (31,106)	$ 75,550
48	Hix D/C Improvement Server Refresh	FY18 Plan	4676	G020	$ 1,000,000	7/1/2017	84	$ 892,857	$ 750,000	$ 821,429	9.9061%	$ 81,371	$ (23,862)	$ 57,510
49	INVP 4464 Data Visualization	FY18 Plan	4464	G020	$ 4,440,000	7/31/2017	84	$ 4,017,143	$ 3,382,857	$ 3,700,000	9.9061%	$ 366,525	$ (108,051)	$ 258,474
50	Mobility - (MDM) Mobile Device	FY18 Plan	3430	G020	$ 1,162,000	7/31/2017	84	$ 1,051,333	$ 885,333	$ 968,333	9.9061%	$ 95,924	$ (28,278)	$ 67,646
51	Changes to ACIS for PMCC Civil Vendor Billing	FY18 Plan	4487	G186	$ 382,000	8/2/2017	84	$ 345,619	$ 291,048	$ 318,333	9.9061%	$ 31,534	$ (9,296)	$ 22,238
52	INVP 4461 Unix51 Interface Migration	FY18 Plan	4461	G020	$ 1,386,701	9/1/2017	84	$ 1,271,143	$ 1,073,042	$ 1,172,093	9.9061%	$ 116,108	$ (34,404)	$ 81,705
53	INVP 4287 Active Directory Upgrade	FY18 Plan	4287	G020	$ 804,825	9/30/2017	84	$ 747,338	$ 632,363	$ 689,850	9.9061%	$ 68,337	$ (20,349)	$ 47,988
54	US Control-Gas System Operating Procedure (SOP) Upgrade	FY18 Plan	4480	G210	$ 542,000	10/2/2017	84	$ 503,286	$ 425,857	$ 464,571	9.9061%	$ 46,021	$ (13,704)	$ 32,317
55	Enterprise Labs	FY18 Plan	4693	G020	$ 668,000	10/30/2017	84	$ 628,238	$ 532,810	$ 580,524	9.9061%	$ 57,507	$ (17,206)	$ 40,301
56	Cascade Electric Application Upgrade Project	FY18 Plan	3986	G198	$ 375,000	10/31/2017	84	$ 352,679	$ 299,107	$ 325,893	9.9061%	$ 32,283	$ (9,659)	$ 22,624
57	INVP 4408 Doc Mgmt Systems Replacement Delivery	FY18 Plan	4408	G149	$ 3,617,542	11/1/2017	84	$ 3,402,212	$ 2,885,420	$ 3,143,816	9.9061%	$ 311,429	$ (93,181)	$ 218,248
58	WIFI for Fleet Services Diagnostic Laptops	FY18 Plan	3956	G352	$ 838,000	11/1/2017	84	$ 788,119	$ 668,405	$ 728,262	9.9061%	$ 72,142	$ (21,585)	$ 50,557
59	Gas Service Database - UNY	FY18 Plan	3949	5210G	$ 325,000	12/1/2017	84	$ 309,524	$ 263,095	$ 286,310	9.9061%	$ 28,362	$ (8,525)	$ 19,837
62	Gas Capital Investment Planning Tool	FY18 Plan	4466	G210	$ 572,000	1/17/2018	84	$ 558,381	$ 476,667	$ 517,524	9.9061%	$ 51,266	$ (14,535)	$ 36,732
63	Computapole Enhancements to Support Inspection Types	FY18 Plan	4462	G186	$ 450,000	3/1/2018	84	$ 444,643	$ 380,357	$ 412,500	9.9061%	$ 40,863	$ (11,648)	$ 29,215
64	Travel & Expense Management (T&E) and Global Master Service Provider (MSP) Strategy	FY18 Plan	4578	G020	$ 1,232,000	3/1/2018	84	$ 1,217,333	$ 1,041,333	$ 1,129,333	9.9061%	$ 111,873	$ (31,890)	$ 79,983
65	Ageing System Stabilization/Upgrades - FY18	FY18 Plan	4389	G148	$ 1,500,000	3/15/2018	84	$ 1,482,143	$ 1,267,857	$ 1,375,000	9.9061%	$ 136,209	$ (38,827)	$ 97,382
66	INVP 3486 US MDS-Itron Enterprise Edition (IEE)	FY18 Plan	3486	G186	$ 670,943	3/31/2018	84	$ 670,943	$ 575,094	$ 623,019	9.9061%	$ 61,717	$ (14,122)	$ 47,595
67	INVP 4390 Plastic Fusion II	FY18 Plan	4390	G207	$ 506,000	3/31/2018	84	$ 506,000	$ 433,714	$ 469,857	9.9061%	$ 46,544	$ (10,650)	$ 35,894
68	INVP 4397 Ariba TLS and CI Update	FY18 Plan	4397	G020	$ 1,462,000	3/31/2018	120	$ 1,462,000	$ 1,315,800	$ 1,388,900	9.9061%	$ 137,586	$ (32,020)	$ 105,566
69	US Mobile Device Refresh	FY18 Plan	4395	G020	$ 5,000,000	3/31/2018	84	$ 5,000,000	$ 4,285,714	$ 4,642,857	9.9061%	$ 459,925	$ -	$ 459,925
70	US SAP: Infrastructure Landscape	FY18 Plan	4348	G020	$ 4,603,000	3/31/2018	84	$ 4,603,000	$ 3,945,429	$ 4,274,214	9.9061%	$ 423,407	$ (96,885)	$ 326,522
71	US CNI Tech Services-Network Equipment Lifecycle Replacements	FY18 Plan	4570	G186	$ 250,000	3/31/2018	84	$ 250,000	$ 214,286	$ 232,143	9.9061%	$ 22,996	$ (5,262)	$ 17,734
72	US CNI-EMS Lifecycle Hardware and Software Upgrade	FY18 Plan	4568	U186	$ 13,348,000	3/31/2018	84	$ 13,348,000	$ 11,441,143	$ 12,394,571	9.9061%	$ 1,227,817	$ (280,952)	$ 946,865
73	Network Transformation Completion - CEMS	FY18 Plan	4647	G020	$ 250,000	3/31/2018	84	$ 250,000	$ 214,286	$ 232,143	9.9061%	$ 22,996	$ (5,262)	$ 17,734
74	Application monitoring, Network/IDS, Operations monitoring	FY18 Plan	4677	G020	$ 750,000	3/31/2018	84	$ 750,000	$ 642,857	$ 696,429	9.9061%	$ 68,989	$ (15,786)	$ 53,203
75	Aged Printer refresh	FY18 Plan	4689	G020	$ 50,000	3/31/2018	84	$ 50,000	$ 42,857	$ 46,429	9.9061%	$ 4,599	$ (1,052)	$ 3,547
76	RSA Token refresh	FY18 Plan	4683	G020	$ 200,000	3/31/2018	84	$ 200,000	$ 171,429	$ 185,714	9.9061%	$ 18,397	$ (4,210)	$ 14,187
78	INVP4449 - EPA File	FY18 Plan	4449	C170	$ 700,000	3/31/2018	84	$ 700,000	$ 600,000	$ 650,000	9.9061%	$ 64,390	$ (14,734)	$ 49,656

Niagara Mohawk Power Corporation d/b/a National Grid
Service Company Rents
Forecasted Service Company Capital Software allocated to Operating Companies as Rent Expense
For the Rate Year ended March 31, 2019

Line	Investment Name	Programs	INVP #	Year Amortization	5210G NIMO G Allocation	NIMO G Rent-Return	NIMO G Rent - Depn	5210E NIMO E Allocation	NIMO E Rent-Return	NIMO E Rent - Depn	5210T NIMO T Allocation	NIMO T Rent-Return	NIMO T Rent - Depn	Amortization Period	Bonus Rate	Bonus Depreciation
1	Cloud Security	Cyber Security	3683	$ 208,571	4.58%	$ 3,751	$ 9,553	17.76%	$ 14,546	$ 37,042	6.11%	$ 5,004	$ 12,744	36	50%	$ 730,000
2	Risk Based Authentication - 2FA token alternative	Cyber Security	3683	$ 33,583	4.58%	$ 612	$ 1,538	17.76%	$ 2,372	$ 5,964	6.11%	$ 816	$ 2,052	36	50%	$ 117,540
3	INVP 3614D1 Ent Network Security	Cyber Security	3614D1	$ 1,354,084	4.58%	$ 24,966	$ 62,017	17.76%	$ 96,812	$ 240,485	6.11%	$ 33,306	$ 82,735	36	50%	$ 4,739,295
4	Threat Behavior Modeling	Cyber Security	3683	$ 114,286	4.58%	$ 2,133	$ 5,234	17.76%	$ 8,271	$ 20,297	6.11%	$ 2,846	$ 6,983	36	50%	$ 400,000
5	Identity & Access Management :Role Base Access Management (RBAC)	Cyber Security	3683	$ 235,714	4.58%	$ 4,506	$ 10,796	17.76%	$ 17,473	$ 41,863	6.11%	$ 6,011	$ 14,402	36	50%	$ 825,000
6	Enhanced DLP Gateway and Endpoint	Cyber Security	3683	$ 319,783	4.58%	$ 6,258	$ 14,646	17.76%	$ 24,265	$ 56,793	6.11%	$ 8,348	$ 19,539	36	50%	$ 1,119,240
7	INVP 3614B7 CNI Network Security	Cyber Security	3614B7	$ 689,941	4.58%	$ 13,657	$ 31,599	17.76%	$ 52,957	$ 122,533	6.11%	$ 18,219	$ 42,155	36	50%	$ 2,414,793
8	INVP 3614E4 US CNI Security I&E	Cyber Security	3614E4	$ 172,435	4.58%	$ 3,413	$ 7,898	17.76%	$ 13,235	$ 30,624	6.11%	$ 4,553	$ 10,536	36	50%	$ 603,522
9	US CNI Intrusion Detection/Prevention Phase 1	Cyber Security	3683	$ 78,571	4.58%	$ 1,787	$ 3,599	17.76%	$ 6,929	$ 13,954	6.11%	$ 2,384	$ 4,801	36	40%	$ 220,000
10	Identity & Access Management: Fine Grain Access Management	Cyber Security	3683	$ 235,714	4.58%	$ 5,361	$ 10,796	17.76%	$ 20,787	$ 41,863	6.11%	$ 7,151	$ 14,402	36	40%	$ 660,000
11	vStig Scaling Upgrades	Cyber Security	3683	$ 95,238	4.58%	$ 1,227	$ 4,362	17.76%	$ 4,759	$ 16,914	6.11%	$ 1,637	$ 5,819	36	40%	$ 400,000
12	IT/OT Discovery and Implementation Phase 1	Cyber Security	3683	$ 392,857	4.58%	$ 6,928	$ 17,993	17.76%	$ 26,866	$ 69,771	6.11%	$ 9,243	$ 24,004	36	40%	$ 2,200,000
13	Security Research Lab	Cyber Security	3683	$ 23,214	4.58%	$ 409	$ 1,063	17.76%	$ 1,588	$ 4,123	6.11%	$ 546	$ 1,418	36	40%	$ 130,000
14	US CNI Security Enhancements Phase 1	Cyber Security	3683	$ 98,214	4.58%	$ 2,105	$ 4,498	17.76%	$ 8,163	$ 17,443	6.11%	$ 2,808	$ 6,001	36	40%	$ 660,000
15	Identity & Access Management: Privileged Access Management	Cyber Security	3683	$ -	4.58%	$ 2,995	$ -	17.76%	$ 11,614	$ -	6.11%	$ 3,996	$ -	36	30%	$ 522,000
16	Domain Based Security Phase 1	Cyber Security	3683	$ -	4.58%	$ 1,377	$ -	17.76%	$ 5,340	$ -	6.11%	$ 1,837	$ -	36	30%	$ 240,000
17	Security Incident Event Management Phase 4	Cyber Security	3683	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	30%	$ -
18	Big Data Security Analytics Phase 1	Cyber Security	3683	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	30%	$ -
19	US CNI Intrusion Detection/Prevention Phase 2	Cyber Security	3683	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
20	Identity & Access Management: Shared Area Access Management	Cyber Security	3683	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
21	Security Incident Event Management Phase 5	Cyber Security	3683	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
22	Domain Based Security Phase 2	Cyber Security	3683	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
23	Security Incident Event Management (SIEM) 6	Cyber Security	3683	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
24	Big Data Security Analytics - Phase 2	Cyber Security	3683	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
25	IT/OT Discovery and Implementation: Phase 2	Cyber Security	3683	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
26	US CNI Security Enhancements - Phase 2	Cyber Security	3683	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
27	Data Visualization	Cyber Security	3683	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
29	INVP 4045 Double Pole Mgmt DB	FY18 Plan	4045	$ 68,879	0.00%	$ -	$ -	41.93%	$ 9,864	$ 28,881	0.00%	$ -	$ -	36	50%	$ 241,077
30	INVP 4373 Contingent Labor Admin Replacement	FY18 Plan	4373	$ 35,813	4.58%	$ 560	$ 1,640	17.76%	$ 2,172	$ 6,360	6.11%	$ 747	$ 2,188	36	50%	$ 125,346
32	INVP 4188 Aging System Stabilize	FY18 Plan	4188	$ 111,816	4.83%	$ 1,927	$ 5,401	18.77%	$ 7,488	$ 20,988	6.43%	$ 2,565	$ 7,190	36	50%	$ 391,355
33	INVP 4280 US VSTIG Bandwidth Ph2	FY18 Plan	4280	$ 285,521	4.58%	$ 4,666	$ 13,077	17.76%	$ 18,092	$ 50,708	6.11%	$ 6,224	$ 17,445	36	50%	$ 999,323
34	INVP 4307 US Win 7 Refresh Ph 3	FY18 Plan	4307	$ 1,651,857	4.58%	$ 26,992	$ 75,655	17.76%	$ 104,669	$ 293,370	6.11%	$ 36,009	$ 100,928	36	50%	$ 5,781,500
35	INVP 4364 Wireless Network	FY18 Plan	4364	$ 329,137	4.58%	$ 5,378	$ 15,074	17.76%	$ 20,856	$ 58,455	6.11%	$ 7,175	$ 20,110	36	50%	$ 1,151,979
36	S005242 M112 Systemic Improvement	FY18 Plan		$ 800,000	4.58%	$ 20,070	$ 36,640	17.76%	$ 77,827	$ 142,080	6.11%	$ 26,775	$ 48,880	36	50%	$ 4,000,000
37	INVP 4289 US Network Improvement	FY18 Plan	4289	$ 139,817	4.58%	$ 2,285	$ 6,404	17.76%	$ 8,859	$ 24,831	6.11%	$ 3,048	$ 8,543	36	50%	$ 489,358
38	HANA License Costs	FY18 Plan	4649	$ 500,000	4.58%	$ 8,170	$ 22,900	17.76%	$ 31,682	$ 88,800	6.11%	$ 10,900	$ 30,550	36	50%	$ 1,750,000
39	Microsoft ELA Renewal	FY18 Plan	4642	$ 271,429	4.58%	$ 4,435	$ 12,431	17.76%	$ 17,199	$ 48,206	6.11%	$ 5,917	$ 16,584	36	50%	$ 950,000
40	Mobile Device Refresh - FY17	FY18 Plan	4671	$ 649,429	4.58%	$ 10,612	$ 29,744	17.76%	$ 41,151	$ 115,339	6.11%	$ 14,157	$ 39,680	36	50%	$ 2,273,000
41	Zscaler	FY18 Plan	4681	$ 300,000	4.58%	$ 4,902	$ 13,740	17.76%	$ 19,009	$ 53,280	6.11%	$ 6,540	$ 18,330	36	50%	$ 1,050,000
43	INVP 4631 Box Enablement	FY18 Plan	4631	$ 36,286	4.58%	$ 653	$ 1,662	17.76%	$ 2,531	$ 6,444	6.11%	$ 871	$ 2,217	36	50%	$ 127,000
44	INVP 4170 Time Transformation	FY18 Plan	4170	$ 559,571	4.58%	$ 10,064	$ 25,628	17.76%	$ 39,026	$ 99,380	6.11%	$ 13,426	$ 34,190	36	50%	$ 1,958,500
45	INVP 4420 US CNI OMSFocalPoint Infrastructure Upgrade	FY18 Plan	4420	$ 195,223	0.00%	$ -	$ -	41.93%	$ 32,145	$ 81,857	0.00%	$ -	$ -	36	50%	$ 683,282
46	INVP 4274 VSTIG Hardware Refresh	FY18 Plan	4274	$ 86,857	4.58%	$ 1,582	$ 3,978	17.76%	$ 6,134	$ 15,426	6.11%	$ 2,110	$ 5,307	36	50%	$ 304,000
47	US Video Conferencing upgrade for RW	FY18 Plan	4632	$ 190,000	4.58%	$ 3,460	$ 8,702	17.76%	$ 13,418	$ 33,744	6.11%	$ 4,616	$ 11,609	36	50%	$ 665,000
48	Hix D/C Improvement Server Refresh	FY18 Plan	4676	$ 142,857	4.58%	$ 2,634	$ 6,543	17.76%	$ 10,214	$ 25,371	6.11%	$ 3,514	$ 8,729	36	50%	$ 500,000
49	INVP 4464 Data Visualization	FY18 Plan	4464	$ 634,286	4.58%	$ 11,838	$ 29,050	17.76%	$ 45,905	$ 112,649	6.11%	$ 15,793	$ 38,755	36	50%	$ 2,220,000
50	Mobility - (MDM) Mobile Device	FY18 Plan	3430	$ 166,000	4.58%	$ 3,098	$ 7,603	17.76%	$ 12,014	$ 29,482	6.11%	$ 4,133	$ 10,143	36	50%	$ 581,000
51	Changes to ACIS for PMCC Civil Vendor Billing	FY18 Plan	4487	$ 54,571	0.00%	$ -	$ -	30.74%	$ 6,836	$ 16,775	10.99%	$ 2,444	$ 5,997	36	50%	$ 191,000
52	INVP 4461 Unix51 Interface Migration	FY18 Plan	4461	$ 198,100	4.58%	$ 3,742	$ 9,073	17.76%	$ 14,511	$ 35,183	6.11%	$ 4,992	$ 12,104	36	50%	$ 693,351
53	INVP 4287 Active Directory Upgrade	FY18 Plan	4287	$ 114,975	4.58%	$ 2,198	$ 5,266	17.76%	$ 8,523	$ 20,420	6.11%	$ 2,932	$ 7,025	36	50%	$ 402,413
54	US Control-Gas System Operating Procedure (SOP) Upgrade	FY18 Plan	4480	$ 77,429	12.44%	$ 4,020	$ 9,632	0.00%	$ -	$ -	0.00%	$ -	$ -	36	50%	$ 271,000
55	Enterprise Labs	FY18 Plan	4693	$ 95,429	4.58%	$ 1,846	$ 4,371	17.76%	$ 7,157	$ 16,948	6.11%	$ 2,462	$ 5,831	36	50%	$ 334,000
56	Cascade Electric Application Upgrade Project	FY18 Plan	3986	$ 53,571	0.00%	$ -	$ -	41.93%	$ 9,486	$ 22,463	0.00%	$ -	$ -	36	50%	$ 187,500
57	INVP 4408 Doc Mgmt Systems Replacement Delivery	FY18 Plan	4408	$ 516,792	4.61%	$ 10,061	$ 23,824	17.88%	$ 39,023	$ 92,402	6.15%	$ 13,422	$ 31,783	36	50%	$ 1,808,771
58	WIFI for Fleet Services Diagnostic Laptops	FY18 Plan	3956	$ 119,714	4.63%	$ 2,341	$ 5,543	17.94%	$ 9,070	$ 21,477	6.17%	$ 3,119	$ 7,386	36	50%	$ 419,000
59	Gas Service Database - UNY	FY18 Plan	3949	$ 46,429	100.00%	$ 19,837	$ 46,429	0.00%	$ -	$ -	0.00%	$ -	$ -	36	50%	$ 162,500
62	Gas Capital Investment Planning Tool	FY18 Plan	4466	$ 81,714	12.44%	$ 4,569	$ 10,165	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 228,800
63	Computapole Enhancements to Support Inspection Types	FY18 Plan	4462	$ 64,286	0.00%	$ -	$ -	30.74%	$ 8,981	$ 19,761	10.99%	$ 3,211	$ 7,065	36	40%	$ 180,000
64	Travel & Expense Management (T&E) and Global Master Service Provider (MSP) Strategy	FY18 Plan	4578	$ 176,000	4.58%	$ 3,663	$ 8,061	17.76%	$ 14,205	$ 31,258	6.11%	$ 4,887	$ 10,754	36	40%	$ 492,800
65	Ageing System Stabilization/Upgrades - FY18	FY18 Plan	4389	$ 214,286	4.83%	$ 4,704	$ 10,350	18.77%	$ 18,279	$ 40,221	6.43%	$ 6,262	$ 13,779	36	40%	$ 600,000
66	INVP 3486 US MDS-Itron Enterprise Edition (IEE)	FY18 Plan	3486	$ 95,849	0.00%	$ -	$ -	30.74%	$ 14,631	$ 29,464	10.99%	$ 5,231	$ 10,534	36	40%	$ 268,377
67	INVP 4390 Plastic Fusion II	FY18 Plan	4390	$ 72,286	19.47%	$ 6,989	$ 14,074	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 202,400
68	INVP 4397 Ariba TLS and CI Update	FY18 Plan	4397	$ 146,200	4.58%	$ 4,835	$ 6,696	17.76%	$ 18,748	$ 25,965	6.11%	$ 6,450	$ 8,933	36	40%	$ 584,800
69	US Mobile Device Refresh	FY18 Plan	4395	$ 714,286	4.58%	$ 21,065	$ 32,714	17.76%	$ 81,683	$ 126,857	6.11%	$ 28,101	$ 43,643	36	40%	$ 2,000,000
70	US SAP: Infrastructure Landscape	FY18 Plan	4348	$ 657,571	4.58%	$ 14,955	$ 30,117	17.76%	$ 57,990	$ 116,785	6.11%	$ 19,951	$ 40,178	36	40%	$ 1,841,200
71	US CNI Tech Services-Network Equipment Lifecycle Replacements	FY18 Plan	4570	$ 35,714	0.00%	$ -	$ -	30.74%	$ 5,451	$ 10,979	10.99%	$ 1,949	$ 3,925	36	40%	$ 100,000
72	US CNI-EMS Lifecycle Hardware and Software Upgrade	FY18 Plan	4568	$ 1,906,857	0.00%	$ -	$ -	26.20%	$ 248,079	$ 499,597	35.42%	$ 335,380	$ 675,409	36	40%	$ 5,339,200
73	Network Transformation Completion - CEMS	FY18 Plan	4647	$ 35,714	4.58%	$ 812	$ 1,636	17.76%	$ 3,150	$ 6,343	6.11%	$ 1,084	$ 2,182	36	40%	$ 100,000
74	Application monitoring, Network/IDS, Operations monitoring	FY18 Plan	4677	$ 107,143	4.58%	$ 2,437	$ 4,907	17.76%	$ 9,449	$ 19,029	6.11%	$ 3,251	$ 6,546	36	40%	$ 300,000
75	Aged Printer refresh	FY18 Plan	4689	$ 7,143	4.58%	$ 162	$ 327	17.76%	$ 630	$ 1,269	6.11%	$ 217	$ 436	36	40%	$ 20,000
76	RSA Token refresh	FY18 Plan	4683	$ 28,571	4.58%	$ 650	$ 1,309	17.76%	$ 2,520	$ 5,074	6.11%	$ 867	$ 1,746	36	40%	$ 80,000
78	INVP4449 - EPA File	FY18 Plan	4449	$ 100,000	14.88%	$ 7,389	$ 14,880	40.06%	$ 19,892	$ 40,060	0.00%	$ -	$ -	36	40%	$ 280,000

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For the Rate Year ended March 31, 2019

Line	Investment Name	Programs	INVP #	Bill Pool	FY19 Total Spend	In Service Date	Amortization Period	4/1/2018 4/1/2018 Balance	3/31/2019 3/31/2019 Balance	Average Balance	9.9061% Service Co Return	Year Return	Return on Accum Taxes	Total Return
79	Informatica Upgrade/Microstrategy Replacement Program	FY18 Plan	4469	G020	$ 3,516,000	5/1/2018	84	$ -	$ 3,055,571	$ 1,527,786	9.9061%	$ 151,344	$ (60,839)	$ 90,505
80	Call Center Customer Contact Center/SDC Technology Upgrade Implement Solution	FY18 Plan	3932	C175	$ 27,724,719	8/31/2018	84	$ -	$ 25,414,326	$ 12,707,163	9.9061%	$ 1,258,782	$ (506,020)	$ 752,763
81	US MDS-Energy Accounting System (EAS) migration to Wholesale Settlement Application (WSA)	FY18 Plan	4481	G186	$ 2,160,000	10/1/2018	84	$ -	$ 2,005,714	$ 1,002,857	9.9061%	$ 99,344	$ (39,935)	$ 59,409
82	INVP 4398 Storms/ISched Upgrade	FY18 Plan	4398	G160	$ 9,955,867	12/15/2018	84	$ -	$ 9,600,300	$ 4,800,150	9.9061%	$ 475,507	$ (191,150)	$ 284,357
84	STORMS Capital Cost Estimates	FY18 Plan	4467	G148	$ 776,000	3/1/2019	84	$ -	$ 766,762	$ 383,381	9.9061%	$ 37,978	$ (12,692)	$ 25,286
86	US CNI Tech Services-Network Equipment Lifecycle Replacements	FY18 Plan	4570	G186	$ 250,000	3/31/2019	84	$ -	$ 250,000	$ 125,000	9.9061%	$ 12,383	$ (2,987)	$ 9,396
87	Inventory Management Handheld Devices	FY18 Plan		G020	$ 75,000	3/31/2019	84	$ -	$ 75,000	$ 37,500	9.9061%	$ 3,715	$ (896)	$ 2,819
88	Customer Bill Redesign	FY18 Plan	4704Q	H173	$ 2,108,147	3/31/2019	84	$ -	$ 2,108,147	$ 1,054,074	9.9061%	$ 104,417	$ (25,185)	$ 79,232
89	INVP 3737 US CNI GMS SCADA Upgrade &	FY18 Plan	3737	C210	$ 22,909,291	3/31/2020	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
90	Cisco Prime	FY18 Plan	4679	G020	$ 216,000	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
91	Contractor Management Modernization	FY18 Plan	4151	G327	$ 750,000	10/15/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
92	Risk Management (Tx Mains & Dx Mains)	GBE- Asset Management		C210	$ 2,110,800	12/1/2017	120	$ 2,040,440	$ 1,829,360	$ 1,934,900	9.9061%	$ 191,673	$ (58,373)	$ 133,300
93	AM Program Leadership-1	GBE- Asset Management		C210	$ 277,124	3/1/2018	120	$ 274,815	$ 247,102	$ 260,958	9.9061%	$ 25,851	$ (7,449)	$ 18,402
94	Enhancements	GBE- Asset Management		C210	$ 2,660,875	12/1/2018	120	$ -	$ 2,572,179	$ 1,286,090	9.9061%	$ 127,401	$ (51,214)	$ 76,187
95	Additional IM Modules	GBE- Asset Management		C210	$ 604,233	2/1/2019	120	$ -	$ 594,163	$ 297,081	9.9061%	$ 29,429	$ (9,825)	$ 19,604
96	AM Program Leadership-2	GBE- Asset Management		C210	$ 398,676	3/1/2019	120	$ -	$ 395,354	$ 197,677	9.9061%	$ 19,582	$ (6,549)	$ 13,033
97	Data Remediation, GIS Upgrade/ Migration & GIS Mobility	GBE- Asset Management		C210	$ 8,409,517	3/1/2019	120	$ -	$ 8,339,438	$ 4,169,719	9.9061%	$ 413,056	$ (138,137)	$ 274,919
98	EAM-FIN Integration	GBE- Asset Management		C210	$ 979,407	6/1/2019	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
99	Integrity Management Integrations	GBE- Asset Management		C210	$ 371,868	10/1/2019	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
100	AM Program Leadership-3	GBE- Asset Management		C210	$ -	3/1/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
101	Design (GWD), Estimating (CU), & Mobility	GBE- Asset Management		C210	$ 1,729,295	9/1/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
102	Asset Analytics Integration	GBE- Asset Management		C210	$ -	12/1/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
103	GIS (GWD/CU) - PPM Integration	GBE- Asset Management		C210	$ -	12/1/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
104	GIS-EAM Integration	GBE- Asset Management		C210	$ 1,250,000	12/2/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
105	AM Program Leadership-4	GBE- Asset Management		C210	$ -	3/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
106	Use Case No.1 - Asset Risk	GBE- Asset Management		C210	$ -	3/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
107	Complex Design (CAD) & Estimating (ESW)	GBE- Asset Management		C210	$ -	3/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
108	Program Learning Management-1	GBE- Business Enablement		C210	$ 117,297	3/1/2018	120	$ 116,319	$ 104,590	$ 110,455	9.9061%	$ 10,942	$ (3,153)	$ 7,789
109	Program Transformational Change Office-1	GBE- Business Enablement		C210	$ 689,043	3/1/2018	120	$ 683,301	$ 614,397	$ 648,849	9.9061%	$ 64,276	$ (18,521)	$ 45,754
110	Program Business Sustainment-1	GBE- Business Enablement		C210	$ 69,617	3/1/2019	120	$ -	$ 69,037	$ 34,518	9.9061%	$ 3,419	$ (1,144)	$ 2,276
111	Program Learning Management-2	GBE- Business Enablement		C210	$ 130,211	3/1/2019	120	$ -	$ 129,126	$ 64,563	9.9061%	$ 6,396	$ (2,139)	$ 4,257
112	Program Transformational Change Office -2	GBE- Business Enablement		C210	$ 1,516,310	3/1/2019	120	$ -	$ 1,503,674	$ 751,837	9.9061%	$ 74,478	$ (24,907)	$ 49,570
113	Program Learning Management-3	GBE- Business Enablement		C210	$ -	3/1/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
114	Program Transformational Change Office-3	GBE- Business Enablement		C210	$ -	3/1/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
115	Program Business Sustainment-2	GBE- Business Enablement		C210	$ -	3/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
116	Program Learning Management-4	GBE- Business Enablement		C210	$ -	3/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
117	Program Transformational Change Office-4	GBE- Business Enablement		C210	$ -	3/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
118	Customer Experience Program Leadership-1	GBE- Customer Engagement		C210	$ 260,229	3/1/2019	120	$ -	$ 258,060	$ 129,030	9.9061%	$ 12,782	$ (4,275)	$ 8,507
119	CxT Portal & Channel Management	GBE- Customer Engagement		C210	$ 6,679,688	6/1/2019	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
120	Customer Interaction - First Release	GBE- Customer Engagement		C210	$ 1,780,471	10/1/2019	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
121	Employee Support Interaction - First Release	GBE- Customer Engagement		C210	$ 3,871,396	10/1/2019	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
122	Customer Experience Program Leadership-2	GBE- Customer Engagement		C210	$ -	3/1/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
123	CRM / Contact Center	GBE- Customer Engagement		C210	$ 15,200,000	6/1/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
124	Large Commercial & Landlord Interaction	GBE- Customer Engagement		C210	$ 15,723	7/1/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
125	Employee Support Interaction - Second Release	GBE- Customer Engagement		C210	$ -	7/1/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
126	Customer Interaction - Second Release	GBE- Customer Engagement		C210	$ -	1/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
127	Customer Experience Program Leadership-3	GBE- Customer Engagement		C210	$ -	3/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
128	Data Management Implementation (Quality & Cleansing)	GBE- Data Management		C210	$ 11,100,000	12/1/2017	120	$ 10,730,000	$ 9,620,000	$ 10,175,000	9.9061%	$ 1,007,944	$ (306,964)	$ 700,981
129	Data Management & Governance Program Leadership-1	GBE- Data Management		C210	$ 58,890	3/1/2018	120	$ 58,399	$ 52,510	$ 55,455	9.9061%	$ 5,493	$ (1,583)	$ 3,910
130	Enable the Data Archive Process	GBE- Data Management		C210	$ 2,111,916	3/1/2019	120	$ -	$ 2,094,317	$ 1,047,158	9.9061%	$ 103,732	$ (34,691)	$ 69,041
131	Data Management & Governance Program Leadership-2	GBE- Data Management		C210	$ 87,954	3/1/2019	120	$ -	$ 87,221	$ 43,611	9.9061%	$ 4,320	$ (1,445)	$ 2,875
132	Data Management & Governance Program Leadership-3	GBE- Data Management		C210	$ -	3/1/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
133	PowerPlan Architecture Enhancements	GBE- Information Services Enabling		C210	$ 6,080,111	11/1/2017	120	$ 5,826,773	$ 5,218,762	$ 5,522,767	9.9061%	$ 547,090	$ (166,124)	$ 380,966
134	Comprehensive Integration Services (Enhancements)	GBE- Information Services Enabling		C210	$ 78,624	12/1/2017	120	$ 76,003	$ 68,141	$ 72,072	9.9061%	$ 7,140	$ (2,174)	$ 4,965
135	Application (Environment) Infrastructure	GBE- Information Services Enabling		C210	$ 2,174,410	12/1/2017	120	$ 2,101,930	$ 1,884,489	$ 1,993,209	9.9061%	$ 197,449	$ (60,132)	$ 137,317
136	Development Operations & BPA Enablement-1	GBE- Information Services Enabling		C210	$ 2,903,920	3/1/2018	120	$ 2,879,721	$ 2,589,329	$ 2,734,525	9.9061%	$ 270,884	$ (78,057)	$ 192,827
137	SAP and Application Integration Development- Release 1-1	GBE- Information Services Enabling		C210	$ 4,765,187	3/1/2018	120	$ 4,725,477	$ 4,248,958	$ 4,487,218	9.9061%	$ 444,508	$ (128,088)	$ 316,419
138	Mobility CoE & End-User Computing-1	GBE- Information Services Enabling		C210	$ 604,790	3/1/2018	120	$ 599,750	$ 539,271	$ 569,511	9.9061%	$ 56,416	$ (16,257)	$ 40,159
139	Operations/System Monitoring	GBE- Information Services Enabling		C210	$ 1,057,768	8/1/2018	120	$ -	$ 987,251	$ 493,625	9.9061%	$ 48,899	$ (19,657)	$ 29,242
140	Development Operations & BPA Enablement-2	GBE- Information Services Enabling		C210	$ 2,562,011	3/1/2019	120	$ -	$ 2,540,661	$ 1,270,330	9.9061%	$ 125,840	$ (42,084)	$ 83,756
141	SAP and Application Integration Development- Release 1-2	GBE- Information Services Enabling		C210	$ 4,548,168	3/1/2019	120	$ -	$ 4,510,266	$ 2,255,133	9.9061%	$ 223,395	$ (74,710)	$ 148,686
142	SAP and Application Integration Development- Release 2-1	GBE- Information Services Enabling		C210	$ 5,055,712	3/1/2019	120	$ -	$ 5,013,581	$ 2,506,790	9.9061%	$ 248,325	$ (83,047)	$ 165,278
143	Mobility CoE & End-User Computing-2	GBE- Information Services Enabling		C210	$ 920,536	3/1/2019	120	$ -	$ 912,865	$ 456,432	9.9061%	$ 45,215	$ (15,121)	$ 30,094
144	Development Operations & BPA Enablement-3	GBE- Information Services Enabling		C210	$ -	3/1/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
145	SAP and Application Integration Development- Release 1-3	GBE- Information Services Enabling		C210	$ -	3/1/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
146	SAP and Application Integration Development- Release 2-2	GBE- Information Services Enabling		C210	$ -	3/1/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
147	SAP and Application Integration Development- Release 3-1	GBE- Information Services Enabling		C210	$ -	3/1/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -

Niagara Mohawk Power Corporation d/b/a National Grid
Service Company Rents
Forecasted Service Company Capital Software allocated to Operating Companies as Rent Expense
For the Rate Year ended March 31, 2019

Line	Investment Name	Programs	INVP #	Year Amortization	5210G NIMO G Allocation	NIMO G Rent-Return	NIMO G Rent - Depn	5210E NIMO E Allocation	NIMO E Rent-Return	NIMO E Rent - Depn	5210T NIMO T Allocation	NIMO T Rent-Return	NIMO T Rent - Depn	Amortization Period	Bonus Rate	Bonus Depreciation
79	Informatica Upgrade/Microstrategy Replacement Program	FY18 Plan	4469	$ 460,429	4.58%	$ 4,145	$ 21,088	17.76%	$ 16,074	$ 81,772	6.11%	$ 5,530	$ 28,132	36	40%	$ 1,406,400
80	Call Center Customer Contact Center/SDC Technology Upgrade Implement Solution	FY18 Plan	3932	$ 2,310,393	8.65%	$ 65,119	$ 199,865	23.28%	$ 175,237	$ 537,841	0.00%	$ -	$ -	36	40%	$ 11,089,888
81	US MDS-Energy Accounting System (EAS) migration to Wholesale Settlement Application (WSA)	FY18 Plan	4481	$ 154,286	0.00%	$ -	$ -	30.74%	$ 18,262	$ 47,427	10.99%	$ 6,529	$ 16,956	36	40%	$ 864,000
82	INVP 4398 Storms/ISched Upgrade	FY18 Plan	4398	$ 355,567	7.15%	$ 20,332	$ 25,423	27.24%	$ 77,459	$ 96,856	9.63%	$ 27,384	$ 34,241	36	40%	$ 3,982,347
84	STORMS Capital Cost Estimates	FY18 Plan	4467	$ 9,238	4.83%	$ 1,221	$ 446	18.77%	$ 4,746	$ 1,734	6.43%	$ 1,626	$ 594	36	30%	$ 232,800
86	US CNI Tech Services-Network Equipment Lifecycle Replacements	FY18 Plan	4570	$ -	0.00%	$ -	$ -	30.74%	$ 2,888	$ -	10.99%	$ 1,033	$ -	36	30%	$ 75,000
87	Inventory Management Handheld Devices	FY18 Plan		$ -	4.58%	$ 129	$ -	17.76%	$ 501	$ -	6.11%	$ 172	$ -	36	30%	$ 22,500
88	Customer Bill Redesign	FY18 Plan	4704Q	$ -	7.07%	$ 5,602	$ -	19.12%	$ 15,149	$ -	0.00%	$ -	$ -	36	30%	$ 632,444
89	INVP 3737 US CNI GMS SCADA Upgrade &	FY18 Plan	3737	$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
90	Cisco Prime	FY18 Plan	4679	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
91	Contractor Management Modernization	FY18 Plan	4151	$ -	4.82%	$ -	$ -	18.70%	$ -	$ -	6.41%	$ -	$ -	36	0%	$ -
92	Risk Management (Tx Mains & Dx Mains)	GBE- Asset Management		$ 211,080	16.89%	$ 22,514	$ 35,651	0.00%	$ -	$ -	0.00%	$ -	$ -	36	50%	$ 1,055,400
93	AM Program Leadership-1	GBE- Asset Management		$ 27,712	16.89%	$ 3,108	$ 4,681	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 110,850
94	Enhancements	GBE- Asset Management		$ 88,696	16.89%	$ 12,868	$ 14,981	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 1,064,350
95	Additional IM Modules	GBE- Asset Management		$ 10,071	16.89%	$ 3,311	$ 1,701	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 181,270
96	AM Program Leadership-2	GBE- Asset Management		$ 3,322	16.89%	$ 2,201	$ 561	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 119,603
97	Data Remediation, GIS Upgrade/ Migration & GIS Mobility	GBE- Asset Management		$ 70,079	16.89%	$ 46,434	$ 11,836	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 2,522,855
98	EAM-FIN Integration	GBE- Asset Management		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ -
99	Integrity Management Integrations	GBE- Asset Management		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ -
100	AM Program Leadership-3	GBE- Asset Management		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
101	Design (GWD), Estimating (CU), & Mobility	GBE- Asset Management		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
102	Asset Analytics Integration	GBE- Asset Management		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
103	GIS (GWD/CU) - PPM Integration	GBE- Asset Management		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
104	GIS-EAM Integration	GBE- Asset Management		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
105	AM Program Leadership-4	GBE- Asset Management		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
106	Use Case No.1 - Asset Risk	GBE- Asset Management		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
107	Complex Design (CAD) & Estimating (ESW)	GBE- Asset Management		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
108	Program Learning Management-1	GBE- Business Enablement		$ 11,730	16.89%	$ 1,316	$ 1,981	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 46,919
109	Program Transformational Change Office-1	GBE- Business Enablement		$ 68,904	16.89%	$ 7,728	$ 11,638	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 275,617
110	Program Business Sustainment-1	GBE- Business Enablement		$ 580	16.89%	$ 384	$ 98	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 20,885
111	Program Learning Management-2	GBE- Business Enablement		$ 1,085	16.89%	$ 719	$ 183	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 39,063
112	Program Transformational Change Office -2	GBE- Business Enablement		$ 12,636	16.89%	$ 8,372	$ 2,134	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 454,893
113	Program Learning Management-3	GBE- Business Enablement		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
114	Program Transformational Change Office-3	GBE- Business Enablement		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
115	Program Business Sustainment-2	GBE- Business Enablement		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
116	Program Learning Management-4	GBE- Business Enablement		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
117	Program Transformational Change Office-4	GBE- Business Enablement		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
118	Customer Experience Program Leadership-1	GBE- Customer Engagement		$ 2,169	16.89%	$ 1,437	$ 366	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 78,069
119	CxT Portal & Channel Management	GBE- Customer Engagement		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ -
120	Customer Interaction - First Release	GBE- Customer Engagement		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ -
121	Employee Support Interaction - First Release	GBE- Customer Engagement		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ -
122	Customer Experience Program Leadership-2	GBE- Customer Engagement		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
123	CRM / Contact Center	GBE- Customer Engagement		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
124	Large Commercial & Landlord Interaction	GBE- Customer Engagement		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
125	Employee Support Interaction - Second Release	GBE- Customer Engagement		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
126	Customer Interaction - Second Release	GBE- Customer Engagement		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
127	Customer Experience Program Leadership-3	GBE- Customer Engagement		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
128	Data Management Implementation (Quality & Cleansing)	GBE- Data Management		$ 1,110,000	16.89%	$ 118,396	$ 187,479	0.00%	$ -	$ -	0.00%	$ -	$ -	36	50%	$ 5,550,000
129	Data Management & Governance Program Leadership-1	GBE- Data Management		$ 5,889	16.89%	$ 660	$ 995	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 23,556
130	Enable the Data Archive Process	GBE- Data Management		$ 17,599	16.89%	$ 11,661	$ 2,973	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 633,575
131	Data Management & Governance Program Leadership-2	GBE- Data Management		$ 733	16.89%	$ 486	$ 124	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 26,386
132	Data Management & Governance Program Leadership-3	GBE- Data Management		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
133	PowerPlan Architecture Enhancements	GBE- Information Services Enabling		$ 608,011	16.89%	$ 64,345	$ 102,693	0.00%	$ -	$ -	0.00%	$ -	$ -	36	50%	$ 3,040,055
134	Comprehensive Integration Services (Enhancements)	GBE- Information Services Enabling		$ 7,862	16.89%	$ 839	$ 1,328	0.00%	$ -	$ -	0.00%	$ -	$ -	36	50%	$ 39,312
135	Application (Environment) Infrastructure	GBE- Information Services Enabling		$ 217,441	16.89%	$ 23,193	$ 36,726	0.00%	$ -	$ -	0.00%	$ -	$ -	36	50%	$ 1,087,205
136	Development Operations & BPA Enablement-1	GBE- Information Services Enabling		$ 290,392	16.89%	$ 32,568	$ 49,047	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 1,161,568
137	SAP and Application Integration Development- Release 1-1	GBE- Information Services Enabling		$ 476,519	16.89%	$ 53,443	$ 80,484	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 1,906,075
138	Mobility CoE & End-User Computing-1	GBE- Information Services Enabling		$ 60,479	16.89%	$ 6,783	$ 10,215	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 241,916
139	Operations/System Monitoring	GBE- Information Services Enabling		$ 70,518	16.89%	$ 4,939	$ 11,910	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 423,107
140	Development Operations & BPA Enablement-2	GBE- Information Services Enabling		$ 21,350	16.89%	$ 14,146	$ 3,606	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 768,603
141	SAP and Application Integration Development- Release 1-2	GBE- Information Services Enabling		$ 37,901	16.89%	$ 25,113	$ 6,402	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 1,364,450
142	SAP and Application Integration Development- Release 2-1	GBE- Information Services Enabling		$ 42,131	16.89%	$ 27,915	$ 7,116	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 1,516,713
143	Mobility CoE & End-User Computing-2	GBE- Information Services Enabling		$ 7,671	16.89%	$ 5,083	$ 1,296	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 276,161
144	Development Operations & BPA Enablement-3	GBE- Information Services Enabling		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
145	SAP and Application Integration Development- Release 1-3	GBE- Information Services Enabling		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
146	SAP and Application Integration Development- Release 2-2	GBE- Information Services Enabling		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
147	SAP and Application Integration Development- Release 3-1	GBE- Information Services Enabling		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -

Niagara Mohawk Power Corporation d/b/a National Grid
Service Company Rents
Forecasted Service Company Capital Software allocated to Operating Companies as Rent Expense
For the Rate Year ended March 31, 2019

Line	Investment Name	Programs	INVP #	Bill Pool	FY19 Total Spend	In Service Date	Amortization Period	4/1/2018 4/1/2018 Balance	3/31/2019 3/31/2019 Balance	Average Balance	9.9061% Service Co Return	Year Return	Return on Accum Taxes	Total Return
148	Mobility CoE & End-User Computing-3	GBE- Information Services Enabling		C210	$ -	3/1/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
149	Test Automation Implementation	GBE- Information Services Enabling		C210	$ 1,525,391	12/1/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
150	Development Operations & BPA Enablement-4	GBE- Information Services Enabling		C210	$ -	3/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
151	SAP and Application Integration Development- Release 1-4	GBE- Information Services Enabling		C210	$ -	3/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
152	SAP and Application Integration Development- Release 3-2	GBE- Information Services Enabling		C210	$ -	3/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
153	Mobility CoE & End-User Computing-4	GBE- Information Services Enabling		C210	$ -	3/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
154	Portfolio Management Leadership-1	GBE- Portfolio Office		C210	$ 1,645,919	3/1/2018	120	$ 1,632,203	$ 1,467,611	$ 1,549,907	9.9061%	$ 153,535	$ (44,242)	$ 109,293
155	Solution Architects & Agile Coaches-1	GBE- Portfolio Office		C210	$ 1,958,277	3/1/2018	120	$ 1,941,958	$ 1,746,130	$ 1,844,044	9.9061%	$ 182,673	$ (52,639)	$ 130,034
156	Portfolio Management Leadership-2	GBE- Portfolio Office		C210	$ 2,144,482	3/1/2019	120	$ -	$ 2,126,611	$ 1,063,306	9.9061%	$ 105,332	$ (35,226)	$ 70,106
157	Solution Architects & Agile Coaches-2	GBE- Portfolio Office		C210	$ 3,964,632	3/1/2019	120	$ -	$ 3,931,593	$ 1,965,797	9.9061%	$ 194,734	$ (65,124)	$ 129,609
158	Portfolio Management Leadership-3	GBE- Portfolio Office		C210	$ -	3/1/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
159	Solution Architects & Agile Coaches-3	GBE- Portfolio Office		C210	$ -	3/1/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
160	Portfolio Management Leadership-4	GBE- Portfolio Office		C210	$ -	3/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
161	Regulatory/ Compliance	GBE- Regulatory and Compliance		C210	$ 2,250,000	9/1/2019	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
162	Supply Chain Program Leadership	GBE- Supply Chain		C210	$ 565,045	3/1/2019	120	$ -	$ 560,336	$ 280,168	9.9061%	$ 27,754	$ (9,282)	$ 18,472
163	Supply Chain Program Leadership	GBE- Supply Chain		C210	$ -	3/1/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
164	Business Architecture Design	GBE- Work Management		C210	$ 3,004,085	12/1/2017	120	$ 2,903,949	$ 2,603,540	$ 2,753,744	9.9061%	$ 272,788	$ (83,076)	$ 189,712
165	WMFE Program Leadership-1	GBE- Work Management		C210	$ 234,013	3/1/2018	120	$ 232,063	$ 208,662	$ 220,362	9.9061%	$ 21,829	$ (6,290)	$ 15,539
166	Corrosion and I&R Work	GBE- Work Management		C210	$ 24,678,252	7/1/2018	120	$ -	$ 22,827,383	$ 11,413,691	9.9061%	$ 1,130,650	$ (454,512)	$ 676,139
167	CU Governance & Library - process	GBE- Work Management		C210	$ 1,658,439	11/1/2018	120	$ -	$ 1,589,337	$ 794,669	9.9061%	$ 78,721	$ (31,645)	$ 47,076
168	WMFE Program Leadership-2	GBE- Work Management		C210	$ 563,692	3/1/2019	120	$ -	$ 558,995	$ 279,497	9.9061%	$ 27,687	$ (9,259)	$ 18,428
169	Company Driven Work: Collections and non-Appointment Offs - Gas	GBE- Work Management		C210	$ 4,139,734	10/1/2019	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
170	Company Driven Work: Collections and non-Appointment Offs- Electric	GBE- Work Management		C198	$ 2,229,087	10/1/2019	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
171	Customer, Leak Investigation & Inspections - Gas	GBE- Work Management		C210	$ 10,086,410	10/1/2019	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
172	Customer, Leak Investigation & Inspections - Electric	GBE- Work Management		C198	$ 5,431,143	10/1/2019	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
173	WMFE Program Leadership-3	GBE- Work Management		C210	$ -	3/1/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
174	PowerPlan Integration & Enhancements	GBE- Work Management		C210	$ -	6/1/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
175	Construction Work & Leak Repair	GBE- Work Management		C210	$ 1,832,544	9/1/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
176	WMFE Program Leadership-4	GBE- Work Management		C210	$ -	3/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
177	Work Forecasting & Planning - solution	GBE- Work Management		C210	$ -	5/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
178	Core Projects & Program Management	GBE- Work Management		C210	$ -	6/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
179	WMFE Optimization	GBE- Work Management		C210	$ -	3/1/2022	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
180	Customer Experience Transformation-Communication Preference Management	Growth Play Book-CXT	4426	C175	$ 2,000,000	3/31/2019	84	$ -	$ 2,000,000	$ 1,000,000	9.9061%	$ 99,061	$ (23,893)	$ 75,167
181	Customer Experience Transformation-MyAccount Portal	Growth Play Book-CXT	4427	C175	$ 7,000,000	6/1/2019	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
182	Governance Risk & Compliance (GRC) Optimization/Upgrade	Growth Play Book-Finance	4222	G020	$ 1,540,000	3/1/2019	84	$ -	$ 1,521,667	$ 760,833	9.9061%	$ 75,369	$ (25,187)	$ 50,182
183	US SAP: Business Planning	Growth Play Book-Finance	4217	G020	$ 4,643,000	3/31/2019	84	$ -	$ 4,643,000	$ 2,321,500	9.9061%	$ 229,970	$ (55,469)	$ 174,501
184	US SAP: FERC on Hana (FOH)	Growth Play Book-Finance	4563	G020	$ 1,315,000	3/31/2019	84	$ -	$ 1,315,000	$ 657,500	9.9061%	$ 65,133	$ (15,710)	$ 49,423
185	DRMS for C&I Demand Response	NY REV / Grid Mod		5210E	$ 3,429,633	5/1/2017	36	$ 2,381,690	$ 1,238,479	$ 1,810,084	9.9061%	$ 179,308	$ (41,731)	$ 137,577
186	Load and DER Forecasting (Acquisition of Remote Sensing Data - NY)	NY REV / Grid Mod	4729	C113	$ 8,632,000	3/31/2018	84	$ 8,632,000	$ 7,398,857	$ 8,015,429	9.9061%	$ 794,015	$ (181,688)	$ 612,327
187	Plant Information Historian	NY REV / Grid Mod	4704K	G198	$ 11,427,818	9/30/2018	84	$ -	$ 10,611,545	$ 5,305,773	9.9061%	$ 525,594	$ (211,284)	$ 314,310
188	DG IOAP Phase II (Tactical)	NY REV / Grid Mod	4704P	5210E	$ 1,764,000	3/31/2019	84	$ -	$ 1,764,000	$ 882,000	9.9061%	$ 87,372	$ (21,074)	$ 66,298
189	E-Commerce Marketplace	NY REV / Grid Mod	4704D	5210E	$ 915,837	3/31/2019	84	$ -	$ 915,837	$ 457,919	9.9061%	$ 45,362	$ (10,941)	$ 34,421
190	AMI - Telecoms	NY REV / Grid Mod	4704I	5210E	$ 1,580,151	3/31/2019	84	$ -	$ 1,580,151	$ 790,076	9.9061%	$ 78,266	$ (18,878)	$ 59,388
191	AMI - CSS Enhancements	NY REV / Grid Mod	4704A	C113	$ 5,319,147	3/31/2020	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
192	Green Button Connect	NY REV / Grid Mod	4704C	C113	$ -	3/31/2020	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
193	DSP - DG IOAP	NY REV / Grid Mod	4704F	5210E	$ 9,120,628	3/31/2020	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
194	AMI - Telecoms	NY REV / Grid Mod	4704I	5210E	$ -	3/31/2020	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
195	Outdoor Lighting Inventory Portal	NY REV / Grid Mod	4704O	5210E	$ 500,000	3/31/2020	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
196	DRMS for C&I Demand Response (Renewal)	NY REV / Grid Mod		5210E	$ -	5/1/2020	12	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
197	Grid MOD - ABB/ADMS & D-SCADA	NY REV / Grid Mod	4704G	5210E	$ 9,345,188	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
198	AMI - Telecoms	NY REV / Grid Mod	4704I	5210E	$ -	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
199	AMI - Enterprise Service Bus & API Integration	NY REV / Grid Mod	4704J	C113	$ 1,690,216	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
200	AMI - Enterprise Service Bus & API Integration	NY REV / Grid Mod	4704J	5210E	$ 3,762,093	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
201	AMI - Info Mgt & Advanced Analytics	NY REV / Grid Mod	4704L	C113	$ 1,720,346	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
202	AMI - Info Mgt & Advanced Analytics	NY REV / Grid Mod	4704L	5210E	$ 8,399,335	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
203	IS-Cloud Computing & Data Lake	NY REV / Grid Mod	4704M	C113	$ 432,445	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
204	IS-Cloud Computing & Data Lake	NY REV / Grid Mod	4704M	5210E	$ 2,111,349	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
205	Cyber Security	NY REV / Grid Mod	4704N	C113	$ 6,514,334	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
206	Cyber Security	NY REV / Grid Mod	4704N	5210E	$ 9,771,502	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
207	INVP 3882 NYS Pipeline Safety CMS	Other Mandates	3882	G207	$ 1,308,000	3/17/2017	84	$ 1,105,571	$ 934,286	$ 1,019,929	9.9061%	$ 101,035	$ (34,829)	$ 66,206
208	INVP 3851 Consolidated Voice Recorder for US Electric Control Rooms	Other Mandates	3851	G181	$ 1,234,000	3/31/2017	84	$ 1,057,714	$ 881,429	$ 969,571	9.9061%	$ 96,047	$ (33,151)	$ 62,895
209	Annual HR & Payroll Mandatory Service Pack Upgrade (HRSP) - FY18	Other Mandates	4400	G020	$ 1,126,000	12/31/2017	84	$ 1,085,786	$ 924,929	$ 1,005,357	9.9061%	$ 99,592	$ (30,071)	$ 69,520
210	Regulatory Mandates - FY18	Other Mandates		G020	$ 5,071,622	3/31/2018	84	$ 5,071,622	$ 4,347,105	$ 4,709,363	9.9061%	$ 466,514	$ (106,749)	$ 359,765
211	US Control-Gas Electronic Bulletin Board (EBB) Upgrade	Other Mandates	4479	G210	$ 3,000,000	5/1/2018	84	$ -	$ 2,607,143	$ 1,303,571	9.9061%	$ 129,133	$ (51,910)	$ 77,223
212	Regulatory Mandates - FY19	Other Mandates		G020	$ 18,595,000	3/31/2019	84	$ -	$ 18,595,000	$ 9,297,500	9.9061%	$ 921,018	$ (222,150)	$ 698,869
213	Regulatory Mandates - FY20	Other Mandates		G020	$ -	3/31/2020	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
214	Regulatory Mandates - FY21	Other Mandates		G020	$ -	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
215	Physical Security Replacements - FY17	Physical Security		G020	$ 906,050	3/31/2017	84	$ 776,614	$ 647,179	$ 711,896	9.9061%	$ 70,521	$ (24,341)	$ 46,180
218	Physical Security Replacements - FY18	Physical Security		G020	$ 950,000	3/31/2018	84	$ 950,000	$ 814,286	$ 882,143	9.9061%	$ 87,386	$ (19,996)	$ 67,390
219	All NIMO Physical Security Replacements - FY18	Physical Security		G114	$ 490,000	3/31/2018	84	$ 490,000	$ 420,000	$ 455,000	9.9061%	$ 45,073	$ (10,314)	$ 34,759
222	Physical Security Replacements - FY19	Physical Security		G020	$ 825,000	3/31/2019	84	$ -	$ 825,000	$ 412,500	9.9061%	$ 40,863	$ (9,856)	$ 31,007
223	All NIMO Physical Security Replacements - FY19	Physical Security		G114	$ 275,000	3/31/2019	84	$ -	$ 275,000	$ 137,500	9.9061%	$ 13,621	$ (3,285)	$ 10,336

Niagara Mohawk Power Corporation d/b/a National Grid
Service Company Rents
Forecasted Service Company Capital Software allocated to Operating Companies as Rent Expense
For the Rate Year ended March 31, 2019

Line	Investment Name	Programs	INVP #	Year Amortization	5210G NIMO G Allocation	NIMO G Rent-Return	NIMO G Rent - Depn	5210E NIMO E Allocation	NIMO E Rent-Return	NIMO E Rent - Depn	5210T NIMO T Allocation	NIMO T Rent-Return	NIMO T Rent - Depn	Amortization Period	Bonus Rate	Bonus Depreciation
148	Mobility CoE & End-User Computing-3	GBE- Information Services Enabling		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
149	Test Automation Implementation	GBE- Information Services Enabling		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
150	Development Operations & BPA Enablement-4	GBE- Information Services Enabling		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
151	SAP and Application Integration Development- Release 1-4	GBE- Information Services Enabling		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
152	SAP and Application Integration Development- Release 3-2	GBE- Information Services Enabling		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
153	Mobility CoE & End-User Computing-4	GBE- Information Services Enabling		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
154	Portfolio Management Leadership-1	GBE- Portfolio Office		$ 164,592	16.89%	$ 18,460	$ 27,800	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 658,368
155	Solution Architects & Agile Coaches-1	GBE- Portfolio Office		$ 195,828	16.89%	$ 21,963	$ 33,075	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 783,311
156	Portfolio Management Leadership-2	GBE- Portfolio Office		$ 17,871	16.89%	$ 11,841	$ 3,018	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 643,345
157	Solution Architects & Agile Coaches-2	GBE- Portfolio Office		$ 33,039	16.89%	$ 21,891	$ 5,580	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 1,189,390
158	Portfolio Management Leadership-3	GBE- Portfolio Office		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
159	Solution Architects & Agile Coaches-3	GBE- Portfolio Office		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
160	Portfolio Management Leadership-4	GBE- Portfolio Office		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
161	Regulatory/ Compliance	GBE- Regulatory and Compliance		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ -
162	Supply Chain Program Leadership	GBE- Supply Chain		$ 4,709	16.89%	$ 3,120	$ 795	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 169,514
163	Supply Chain Program Leadership	GBE- Supply Chain		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
164	Business Architecture Design	GBE- Work Management		$ 300,408	16.89%	$ 32,042	$ 50,739	0.00%	$ -	$ -	0.00%	$ -	$ -	36	50%	$ 1,502,042
165	WMFE Program Leadership-1	GBE- Work Management		$ 23,401	16.89%	$ 2,625	$ 3,952	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 93,605
166	Corrosion and I&R Work	GBE- Work Management		$ 1,850,869	16.89%	$ 114,200	$ 312,612	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 9,871,301
167	CU Governance & Library - process	GBE- Work Management		$ 69,102	16.89%	$ 7,951	$ 11,671	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 663,376
168	WMFE Program Leadership-2	GBE- Work Management		$ 4,697	16.89%	$ 3,112	$ 793	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 169,108
169	Company Driven Work: Collections and non-Appointment Offs - Gas	GBE- Work Management		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ -
170	Company Driven Work: Collections and non-Appointment Offs- Electric	GBE- Work Management		$ -	0.00%	$ -	$ -	47.71%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ -
171	Customer, Leak Investigation & Inspections - Gas	GBE- Work Management		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ -
172	Customer, Leak Investigation & Inspections - Electric	GBE- Work Management		$ -	0.00%	$ -	$ -	47.71%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ -
173	WMFE Program Leadership-3	GBE- Work Management		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
174	PowerPlan Integration & Enhancements	GBE- Work Management		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
175	Construction Work & Leak Repair	GBE- Work Management		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
176	WMFE Program Leadership-4	GBE- Work Management		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
177	Work Forecasting & Planning - solution	GBE- Work Management		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
178	Core Projects & Program Management	GBE- Work Management		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
179	WMFE Optimization	GBE- Work Management		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
180	Customer Experience Transformation-Communication Preference Management	Growth Play Book-CXT	4426	$ -	8.65%	$ 6,502	$ -	23.28%	$ 17,498	$ -	0.00%	$ -	$ -	36	30%	$ 600,000
181	Customer Experience Transformation-MyAccount Portal	Growth Play Book-CXT	4427	$ -	8.65%	$ -	$ -	23.28%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ -
182	Governance Risk & Compliance (GRC) Optimization/Upgrade	Growth Play Book-Finance	4222	$ 18,333	4.58%	$ 2,298	$ 840	17.76%	$ 8,912	$ 3,256	6.11%	$ 3,066	$ 1,120	36	30%	$ 462,000
183	US SAP: Business Planning	Growth Play Book-Finance	4217	$ -	4.58%	$ 7,992	$ -	17.76%	$ 30,991	$ -	6.11%	$ 10,662	$ -	36	30%	$ 1,392,900
184	US SAP: FERC on Hana (FOH)	Growth Play Book-Finance	4563	$ -	4.58%	$ 2,264	$ -	17.76%	$ 8,777	$ -	6.11%	$ 3,020	$ -	36	30%	$ 394,500
185	DRMS for C&I Demand Response	NY REV / Grid Mod		$ 1,143,211	0.00%	$ -	$ -	100.00%	$ 137,577	$ 1,143,211	0.00%	$ -	$ -	36	50%	$ 1,714,817
186	Load and DER Forecasting (Acquisition of Remote Sensing Data - NY)	NY REV / Grid Mod	4729	$ 1,233,143	27.09%	$ 165,879	$ 334,058	72.91%	$ 446,448	$ 899,084	0.00%	$ -	$ -	36	40%	$ 3,452,800
187	Plant Information Historian	NY REV / Grid Mod	4704K	$ 816,273	0.00%	$ -	$ -	41.93%	$ 131,790	$ 342,263	0.00%	$ -	$ -	36	40%	$ 4,571,127
188	DG IOAP Phase II (Tactical)	NY REV / Grid Mod	4704P	$ -	0.00%	$ -	$ -	100.00%	$ 66,298	$ -	0.00%	$ -	$ -	36	30%	$ 529,200
189	E-Commerce Marketplace	NY REV / Grid Mod	4704D	$ -	0.00%	$ -	$ -	100.00%	$ 34,421	$ -	0.00%	$ -	$ -	36	30%	$ 274,751
190	AMI - Telecoms	NY REV / Grid Mod	4704I	$ -	0.00%	$ -	$ -	100.00%	$ 59,388	$ -	0.00%	$ -	$ -	36	30%	$ 474,045
191	AMI - CSS Enhancements	NY REV / Grid Mod	4704A	$ -	27.09%	$ -	$ -	72.91%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
192	Green Button Connect	NY REV / Grid Mod	4704C	$ -	27.09%	$ -	$ -	72.91%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
193	DSP - DG IOAP	NY REV / Grid Mod	4704F	$ -	0.00%	$ -	$ -	100.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
194	AMI - Telecoms	NY REV / Grid Mod	4704I	$ -	0.00%	$ -	$ -	100.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
195	Outdoor Lighting Inventory Portal	NY REV / Grid Mod	4704O	$ -	0.00%	$ -	$ -	100.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
196	DRMS for C&I Demand Response (Renewal)	NY REV / Grid Mod		$ -	0.00%	$ -	$ -	100.00%	$ -	$ -	0.00%	$ -	$ -	12	0%	$ -
197	Grid MOD - ABB/ADMS & D-SCADA	NY REV / Grid Mod	4704G	$ -	0.00%	$ -	$ -	100.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
198	AMI - Telecoms	NY REV / Grid Mod	4704I	$ -	0.00%	$ -	$ -	100.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
199	AMI - Enterprise Service Bus & API Integration	NY REV / Grid Mod	4704J	$ -	27.09%	$ -	$ -	72.91%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
200	AMI - Enterprise Service Bus & API Integration	NY REV / Grid Mod	4704J	$ -	0.00%	$ -	$ -	100.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
201	AMI - Info Mgt & Advanced Analytics	NY REV / Grid Mod	4704L	$ -	27.09%	$ -	$ -	72.91%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
202	AMI - Info Mgt & Advanced Analytics	NY REV / Grid Mod	4704L	$ -	0.00%	$ -	$ -	100.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
203	IS-Cloud Computing & Data Lake	NY REV / Grid Mod	4704M	$ -	27.09%	$ -	$ -	72.91%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
204	IS-Cloud Computing & Data Lake	NY REV / Grid Mod	4704M	$ -	0.00%	$ -	$ -	100.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
205	Cyber Security	NY REV / Grid Mod	4704N	$ -	27.09%	$ -	$ -	72.91%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
206	Cyber Security	NY REV / Grid Mod	4704N	$ -	0.00%	$ -	$ -	100.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
207	INVP 3882 NYS Pipeline Safety CMS	Other Mandates	3882	$ 171,286	19.47%	$ 12,890	$ 33,349	0.00%	$ -	$ -	0.00%	$ -	$ -	36	50%	$ 654,000
208	INVP 3851 Consolidated Voice Recorder for US Electric Control Rooms	Other Mandates	3851	$ 176,286	0.00%	$ -	$ -	74.79%	$ 47,039	$ 131,844	25.21%	$ 15,856	$ 44,442	36	50%	$ 617,000
209	Annual HR & Payroll Mandatory Service Pack Upgrade (HRSP) - FY18	Other Mandates	4400	$ 160,857	4.58%	$ 3,184	$ 7,367	17.76%	$ 12,347	$ 28,568	6.11%	$ 4,248	$ 9,828	36	50%	$ 563,000
210	Regulatory Mandates - FY18	Other Mandates		$ 724,517	4.58%	$ 16,477	$ 33,183	17.76%	$ 63,894	$ 128,674	6.11%	$ 21,982	$ 44,268	36	40%	$ 2,028,649
211	US Control-Gas Electronic Bulletin Board (EBB) Upgrade	Other Mandates	4479	$ 392,857	12.44%	$ 9,607	$ 48,871	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 1,200,000
212	Regulatory Mandates - FY19	Other Mandates		$ -	4.58%	$ 32,008	$ -	17.76%	$ 124,119	$ -	6.11%	$ 42,701	$ -	36	30%	$ 5,578,500
213	Regulatory Mandates - FY20	Other Mandates		$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
214	Regulatory Mandates - FY21	Other Mandates		$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
215	Physical Security Replacements - FY17	Physical Security		$ 129,436	4.58%	$ 2,115	$ 5,928	17.76%	$ 8,202	$ 22,988	6.11%	$ 2,822	$ 7,909	36	50%	$ 453,025
218	Physical Security Replacements - FY18	Physical Security		$ 135,714	4.58%	$ 3,086	$ 6,216	17.76%	$ 11,968	$ 24,103	6.11%	$ 4,118	$ 8,292	36	40%	$ 380,000
219	All NIMO Physical Security Replacements - FY18	Physical Security		$ 70,000	15.97%	$ 5,551	$ 11,179	63.00%	$ 21,898	$ 44,100	21.03%	$ 7,310	$ 14,721	36	40%	$ 196,000
222	Physical Security Replacements - FY19	Physical Security		$ -	4.58%	$ 1,420	$ -	17.76%	$ 5,507	$ -	6.11%	$ 1,894	$ -	36	30%	$ 247,500
223	All NIMO Physical Security Replacements - FY19	Physical Security		$ -	15.97%	$ 1,651	$ -	63.00%	$ 6,511	$ -	21.03%	$ 2,174	$ -	36	30%	$ 82,500

Niagara Mohawk Power Corporation d/b/a National Grid
Service Company Rents
Forecasted Service Company Capital Software allocated to Operating Companies as Rent Expense
For the Rate Year ended March 31, 2019

Line	Investment Name	Programs	INVP #	Bill Pool	FY19 Total Spend	In Service Date	Amortization Period	4/1/2018 4/1/2018 Balance	3/31/2019 3/31/2019 Balance	Average Balance	9.9061% Service Co Return	Year Return	Return on Accum Taxes	Total Return
226	Physical Security Replacements - FY20	Physical Security		G020	$ -	3/31/2020	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
227	All NIMO Physical Security Replacements - FY20	Physical Security		G114	$ -	3/31/2020	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
230	Physical Security Replacements - FY21	Physical Security		G020	$ -	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
231	All NIMO Physical Security Replacements - FY21	Physical Security		G114	$ -	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
236	INVP 4124 Auto Remote Net Meter	PSC Mandate	4124	C198	$ 3,584,165	8/31/2017	84	$ 3,285,485	$ 2,773,461	$ 3,029,473	9.9061%	$ 300,102	$ (88,923)	$ 211,179
237	INVP 3839A NY Retail Access Ph2	PSC Mandate	3839A	C170	$ 5,356,231	10/31/2017	84	$ 5,037,408	$ 4,272,232	$ 4,654,820	9.9061%	$ 461,110	$ (137,966)	$ 323,144
238	INVP 4411AB Distributed Generation Portal	PSC Mandate	4411A+B	C198	$ 3,347,611	11/30/2017	84	$ 3,188,201	$ 2,709,971	$ 2,949,086	9.9061%	$ 292,139	$ (87,815)	$ 204,324
239	INVP 4383 NY Community Choice Aggregation	PSC Mandate	4383	C170	$ 551,447	12/31/2017	84	$ 531,752	$ 452,974	$ 492,363	9.9061%	$ 48,774	$ (14,727)	$ 34,047
241	INVP 4448 Low Income Order CSS	PSC Mandate	4448	C195	$ 2,489,410	12/31/2017	84	$ 2,400,503	$ 2,044,873	$ 2,222,688	9.9061%	$ 220,181	$ (66,483)	$ 153,699
242	INVP 4411C New Electric Connections	PSC Mandate	4411C	C198	$ 698,000	4/30/2018	84	$ -	$ 606,595	$ 303,298	9.9061%	$ 30,045	$ (12,078)	$ 17,967
243	INVP 4411D New Gas Connections	PSC Mandate	4411D	C210	$ 896,000	10/31/2018	84	$ -	$ 842,667	$ 421,333	9.9061%	$ 41,738	$ (16,778)	$ 24,959
244	CPE Buyback	Tech. Modernization	4684	G020	$ 5,140,000	3/31/2017	84	$ 4,405,714	$ 3,671,429	$ 4,038,571	9.9061%	$ 400,064	$ (138,085)	$ 261,979
245	Active Directory Improvements	Tech. Modernization	4489	G020	$ 275,000	11/30/2017	84	$ 261,905	$ 222,619	$ 242,262	9.9061%	$ 23,999	$ (7,214)	$ 16,785
246	Application Performance Management (APM)	Tech. Modernization	4490	G020	$ 375,000	1/31/2018	84	$ 366,071	$ 312,500	$ 339,286	9.9061%	$ 33,610	$ (9,529)	$ 24,081
247	RAS/VPN Re-Platform/Mobile	Tech. Modernization	4269	G020	$ 600,000	3/16/2018	84	$ 592,857	$ 507,143	$ 550,000	9.9061%	$ 54,483	$ (15,531)	$ 38,953
248	US Network Programme	Tech. Modernization	4496	G020	$ 3,025,000	3/31/2018	84	$ 3,025,000	$ 2,592,857	$ 2,808,929	9.9061%	$ 278,255	$ (63,671)	$ 214,584
249	US VSTIG Programme	Tech. Modernization	4498	G020	$ 2,700,000	3/31/2018	84	$ 2,700,000	$ 2,314,286	$ 2,507,143	9.9061%	$ 248,360	$ (56,830)	$ 191,530
250	US Wireless Programme	Tech. Modernization	4499	G020	$ 1,950,000	3/31/2018	84	$ 1,950,000	$ 1,671,429	$ 1,810,714	9.9061%	$ 179,371	$ (41,044)	$ 138,327
251	Monitoring and Alerting	Tech. Modernization	4493	G020	$ 450,000	3/31/2018	84	$ 450,000	$ 385,714	$ 417,857	9.9061%	$ 41,393	$ (9,472)	$ 31,922
252	RSA Re-platform	Tech. Modernization	4270	G020	$ 280,000	3/31/2018	84	$ 280,000	$ 240,000	$ 260,000	9.9061%	$ 25,756	$ (5,894)	$ 19,862
253	Cloud Broker - Hybrid Enablement	Tech. Modernization	3899	G020	$ 250,000	3/31/2018	84	$ 250,000	$ 214,286	$ 232,143	9.9061%	$ 22,996	$ (5,262)	$ 17,734
254	Office 2010 Upgrade	Tech. Modernization	4265	G020	$ 800,000	3/31/2018	84	$ 800,000	$ 685,714	$ 742,857	9.9061%	$ 73,588	$ (16,839)	$ 56,749
255	Citrix Infrstructure Upgrade (Xenapp and NetScaler)	Tech. Modernization	4279	G020	$ 500,000	3/31/2018	84	$ 500,000	$ 428,571	$ 464,286	9.9061%	$ 45,993	$ (10,524)	$ 35,468
256	Business Innovation Projects 1	Tech. Modernization	4707	G020	$ 3,368,613	3/31/2018	84	$ 3,368,613	$ 2,887,383	$ 3,127,998	9.9061%	$ 309,862	$ (70,903)	$ 238,959
257	Data Security	Tech. Modernization	4710	G020	$ 1,575,000	3/31/2018	84	$ 1,575,000	$ 1,350,000	$ 1,462,500	9.9061%	$ 144,877	$ (33,151)	$ 111,726
258	Orchestration and Self Service	Tech. Modernization	4726	G020	$ 750,000	3/31/2018	84	$ 750,000	$ 642,857	$ 696,429	9.9061%	$ 68,989	$ (15,786)	$ 53,203
259	Virtual Desktop - DaaS	Tech. Modernization	4727	G020	$ 550,000	3/31/2018	84	$ 550,000	$ 471,429	$ 510,714	9.9061%	$ 50,592	$ (11,577)	$ 39,015
260	SCI connections	Tech. Modernization	4495	G020	$ 100,000	3/31/2018	84	$ 100,000	$ 85,714	$ 92,857	9.9061%	$ 9,199	$ (2,105)	$ 7,094
261	US SAP: Dynamic Storage Tiering	Tech. Modernization	4560	G020	$ 1,355,000	7/5/2018	84	$ -	$ 1,209,821	$ 604,911	9.9061%	$ 59,923	$ (24,088)	$ 35,834
262	ICE Replacement	Tech. Modernization	4491	G020	$ 3,316,000	10/31/2018	84	$ -	$ 3,118,619	$ 1,559,310	9.9061%	$ 154,467	$ (62,094)	$ 92,372
263	US Network Programme	Tech. Modernization	4496	G020	$ 2,075,000	3/31/2019	84	$ -	$ 2,075,000	$ 1,037,500	9.9061%	$ 102,776	$ (24,789)	$ 77,986
264	US VSTIG Programme	Tech. Modernization	4498	G020	$ 1,700,000	3/31/2019	84	$ -	$ 1,700,000	$ 850,000	9.9061%	$ 84,202	$ (20,309)	$ 63,892
265	US Wireless Programme	Tech. Modernization	4499	G020	$ 1,500,000	3/31/2019	84	$ -	$ 1,500,000	$ 750,000	9.9061%	$ 74,296	$ (17,920)	$ 56,376
266	Data Visualisation Expansion	Tech. Modernization	4606	G020	$ 2,800,000	3/31/2019	84	$ -	$ 2,800,000	$ 1,400,000	9.9061%	$ 138,685	$ (33,451)	$ 105,234
267	US SAP: Business Warehouse (BW) Consolidation to HANA Enterprise Cloud (HEC)	Tech. Modernization	4562	G020	$ 2,366,000	3/31/2019	84	$ -	$ 2,366,000	$ 1,183,000	9.9061%	$ 117,189	$ (28,266)	$ 88,923
268	Monitoring and Alerting	Tech. Modernization	4493	G020	$ 1,000,000	3/31/2019	84	$ -	$ 1,000,000	$ 500,000	9.9061%	$ 49,530	$ (11,947)	$ 37,584
269	MWORK and Netmotion Risk Avoidance	Tech. Modernization	4725	G020	$ 500,000	3/31/2019	84	$ -	$ 500,000	$ 250,000	9.9061%	$ 24,765	$ (5,973)	$ 18,792
270	Improving End User Experience- Cloud based DMZ Service Platform	Tech. Modernization	4723	G020	$ 300,000	3/31/2019	84	$ -	$ 300,000	$ 150,000	9.9061%	$ 14,859	$ (3,584)	$ 11,275
271	Mobile Broadband POC	Tech. Modernization		G020	$ 100,000	3/31/2019	84	$ -	$ 100,000	$ 50,000	9.9061%	$ 4,953	$ (1,195)	$ 3,758
272	FY19 Edge Projects	Tech. Modernization	4717	G020	$ 1,000,000	3/31/2019	84	$ -	$ 1,000,000	$ 500,000	9.9061%	$ 49,530	$ (11,947)	$ 37,584
273	FY19 Network Projects	Tech. Modernization	4718	G020	$ 1,000,000	3/31/2019	84	$ -	$ 1,000,000	$ 500,000	9.9061%	$ 49,530	$ (11,947)	$ 37,584
274	Digital Asset Management (DAM)	Tech. Modernization	4711	G020	$ 500,000	3/31/2019	84	$ -	$ 500,000	$ 250,000	9.9061%	$ 24,765	$ (5,973)	$ 18,792
275	Business Innovation Projects 1	Tech. Modernization	4707	G020	$ 3,973,236	3/31/2019	84	$ -	$ 3,973,236	$ 1,986,618	9.9061%	$ 196,796	$ (47,467)	$ 149,329
276	Business Innovation Projects 2	Tech. Modernization	4708	G020	$ 3,368,613	3/31/2019	84	$ -	$ 3,368,613	$ 1,684,307	9.9061%	$ 166,849	$ (40,244)	$ 126,605
277	Business Innovation Projects 3	Tech. Modernization	4728	G020	$ 3,368,613	3/31/2019	84	$ -	$ 3,368,613	$ 1,684,307	9.9061%	$ 166,849	$ (40,244)	$ 126,605
278	EUC, network, and data center strategy	Tech. Modernization	4715	G020	$ 1,542,858	3/31/2019	84	$ -	$ 1,542,858	$ 771,429	9.9061%	$ 76,418	$ (18,432)	$ 57,986
279	Data Security	Tech. Modernization	4710	G020	$ 1,575,000	3/31/2019	84	$ -	$ 1,575,000	$ 787,500	9.9061%	$ 78,010	$ (18,816)	$ 59,194
280	FY19 Data Centre Projects	Tech. Modernization	4716	G020	$ 2,000,000	3/31/2019	84	$ -	$ 2,000,000	$ 1,000,000	9.9061%	$ 99,061	$ (23,893)	$ 75,167
281	1327 Interfaces - 523 FTS, 340 RDX, 245 MQSI, 253 JCAPS, 44 PM4D, 7 VB	Tech. Modernization	4706	G020	$ 3,300,000	3/31/2019	84	$ -	$ 3,300,000	$ 1,650,000	9.9061%	$ 163,450	$ (39,424)	$ 124,026
282	US Video Conference Programme	Tech. Modernization	4497	G020	$ 1,550,000	6/1/2019	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
283	US SAP: Enhancement Pack 9 Upgrade	Tech. Modernization	4564	G020	$ 3,493,000	3/31/2020	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
284	US Network Programme	Tech. Modernization	4496	G020	$ -	3/31/2020	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
285	US VSTIG Programme	Tech. Modernization	4498	G020	$ -	3/31/2020	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
286	US Wireless Programme	Tech. Modernization	4499	G020	$ -	3/31/2020	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
287	Monitoring and Alerting	Tech. Modernization	4493	G020	$ -	3/31/2020	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
288	Service Now - Release 3	Tech. Modernization	4261	G020	$ 1,900,000	3/31/2020	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
289	IS Tools	Tech. Modernization	4513	G020	$ 200,000	3/31/2020	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
290	FY20 Edge Projects	Tech. Modernization	4720	G020	$ -	3/31/2020	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
291	FY20 Network Projects	Tech. Modernization	4721	G020	$ -	3/31/2020	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
292	EMM Licenses	Tech. Modernization	4713	G020	$ 660,000	3/31/2020	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
293	Business Innovation Projects 2	Tech. Modernization	4708	G020	$ -	3/31/2020	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
294	Business Innovation Projects 3	Tech. Modernization	4728	G020	$ -	3/31/2020	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
295	Data Security	Tech. Modernization	4710	G020	$ -	3/31/2020	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
296	Hardware and Software Upgrades	Tech. Modernization	4722	G020	$ 6,500,000	3/31/2020	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
297	Data Centre Consolidation efforts	Tech. Modernization	4709	G020	$ 3,000,000	3/31/2020	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
298	FY20 Data Centre Projects	Tech. Modernization	4719	G020	$ -	3/31/2020	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
299	Enterprise Data Management Platform	Tech. Modernization	4582	G020	$ 2,500,000	6/1/2020	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
300	Business Innovation Projects 2	Tech. Modernization	4708	G020	$ -	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
301	Business Innovation Projects 3	Tech. Modernization	4728	G020	$ -	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
	Total IS				$ 617,382,630			$ 215,663,979	$ 388,651,928	$ 302,157,954		$ 29,932,027	$ (8,908,805)	$ 21,023,222

Niagara Mohawk Power Corporation d/b/a National Grid
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For the Rate Year ended March 31, 2019

Line	Investment Name	Programs	INVP #	Year Amortization	5210G NIMO G Allocation	NIMO G Rent-Return	NIMO G Rent - Depn	5210E NIMO E Allocation	NIMO E Rent-Return	NIMO E Rent - Depn	5210T NIMO T Allocation	NIMO T Rent-Return	NIMO T Rent - Depn	Amortization Period	Bonus Rate	Bonus Depreciation
226	Physical Security Replacements - FY20	Physical Security		$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
227	All NIMO Physical Security Replacements - FY20	Physical Security		$ -	15.97%	$ -	$ -	63.00%	$ -	$ -	21.03%	$ -	$ -	36	0%	$ -
230	Physical Security Replacements - FY21	Physical Security		$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
231	All NIMO Physical Security Replacements - FY21	Physical Security		$ -	15.97%	$ -	$ -	63.00%	$ -	$ -	21.03%	$ -	$ -	36	0%	$ -
236	INVP 4124 Auto Remote Net Meter	PSC Mandate	4124	$ 512,024	0.00%	$ -	$ -	47.71%	$ 100,754	$ 244,286	0.00%	$ -	$ -	36	50%	$ 1,792,083
237	INVP 3839A NY Retail Access Ph2	PSC Mandate	3839A	$ 765,176	14.88%	$ 48,084	$ 113,858	40.06%	$ 129,452	$ 306,529	0.00%	$ -	$ -	36	50%	$ 2,678,116
238	INVP 4411AB Distributed Generation Portal	PSC Mandate	4411A+B	$ 478,230	0.00%	$ -	$ -	47.71%	$ 97,483	$ 228,164	0.00%	$ -	$ -	36	50%	$ 1,673,805
239	INVP 4383 NY Community Choice Aggregation	PSC Mandate	4383	$ 78,778	14.88%	$ 5,066	$ 11,722	40.06%	$ 13,639	$ 31,559	0.00%	$ -	$ -	36	50%	$ 275,724
241	INVP 4448 Low Income Order CSS	PSC Mandate	4448	$ 355,630	21.56%	$ 33,137	$ 76,674	57.91%	$ 89,007	$ 205,945	0.00%	$ -	$ -	36	50%	$ 1,244,705
242	INVP 4411C New Electric Connections	PSC Mandate	4411C	$ 91,405	0.00%	$ -	$ -	47.71%	$ 8,572	$ 43,609	0.00%	$ -	$ -	36	40%	$ 279,200
243	INVP 4411D New Gas Connections	PSC Mandate	4411D	$ 53,333	16.89%	$ 4,216	$ 9,008	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 358,400
244	CPE Buyback	Tech. Modernization	4684	$ 734,286	4.58%	$ 11,999	$ 33,630	17.76%	$ 46,528	$ 130,409	6.11%	$ 16,007	$ 44,865	36	50%	$ 2,570,000
245	Active Directory Improvements	Tech. Modernization	4489	$ 39,286	4.58%	$ 769	$ 1,799	17.76%	$ 2,981	$ 6,977	6.11%	$ 1,026	$ 2,400	36	50%	$ 137,500
246	Application Performance Management (APM)	Tech. Modernization	4490	$ 53,571	4.58%	$ 1,103	$ 2,454	17.76%	$ 4,277	$ 9,514	6.11%	$ 1,471	$ 3,273	36	40%	$ 150,000
247	RAS/VPN Re-Platform/Mobile	Tech. Modernization	4269	$ 85,714	4.58%	$ 1,784	$ 3,926	17.76%	$ 6,918	$ 15,223	6.11%	$ 2,380	$ 5,237	36	40%	$ 240,000
248	US Network Programme	Tech. Modernization	4496	$ 432,143	4.58%	$ 9,828	$ 19,792	17.76%	$ 38,110	$ 76,749	6.11%	$ 13,111	$ 26,404	36	40%	$ 1,210,000
249	US VSTIG Programme	Tech. Modernization	4498	$ 385,714	4.58%	$ 8,772	$ 17,666	17.76%	$ 34,016	$ 68,503	6.11%	$ 11,702	$ 23,567	36	40%	$ 1,080,000
250	US Wireless Programme	Tech. Modernization	4499	$ 278,571	4.58%	$ 6,335	$ 12,759	17.76%	$ 24,567	$ 49,474	6.11%	$ 8,452	$ 17,021	36	40%	$ 780,000
251	Monitoring and Alerting	Tech. Modernization	4493	$ 64,286	4.58%	$ 1,462	$ 2,944	17.76%	$ 5,669	$ 11,417	6.11%	$ 1,950	$ 3,928	36	40%	$ 180,000
252	RSA Re-platform	Tech. Modernization	4270	$ 40,000	4.58%	$ 910	$ 1,832	17.76%	$ 3,528	$ 7,104	6.11%	$ 1,214	$ 2,444	36	40%	$ 112,000
253	Cloud Broker - Hybrid Enablement	Tech. Modernization	3899	$ 35,714	4.58%	$ 812	$ 1,636	17.76%	$ 3,150	$ 6,343	6.11%	$ 1,084	$ 2,182	36	40%	$ 100,000
254	Office 2010 Upgrade	Tech. Modernization	4265	$ 114,286	4.58%	$ 2,599	$ 5,234	17.76%	$ 10,079	$ 20,297	6.11%	$ 3,467	$ 6,983	36	40%	$ 320,000
255	Citrix Infrstructure Upgrade (Xenapp and NetScaler)	Tech. Modernization	4279	$ 71,429	4.58%	$ 1,624	$ 3,271	17.76%	$ 6,299	$ 12,686	6.11%	$ 2,167	$ 4,364	36	40%	$ 200,000
256	Business Innovation Projects 1	Tech. Modernization	4707	$ 481,230	4.58%	$ 10,944	$ 22,040	17.76%	$ 42,439	$ 85,467	6.11%	$ 14,600	$ 29,403	36	40%	$ 1,347,445
257	Data Security	Tech. Modernization	4710	$ 225,000	4.58%	$ 5,117	$ 10,305	17.76%	$ 19,842	$ 39,960	6.11%	$ 6,826	$ 13,748	36	40%	$ 630,000
258	Orchestration and Self Service	Tech. Modernization	4726	$ 107,143	4.58%	$ 2,437	$ 4,907	17.76%	$ 9,449	$ 19,029	6.11%	$ 3,251	$ 6,546	36	40%	$ 300,000
259	Virtual Desktop - DaaS	Tech. Modernization	4727	$ 78,571	4.58%	$ 1,787	$ 3,599	17.76%	$ 6,929	$ 13,954	6.11%	$ 2,384	$ 4,801	36	40%	$ 220,000
260	SCI connections	Tech. Modernization	4495	$ 14,286	4.58%	$ 325	$ 654	17.76%	$ 1,260	$ 2,537	6.11%	$ 433	$ 873	36	40%	$ 40,000
261	US SAP: Dynamic Storage Tiering	Tech. Modernization	4560	$ 145,179	4.58%	$ 1,641	$ 6,649	17.76%	$ 6,364	$ 25,784	6.11%	$ 2,189	$ 8,870	36	40%	$ 542,000
262	ICE Replacement	Tech. Modernization	4491	$ 197,381	4.58%	$ 4,231	$ 9,040	17.76%	$ 16,405	$ 35,055	6.11%	$ 5,644	$ 12,060	36	40%	$ 1,326,400
263	US Network Programme	Tech. Modernization	4496	$ -	4.58%	$ 3,572	$ -	17.76%	$ 13,850	$ -	6.11%	$ 4,765	$ -	36	30%	$ 622,500
264	US VSTIG Programme	Tech. Modernization	4498	$ -	4.58%	$ 2,926	$ -	17.76%	$ 11,347	$ -	6.11%	$ 3,904	$ -	36	30%	$ 510,000
265	US Wireless Programme	Tech. Modernization	4499	$ -	4.58%	$ 2,582	$ -	17.76%	$ 10,012	$ -	6.11%	$ 3,445	$ -	36	30%	$ 450,000
266	Data Visualisation Expansion	Tech. Modernization	4606	$ -	4.58%	$ 4,820	$ -	17.76%	$ 18,690	$ -	6.11%	$ 6,430	$ -	36	30%	$ 840,000
267	US SAP: Business Warehouse (BW) Consolidation to HANA Enterprise Cloud (HEC)	Tech. Modernization	4562	$ -	4.58%	$ 4,073	$ -	17.76%	$ 15,793	$ -	6.11%	$ 5,433	$ -	36	30%	$ 709,800
268	Monitoring and Alerting	Tech. Modernization	4493	$ -	4.58%	$ 1,721	$ -	17.76%	$ 6,675	$ -	6.11%	$ 2,296	$ -	36	30%	$ 300,000
269	MWORK and Netmotion Risk Avoidance	Tech. Modernization	4725	$ -	4.58%	$ 861	$ -	17.76%	$ 3,337	$ -	6.11%	$ 1,148	$ -	36	30%	$ 150,000
270	Improving End User Experience- Cloud based DMZ Service Platform	Tech. Modernization	4723	$ -	4.58%	$ 516	$ -	17.76%	$ 2,002	$ -	6.11%	$ 689	$ -	36	30%	$ 90,000
271	Mobile Broadband POC	Tech. Modernization		$ -	4.58%	$ 172	$ -	17.76%	$ 667	$ -	6.11%	$ 230	$ -	36	30%	$ 30,000
272	FY19 Edge Projects	Tech. Modernization	4717	$ -	4.58%	$ 1,721	$ -	17.76%	$ 6,675	$ -	6.11%	$ 2,296	$ -	36	30%	$ 300,000
273	FY19 Network Projects	Tech. Modernization	4718	$ -	4.58%	$ 1,721	$ -	17.76%	$ 6,675	$ -	6.11%	$ 2,296	$ -	36	30%	$ 300,000
274	Digital Asset Management (DAM)	Tech. Modernization	4711	$ -	4.58%	$ 861	$ -	17.76%	$ 3,337	$ -	6.11%	$ 1,148	$ -	36	30%	$ 150,000
275	Business Innovation Projects 1	Tech. Modernization	4707	$ -	4.58%	$ 6,839	$ -	17.76%	$ 26,521	$ -	6.11%	$ 9,124	$ -	36	30%	$ 1,191,971
276	Business Innovation Projects 2	Tech. Modernization	4708	$ -	4.58%	$ 5,799	$ -	17.76%	$ 22,485	$ -	6.11%	$ 7,736	$ -	36	30%	$ 1,010,584
277	Business Innovation Projects 3	Tech. Modernization	4728	$ -	4.58%	$ 5,799	$ -	17.76%	$ 22,485	$ -	6.11%	$ 7,736	$ -	36	30%	$ 1,010,584
278	EUC, network, and data center strategy	Tech. Modernization	4715	$ -	4.58%	$ 2,656	$ -	17.76%	$ 10,298	$ -	6.11%	$ 3,543	$ -	36	30%	$ 462,857
279	Data Security	Tech. Modernization	4710	$ -	4.58%	$ 2,711	$ -	17.76%	$ 10,513	$ -	6.11%	$ 3,617	$ -	36	30%	$ 472,500
280	FY19 Data Centre Projects	Tech. Modernization	4716	$ -	4.58%	$ 3,443	$ -	17.76%	$ 13,350	$ -	6.11%	$ 4,593	$ -	36	30%	$ 600,000
281	1327 Interfaces - 523 FTS, 340 RDX, 245 MQSI, 253 JCAPS, 44 PM4D, 7 VB	Tech. Modernization	4706	$ -	4.58%	$ 5,680	$ -	17.76%	$ 22,027	$ -	6.11%	$ 7,578	$ -	36	30%	$ 990,000
282	US Video Conference Programme	Tech. Modernization	4497	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	30%	$ -
283	US SAP: Enhancement Pack 9 Upgrade	Tech. Modernization	4564	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
284	US Network Programme	Tech. Modernization	4496	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
285	US VSTIG Programme	Tech. Modernization	4498	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
286	US Wireless Programme	Tech. Modernization	4499	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
287	Monitoring and Alerting	Tech. Modernization	4493	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
288	Service Now - Release 3	Tech. Modernization	4261	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
289	IS Tools	Tech. Modernization	4513	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
290	FY20 Edge Projects	Tech. Modernization	4720	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
291	FY20 Network Projects	Tech. Modernization	4721	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
292	EMM Licenses	Tech. Modernization	4713	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
293	Business Innovation Projects 2	Tech. Modernization	4708	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
294	Business Innovation Projects 3	Tech. Modernization	4728	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
295	Data Security	Tech. Modernization	4710	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
296	Hardware and Software Upgrades	Tech. Modernization	4722	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
297	Data Centre Consolidation efforts	Tech. Modernization	4709	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
298	FY20 Data Centre Projects	Tech. Modernization	4719	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
299	Enterprise Data Management Platform	Tech. Modernization	4582	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
300	Business Innovation Projects 2	Tech. Modernization	4708	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
301	Business Innovation Projects 3	Tech. Modernization	4728	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
	Total IS			$ 39,465,183		$ 1,651,181	$ 2,882,291		$ 3,942,882	$ 8,483,947		$ 1,058,927	$ 1,993,695			$ 180,572,757

NIMO G	$ 4,533,472	NIMO E	$ 15,479,451
HTY NIMO G	$ -	HTY NIMO E	$ -
RY19 Adjust	$ 4,533,472	RY19 Adjust	$ 15,479,451

NIMO	$ 20,012,923
HTY NIMO	$ -
RY19 Adjust	$ 20,012,923

Niagara Mohawk Power Corporation d/b/a National Grid
Service Company Rents
Forecasted Service Company Capital Software allocated to Operating Companies as Rent Expense
For the Data Year ended March 31, 2020

Line	Investment Name	Programs	INVP #	Bill Pool	FY20 Total Spend	In Service Date	Amortization Period	4/1/2019 4/1/2019 Balance	3/31/2020 3/31/2020 Balance	Average Balance	9.9061% Service Co Return	Year Return	Return on Accum Taxes	Total Return
1	Cloud Security	Cyber Security	3683	G020	$ 1,460,000	5/1/2017	84	$ 1,060,238	$ 851,667	$ 955,952	9.9061%	$ 94,697	$ (33,762)	$ 60,936
2	Risk Based Authentication - 2FA token alternative	Cyber Security	3683	G020	$ 235,080	6/1/2017	84	$ 173,511	$ 139,929	$ 156,720	9.9061%	$ 15,525	$ (5,548)	$ 9,977
3	INVP 3614D1 Ent Network Security	Cyber Security	3614D1	G020	$ 9,478,590	6/30/2017	84	$ 7,108,943	$ 5,754,858	$ 6,431,900	9.9061%	$ 637,150	$ (228,174)	$ 408,976
4	Threat Behavior Modeling	Cyber Security	3683	G020	$ 800,000	8/1/2017	84	$ 609,524	$ 495,238	$ 552,381	9.9061%	$ 54,719	$ (19,637)	$ 35,082
5	Identity & Access Management :Role Base Access Management (RBAC)	Cyber Security	3683	G020	$ 1,650,000	10/1/2017	84	$ 1,296,429	$ 1,060,714	$ 1,178,571	9.9061%	$ 116,750	$ (42,066)	$ 74,684
6	Enhanced DLP Gateway and Endpoint	Cyber Security	3683	G020	$ 2,238,480	12/1/2017	84	$ 1,812,103	$ 1,492,320	$ 1,652,211	9.9061%	$ 163,669	$ (59,192)	$ 104,478
7	INVP 3614B7 CNI Network Security	Cyber Security	3614B7	G020	$ 4,829,586	12/31/2017	84	$ 3,967,160	$ 3,277,219	$ 3,622,189	9.9061%	$ 358,817	$ (129,998)	$ 228,819
8	INVP 3614E4 US CNI Security I&E	Cyber Security	3614E4	G020	$ 1,207,045	12/31/2017	84	$ 991,501	$ 819,066	$ 905,284	9.9061%	$ 89,678	$ (32,490)	$ 57,188
9	US CNI Intrusion Detection/Prevention Phase 1	Cyber Security	3683	G020	$ 550,000	3/31/2018	84	$ 471,429	$ 392,857	$ 432,143	9.9061%	$ 42,808	$ (14,289)	$ 28,519
10	Identity & Access Management: Fine Grain Access Management	Cyber Security	3683	G020	$ 1,650,000	3/31/2018	84	$ 1,414,286	$ 1,178,571	$ 1,296,429	9.9061%	$ 128,425	$ (42,867)	$ 85,558
11	vStig Scaling Upgrades	Cyber Security	3683	G020	$ 1,000,000	8/1/2018	84	$ 904,762	$ 761,905	$ 833,333	9.9061%	$ 82,551	$ (22,566)	$ 59,985
12	IT/OT Discovery and Implementation Phase 1	Cyber Security	3683	G020	$ 5,500,000	10/1/2018	84	$ 5,107,143	$ 4,321,429	$ 4,714,286	9.9061%	$ 467,001	$ (129,327)	$ 337,674
13	Security Research Lab	Cyber Security	3683	G020	$ 325,000	10/1/2018	84	$ 301,786	$ 255,357	$ 278,571	9.9061%	$ 27,596	$ (7,642)	$ 19,953
14	US CNI Security Enhancements Phase 1	Cyber Security	3683	G020	$ 1,650,000	11/1/2018	84	$ 1,551,786	$ 1,316,071	$ 1,433,929	9.9061%	$ 142,046	$ (39,580)	$ 102,466
15	Identity & Access Management: Privileged Access Management	Cyber Security	3683	G020	$ 1,740,000	3/31/2019	84	$ 1,740,000	$ 1,491,429	$ 1,615,714	9.9061%	$ 160,054	$ (32,004)	$ 128,050
16	Domain Based Security Phase 1	Cyber Security	3683	G020	$ 800,000	3/31/2019	84	$ 800,000	$ 685,714	$ 742,857	9.9061%	$ 73,588	$ (14,715)	$ 58,873
17	Security Incident Event Management Phase 4	Cyber Security	3683	G020	$ 1,266,300	5/1/2019	84	$ -	$ 1,100,475	$ 550,238	9.9061%	$ 54,507	$ (17,709)	$ 36,798
18	Big Data Security Analytics Phase 1	Cyber Security	3683	G020	$ 4,621,552	5/1/2019	84	$ -	$ 4,016,349	$ 2,008,174	9.9061%	$ 198,931	$ (64,632)	$ 134,300
19	US CNI Intrusion Detection/Prevention Phase 2	Cyber Security	3683	G020	$ 800,000	3/31/2020	84	$ -	$ 800,000	$ 400,000	9.9061%	$ 39,624	$ -	$ 39,624
20	Identity & Access Management: Shared Area Access Management	Cyber Security	3683	G020	$ 1,740,000	3/31/2020	84	$ -	$ 1,740,000	$ 870,000	9.9061%	$ 86,183	$ -	$ 86,183
21	Security Incident Event Management Phase 5	Cyber Security	3683	G020	$ 733,150	5/1/2020	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
22	Domain Based Security Phase 2	Cyber Security	3683	G020	$ 3,000,000	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
23	Security Incident Event Management (SIEM) 6	Cyber Security	3683	G020	$ -	5/1/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
24	Big Data Security Analytics - Phase 2	Cyber Security	3683	G020	$ 3,466,164	5/1/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
25	IT/OT Discovery and Implementation: Phase 2	Cyber Security	3683	G020	$ 3,769,230	10/1/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
26	US CNI Security Enhancements - Phase 2	Cyber Security	3683	G020	$ 2,640,000	11/1/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
27	Data Visualization	Cyber Security	3683	G020	$ -	12/1/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
29	INVP 4045 Double Pole Mgmt DB	FY18 Plan	4045	G198	$ 482,153	2/18/2017	84	$ 338,655	$ 269,776	$ 304,216	9.9061%	$ 30,136	$ (11,403)	$ 18,733
30	INVP 4373 Contingent Labor Admin Replacement	FY18 Plan	4373	G020	$ 250,692	2/20/2017	84	$ 176,082	$ 140,268	$ 158,175	9.9061%	$ 15,669	$ (5,929)	$ 9,740
32	INVP 4188 Aging System Stabilize	FY18 Plan	4188	G148	$ 782,710	3/31/2017	84	$ 559,079	$ 447,263	$ 503,171	9.9061%	$ 49,845	$ (18,883)	$ 30,962
33	INVP 4280 US VSTIG Bandwidth Ph2	FY18 Plan	4280	G020	$ 1,998,645	3/31/2017	84	$ 1,427,604	$ 1,142,083	$ 1,284,843	9.9061%	$ 127,278	$ (48,217)	$ 79,061
34	INVP 4307 US Win 7 Refresh Ph 3	FY18 Plan	4307	G020	$ 11,562,999	3/31/2017	84	$ 8,259,285	$ 6,607,428	$ 7,433,357	9.9061%	$ 736,355	$ (278,954)	$ 457,400
35	INVP 4364 Wireless Network	FY18 Plan	4364	G020	$ 2,303,959	3/31/2017	84	$ 1,645,685	$ 1,316,548	$ 1,481,116	9.9061%	$ 146,721	$ (55,582)	$ 91,138
36	S005242 M112 Systemic Improvement	FY18 Plan		G020	$ 8,000,000	3/31/2017	120	$ 6,400,000	$ 5,600,000	$ 6,000,000	9.9061%	$ 594,365	$ (227,131)	$ 367,234
37	INVP 4289 US Network Improvement	FY18 Plan	4289	G020	$ 978,717	3/31/2017	84	$ 699,083	$ 559,267	$ 629,175	9.9061%	$ 62,327	$ (23,611)	$ 38,715
38	HANA License Costs	FY18 Plan	4649	G020	$ 3,500,000	3/31/2017	84	$ 2,500,000	$ 2,000,000	$ 2,250,000	9.9061%	$ 222,887	$ (84,437)	$ 138,450
39	Microsoft ELA Renewal	FY18 Plan	4642	G020	$ 1,900,000	3/31/2017	84	$ 1,357,143	$ 1,085,714	$ 1,221,429	9.9061%	$ 120,996	$ (45,837)	$ 75,159
40	Mobile Device Refresh - FY17	FY18 Plan	4671	G020	$ 4,546,000	3/31/2017	84	$ 3,247,143	$ 2,597,714	$ 2,922,429	9.9061%	$ 289,498	$ (109,671)	$ 179,827
41	Zscaler	FY18 Plan	4681	G020	$ 2,100,000	3/31/2017	84	$ 1,500,000	$ 1,200,000	$ 1,350,000	9.9061%	$ 133,732	$ (50,662)	$ 83,070
43	INVP 4631 Box Enablement	FY18 Plan	4631	G020	$ 254,000	4/30/2017	84	$ 184,452	$ 148,167	$ 166,310	9.9061%	$ 16,475	$ (5,874)	$ 10,601
44	INVP 4170 Time Transformation	FY18 Plan	4170	G020	$ 3,917,000	5/1/2017	84	$ 2,844,488	$ 2,284,917	$ 2,564,702	9.9061%	$ 254,062	$ (90,578)	$ 163,483
45	INVP 4420 US CNI OMSFocalPoint Infrastructure Upgrade	FY18 Plan	4420	G198	$ 1,366,563	5/1/2017	84	$ 992,385	$ 797,162	$ 894,773	9.9061%	$ 88,637	$ (31,601)	$ 57,036
46	INVP 4274 VSTIG Hardware Refresh	FY18 Plan	4274	G020	$ 608,000	5/31/2017	84	$ 448,762	$ 361,905	$ 405,333	9.9061%	$ 40,153	$ (14,348)	$ 25,805
47	US Video Conferencing upgrade for RW	FY18 Plan	4632	G020	$ 1,330,000	6/1/2017	84	$ 981,667	$ 791,667	$ 886,667	9.9061%	$ 87,834	$ (31,386)	$ 56,448
48	Hix D/C Improvement Server Refresh	FY18 Plan	4676	G020	$ 1,000,000	7/1/2017	84	$ 750,000	$ 607,143	$ 678,571	9.9061%	$ 67,220	$ (24,073)	$ 43,147
49	INVP 4464 Data Visualization	FY18 Plan	4464	G020	$ 4,440,000	7/31/2017	84	$ 3,382,857	$ 2,748,571	$ 3,065,714	9.9061%	$ 303,692	$ (108,987)	$ 194,705
50	Mobility - (MDM) Mobile Device	FY18 Plan	3430	G020	$ 1,162,000	7/31/2017	84	$ 885,333	$ 719,333	$ 802,333	9.9061%	$ 79,480	$ (28,523)	$ 50,957
51	Changes to ACIS for PMCC Civil Vendor Billing	FY18 Plan	4487	G186	$ 382,000	8/2/2017	84	$ 291,048	$ 236,476	$ 263,762	9.9061%	$ 26,128	$ (9,377)	$ 16,752
52	INVP 4461 Unix51 Interface Migration	FY18 Plan	4461	G020	$ 1,386,701	9/1/2017	84	$ 1,073,042	$ 874,942	$ 973,992	9.9061%	$ 96,485	$ (34,696)	$ 61,788
53	INVP 4287 Active Directory Upgrade	FY18 Plan	4287	G020	$ 804,825	9/30/2017	84	$ 632,363	$ 517,388	$ 574,875	9.9061%	$ 56,948	$ (20,519)	$ 36,429
54	US Control-Gas System Operating Procedure (SOP) Upgrade	FY18 Plan	4480	G210	$ 542,000	10/2/2017	84	$ 425,857	$ 348,429	$ 387,143	9.9061%	$ 38,351	$ (13,818)	$ 24,533
55	Enterprise Labs	FY18 Plan	4693	G020	$ 668,000	10/30/2017	84	$ 532,810	$ 437,381	$ 485,095	9.9061%	$ 48,054	$ (17,347)	$ 30,707
56	Cascade Electric Application Upgrade Project	FY18 Plan	3986	G198	$ 375,000	10/31/2017	84	$ 299,107	$ 245,536	$ 272,321	9.9061%	$ 26,976	$ (9,738)	$ 17,238
57	INVP 4408 Doc Mgmt Systems Replacement Delivery	FY18 Plan	4408	G149	$ 3,617,542	11/1/2017	84	$ 2,885,420	$ 2,368,629	$ 2,627,025	9.9061%	$ 260,235	$ (93,943)	$ 166,292
58	WIFI for Fleet Services Diagnostic Laptops	FY18 Plan	3956	G352	$ 838,000	11/1/2017	84	$ 668,405	$ 548,690	$ 608,548	9.9061%	$ 60,283	$ (21,762)	$ 38,521
59	Gas Service Database - UNY	FY18 Plan	3949	5210G	$ 325,000	12/1/2017	84	$ 263,095	$ 216,667	$ 239,881	9.9061%	$ 23,763	$ (8,594)	$ 15,169
62	Gas Capital Investment Planning Tool	FY18 Plan	4466	G210	$ 572,000	1/17/2018	84	$ 476,667	$ 394,952	$ 435,810	9.9061%	$ 43,172	$ (15,330)	$ 27,841
63	Computapole Enhancements to Support Inspection Types	FY18 Plan	4462	G186	$ 450,000	3/1/2018	84	$ 380,357	$ 316,071	$ 348,214	9.9061%	$ 34,494	$ (12,274)	$ 22,221
64	Travel & Expense Management (T&E) and Global Master Service Provider (MSP) Strategy	FY18 Plan	4578	G020	$ 1,232,000	3/1/2018	84	$ 1,041,333	$ 865,333	$ 953,333	9.9061%	$ 94,438	$ (33,603)	$ 60,835
65	Ageing System Stabilization/Upgrades - FY18	FY18 Plan	4389	G148	$ 1,500,000	3/15/2018	84	$ 1,267,857	$ 1,053,571	$ 1,160,714	9.9061%	$ 114,981	$ (40,913)	$ 74,069
66	INVP 3486 US MDS-Itron Enterprise Edition (IEE)	FY18 Plan	3486	G186	$ 670,943	3/31/2018	84	$ 575,094	$ 479,245	$ 527,170	9.9061%	$ 52,222	$ (17,431)	$ 34,791
67	INVP 4390 Plastic Fusion II	FY18 Plan	4390	G207	$ 506,000	3/31/2018	84	$ 433,714	$ 361,429	$ 397,571	9.9061%	$ 39,384	$ (13,146)	$ 26,238
68	INVP 4397 Ariba TLS and CI Update	FY18 Plan	4397	G020	$ 1,462,000	3/31/2018	120	$ 1,315,800	$ 1,169,600	$ 1,242,700	9.9061%	$ 123,103	$ (41,725)	$ 81,378
69	US Mobile Device Refresh	FY18 Plan	4395	G020	$ 5,000,000	3/31/2018	84	$ 4,285,714	$ 3,571,429	$ 3,928,571	9.9061%	$ 389,168	$ -	$ 389,168
70	US SAP: Infrastructure Landscape	FY18 Plan	4348	G020	$ 4,603,000	3/31/2018	84	$ 3,945,429	$ 3,287,857	$ 3,616,643	9.9061%	$ 358,268	$ (119,586)	$ 238,682
71	US CNI Tech Services-Network Equipment Lifecycle Replacements	FY18 Plan	4570	G186	$ 250,000	3/31/2018	84	$ 214,286	$ 178,571	$ 196,429	9.9061%	$ 19,458	$ (6,495)	$ 12,963
72	US CNI-EMS Lifecycle Hardware and Software Upgrade	FY18 Plan	4568	U186	$ 13,348,000	3/31/2018	84	$ 11,441,143	$ 9,534,286	$ 10,487,714	9.9061%	$ 1,038,922	$ (346,780)	$ 692,142
73	Network Transformation Completion - CEMS	FY18 Plan	4647	G020	$ 250,000	3/31/2018	84	$ 214,286	$ 178,571	$ 196,429	9.9061%	$ 19,458	$ (6,495)	$ 12,963
74	Application monitoring, Network/IDS, Operations monitoring	FY18 Plan	4677	G020	$ 750,000	3/31/2018	84	$ 642,857	$ 535,714	$ 589,286	9.9061%	$ 58,375	$ (19,485)	$ 38,890
75	Aged Printer refresh	FY18 Plan	4689	G020	$ 50,000	3/31/2018	84	$ 42,857	$ 35,714	$ 39,286	9.9061%	$ 3,892	$ (1,299)	$ 2,593
76	RSA Token refresh	FY18 Plan	4683	G020	$ 200,000	3/31/2018	84	$ 171,429	$ 142,857	$ 157,143	9.9061%	$ 15,567	$ (5,196)	$ 10,371
78	INVP4449 - EPA File	FY18 Plan	4449	C170	$ 700,000	3/31/2018	84	$ 600,000	$ 500,000	$ 550,000	9.9061%	$ 54,483	$ (18,186)	$ 36,298
79	Informatica Upgrade/Microstrategy Replacement Program	FY18 Plan	4469	G020	$ 3,516,000	5/1/2018	84	$ 3,055,571	$ 2,553,286	$ 2,804,429	9.9061%	$ 277,809	$ (74,341)	$ 203,468
80	Call Center Customer Contact Center/SDC Technology Upgrade Implement Solution	FY18 Plan	3932	C175	$ 27,724,719	8/31/2018	84	$ 25,414,326	$ 21,453,652	$ 23,433,989	9.9061%	$ 2,321,391	$ (638,778)	$ 1,682,613

Niagara Mohawk Power Corporation d/b/a National Grid
Service Company Rents
Forecasted Service Company Capital Software allocated to Operating Companies as Rent Expense
For the Data Year ended March 31, 2020

Line	Investment Name	Programs	INVP #	Year Amortization	5210G NIMO G Allocation	NIMO G Rent-Return	NIMO G Rent - Depn	5210E NIMO E Allocation	NIMO E Rent-Return	NIMO E Rent - Depn	5210T NIMO T Allocation	NIMO T Rent-Return	NIMO T Rent - Depn	Amortization Period	Bonus Rate	Bonus Depreciation
1	Cloud Security	Cyber Security	3683	$ 208,571	4.58%	$ 2,791	$ 9,553	17.76%	$ 10,822	$ 37,042	6.11%	$ 3,723	$ 12,744	36	50%	$ 730,000
2	Risk Based Authentication - 2FA token alternative	Cyber Security	3683	$ 33,583	4.58%	$ 457	$ 1,538	17.76%	$ 1,772	$ 5,964	6.11%	$ 610	$ 2,052	36	50%	$ 117,540
3	INVP 3614D1 Ent Network Security	Cyber Security	3614D1	$ 1,354,084	4.58%	$ 18,731	$ 62,017	17.76%	$ 72,634	$ 240,485	6.11%	$ 24,988	$ 82,735	36	50%	$ 4,739,295
4	Threat Behavior Modeling	Cyber Security	3683	$ 114,286	4.58%	$ 1,607	$ 5,234	17.76%	$ 6,231	$ 20,297	6.11%	$ 2,144	$ 6,983	36	50%	$ 400,000
5	Identity & Access Management :Role Base Access Management (RBAC)	Cyber Security	3683	$ 235,714	4.58%	$ 3,421	$ 10,796	17.76%	$ 13,264	$ 41,863	6.11%	$ 4,563	$ 14,402	36	50%	$ 825,000
6	Enhanced DLP Gateway and Endpoint	Cyber Security	3683	$ 319,783	4.58%	$ 4,785	$ 14,646	17.76%	$ 18,555	$ 56,793	6.11%	$ 6,384	$ 19,539	36	50%	$ 1,119,240
7	INVP 3614B7 CNI Network Security	Cyber Security	3614B7	$ 689,941	4.58%	$ 10,480	$ 31,599	17.76%	$ 40,638	$ 122,533	6.11%	$ 13,981	$ 42,155	36	50%	$ 2,414,793
8	INVP 3614E4 US CNI Security I&E	Cyber Security	3614E4	$ 172,435	4.58%	$ 2,619	$ 7,898	17.76%	$ 10,157	$ 30,624	6.11%	$ 3,494	$ 10,536	36	50%	$ 603,522
9	US CNI Intrusion Detection/Prevention Phase 1	Cyber Security	3683	$ 78,571	4.58%	$ 1,306	$ 3,599	17.76%	$ 5,065	$ 13,954	6.11%	$ 1,743	$ 4,801	36	40%	$ 220,000
10	Identity & Access Management: Fine Grain Access Management	Cyber Security	3683	$ 235,714	4.58%	$ 3,919	$ 10,796	17.76%	$ 15,195	$ 41,863	6.11%	$ 5,228	$ 14,402	36	40%	$ 660,000
11	vStig Scaling Upgrades	Cyber Security	3683	$ 142,857	4.58%	$ 2,747	$ 6,543	17.76%	$ 10,653	$ 25,371	6.11%	$ 3,665	$ 8,729	36	40%	$ 400,000
12	IT/OT Discovery and Implementation Phase 1	Cyber Security	3683	$ 785,714	4.58%	$ 15,465	$ 35,986	17.76%	$ 59,971	$ 139,543	6.11%	$ 20,632	$ 48,007	36	40%	$ 2,200,000
13	Security Research Lab	Cyber Security	3683	$ 46,429	4.58%	$ 914	$ 2,126	17.76%	$ 3,544	$ 8,246	6.11%	$ 1,219	$ 2,837	36	40%	$ 130,000
14	US CNI Security Enhancements Phase 1	Cyber Security	3683	$ 235,714	4.58%	$ 4,693	$ 10,796	17.76%	$ 18,198	$ 41,863	6.11%	$ 6,261	$ 14,402	36	40%	$ 660,000
15	Identity & Access Management: Privileged Access Management	Cyber Security	3683	$ 248,571	4.58%	$ 5,865	$ 11,385	17.76%	$ 22,742	$ 44,146	6.11%	$ 7,824	$ 15,188	36	30%	$ 522,000
16	Domain Based Security Phase 1	Cyber Security	3683	$ 114,286	4.58%	$ 2,696	$ 5,234	17.76%	$ 10,456	$ 20,297	6.11%	$ 3,597	$ 6,983	36	30%	$ 240,000
17	Security Incident Event Management Phase 4	Cyber Security	3683	$ 165,825	4.58%	$ 1,685	$ 7,595	17.76%	$ 6,535	$ 29,451	6.11%	$ 2,248	$ 10,132	36	30%	$ 379,890
18	Big Data Security Analytics Phase 1	Cyber Security	3683	$ 605,203	4.58%	$ 6,151	$ 27,718	17.76%	$ 23,852	$ 107,484	6.11%	$ 8,206	$ 36,978	36	30%	$ 1,386,466
19	US CNI Intrusion Detection/Prevention Phase 2	Cyber Security	3683	$ -	4.58%	$ 1,815	$ -	17.76%	$ 7,037	$ -	6.11%	$ 2,421	$ -	36	0%	$ -
20	Identity & Access Management: Shared Area Access Management	Cyber Security	3683	$ -	4.58%	$ 3,947	$ -	17.76%	$ 15,306	$ -	6.11%	$ 5,266	$ -	36	0%	$ -
21	Security Incident Event Management Phase 5	Cyber Security	3683	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
22	Domain Based Security Phase 2	Cyber Security	3683	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
23	Security Incident Event Management (SIEM) 6	Cyber Security	3683	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
24	Big Data Security Analytics - Phase 2	Cyber Security	3683	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
25	IT/OT Discovery and Implementation: Phase 2	Cyber Security	3683	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
26	US CNI Security Enhancements - Phase 2	Cyber Security	3683	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
27	Data Visualization	Cyber Security	3683	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
29	INVP 4045 Double Pole Mgmt DB	FY18 Plan	4045	$ 68,879	0.00%	$ -	$ -	41.93%	$ 7,855	$ 28,881	0.00%	$ -	$ -	36	50%	$ 241,077
30	INVP 4373 Contingent Labor Admin Replacement	FY18 Plan	4373	$ 35,813	4.58%	$ 446	$ 1,640	17.76%	$ 1,730	$ 6,360	6.11%	$ 595	$ 2,188	36	50%	$ 125,346
32	INVP 4188 Aging System Stabilize	FY18 Plan	4188	$ 111,816	4.83%	$ 1,495	$ 5,401	18.77%	$ 5,812	$ 20,988	6.43%	$ 1,991	$ 7,190	36	50%	$ 391,355
33	INVP 4280 US VSTIG Bandwidth Ph2	FY18 Plan	4280	$ 285,521	4.58%	$ 3,621	$ 13,077	17.76%	$ 14,041	$ 50,708	6.11%	$ 4,831	$ 17,445	36	50%	$ 999,323
34	INVP 4307 US Win 7 Refresh Ph 3	FY18 Plan	4307	$ 1,651,857	4.58%	$ 20,949	$ 75,655	17.76%	$ 81,234	$ 293,370	6.11%	$ 27,947	$ 100,928	36	50%	$ 5,781,500
35	INVP 4364 Wireless Network	FY18 Plan	4364	$ 329,137	4.58%	$ 4,174	$ 15,074	17.76%	$ 16,186	$ 58,455	6.11%	$ 5,569	$ 20,110	36	50%	$ 1,151,979
36	S005242 M112 Systemic Improvement	FY18 Plan		$ 800,000	4.58%	$ 16,819	$ 36,640	17.76%	$ 65,221	$ 142,080	6.11%	$ 22,438	$ 48,880	36	50%	$ 4,000,000
37	INVP 4289 US Network Improvement	FY18 Plan	4289	$ 139,817	4.58%	$ 1,773	$ 6,404	17.76%	$ 6,876	$ 24,831	6.11%	$ 2,366	$ 8,543	36	50%	$ 489,358
38	HANA License Costs	FY18 Plan	4649	$ 500,000	4.58%	$ 6,341	$ 22,900	17.76%	$ 24,589	$ 88,800	6.11%	$ 8,459	$ 30,550	36	50%	$ 1,750,000
39	Microsoft ELA Renewal	FY18 Plan	4642	$ 271,429	4.58%	$ 3,442	$ 12,431	17.76%	$ 13,348	$ 48,206	6.11%	$ 4,592	$ 16,584	36	50%	$ 950,000
40	Mobile Device Refresh - FY17	FY18 Plan	4671	$ 649,429	4.58%	$ 8,236	$ 29,744	17.76%	$ 31,937	$ 115,339	6.11%	$ 10,987	$ 39,680	36	50%	$ 2,273,000
41	Zscaler	FY18 Plan	4681	$ 300,000	4.58%	$ 3,805	$ 13,740	17.76%	$ 14,753	$ 53,280	6.11%	$ 5,076	$ 18,330	36	50%	$ 1,050,000
43	INVP 4631 Box Enablement	FY18 Plan	4631	$ 36,286	4.58%	$ 486	$ 1,662	17.76%	$ 1,883	$ 6,444	6.11%	$ 648	$ 2,217	36	50%	$ 127,000
44	INVP 4170 Time Transformation	FY18 Plan	4170	$ 559,571	4.58%	$ 7,488	$ 25,628	17.76%	$ 29,035	$ 99,380	6.11%	$ 9,989	$ 34,190	36	50%	$ 1,958,500
45	INVP 4420 US CNI OMSFocalPoint Infrastructure Upgrade	FY18 Plan	4420	$ 195,223	0.00%	$ -	$ -	41.93%	$ 23,915	$ 81,857	0.00%	$ -	$ -	36	50%	$ 683,282
46	INVP 4274 VSTIG Hardware Refresh	FY18 Plan	4274	$ 86,857	4.58%	$ 1,182	$ 3,978	17.76%	$ 4,583	$ 15,426	6.11%	$ 1,577	$ 5,307	36	50%	$ 304,000
47	US Video Conferencing upgrade for RW	FY18 Plan	4632	$ 190,000	4.58%	$ 2,585	$ 8,702	17.76%	$ 10,025	$ 33,744	6.11%	$ 3,449	$ 11,609	36	50%	$ 665,000
48	Hix D/C Improvement Server Refresh	FY18 Plan	4676	$ 142,857	4.58%	$ 1,976	$ 6,543	17.76%	$ 7,663	$ 25,371	6.11%	$ 2,636	$ 8,729	36	50%	$ 500,000
49	INVP 4464 Data Visualization	FY18 Plan	4464	$ 634,286	4.58%	$ 8,918	$ 29,050	17.76%	$ 34,580	$ 112,649	6.11%	$ 11,896	$ 38,755	36	50%	$ 2,220,000
50	Mobility - (MDM) Mobile Device	FY18 Plan	3430	$ 166,000	4.58%	$ 2,334	$ 7,603	17.76%	$ 9,050	$ 29,482	6.11%	$ 3,113	$ 10,143	36	50%	$ 581,000
51	Changes to ACIS for PMCC Civil Vendor Billing	FY18 Plan	4487	$ 54,571	0.00%	$ -	$ -	30.74%	$ 5,149	$ 16,775	10.99%	$ 1,841	$ 5,997	36	50%	$ 191,000
52	INVP 4461 Unix51 Interface Migration	FY18 Plan	4461	$ 198,100	4.58%	$ 2,830	$ 9,073	17.76%	$ 10,974	$ 35,183	6.11%	$ 3,775	$ 12,104	36	50%	$ 693,351
53	INVP 4287 Active Directory Upgrade	FY18 Plan	4287	$ 114,975	4.58%	$ 1,668	$ 5,266	17.76%	$ 6,470	$ 20,420	6.11%	$ 2,226	$ 7,025	36	50%	$ 402,413
54	US Control-Gas System Operating Procedure (SOP) Upgrade	FY18 Plan	4480	$ 77,429	12.44%	$ 3,052	$ 9,632	0.00%	$ -	$ -	0.00%	$ -	$ -	36	50%	$ 271,000
55	Enterprise Labs	FY18 Plan	4693	$ 95,429	4.58%	$ 1,406	$ 4,371	17.76%	$ 5,454	$ 16,948	6.11%	$ 1,876	$ 5,831	36	50%	$ 334,000
56	Cascade Electric Application Upgrade Project	FY18 Plan	3986	$ 53,571	0.00%	$ -	$ -	41.93%	$ 7,228	$ 22,463	0.00%	$ -	$ -	36	50%	$ 187,500
57	INVP 4408 Doc Mgmt Systems Replacement Delivery	FY18 Plan	4408	$ 516,792	4.61%	$ 7,666	$ 23,824	17.88%	$ 29,733	$ 92,402	6.15%	$ 10,227	$ 31,783	36	50%	$ 1,808,771
58	WIFI for Fleet Services Diagnostic Laptops	FY18 Plan	3956	$ 119,714	4.63%	$ 1,784	$ 5,543	17.94%	$ 6,911	$ 21,477	6.17%	$ 2,377	$ 7,386	36	50%	$ 419,000
59	Gas Service Database - UNY	FY18 Plan	3949	$ 46,429	100.00%	$ 15,169	$ 46,429	0.00%	$ -	$ -	0.00%	$ -	$ -	36	50%	$ 162,500
62	Gas Capital Investment Planning Tool	FY18 Plan	4466	$ 81,714	12.44%	$ 3,463	$ 10,165	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 228,800
63	Computapole Enhancements to Support Inspection Types	FY18 Plan	4462	$ 64,286	0.00%	$ -	$ -	30.74%	$ 6,831	$ 19,761	10.99%	$ 2,442	$ 7,065	36	40%	$ 180,000
64	Travel & Expense Management (T&E) and Global Master Service Provider (MSP) Strategy	FY18 Plan	4578	$ 176,000	4.58%	$ 2,786	$ 8,061	17.76%	$ 10,804	$ 31,258	6.11%	$ 3,717	$ 10,754	36	40%	$ 492,800
65	Ageing System Stabilization/Upgrades - FY18	FY18 Plan	4389	$ 214,286	4.83%	$ 3,578	$ 10,350	18.77%	$ 13,903	$ 40,221	6.43%	$ 4,763	$ 13,779	36	40%	$ 600,000
66	INVP 3486 US MDS-Itron Enterprise Edition (IEE)	FY18 Plan	3486	$ 95,849	0.00%	$ -	$ -	30.74%	$ 10,695	$ 29,464	10.99%	$ 3,824	$ 10,534	36	40%	$ 268,377
67	INVP 4390 Plastic Fusion II	FY18 Plan	4390	$ 72,286	19.47%	$ 5,109	$ 14,074	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 202,400
68	INVP 4397 Ariba TLS and CI Update	FY18 Plan	4397	$ 146,200	4.58%	$ 3,727	$ 6,696	17.76%	$ 14,453	$ 25,965	6.11%	$ 4,972	$ 8,933	36	40%	$ 584,800
69	US Mobile Device Refresh	FY18 Plan	4395	$ 714,286	4.58%	$ 17,824	$ 32,714	17.76%	$ 69,116	$ 126,857	6.11%	$ 23,778	$ 43,643	36	40%	$ 2,000,000
70	US SAP: Infrastructure Landscape	FY18 Plan	4348	$ 657,571	4.58%	$ 10,932	$ 30,117	17.76%	$ 42,390	$ 116,785	6.11%	$ 14,583	$ 40,178	36	40%	$ 1,841,200
71	US CNI Tech Services-Network Equipment Lifecycle Replacements	FY18 Plan	4570	$ 35,714	0.00%	$ -	$ -	30.74%	$ 3,985	$ 10,979	10.99%	$ 1,425	$ 3,925	36	40%	$ 100,000
72	US CNI-EMS Lifecycle Hardware and Software Upgrade	FY18 Plan	4568	$ 1,906,857	0.00%	$ -	$ -	26.20%	$ 181,341	$ 499,597	35.42%	$ 245,157	$ 675,409	36	40%	$ 5,339,200
73	Network Transformation Completion - CEMS	FY18 Plan	4647	$ 35,714	4.58%	$ 594	$ 1,636	17.76%	$ 2,302	$ 6,343	6.11%	$ 792	$ 2,182	36	40%	$ 100,000
74	Application monitoring, Network/IDS, Operations monitoring	FY18 Plan	4677	$ 107,143	4.58%	$ 1,781	$ 4,907	17.76%	$ 6,907	$ 19,029	6.11%	$ 2,376	$ 6,546	36	40%	$ 300,000
75	Aged Printer refresh	FY18 Plan	4689	$ 7,143	4.58%	$ 119	$ 327	17.76%	$ 460	$ 1,269	6.11%	$ 158	$ 436	36	40%	$ 20,000
76	RSA Token refresh	FY18 Plan	4683	$ 28,571	4.58%	$ 475	$ 1,309	17.76%	$ 1,842	$ 5,074	6.11%	$ 634	$ 1,746	36	40%	$ 80,000
78	INVP4449 - EPA File	FY18 Plan	4449	$ 100,000	14.88%	$ 5,401	$ 14,880	40.06%	$ 14,541	$ 40,060	0.00%	$ -	$ -	36	40%	$ 280,000
79	Informatica Upgrade/Microstrategy Replacement Program	FY18 Plan	4469	$ 502,286	4.58%	$ 9,319	$ 23,005	17.76%	$ 36,136	$ 89,206	6.11%	$ 12,432	$ 30,690	36	40%	$ 1,406,400
80	Call Center Customer Contact Center/SDC Technology Upgrade Implement Solution	FY18 Plan	3932	$ 3,960,674	8.65%	$ 145,557	$ 342,625	23.28%	$ 391,699	$ 922,013	0.00%	$ -	$ -	36	40%	$ 11,089,888

Niagara Mohawk Power Corporation d/b/a National Grid
Service Company Rents
Forecasted Service Company Capital Software allocated to Operating Companies as Rent Expense
For the Data Year ended March 31, 2020

Line	Investment Name	Programs	INVP #	Bill Pool	FY20 Total Spend	In Service Date	Amortization Period	4/1/2019 4/1/2019 Balance	3/31/2020 3/31/2020 Balance	Average Balance	9.9061% Service Co Return	Year Return	Return on Accum Taxes	Total Return
81	US MDS-Energy Accounting System (EAS) migration to Wholesale Settlement Application (WSA)	FY18 Plan	4481	G186	$ 2,160,000	10/1/2018	84	$ 2,005,714	$ 1,697,143	$ 1,851,429	9.9061%	$ 183,404	$ (50,790)	$ 132,614
82	INVP 4398 Storms/ISched Upgrade	FY18 Plan	4398	G160	$ 9,955,867	12/15/2018	84	$ 9,481,778	$ 8,059,511	$ 8,770,644	9.9061%	$ 868,828	$ (243,543)	$ 625,285
84	STORMS Capital Cost Estimates	FY18 Plan	4467	G148	$ 776,000	3/1/2019	84	$ 766,762	$ 655,905	$ 711,333	9.9061%	$ 70,465	$ (18,713)	$ 51,752
86	US CNI Tech Services-Network Equipment Lifecycle Replacements	FY18 Plan	4570	G186	$ 250,000	3/31/2019	84	$ 250,000	$ 214,286	$ 232,143	9.9061%	$ 22,996	$ (4,598)	$ 18,398
87	Inventory Management Handheld Devices	FY18 Plan		G020	$ 75,000	3/31/2019	84	$ 75,000	$ 64,286	$ 69,643	9.9061%	$ 6,899	$ (1,379)	$ 5,519
88	Customer Bill Redesign	FY18 Plan	4704Q	H173	$ 2,108,147	3/31/2019	84	$ 2,108,147	$ 1,806,983	$ 1,957,565	9.9061%	$ 193,918	$ (38,776)	$ 155,142
89	INVP 3737 US CNI GMS SCADA Upgrade &	FY18 Plan	3737	C210	$ 25,930,291	3/31/2020	84	$ -	$ 25,930,291	$ 12,965,146	9.9061%	$ 1,284,338	$ -	$ 1,284,338
90	Cisco Prime	FY18 Plan	4679	G020	$ 432,000	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
91	Contractor Management Modernization	FY18 Plan	4151	G327	$ 3,750,000	10/15/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
92	Risk Management (Tx Mains & Dx Mains)	GBE- Asset Management		C210	$ 2,110,800	12/1/2017	120	$ 1,829,360	$ 1,618,280	$ 1,723,820	9.9061%	$ 170,763	$ (62,420)	$ 108,343
93	AM Program Leadership-1	GBE- Asset Management		C210	$ 277,124	3/1/2018	120	$ 247,102	$ 219,390	$ 233,246	9.9061%	$ 23,106	$ (8,307)	$ 14,798
94	Enhancements	GBE- Asset Management		C210	$ 2,660,875	12/1/2018	120	$ 2,572,179	$ 2,306,092	$ 2,439,136	9.9061%	$ 241,623	$ (68,875)	$ 172,748
95	Additional IM Modules	GBE- Asset Management		C210	$ 716,840	2/1/2019	120	$ 704,892	$ 633,208	$ 669,050	9.9061%	$ 66,277	$ (17,762)	$ 48,515
96	AM Program Leadership-2	GBE- Asset Management		C210	$ 398,676	3/1/2019	120	$ 395,354	$ 355,486	$ 375,420	9.9061%	$ 37,189	$ (10,011)	$ 27,179
97	Data Remediation, GIS Upgrade/ Migration & GIS Mobility	GBE- Asset Management		C210	$ 11,311,759	3/1/2019	120	$ 11,217,494	$ 10,086,318	$ 10,651,906	9.9061%	$ 1,055,187	$ (284,040)	$ 771,147
98	EAM-FIN Integration	GBE- Asset Management		C210	$ 1,778,102	6/1/2019	120	$ -	$ 1,629,927	$ 814,963	9.9061%	$ 80,731	$ (26,552)	$ 54,179
99	Integrity Management Integrations	GBE- Asset Management		C210	$ 1,088,112	10/1/2019	120	$ -	$ 1,033,706	$ 516,853	9.9061%	$ 51,200	$ (16,971)	$ 34,229
100	AM Program Leadership-3	GBE- Asset Management		C210	$ 408,336	3/1/2020	120	$ -	$ 404,933	$ 202,467	9.9061%	$ 20,057	$ (2,642)	$ 17,414
101	Design (GWD), Estimating (CU), & Mobility	GBE- Asset Management		C210	$ 6,649,865	9/1/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
102	Asset Analytics Integration	GBE- Asset Management		C210	$ -	12/1/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
103	GIS (GWD/CU) - PPM Integration	GBE- Asset Management		C210	$ -	12/1/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
104	GIS-EAM Integration	GBE- Asset Management		C210	$ 4,536,424	12/2/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
105	AM Program Leadership-4	GBE- Asset Management		C210	$ -	3/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
106	Use Case No.1 - Asset Risk	GBE- Asset Management		C210	$ -	3/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
107	Complex Design (CAD) & Estimating (ESW)	GBE- Asset Management		C210	$ -	3/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
108	Program Learning Management-1	GBE- Business Enablement		C210	$ 117,297	3/1/2018	120	$ 104,590	$ 92,860	$ 98,725	9.9061%	$ 9,780	$ (3,516)	$ 6,264
109	Program Transformational Change Office-1	GBE- Business Enablement		C210	$ 689,043	3/1/2018	120	$ 614,397	$ 545,492	$ 579,944	9.9061%	$ 57,450	$ (20,656)	$ 36,794
110	Program Business Sustainment-1	GBE- Business Enablement		C210	$ 69,617	3/1/2019	120	$ 69,037	$ 62,075	$ 65,556	9.9061%	$ 6,494	$ (1,748)	$ 4,746
111	Program Learning Management-2	GBE- Business Enablement		C210	$ 130,211	3/1/2019	120	$ 129,126	$ 116,105	$ 122,615	9.9061%	$ 12,146	$ (3,270)	$ 8,877
112	Program Transformational Change Office -2	GBE- Business Enablement		C210	$ 1,516,310	3/1/2019	120	$ 1,503,674	$ 1,352,043	$ 1,427,858	9.9061%	$ 141,445	$ (38,075)	$ 103,370
113	Program Learning Management-3	GBE- Business Enablement		C210	$ 173,060	3/1/2020	120	$ -	$ 171,618	$ 85,809	9.9061%	$ 8,500	$ (1,120)	$ 7,381
114	Program Transformational Change Office-3	GBE- Business Enablement		C210	$ 368,704	3/1/2020	120	$ -	$ 365,632	$ 182,816	9.9061%	$ 18,110	$ (2,386)	$ 15,724
115	Program Business Sustainment-2	GBE- Business Enablement		C210	$ -	3/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
116	Program Learning Management-4	GBE- Business Enablement		C210	$ -	3/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
117	Program Transformational Change Office-4	GBE- Business Enablement		C210	$ -	3/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
118	Customer Experience Program Leadership-1	GBE- Customer Engagement		C210	$ 260,229	3/1/2019	120	$ 258,060	$ 232,038	$ 245,049	9.9061%	$ 24,275	$ (6,534)	$ 17,740
119	CxT Portal & Channel Management	GBE- Customer Engagement		C210	$ 11,875,000	6/1/2019	120	$ -	$ 10,885,417	$ 5,442,708	9.9061%	$ 539,159	$ (177,329)	$ 361,830
120	Customer Interaction - First Release	GBE- Customer Engagement		C210	$ 4,796,546	10/1/2019	120	$ -	$ 4,556,718	$ 2,278,359	9.9061%	$ 225,696	$ (74,810)	$ 150,886
121	Employee Support Interaction - First Release	GBE- Customer Engagement		C210	$ 7,954,131	10/1/2019	120	$ -	$ 7,556,424	$ 3,778,212	9.9061%	$ 374,273	$ (124,058)	$ 250,215
122	Customer Experience Program Leadership-2	GBE- Customer Engagement		C210	$ 266,277	3/1/2020	120	$ -	$ 264,058	$ 132,029	9.9061%	$ 13,079	$ (1,723)	$ 11,356
123	CRM / Contact Center	GBE- Customer Engagement		C210	$ 19,000,000	6/1/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
124	Large Commercial & Landlord Interaction	GBE- Customer Engagement		C210	$ 35,376	7/1/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
125	Employee Support Interaction - Second Release	GBE- Customer Engagement		C210	$ -	7/1/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
126	Customer Interaction - Second Release	GBE- Customer Engagement		C210	$ -	1/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
127	Customer Experience Program Leadership-3	GBE- Customer Engagement		C210	$ -	3/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
128	Data Management Implementation (Quality & Cleansing)	GBE- Data Management		C210	$ 11,100,000	12/1/2017	120	$ 9,620,000	$ 8,510,000	$ 9,065,000	9.9061%	$ 897,987	$ (328,247)	$ 569,739
129	Data Management & Governance Program Leadership-1	GBE- Data Management		C210	$ 58,890	3/1/2018	120	$ 52,510	$ 46,621	$ 49,566	9.9061%	$ 4,910	$ (1,765)	$ 3,145
130	Enable the Data Archive Process	GBE- Data Management		C210	$ 2,179,480	3/1/2019	120	$ 2,161,318	$ 1,943,370	$ 2,052,344	9.9061%	$ 203,307	$ (54,727)	$ 148,580
131	Data Management & Governance Program Leadership-2	GBE- Data Management		C210	$ 87,954	3/1/2019	120	$ 87,221	$ 78,426	$ 82,823	9.9061%	$ 8,205	$ (2,209)	$ 5,996
132	Data Management & Governance Program Leadership-3	GBE- Data Management		C210	$ 89,713	3/1/2020	120	$ -	$ 88,965	$ 44,483	9.9061%	$ 4,406	$ (580)	$ 3,826
133	PowerPlan Architecture Enhancements	GBE- Information Services Enabling		C210	$ 6,080,111	11/1/2017	120	$ 5,218,762	$ 4,610,751	$ 4,914,756	9.9061%	$ 486,860	$ (177,782)	$ 309,078
134	Comprehensive Integration Services (Enhancements)	GBE- Information Services Enabling		C210	$ 78,624	12/1/2017	120	$ 68,141	$ 60,278	$ 64,210	9.9061%	$ 6,361	$ (2,325)	$ 4,036
135	Application (Environment) Infrastructure	GBE- Information Services Enabling		C210	$ 2,174,410	12/1/2017	120	$ 1,884,489	$ 1,667,048	$ 1,775,768	9.9061%	$ 175,909	$ (64,301)	$ 111,608
136	Development Operations & BPA Enablement-1	GBE- Information Services Enabling		C210	$ 2,903,920	3/1/2018	120	$ 2,589,329	$ 2,298,937	$ 2,444,133	9.9061%	$ 242,118	$ (87,052)	$ 155,066
137	SAP and Application Integration Development- Release 1-1	GBE- Information Services Enabling		C210	$ 4,765,187	3/1/2018	120	$ 4,248,958	$ 3,772,440	$ 4,010,699	9.9061%	$ 397,303	$ (142,848)	$ 254,455
138	Mobility CoE & End-User Computing-1	GBE- Information Services Enabling		C210	$ 604,790	3/1/2018	120	$ 539,271	$ 478,792	$ 509,032	9.9061%	$ 50,425	$ (18,130)	$ 32,295
139	Operations/System Monitoring	GBE- Information Services Enabling		C210	$ 1,057,768	8/1/2018	120	$ 987,251	$ 881,474	$ 934,362	9.9061%	$ 92,559	$ (25,976)	$ 66,583
140	Development Operations & BPA Enablement-2	GBE- Information Services Enabling		C210	$ 2,562,011	3/1/2019	120	$ 2,540,661	$ 2,284,460	$ 2,412,560	9.9061%	$ 238,990	$ (64,332)	$ 174,658
141	SAP and Application Integration Development- Release 1-2	GBE- Information Services Enabling		C210	$ 4,548,168	3/1/2019	120	$ 4,510,266	$ 4,055,449	$ 4,282,858	9.9061%	$ 424,264	$ (114,205)	$ 310,059
142	SAP and Application Integration Development- Release 2-1	GBE- Information Services Enabling		C210	$ 5,055,712	3/1/2019	120	$ 5,013,581	$ 4,508,009	$ 4,760,795	9.9061%	$ 471,608	$ (126,950)	$ 344,659
143	Mobility CoE & End-User Computing-2	GBE- Information Services Enabling		C210	$ 920,536	3/1/2019	120	$ 912,865	$ 820,811	$ 866,838	9.9061%	$ 85,870	$ (23,115)	$ 62,755
144	Development Operations & BPA Enablement-3	GBE- Information Services Enabling		C210	$ 2,164,144	3/1/2020	120	$ -	$ 2,146,110	$ 1,073,055	9.9061%	$ 106,298	$ (14,003)	$ 92,295
145	SAP and Application Integration Development- Release 1-3	GBE- Information Services Enabling		C210	$ 600,000	3/1/2020	120	$ -	$ 595,000	$ 297,500	9.9061%	$ 29,471	$ (3,882)	$ 25,588
146	SAP and Application Integration Development- Release 2-2	GBE- Information Services Enabling		C210	$ 4,397,065	3/1/2020	120	$ -	$ 4,360,423	$ 2,180,211	9.9061%	$ 215,974	$ (28,451)	$ 187,522
147	SAP and Application Integration Development- Release 3-1	GBE- Information Services Enabling		C210	$ 85,915	3/1/2020	120	$ -	$ 85,199	$ 42,599	9.9061%	$ 4,220	$ (556)	$ 3,664
148	Mobility CoE & End-User Computing-3	GBE- Information Services Enabling		C210	$ 1,031,843	3/1/2020	120	$ -	$ 1,023,244	$ 511,622	9.9061%	$ 50,682	$ (6,677)	$ 44,005
149	Test Automation Implementation	GBE- Information Services Enabling		C210	$ 2,289,034	12/1/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
150	Development Operations & BPA Enablement-4	GBE- Information Services Enabling		C210	$ -	3/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
151	SAP and Application Integration Development- Release 1-4	GBE- Information Services Enabling		C210	$ -	3/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
152	SAP and Application Integration Development- Release 3-2	GBE- Information Services Enabling		C210	$ -	3/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
153	Mobility CoE & End-User Computing-4	GBE- Information Services Enabling		C210	$ -	3/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
154	Portfolio Management Leadership-1	GBE- Portfolio Office		C210	$ 1,645,919	3/1/2018	120	$ 1,467,611	$ 1,303,019	$ 1,385,315	9.9061%	$ 137,231	$ (49,340)	$ 87,890
155	Solution Architects & Agile Coaches-1	GBE- Portfolio Office		C210	$ 1,958,277	3/1/2018	120	$ 1,746,130	$ 1,550,303	$ 1,648,217	9.9061%	$ 163,274	$ (58,704)	$ 104,570
156	Portfolio Management Leadership-2	GBE- Portfolio Office		C210	$ 2,144,482	3/1/2019	120	$ 2,126,611	$ 1,912,163	$ 2,019,387	9.9061%	$ 200,042	$ (53,848)	$ 146,194

Niagara Mohawk Power Corporation d/b/a National Grid
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Forecasted Service Company Capital Software allocated to Operating Companies as Rent Expense
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Line	Investment Name	Programs	INVP #	Year Amortization	5210G NIMO G Allocation	NIMO G Rent-Return	NIMO G Rent - Depn	5210E NIMO E Allocation	NIMO E Rent-Return	NIMO E Rent - Depn	5210T NIMO T Allocation	NIMO T Rent-Return	NIMO T Rent - Depn	Amortization Period	Bonus Rate	Bonus Depreciation
81	US MDS-Energy Accounting System (EAS) migration to Wholesale Settlement Application (WSA)	FY18 Plan	4481	$ 308,571	0.00%	$ -	$ -	30.74%	$ 40,765	$ 94,855	10.99%	$ 14,574	$ 33,912	36	40%	$ 864,000
82	INVP 4398 Storms/ISched Upgrade	FY18 Plan	4398	$ 1,422,267	7.15%	$ 44,708	$ 101,692	27.24%	$ 170,328	$ 387,425	9.63%	$ 60,215	$ 136,964	36	40%	$ 3,982,347
84	STORMS Capital Cost Estimates	FY18 Plan	4467	$ 110,857	4.83%	$ 2,500	$ 5,354	18.77%	$ 9,714	$ 20,808	6.43%	$ 3,328	$ 7,128	36	30%	$ 232,800
86	US CNI Tech Services-Network Equipment Lifecycle Replacements	FY18 Plan	4570	$ 35,714	0.00%	$ -	$ -	30.74%	$ 5,656	$ 10,979	10.99%	$ 2,022	$ 3,925	36	30%	$ 75,000
87	Inventory Management Handheld Devices	FY18 Plan		$ 10,714	4.58%	$ 253	$ 491	17.76%	$ 980	$ 1,903	6.11%	$ 337	$ 655	36	30%	$ 22,500
88	Customer Bill Redesign	FY18 Plan	4704Q	$ 301,164	7.07%	$ 10,969	$ 21,292	19.12%	$ 29,663	$ 57,583	0.00%	$ -	$ -	36	30%	$ 632,444
89	INVP 3737 US CNI GMS SCADA Upgrade &	FY18 Plan	3737	$ -	16.89%	$ 216,925	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
90	Cisco Prime	FY18 Plan	4679	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
91	Contractor Management Modernization	FY18 Plan	4151	$ -	4.82%	$ -	$ -	18.70%	$ -	$ -	6.41%	$ -	$ -	36	0%	$ -
92	Risk Management (Tx Mains & Dx Mains)	GBE- Asset Management		$ 211,080	16.89%	$ 18,299	$ 35,651	0.00%	$ -	$ -	0.00%	$ -	$ -	36	50%	$ 1,055,400
93	AM Program Leadership-1	GBE- Asset Management		$ 27,712	16.89%	$ 2,499	$ 4,681	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 110,850
94	Enhancements	GBE- Asset Management		$ 266,088	16.89%	$ 29,177	$ 44,942	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 1,064,350
95	Additional IM Modules	GBE- Asset Management		$ 71,684	16.89%	$ 8,194	$ 12,107	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 215,052
96	AM Program Leadership-2	GBE- Asset Management		$ 39,868	16.89%	$ 4,590	$ 6,734	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 119,603
97	Data Remediation, GIS Upgrade/ Migration & GIS Mobility	GBE- Asset Management		$ 1,131,176	16.89%	$ 130,247	$ 191,056	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 3,393,528
98	EAM-FIN Integration	GBE- Asset Management		$ 148,175	16.89%	$ 9,151	$ 25,027	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 533,431
99	Integrity Management Integrations	GBE- Asset Management		$ 54,406	16.89%	$ 5,781	$ 9,189	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 326,433
100	AM Program Leadership-3	GBE- Asset Management		$ 3,403	16.89%	$ 2,941	$ 575	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
101	Design (GWD), Estimating (CU), & Mobility	GBE- Asset Management		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
102	Asset Analytics Integration	GBE- Asset Management		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
103	GIS (GWD/CU) - PPM Integration	GBE- Asset Management		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
104	GIS-EAM Integration	GBE- Asset Management		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
105	AM Program Leadership-4	GBE- Asset Management		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
106	Use Case No.1 - Asset Risk	GBE- Asset Management		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
107	Complex Design (CAD) & Estimating (ESW)	GBE- Asset Management		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
108	Program Learning Management-1	GBE- Business Enablement		$ 11,730	16.89%	$ 1,058	$ 1,981	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 46,919
109	Program Transformational Change Office-1	GBE- Business Enablement		$ 68,904	16.89%	$ 6,215	$ 11,638	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 275,617
110	Program Business Sustainment-1	GBE- Business Enablement		$ 6,962	16.89%	$ 802	$ 1,176	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 20,885
111	Program Learning Management-2	GBE- Business Enablement		$ 13,021	16.89%	$ 1,499	$ 2,199	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 39,063
112	Program Transformational Change Office -2	GBE- Business Enablement		$ 151,631	16.89%	$ 17,459	$ 25,610	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 454,893
113	Program Learning Management-3	GBE- Business Enablement		$ 1,442	16.89%	$ 1,247	$ 244	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
114	Program Transformational Change Office-3	GBE- Business Enablement		$ 3,073	16.89%	$ 2,656	$ 519	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
115	Program Business Sustainment-2	GBE- Business Enablement		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
116	Program Learning Management-4	GBE- Business Enablement		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
117	Program Transformational Change Office-4	GBE- Business Enablement		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
118	Customer Experience Program Leadership-1	GBE- Customer Engagement		$ 26,023	16.89%	$ 2,996	$ 4,395	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 78,069
119	CxT Portal & Channel Management	GBE- Customer Engagement		$ 989,583	16.89%	$ 61,113	$ 167,141	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 3,562,500
120	Customer Interaction - First Release	GBE- Customer Engagement		$ 239,827	16.89%	$ 25,485	$ 40,507	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 1,438,964
121	Employee Support Interaction - First Release	GBE- Customer Engagement		$ 397,707	16.89%	$ 42,261	$ 67,173	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 2,386,239
122	Customer Experience Program Leadership-2	GBE- Customer Engagement		$ 2,219	16.89%	$ 1,918	$ 375	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
123	CRM / Contact Center	GBE- Customer Engagement		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
124	Large Commercial & Landlord Interaction	GBE- Customer Engagement		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
125	Employee Support Interaction - Second Release	GBE- Customer Engagement		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
126	Customer Interaction - Second Release	GBE- Customer Engagement		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
127	Customer Experience Program Leadership-3	GBE- Customer Engagement		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
128	Data Management Implementation (Quality & Cleansing)	GBE- Data Management		$ 1,110,000	16.89%	$ 96,229	$ 187,479	0.00%	$ -	$ -	0.00%	$ -	$ -	36	50%	$ 5,550,000
129	Data Management & Governance Program Leadership-1	GBE- Data Management		$ 5,889	16.89%	$ 531	$ 995	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 23,556
130	Enable the Data Archive Process	GBE- Data Management		$ 217,948	16.89%	$ 25,095	$ 36,811	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 653,844
131	Data Management & Governance Program Leadership-2	GBE- Data Management		$ 8,795	16.89%	$ 1,013	$ 1,486	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 26,386
132	Data Management & Governance Program Leadership-3	GBE- Data Management		$ 748	16.89%	$ 646	$ 126	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
133	PowerPlan Architecture Enhancements	GBE- Information Services Enabling		$ 608,011	16.89%	$ 52,203	$ 102,693	0.00%	$ -	$ -	0.00%	$ -	$ -	36	50%	$ 3,040,055
134	Comprehensive Integration Services (Enhancements)	GBE- Information Services Enabling		$ 7,862	16.89%	$ 682	$ 1,328	0.00%	$ -	$ -	0.00%	$ -	$ -	36	50%	$ 39,312
135	Application (Environment) Infrastructure	GBE- Information Services Enabling		$ 217,441	16.89%	$ 18,851	$ 36,726	0.00%	$ -	$ -	0.00%	$ -	$ -	36	50%	$ 1,087,205
136	Development Operations & BPA Enablement-1	GBE- Information Services Enabling		$ 290,392	16.89%	$ 26,191	$ 49,047	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 1,161,568
137	SAP and Application Integration Development- Release 1-1	GBE- Information Services Enabling		$ 476,519	16.89%	$ 42,977	$ 80,484	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 1,906,075
138	Mobility CoE & End-User Computing-1	GBE- Information Services Enabling		$ 60,479	16.89%	$ 5,455	$ 10,215	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 241,916
139	Operations/System Monitoring	GBE- Information Services Enabling		$ 105,777	16.89%	$ 11,246	$ 17,866	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 423,107
140	Development Operations & BPA Enablement-2	GBE- Information Services Enabling		$ 256,201	16.89%	$ 29,500	$ 43,272	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 768,603
141	SAP and Application Integration Development- Release 1-2	GBE- Information Services Enabling		$ 454,817	16.89%	$ 52,369	$ 76,819	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 1,364,450
142	SAP and Application Integration Development- Release 2-1	GBE- Information Services Enabling		$ 505,571	16.89%	$ 58,213	$ 85,391	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 1,516,713
143	Mobility CoE & End-User Computing-2	GBE- Information Services Enabling		$ 92,054	16.89%	$ 10,599	$ 15,548	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 276,161
144	Development Operations & BPA Enablement-3	GBE- Information Services Enabling		$ 18,035	16.89%	$ 15,589	$ 3,046	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
145	SAP and Application Integration Development- Release 1-3	GBE- Information Services Enabling		$ 5,000	16.89%	$ 4,322	$ 845	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
146	SAP and Application Integration Development- Release 2-2	GBE- Information Services Enabling		$ 36,642	16.89%	$ 31,673	$ 6,189	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
147	SAP and Application Integration Development- Release 3-1	GBE- Information Services Enabling		$ 716	16.89%	$ 619	$ 121	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
148	Mobility CoE & End-User Computing-3	GBE- Information Services Enabling		$ 8,599	16.89%	$ 7,432	$ 1,452	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
149	Test Automation Implementation	GBE- Information Services Enabling		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
150	Development Operations & BPA Enablement-4	GBE- Information Services Enabling		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
151	SAP and Application Integration Development- Release 1-4	GBE- Information Services Enabling		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
152	SAP and Application Integration Development- Release 3-2	GBE- Information Services Enabling		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
153	Mobility CoE & End-User Computing-4	GBE- Information Services Enabling		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
154	Portfolio Management Leadership-1	GBE- Portfolio Office		$ 164,592	16.89%	$ 14,845	$ 27,800	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 658,368
155	Solution Architects & Agile Coaches-1	GBE- Portfolio Office		$ 195,828	16.89%	$ 17,662	$ 33,075	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 783,311
156	Portfolio Management Leadership-2	GBE- Portfolio Office		$ 214,448	16.89%	$ 24,692	$ 36,220	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 643,345

Niagara Mohawk Power Corporation d/b/a National Grid
Service Company Rents
Forecasted Service Company Capital Software allocated to Operating Companies as Rent Expense
For the Data Year ended March 31, 2020

Line	Investment Name	Programs	INVP #	Bill Pool	FY20 Total Spend	In Service Date	Amortization Period	4/1/2019 4/1/2019 Balance	3/31/2020 3/31/2020 Balance	Average Balance	9.9061% Service Co Return	Year Return	Return on Accum Taxes	Total Return
157	Solution Architects & Agile Coaches-2	GBE- Portfolio Office		C210	$ 3,964,632	3/1/2019	120	$ 3,931,593	$ 3,535,130	$ 3,733,362	9.9061%	$ 369,830	$ (99,552)	$ 270,278
158	Portfolio Management Leadership-3	GBE- Portfolio Office		C210	$ 2,161,221	3/1/2020	120	$ -	$ 2,143,211	$ 1,071,605	9.9061%	$ 106,154	$ (13,984)	$ 92,170
159	Solution Architects & Agile Coaches-3	GBE- Portfolio Office		C210	$ 2,824,290	3/1/2020	120	$ -	$ 2,800,755	$ 1,400,377	9.9061%	$ 138,723	$ (18,275)	$ 120,448
160	Portfolio Management Leadership-4	GBE- Portfolio Office		C210	$ -	3/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
161	Regulatory/ Compliance	GBE- Regulatory and Compliance		C210	$ 3,000,000	9/1/2019	120	$ -	$ 2,825,000	$ 1,412,500	9.9061%	$ 139,923	$ (46,292)	$ 93,631
162	Supply Chain Program Leadership	GBE- Supply Chain		C210	$ 565,045	3/1/2019	120	$ 560,336	$ 503,832	$ 532,084	9.9061%	$ 52,709	$ (14,188)	$ 38,520
163	Supply Chain Program Leadership	GBE- Supply Chain		C210	$ 235,258	3/1/2020	120	$ -	$ 233,298	$ 116,649	9.9061%	$ 11,555	$ (1,522)	$ 10,033
164	Business Architecture Design	GBE- Work Management		C210	$ 3,004,085	12/1/2017	120	$ 2,603,540	$ 2,303,132	$ 2,453,336	9.9061%	$ 243,030	$ (88,836)	$ 154,193
165	WMFE Program Leadership-1	GBE- Work Management		C210	$ 234,013	3/1/2018	120	$ 208,662	$ 185,260	$ 196,961	9.9061%	$ 19,511	$ (7,015)	$ 12,496
166	Corrosion and I&R Work	GBE- Work Management		C210	$ 26,479,653	7/1/2018	120	$ 24,493,679	$ 21,845,714	$ 23,169,696	9.9061%	$ 2,295,210	$ (641,475)	$ 1,653,735
167	CU Governance & Library - process	GBE- Work Management		C210	$ 1,658,439	11/1/2018	120	$ 1,589,337	$ 1,423,494	$ 1,506,415	9.9061%	$ 149,227	$ (42,377)	$ 106,849
168	WMFE Program Leadership-2	GBE- Work Management		C210	$ 563,692	3/1/2019	120	$ 558,995	$ 502,625	$ 530,810	9.9061%	$ 52,582	$ (14,154)	$ 38,428
169	Company Driven Work: Collections and non-Appointment Offs - Gas	GBE- Work Management		C210	$ 5,310,645	10/1/2019	120	$ -	$ 5,045,113	$ 2,522,556	9.9061%	$ 249,887	$ (82,828)	$ 167,058
170	Company Driven Work: Collections and non-Appointment Offs- Electric	GBE- Work Management		C198	$ 2,859,577	10/1/2019	120	$ -	$ 2,716,598	$ 1,358,299	9.9061%	$ 134,554	$ (44,600)	$ 89,954
171	Customer, Leak Investigation & Inspections - Gas	GBE- Work Management		C210	$ 20,374,438	10/1/2019	120	$ -	$ 19,355,716	$ 9,677,858	9.9061%	$ 958,697	$ (317,773)	$ 640,924
172	Customer, Leak Investigation & Inspections - Electric	GBE- Work Management		C198	$ 10,970,850	10/1/2019	120	$ -	$ 10,422,308	$ 5,211,154	9.9061%	$ 516,221	$ (171,109)	$ 345,113
173	WMFE Program Leadership-3	GBE- Work Management		C210	$ 595,004	3/1/2020	120	$ -	$ 590,046	$ 295,023	9.9061%	$ 29,225	$ (3,850)	$ 25,375
174	PowerPlan Integration & Enhancements	GBE- Work Management		C210	$ 915,441	6/1/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
175	Construction Work & Leak Repair	GBE- Work Management		C210	$ 9,000,148	9/1/2020	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
176	WMFE Program Leadership-4	GBE- Work Management		C210	$ -	3/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
177	Work Forecasting & Planning - solution	GBE- Work Management		C210	$ -	5/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
178	Core Projects & Program Management	GBE- Work Management		C210	$ -	6/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
179	WMFE Optimization	GBE- Work Management		C210	$ 346,828	3/1/2022	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
180	Customer Experience Transformation-Communication Preference Management	Growth Play Book-CXT	4426	C175	$ 2,000,000	3/31/2019	84	$ 2,000,000	$ 1,714,286	$ 1,857,143	9.9061%	$ 183,970	$ (36,787)	$ 147,184
181	Customer Experience Transformation-MyAccount Portal	Growth Play Book-CXT	4427	C175	$ 8,500,000	6/1/2019	84	$ -	$ 7,488,095	$ 3,744,048	9.9061%	$ 370,889	$ (120,886)	$ 250,003
182	Governance Risk & Compliance (GRC) Optimization/Upgrade	Growth Play Book-Finance	4222	G020	$ 1,540,000	3/1/2019	84	$ 1,521,667	$ 1,301,667	$ 1,411,667	9.9061%	$ 139,841	$ (37,136)	$ 102,704
183	US SAP: Business Planning	Growth Play Book-Finance	4217	G020	$ 4,643,000	3/31/2019	84	$ 4,643,000	$ 3,979,714	$ 4,311,357	9.9061%	$ 427,087	$ (85,400)	$ 341,687
184	US SAP: FERC on Hana (FOH)	Growth Play Book-Finance	4563	G020	$ 1,315,000	3/31/2019	84	$ 1,315,000	$ 1,127,143	$ 1,221,071	9.9061%	$ 120,960	$ (24,187)	$ 96,773
185	DRMS for C&I Demand Response	NY REV / Grid Mod		5210E	$ 3,429,633	5/1/2017	36	$ 1,238,479	$ 95,268	$ 666,873	9.9061%	$ 66,061	$ (16,440)	$ 49,621
186	Load and DER Forecasting (Acquisition of Remote Sensing Data - NY)	NY REV / Grid Mod	4729	C113	$ 8,632,000	3/31/2018	84	$ 7,398,857	$ 6,165,714	$ 6,782,286	9.9061%	$ 671,859	$ (224,259)	$ 447,600
187	Plant Information Historian	NY REV / Grid Mod	4704K	G198	$ 11,427,818	9/30/2018	84	$ 10,611,545	$ 8,979,000	$ 9,795,272	9.9061%	$ 970,328	$ (268,715)	$ 701,613
188	DG IOAP Phase II (Tactical)	NY REV / Grid Mod	4704P	5210E	$ 1,764,000	3/31/2019	84	$ 1,764,000	$ 1,512,000	$ 1,638,000	9.9061%	$ 162,262	$ (32,446)	$ 129,816
189	E-Commerce Marketplace	NY REV / Grid Mod	4704D	5210E	$ 915,837	3/31/2019	84	$ 915,837	$ 785,003	$ 850,420	9.9061%	$ 84,243	$ (16,845)	$ 67,398
190	AMI - Telecoms	NY REV / Grid Mod	4704I	5210E	$ 1,580,151	3/31/2019	84	$ 1,580,151	$ 1,354,415	$ 1,467,283	9.9061%	$ 145,350	$ (29,064)	$ 116,286
191	AMI - CSS Enhancements	NY REV / Grid Mod	4704A	C113	$ 8,075,538	3/31/2020	84	$ -	$ 8,075,538	$ 4,037,769	9.9061%	$ 399,985	$ -	$ 399,985
192	Green Button Connect	NY REV / Grid Mod	4704C	C113	$ 3,072,759	3/31/2020	84	$ -	$ 3,072,759	$ 1,536,380	9.9061%	$ 152,195	$ -	$ 152,195
193	DSP - DG IOAP	NY REV / Grid Mod	4704F	5210E	$ 14,835,271	3/31/2020	84	$ -	$ 14,835,271	$ 7,417,636	9.9061%	$ 734,797	$ -	$ 734,797
194	AMI - Telecoms	NY REV / Grid Mod	4704I	5210E	$ 1,409,719	3/31/2020	84	$ -	$ 1,409,719	$ 704,860	9.9061%	$ 69,824	$ -	$ 69,824
195	Outdoor Lighting Inventory Portal	NY REV / Grid Mod	4704O	5210E	$ 1,600,000	3/31/2020	84	$ -	$ 1,600,000	$ 800,000	9.9061%	$ 79,249	$ -	$ 79,249
196	DRMS for C&I Demand Response (Renewal)	NY REV / Grid Mod		5210E	$ -	5/1/2020	12	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
197	Grid MOD - ABB/ADMS & D-SCADA	NY REV / Grid Mod	4704G	5210E	$ 22,311,797	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
198	AMI - Telecoms	NY REV / Grid Mod	4704I	5210E	$ -	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
199	AMI - Enterprise Service Bus & API Integration	NY REV / Grid Mod	4704J	C113	$ 4,455,614	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
200	AMI - Enterprise Service Bus & API Integration	NY REV / Grid Mod	4704J	5210E	$ 9,917,333	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
201	AMI - Info Mgt & Advanced Analytics	NY REV / Grid Mod	4704L	C113	$ 2,729,722	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
202	AMI - Info Mgt & Advanced Analytics	NY REV / Grid Mod	4704L	5210E	$ 13,327,464	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
203	IS-Cloud Computing & Data Lake	NY REV / Grid Mod	4704M	C113	$ 744,430	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
204	IS-Cloud Computing & Data Lake	NY REV / Grid Mod	4704M	5210E	$ 3,634,571	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
205	Cyber Security	NY REV / Grid Mod	4704N	C113	$ 9,709,632	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
206	Cyber Security	NY REV / Grid Mod	4704N	5210E	$ 14,564,448	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
207	INVP 3882 NYS Pipeline Safety CMS	Other Mandates	3882	G207	$ 1,308,000	3/17/2017	84	$ 918,714	$ 731,857	$ 825,286	9.9061%	$ 81,754	$ (30,935)	$ 50,818
208	INVP 3851 Consolidated Voice Recorder for US Electric Control Rooms	Other Mandates	3851	G181	$ 1,234,000	3/31/2017	84	$ 881,429	$ 705,143	$ 793,286	9.9061%	$ 78,584	$ (29,770)	$ 48,814
209	Annual HR & Payroll Mandatory Service Pack Upgrade (HRSP) - FY18	Other Mandates	4400	G020	$ 1,126,000	12/31/2017	84	$ 924,929	$ 764,071	$ 844,500	9.9061%	$ 83,657	$ (30,309)	$ 53,348
210	Regulatory Mandates - FY18	Other Mandates		G020	$ 5,071,622	3/31/2018	84	$ 4,347,105	$ 3,622,587	$ 3,984,846	9.9061%	$ 394,742	$ (131,760)	$ 262,982
211	US Control-Gas Electronic Bulletin Board (EBB) Upgrade	Other Mandates	4479	G210	$ 3,000,000	5/1/2018	84	$ 2,607,143	$ 2,178,571	$ 2,392,857	9.9061%	$ 237,038	$ (63,431)	$ 173,607
212	Regulatory Mandates - FY19	Other Mandates		G020	$ 18,595,000	3/31/2019	84	$ 18,595,000	$ 15,938,571	$ 17,266,786	9.9061%	$ 1,710,463	$ (342,023)	$ 1,368,440
213	Regulatory Mandates - FY20	Other Mandates		G020	$ 20,000,000	3/31/2020	84	$ -	$ 20,000,000	$ 10,000,000	9.9061%	$ 990,609	$ -	$ 990,609
214	Regulatory Mandates - FY21	Other Mandates		G020	$ -	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
215	Physical Security Replacements - FY17	Physical Security		G020	$ 906,050	3/31/2017	84	$ 647,179	$ 517,743	$ 582,461	9.9061%	$ 57,699	$ (21,858)	$ 35,841
218	Physical Security Replacements - FY18	Physical Security		G020	$ 950,000	3/31/2018	84	$ 814,286	$ 678,571	$ 746,429	9.9061%	$ 73,942	$ (24,681)	$ 49,261
219	All NIMO Physical Security Replacements - FY18	Physical Security		G114	$ 490,000	3/31/2018	84	$ 420,000	$ 350,000	$ 385,000	9.9061%	$ 38,138	$ (12,730)	$ 25,408
222	Physical Security Replacements - FY19	Physical Security		G020	$ 825,000	3/31/2019	84	$ 825,000	$ 707,143	$ 766,071	9.9061%	$ 75,888	$ (15,174)	$ 60,713
223	All NIMO Physical Security Replacements - FY19	Physical Security		G114	$ 275,000	3/31/2019	84	$ 275,000	$ 235,714	$ 255,357	9.9061%	$ 25,296	$ (5,058)	$ 20,238
226	Physical Security Replacements - FY20	Physical Security		G020	$ 835,000	3/31/2020	84	$ -	$ 835,000	$ 417,500	9.9061%	$ 41,358	$ -	$ 41,358
227	All NIMO Physical Security Replacements - FY20	Physical Security		G114	$ 282,000	3/31/2020	84	$ -	$ 282,000	$ 141,000	9.9061%	$ 13,968	$ -	$ 13,968
230	Physical Security Replacements - FY21	Physical Security		G020	$ -	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
231	All NIMO Physical Security Replacements - FY21	Physical Security		G114	$ -	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
236	INVP 4124 Auto Remote Net Meter	PSC Mandate	4124	C198	$ 3,584,165	8/31/2017	84	$ 2,773,461	$ 2,261,438	$ 2,517,449	9.9061%	$ 249,381	$ (89,678)	$ 159,702
237	INVP 3839A NY Retail Access Ph2	PSC Mandate	3839A	C170	$ 5,356,231	10/31/2017	84	$ 4,272,232	$ 3,507,056	$ 3,889,644	9.9061%	$ 385,312	$ (139,095)	$ 246,216
238	INVP 4411AB Distributed Generation Portal	PSC Mandate	4411A+B	C198	$ 3,347,611	11/30/2017	84	$ 2,709,971	$ 2,231,740	$ 2,470,856	9.9061%	$ 244,765	$ (88,521)	$ 156,244
239	INVP 4383 NY Community Choice Aggregation	PSC Mandate	4383	C170	$ 551,447	12/31/2017	84	$ 452,974	$ 374,196	$ 413,585	9.9061%	$ 40,970	$ (14,843)	$ 26,127
241	INVP 4448 Low Income Order CSS	PSC Mandate	4448	C195	$ 2,489,410	12/31/2017	84	$ 2,044,873	$ 1,689,243	$ 1,867,058	9.9061%	$ 184,952	$ (67,007)	$ 117,945
242	INVP 4411C New Electric Connections	PSC Mandate	4411C	C198	$ 698,000	4/30/2018	84	$ 606,595	$ 506,881	$ 556,738	9.9061%	$ 55,151	$ (14,758)	$ 40,393
243	INVP 4411D New Gas Connections	PSC Mandate	4411D	C210	$ 896,000	10/31/2018	84	$ 842,667	$ 714,667	$ 778,667	9.9061%	$ 77,135	$ (21,493)	$ 55,642
244	CPE Buyback	Tech. Modernization	4684	G020	$ 5,140,000	3/31/2017	84	$ 3,671,429	$ 2,937,143	$ 3,304,286	9.9061%	$ 327,325	$ (124,001)	$ 203,324
245	Active Directory Improvements	Tech. Modernization	4489	G020	$ 275,000	11/30/2017	84	$ 222,619	$ 183,333	$ 202,976	9.9061%	$ 20,107	$ (7,272)	$ 12,835
246	Application Performance Management (APM)	Tech. Modernization	4490	G020	$ 375,000	1/31/2018	84	$ 312,500	$ 258,929	$ 285,714	9.9061%	$ 28,303	$ (10,050)	$ 18,253
247	RAS/VPN Re-Platform/Mobile	Tech. Modernization	4269	G020	$ 600,000	3/16/2018	84	$ 507,143	$ 421,429	$ 464,286	9.9061%	$ 45,993	$ (16,365)	$ 29,627
248	US Network Programme	Tech. Modernization	4496	G020	$ 3,025,000	3/31/2018	84	$ 2,592,857	$ 2,160,714	$ 2,376,786	9.9061%	$ 235,446	$ (78,589)	$ 156,857
249	US VSTIG Programme	Tech. Modernization	4498	G020	$ 2,700,000	3/31/2018	84	$ 2,314,286	$ 1,928,571	$ 2,121,429	9.9061%	$ 210,151	$ (70,146)	$ 140,005

Niagara Mohawk Power Corporation d/b/a National Grid
Service Company Rents
Forecasted Service Company Capital Software allocated to Operating Companies as Rent Expense
For the Data Year ended March 31, 2020

Line	Investment Name	Programs	INVP #	Year Amortization	5210G NIMO G Allocation	NIMO G Rent-Return	NIMO G Rent-Depn	5210E NIMO E Allocation	NIMO E Rent-Return	NIMO E Rent-Depn	5210T NIMO T Allocation	NIMO T Rent-Return	NIMO T Rent-Depn	Amortization Period	Bonus Rate	Bonus Depreciation
157	Solution Architects & Agile Coaches-2	GBE- Portfolio Office		$ 396,463	16.89%	$ 45,650	$ 66,963	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 1,189,390
158	Portfolio Management Leadership-3	GBE- Portfolio Office		$ 18,010	16.89%	$ 15,568	$ 3,042	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
159	Solution Architects & Agile Coaches-3	GBE- Portfolio Office		$ 23,536	16.89%	$ 20,344	$ 3,975	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
160	Portfolio Management Leadership-4	GBE- Portfolio Office		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
161	Regulatory/ Compliance	GBE- Regulatory and Compliance		$ 175,000	16.89%	$ 15,814	$ 29,558	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 900,000
162	Supply Chain Program Leadership	GBE- Supply Chain		$ 56,504	16.89%	$ 6,506	$ 9,544	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 169,514
163	Supply Chain Program Leadership	GBE- Supply Chain		$ 1,960	16.89%	$ 1,695	$ 331	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
164	Business Architecture Design	GBE- Work Management		$ 300,408	16.89%	$ 26,043	$ 50,739	0.00%	$ -	$ -	0.00%	$ -	$ -	36	50%	$ 1,502,042
165	WMFE Program Leadership-1	GBE- Work Management		$ 23,401	16.89%	$ 2,111	$ 3,952	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 93,605
166	Corrosion and I&R Work	GBE- Work Management		$ 2,647,965	16.89%	$ 279,316	$ 447,241	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 10,591,861
167	CU Governance & Library - process	GBE- Work Management		$ 165,844	16.89%	$ 18,047	$ 28,011	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 663,376
168	WMFE Program Leadership-2	GBE- Work Management		$ 56,369	16.89%	$ 6,491	$ 9,521	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 169,108
169	Company Driven Work: Collections and non-Appointment Offs - Gas	GBE- Work Management		$ 265,532	16.89%	$ 28,216	$ 44,848	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 1,593,194
170	Company Driven Work: Collections and non-Appointment Offs- Electric	GBE- Work Management		$ 142,979	0.00%	$ -	$ -	47.71%	$ 42,917	$ 68,215	0.00%	$ -	$ -	36	30%	$ 857,873
171	Customer, Leak Investigation & Inspections - Gas	GBE- Work Management		$ 1,018,722	16.89%	$ 108,252	$ 172,062	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 6,112,331
172	Customer, Leak Investigation & Inspections - Electric	GBE- Work Management		$ 548,543	0.00%	$ -	$ -	47.71%	$ 164,653	$ 261,710	0.00%	$ -	$ -	36	30%	$ 3,291,255
173	WMFE Program Leadership-3	GBE- Work Management		$ 4,958	16.89%	$ 4,286	$ 837	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
174	PowerPlan Integration & Enhancements	GBE- Work Management		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
175	Construction Work & Leak Repair	GBE- Work Management		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
176	WMFE Program Leadership-4	GBE- Work Management		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
177	Work Forecasting & Planning - solution	GBE- Work Management		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
178	Core Projects & Program Management	GBE- Work Management		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
179	WMFE Optimization	GBE- Work Management		$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
180	Customer Experience Transformation-Communication Preference Management	Growth Play Book-CXT	4426	$ 285,714	8.65%	$ 12,732	$ 24,716	23.28%	$ 34,263	$ 66,512	0.00%	$ -	$ -	36	30%	$ 600,000
181	Customer Experience Transformation-MyAccount Portal	Growth Play Book-CXT	4427	$ 1,011,905	8.65%	$ 21,627	$ 87,537	23.28%	$ 58,199	$ 235,563	0.00%	$ -	$ -	36	30%	$ 2,550,000
182	Governance Risk & Compliance (GRC) Optimization/Upgrade	Growth Play Book-Finance	4222	$ 220,000	4.58%	$ 4,704	$ 10,076	17.76%	$ 18,240	$ 39,072	6.11%	$ 6,275	$ 13,442	36	30%	$ 462,000
183	US SAP: Business Planning	Growth Play Book-Finance	4217	$ 663,286	4.58%	$ 15,649	$ 30,378	17.76%	$ 60,684	$ 117,800	6.11%	$ 20,877	$ 40,527	36	30%	$ 1,392,900
184	US SAP: FERC on Hana (FOH)	Growth Play Book-Finance	4563	$ 187,857	4.58%	$ 4,432	$ 8,604	17.76%	$ 17,187	$ 33,363	6.11%	$ 5,913	$ 11,478	36	30%	$ 394,500
185	DRMS for C&I Demand Response	NY REV / Grid Mod		$ 1,143,211	0.00%	$ -	$ -	100.00%	$ 49,621	$ 1,143,211	0.00%	$ -	$ -	36	50%	$ 1,714,817
186	Load and DER Forecasting (Acquisition of Remote Sensing Data - NY)	NY REV / Grid Mod	4729	$ 1,233,143	27.09%	$ 121,255	$ 334,058	72.91%	$ 326,345	$ 899,084	0.00%	$ -	$ -	36	40%	$ 3,452,800
187	Plant Information Historian	NY REV / Grid Mod	4704K	$ 1,632,545	0.00%	$ -	$ -	41.93%	$ 294,187	$ 684,526	0.00%	$ -	$ -	36	40%	$ 4,571,127
188	DG IOAP Phase II (Tactical)	NY REV / Grid Mod	4704P	$ 252,000	0.00%	$ -	$ -	100.00%	$ 129,816	$ 252,000	0.00%	$ -	$ -	36	30%	$ 529,200
189	E-Commerce Marketplace	NY REV / Grid Mod	4704D	$ 130,834	0.00%	$ -	$ -	100.00%	$ 67,398	$ 130,834	0.00%	$ -	$ -	36	30%	$ 274,751
190	AMI - Telecoms	NY REV / Grid Mod	4704I	$ 225,736	0.00%	$ -	$ -	100.00%	$ 116,286	$ 225,736	0.00%	$ -	$ -	36	30%	$ 474,045
191	AMI - CSS Enhancements	NY REV / Grid Mod	4704A	$ -	27.09%	$ 108,356	$ -	72.91%	$ 291,629	$ -	0.00%	$ -	$ -	36	0%	$ -
192	Green Button Connect	NY REV / Grid Mod	4704C	$ -	27.09%	$ 41,230	$ -	72.91%	$ 110,965	$ -	0.00%	$ -	$ -	36	0%	$ -
193	DSP - DG IOAP	NY REV / Grid Mod	4704F	$ -	0.00%	$ -	$ -	100.00%	$ 734,797	$ -	0.00%	$ -	$ -	36	0%	$ -
194	AMI - Telecoms	NY REV / Grid Mod	4704I	$ -	0.00%	$ -	$ -	100.00%	$ 69,824	$ -	0.00%	$ -	$ -	36	0%	$ -
195	Outdoor Lighting Inventory Portal	NY REV / Grid Mod	4704O	$ -	0.00%	$ -	$ -	100.00%	$ 79,249	$ -	0.00%	$ -	$ -	36	0%	$ -
196	DRMS for C&I Demand Response (Renewal)	NY REV / Grid Mod		$ -	0.00%	$ -	$ -	100.00%	$ -	$ -	0.00%	$ -	$ -	12	0%	$ -
197	Grid MOD - ABB/ADMS & D-SCADA	NY REV / Grid Mod	4704G	$ -	0.00%	$ -	$ -	100.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
198	AMI - Telecoms	NY REV / Grid Mod	4704I	$ -	0.00%	$ -	$ -	100.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
199	AMI - Enterprise Service Bus & API Integration	NY REV / Grid Mod	4704J	$ -	27.09%	$ -	$ -	72.91%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
200	AMI - Enterprise Service Bus & API Integration	NY REV / Grid Mod	4704J	$ -	0.00%	$ -	$ -	100.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
201	AMI - Info Mgt & Advanced Analytics	NY REV / Grid Mod	4704L	$ -	27.09%	$ -	$ -	72.91%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
202	AMI - Info Mgt & Advanced Analytics	NY REV / Grid Mod	4704L	$ -	0.00%	$ -	$ -	100.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
203	IS-Cloud Computing & Data Lake	NY REV / Grid Mod	4704M	$ -	27.09%	$ -	$ -	72.91%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
204	IS-Cloud Computing & Data Lake	NY REV / Grid Mod	4704M	$ -	0.00%	$ -	$ -	100.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
205	Cyber Security	NY REV / Grid Mod	4704N	$ -	27.09%	$ -	$ -	72.91%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
206	Cyber Security	NY REV / Grid Mod	4704N	$ -	0.00%	$ -	$ -	100.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
207	INVP 3882 NYS Pipeline Safety CMS	Other Mandates	3882	$ 186,857	19.47%	$ 9,894	$ 36,381	0.00%	$ -	$ -	0.00%	$ -	$ -	36	50%	$ 654,000
208	INVP 3851 Consolidated Voice Recorder for US Electric Control Rooms	Other Mandates	3851	$ 176,286	0.00%	$ -	$ -	74.79%	$ 36,508	$ 131,844	25.21%	$ 12,306	$ 44,442	36	50%	$ 617,000
209	Annual HR & Payroll Mandatory Service Pack Upgrade (HRSP) - FY18	Other Mandates	4400	$ 160,857	4.58%	$ 2,443	$ 7,367	17.76%	$ 9,475	$ 28,568	6.11%	$ 3,260	$ 9,828	36	50%	$ 563,000
210	Regulatory Mandates - FY18	Other Mandates		$ 724,517	4.58%	$ 12,045	$ 33,183	17.76%	$ 46,706	$ 128,674	6.11%	$ 16,068	$ 44,268	36	40%	$ 2,028,649
211	US Control-Gas Electronic Bulletin Board (EBB) Upgrade	Other Mandates	4479	$ 428,571	12.44%	$ 21,597	$ 53,314	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 1,200,000
212	Regulatory Mandates - FY19	Other Mandates		$ 2,656,429	4.58%	$ 62,675	$ 121,664	17.76%	$ 243,035	$ 471,782	6.11%	$ 83,612	$ 162,308	36	30%	$ 5,578,500
213	Regulatory Mandates - FY20	Other Mandates		$ -	4.58%	$ 45,370	$ -	17.76%	$ 175,932	$ -	6.11%	$ 60,526	$ -	36	0%	$ -
214	Regulatory Mandates - FY21	Other Mandates		$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
215	Physical Security Replacements - FY17	Physical Security		$ 129,436	4.58%	$ 1,642	$ 5,928	17.76%	$ 6,365	$ 22,988	6.11%	$ 2,190	$ 7,909	36	50%	$ 453,025
218	Physical Security Replacements - FY18	Physical Security		$ 135,714	4.58%	$ 2,256	$ 6,216	17.76%	$ 8,749	$ 24,103	6.11%	$ 3,010	$ 8,292	36	40%	$ 380,000
219	All NIMO Physical Security Replacements - FY18	Physical Security		$ 70,000	15.97%	$ 4,058	$ 11,179	63.00%	$ 16,007	$ 44,100	21.03%	$ 5,343	$ 14,721	36	40%	$ 196,000
222	Physical Security Replacements - FY19	Physical Security		$ 117,857	4.58%	$ 2,781	$ 5,398	17.76%	$ 10,783	$ 20,931	6.11%	$ 3,710	$ 7,201	36	30%	$ 247,500
223	All NIMO Physical Security Replacements - FY19	Physical Security		$ 39,286	15.97%	$ 3,232	$ 6,274	63.00%	$ 12,750	$ 24,750	21.03%	$ 4,256	$ 8,262	36	30%	$ 82,500
226	Physical Security Replacements - FY20	Physical Security		$ -	4.58%	$ 1,894	$ -	17.76%	$ 7,345	$ -	6.11%	$ 2,527	$ -	36	0%	$ -
227	All NIMO Physical Security Replacements - FY20	Physical Security		$ -	15.97%	$ 2,231	$ -	63.00%	$ 8,800	$ -	21.03%	$ 2,937	$ -	36	0%	$ -
230	Physical Security Replacements - FY21	Physical Security		$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
231	All NIMO Physical Security Replacements - FY21	Physical Security		$ -	15.97%	$ -	$ -	63.00%	$ -	$ -	21.03%	$ -	$ -	36	0%	$ -
236	INVP 4124 Auto Remote Net Meter	PSC Mandate	4124	$ 512,024	0.00%	$ -	$ -	47.71%	$ 76,194	$ 244,286	0.00%	$ -	$ -	36	50%	$ 1,792,083
237	INVP 3839A NY Retail Access Ph2	PSC Mandate	3839A	$ 765,176	14.88%	$ 36,637	$ 113,858	40.06%	$ 98,634	$ 306,529	0.00%	$ -	$ -	36	50%	$ 2,678,116
238	INVP 4411AB Distributed Generation Portal	PSC Mandate	4411A+B	$ 478,230	0.00%	$ -	$ -	47.71%	$ 74,544	$ 228,164	0.00%	$ -	$ -	36	50%	$ 1,673,805
239	INVP 4383 NY Community Choice Aggregation	PSC Mandate	4383	$ 78,778	14.88%	$ 3,888	$ 11,722	40.06%	$ 10,466	$ 31,559	0.00%	$ -	$ -	36	50%	$ 275,724
241	INVP 4448 Low Income Order CSS	PSC Mandate	4448	$ 355,630	21.56%	$ 25,429	$ 76,674	57.91%	$ 68,302	$ 205,945	0.00%	$ -	$ -	36	50%	$ 1,244,705
242	INVP 4411C New Electric Connections	PSC Mandate	4411C	$ 99,714	0.00%	$ -	$ -	47.71%	$ 19,271	$ 47,574	0.00%	$ -	$ -	36	40%	$ 279,200
243	INVP 4411D New Gas Connections	PSC Mandate	4411D	$ 128,000	16.89%	$ 9,398	$ 21,619	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 358,400
244	CPE Buyback	Tech. Modernization	4684	$ 734,286	4.58%	$ 9,312	$ 33,630	17.76%	$ 36,110	$ 130,409	6.11%	$ 12,423	$ 44,865	36	50%	$ 2,570,000
245	Active Directory Improvements	Tech. Modernization	4489	$ 39,286	4.58%	$ 588	$ 1,799	17.76%	$ 2,280	$ 6,977	6.11%	$ 784	$ 2,400	36	50%	$ 137,500
246	Application Performance Management (APM)	Tech. Modernization	4490	$ 53,571	4.58%	$ 836	$ 2,454	17.76%	$ 3,242	$ 9,514	6.11%	$ 1,115	$ 3,273	36	40%	$ 150,000
247	RAS/VPN Re-Platform/Mobile	Tech. Modernization	4269	$ 85,714	4.58%	$ 1,357	$ 3,926	17.76%	$ 5,262	$ 15,223	6.11%	$ 1,810	$ 5,237	36	40%	$ 240,000
248	US Network Programme	Tech. Modernization	4496	$ 432,143	4.58%	$ 7,184	$ 19,792	17.76%	$ 27,858	$ 76,749	6.11%	$ 9,584	$ 26,404	36	40%	$ 1,210,000
249	US VSTIG Programme	Tech. Modernization	4498	$ 385,714	4.58%	$ 6,412	$ 17,666	17.76%	$ 24,865	$ 68,503	6.11%	$ 8,554	$ 23,567	36	40%	$ 1,080,000

Niagara Mohawk Power Corporation d/b/a National Grid
Service Company Rents
Forecasted Service Company Capital Software allocated to Operating Companies as Rent Expense
For the Data Year ended March 31, 2020

Line	Investment Name	Programs	INVP #	Bill Pool	FY20 Total Spend	In Service Date	Amortization Period	4/1/2019 4/1/2019 Balance	3/31/2020 3/31/2020 Balance	Average Balance	9.9061% Service Co Return	Year Return	Return on Accum Taxes	Total Return
250	US Wireless Programme	Tech. Modernization	4499	G020	$ 1,950,000	3/31/2018	84	$ 1,671,429	$ 1,392,857	$ 1,532,143	9.9061%	$ 151,775	$ (50,661)	$ 101,114
251	Monitoring and Alerting	Tech. Modernization	4493	G020	$ 450,000	3/31/2018	84	$ 385,714	$ 321,429	$ 353,571	9.9061%	$ 35,025	$ (11,691)	$ 23,334
252	RSA Re-platform	Tech. Modernization	4270	G020	$ 280,000	3/31/2018	84	$ 240,000	$ 200,000	$ 220,000	9.9061%	$ 21,793	$ (7,274)	$ 14,519
253	Cloud Broker - Hybrid Enablement	Tech. Modernization	3899	G020	$ 250,000	3/31/2018	84	$ 214,286	$ 178,571	$ 196,429	9.9061%	$ 19,458	$ (6,495)	$ 12,963
254	Office 2010 Upgrade	Tech. Modernization	4265	G020	$ 800,000	3/31/2018	84	$ 685,714	$ 571,429	$ 628,571	9.9061%	$ 62,267	$ (20,784)	$ 41,483
255	Citrix Infrstructure Upgrade (Xenapp and NetScaler)	Tech. Modernization	4279	G020	$ 500,000	3/31/2018	84	$ 428,571	$ 357,143	$ 392,857	9.9061%	$ 38,917	$ (12,990)	$ 25,927
256	Business Innovation Projects 1	Tech. Modernization	4707	G020	$ 3,368,613	3/31/2018	84	$ 2,887,383	$ 2,406,152	$ 2,646,767	9.9061%	$ 262,191	$ (87,516)	$ 174,675
257	Data Security	Tech. Modernization	4710	G020	$ 1,575,000	3/31/2018	84	$ 1,350,000	$ 1,125,000	$ 1,237,500	9.9061%	$ 122,588	$ (40,918)	$ 81,669
258	Orchestration and Self Service	Tech. Modernization	4726	G020	$ 750,000	3/31/2018	84	$ 642,857	$ 535,714	$ 589,286	9.9061%	$ 58,375	$ (19,485)	$ 38,890
259	Virtual Desktop - DaaS	Tech. Modernization	4727	G020	$ 550,000	3/31/2018	84	$ 471,429	$ 392,857	$ 432,143	9.9061%	$ 42,808	$ (14,289)	$ 28,519
260	SCI connections	Tech. Modernization	4495	G020	$ 100,000	3/31/2018	84	$ 85,714	$ 71,429	$ 78,571	9.9061%	$ 7,783	$ (2,598)	$ 5,185
261	US SAP: Dynamic Storage Tiering	Tech. Modernization	4560	G020	$ 1,355,000	7/5/2018	84	$ 1,209,821	$ 1,016,250	$ 1,113,036	9.9061%	$ 110,258	$ (29,934)	$ 80,324
262	ICE Replacement	Tech. Modernization	4491	G020	$ 3,316,000	10/31/2018	84	$ 3,118,619	$ 2,644,905	$ 2,881,762	9.9061%	$ 285,470	$ (79,545)	$ 205,925
263	US Network Programme	Tech. Modernization	4496	G020	$ 2,075,000	3/31/2019	84	$ 2,075,000	$ 1,778,571	$ 1,926,786	9.9061%	$ 190,869	$ (38,166)	$ 152,703
264	US VSTIG Programme	Tech. Modernization	4498	G020	$ 1,700,000	3/31/2019	84	$ 1,700,000	$ 1,457,143	$ 1,578,571	9.9061%	$ 156,375	$ (31,269)	$ 125,106
265	US Wireless Programme	Tech. Modernization	4499	G020	$ 1,500,000	3/31/2019	84	$ 1,500,000	$ 1,285,714	$ 1,392,857	9.9061%	$ 137,978	$ (27,590)	$ 110,388
266	Data Visualisation Expansion	Tech. Modernization	4606	G020	$ 2,800,000	3/31/2019	84	$ 2,800,000	$ 2,400,000	$ 2,600,000	9.9061%	$ 257,558	$ (51,501)	$ 206,057
267	US SAP: Business Warehouse (BW) Consolidation to HANA Enterprise Cloud (HEC)	Tech. Modernization	4562	G020	$ 2,366,000	3/31/2019	84	$ 2,366,000	$ 2,028,000	$ 2,197,000	9.9061%	$ 217,637	$ (43,518)	$ 174,118
268	Monitoring and Alerting	Tech. Modernization	4493	G020	$ 1,000,000	3/31/2019	84	$ 1,000,000	$ 857,143	$ 928,571	9.9061%	$ 91,985	$ (18,393)	$ 73,592
269	MWORK and Netmotion Risk Avoidance	Tech. Modernization	4725	G020	$ 500,000	3/31/2019	84	$ 500,000	$ 428,571	$ 464,286	9.9061%	$ 45,993	$ (9,197)	$ 36,796
270	Improving End User Experience- Cloud based DMZ Service Platform	Tech. Modernization	4723	G020	$ 300,000	3/31/2019	84	$ 300,000	$ 257,143	$ 278,571	9.9061%	$ 27,596	$ (5,518)	$ 22,078
271	Mobile Broadband POC	Tech. Modernization		G020	$ 100,000	3/31/2019	84	$ 100,000	$ 85,714	$ 92,857	9.9061%	$ 9,199	$ (1,839)	$ 7,359
272	FY19 Edge Projects	Tech. Modernization	4717	G020	$ 1,000,000	3/31/2019	84	$ 1,000,000	$ 857,143	$ 928,571	9.9061%	$ 91,985	$ (18,393)	$ 73,592
273	FY19 Network Projects	Tech. Modernization	4718	G020	$ 1,000,000	3/31/2019	84	$ 1,000,000	$ 857,143	$ 928,571	9.9061%	$ 91,985	$ (18,393)	$ 73,592
274	Digital Asset Management (DAM)	Tech. Modernization	4711	G020	$ 500,000	3/31/2019	84	$ 500,000	$ 428,571	$ 464,286	9.9061%	$ 45,993	$ (9,197)	$ 36,796
275	Business Innovation Projects 1	Tech. Modernization	4707	G020	$ 3,973,236	3/31/2019	84	$ 3,973,236	$ 3,405,631	$ 3,689,433	9.9061%	$ 365,478	$ (73,081)	$ 292,398
276	Business Innovation Projects 2	Tech. Modernization	4708	G020	$ 3,368,613	3/31/2019	84	$ 3,368,613	$ 2,887,383	$ 3,127,998	9.9061%	$ 309,862	$ (61,960)	$ 247,902
277	Business Innovation Projects 3	Tech. Modernization	4728	G020	$ 3,368,613	3/31/2019	84	$ 3,368,613	$ 2,887,383	$ 3,127,998	9.9061%	$ 309,862	$ (61,960)	$ 247,902
278	EUC, network, and data center strategy	Tech. Modernization	4715	G020	$ 1,542,858	3/31/2019	84	$ 1,542,858	$ 1,322,450	$ 1,432,654	9.9061%	$ 141,920	$ (28,378)	$ 113,542
279	Data Security	Tech. Modernization	4710	G020	$ 1,575,000	3/31/2019	84	$ 1,575,000	$ 1,350,000	$ 1,462,500	9.9061%	$ 144,877	$ (28,969)	$ 115,907
280	FY19 Data Centre Projects	Tech. Modernization	4716	G020	$ 2,000,000	3/31/2019	84	$ 2,000,000	$ 1,714,286	$ 1,857,143	9.9061%	$ 183,970	$ (36,787)	$ 147,184
281	1327 Interfaces - 523 FTS, 340 RDX, 245 MQSI, 253 JCAPS, 44 PM4D, 7 VB	Tech. Modernization	4706	G020	$ 3,300,000	3/31/2019	84	$ 3,300,000	$ 2,828,571	$ 3,064,286	9.9061%	$ 303,551	$ (60,698)	$ 242,853
282	US Video Conference Programme	Tech. Modernization	4497	G020	$ 1,650,000	6/1/2019	84	$ -	$ 1,453,571	$ 726,786	9.9061%	$ 71,996	$ (23,466)	$ 48,530
283	US SAP: Enhancement Pack 9 Upgrade	Tech. Modernization	4564	G020	$ 8,821,000	3/31/2020	84	$ -	$ 8,821,000	$ 4,410,500	9.9061%	$ 436,908	$ -	$ 436,908
284	US Network Programme	Tech. Modernization	4496	G020	$ 1,575,000	3/31/2020	84	$ -	$ 1,575,000	$ 787,500	9.9061%	$ 78,010	$ -	$ 78,010
285	US VSTIG Programme	Tech. Modernization	4498	G020	$ 700,000	3/31/2020	84	$ -	$ 700,000	$ 350,000	9.9061%	$ 34,671	$ -	$ 34,671
286	US Wireless Programme	Tech. Modernization	4499	G020	$ 1,500,000	3/31/2020	84	$ -	$ 1,500,000	$ 750,000	9.9061%	$ 74,296	$ -	$ 74,296
287	Monitoring and Alerting	Tech. Modernization	4493	G020	$ 1,000,000	3/31/2020	84	$ -	$ 1,000,000	$ 500,000	9.9061%	$ 49,530	$ -	$ 49,530
288	Service Now - Release 3	Tech. Modernization	4261	G020	$ 3,400,000	3/31/2020	84	$ -	$ 3,400,000	$ 1,700,000	9.9061%	$ 168,403	$ -	$ 168,403
289	IS Tools	Tech. Modernization	4513	G020	$ 400,000	3/31/2020	84	$ -	$ 400,000	$ 200,000	9.9061%	$ 19,812	$ -	$ 19,812
290	FY20 Edge Projects	Tech. Modernization	4720	G020	$ 2,000,000	3/31/2020	84	$ -	$ 2,000,000	$ 1,000,000	9.9061%	$ 99,061	$ -	$ 99,061
291	FY20 Network Projects	Tech. Modernization	4721	G020	$ 4,000,000	3/31/2020	84	$ -	$ 4,000,000	$ 2,000,000	9.9061%	$ 198,122	$ -	$ 198,122
292	EMM Licenses	Tech. Modernization	4713	G020	$ 1,320,000	3/31/2020	84	$ -	$ 1,320,000	$ 660,000	9.9061%	$ 65,380	$ -	$ 65,380
293	Business Innovation Projects 2	Tech. Modernization	4708	G020	$ 3,973,236	3/31/2020	84	$ -	$ 3,973,236	$ 1,986,618	9.9061%	$ 196,796	$ -	$ 196,796
294	Business Innovation Projects 3	Tech. Modernization	4728	G020	$ 3,979,236	3/31/2020	84	$ -	$ 3,979,236	$ 1,989,618	9.9061%	$ 197,093	$ -	$ 197,093
295	Data Security	Tech. Modernization	4710	G020	$ 1,575,000	3/31/2020	84	$ -	$ 1,575,000	$ 787,500	9.9061%	$ 78,010	$ -	$ 78,010
296	Hardware and Software Upgrades	Tech. Modernization	4722	G020	$ 7,500,000	3/31/2020	84	$ -	$ 7,500,000	$ 3,750,000	9.9061%	$ 371,478	$ -	$ 371,478
297	Data Centre Consolidation efforts	Tech. Modernization	4709	G020	$ 3,500,000	3/31/2020	84	$ -	$ 3,500,000	$ 1,750,000	9.9061%	$ 173,357	$ -	$ 173,357
298	FY20 Data Centre Projects	Tech. Modernization	4719	G020	$ 4,000,000	3/31/2020	84	$ -	$ 4,000,000	$ 2,000,000	9.9061%	$ 198,122	$ -	$ 198,122
299	Enterprise Data Management Platform	Tech. Modernization	4582	G020	$ 3,730,000	6/1/2020	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
300	Business Innovation Projects 2	Tech. Modernization	4708	G020	$ -	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
301	Business Innovation Projects 3	Tech. Modernization	4728	G020	$ -	3/31/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
	Total IS				$ 822,605,365			$ 393,239,918	$ 557,144,099	$ 475,192,009		$ 47,072,929	$ (12,022,323)	$ 35,050,606

Niagara Mohawk Power Corporation d/b/a National Grid
Service Company Rents
Forecasted Service Company Capital Software allocated to Operating Companies as Rent Expense
For the Data Year ended March 31, 2020

Line	Investment Name	Programs	INVP #	Year Amortization	5210G NIMO G Allocation	NIMO G Rent-Return	NIMO G Rent - Depn	5210E NIMO E Allocation	NIMO E Rent-Return	NIMO E Rent - Depn	5210T NIMO T Allocation	NIMO T Rent-Return	NIMO T Rent - Depn	Amortization Period	Bonus Rate	Bonus Depreciation
250	US Wireless Programme	Tech. Modernization	4499	$ 278,571	4.58%	$ 4,631	$ 12,759	17.76%	$ 17,958	$ 49,474	6.11%	$ 6,178	$ 17,021	36	40%	$ 780,000
251	Monitoring and Alerting	Tech. Modernization	4493	$ 64,286	4.58%	$ 1,069	$ 2,944	17.76%	$ 4,144	$ 11,417	6.11%	$ 1,426	$ 3,928	36	40%	$ 180,000
252	RSA Re-platform	Tech. Modernization	4270	$ 40,000	4.58%	$ 665	$ 1,832	17.76%	$ 2,579	$ 7,104	6.11%	$ 887	$ 2,444	36	40%	$ 112,000
253	Cloud Broker - Hybrid Enablement	Tech. Modernization	3899	$ 35,714	4.58%	$ 594	$ 1,636	17.76%	$ 2,302	$ 6,343	6.11%	$ 792	$ 2,182	36	40%	$ 100,000
254	Office 2010 Upgrade	Tech. Modernization	4265	$ 114,286	4.58%	$ 1,900	$ 5,234	17.76%	$ 7,367	$ 20,297	6.11%	$ 2,535	$ 6,983	36	40%	$ 320,000
255	Citrix Infrstructure Upgrade (Xenapp and NetScaler)	Tech. Modernization	4279	$ 71,429	4.58%	$ 1,187	$ 3,271	17.76%	$ 4,605	$ 12,686	6.11%	$ 1,584	$ 4,364	36	40%	$ 200,000
256	Business Innovation Projects 1	Tech. Modernization	4707	$ 481,230	4.58%	$ 8,000	$ 22,040	17.76%	$ 31,022	$ 85,467	6.11%	$ 10,673	$ 29,403	36	40%	$ 1,347,445
257	Data Security	Tech. Modernization	4710	$ 225,000	4.58%	$ 3,740	$ 10,305	17.76%	$ 14,504	$ 39,960	6.11%	$ 4,990	$ 13,748	36	40%	$ 630,000
258	Orchestration and Self Service	Tech. Modernization	4726	$ 107,143	4.58%	$ 1,781	$ 4,907	17.76%	$ 6,907	$ 19,029	6.11%	$ 2,376	$ 6,546	36	40%	$ 300,000
259	Virtual Desktop - DaaS	Tech. Modernization	4727	$ 78,571	4.58%	$ 1,306	$ 3,599	17.76%	$ 5,065	$ 13,954	6.11%	$ 1,743	$ 4,801	36	40%	$ 220,000
260	SCI connections	Tech. Modernization	4495	$ 14,286	4.58%	$ 237	$ 654	17.76%	$ 921	$ 2,537	6.11%	$ 317	$ 873	36	40%	$ 40,000
261	US SAP: Dynamic Storage Tiering	Tech. Modernization	4560	$ 193,571	4.58%	$ 3,679	$ 8,866	17.76%	$ 14,266	$ 34,378	6.11%	$ 4,908	$ 11,827	36	40%	$ 542,000
262	ICE Replacement	Tech. Modernization	4491	$ 473,714	4.58%	$ 9,431	$ 21,696	17.76%	$ 36,572	$ 84,132	6.11%	$ 12,582	$ 28,944	36	40%	$ 1,326,400
263	US Network Programme	Tech. Modernization	4496	$ 296,429	4.58%	$ 6,994	$ 13,576	17.76%	$ 27,120	$ 52,646	6.11%	$ 9,330	$ 18,112	36	30%	$ 622,500
264	US VSTIG Programme	Tech. Modernization	4498	$ 242,857	4.58%	$ 5,730	$ 11,123	17.76%	$ 22,219	$ 43,131	6.11%	$ 7,644	$ 14,839	36	30%	$ 510,000
265	US Wireless Programme	Tech. Modernization	4499	$ 214,286	4.58%	$ 5,056	$ 9,814	17.76%	$ 19,605	$ 38,057	6.11%	$ 6,745	$ 13,093	36	30%	$ 450,000
266	Data Visualisation Expansion	Tech. Modernization	4606	$ 400,000	4.58%	$ 9,437	$ 18,320	17.76%	$ 36,596	$ 71,040	6.11%	$ 12,590	$ 24,440	36	30%	$ 840,000
267	US SAP: Business Warehouse (BW) Consolidation to HANA Enterprise Cloud (HEC)	Tech. Modernization	4562	$ 338,000	4.58%	$ 7,975	$ 15,480	17.76%	$ 30,923	$ 60,029	6.11%	$ 10,639	$ 20,652	36	30%	$ 709,800
268	Monitoring and Alerting	Tech. Modernization	4493	$ 142,857	4.58%	$ 3,371	$ 6,543	17.76%	$ 13,070	$ 25,371	6.11%	$ 4,496	$ 8,729	36	30%	$ 300,000
269	MWORK and Netmotion Risk Avoidance	Tech. Modernization	4725	$ 71,429	4.58%	$ 1,685	$ 3,271	17.76%	$ 6,535	$ 12,686	6.11%	$ 2,248	$ 4,364	36	30%	$ 150,000
270	Improving End User Experience- Cloud based DMZ Service Platform	Tech. Modernization	4723	$ 42,857	4.58%	$ 1,011	$ 1,963	17.76%	$ 3,921	$ 7,611	6.11%	$ 1,349	$ 2,619	36	30%	$ 90,000
271	Mobile Broadband POC	Tech. Modernization		$ 14,286	4.58%	$ 337	$ 654	17.76%	$ 1,307	$ 2,537	6.11%	$ 450	$ 873	36	30%	$ 30,000
272	FY19 Edge Projects	Tech. Modernization	4717	$ 142,857	4.58%	$ 3,371	$ 6,543	17.76%	$ 13,070	$ 25,371	6.11%	$ 4,496	$ 8,729	36	30%	$ 300,000
273	FY19 Network Projects	Tech. Modernization	4718	$ 142,857	4.58%	$ 3,371	$ 6,543	17.76%	$ 13,070	$ 25,371	6.11%	$ 4,496	$ 8,729	36	30%	$ 300,000
274	Digital Asset Management (DAM)	Tech. Modernization	4711	$ 71,429	4.58%	$ 1,685	$ 3,271	17.76%	$ 6,535	$ 12,686	6.11%	$ 2,248	$ 4,364	36	30%	$ 150,000
275	Business Innovation Projects 1	Tech. Modernization	4707	$ 567,605	4.58%	$ 13,392	$ 25,996	17.76%	$ 51,930	$ 100,807	6.11%	$ 17,865	$ 34,681	36	30%	$ 1,191,971
276	Business Innovation Projects 2	Tech. Modernization	4708	$ 481,230	4.58%	$ 11,354	$ 22,040	17.76%	$ 44,027	$ 85,467	6.11%	$ 15,147	$ 29,403	36	30%	$ 1,010,584
277	Business Innovation Projects 3	Tech. Modernization	4728	$ 481,230	4.58%	$ 11,354	$ 22,040	17.76%	$ 44,027	$ 85,467	6.11%	$ 15,147	$ 29,403	36	30%	$ 1,010,584
278	EUC, network, and data center strategy	Tech. Modernization	4715	$ 220,408	4.58%	$ 5,200	$ 10,095	17.76%	$ 20,165	$ 39,145	6.11%	$ 6,937	$ 13,467	36	30%	$ 462,857
279	Data Security	Tech. Modernization	4710	$ 225,000	4.58%	$ 5,309	$ 10,305	17.76%	$ 20,585	$ 39,960	6.11%	$ 7,082	$ 13,748	36	30%	$ 472,500
280	FY19 Data Centre Projects	Tech. Modernization	4716	$ 285,714	4.58%	$ 6,741	$ 13,086	17.76%	$ 26,140	$ 50,743	6.11%	$ 8,993	$ 17,457	36	30%	$ 600,000
281	1327 Interfaces - 523 FTS, 340 RDX, 245 MQSI, 253 JCAPS, 44 PM4D, 7 VB	Tech. Modernization	4706	$ 471,429	4.58%	$ 11,123	$ 21,591	17.76%	$ 43,131	$ 83,726	6.11%	$ 14,838	$ 28,804	36	30%	$ 990,000
282	US Video Conference Programme	Tech. Modernization	4497	$ 196,429	4.58%	$ 2,223	$ 8,996	17.76%	$ 8,619	$ 34,886	6.11%	$ 2,965	$ 12,002	36	30%	$ 495,000
283	US SAP: Enhancement Pack 9 Upgrade	Tech. Modernization	4564	$ -	4.58%	$ 20,010	$ -	17.76%	$ 77,595	$ -	6.11%	$ 26,695	$ -	36	0%	$ -
284	US Network Programme	Tech. Modernization	4496	$ -	4.58%	$ 3,573	$ -	17.76%	$ 13,855	$ -	6.11%	$ 4,766	$ -	36	0%	$ -
285	US VSTIG Programme	Tech. Modernization	4498	$ -	4.58%	$ 1,588	$ -	17.76%	$ 6,158	$ -	6.11%	$ 2,118	$ -	36	0%	$ -
286	US Wireless Programme	Tech. Modernization	4499	$ -	4.58%	$ 3,403	$ -	17.76%	$ 13,195	$ -	6.11%	$ 4,539	$ -	36	0%	$ -
287	Monitoring and Alerting	Tech. Modernization	4493	$ -	4.58%	$ 2,268	$ -	17.76%	$ 8,797	$ -	6.11%	$ 3,026	$ -	36	0%	$ -
288	Service Now - Release 3	Tech. Modernization	4261	$ -	4.58%	$ 7,713	$ -	17.76%	$ 29,908	$ -	6.11%	$ 10,289	$ -	36	0%	$ -
289	IS Tools	Tech. Modernization	4513	$ -	4.58%	$ 907	$ -	17.76%	$ 3,519	$ -	6.11%	$ 1,211	$ -	36	0%	$ -
290	FY20 Edge Projects	Tech. Modernization	4720	$ -	4.58%	$ 4,537	$ -	17.76%	$ 17,593	$ -	6.11%	$ 6,053	$ -	36	0%	$ -
291	FY20 Network Projects	Tech. Modernization	4721	$ -	4.58%	$ 9,074	$ -	17.76%	$ 35,186	$ -	6.11%	$ 12,105	$ -	36	0%	$ -
292	EMM Licenses	Tech. Modernization	4713	$ -	4.58%	$ 2,994	$ -	17.76%	$ 11,612	$ -	6.11%	$ 3,995	$ -	36	0%	$ -
293	Business Innovation Projects 2	Tech. Modernization	4708	$ -	4.58%	$ 9,013	$ -	17.76%	$ 34,951	$ -	6.11%	$ 12,024	$ -	36	0%	$ -
294	Business Innovation Projects 3	Tech. Modernization	4728	$ -	4.58%	$ 9,027	$ -	17.76%	$ 35,004	$ -	6.11%	$ 12,042	$ -	36	0%	$ -
295	Data Security	Tech. Modernization	4710	$ -	4.58%	$ 3,573	$ -	17.76%	$ 13,855	$ -	6.11%	$ 4,766	$ -	36	0%	$ -
296	Hardware and Software Upgrades	Tech. Modernization	4722	$ -	4.58%	$ 17,014	$ -	17.76%	$ 65,975	$ -	6.11%	$ 22,697	$ -	36	0%	$ -
297	Data Centre Consolidation efforts	Tech. Modernization	4709	$ -	4.58%	$ 7,940	$ -	17.76%	$ 30,788	$ -	6.11%	$ 10,592	$ -	36	0%	$ -
298	FY20 Data Centre Projects	Tech. Modernization	4719	$ -	4.58%	$ 9,074	$ -	17.76%	$ 35,186	$ -	6.11%	$ 12,105	$ -	36	0%	$ -
299	Enterprise Data Management Platform	Tech. Modernization	4582	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
300	Business Innovation Projects 2	Tech. Modernization	4708	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
301	Business Innovation Projects 3	Tech. Modernization	4728	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
	Total IS			$ 65,670,951		$ 3,084,103	$ 5,109,749		$ 6,643,095	$ 12,856,883		$ 1,303,008	$ 2,803,502			$ 208,031,617

NIMO G	$ 8,193,852	NIMO E	$ 23,606,489
RY19 NIMO G	$ 4,533,472	RY19 NIMO E	$ 15,479,451
RY20 Adjust	$ 3,660,380	RY20 Adjust	$ 8,127,038
NIMO	$ 31,800,341		
RY19 NIMO	$ 20,012,923		
RY20 Adjust	$ 11,787,418		

Niagara Mohawk Power Corporation d/b/a National Grid
Service Company Rents
Forecasted Service Company Capital Software allocated to Operating Companies as Rent Expense
For the Data Year ended March 31, 2021

								4/1/2020	3/31/2021		9.9061%			
Line	Investment Name	Programs	INVP #	Bill Pool	FY21 Total Spend	In Service Date	Amortization Period	4/1/2020 Balance	3/31/2021 Balance	Average Balance	Service Co Return	Year Return	Return on Accum Taxes	Total Return
1	Cloud Security	Cyber Security	3683	G020	$ 1,460,000	5/1/2017	84	$ 851,667	$ 643,095	$ 747,381	9.9061%	$ 74,036	$ (27,608)	$ 46,428
2	Risk Based Authentication - 2FA token alternative	Cyber Security	3683	G020	$ 235,080	6/1/2017	84	$ 139,929	$ 106,346	$ 123,137	9.9061%	$ 12,198	$ (4,557)	$ 7,641
3	INVP 3614D1 Ent Network Security	Cyber Security	3614D1	G020	$ 9,478,590	6/30/2017	84	$ 5,754,858	$ 4,400,774	$ 5,077,816	9.9061%	$ 503,013	$ (188,226)	$ 314,787
4	Threat Behavior Modeling	Cyber Security	3683	G020	$ 800,000	8/1/2017	84	$ 495,238	$ 380,952	$ 438,095	9.9061%	$ 43,398	$ (16,266)	$ 27,132
5	Identity & Access Management :Role Base Access Management (RBAC)	Cyber Security	3683	G020	$ 1,650,000	10/1/2017	84	$ 1,060,714	$ 825,000	$ 942,857	9.9061%	$ 93,400	$ (35,112)	$ 58,288
6	Enhanced DLP Gateway and Endpoint	Cyber Security	3683	G020	$ 2,238,480	12/1/2017	84	$ 1,492,320	$ 1,172,537	$ 1,332,429	9.9061%	$ 131,992	$ (49,758)	$ 82,234
7	INVP 3614B7 CNI Network Security	Cyber Security	3614B7	G020	$ 4,829,586	12/31/2017	84	$ 3,277,219	$ 2,587,278	$ 2,932,249	9.9061%	$ 290,471	$ (109,644)	$ 180,827
8	INVP 3614E4 US CNI Security I&E	Cyber Security	3614E4	G020	$ 1,207,045	12/31/2017	84	$ 819,066	$ 646,631	$ 732,849	9.9061%	$ 72,597	$ (27,403)	$ 45,194
9	US CNI Intrusion Detection/Prevention Phase 1	Cyber Security	3683	G020	$ 550,000	3/31/2018	84	$ 392,857	$ 314,286	$ 353,571	9.9061%	$ 35,025	$ (13,106)	$ 21,919
10	Identity & Access Management: Fine Grain Access Management	Cyber Security	3683	G020	$ 1,650,000	3/31/2018	84	$ 1,178,571	$ 942,857	$ 1,060,714	9.9061%	$ 105,075	$ (39,319)	$ 65,756
11	vStig Scaling Upgrades	Cyber Security	3683	G020	$ 1,000,000	8/1/2018	84	$ 761,905	$ 619,048	$ 690,476	9.9061%	$ 68,399	$ (23,957)	$ 44,443
12	IT/OT Discovery and Implementation Phase 1	Cyber Security	3683	G020	$ 5,500,000	10/1/2018	84	$ 4,321,429	$ 3,535,714	$ 3,928,571	9.9061%	$ 389,168	$ (136,976)	$ 252,191
13	Security Research Lab	Cyber Security	3683	G020	$ 325,000	10/1/2018	84	$ 255,357	$ 208,929	$ 232,143	9.9061%	$ 22,996	$ (8,094)	$ 14,902
14	US CNI Security Enhancements Phase 1	Cyber Security	3683	G020	$ 1,650,000	11/1/2018	84	$ 1,316,071	$ 1,080,357	$ 1,198,214	9.9061%	$ 118,696	$ (41,875)	$ 76,821
15	Identity & Access Management: Privileged Access Management	Cyber Security	3683	G020	$ 1,740,000	3/31/2019	84	$ 1,491,429	$ 1,242,857	$ 1,367,143	9.9061%	$ 135,430	$ (43,665)	$ 91,765
16	Domain Based Security Phase 1	Cyber Security	3683	G020	$ 800,000	3/31/2019	84	$ 685,714	$ 571,429	$ 628,571	9.9061%	$ 62,267	$ (20,076)	$ 42,191
17	Security Incident Event Management Phase 4	Cyber Security	3683	G020	$ 1,266,300	5/1/2019	84	$ 1,100,475	$ 919,575	$ 1,010,025	9.9061%	$ 100,054	$ (24,533)	$ 75,521
18	Big Data Security Analytics Phase 1	Cyber Security	3683	G020	$ 4,621,552	5/1/2019	84	$ 4,016,349	$ 3,356,127	$ 3,686,238	9.9061%	$ 365,162	$ (89,537)	$ 275,625
19	US CNI Intrusion Detection/Prevention Phase 2	Cyber Security	3683	G020	$ 800,000	3/31/2020	84	$ 800,000	$ 685,714	$ 742,857	9.9061%	$ 73,588	$ (8,343)	$ 65,245
20	Identity & Access Management: Shared Area Access Management	Cyber Security	3683	G020	$ 1,740,000	3/31/2020	84	$ 1,740,000	$ 1,491,429	$ 1,615,714	9.9061%	$ 160,054	$ (18,145)	$ 141,909
21	Security Incident Event Management Phase 5	Cyber Security	3683	G020	$ 733,150	5/1/2020	84	$ -	$ 637,142	$ 318,571	9.9061%	$ 31,558	$ (2,954)	$ 28,604
22	Domain Based Security Phase 2	Cyber Security	3683	G020	$ 6,000,000	3/31/2021	84	$ -	$ 6,000,000	$ 3,000,000	9.9061%	$ 297,183	$ -	$ 297,183
23	Security Incident Event Management (SIEM) 6	Cyber Security	3683	G020	$ 733,150	5/1/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
24	Big Data Security Analytics - Phase 2	Cyber Security	3683	G020	$ 5,776,940	5/1/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
25	IT/OT Discovery and Implementation: Phase 2	Cyber Security	3683	G020	$ 7,000,000	10/1/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
26	US CNI Security Enhancements - Phase 2	Cyber Security	3683	G020	$ 3,960,000	11/1/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
27	Data Visualization	Cyber Security	3683	G020	$ 1,000,000	12/1/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
29	INVP 4045 Double Pole Mgmt DB	FY18 Plan	4045	G198	$ 482,153	2/18/2017	84	$ 269,776	$ 200,897	$ 235,337	9.9061%	$ 23,313	$ (8,660)	$ 14,652
30	INVP 4373 Contingent Labor Admin Replacement	FY18 Plan	4373	G020	$ 250,692	2/20/2017	84	$ 140,268	$ 104,455	$ 122,362	9.9061%	$ 12,121	$ (4,503)	$ 7,618
32	INVP 4188 Aging System Stabilize	FY18 Plan	4188	G148	$ 782,710	3/31/2017	84	$ 447,263	$ 335,447	$ 391,355	9.9061%	$ 38,768	$ (14,430)	$ 24,338
33	INVP 4280 US VSTIG Bandwidth Ph2	FY18 Plan	4280	G020	$ 1,998,645	3/31/2017	84	$ 1,142,083	$ 856,562	$ 999,323	9.9061%	$ 98,994	$ (36,847)	$ 62,147
34	INVP 4307 US Win 7 Refresh Ph 3	FY18 Plan	4307	G020	$ 11,562,999	3/31/2017	84	$ 6,607,428	$ 4,955,571	$ 5,781,500	9.9061%	$ 572,720	$ (213,173)	$ 359,547
35	INVP 4364 Wireless Network	FY18 Plan	4364	G020	$ 2,303,959	3/31/2017	84	$ 1,316,548	$ 987,411	$ 1,151,979	9.9061%	$ 114,116	$ (42,475)	$ 71,641
36	S005242 M112 Systemic Improvement	FY18 Plan		G020	$ 8,000,000	3/31/2017	120	$ 5,600,000	$ 4,800,000	$ 5,200,000	9.9061%	$ 515,116	$ (195,273)	$ 319,843
37	INVP 4289 US Network Improvement	FY18 Plan	4289	G020	$ 978,717	3/31/2017	84	$ 559,267	$ 419,450	$ 489,358	9.9061%	$ 48,476	$ (18,043)	$ 30,433
38	HANA License Costs	FY18 Plan	4649	G020	$ 3,500,000	3/31/2017	84	$ 2,000,000	$ 1,500,000	$ 1,750,000	9.9061%	$ 173,357	$ (64,525)	$ 108,831
39	Microsoft ELA Renewal	FY18 Plan	4642	G020	$ 1,900,000	3/31/2017	84	$ 1,085,714	$ 814,286	$ 950,000	9.9061%	$ 94,108	$ (35,028)	$ 59,080
40	Mobile Device Refresh - FY17	FY18 Plan	4671	G020	$ 4,546,000	3/31/2017	84	$ 2,597,714	$ 1,948,286	$ 2,273,000	9.9061%	$ 225,165	$ (83,809)	$ 141,356
41	Zscaler	FY18 Plan	4681	G020	$ 2,100,000	3/31/2017	84	$ 1,200,000	$ 900,000	$ 1,050,000	9.9061%	$ 104,014	$ (38,715)	$ 65,299
43	INVP 4631 Box Enablement	FY18 Plan	4631	G020	$ 254,000	4/30/2017	84	$ 148,167	$ 111,881	$ 130,024	9.9061%	$ 12,880	$ (4,803)	$ 8,077
44	INVP 4170 Time Transformation	FY18 Plan	4170	G020	$ 3,917,000	5/1/2017	84	$ 2,284,917	$ 1,725,345	$ 2,005,131	9.9061%	$ 198,630	$ (74,070)	$ 124,560
45	INVP 4420 US CNI OMSFocalPoint Infrastructure Upgrade	FY18 Plan	4420	G198	$ 1,366,563	5/1/2017	84	$ 797,162	$ 601,938	$ 699,550	9.9061%	$ 69,298	$ (25,842)	$ 43,456
46	INVP 4274 VSTIG Hardware Refresh	FY18 Plan	4274	G020	$ 608,000	5/31/2017	84	$ 361,905	$ 275,048	$ 318,476	9.9061%	$ 31,549	$ (11,785)	$ 19,763
47	US Video Conferencing upgrade for RW	FY18 Plan	4632	G020	$ 1,330,000	6/1/2017	84	$ 791,667	$ 601,667	$ 696,667	9.9061%	$ 69,012	$ (25,781)	$ 43,232
48	Hix D/C Improvement Server Refresh	FY18 Plan	4676	G020	$ 1,000,000	7/1/2017	84	$ 607,143	$ 464,286	$ 535,714	9.9061%	$ 53,068	$ (19,858)	$ 33,210
49	INVP 4464 Data Visualization	FY18 Plan	4464	G020	$ 4,440,000	7/31/2017	84	$ 2,748,571	$ 2,114,286	$ 2,431,429	9.9061%	$ 240,859	$ (90,275)	$ 150,585
50	Mobility - (MDM) Mobile Device	FY18 Plan	3430	G020	$ 1,162,000	7/31/2017	84	$ 719,333	$ 553,333	$ 636,333	9.9061%	$ 63,036	$ (23,626)	$ 39,410
51	Changes to ACIS for PMCC Civil Vendor Billing	FY18 Plan	4487	G186	$ 382,000	8/2/2017	84	$ 236,476	$ 181,905	$ 209,190	9.9061%	$ 20,723	$ (7,767)	$ 12,956
52	INVP 4461 Unix51 Interface Migration	FY18 Plan	4461	G020	$ 1,386,701	9/1/2017	84	$ 874,942	$ 676,842	$ 775,892	9.9061%	$ 76,861	$ (28,852)	$ 48,009
53	INVP 4287 Active Directory Upgrade	FY18 Plan	4287	G020	$ 804,825	9/30/2017	84	$ 517,388	$ 402,413	$ 459,900	9.9061%	$ 45,558	$ (17,127)	$ 28,431
54	US Control-Gas System Operating Procedure (SOP) Upgrade	FY18 Plan	4480	G210	$ 542,000	10/2/2017	84	$ 348,429	$ 271,000	$ 309,714	9.9061%	$ 30,681	$ (11,534)	$ 19,147
55	Enterprise Labs	FY18 Plan	4693	G020	$ 668,000	10/30/2017	84	$ 437,381	$ 341,952	$ 389,667	9.9061%	$ 38,601	$ (14,532)	$ 24,069
56	Cascade Electric Application Upgrade Project	FY18 Plan	3986	G198	$ 375,000	10/31/2017	84	$ 245,536	$ 191,964	$ 218,750	9.9061%	$ 21,670	$ (8,158)	$ 13,512
57	INVP 4408 Doc Mgmt Systems Replacement Delivery	FY18 Plan	4408	G149	$ 3,617,542	11/1/2017	84	$ 2,368,629	$ 1,851,837	$ 2,110,233	9.9061%	$ 209,041	$ (78,697)	$ 130,344
58	WIFI for Fleet Services Diagnostic Laptops	FY18 Plan	3956	G352	$ 838,000	11/1/2017	84	$ 548,690	$ 428,976	$ 488,833	9.9061%	$ 48,424	$ (18,230)	$ 30,194
59	Gas Service Database - UNY	FY18 Plan	3949	5210G	$ 325,000	12/1/2017	84	$ 216,667	$ 170,238	$ 193,452	9.9061%	$ 19,164	$ (7,224)	$ 11,939
62	Gas Capital Investment Planning Tool	FY18 Plan	4466	G210	$ 572,000	1/17/2018	84	$ 394,952	$ 313,238	$ 354,095	9.9061%	$ 35,077	$ (13,088)	$ 21,989
63	Computapole Enhancements to Support Inspection Types	FY18 Plan	4462	G186	$ 450,000	3/1/2018	84	$ 316,071	$ 251,786	$ 283,929	9.9061%	$ 28,126	$ (10,510)	$ 17,616
64	Travel & Expense Management (T&E) and Global Master Service Provider (MSP) Strategy	FY18 Plan	4578	G020	$ 1,232,000	3/1/2018	84	$ 865,333	$ 689,333	$ 777,333	9.9061%	$ 77,003	$ (28,774)	$ 48,229
65	Ageing System Stabilization/Upgrades - FY18	FY18 Plan	4389	G148	$ 1,500,000	3/15/2018	84	$ 1,053,571	$ 839,286	$ 946,429	9.9061%	$ 93,754	$ (35,033)	$ 58,721
66	INVP 3486 US MDS-Itron Enterprise Edition (IEE)	FY18 Plan	3486	G186	$ 670,943	3/31/2018	84	$ 479,245	$ 383,396	$ 431,321	9.9061%	$ 42,727	$ (15,988)	$ 26,739
67	INVP 4390 Plastic Fusion II	FY18 Plan	4390	G207	$ 506,000	3/31/2018	84	$ 361,429	$ 289,143	$ 325,286	9.9061%	$ 32,223	$ (12,058)	$ 20,165
68	INVP 4397 Ariba TLS and CI Update	FY18 Plan	4397	G020	$ 1,462,000	3/31/2018	120	$ 1,169,600	$ 1,023,400	$ 1,096,500	9.9061%	$ 108,620	$ (41,077)	$ 67,543
69	US Mobile Device Refresh	FY18 Plan	4395	G020	$ 5,000,000	3/31/2018	84	$ 3,571,429	$ 2,857,143	$ 3,214,286	9.9061%	$ 318,410	$ -	$ 318,410
70	US SAP: Infrastructure Landscape	FY18 Plan	4348	G020	$ 4,603,000	3/31/2018	84	$ 3,287,857	$ 2,630,286	$ 2,959,071	9.9061%	$ 293,128	$ (109,688)	$ 183,440
71	US CNI Tech Services-Network Equipment Lifecycle Replacements	FY18 Plan	4570	G186	$ 250,000	3/31/2018	84	$ 178,571	$ 142,857	$ 160,714	9.9061%	$ 15,920	$ (5,957)	$ 9,963
72	US CNI-EMS Lifecycle Hardware and Software Upgrade	FY18 Plan	4568	U186	$ 13,348,000	3/31/2018	84	$ 9,534,286	$ 7,627,429	$ 8,580,857	9.9061%	$ 850,027	$ (318,078)	$ 531,949
73	Network Transformation Completion - CEMS	FY18 Plan	4647	G020	$ 250,000	3/31/2018	84	$ 178,571	$ 142,857	$ 160,714	9.9061%	$ 15,920	$ (5,957)	$ 9,963
74	Application monitoring, Network/IDS, Operations monitoring	FY18 Plan	4677	G020	$ 750,000	3/31/2018	84	$ 535,714	$ 428,571	$ 482,143	9.9061%	$ 47,761	$ (17,872)	$ 29,889
75	Aged Printer refresh	FY18 Plan	4689	G020	$ 50,000	3/31/2018	84	$ 35,714	$ 28,571	$ 32,143	9.9061%	$ 3,184	$ (1,191)	$ 1,993
76	RSA Token refresh	FY18 Plan	4683	G020	$ 200,000	3/31/2018	84	$ 142,857	$ 114,286	$ 128,571	9.9061%	$ 12,736	$ (4,766)	$ 7,970

Niagara Mohawk Power Corporation d/b/a National Grid
Service Company Rents
Forecasted Service Company Capital Software allocated to Operating Companies as Rent Expense
For the Data Year ended March 31, 2021

Line	Investment Name	Programs	Year Amortization	5210G NIMO G Allocation	NIMO G Rent-Return	NIMO G Rent - Depn	5210E NIMO E Allocation	NIMO E Rent-Return	NIMO E Rent - Depn	5210T NIMO T Allocation	NIMO T Rent-Return	NIMO T Rent - Depn	Amortization Period	Bonus Rate	Bonus Depreciation
1	Cloud Security	Cyber Security	$ 208,571	4.58%	$ 2,126	$ 9,553	17.76%	$ 8,246	$ 37,042	6.11%	$ 2,837	$ 12,744	36	50%	$ 730,000
2	Risk Based Authentication - 2FA token alternative	Cyber Security	$ 33,583	4.58%	$ 350	$ 1,538	17.76%	$ 1,357	$ 5,964	6.11%	$ 467	$ 2,052	36	50%	$ 117,540
3	INVP 3614D1 Ent Network Security	Cyber Security	$ 1,354,084	4.58%	$ 14,417	$ 62,017	17.76%	$ 55,906	$ 240,485	6.11%	$ 19,233	$ 82,735	36	50%	$ 4,739,295
4	Threat Behavior Modeling	Cyber Security	$ 114,286	4.58%	$ 1,243	$ 5,234	17.76%	$ 4,819	$ 20,297	6.11%	$ 1,658	$ 6,983	36	50%	$ 400,000
5	Identity & Access Management :Role Base Access Management (RBAC)	Cyber Security	$ 235,714	4.58%	$ 2,670	$ 10,796	17.76%	$ 10,352	$ 41,863	6.11%	$ 3,561	$ 14,402	36	50%	$ 825,000
6	Enhanced DLP Gateway and Endpoint	Cyber Security	$ 319,783	4.58%	$ 3,766	$ 14,646	17.76%	$ 14,605	$ 56,793	6.11%	$ 5,024	$ 19,539	36	50%	$ 1,119,240
7	INVP 3614B7 CNI Network Security	Cyber Security	$ 689,941	4.58%	$ 8,282	$ 31,599	17.76%	$ 32,115	$ 122,533	6.11%	$ 11,049	$ 42,155	36	50%	$ 2,414,793
8	INVP 3614E4 US CNI Security I&E	Cyber Security	$ 172,435	4.58%	$ 2,070	$ 7,898	17.76%	$ 8,026	$ 30,624	6.11%	$ 2,761	$ 10,536	36	50%	$ 603,522
9	US CNI Intrusion Detection/Prevention Phase 1	Cyber Security	$ 78,571	4.58%	$ 1,004	$ 3,599	17.76%	$ 3,893	$ 13,954	6.11%	$ 1,339	$ 4,801	36	40%	$ 220,000
10	Identity & Access Management: Fine Grain Access Management	Cyber Security	$ 235,714	4.58%	$ 3,012	$ 10,796	17.76%	$ 11,678	$ 41,863	6.11%	$ 4,018	$ 14,402	36	40%	$ 660,000
11	vStig Scaling Upgrades	Cyber Security	$ 142,857	4.58%	$ 2,035	$ 6,543	17.76%	$ 7,893	$ 25,371	6.11%	$ 2,715	$ 8,729	36	40%	$ 400,000
12	IT/OT Discovery and Implementation Phase 1	Cyber Security	$ 785,714	4.58%	$ 11,550	$ 35,986	17.76%	$ 44,789	$ 139,543	6.11%	$ 15,409	$ 48,007	36	40%	$ 2,200,000
13	Security Research Lab	Cyber Security	$ 46,429	4.58%	$ 683	$ 2,126	17.76%	$ 2,647	$ 8,246	6.11%	$ 911	$ 2,837	36	40%	$ 130,000
14	US CNI Security Enhancements Phase 1	Cyber Security	$ 235,714	4.58%	$ 3,518	$ 10,796	17.76%	$ 13,643	$ 41,863	6.11%	$ 4,694	$ 14,402	36	40%	$ 660,000
15	Identity & Access Management: Privileged Access Management	Cyber Security	$ 248,571	4.58%	$ 4,203	$ 11,385	17.76%	$ 16,297	$ 44,146	6.11%	$ 5,607	$ 15,188	36	30%	$ 522,000
16	Domain Based Security Phase 1	Cyber Security	$ 114,286	4.58%	$ 1,932	$ 5,234	17.76%	$ 7,493	$ 20,297	6.11%	$ 2,578	$ 6,983	36	30%	$ 240,000
17	Security Incident Event Management Phase 4	Cyber Security	$ 180,900	4.58%	$ 3,459	$ 8,285	17.76%	$ 13,413	$ 32,128	6.11%	$ 4,614	$ 11,053	36	30%	$ 379,890
18	Big Data Security Analytics Phase 1	Cyber Security	$ 660,222	4.58%	$ 12,624	$ 30,238	17.76%	$ 48,951	$ 117,255	6.11%	$ 16,841	$ 40,340	36	30%	$ 1,386,466
19	US CNI Intrusion Detection/Prevention Phase 2	Cyber Security	$ 114,286	4.58%	$ 2,988	$ 5,234	17.76%	$ 11,588	$ 20,297	6.11%	$ 3,986	$ 6,983	36	0%	$ -
20	Identity & Access Management: Shared Area Access Management	Cyber Security	$ 248,571	4.58%	$ 6,499	$ 11,385	17.76%	$ 25,203	$ 44,146	6.11%	$ 8,671	$ 15,188	36	0%	$ -
21	Security Incident Event Management Phase 5	Cyber Security	$ 96,008	4.58%	$ 1,310	$ 4,397	17.76%	$ 5,080	$ 17,051	6.11%	$ 1,748	$ 5,866	36	0%	$ -
22	Domain Based Security Phase 2	Cyber Security	$ -	4.58%	$ 13,611	$ -	17.76%	$ 52,780	$ -	6.11%	$ 18,158	$ -	36	0%	$ -
23	Security Incident Event Management (SIEM) 6	Cyber Security	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
24	Big Data Security Analytics - Phase 2	Cyber Security	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
25	IT/OT Discovery and Implementation: Phase 2	Cyber Security	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
26	US CNI Security Enhancements - Phase 2	Cyber Security	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
27	Data Visualization	Cyber Security	$ -	4.58%	$ -	$ -	17.76%	$ -	$ -	6.11%	$ -	$ -	36	0%	$ -
29	INVP 4045 Double Pole Mgmt DB	FY18 Plan	$ 68,879	0.00%	$ -	$ -	41.93%	$ 6,144	$ 28,881	0.00%	$ -	$ -	36	50%	$ 241,077
30	INVP 4373 Contingent Labor Admin Replacement	FY18 Plan	$ 35,813	4.58%	$ 349	$ 1,640	17.76%	$ 1,353	$ 6,360	6.11%	$ 465	$ 2,188	36	50%	$ 125,346
32	INVP 4188 Aging System Stabilize	FY18 Plan	$ 111,816	4.83%	$ 1,176	$ 5,401	18.77%	$ 4,568	$ 20,988	6.43%	$ 1,565	$ 7,190	36	50%	$ 391,355
33	INVP 4280 US VSTIG Bandwidth Ph2	FY18 Plan	$ 285,521	4.58%	$ 2,846	$ 13,077	17.76%	$ 11,037	$ 50,708	6.11%	$ 3,797	$ 17,445	36	50%	$ 999,323
34	INVP 4307 US Win 7 Refresh Ph 3	FY18 Plan	$ 1,651,857	4.58%	$ 16,467	$ 75,655	17.76%	$ 63,856	$ 293,370	6.11%	$ 21,968	$ 100,928	36	50%	$ 5,781,500
35	INVP 4364 Wireless Network	FY18 Plan	$ 329,137	4.58%	$ 3,281	$ 15,074	17.76%	$ 12,723	$ 58,455	6.11%	$ 4,377	$ 20,110	36	50%	$ 1,151,979
36	S005242 M112 Systemic Improvement	FY18 Plan	$ 800,000	4.58%	$ 14,649	$ 36,640	17.76%	$ 56,804	$ 142,080	6.11%	$ 19,542	$ 48,880	36	50%	$ 4,000,000
37	INVP 4289 US Network Improvement	FY18 Plan	$ 139,817	4.58%	$ 1,394	$ 6,404	17.76%	$ 5,405	$ 24,831	6.11%	$ 1,859	$ 8,543	36	50%	$ 489,358
38	HANA License Costs	FY18 Plan	$ 500,000	4.58%	$ 4,984	$ 22,900	17.76%	$ 19,328	$ 88,800	6.11%	$ 6,650	$ 30,550	36	50%	$ 1,750,000
39	Microsoft ELA Renewal	FY18 Plan	$ 271,429	4.58%	$ 2,706	$ 12,431	17.76%	$ 10,493	$ 48,206	6.11%	$ 3,610	$ 16,584	36	50%	$ 950,000
40	Mobile Device Refresh - FY17	FY18 Plan	$ 649,429	4.58%	$ 6,474	$ 29,744	17.76%	$ 25,105	$ 115,339	6.11%	$ 8,637	$ 39,680	36	50%	$ 2,273,000
41	Zscaler	FY18 Plan	$ 300,000	4.58%	$ 2,991	$ 13,740	17.76%	$ 11,597	$ 53,280	6.11%	$ 3,990	$ 18,330	36	50%	$ 1,050,000
43	INVP 4631 Box Enablement	FY18 Plan	$ 36,286	4.58%	$ 370	$ 1,662	17.76%	$ 1,435	$ 6,444	6.11%	$ 494	$ 2,217	36	50%	$ 127,000
44	INVP 4170 Time Transformation	FY18 Plan	$ 559,571	4.58%	$ 5,705	$ 25,628	17.76%	$ 22,122	$ 99,380	6.11%	$ 7,611	$ 34,190	36	50%	$ 1,958,500
45	INVP 4420 US CNI OMSFocalPoint Infrastructure Upgrade	FY18 Plan	$ 195,223	0.00%	$ -	$ -	41.93%	$ 18,221	$ 81,857	0.00%	$ -	$ -	36	50%	$ 683,282
46	INVP 4274 VSTIG Hardware Refresh	FY18 Plan	$ 86,857	4.58%	$ 905	$ 3,978	17.76%	$ 3,510	$ 15,426	6.11%	$ 1,208	$ 5,307	36	50%	$ 304,000
47	US Video Conferencing upgrade for RW	FY18 Plan	$ 190,000	4.58%	$ 1,980	$ 8,702	17.76%	$ 7,678	$ 33,744	6.11%	$ 2,641	$ 11,609	36	50%	$ 665,000
48	Hix D/C Improvement Server Refresh	FY18 Plan	$ 142,857	4.58%	$ 1,521	$ 6,543	17.76%	$ 5,898	$ 25,371	6.11%	$ 2,029	$ 8,729	36	50%	$ 500,000
49	INVP 4464 Data Visualization	FY18 Plan	$ 634,286	4.58%	$ 6,897	$ 29,050	17.76%	$ 26,744	$ 112,649	6.11%	$ 9,201	$ 38,755	36	50%	$ 2,220,000
50	Mobility - (MDM) Mobile Device	FY18 Plan	$ 166,000	4.58%	$ 1,805	$ 7,603	17.76%	$ 6,999	$ 29,482	6.11%	$ 2,408	$ 10,143	36	50%	$ 581,000
51	Changes to ACIS for PMCC Civil Vendor Billing	FY18 Plan	$ 54,571	0.00%	$ -	$ -	30.74%	$ 3,983	$ 16,775	10.99%	$ 1,424	$ 5,997	36	50%	$ 191,000
52	INVP 4461 Unix51 Interface Migration	FY18 Plan	$ 198,100	4.58%	$ 2,199	$ 9,073	17.76%	$ 8,526	$ 35,183	6.11%	$ 2,933	$ 12,104	36	50%	$ 693,351
53	INVP 4287 Active Directory Upgrade	FY18 Plan	$ 114,975	4.58%	$ 1,302	$ 5,266	17.76%	$ 5,049	$ 20,420	6.11%	$ 1,737	$ 7,025	36	50%	$ 402,413
54	US Control-Gas System Operating Procedure (SOP) Upgrade	FY18 Plan	$ 77,429	12.44%	$ 2,382	$ 9,632	0.00%	$ -	$ -	0.00%	$ -	$ -	36	50%	$ 271,000
55	Enterprise Labs	FY18 Plan	$ 95,429	4.58%	$ 1,102	$ 4,371	17.76%	$ 4,275	$ 16,948	6.11%	$ 1,471	$ 5,831	36	50%	$ 334,000
56	Cascade Electric Application Upgrade Project	FY18 Plan	$ 53,571	0.00%	$ -	$ -	41.93%	$ 5,665	$ 22,463	0.00%	$ -	$ -	36	50%	$ 187,500
57	INVP 4408 Doc Mgmt Systems Replacement Delivery	FY18 Plan	$ 516,792	4.61%	$ 6,009	$ 23,824	17.88%	$ 23,306	$ 92,402	6.15%	$ 8,016	$ 31,783	36	50%	$ 1,808,771
58	WIFI for Fleet Services Diagnostic Laptops	FY18 Plan	$ 119,714	4.63%	$ 1,398	$ 5,543	17.94%	$ 5,417	$ 21,477	6.17%	$ 1,863	$ 7,386	36	50%	$ 419,000
59	Gas Service Database - UNY	FY18 Plan	$ 46,429	100.00%	$ 11,939	$ 46,429	0.00%	$ -	$ -	0.00%	$ -	$ -	36	50%	$ 162,500
62	Gas Capital Investment Planning Tool	FY18 Plan	$ 81,714	12.44%	$ 2,735	$ 10,165	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 228,800
63	Computapole Enhancements to Support Inspection Types	FY18 Plan	$ 64,286	0.00%	$ -	$ -	30.74%	$ 5,415	$ 19,761	10.99%	$ 1,936	$ 7,065	36	40%	$ 180,000
64	Travel & Expense Management (T&E) and Global Master Service Provider (MSP) Strategy	FY18 Plan	$ 176,000	4.58%	$ 2,209	$ 8,061	17.76%	$ 8,566	$ 31,258	6.11%	$ 2,947	$ 10,754	36	40%	$ 492,800
65	Ageing System Stabilization/Upgrades - FY18	FY18 Plan	$ 214,286	4.83%	$ 2,836	$ 10,350	18.77%	$ 11,022	$ 40,221	6.43%	$ 3,776	$ 13,779	36	40%	$ 600,000
66	INVP 3486 US MDS-Itron Enterprise Edition (IEE)	FY18 Plan	$ 95,849	0.00%	$ -	$ -	30.74%	$ 8,219	$ 29,464	10.99%	$ 2,939	$ 10,534	36	40%	$ 268,377
67	INVP 4390 Plastic Fusion II	FY18 Plan	$ 72,286	19.47%	$ 3,926	$ 14,074	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 202,400
68	INVP 4397 Ariba TLS and CI Update	FY18 Plan	$ 146,200	4.58%	$ 3,093	$ 6,696	17.76%	$ 11,996	$ 25,965	6.11%	$ 4,127	$ 8,933	36	40%	$ 584,800
69	US Mobile Device Refresh	FY18 Plan	$ 714,286	4.58%	$ 14,583	$ 32,714	17.76%	$ 56,550	$ 126,857	6.11%	$ 19,455	$ 43,643	36	40%	$ 2,000,000
70	US SAP: Infrastructure Landscape	FY18 Plan	$ 657,571	4.58%	$ 8,402	$ 30,117	17.76%	$ 32,579	$ 116,785	6.11%	$ 11,208	$ 40,178	36	40%	$ 1,841,200
71	US CNI Tech Services-Network Equipment Lifecycle Replacements	FY18 Plan	$ 35,714	0.00%	$ -	$ -	30.74%	$ 3,063	$ 10,979	10.99%	$ 1,095	$ 3,925	36	40%	$ 100,000
72	US CNI-EMS Lifecycle Hardware and Software Upgrade	FY18 Plan	$ 1,906,857	0.00%	$ -	$ -	26.20%	$ 139,371	$ 499,597	35.42%	$ 188,416	$ 675,409	36	40%	$ 5,339,200
73	Network Transformation Completion - CEMS	FY18 Plan	$ 35,714	4.58%	$ 456	$ 1,636	17.76%	$ 1,769	$ 6,343	6.11%	$ 609	$ 2,182	36	40%	$ 100,000
74	Application monitoring, Network/IDS, Operations monitoring	FY18 Plan	$ 107,143	4.58%	$ 1,369	$ 4,907	17.76%	$ 5,308	$ 19,029	6.11%	$ 1,826	$ 6,546	36	40%	$ 300,000
75	Aged Printer refresh	FY18 Plan	$ 7,143	4.58%	$ 91	$ 327	17.76%	$ 354	$ 1,269	6.11%	$ 122	$ 436	36	40%	$ 20,000
76	RSA Token refresh	FY18 Plan	$ 28,571	4.58%	$ 365	$ 1,309	17.76%	$ 1,416	$ 5,074	6.11%	$ 487	$ 1,746	36	40%	$ 80,000

Niagara Mohawk Power Corporation d/b/a National Grid
Service Company Rents
Forecasted Service Company Capital Software allocated to Operating Companies as Rent Expense
For the Data Year ended March 31, 2021

Line	Investment Name	Programs	INVP #	Bill Pool	FY21 Total Spend	In Service Date	Amortization Period	4/1/2020 Balance (4/1/2020)	3/31/2021 Balance (3/31/2021)	Average Balance	Service Co Return (9.9061%)	Year Return	Return on Accum Taxes	Total Return
78	INVP4449 - EPA File	FY18 Plan	4449	C170	$ 700,000	3/31/2018	84	$ 500,000	$ 400,000	$ 450,000	9.9061%	$ 44,577	$ (16,681)	$ 27,897
79	Informatica Upgrade/Microstrategy Replacement Program	FY18 Plan	4469	G020	$ 3,516,000	5/1/2018	84	$ 2,553,286	$ 2,051,000	$ 2,302,143	9.9061%	$ 228,052	$ (79,231)	$ 148,821
80	Call Center Customer Contact Center/SDC Technology Upgrade Implement Solution	FY18 Plan	3932	C175	$ 27,724,719	8/31/2018	84	$ 21,453,652	$ 17,492,977	$ 19,473,315	9.9061%	$ 1,929,043	$ (677,335)	$ 1,251,708
81	US MDS-Energy Accounting System (EAS) migration to Wholesale Settlement Application (WSA)	FY18 Plan	4481	G186	$ 2,160,000	10/1/2018	84	$ 1,697,143	$ 1,388,571	$ 1,542,857	9.9061%	$ 152,837	$ (53,794)	$ 99,042
82	INVP 4398 Storms/ISched Upgrade	FY18 Plan	4398	G160	$ 9,955,867	12/15/2018	84	$ 8,059,511	$ 6,637,244	$ 7,348,378	9.9061%	$ 727,937	$ (257,389)	$ 470,548
84	STORMS Capital Cost Estimates	FY18 Plan	4467	G148	$ 776,000	3/1/2019	84	$ 655,905	$ 545,048	$ 600,476	9.9061%	$ 59,484	$ (20,708)	$ 38,776
86	US CNI Tech Services-Network Equipment Lifecycle Replacements	FY18 Plan	4570	G186	$ 250,000	3/31/2019	84	$ 214,286	$ 178,571	$ 196,429	9.9061%	$ 19,458	$ (6,274)	$ 13,185
87	Inventory Management Handheld Devices	FY18 Plan		G020	$ 75,000	3/31/2019	84	$ 64,286	$ 53,571	$ 58,929	9.9061%	$ 5,838	$ (1,882)	$ 3,955
88	Customer Bill Redesign	FY18 Plan	4704Q	H173	$ 2,108,147	3/31/2019	84	$ 1,806,983	$ 1,505,819	$ 1,656,401	9.9061%	$ 164,085	$ (52,904)	$ 111,180
89	INVP 3737 US CNI GMS SCADA Upgrade &	FY18 Plan	3737	C210	$ 25,930,291	3/31/2020	84	$ 25,930,291	$ 22,225,964	$ 24,078,128	9.9061%	$ 2,385,200	$ (270,411)	$ 2,114,789
90	Cisco Prime	FY18 Plan	4679	G020	$ 648,000	3/31/2021	84	$ -	$ 648,000	$ 324,000	9.9061%	$ 32,096	$ -	$ 32,096
91	Contractor Management Modernization	FY18 Plan	4151	G327	$ 5,910,000	10/15/2021	84	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
92	Risk Management (Tx Mains & Dx Mains)	GBE- Asset Management		C210	$ 2,110,800	12/1/2017	120	$ 1,618,280	$ 1,407,200	$ 1,512,740	9.9061%	$ 149,853	$ (57,127)	$ 92,727
93	AM Program Leadership-1	GBE- Asset Management		C210	$ 277,124	3/1/2018	120	$ 219,390	$ 191,677	$ 205,534	9.9061%	$ 20,360	$ (7,694)	$ 12,666
94	Enhancements	GBE- Asset Management		C210	$ 2,660,875	12/1/2018	120	$ 2,306,092	$ 2,040,004	$ 2,173,048	9.9061%	$ 215,264	$ (77,117)	$ 138,147
95	Additional IM Modules	GBE- Asset Management		C210	$ 716,840	2/1/2019	120	$ 633,208	$ 561,524	$ 597,366	9.9061%	$ 59,176	$ (20,828)	$ 38,347
96	AM Program Leadership-2	GBE- Asset Management		C210	$ 398,676	3/1/2019	120	$ 355,486	$ 315,619	$ 335,552	9.9061%	$ 33,240	$ (11,716)	$ 21,524
97	Data Remediation, GIS Upgrade/ Migration & GIS Mobility	GBE- Asset Management		C210	$ 11,311,759	3/1/2019	120	$ 10,086,318	$ 8,955,142	$ 9,520,730	9.9061%	$ 943,132	$ (332,424)	$ 610,708
98	EAM-FIN Integration	GBE- Asset Management		C210	$ 1,778,102	6/1/2019	120	$ 1,629,927	$ 1,452,117	$ 1,541,022	9.9061%	$ 152,655	$ (39,338)	$ 113,317
99	Integrity Management Integrations	GBE- Asset Management		C210	$ 1,088,112	10/1/2019	120	$ 1,033,706	$ 924,895	$ 979,300	9.9061%	$ 97,010	$ (25,517)	$ 71,493
100	AM Program Leadership-3	GBE- Asset Management		C210	$ 408,336	3/1/2020	120	$ 404,933	$ 364,100	$ 384,516	9.9061%	$ 38,091	$ (8,085)	$ 30,005
101	Design (GWD), Estimating (CU), & Mobility	GBE- Asset Management		C210	$ 9,851,109	9/1/2020	120	$ -	$ 9,276,461	$ 4,638,231	9.9061%	$ 459,467	$ (53,934)	$ 405,533
102	Asset Analytics Integration	GBE- Asset Management		C210	$ 1,764,202	12/1/2020	120	$ -	$ 1,705,395	$ 852,698	9.9061%	$ 84,469	$ (10,537)	$ 73,932
103	GIS (GWD/CU) - PPM Integration	GBE- Asset Management		C210	$ 844,849	12/1/2020	120	$ -	$ 816,687	$ 408,343	9.9061%	$ 40,451	$ (5,046)	$ 35,405
104	GIS-EAM Integration	GBE- Asset Management		C210	$ 7,818,756	12/2/2020	120	$ -	$ 7,558,131	$ 3,779,066	9.9061%	$ 374,357	$ -	$ -
105	AM Program Leadership-4	GBE- Asset Management		C210	$ 103,929	3/1/2021	120	$ -	$ 103,063	$ 51,531	9.9061%	$ 5,105	$ (672)	$ 4,432
106	Use Case No.1 - Asset Risk	GBE- Asset Management		C210	$ 3,591,031	3/1/2021	120	$ -	$ 3,561,106	$ 1,780,553	9.9061%	$ 176,383	$ (23,236)	$ 153,147
107	Complex Design (CAD) & Estimating (ESW)	GBE- Asset Management		C210	$ 2,389,087	3/1/2021	120	$ -	$ 2,369,178	$ 1,184,589	9.9061%	$ 117,346	$ (15,459)	$ 101,888
108	Program Learning Management-1	GBE- Business Enablement		C210	$ 117,297	3/1/2018	120	$ 92,860	$ 81,130	$ 86,995	9.9061%	$ 8,618	$ (3,257)	$ 5,361
109	Program Transformational Change Office-1	GBE- Business Enablement		C210	$ 689,043	3/1/2018	120	$ 545,492	$ 476,588	$ 511,040	9.9061%	$ 50,624	$ (19,131)	$ 31,493
110	Program Business Sustainment-1	GBE- Business Enablement		C210	$ 69,617	3/1/2019	120	$ 62,075	$ 55,113	$ 58,594	9.9061%	$ 5,804	$ (2,046)	$ 3,759
111	Program Learning Management-2	GBE- Business Enablement		C210	$ 130,211	3/1/2019	120	$ 116,105	$ 103,083	$ 109,594	9.9061%	$ 10,856	$ (3,827)	$ 7,030
112	Program Transformational Change Office -2	GBE- Business Enablement		C210	$ 1,516,310	3/1/2019	120	$ 1,352,043	$ 1,200,412	$ 1,276,227	9.9061%	$ 126,424	$ (44,560)	$ 81,864
113	Program Learning Management-3	GBE- Business Enablement		C210	$ 173,060	3/1/2020	120	$ 171,618	$ 154,312	$ 162,965	9.9061%	$ 16,143	$ (3,427)	$ 12,717
114	Program Transformational Change Office-3	GBE- Business Enablement		C210	$ 368,704	3/1/2020	120	$ 365,632	$ 328,761	$ 347,197	9.9061%	$ 34,394	$ (7,300)	$ 27,093
115	Program Business Sustainment-2	GBE- Business Enablement		C210	$ 221,771	3/1/2021	120	$ -	$ 219,923	$ 109,961	9.9061%	$ 10,893	$ (1,435)	$ 9,458
116	Program Learning Management-4	GBE- Business Enablement		C210	$ 195,721	3/1/2021	120	$ -	$ 194,090	$ 97,045	9.9061%	$ 9,613	$ (1,266)	$ 8,347
117	Program Transformational Change Office-4	GBE- Business Enablement		C210	$ 169,648	3/1/2021	120	$ -	$ 168,234	$ 84,117	9.9061%	$ 8,333	$ (1,098)	$ 7,235
118	Customer Experience Program Leadership-1	GBE- Customer Engagement		C210	$ 260,229	3/1/2019	120	$ 232,038	$ 206,015	$ 219,026	9.9061%	$ 21,697	$ (7,647)	$ 14,049
119	CxT Portal & Channel Management	GBE- Customer Engagement		C210	$ 11,875,000	6/1/2019	120	$ 10,885,417	$ 9,697,917	$ 10,291,667	9.9061%	$ 1,019,501	$ (262,716)	$ 756,786
120	Customer Interaction - First Release	GBE- Customer Engagement		C210	$ 4,796,546	10/1/2019	120	$ 4,556,718	$ 4,077,064	$ 4,316,891	9.9061%	$ 427,635	$ (112,483)	$ 315,152
121	Employee Support Interaction - First Release	GBE- Customer Engagement		C210	$ 7,954,131	10/1/2019	120	$ 7,556,424	$ 6,761,011	$ 7,158,718	9.9061%	$ 709,149	$ (186,531)	$ 522,618
122	Customer Experience Program Leadership-2	GBE- Customer Engagement		C210	$ 266,277	3/1/2020	120	$ 264,058	$ 237,430	$ 250,744	9.9061%	$ 24,839	$ (5,272)	$ 19,567
123	CRM / Contact Center	GBE- Customer Engagement		C210	$ 19,000,000	6/1/2020	120	$ -	$ 17,416,667	$ 8,708,333	9.9061%	$ 862,655	$ (94,566)	$ 768,089
124	Large Commercial & Landlord Interaction	GBE- Customer Engagement		C210	$ 1,446,508	7/1/2020	120	$ -	$ 1,338,020	$ 669,010	9.9061%	$ 66,273	$ (7,439)	$ 58,833
125	Employee Support Interaction - Second Release	GBE- Customer Engagement		C210	$ 292,791	7/1/2020	120	$ -	$ 270,832	$ 135,416	9.9061%	$ 13,414	$ (1,506)	$ 11,909
126	Customer Interaction - Second Release	GBE- Customer Engagement		C210	$ 2,010,254	1/1/2021	120	$ -	$ 1,959,998	$ 979,999	9.9061%	$ 97,080	$ (12,340)	$ 84,739
127	Customer Experience Program Leadership-3	GBE- Customer Engagement		C210	$ 203,177	3/1/2021	120	$ -	$ 201,484	$ 100,742	9.9061%	$ 9,980	$ (1,315)	$ 8,665
128	Data Management Implementation (Quality & Cleansing)	GBE- Data Management		C210	$ 11,100,000	12/1/2017	120	$ 8,510,000	$ 7,400,000	$ 7,955,000	9.9061%	$ 788,029	$ (300,411)	$ 487,619
129	Data Management & Governance Program Leadership-1	GBE- Data Management		C210	$ 58,890	3/1/2018	120	$ 46,621	$ 40,732	$ 43,677	9.9061%	$ 4,327	$ (1,635)	$ 2,692
130	Enable the Data Archive Process	GBE- Data Management		C210	$ 2,179,480	3/1/2019	120	$ 1,943,370	$ 1,725,422	$ 1,834,396	9.9061%	$ 181,717	$ (64,049)	$ 117,667
131	Data Management & Governance Program Leadership-2	GBE- Data Management		C210	$ 87,954	3/1/2019	120	$ 78,426	$ 69,630	$ 74,028	9.9061%	$ 7,333	$ (2,585)	$ 4,749
132	Data Management & Governance Program Leadership-3	GBE- Data Management		C210	$ 89,713	3/1/2020	120	$ 88,965	$ 79,994	$ 84,480	9.9061%	$ 8,369	$ (1,776)	$ 6,592
133	PowerPlan Architecture Enhancements	GBE- Information Services Enabling		C210	$ 6,080,111	11/1/2017	120	$ 4,610,751	$ 4,002,740	$ 4,306,745	9.9061%	$ 426,630	$ (162,534)	$ 264,095
134	Comprehensive Integration Services (Enhancements)	GBE- Information Services Enabling		C210	$ 78,624	12/1/2017	120	$ 60,278	$ 52,416	$ 56,347	9.9061%	$ 5,582	$ (2,128)	$ 3,454
135	Application (Environment) Infrastructure	GBE- Information Services Enabling		C210	$ 2,174,410	12/1/2017	120	$ 1,667,048	$ 1,449,607	$ 1,558,327	9.9061%	$ 154,369	$ (58,848)	$ 95,521
136	Development Operations & BPA Enablement-1	GBE- Information Services Enabling		C210	$ 2,903,920	3/1/2018	120	$ 2,298,937	$ 2,008,545	$ 2,153,741	9.9061%	$ 213,351	$ (80,626)	$ 132,726
137	SAP and Application Integration Development- Release 1-1	GBE- Information Services Enabling		C210	$ 4,765,187	3/1/2018	120	$ 3,772,440	$ 3,295,921	$ 3,534,180	9.9061%	$ 350,099	$ (132,303)	$ 217,796
138	Mobility CoE & End-User Computing-1	GBE- Information Services Enabling		C210	$ 604,790	3/1/2018	120	$ 478,792	$ 418,313	$ 448,553	9.9061%	$ 44,434	$ (16,792)	$ 27,642
139	Operations/System Monitoring	GBE- Information Services Enabling		C210	$ 1,057,768	8/1/2018	120	$ 881,474	$ 775,697	$ 828,585	9.9061%	$ 82,080	$ (29,252)	$ 52,828
140	Development Operations & BPA Enablement-2	GBE- Information Services Enabling		C210	$ 2,562,011	3/1/2019	120	$ 2,284,460	$ 2,028,259	$ 2,156,359	9.9061%	$ 213,611	$ (75,291)	$ 138,320
141	SAP and Application Integration Development- Release 1-2	GBE- Information Services Enabling		C210	$ 4,548,168	3/1/2019	120	$ 4,055,449	$ 3,600,633	$ 3,828,041	9.9061%	$ 379,209	$ (133,659)	$ 245,550
142	SAP and Application Integration Development- Release 2-1	GBE- Information Services Enabling		C210	$ 5,055,712	3/1/2019	120	$ 4,508,009	$ 4,002,438	$ 4,255,224	9.9061%	$ 421,526	$ (148,574)	$ 272,952
143	Mobility CoE & End-User Computing-2	GBE- Information Services Enabling		C210	$ 920,536	3/1/2019	120	$ 820,811	$ 728,758	$ 774,785	9.9061%	$ 76,751	$ (27,052)	$ 49,699
144	Development Operations & BPA Enablement-3	GBE- Information Services Enabling		C210	$ 2,164,144	3/1/2020	120	$ 2,146,110	$ 1,929,695	$ 2,037,902	9.9061%	$ 201,876	$ (42,851)	$ 159,025
145	SAP and Application Integration Development- Release 1-3	GBE- Information Services Enabling		C210	$ 600,000	3/1/2020	120	$ 595,000	$ 535,000	$ 565,000	9.9061%	$ 55,969	$ (11,880)	$ 44,089
146	SAP and Application Integration Development- Release 2-2	GBE- Information Services Enabling		C210	$ 4,397,065	3/1/2020	120	$ 4,360,423	$ 3,920,716	$ 4,140,569	9.9061%	$ 410,168	$ (87,064)	$ 323,105
147	SAP and Application Integration Development- Release 3-1	GBE- Information Services Enabling		C210	$ 85,915	3/1/2020	120	$ 85,199	$ 76,607	$ 80,903	9.9061%	$ 8,014	$ (1,701)	$ 6,313
148	Mobility CoE & End-User Computing-3	GBE- Information Services Enabling		C210	$ 1,031,843	3/1/2020	120	$ 1,023,244	$ 920,060	$ 971,652	9.9061%	$ 96,253	$ (20,431)	$ 75,822
149	Test Automation Implementation	GBE- Information Services Enabling		C210	$ 2,577,052	12/1/2020	120	$ -	$ 2,491,150	$ 1,245,575	9.9061%	$ 123,388	$ (15,392)	$ 107,996
150	Development Operations & BPA Enablement-4	GBE- Information Services Enabling		C210	$ 2,176,436	3/1/2021	120	$ -	$ 2,158,299	$ 1,079,149	9.9061%	$ 106,901	$ (14,083)	$ 92,819
151	SAP and Application Integration Development- Release 1-4	GBE- Information Services Enabling		C210	$ 600,000	3/1/2021	120	$ -	$ 595,000	$ 297,500	9.9061%	$ 29,471	$ (3,882)	$ 25,588
152	SAP and Application Integration Development- Release 3-2	GBE- Information Services Enabling		C210	$ 2,326,606	3/1/2021	120	$ -	$ 2,307,217	$ 1,153,609	9.9061%	$ 114,277	$ (15,054)	$ 99,223

Niagara Mohawk Power Corporation d/b/a National Grid
Service Company Rents
Forecasted Service Company Capital Software allocated to Operating Companies as Rent Expense
For the Data Year ended March 31, 2021

Line	Investment Name	Programs	Year Amortization	5210G NIMO G Allocation	NIMO G Rent-Return	NIMO G Rent - Depn	5210E NIMO E Allocation	NIMO E Rent-Return	NIMO E Rent - Depn	5210T NIMO T Allocation	NIMO T Rent-Return	NIMO T Rent - Depn	Amortization Period	Bonus Rate	Bonus Depreciation
78	INVP4449 - EPA File	FY18 Plan	$ 100,000	14.88%	$ 4,151	$ 14,880	40.06%	$ 11,175	$ 40,060	0.00%	$ -	$ -	36	40%	$ 280,000
79	Informatica Upgrade/Microstrategy Replacement Program	FY18 Plan	$ 502,286	4.58%	$ 6,816	$ 23,005	17.76%	$ 26,431	$ 89,206	6.11%	$ 9,093	$ 30,690	36	40%	$ 1,406,400
80	Call Center Customer Contact Center/SDC Technology Upgrade Implement Solution	FY18 Plan	$ 3,960,674	8.65%	$ 108,281	$ 342,625	23.28%	$ 291,387	$ 922,013	0.00%	$ -	$ -	36	40%	$ 11,089,888
81	US MDS-Energy Accounting System (EAS) migration to Wholesale Settlement Application (WSA)	FY18 Plan	$ 308,571	0.00%	$ -	$ -	30.74%	$ 30,446	$ 94,855	10.99%	$ 10,885	$ 33,912	36	40%	$ 864,000
82	INVP 4398 Storms/ISched Upgrade	FY18 Plan	$ 1,422,267	7.15%	$ 33,644	$ 101,692	27.24%	$ 128,177	$ 387,425	9.63%	$ 45,314	$ 136,964	36	40%	$ 3,982,347
84	STORMS Capital Cost Estimates	FY18 Plan	$ 110,857	4.83%	$ 1,873	$ 5,354	18.77%	$ 7,278	$ 20,808	6.43%	$ 2,493	$ 7,128	36	30%	$ 232,800
86	US CNI Tech Services-Network Equipment Lifecycle Replacements	FY18 Plan	$ 35,714	0.00%	$ -	$ -	30.74%	$ 4,053	$ 10,979	10.99%	$ 1,449	$ 3,925	36	30%	$ 75,000
87	Inventory Management Handheld Devices	FY18 Plan	$ 10,714	4.58%	$ 181	$ 491	17.76%	$ 702	$ 1,903	6.11%	$ 242	$ 655	36	30%	$ 22,500
88	Customer Bill Redesign	FY18 Plan	$ 301,164	7.07%	$ 7,860	$ 21,292	19.12%	$ 21,258	$ 57,583	0.00%	$ -	$ -	36	30%	$ 632,444
89	INVP 3737 US CNI GMS SCADA Upgrade &	FY18 Plan	$ 3,704,327	16.89%	$ 357,188	$ 625,661	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
90	Cisco Prime	FY18 Plan	$ -	4.58%	$ 1,470	$ -	17.76%	$ 5,700	$ -	6.11%	$ 1,961	$ -	36	0%	$ -
91	Contractor Management Modernization	FY18 Plan	$ -	4.82%	$ -	$ -	18.70%	$ -	$ -	6.41%	$ -	$ -	36	0%	$ -
92	Risk Management (Tx Mains & Dx Mains)	GBE- Asset Management	$ 211,080	16.89%	$ 15,662	$ 35,651	0.00%	$ -	$ -	0.00%	$ -	$ -	36	50%	$ 1,055,400
93	AM Program Leadership-1	GBE- Asset Management	$ 27,712	16.89%	$ 2,139	$ 4,681	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 110,850
94	Enhancements	GBE- Asset Management	$ 266,088	16.89%	$ 23,333	$ 44,942	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 1,064,350
95	Additional IM Modules	GBE- Asset Management	$ 71,684	16.89%	$ 6,477	$ 12,107	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 215,052
96	AM Program Leadership-2	GBE- Asset Management	$ 39,868	16.89%	$ 3,635	$ 6,734	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 119,603
97	Data Remediation, GIS Upgrade/ Migration & GIS Mobility	GBE- Asset Management	$ 1,131,176	16.89%	$ 103,149	$ 191,056	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 3,393,528
98	EAM-FIN Integration	GBE- Asset Management	$ 177,810	16.89%	$ 19,139	$ 30,032	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 533,431
99	Integrity Management Integrations	GBE- Asset Management	$ 108,811	16.89%	$ 12,075	$ 18,378	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 326,433
100	AM Program Leadership-3	GBE- Asset Management	$ 40,834	16.89%	$ 5,068	$ 6,897	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
101	Design (GWD), Estimating (CU), & Mobility	GBE- Asset Management	$ 574,648	16.89%	$ 68,495	$ 97,058	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
102	Asset Analytics Integration	GBE- Asset Management	$ 58,807	16.89%	$ 12,487	$ 9,932	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
103	GIS (GWD/CU) - PPM Integration	GBE- Asset Management	$ 28,162	16.89%	$ 5,980	$ 4,756	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
104	GIS-EAM Integration	GBE- Asset Management	$ 260,625	16.89%	$ -	$ 44,020	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
105	AM Program Leadership-4	GBE- Asset Management	$ 866	16.89%	$ 749	$ 146	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
106	Use Case No.1 - Asset Risk	GBE- Asset Management	$ 29,925	16.89%	$ 25,867	$ 5,054	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
107	Complex Design (CAD) & Estimating (ESW)	GBE- Asset Management	$ 19,909	16.89%	$ 17,209	$ 3,363	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
108	Program Learning Management-1	GBE- Business Enablement	$ 11,730	16.89%	$ 905	$ 1,981	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 46,919
109	Program Transformational Change Office-1	GBE- Business Enablement	$ 68,904	16.89%	$ 5,319	$ 11,638	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 275,617
110	Program Business Sustainment-1	GBE- Business Enablement	$ 6,962	16.89%	$ 635	$ 1,176	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 20,885
111	Program Learning Management-2	GBE- Business Enablement	$ 13,021	16.89%	$ 1,187	$ 2,199	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 39,063
112	Program Transformational Change Office -2	GBE- Business Enablement	$ 151,631	16.89%	$ 13,827	$ 25,610	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 454,893
113	Program Learning Management-3	GBE- Business Enablement	$ 17,306	16.89%	$ 2,148	$ 2,923	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
114	Program Transformational Change Office-3	GBE- Business Enablement	$ 36,870	16.89%	$ 4,576	$ 6,227	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
115	Program Business Sustainment-2	GBE- Business Enablement	$ 1,848	16.89%	$ 1,597	$ 312	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
116	Program Learning Management-4	GBE- Business Enablement	$ 1,631	16.89%	$ 1,410	$ 275	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
117	Program Transformational Change Office-4	GBE- Business Enablement	$ 1,414	16.89%	$ 1,222	$ 239	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
118	Customer Experience Program Leadership-1	GBE- Customer Engagement	$ 26,023	16.89%	$ 2,373	$ 4,395	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 78,069
119	CxT Portal & Channel Management	GBE- Customer Engagement	$ 1,187,500	16.89%	$ 127,821	$ 200,569	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 3,562,500
120	Customer Interaction - First Release	GBE- Customer Engagement	$ 479,655	16.89%	$ 53,229	$ 81,014	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 1,438,964
121	Employee Support Interaction - First Release	GBE- Customer Engagement	$ 795,413	16.89%	$ 88,270	$ 134,345	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 2,386,239
122	Customer Experience Program Leadership-2	GBE- Customer Engagement	$ 26,628	16.89%	$ 3,305	$ 4,497	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
123	CRM / Contact Center	GBE- Customer Engagement	$ 1,583,333	16.89%	$ 129,730	$ 267,425	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
124	Large Commercial & Landlord Interaction	GBE- Customer Engagement	$ 108,488	16.89%	$ 9,937	$ 18,324	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
125	Employee Support Interaction - Second Release	GBE- Customer Engagement	$ 21,959	16.89%	$ 2,011	$ 3,709	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
126	Customer Interaction - Second Release	GBE- Customer Engagement	$ 50,256	16.89%	$ 14,312	$ 8,488	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
127	Customer Experience Program Leadership-3	GBE- Customer Engagement	$ 1,693	16.89%	$ 1,464	$ 286	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
128	Data Management Implementation (Quality & Cleansing)	GBE- Data Management	$ 1,110,000	16.89%	$ 82,359	$ 187,479	0.00%	$ -	$ -	0.00%	$ -	$ -	36	50%	$ 5,550,000
129	Data Management & Governance Program Leadership-1	GBE- Data Management	$ 5,889	16.89%	$ 455	$ 995	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 23,556
130	Enable the Data Archive Process	GBE- Data Management	$ 217,948	16.89%	$ 19,874	$ 36,811	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 653,844
131	Data Management & Governance Program Leadership-2	GBE- Data Management	$ 8,795	16.89%	$ 802	$ 1,486	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 26,386
132	Data Management & Governance Program Leadership-3	GBE- Data Management	$ 8,971	16.89%	$ 1,113	$ 1,515	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
133	PowerPlan Architecture Enhancements	GBE- Information Services Enabling	$ 608,011	16.89%	$ 44,606	$ 102,693	0.00%	$ -	$ -	0.00%	$ -	$ -	36	50%	$ 3,040,055
134	Comprehensive Integration Services (Enhancements)	GBE- Information Services Enabling	$ 7,862	16.89%	$ 583	$ 1,328	0.00%	$ -	$ -	0.00%	$ -	$ -	36	50%	$ 39,312
135	Application (Environment) Infrastructure	GBE- Information Services Enabling	$ 217,441	16.89%	$ 16,133	$ 36,726	0.00%	$ -	$ -	0.00%	$ -	$ -	36	50%	$ 1,087,205
136	Development Operations & BPA Enablement-1	GBE- Information Services Enabling	$ 290,392	16.89%	$ 22,417	$ 49,047	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 1,161,568
137	SAP and Application Integration Development- Release 1-1	GBE- Information Services Enabling	$ 476,519	16.89%	$ 36,786	$ 80,484	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 1,906,075
138	Mobility CoE & End-User Computing-1	GBE- Information Services Enabling	$ 60,479	16.89%	$ 4,669	$ 10,215	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 241,916
139	Operations/System Monitoring	GBE- Information Services Enabling	$ 105,777	16.89%	$ 8,923	$ 17,866	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 423,107
140	Development Operations & BPA Enablement-2	GBE- Information Services Enabling	$ 256,201	16.89%	$ 23,362	$ 43,272	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 768,603
141	SAP and Application Integration Development- Release 1-2	GBE- Information Services Enabling	$ 454,817	16.89%	$ 41,473	$ 76,819	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 1,364,450
142	SAP and Application Integration Development- Release 2-1	GBE- Information Services Enabling	$ 505,571	16.89%	$ 46,102	$ 85,391	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 1,516,713
143	Mobility CoE & End-User Computing-2	GBE- Information Services Enabling	$ 92,054	16.89%	$ 8,394	$ 15,548	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 276,161
144	Development Operations & BPA Enablement-3	GBE- Information Services Enabling	$ 216,414	16.89%	$ 26,859	$ 36,552	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
145	SAP and Application Integration Development- Release 1-3	GBE- Information Services Enabling	$ 60,000	16.89%	$ 7,447	$ 10,134	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
146	SAP and Application Integration Development- Release 2-2	GBE- Information Services Enabling	$ 439,706	16.89%	$ 54,572	$ 74,266	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
147	SAP and Application Integration Development- Release 3-1	GBE- Information Services Enabling	$ 8,591	16.89%	$ 1,066	$ 1,451	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
148	Mobility CoE & End-User Computing-3	GBE- Information Services Enabling	$ 103,184	16.89%	$ 12,806	$ 17,428	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
149	Test Automation Implementation	GBE- Information Services Enabling	$ 85,902	16.89%	$ 18,240	$ 14,509	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
150	Development Operations & BPA Enablement-4	GBE- Information Services Enabling	$ 18,137	16.89%	$ 15,677	$ 3,063	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
151	SAP and Application Integration Development- Release 1-4	GBE- Information Services Enabling	$ 5,000	16.89%	$ 4,322	$ 845	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
152	SAP and Application Integration Development- Release 3-2	GBE- Information Services Enabling	$ 19,388	16.89%	$ 16,759	$ 3,275	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -

Niagara Mohawk Power Corporation d/b/a National Grid
Service Company Rents
Forecasted Service Company Capital Software allocated to Operating Companies as Rent Expense
For the Data Year ended March 31, 2021

Line	Investment Name	Programs	INVP #	Bill Pool	FY21 Total Spend	In Service Date	Amortization Period	4/1/2020 Balance	3/31/2021 Balance	Average Balance	Service Co Return	Year Return	Return on Accum Taxes	Total Return
								4/1/2020	3/31/2021		9.9061%			
153	Mobility CoE & End-User Computing-4	GBE-Information Services Enabling		C210	$ 952,793	3/1/2021	120	$ -	$ 944,853	$ 472,426	9.9061%	$ 46,799	$ (6,165)	$ 40,634
154	Portfolio Management Leadership-1	GBE-Portfolio Office		C210	$ 1,645,919	3/1/2018	120	$ 1,303,019	$ 1,138,427	$ 1,220,723	9.9061%	$ 120,926	$ (45,698)	$ 75,228
155	Solution Architects & Agile Coaches-1	GBE-Portfolio Office		C210	$ 1,958,277	3/1/2018	120	$ 1,550,303	$ 1,354,475	$ 1,452,389	9.9061%	$ 143,875	$ (54,371)	$ 89,504
156	Portfolio Management Leadership-2	GBE-Portfolio Office		C210	$ 2,144,482	3/1/2019	120	$ 1,912,163	$ 1,697,715	$ 1,804,939	9.9061%	$ 178,799	$ (63,021)	$ 115,778
157	Solution Architects & Agile Coaches-2	GBE-Portfolio Office		C210	$ 3,964,632	3/1/2019	120	$ 3,535,130	$ 3,138,667	$ 3,336,899	9.9061%	$ 330,556	$ (116,510)	$ 214,046
158	Portfolio Management Leadership-3	GBE-Portfolio Office		C210	$ 2,161,221	3/1/2020	120	$ 2,143,211	$ 1,927,089	$ 2,035,150	9.9061%	$ 201,604	$ (42,793)	$ 158,811
159	Solution Architects & Agile Coaches-3	GBE-Portfolio Office		C210	$ 2,824,290	3/1/2020	120	$ 2,800,755	$ 2,518,326	$ 2,659,540	9.9061%	$ 263,456	$ (55,922)	$ 207,534
160	Portfolio Management Leadership-4	GBE-Portfolio Office		C210	$ 1,855,901	3/1/2021	120	$ -	$ 1,840,435	$ 920,218	9.9061%	$ 91,158	$ (12,009)	$ 79,149
161	Regulatory/ Compliance	GBE-Regulatory and Compliance		C210	$ 3,000,000	9/1/2019	120	$ 2,825,000	$ 2,525,000	$ 2,675,000	9.9061%	$ 264,988	$ (69,357)	$ 195,631
162	Supply Chain Program Leadership	GBE-Supply Chain		C210	$ 565,045	3/1/2019	120	$ 503,832	$ 447,327	$ 475,580	9.9061%	$ 47,111	$ (16,605)	$ 30,506
163	Supply Chain Program Leadership	GBE-Supply Chain		C210	$ 235,258	3/1/2020	120	$ 233,298	$ 209,772	$ 221,535	9.9061%	$ 21,945	$ (4,658)	$ 17,287
164	Business Architecture Design	GBE-Work Management		C210	$ 3,004,085	12/1/2017	120	$ 2,303,132	$ 2,002,723	$ 2,152,927	9.9061%	$ 213,271	$ (81,303)	$ 131,968
165	WMFE Program Leadership-1	GBE-Work Management		C210	$ 234,013	3/1/2018	120	$ 185,260	$ 161,859	$ 173,560	9.9061%	$ 17,193	$ (6,497)	$ 10,696
166	Corrosion and I&R Work	GBE-Work Management		C210	$ 26,479,653	7/1/2018	120	$ 21,845,714	$ 19,197,748	$ 20,521,731	9.9061%	$ 2,032,900	$ (723,493)	$ 1,309,408
167	CU Governance & Library - process	GBE-Work Management		C210	$ 1,658,439	11/1/2018	120	$ 1,423,494	$ 1,257,650	$ 1,340,572	9.9061%	$ 132,798	$ (47,514)	$ 85,284
168	WMFE Program Leadership-2	GBE-Work Management		C210	$ 563,692	3/1/2019	120	$ 502,625	$ 446,256	$ 474,441	9.9061%	$ 46,999	$ (16,565)	$ 30,433
169	Company Driven Work: Collections and non-Appointment Offs - Gas	GBE-Work Management		C210	$ 5,310,645	10/1/2019	120	$ 5,045,113	$ 4,514,048	$ 4,779,581	9.9061%	$ 473,469	$ (124,539)	$ 348,930
170	Company Driven Work: Collections and non-Appointment Offs- Electric	GBE-Work Management		C198	$ 2,859,577	10/1/2019	120	$ 2,716,598	$ 2,430,640	$ 2,573,619	9.9061%	$ 254,945	$ (67,060)	$ 187,885
171	Customer, Leak Investigation & Inspections - Gas	GBE-Work Management		C210	$ 20,374,438	10/1/2019	120	$ 19,355,716	$ 17,318,272	$ 18,336,994	9.9061%	$ 1,816,478	$ (477,798)	$ 1,338,680
172	Customer, Leak Investigation & Inspections - Electric	GBE-Work Management		C198	$ 10,970,850	10/1/2019	120	$ 10,422,308	$ 9,325,223	$ 9,873,765	9.9061%	$ 978,104	$ (257,276)	$ 720,828
173	WMFE Program Leadership-3	GBE-Work Management		C210	$ 595,004	3/1/2020	120	$ 590,046	$ 530,545	$ 560,295	9.9061%	$ 55,503	$ (11,781)	$ 43,722
174	PowerPlan Integration & Enhancements	GBE-Work Management		C210	$ 1,946,867	6/1/2020	120	$ -	$ 1,784,629	$ 892,314	9.9061%	$ 88,393	$ (9,690)	$ 78,704
175	Construction Work & Leak Repair	GBE-Work Management		C210	$ 19,718,534	9/1/2020	120	$ -	$ 18,568,286	$ 9,284,143	9.9061%	$ 919,695	$ (107,958)	$ 811,738
176	WMFE Program Leadership-4	GBE-Work Management		C210	$ 155,062	3/1/2021	120	$ -	$ 153,770	$ 76,885	9.9061%	$ 7,616	$ (1,003)	$ 6,613
177	Work Forecasting & Planning - solution	GBE-Work Management		C210	$ 1,708,505	5/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
178	Core Projects & Program Management	GBE-Work Management		C210	$ 3,134,061	6/1/2021	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
179	WMFE Optimization	GBE-Work Management		C210	$ 3,331,402	3/1/2022	120	$ -	$ -	$ -	9.9061%	$ -	$ -	$ -
180	Customer Experience Transformation-Communication Preference Management	Growth Play Book-CXT	4426	C175	$ 2,000,000	3/31/2019	84	$ 1,714,286	$ 1,428,571	$ 1,571,429	9.9061%	$ 155,667	$ (50,190)	$ 105,477
181	Customer Experience Transformation-MyAccount Portal	Growth Play Book-CXT	4427	C175	$ 8,500,000	6/1/2019	84	$ 7,488,095	$ 6,273,810	$ 6,880,952	9.9061%	$ 681,633	$ (168,707)	$ 512,926
182	Governance Risk & Compliance (GRC) Optimization/Upgrade	Growth Play Book-Finance	4222	G020	$ 1,540,000	3/1/2019	84	$ 1,301,667	$ 1,081,667	$ 1,191,667	9.9061%	$ 118,048	$ (41,095)	$ 76,952
183	US SAP: Business Planning	Growth Play Book-Finance	4217	G020	$ 4,643,000	3/31/2019	84	$ 3,979,714	$ 3,316,429	$ 3,648,071	9.9061%	$ 361,381	$ (116,517)	$ 244,865
184	US SAP: FERC on Hana (FOH)	Growth Play Book-Finance	4563	G020	$ 1,315,000	3/31/2019	84	$ 1,127,143	$ 939,286	$ 1,033,214	9.9061%	$ 102,351	$ (33,000)	$ 69,351
185	DRMS for C&I Demand Response	NY REV / Grid Mod		5210E	$ 3,429,633	5/1/2017	36	$ 95,268	$ -	$ 47,634	9.9061%	$ 4,719	$ 3,163	$ 7,882
186	Load and DER Forecasting (Acquisition of Remote Sensing Data - NY)	NY REV / Grid Mod	4729	C113	$ 8,632,000	3/31/2018	84	$ 6,165,714	$ 4,932,571	$ 5,549,143	9.9061%	$ 549,703	$ (205,698)	$ 344,005
187	Plant Information Historian	NY REV / Grid Mod	4704K	G198	$ 11,427,818	9/30/2018	84	$ 8,979,000	$ 7,346,454	$ 8,162,727	9.9061%	$ 808,607	$ (284,608)	$ 523,999
188	DG IOAP Phase II (Tactical)	NY REV / Grid Mod	4704P	5210E	$ 1,764,000	3/31/2019	84	$ 1,512,000	$ 1,260,000	$ 1,386,000	9.9061%	$ 137,298	$ (44,268)	$ 93,031
189	E-Commerce Marketplace	NY REV / Grid Mod	4704D	5210E	$ 915,837	3/31/2019	84	$ 785,003	$ 654,169	$ 719,586	9.9061%	$ 71,283	$ (22,983)	$ 48,300
190	AMI - Telecoms	NY REV / Grid Mod	4704I	5210E	$ 1,580,151	3/31/2019	84	$ 1,354,415	$ 1,128,679	$ 1,241,547	9.9061%	$ 122,989	$ (39,654)	$ 83,335
191	AMI - CSS Enhancements	NY REV / Grid Mod	4704A	C113	$ 8,075,538	3/31/2020	84	$ 8,075,538	$ 6,921,890	$ 7,498,714	9.9061%	$ 742,829	$ (84,215)	$ 658,614
192	Green Button Connect	NY REV / Grid Mod	4704C	C113	$ 3,072,759	3/31/2020	84	$ 3,072,759	$ 2,633,793	$ 2,853,276	9.9061%	$ 282,648	$ (32,044)	$ 250,604
193	DSP - DG IOAP	NY REV / Grid Mod	4704F	5210E	$ 14,835,271	3/31/2020	84	$ 14,835,271	$ 12,715,947	$ 13,775,609	9.9061%	$ 1,364,624	$ (154,708)	$ 1,209,916
194	AMI - Telecoms	NY REV / Grid Mod	4704I	5210E	$ 1,409,719	3/31/2020	84	$ 1,409,719	$ 1,208,331	$ 1,309,025	9.9061%	$ 129,673	$ (14,701)	$ 114,972
195	Outdoor Lighting Inventory Portal	NY REV / Grid Mod	4704O	5210E	$ 1,600,000	3/31/2020	84	$ 1,600,000	$ 1,371,429	$ 1,485,714	9.9061%	$ 147,176	$ (16,685)	$ 130,491
196	DRMS for C&I Demand Response (Renewal)	NY REV / Grid Mod		5210E	$ 1,200,000	5/1/2020	12	$ -	$ 100,000	$ 50,000	9.9061%	$ 4,953	$ -	$ 4,953
197	Grid MOD - ABB/ADMS & D-SCADA	NY REV / Grid Mod	4704G	5210E	$ 29,229,298	3/31/2021	84	$ -	$ 29,229,298	$ 14,614,649	9.9061%	$ 1,447,740	$ -	$ 1,447,740
198	AMI - Telecoms	NY REV / Grid Mod	4704I	5210E	$ 1,962,336	3/31/2021	84	$ -	$ 1,962,336	$ 981,168	9.9061%	$ 97,195	$ -	$ 97,195
199	AMI - Enterprise Service Bus & API Integration	NY REV / Grid Mod	4704J	C113	$ 4,946,371	3/31/2021	84	$ -	$ 4,946,371	$ 2,473,185	9.9061%	$ 244,996	$ -	$ 244,996
200	AMI - Enterprise Service Bus & API Integration	NY REV / Grid Mod	4704J	5210E	$ 11,009,664	3/31/2021	84	$ -	$ 11,009,664	$ 5,504,832	9.9061%	$ 545,313	$ -	$ 545,313
201	AMI - Info Mgt & Advanced Analytics	NY REV / Grid Mod	4704L	C113	$ 3,378,822	3/31/2021	84	$ -	$ 3,378,822	$ 1,689,411	9.9061%	$ 167,354	$ -	$ 167,354
202	AMI - Info Mgt & Advanced Analytics	NY REV / Grid Mod	4704L	5210E	$ 16,496,601	3/31/2021	84	$ -	$ 16,496,601	$ 8,248,300	9.9061%	$ 817,084	$ -	$ 817,084
203	IS-Cloud Computing & Data Lake	NY REV / Grid Mod	4704M	C113	$ 1,178,236	3/31/2021	84	$ -	$ 1,178,236	$ 589,118	9.9061%	$ 58,359	$ -	$ 58,359
204	IS-Cloud Computing & Data Lake	NY REV / Grid Mod	4704M	5210E	$ 5,752,565	3/31/2021	84	$ -	$ 5,752,565	$ 2,876,283	9.9061%	$ 284,927	$ -	$ 284,927
205	Cyber Security	NY REV / Grid Mod	4704N	C113	$ 11,541,052	3/31/2021	84	$ -	$ 11,541,052	$ 5,770,526	9.9061%	$ 571,633	$ -	$ 571,633
206	Cyber Security	NY REV / Grid Mod	4704N	5210E	$ 17,311,579	3/31/2021	84	$ -	$ 17,311,579	$ 8,655,789	9.9061%	$ 857,450	$ -	$ 857,450
207	INVP 3882 NYS Pipeline Safety CMS	Other Mandates	3882	G207	$ 1,308,000	3/17/2017	84	$ 731,857	$ 545,000	$ 638,429	9.9061%	$ 63,243	$ (23,494)	$ 39,749
208	INVP 3851 Consolidated Voice Recorder for US Electric Control Rooms	Other Mandates	3851	G181	$ 1,234,000	3/31/2017	84	$ 705,143	$ 528,857	$ 617,000	9.9061%	$ 61,121	$ (22,750)	$ 38,371
209	Annual HR & Payroll Mandatory Service Pack Upgrade (HRSP) - FY18	Other Mandates	4400	G020	$ 1,126,000	12/31/2017	84	$ 764,071	$ 603,214	$ 683,643	9.9061%	$ 67,722	$ (25,563)	$ 42,159
210	Regulatory Mandates - FY18	Other Mandates		G020	$ 5,071,622	3/31/2018	84	$ 3,622,587	$ 2,898,070	$ 3,260,328	9.9061%	$ 322,971	$ (120,855)	$ 202,116
211	US Control-Gas Electronic Bulletin Board (EBB) Upgrade	Other Mandates	4479	G210	$ 3,000,000	5/1/2018	84	$ 2,178,571	$ 1,750,000	$ 1,964,286	9.9061%	$ 194,584	$ (67,603)	$ 126,981
212	Regulatory Mandates - FY19	Other Mandates		G020	$ 18,595,000	3/31/2019	84	$ 15,938,571	$ 13,282,143	$ 14,610,357	9.9061%	$ 1,447,315	$ (466,643)	$ 980,671
213	Regulatory Mandates - FY20	Other Mandates		G020	$ 20,000,000	3/31/2020	84	$ 20,000,000	$ 17,142,857	$ 18,571,429	9.9061%	$ 1,839,702	$ (208,567)	$ 1,631,134
214	Regulatory Mandates - FY21	Other Mandates		G020	$ 20,000,000	3/31/2021	84	$ -	$ 20,000,000	$ 10,000,000	9.9061%	$ 990,609	$ -	$ 990,609
215	Physical Security Replacements - FY17	Physical Security		G020	$ 906,050	3/31/2017	84	$ 517,743	$ 388,307	$ 453,025	9.9061%	$ 44,877	$ (16,704)	$ 28,173
218	Physical Security Replacements - FY18	Physical Security		G020	$ 950,000	3/31/2018	84	$ 678,571	$ 542,857	$ 610,714	9.9061%	$ 60,498	$ (22,638)	$ 37,860
219	All NIMO Physical Security Replacements - FY18	Physical Security		G114	$ 490,000	3/31/2018	84	$ 350,000	$ 280,000	$ 315,000	9.9061%	$ 31,204	$ (11,677)	$ 19,528
222	Physical Security Replacements - FY19	Physical Security		G020	$ 825,000	3/31/2019	84	$ 707,143	$ 589,286	$ 648,214	9.9061%	$ 64,213	$ (20,703)	$ 43,509
223	All NIMO Physical Security Replacements - FY19	Physical Security		G114	$ 275,000	3/31/2019	84	$ 235,714	$ 196,429	$ 216,071	9.9061%	$ 21,404	$ (6,901)	$ 14,503

Niagara Mohawk Power Corporation d/b/a National Grid
Service Company Rents
Forecasted Service Company Capital Software allocated to Operating Companies as Rent Expense
For the Data Year ended March 31, 2021

Line	Investment Name	Programs	Year Amortization	5210G NIMO G Allocation	NIMO G Rent-Return	NIMO G Rent - Depn	5210E NIMO E Allocation	NIMO E Rent-Return	NIMO E Rent - Depn	5210T NIMO T Allocation	NIMO T Rent-Return	NIMO T Rent - Depn	Amortization Period	Bonus Rate	Bonus Depreciation
153	Mobility CoE & End-User Computing-4	GBE-Information Services Enabling	$ 7,940	16.89%	$ 6,863	$ 1,341	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
154	Portfolio Management Leadership-1	GBE-Portfolio Office	$ 164,592	16.89%	$ 12,706	$ 27,800	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 658,368
155	Solution Architects & Agile Coaches-1	GBE-Portfolio Office	$ 195,828	16.89%	$ 15,117	$ 33,075	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 783,311
156	Portfolio Management Leadership-2	GBE-Portfolio Office	$ 214,448	16.89%	$ 19,555	$ 36,220	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 643,345
157	Solution Architects & Agile Coaches-2	GBE-Portfolio Office	$ 396,463	16.89%	$ 36,152	$ 66,963	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 1,189,390
158	Portfolio Management Leadership-3	GBE-Portfolio Office	$ 216,122	16.89%	$ 26,823	$ 36,503	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
159	Solution Architects & Agile Coaches-3	GBE-Portfolio Office	$ 282,429	16.89%	$ 35,053	$ 47,702	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
160	Portfolio Management Leadership-4	GBE-Portfolio Office	$ 15,466	16.89%	$ 13,368	$ 2,612	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
161	Regulatory/ Compliance	GBE-Regulatory and Compliance	$ 300,000	16.89%	$ 33,042	$ 50,670	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 900,000
162	Supply Chain Program Leadership	GBE-Supply Chain	$ 56,505	16.89%	$ 5,152	$ 9,544	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 169,514
163	Supply Chain Program Leadership	GBE-Supply Chain	$ 23,526	16.89%	$ 2,920	$ 3,974	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
164	Business Architecture Design	GBE-Work Management	$ 300,408	16.89%	$ 22,289	$ 50,739	0.00%	$ -	$ -	0.00%	$ -	$ -	36	50%	$ 1,502,042
165	WMFE Program Leadership-1	GBE-Work Management	$ 23,401	16.89%	$ 1,807	$ 3,952	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 93,605
166	Corrosion and I&R Work	GBE-Work Management	$ 2,647,965	16.89%	$ 221,159	$ 447,241	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 10,591,861
167	CU Governance & Library - process	GBE-Work Management	$ 165,844	16.89%	$ 14,404	$ 28,011	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 663,376
168	WMFE Program Leadership-2	GBE-Work Management	$ 56,369	16.89%	$ 5,140	$ 9,521	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 169,108
169	Company Driven Work: Collections and non-Appointment Offs - Gas	GBE-Work Management	$ 531,065	16.89%	$ 58,934	$ 89,697	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 1,593,194
170	Company Driven Work: Collections and non-Appointment Offs- Electric	GBE-Work Management	$ 285,958	0.00%	$ -	$ -	47.71%	$ 89,640	$ 136,430	0.00%	$ -	$ -	36	30%	$ 857,873
171	Customer, Leak Investigation & Inspections - Gas	GBE-Work Management	$ 2,037,444	16.89%	$ 226,103	$ 344,124	0.00%	$ -	$ -	0.00%	$ -	$ -	36	30%	$ 6,112,331
172	Customer, Leak Investigation & Inspections - Electric	GBE-Work Management	$ 1,097,085	0.00%	$ -	$ -	47.71%	$ 343,907	$ 523,419	0.00%	$ -	$ -	36	30%	$ 3,291,255
173	WMFE Program Leadership-3	GBE-Work Management	$ 59,500	16.89%	$ 7,385	$ 10,050	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
174	PowerPlan Integration & Enhancements	GBE-Work Management	$ 162,239	16.89%	$ 13,293	$ 27,402	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
175	Construction Work & Leak Repair	GBE-Work Management	$ 1,150,248	16.89%	$ 137,102	$ 194,277	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
176	WMFE Program Leadership-4	GBE-Work Management	$ 1,292	16.89%	$ 1,117	$ 218	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
177	Work Forecasting & Planning - solution	GBE-Work Management	$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
178	Core Projects & Program Management	GBE-Work Management	$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
179	WMFE Optimization	GBE-Work Management	$ -	16.89%	$ -	$ -	0.00%	$ -	$ -	0.00%	$ -	$ -	36	0%	$ -
180	Customer Experience Transformation-Communication Preference Management	Growth Play Book-CXT	$ 285,714	8.65%	$ 9,124	$ 24,716	23.28%	$ 24,554	$ 66,512	0.00%	$ -	$ -	36	30%	$ 600,000
181	Customer Experience Transformation-MyAccount Portal	Growth Play Book-CXT	$ 1,214,286	8.65%	$ 44,372	$ 105,044	23.28%	$ 119,405	$ 282,676	0.00%	$ -	$ -	36	30%	$ 2,550,000
182	Governance Risk & Compliance (GRC) Optimization/Upgrade	Growth Play Book-Finance	$ 220,000	4.58%	$ 3,524	$ 10,076	17.76%	$ 13,667	$ 39,072	6.11%	$ 4,702	$ 13,442	36	30%	$ 462,000
183	US SAP: Business Planning	Growth Play Book-Finance	$ 663,286	4.58%	$ 11,215	$ 30,378	17.76%	$ 43,488	$ 117,800	6.11%	$ 14,961	$ 40,527	36	30%	$ 1,392,900
184	US SAP: FERC on Hana (FOH)	Growth Play Book-Finance	$ 187,857	4.58%	$ 3,176	$ 8,604	17.76%	$ 12,317	$ 33,363	6.11%	$ 4,237	$ 11,478	36	30%	$ 394,500
185	DRMS for C&I Demand Response	NY REV / Grid Mod	$ 95,268	0.00%	$ -	$ -	100.00%	$ 7,882	$ 95,268	0.00%	$ -	$ -	36	50%	$ 1,714,817
186	Load and DER Forecasting (Acquisition of Remote Sensing Data - NY)	NY REV / Grid Mod	$ 1,233,143	27.09%	$ 93,191	$ 334,058	72.91%	$ 250,814	$ 899,084	0.00%	$ -	$ -	36	40%	$ 3,452,800
187	Plant Information Historian	NY REV / Grid Mod	$ 1,632,545	0.00%	$ -	$ -	41.93%	$ 219,713	$ 684,526	0.00%	$ -	$ -	36	40%	$ 4,571,127
188	DG IOAP Phase II (Tactical)	NY REV / Grid Mod	$ 252,000	0.00%	$ -	$ -	100.00%	$ 93,031	$ 252,000	0.00%	$ -	$ -	36	30%	$ 529,200
189	E-Commerce Marketplace	NY REV / Grid Mod	$ 130,834	0.00%	$ -	$ -	100.00%	$ 48,300	$ 130,834	0.00%	$ -	$ -	36	30%	$ 274,751
190	AMI - Telecoms	NY REV / Grid Mod	$ 225,736	0.00%	$ -	$ -	100.00%	$ 83,335	$ 225,736	0.00%	$ -	$ -	36	30%	$ 474,045
191	AMI - CSS Enhancements	NY REV / Grid Mod	$ 1,153,648	27.09%	$ 178,419	$ 312,523	72.91%	$ 480,196	$ 841,125	0.00%	$ -	$ -	36	0%	$ -
192	Green Button Connect	NY REV / Grid Mod	$ 438,966	27.09%	$ 67,889	$ 118,916	72.91%	$ 182,715	$ 320,050	0.00%	$ -	$ -	36	0%	$ -
193	DSP - DG IOAP	NY REV / Grid Mod	$ 2,119,324	0.00%	$ -	$ -	100.00%	$ 1,209,916	$ 2,119,324	0.00%	$ -	$ -	36	0%	$ -
194	AMI - Telecoms	NY REV / Grid Mod	$ 201,388	0.00%	$ -	$ -	100.00%	$ 114,972	$ 201,388	0.00%	$ -	$ -	36	0%	$ -
195	Outdoor Lighting Inventory Portal	NY REV / Grid Mod	$ 228,571	0.00%	$ -	$ -	100.00%	$ 130,491	$ 228,571	0.00%	$ -	$ -	36	0%	$ -
196	DRMS for C&I Demand Response (Renewal)	NY REV / Grid Mod	$ 1,100,000	0.00%	$ -	$ -	100.00%	$ -	$ 1,100,000	0.00%	$ -	$ -	12	0%	$ -
197	Grid MOD - ABB/ADMS & D-SCADA	NY REV / Grid Mod	$ -	0.00%	$ -	$ -	100.00%	$ 1,447,740	$ -	0.00%	$ -	$ -	36	0%	$ -
198	AMI - Telecoms	NY REV / Grid Mod	$ -	0.00%	$ -	$ -	100.00%	$ 97,195	$ -	0.00%	$ -	$ -	36	0%	$ -
199	AMI - Enterprise Service Bus & API Integration	NY REV / Grid Mod	$ -	27.09%	$ 66,369	$ -	72.91%	$ 178,626	$ -	0.00%	$ -	$ -	36	0%	$ -
200	AMI - Enterprise Service Bus & API Integration	NY REV / Grid Mod	$ -	0.00%	$ -	$ -	100.00%	$ 545,313	$ -	0.00%	$ -	$ -	36	0%	$ -
201	AMI - Info Mgt & Advanced Analytics	NY REV / Grid Mod	$ -	27.09%	$ 45,336	$ -	72.91%	$ 122,018	$ -	0.00%	$ -	$ -	36	0%	$ -
202	AMI - Info Mgt & Advanced Analytics	NY REV / Grid Mod	$ -	0.00%	$ -	$ -	100.00%	$ 817,084	$ -	0.00%	$ -	$ -	36	0%	$ -
203	IS-Cloud Computing & Data Lake	NY REV / Grid Mod	$ -	27.09%	$ 15,809	$ -	72.91%	$ 42,549	$ -	0.00%	$ -	$ -	36	0%	$ -
204	IS-Cloud Computing & Data Lake	NY REV / Grid Mod	$ -	0.00%	$ -	$ -	100.00%	$ 284,927	$ -	0.00%	$ -	$ -	36	0%	$ -
205	Cyber Security	NY REV / Grid Mod	$ -	27.09%	$ 154,855	$ -	72.91%	$ 416,778	$ -	0.00%	$ -	$ -	36	0%	$ -
206	Cyber Security	NY REV / Grid Mod	$ -	0.00%	$ -	$ -	100.00%	$ 857,450	$ -	0.00%	$ -	$ -	36	0%	$ -
207	INVP 3882 NYS Pipeline Safety CMS	Other Mandates	$ 186,857	19.47%	$ 7,739	$ 36,381	0.00%	$ -	$ -	0.00%	$ -	$ -	36	50%	$ 654,000
208	INVP 3851 Consolidated Voice Recorder for US Electric Control Rooms	Other Mandates	$ 176,286	0.00%	$ -	$ -	74.79%	$ 28,697	$ 131,844	25.21%	$ 9,673	$ 44,442	36	50%	$ 617,000
209	Annual HR & Payroll Mandatory Service Pack Upgrade (HRSP) - FY18	Other Mandates	$ 160,857	4.58%	$ 1,931	$ 7,367	17.76%	$ 7,487	$ 28,568	6.11%	$ 2,576	$ 9,828	36	50%	$ 563,000
210	Regulatory Mandates - FY18	Other Mandates	$ 724,517	4.58%	$ 9,257	$ 33,183	17.76%	$ 35,896	$ 128,674	6.11%	$ 12,349	$ 44,268	36	40%	$ 2,028,649
211	US Control-Gas Electronic Bulletin Board (EBB) Upgrade	Other Mandates	$ 428,571	12.44%	$ 15,796	$ 53,314	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 1,200,000
212	Regulatory Mandates - FY19	Other Mandates	$ 2,656,429	4.58%	$ 44,915	$ 121,664	17.76%	$ 174,167	$ 471,782	6.11%	$ 59,919	$ 162,308	36	30%	$ 5,578,500
213	Regulatory Mandates - FY20	Other Mandates	$ 2,857,143	4.58%	$ 74,706	$ 130,857	17.76%	$ 289,689	$ 507,429	6.11%	$ 99,662	$ 174,571	36	0%	$ -
214	Regulatory Mandates - FY21	Other Mandates	$ -	4.58%	$ 45,370	$ -	17.76%	$ 175,932	$ -	6.11%	$ 60,526	$ -	36	0%	$ -
215	Physical Security Replacements - FY17	Physical Security	$ 129,436	4.58%	$ 1,290	$ 5,928	17.76%	$ 5,004	$ 22,988	6.11%	$ 1,721	$ 7,909	36	50%	$ 453,025
218	Physical Security Replacements - FY18	Physical Security	$ 135,714	4.58%	$ 1,734	$ 6,216	17.76%	$ 6,724	$ 24,103	6.11%	$ 2,313	$ 8,292	36	40%	$ 380,000
219	All NIMO Physical Security Replacements - FY18	Physical Security	$ 70,000	15.97%	$ 3,119	$ 11,179	63.00%	$ 12,302	$ 44,100	21.03%	$ 4,107	$ 14,721	36	40%	$ 196,000
222	Physical Security Replacements - FY19	Physical Security	$ 117,857	4.58%	$ 1,993	$ 5,398	17.76%	$ 7,727	$ 20,931	6.11%	$ 2,658	$ 7,201	36	30%	$ 247,500
223	All NIMO Physical Security Replacements - FY19	Physical Security	$ 39,286	15.97%	$ 2,316	$ 6,274	63.00%	$ 9,137	$ 24,750	21.03%	$ 3,050	$ 8,262	36	30%	$ 82,500

Niagara Mohawk Power Corporation d/b/a National Grid
Service Company Rents
Forecasted Service Company Capital Software allocated to Operating Companies as Rent Expense
For the Data Year ended March 31, 2021

Line	Investment Name	Programs	INVP #	Bill Pool	FY21 Total Spend	In Service Date	Amortization Period	4/1/2020 Balance	3/31/2021 Balance	Average Balance	9.9061% Service Co Return	Year Return	Return on Accum Taxes	Total Return
226	Physical Security Replacements - FY20	Physical Security		G020	$ 835,000	3/31/2020	84	$ 835,000	$ 715,714	$ 775,357	9.9061%	$ 76,808	$ (8,708)	$ 68,100
227	All NIMO Physical Security Replacements - FY20	Physical Security		G114	$ 282,000	3/31/2020	84	$ 282,000	$ 241,714	$ 261,857	9.9061%	$ 25,940	$ (2,941)	$ 22,999
230	Physical Security Replacements - FY21	Physical Security		G020	$ 860,000	3/31/2021	84	$ -	$ 860,000	$ 430,000	9.9061%	$ 42,596	$ -	$ 42,596
231	All NIMO Physical Security Replacements - FY21	Physical Security		G114	$ 290,000	3/31/2021	84	$ -	$ 290,000	$ 145,000	9.9061%	$ 14,364	$ -	$ 14,364
236	INVP 4124 Auto Remote Net Meter	PSC Mandate	4124	C198	$ 3,584,165	8/31/2017	84	$ 2,261,438	$ 1,749,414	$ 2,005,426	9.9061%	$ 198,659	$ (74,573)	$ 124,086
237	INVP 3839A NY Retail Access Ph2	PSC Mandate	3839A	C170	$ 5,356,231	10/31/2017	84	$ 3,507,056	$ 2,741,880	$ 3,124,468	9.9061%	$ 309,513	$ (116,521)	$ 192,991
238	INVP 4411AB Distributed Generation Portal	PSC Mandate	4411A+B	C198	$ 3,347,611	11/30/2017	84	$ 2,231,740	$ 1,753,510	$ 1,992,625	9.9061%	$ 197,391	$ (74,412)	$ 122,979
239	INVP 4383 NY Community Choice Aggregation	PSC Mandate	4383	C170	$ 551,447	12/31/2017	84	$ 374,196	$ 295,418	$ 334,807	9.9061%	$ 33,166	$ (12,519)	$ 20,647
241	INVP 4448 Low Income Order CSS	PSC Mandate	4448	C195	$ 2,489,410	12/31/2017	84	$ 1,689,243	$ 1,333,613	$ 1,511,428	9.9061%	$ 149,723	$ (56,516)	$ 93,207
242	INVP 4411C New Electric Connections	PSC Mandate	4411C	C198	$ 698,000	4/30/2018	84	$ 506,881	$ 407,167	$ 457,024	9.9061%	$ 45,273	$ (15,729)	$ 29,544
243	INVP 4411D New Gas Connections	PSC Mandate	4411D	C210	$ 896,000	10/31/2018	84	$ 714,667	$ 586,667	$ 650,667	9.9061%	$ 64,456	$ (22,739)	$ 41,716
244	CPE Buyback	Tech. Modernization	4684	G020	$ 5,140,000	3/31/2017	84	$ 2,937,143	$ 2,202,857	$ 2,570,000	9.9061%	$ 254,586	$ (94,760)	$ 159,826
245	Active Directory Improvements	Tech. Modernization	4489	G020	$ 275,000	11/30/2017	84	$ 183,333	$ 144,048	$ 163,690	9.9061%	$ 16,215	$ (6,113)	$ 10,103
246	Application Performance Management (APM)	Tech. Modernization	4490	G020	$ 375,000	1/31/2018	84	$ 258,929	$ 205,357	$ 232,143	9.9061%	$ 22,996	$ (8,581)	$ 14,416
247	RAS/VPN Re-Platform/Mobile	Tech. Modernization	4269	G020	$ 600,000	3/16/2018	84	$ 421,429	$ 335,714	$ 378,571	9.9061%	$ 37,502	$ (14,013)	$ 23,488
248	US Network Programme	Tech. Modernization	4496	G020	$ 3,025,000	3/31/2018	84	$ 2,160,714	$ 1,728,571	$ 1,944,643	9.9061%	$ 192,638	$ (72,085)	$ 120,553
249	US VSTIG Programme	Tech. Modernization	4498	G020	$ 2,700,000	3/31/2018	84	$ 1,928,571	$ 1,542,857	$ 1,735,714	9.9061%	$ 171,941	$ (64,340)	$ 107,601
250	US Wireless Programme	Tech. Modernization	4499	G020	$ 1,950,000	3/31/2018	84	$ 1,392,857	$ 1,114,286	$ 1,253,571	9.9061%	$ 124,180	$ (46,468)	$ 77,712
251	Monitoring and Alerting	Tech. Modernization	4493	G020	$ 450,000	3/31/2018	84	$ 321,429	$ 257,143	$ 289,286	9.9061%	$ 28,657	$ (10,723)	$ 17,934
252	RSA Re-platform	Tech. Modernization	4270	G020	$ 280,000	3/31/2018	84	$ 200,000	$ 160,000	$ 180,000	9.9061%	$ 17,831	$ (6,672)	$ 11,159
253	Cloud Broker - Hybrid Enablement	Tech. Modernization	3899	G020	$ 250,000	3/31/2018	84	$ 178,571	$ 142,857	$ 160,714	9.9061%	$ 15,920	$ (5,957)	$ 9,963
254	Office 2010 Upgrade	Tech. Modernization	4265	G020	$ 800,000	3/31/2018	84	$ 571,429	$ 457,143	$ 514,286	9.9061%	$ 50,946	$ (19,064)	$ 31,882
255	Citrix Infrstructure Upgrade (Xenapp and NetScaler)	Tech. Modernization	4279	G020	$ 500,000	3/31/2018	84	$ 357,143	$ 285,714	$ 321,429	9.9061%	$ 31,841	$ (11,915)	$ 19,926
256	Business Innovation Projects 1	Tech. Modernization	4707	G020	$ 3,368,613	3/31/2018	84	$ 2,406,152	$ 1,924,922	$ 2,165,537	9.9061%	$ 214,520	$ (80,273)	$ 134,247
257	Data Security	Tech. Modernization	4710	G020	$ 1,575,000	3/31/2018	84	$ 1,125,000	$ 900,000	$ 1,012,500	9.9061%	$ 100,299	$ (37,532)	$ 62,767
258	Orchestration and Self Service	Tech. Modernization	4726	G020	$ 750,000	3/31/2018	84	$ 535,714	$ 428,571	$ 482,143	9.9061%	$ 47,761	$ (17,872)	$ 29,889
259	Virtual Desktop - DaaS	Tech. Modernization	4727	G020	$ 550,000	3/31/2018	84	$ 392,857	$ 314,286	$ 353,571	9.9061%	$ 35,025	$ (13,106)	$ 21,919
260	SCI connections	Tech. Modernization	4495	G020	$ 100,000	3/31/2018	84	$ 71,429	$ 57,143	$ 64,286	9.9061%	$ 6,368	$ (2,383)	$ 3,985
261	US SAP: Dynamic Storage Tiering	Tech. Modernization	4560	G020	$ 1,355,000	7/5/2018	84	$ 1,016,250	$ 822,679	$ 919,464	9.9061%	$ 91,083	$ (31,819)	$ 59,264
262	ICE Replacement	Tech. Modernization	4491	G020	$ 3,316,000	10/31/2018	84	$ 2,644,905	$ 2,171,190	$ 2,408,048	9.9061%	$ 238,543	$ (84,156)	$ 154,387
263	US Network Programme	Tech. Modernization	4496	G020	$ 2,075,000	3/31/2019	84	$ 1,778,571	$ 1,482,143	$ 1,630,357	9.9061%	$ 161,505	$ (52,072)	$ 109,432
264	US VSTIG Programme	Tech. Modernization	4498	G020	$ 1,700,000	3/31/2019	84	$ 1,457,143	$ 1,214,286	$ 1,335,714	9.9061%	$ 132,317	$ (42,662)	$ 89,655
265	US Wireless Programme	Tech. Modernization	4499	G020	$ 1,500,000	3/31/2019	84	$ 1,285,714	$ 1,071,429	$ 1,178,571	9.9061%	$ 116,750	$ (37,643)	$ 79,108
266	Data Visualisation Expansion	Tech. Modernization	4606	G020	$ 2,800,000	3/31/2019	84	$ 2,400,000	$ 2,000,000	$ 2,200,000	9.9061%	$ 217,934	$ (70,266)	$ 147,668
267	US SAP: Business Warehouse (BW) Consolidation to HANA Enterprise Cloud (HEC)	Tech. Modernization	4562	G020	$ 2,366,000	3/31/2019	84	$ 2,028,000	$ 1,690,000	$ 1,859,000	9.9061%	$ 184,154	$ (59,375)	$ 124,779
268	Monitoring and Alerting	Tech. Modernization	4493	G020	$ 1,000,000	3/31/2019	84	$ 857,143	$ 714,286	$ 785,714	9.9061%	$ 77,834	$ (25,095)	$ 52,738
269	MWORK and Netmotion Risk Avoidance	Tech. Modernization	4725	G020	$ 500,000	3/31/2019	84	$ 428,571	$ 357,143	$ 392,857	9.9061%	$ 38,917	$ (12,548)	$ 26,369
270	Improving End User Experience- Cloud based DMZ Service Platform	Tech. Modernization	4723	G020	$ 300,000	3/31/2019	84	$ 257,143	$ 214,286	$ 235,714	9.9061%	$ 23,350	$ (7,529)	$ 15,822
271	Mobile Broadband POC	Tech. Modernization		G020	$ 100,000	3/31/2019	84	$ 85,714	$ 71,429	$ 78,571	9.9061%	$ 7,783	$ (2,510)	$ 5,274
272	FY19 Edge Projects	Tech. Modernization	4717	G020	$ 1,000,000	3/31/2019	84	$ 857,143	$ 714,286	$ 785,714	9.9061%	$ 77,834	$ (25,095)	$ 52,738
273	FY19 Network Projects	Tech. Modernization	4718	G020	$ 1,000,000	3/31/2019	84	$ 857,143	$ 714,286	$ 785,714	9.9061%	$ 77,834	$ (25,095)	$ 52,738
274	Digital Asset Management (DAM)	Tech. Modernization	4711	G020	$ 500,000	3/31/2019	84	$ 428,571	$ 357,143	$ 392,857	9.9061%	$ 38,917	$ (12,548)	$ 26,369
275	Business Innovation Projects 1	Tech. Modernization	4707	G020	$ 3,973,236	3/31/2019	84	$ 3,405,631	$ 2,838,026	$ 3,121,828	9.9061%	$ 309,251	$ (99,709)	$ 209,542
276	Business Innovation Projects 2	Tech. Modernization	4708	G020	$ 3,368,613	3/31/2019	84	$ 2,887,383	$ 2,406,152	$ 2,646,767	9.9061%	$ 262,191	$ (84,536)	$ 177,655
277	Business Innovation Projects 3	Tech. Modernization	4728	G020	$ 3,368,613	3/31/2019	84	$ 2,887,383	$ 2,406,152	$ 2,646,767	9.9061%	$ 262,191	$ (84,536)	$ 177,655
278	EUC, network, and data center strategy	Tech. Modernization	4715	G020	$ 1,542,858	3/31/2019	84	$ 1,322,450	$ 1,102,041	$ 1,212,246	9.9061%	$ 120,086	$ (38,718)	$ 81,368
279	Data Security	Tech. Modernization	4710	G020	$ 1,575,000	3/31/2019	84	$ 1,350,000	$ 1,125,000	$ 1,237,500	9.9061%	$ 122,588	$ (39,525)	$ 83,063
280	FY19 Data Centre Projects	Tech. Modernization	4716	G020	$ 2,000,000	3/31/2019	84	$ 1,714,286	$ 1,428,571	$ 1,571,429	9.9061%	$ 155,667	$ (50,190)	$ 105,477
281	1327 Interfaces - 523 FTS, 340 RDX, 245 MQSI, 253 JCAPS, 44 PM4D, 7 VB	Tech. Modernization	4706	G020	$ 3,300,000	3/31/2019	84	$ 2,828,571	$ 2,357,143	$ 2,592,857	9.9061%	$ 256,851	$ (82,814)	$ 174,037
282	US Video Conference Programme	Tech. Modernization	4497	G020	$ 1,650,000	6/1/2019	84	$ 1,453,571	$ 1,217,857	$ 1,335,714	9.9061%	$ 132,317	$ (32,749)	$ 99,568
283	US SAP: Enhancement Pack 9 Upgrade	Tech. Modernization	4564	G020	$ 8,821,000	3/31/2020	84	$ 8,821,000	$ 7,560,857	$ 8,190,929	9.9061%	$ 811,400	$ (91,989)	$ 719,412
284	US Network Programme	Tech. Modernization	4496	G020	$ 1,575,000	3/31/2020	84	$ 1,575,000	$ 1,350,000	$ 1,462,500	9.9061%	$ 144,877	$ (16,425)	$ 128,452
285	US VSTIG Programme	Tech. Modernization	4498	G020	$ 700,000	3/31/2020	84	$ 700,000	$ 600,000	$ 650,000	9.9061%	$ 64,390	$ (7,300)	$ 57,090
286	US Wireless Programme	Tech. Modernization	4499	G020	$ 1,500,000	3/31/2020	84	$ 1,500,000	$ 1,285,714	$ 1,392,857	9.9061%	$ 137,978	$ (15,643)	$ 122,335
287	Monitoring and Alerting	Tech. Modernization	4493	G020	$ 1,000,000	3/31/2020	84	$ 1,000,000	$ 857,143	$ 928,571	9.9061%	$ 91,985	$ (10,428)	$ 81,557
288	Service Now - Release 3	Tech. Modernization	4261	G020	$ 3,400,000	3/31/2020	84	$ 3,400,000	$ 2,914,286	$ 3,157,143	9.9061%	$ 312,749	$ (35,456)	$ 277,293
289	IS Tools	Tech. Modernization	4513	G020	$ 400,000	3/31/2020	84	$ 400,000	$ 342,857	$ 371,429	9.9061%	$ 36,794	$ (4,171)	$ 32,623
290	FY20 Edge Projects	Tech. Modernization	4720	G020	$ 2,000,000	3/31/2020	84	$ 2,000,000	$ 1,714,286	$ 1,857,143	9.9061%	$ 183,970	$ (20,857)	$ 163,113
291	FY20 Network Projects	Tech. Modernization	4721	G020	$ 4,000,000	3/31/2020	84	$ 4,000,000	$ 3,428,571	$ 3,714,286	9.9061%	$ 367,940	$ (41,713)	$ 326,227
292	EMM Licenses	Tech. Modernization	4713	G020	$ 1,320,000	3/31/2020	84	$ 1,320,000	$ 1,131,429	$ 1,225,714	9.9061%	$ 121,420	$ (13,765)	$ 107,655
293	Business Innovation Projects 2	Tech. Modernization	4708	G020	$ 3,973,236	3/31/2020	84	$ 3,973,236	$ 3,405,631	$ 3,689,433	9.9061%	$ 365,478	$ (41,434)	$ 324,044
294	Business Innovation Projects 3	Tech. Modernization	4728	G020	$ 3,979,236	3/31/2020	84	$ 3,979,236	$ 3,410,774	$ 3,695,005	9.9061%	$ 366,030	$ (41,497)	$ 324,533
295	Data Security	Tech. Modernization	4710	G020	$ 1,575,000	3/31/2020	84	$ 1,575,000	$ 1,350,000	$ 1,462,500	9.9061%	$ 144,877	$ (16,425)	$ 128,452
296	Hardware and Software Upgrades	Tech. Modernization	4722	G020	$ 7,500,000	3/31/2020	84	$ 7,500,000	$ 6,428,571	$ 6,964,286	9.9061%	$ 689,888	$ (78,213)	$ 611,675
297	Data Centre Consolidation efforts	Tech. Modernization	4709	G020	$ 3,500,000	3/31/2020	84	$ 3,500,000	$ 3,000,000	$ 3,250,000	9.9061%	$ 321,948	$ (36,499)	$ 285,449
298	FY20 Data Centre Projects	Tech. Modernization	4719	G020	$ 4,000,000	3/31/2020	84	$ 4,000,000	$ 3,428,571	$ 3,714,286	9.9061%	$ 367,940	$ (41,713)	$ 326,227
299	Enterprise Data Management Platform	Tech. Modernization	4582	G020	$ 4,730,000	6/1/2020	84	$ -	$ 4,166,905	$ 2,083,452	9.9061%	$ 206,389	$ (20,178)	$ 186,210
300	Business Innovation Projects 2	Tech. Modernization	4708	G020	$ 4,491,484	3/31/2021	84	$ -	$ 4,491,484	$ 2,245,742	9.9061%	$ 222,465	$ -	$ 222,465
301	Business Innovation Projects 3	Tech. Modernization	4728	G020	$ 4,491,484	3/31/2021	84	$ -	$ 4,491,484	$ 2,245,742	9.9061%	$ 222,465	$ -	$ 222,465
	Total IS				$ 938,266,477			$ 557,144,099	$ 692,300,617	$ 624,722,358		$ 61,885,534	$ (14,670,153)	$ 46,841,024

Niagara Mohawk Power Corporation d/b/a National Grid
Service Company Rents
Forecasted Service Company Capital Software allocated to Operating Companies as Rent Expense
For the Data Year ended March 31, 2021

Line	Investment Name	Programs	Year Amortization	5210G NIMO G Allocation	NIMO G Rent-Return	NIMO G Rent - Depn	5210E NIMO E Allocation	NIMO E Rent-Return	NIMO E Rent - Depn	5210T NIMO T Allocation	NIMO T Rent-Return	NIMO T Rent - Depn	Amortization Period	Bonus Rate	Bonus Depreciation
226	Physical Security Replacements - FY20	Physical Security	$ 119,286	4.58%	$ 3,119	$ 5,463	17.76%	$ 12,095	$ 21,185	6.11%	$ 4,161	$ 7,288	36	0%	$ -
227	All NIMO Physical Security Replacements - FY20	Physical Security	$ 40,286	15.97%	$ 3,673	$ 6,434	63.00%	$ 14,489	$ 25,380	21.03%	$ 4,837	$ 8,472	36	0%	$ -
230	Physical Security Replacements - FY21	Physical Security	$ -	4.58%	$ 1,951	$ -	17.76%	$ 7,565	$ -	6.11%	$ 2,603	$ -	36	0%	$ -
231	All NIMO Physical Security Replacements - FY21	Physical Security	$ -	15.97%	$ 2,294	$ -	63.00%	$ 9,049	$ -	21.03%	$ 3,021	$ -	36	0%	$ -
236	INVP 4124 Auto Remote Net Meter	PSC Mandate	$ 512,024	0.00%	$ -	$ -	47.71%	$ 59,202	$ 244,286	0.00%	$ -	$ -	36	50%	$ 1,792,083
237	INVP 3839A NY Retail Access Ph2	PSC Mandate	$ 765,176	14.88%	$ 28,717	$ 113,858	40.06%	$ 77,312	$ 306,529	0.00%	$ -	$ -	36	50%	$ 2,678,116
238	INVP 4411AB Distributed Generation Portal	PSC Mandate	$ 478,230	0.00%	$ -	$ -	47.71%	$ 58,673	$ 228,164	0.00%	$ -	$ -	36	50%	$ 1,673,805
239	INVP 4383 NY Community Choice Aggregation	PSC Mandate	$ 78,778	14.88%	$ 3,072	$ 11,722	40.06%	$ 8,271	$ 31,559	0.00%	$ -	$ -	36	50%	$ 275,724
241	INVP 4448 Low Income Order CSS	PSC Mandate	$ 355,630	21.56%	$ 20,096	$ 76,674	57.91%	$ 53,976	$ 205,945	0.00%	$ -	$ -	36	50%	$ 1,244,705
242	INVP 4411C New Electric Connections	PSC Mandate	$ 99,714	0.00%	$ -	$ -	47.71%	$ 14,096	$ 47,574	0.00%	$ -	$ -	36	40%	$ 279,200
243	INVP 4411D New Gas Connections	PSC Mandate	$ 128,000	16.89%	$ 7,046	$ 21,619	0.00%	$ -	$ -	0.00%	$ -	$ -	36	40%	$ 358,400
244	CPE Buyback	Tech. Modernization	$ 734,286	4.58%	$ 7,320	$ 33,630	17.76%	$ 28,385	$ 130,409	6.11%	$ 9,765	$ 44,865	36	50%	$ 2,570,000
245	Active Directory Improvements	Tech. Modernization	$ 39,286	4.58%	$ 463	$ 1,799	17.76%	$ 1,794	$ 6,977	6.11%	$ 617	$ 2,400	36	50%	$ 137,500
246	Application Performance Management (APM)	Tech. Modernization	$ 53,571	4.58%	$ 660	$ 2,454	17.76%	$ 2,560	$ 9,514	6.11%	$ 881	$ 3,273	36	40%	$ 150,000
247	RAS/VPN Re-Platform/Mobile	Tech. Modernization	$ 85,714	4.58%	$ 1,076	$ 3,926	17.76%	$ 4,172	$ 15,223	6.11%	$ 1,435	$ 5,237	36	40%	$ 240,000
248	US Network Programme	Tech. Modernization	$ 432,143	4.58%	$ 5,521	$ 19,792	17.76%	$ 21,410	$ 76,749	6.11%	$ 7,366	$ 26,404	36	40%	$ 1,210,000
249	US VSTIG Programme	Tech. Modernization	$ 385,714	4.58%	$ 4,928	$ 17,666	17.76%	$ 19,110	$ 68,503	6.11%	$ 6,574	$ 23,567	36	40%	$ 1,080,000
250	US Wireless Programme	Tech. Modernization	$ 278,571	4.58%	$ 3,559	$ 12,759	17.76%	$ 13,802	$ 49,474	6.11%	$ 4,748	$ 17,021	36	40%	$ 780,000
251	Monitoring and Alerting	Tech. Modernization	$ 64,286	4.58%	$ 821	$ 2,944	17.76%	$ 3,185	$ 11,417	6.11%	$ 1,096	$ 3,928	36	40%	$ 180,000
252	RSA Re-platform	Tech. Modernization	$ 40,000	4.58%	$ 511	$ 1,832	17.76%	$ 1,982	$ 7,104	6.11%	$ 682	$ 2,444	36	40%	$ 112,000
253	Cloud Broker - Hybrid Enablement	Tech. Modernization	$ 35,714	4.58%	$ 456	$ 1,636	17.76%	$ 1,769	$ 6,343	6.11%	$ 609	$ 2,182	36	40%	$ 100,000
254	Office 2010 Upgrade	Tech. Modernization	$ 114,286	4.58%	$ 1,460	$ 5,234	17.76%	$ 5,662	$ 20,297	6.11%	$ 1,948	$ 6,983	36	40%	$ 320,000
255	Citrix Infrstructure Upgrade (Xenapp and NetScaler)	Tech. Modernization	$ 71,429	4.58%	$ 913	$ 3,271	17.76%	$ 3,539	$ 12,686	6.11%	$ 1,217	$ 4,364	36	40%	$ 200,000
256	Business Innovation Projects 1	Tech. Modernization	$ 481,230	4.58%	$ 6,149	$ 22,040	17.76%	$ 23,842	$ 85,467	6.11%	$ 8,202	$ 29,403	36	40%	$ 1,347,445
257	Data Security	Tech. Modernization	$ 225,000	4.58%	$ 2,875	$ 10,305	17.76%	$ 11,147	$ 39,960	6.11%	$ 3,835	$ 13,748	36	40%	$ 630,000
258	Orchestration and Self Service	Tech. Modernization	$ 107,143	4.58%	$ 1,369	$ 4,907	17.76%	$ 5,308	$ 19,029	6.11%	$ 1,826	$ 6,546	36	40%	$ 300,000
259	Virtual Desktop - DaaS	Tech. Modernization	$ 78,571	4.58%	$ 1,004	$ 3,599	17.76%	$ 3,893	$ 13,954	6.11%	$ 1,339	$ 4,801	36	40%	$ 220,000
260	SCI connections	Tech. Modernization	$ 14,286	4.58%	$ 183	$ 654	17.76%	$ 708	$ 2,537	6.11%	$ 243	$ 873	36	40%	$ 40,000
261	US SAP: Dynamic Storage Tiering	Tech. Modernization	$ 193,571	4.58%	$ 2,714	$ 8,866	17.76%	$ 10,525	$ 34,378	6.11%	$ 3,621	$ 11,827	36	40%	$ 542,000
262	ICE Replacement	Tech. Modernization	$ 473,714	4.58%	$ 7,071	$ 21,696	17.76%	$ 27,419	$ 84,132	6.11%	$ 9,433	$ 28,944	36	40%	$ 1,326,400
263	US Network Programme	Tech. Modernization	$ 296,429	4.58%	$ 5,012	$ 13,576	17.76%	$ 19,435	$ 52,646	6.11%	$ 6,686	$ 18,112	36	30%	$ 622,500
264	US VSTIG Programme	Tech. Modernization	$ 242,857	4.58%	$ 4,106	$ 11,123	17.76%	$ 15,923	$ 43,131	6.11%	$ 5,478	$ 14,839	36	30%	$ 510,000
265	US Wireless Programme	Tech. Modernization	$ 214,286	4.58%	$ 3,623	$ 9,814	17.76%	$ 14,050	$ 38,057	6.11%	$ 4,833	$ 13,093	36	30%	$ 450,000
266	Data Visualisation Expansion	Tech. Modernization	$ 400,000	4.58%	$ 6,763	$ 18,320	17.76%	$ 26,226	$ 71,040	6.11%	$ 9,022	$ 24,440	36	30%	$ 840,000
267	US SAP: Business Warehouse (BW) Consolidation to HANA Enterprise Cloud (HEC)	Tech. Modernization	$ 338,000	4.58%	$ 5,715	$ 15,480	17.76%	$ 22,161	$ 60,029	6.11%	$ 7,624	$ 20,652	36	30%	$ 709,800
268	Monitoring and Alerting	Tech. Modernization	$ 142,857	4.58%	$ 2,415	$ 6,543	17.76%	$ 9,366	$ 25,371	6.11%	$ 3,222	$ 8,729	36	30%	$ 300,000
269	MWORK and Netmotion Risk Avoidance	Tech. Modernization	$ 71,429	4.58%	$ 1,208	$ 3,271	17.76%	$ 4,683	$ 12,686	6.11%	$ 1,611	$ 4,364	36	30%	$ 150,000
270	Improving End User Experience- Cloud based DMZ Service Platform	Tech. Modernization	$ 42,857	4.58%	$ 725	$ 1,963	17.76%	$ 2,810	$ 7,611	6.11%	$ 967	$ 2,619	36	30%	$ 90,000
271	Mobile Broadband POC	Tech. Modernization	$ 14,286	4.58%	$ 242	$ 654	17.76%	$ 937	$ 2,537	6.11%	$ 322	$ 873	36	30%	$ 30,000
272	FY19 Edge Projects	Tech. Modernization	$ 142,857	4.58%	$ 2,415	$ 6,543	17.76%	$ 9,366	$ 25,371	6.11%	$ 3,222	$ 8,729	36	30%	$ 300,000
273	FY19 Network Projects	Tech. Modernization	$ 142,857	4.58%	$ 2,415	$ 6,543	17.76%	$ 9,366	$ 25,371	6.11%	$ 3,222	$ 8,729	36	30%	$ 300,000
274	Digital Asset Management (DAM)	Tech. Modernization	$ 71,429	4.58%	$ 1,208	$ 3,271	17.76%	$ 4,683	$ 12,686	6.11%	$ 1,611	$ 4,364	36	30%	$ 150,000
275	Business Innovation Projects 1	Tech. Modernization	$ 567,605	4.58%	$ 9,597	$ 25,996	17.76%	$ 37,215	$ 100,807	6.11%	$ 12,803	$ 34,681	36	30%	$ 1,191,971
276	Business Innovation Projects 2	Tech. Modernization	$ 481,230	4.58%	$ 8,137	$ 22,040	17.76%	$ 31,552	$ 85,467	6.11%	$ 10,855	$ 29,403	36	30%	$ 1,010,584
277	Business Innovation Projects 3	Tech. Modernization	$ 481,230	4.58%	$ 8,137	$ 22,040	17.76%	$ 31,552	$ 85,467	6.11%	$ 10,855	$ 29,403	36	30%	$ 1,010,584
278	EUC, network, and data center strategy	Tech. Modernization	$ 220,408	4.58%	$ 3,727	$ 10,095	17.76%	$ 14,451	$ 39,145	6.11%	$ 4,972	$ 13,467	36	30%	$ 462,857
279	Data Security	Tech. Modernization	$ 225,000	4.58%	$ 3,804	$ 10,305	17.76%	$ 14,752	$ 39,960	6.11%	$ 5,075	$ 13,748	36	30%	$ 472,500
280	FY19 Data Centre Projects	Tech. Modernization	$ 285,714	4.58%	$ 4,831	$ 13,086	17.76%	$ 18,733	$ 50,743	6.11%	$ 6,445	$ 17,457	36	30%	$ 600,000
281	1327 Interfaces - 523 FTS, 340 RDX, 245 MQSI, 253 JCAPS, 44 PM4D, 7 VB	Tech. Modernization	$ 471,429	4.58%	$ 7,971	$ 21,591	17.76%	$ 30,909	$ 83,726	6.11%	$ 10,634	$ 28,804	36	30%	$ 990,000
282	US Video Conference Programme	Tech. Modernization	$ 235,714	4.58%	$ 4,560	$ 10,796	17.76%	$ 17,683	$ 41,863	6.11%	$ 6,084	$ 14,402	36	30%	$ 495,000
283	US SAP: Enhancement Pack 9 Upgrade	Tech. Modernization	$ 1,260,143	4.58%	$ 32,949	$ 57,715	17.76%	$ 127,768	$ 223,801	6.11%	$ 43,956	$ 76,995	36	0%	$ -
284	US Network Programme	Tech. Modernization	$ 225,000	4.58%	$ 5,883	$ 10,305	17.76%	$ 22,813	$ 39,960	6.11%	$ 7,848	$ 13,748	36	0%	$ -
285	US VSTIG Programme	Tech. Modernization	$ 100,000	4.58%	$ 2,615	$ 4,580	17.76%	$ 10,139	$ 17,760	6.11%	$ 3,488	$ 6,110	36	0%	$ -
286	US Wireless Programme	Tech. Modernization	$ 214,286	4.58%	$ 5,603	$ 9,814	17.76%	$ 21,727	$ 38,057	6.11%	$ 7,475	$ 13,093	36	0%	$ -
287	Monitoring and Alerting	Tech. Modernization	$ 142,857	4.58%	$ 3,735	$ 6,543	17.76%	$ 14,484	$ 25,371	6.11%	$ 4,983	$ 8,729	36	0%	$ -
288	Service Now - Release 3	Tech. Modernization	$ 485,714	4.58%	$ 12,700	$ 22,246	17.76%	$ 49,247	$ 86,263	6.11%	$ 16,943	$ 29,677	36	0%	$ -
289	IS Tools	Tech. Modernization	$ 57,143	4.58%	$ 1,494	$ 2,617	17.76%	$ 5,794	$ 10,149	6.11%	$ 1,993	$ 3,491	36	0%	$ -
290	FY20 Edge Projects	Tech. Modernization	$ 285,714	4.58%	$ 7,471	$ 13,086	17.76%	$ 28,969	$ 50,743	6.11%	$ 9,966	$ 17,457	36	0%	$ -
291	FY20 Network Projects	Tech. Modernization	$ 571,429	4.58%	$ 14,941	$ 26,171	17.76%	$ 57,938	$ 101,486	6.11%	$ 19,932	$ 34,914	36	0%	$ -
292	EMM Licenses	Tech. Modernization	$ 188,571	4.58%	$ 4,931	$ 8,637	17.76%	$ 19,120	$ 33,490	6.11%	$ 6,578	$ 11,522	36	0%	$ -
293	Business Innovation Projects 2	Tech. Modernization	$ 567,605	4.58%	$ 14,841	$ 25,996	17.76%	$ 57,550	$ 100,807	6.11%	$ 19,799	$ 34,681	36	0%	$ -
294	Business Innovation Projects 3	Tech. Modernization	$ 568,462	4.58%	$ 14,864	$ 26,036	17.76%	$ 57,637	$ 100,959	6.11%	$ 19,829	$ 34,733	36	0%	$ -
295	Data Security	Tech. Modernization	$ 225,000	4.58%	$ 5,883	$ 10,305	17.76%	$ 22,813	$ 39,960	6.11%	$ 7,848	$ 13,748	36	0%	$ -
296	Hardware and Software Upgrades	Tech. Modernization	$ 1,071,429	4.58%	$ 28,015	$ 49,071	17.76%	$ 108,634	$ 190,286	6.11%	$ 37,373	$ 65,464	36	0%	$ -
297	Data Centre Consolidation efforts	Tech. Modernization	$ 500,000	4.58%	$ 13,074	$ 22,900	17.76%	$ 50,696	$ 88,800	6.11%	$ 17,441	$ 30,550	36	0%	$ -
298	FY20 Data Centre Projects	Tech. Modernization	$ 571,429	4.58%	$ 14,941	$ 26,171	17.76%	$ 57,938	$ 101,486	6.11%	$ 19,932	$ 34,914	36	0%	$ -
299	Enterprise Data Management Platform	Tech. Modernization	$ 563,095	4.58%	$ 8,528	$ 25,790	17.76%	$ 33,071	$ 100,006	6.11%	$ 11,377	$ 34,405	36	0%	$ -
300	Business Innovation Projects 2	Tech. Modernization	$ -	4.58%	$ 10,189	$ -	17.76%	$ 39,510	$ -	6.11%	$ 13,593	$ -	36	0%	$ -
301	Business Innovation Projects 3	Tech. Modernization	$ -	4.58%	$ 10,189	$ -	17.76%	$ 39,510	$ -	6.11%	$ 13,593	$ -	36	0%	$ -
	Total IS		$ 93,639,207		$ 4,307,665	$ 8,043,817		$ 12,287,185	$ 19,000,733		$ 1,329,762	$ 3,492,784			$ 208,031,617

NIMO G	$ 12,351,482	NIMO E	$ 36,110,464
RY20 NIMO G	$ 8,193,852	RY20 NIMO E	$ 23,606,489
RY21 Adjust	$ 4,157,630	RY21 Adjust	$ 12,503,976

NIMO	$ 48,461,947
RY20 NIMO	$ 31,800,341
RY21 Adjust	$ 16,661,606

BEFORE THE
STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

In the Matter of

Niagara Mohawk Power Corporation

Cases 17-E-0238 and 17-G-0239

August 2017

Prepared Exhibits of:

Staff Information Services Panel

Andrew Timbrook
Utility Engineer II

Aric Rider
Utility Supervisor

Keith Haugen
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State of New York
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Albany, New York 12223-1350

List of Exhibits

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Exhibit __(SISP-1)	IR Responses	3
Exhibit __(SISP-2)	Historic Capital Expenditures and Operating Expenses	1663
Exhibit __(SISP-3)	Staff Adjustments	1664

Exhibit ___(SISP-1)

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DPS-559[4]	Project INVP #3932	1658

[1] Attachments 5a and 5b to the response to DPS-275 are marked confidential. Staff does not specifically rely on these attachments, and so has not included them in this exhibit. The attachments can be provided if necessary.
[2] Attachments 2-11 to the response to DPS-607 are marked confidential. The attachments can be provided if necessary.
[3] Attachments 1-5, 4A, 5A, 6, 8, 9, 10 and 12 to the response to DPS-562 are marked confidential. The attachments can be provided if necessary.

[4] Attachments 1-4 to the response to DPS-559 are marked confidential. The attachments can be provided if necessary.

Date of Request: June 28, 2017 Request No. DPS-432 AT-5
Due Date: July 10, 2017 NMPC Req. No. NM-1005

NIAGARA MOHAWK POWER CORPORATION d/b/a NATIONAL GRID
Case No. 17-E-0238 and 17-G-0239 –
Niagara Mohawk Power Corporation d/b/a National Grid – Electric and Gas Rates

Request for Information

FROM: DPS Staff, Andrew Timbrook

TO: National Grid, Gas Information Systems Panel

SUBJECT: **GAS BUSINESS ENABLEMENT (GBE) - JUSTIFICATION**

Request:

In this interrogatory, all requests for data, workpapers or supporting calculations should be construed as requesting any Word, Excel or other computer spreadsheet models in original electronic format with all formulae intact.

Concerning the proposed GBE program, provide the following:

1. A graphic showing the current NMPC programs and the average age of those programs. Does the age of NMPC's systems drive the need for GBE?

2. Explain how crews currently acquire new or revised procedures.

3. Explain how GBE will change the process by which crews acquire new or revised procedures.

4. Explain how customers currently make appointments.

5. Explain how GBE will change the process by which customers make appointments.

6. Explain how customers currently acquire information from the Company.

7. Explain GBE will change the process by which customers acquire information from the Company.

8. Explain why the Company plans to roll out (program) at its Rhode Island gas distribution company first.

9. Explain how the Company engaged stakeholders when it developed the GBE business plan.

10. Did the Company conduct any Pilot programs associated with GBE? If so, identify each Pilot program, describe its results, identify lessons learned from each Pilot program, and explain how those lessons were incorporated into the GBE plan.

11. Page 88 of the Panel's Pre-Filed Direct Testimony states that "it is becoming increasingly difficult to support safe, compliant, operations and meet regulatory obligations."

a. Identify the areas where the Company was either unsafe, non-compliant, or did not meet regulatory obligations.

b. Explain how specific components of GBE will improve each of the issues identified in response to the preceding question.

Response:

1. Attachment 1 depicts the current state of applications that support functions required by Niagara Mohawk's gas business, as well as the projected future state of the same functions after GBE implementation. The average age of the systems supporting Niagara Mohawk's gas business is eleven years.

   The age of the systems supporting Niagara Mohawk is an important driver of GBE. These systems are quite old, and in many cases are no longer supported by the vendor. This creates an unacceptable risk to gas business operations and Niagara Mohawk's ability to effectively serve customers. As systems age, and technology changes, it is increasingly difficult to make modifications to the systems to support changing business requirements. In addition, the current systems, many of which rely on paper records, no longer support the way today's gas businesses need to operate, manage performance, and provide employees with the right information and effective tools. Modern supported solutions are also needed to help reliably deliver capital investment and growth.

2. Currently, crews utilize two methods of acquiring new or revised procedures. In some locations, paper procedure manuals are produced and distributed to field workers. In areas where field workers have access to the Company InfoNet, a link to an automated procedure library provides access to the procedures in a truck-mounted computer.

3. Following GBE implementation, all field workers will have access to modern mobile devices, and will be able to access a procedure portal online. Importantly, this will enable workers to access procedures in the field where the work is being performed. There are also plans to make learning libraries available online for common procedures, tasks and repairs, and these may include photographs and short training videos.

4. To make a service appointment today, a customer must contact the call center and speak to a customer representative. The customer representative, while speaking with the customer, accesses a system function that shows appointment availability. Appointment availability is based on the average number of jobs per day per field worker, the season, day of the week, time of day, etc.

5. Following GBE implementation, in addition to contacting the call center, the customer will also have the option of using the web to make the appointment, and will be presented with a screen with the available appointment windows. The customer will also have the option of receiving a call or a text when the field worker leaves for the appointment.

6. A great deal of information is available on the Company's website. However, if a customer has a specific question about billing, equipment, pending work, etc., the customer must contact the call center and speak to a customer representative. While speaking with the customer, the representative is presented with a number of screens to research the customer's question. Today, however, much information, such as that related to construction or maintenance work and new service requests, is not available to the customer representative, and it is often necessary to refer the customer to other Company departments, or request that the customer submit the request in writing.

7. Following GBE implementation, the customer will be given the opportunity to use the Company's website on a much broader scale to obtain information from the Company. In addition, the customer will have many more self-service options through digital channels to enable them to choose how they interact with National Grid. The customer will be able to access screens that were previously available only to customer representatives, and that will guide the customer through the website to the answers they require. Customers will be able to request further information online, and will be able to upload documents and photographs to support their questions. The integration of the new systems that are part of GBE will make much more information directly available to customers, without the need to work through a customer representative.

   For customers calling the call center, the process will also be enhanced by providing customer representatives with much more information to better serve customers.

8. Please see the Pre-Filed testimony of the GIOP Panel, page 95, lines 1 – 7.

9. Development of the GBE business case required detailed analysis of the current gas processes, including functions that were particularly difficult to perform, given the aging systems that supported those processes. Significant analysis was also required to identify what the new processes would be needed to support the gas business now and into the future. Stakeholders for these activities included subject matter experts from throughout the gas business, and included management personnel and field workers from across all gas business functions and regions. It is important to note that the GBE project team itself was staffed with individuals with direct experience across the gas business. The GBE Program conducted 44 workshops with over 400 employees at all levels across 44 departments in the gas business to collaborate on systems and process pain points, system

design and functionality, and processes that could better serve customers. Workers from the Contact Center, Dispatch, Meter Work, Maintenance, Construction, Asset Management, and GIS, among other groups, participated in these sessions. The GBE team engaged the much larger Operations teams by travelling to each jurisdiction and various groups within those jurisdictions to discuss pain points, and the Operations driven proposals. Support departments such as Supply Chain and Human Resources have also been kept fully aware of the direction of GBE, and have participated in the workshops as appropriate. The workshops formed the basis for development of the roadmap, comparing the "as is" processes to the "to be" processes. Approximately fifteen team members continue to ride weekly with field workers and supervisors to better understand the pain points and incorporate recommendations. As the solution is being designed, each capability is being designed with the leads described above and with the Operations subject matter experts. Testing and training will also be conducted using the same teams.

Stakeholder outreach was also conducted with unions in Fall 2016. Union meetings are continuing for the next few weeks to provide status updates and also respond to any questions.

10. The GBE Program conducted two main pilots in 2016 to test important concepts that National Grid is planning to leverage through GBE to determine if they were viable. The first was a process pilot, the second involved two technology pilots. Four Meter-To-Cash processes were chosen for the pilots: Collections, Advanced Consumption, Stopped Meter, and Long Term Estimates.

    The process pilot was focused on feasibility of standardizing processes across the National Grid's various jurisdictions, recognizing the need to meet any regulatory requirements in each jurisdiction. The pilot involved workshops in all jurisdictions to understand current processes and to achieve broad engagement to define the "to be" process. The pilot was a significant success with four new "to be" processes being developed that were able to account for regional variations. By removing duplication across the jurisdictions, the total number of process steps from "as is" to "to be" was reduced by 56%, providing a good example of the potential for simplification.

    The goal of the technology pilots was to demonstrate that one of the new standard processes could be effectively implemented using Agile development methods. There were two technology pilots, one on Collections that was piloted in the field and one using the Stopped Meter process that was used as a back office demonstration. The pilots were successful in demonstrating that the Agile development methods were very effective, and were also very well received by management and field workers from the gas business.

    The Collections pilot was based in Long Island. It took less than 12 weeks from the start of the pilot to use of the solution in the field. It was also possible to see feedback from front-line employees built into the solution through the pilot process. The pilot introduced a modern technology device and user interface to the workforce, which were very favorably received.

The Stopped Meter pilot was based in Syracuse. It provided greater visibility into the process and activity status across all parts of the business was achieved. This was a desktop pilot but was able to show some of the opportunities a modern platform would provide the Company to more effectively manage work.

The technology pilots confirmed the benefit of using the Agile development methodology, which involved frequent engagement with business and field workers, and resulted in accelerated delivery of business value. The Agile methodology was well received by all participants in the pilots.

The results of the process and technology pilots were key inputs that validated assumptions around the approach to the GBE Program. The learnings were fully incorporated into the roadmap, including the ambition to consolidate processes across regions before developing the solution, leveraging the Agile methodology where practical, and utilizing cloud computing technologies.

11. In the testimony of the GIOP Panel, the Company states that the age of the systems supporting the gas business limits the ability to make modifications and increases the amount of time the systems are down. These systems limitations present challenges in supporting safety, compliance, and regulatory obligations. The Company did not state, however, that it is unable to support safe, compliant operations or meet regulatory obligations.

    The Company takes its gas safety and compliance obligations very seriously and has a broad range of systems and controls currently in place to deliver its obligations. However, there are certain areas where the current systems are preventing the Company from achieving its desired level of performance:

    Missing or being late for a required work activity. Today, this often requires additional manual controls and local tracking, follow up, and checking. Post GBE, all work will be contained in one system with pre-defined rules that will automatically schedule work in advance of its due date, and there will be central visibility to ensure all mandated activities are completed in a timely fashion.

    Documenting work activity. Many work activities involve paper documentation or filling out open text fields in truck-based computers. While the Company has implemented additional controls, including re-trainings, review meetings with crews, and modifications across multiple systems to enhancing tracking of these activities, post GBE employees will have devices that they can take to the job site, which will allow for paper forms to be replaced with electronic ones. Workers will have real-time access to the procedures for the work they are doing, as well as additional relevant training materials and electronic forms, which will validate required fields to support the accurate capture of the right information the first time. This information will be electronically stored to enable future access and reporting as appropriate.

Completing, and following up on, warning tags. Today, these are manual processes with manual controls such as backup personnel and additional human review. Post GBE, warning tags will be completed electronically and printed in the field – this will enable validation of information as the tag is completed, and it will give the Company an electronic copy of every warning tag. It will also enable any follow up work to be automatically scheduled, significantly reducing the reliance on manual processes and controls.

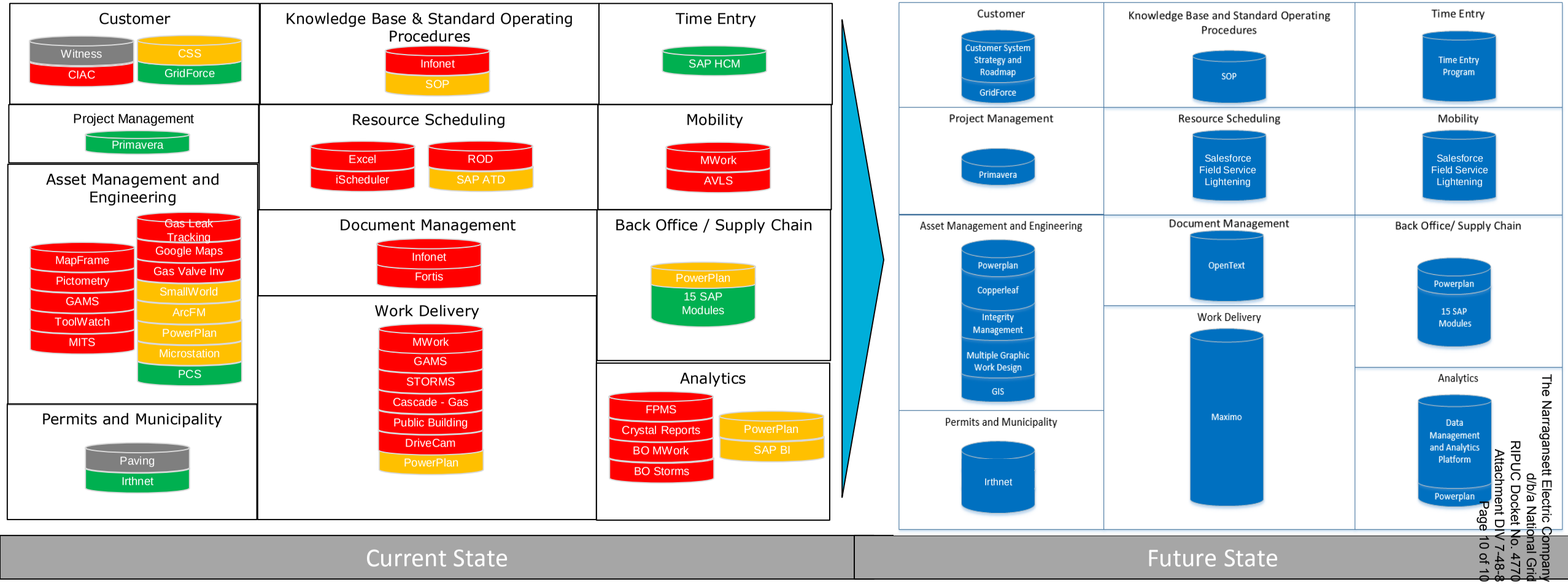
Beyond these specific examples, GBE initiatives are anticipated to provide various capabilities that will further support the Company's approach to gas pipeline safety and compliance, including customer engagement capabilities that will facilitate making appointments with customers,, reducing the number of jobs that are unable to be completed due to access issues. The GBE Program will also facilitate having CMS and Field Operations employees working on the same system – making it easier to transfer work between teams. The mobile platform will also make it easier to take pictures of abnormal conditions in the field and transfer them to the appropriate person/team so they can be more quickly assessed to identify any corrective action required. In short, the modern platforms to be delivered through GBE will enable Niagara Mohawk to move from mainly manual controls to more automated controls and give the Company great flexibility and agility to meet future requirements to continuously improve the approach to gas pipeline safety and compliance.

Name of Respondent:
Johnny Johnston

Date of Reply:
July 10, 2017

nationalgrid

Current to Future State – Upstate NY



Current Disposition Risk (Technology/Business)

Unknown | Acceptable → Unacceptable

- Moving from ~50* to ~19** different systems across multiple functional areas
- Simplifying Integration across Asset & Engineering and Work Management Systems

*Multiple Modules/ Technologies / Instances not depicted due to multiple or incomplete mappings 36/59 are depicted in current diagram. SAP Modules are not included in this count.
**The Variability of 19 is due to Customer Experience not being a part of US GBE.

Future State

CONCLUSION

The US Gas Business is facing significant risk and performance challenges that require action. The recommended GBE roadmap addresses these challenges and leaves the business well placed to meet future regulatory, customer and stakeholder needs. The program applies lessons from the past to facilitate successful delivery. The immediate need, expected regulatory support and anticipated benefits support the overall approach and investment.

INPUT SOUGHT

(1) Approve an FY18 GBE budget of $84M ($30M Opex and $54M Capex) with an incremental $9M contingency for the recommended roadmap. Note that FY19 funding will be requested in September 2018 and that there will be a four-year funding commitment to complete the backbone. (2) Endorse the proposed $458M ($178M Opex and $280M Capex) with an incremental $61M contingency, five year roadmap. Note that the anticipated annual benefits are $40M a year ($11M Opex and $29M Capex) and there will be an estimated incremental RTB costs of $18M a year. (3) Endorse the proposed annual sanctioning approach to provide on-going assurance, and (4) Delegate Authority to the GBE Steering Group to continue regular oversight of the GBE program

The Report - ANALYSIS

1. What is Gas Business Enablement and why is it needed now?

Gas Business Enablement (GBE) is proposed as a holistic transformation of the US gas business to address three specific challenges the business is facing:

- **The increasing risk of reliably delivering core operations with a growing list of core systems that are aging with a corresponding reduction in support.** Within two years, 94% of the front office systems will be at 'end of life', up from 79% today. The average age of these systems is 14 years old versus an industry benchmark of six. Due to growing down time and reduced ability to make changes to these systems, it is increasingly difficult to support safe, compliant operations and meet ongoing regulatory obligations.
- **The need for a step change in business performance.** There are several examples where the company needs to do better. These include the $40M in compliance penalties the gas business has or is negotiating from the last three years, our inability to respond to regulatory needs (for example, it took 10 months to implement a shorter appointment window in MA), and the significant reliance on paper, which is a challenge to efficiency and effective record keeping. In short, our current systems no longer support the way we need to work, manage performance, and empower our employees to serve our customers.
- **Continued successful delivery of the capital program.** Over recent years the capital delivery program has tripled to over $2bn a year, largely in response to customer and regulatory requirements. This has put significant strain on the legacy approach and supply chain. Modern supported solutions with an integrated supply chain are necessary to reliably deliver this significant growth area for National Grid.

In addition to addressing these challenges, GBE will help National Grid be more prepared to respond to the fast changing energy and technology environments. Ensuring that the capabilities being delivered remain prudent and relevant to the business. To respond to these challenges, GBE has the following key elements:

1. **Integrate, standardize, and simplify** our core delivery processes and systems onto a modern platform (comprising 19 best-of-breed solution components from the 99 disparate applications today). This includes industry standard core enterprise asset management, work management, and geospatial information systems (GIS - *i.e.*, mapping solution) to process all gas assets, records, and transactional data and to allow the management of assets and administration of work more holistically. This will improve capital delivery effectiveness, reduce compliance breaches and lead to better employee utilization.

2. **Build a flexible, digital interaction platform** on top of the core systems to allow our customers, call center and field employees to operate on the same platform. This will significantly improve the experience for our customers by making National Grid a much easier company to do business with, and putting information and control into customers' hands (examples can be seen in Appendix G). It will also significantly improve our employee's experience, giving them a platform that makes it easy to get and complete work. This supports Operations in the short term by allowing more to be completed with appointments and improving customer satisfaction. It also builds invaluable capabilities necessary in the evolving future energy marketplace.
3. **Creating a performance focused organization** with focus on end-to-end process, a strengthened value framework and revised and clarified accountability aligned with API 1173 (Federal Process Safety guidelines) requirements. These business capabilities ensure that business outcomes are realized and will drive desired behavioural changes throughout the organization necessary to deliver a step change in performance

The greatest imperative for immediate action is that 79% of the front office systems are already at 'end of life'. Because of this, the business is carrying significant risk, is experiencing heightened levels of frustration and overall ineffectiveness. This will intensify in the future as the reliability of these systems deteriorates. The existing systems hinder the business' ability to effectively support delivery of the growing US gas capital program, address the evolving regulatory environment around gas safety and compliance, and meet changing customer expectations.

2. What is the approach to the solution and is there anything unique?

This is a large program that will take multiple years to complete. National Grid has worked with two of the top system integrators (SI) in the US, Accenture and PWC, to complete a high-level design and develop a roadmap that leverages modern approaches to minimize risk and maximise the likelihood that the desired business outcomes are successfully delivered. This work includes:

- **Developing a core backbone solution and building incremental enhanced capabilities.** The core includes implementing asset, work management and mapping solutions over the first four years. The core solution uses tried and tested utility solutions that will be implemented with minimal customization and standardized business processes across the enterprise. Focusing on the core first and implementing it as quickly as possible will help to reduce risk and create the foundation for the value adding enhancements. The enhanced capabilities build on the core and are focused on adding incremental value to National Grid's customers throughout the five-year program. The full set of initiatives and high level roadmap can be seen in Appendix A and B.
- **Phasing implementation.** The approach avoids a 'big bang' implementation by breaking down the program based on work types and geography and prioritizing work types to accelerate delivery and manage risks. For geography, Rhode Island has been identified as the optimal test bed given its significant reliance today on paper-based operations and its manageable scale. A strict stage-gate methodology will be employed to manage delivery and implementation in other geographies/OpCo's, once pre-defined thresholds of performance have been successfully demonstrated in Rhode Island.
- **Leveraging agile development techniques.** Traditionally, projects like this would be developed using waterfall techniques with long cycle time between business requirements and a solution. In *agile* development, the business and IS teams work more collaboratively in short-cycle scrums to prioritize functionality and get to a minimum viable product (MVP). This is the simplest solution that can be implemented, with future enhancements continuously prioritized by value and added as the team learns with the solution. Agile development offers many benefits including earlier release of initial functionality, continuously reprioritized enhancements based on learning, and higher success rates. Agile is a well-established approach utilized by a growing number of utilities. It was successfully used in one of the GBE pilots.

- **Taking a 'cloud first' approach.** Putting as much of the solution into the cloud as appropriate will provide several benefits including faster implementation and enhancement adoption, fewer upgrades to legacy infrastructure, reduced risk of obsolescence, and the opportunity to enhance security. Cloud solutions also provide strategic advantages: Software in the cloud is easier to keep up to date, and so key external interfaces such as those required in strategic partnership are easier to accomplish. Cloud solutions can also be more easily scaled for additional capacity when required to enable growth. Also, cloud instances can be managed more dynamically, providing important flexibility to refine solutions as market requirements change over time while at the same time discouraging customization due to the adoption of standard services.

Lessons from previous programs have been built into GBE from the start. The table below shows specifically how the root causes and lessons of the US Foundations Program have been built into the GBE program. National Grid's Critical Success Factors have also been embedded into the GBE program from the beginning.

USFP Root Causes	GBE Program Actions
Weak human capital infrastructure	Strong Leadership team built, talent from business and IS inserted with external hires with specific required capability to support (e.g. scaled agile, cloud & data architects, change management experts) – 70% of Band Cs are Hypo or promotable. Dedicated HRBP to support attraction & development of talent
Personnel churn	Plan to work with HR on retention arrangements for key personnel. Talent Management Plans (including Succession Plans) being built for all aspects of program organization.
Program Management Weakness	PMO setup with USFP BI lead and additional National Grid resources to limit over-reliance on contractors, Critical Success Factors implemented, first pulse check from Program Assurance positive
Little clarity on roles, responsibilities, authority w/I US and with PLC	Single Executive Sponsor – Dean Seavers Single Program Sponsor – Johnny Johnston See RACI in Appendix F that clearly defines roles
Poor Organizational Change Management	External VP hired for their change management capability. Change Management capability build planned for business leadership team as part of the program. A transformational scope developed that includes a number of initiatives supporting change management
Absence of useful metrics	Program metrics developed for phase 1 and reviewed on a weekly basis in the team hub. Approach will be refreshed for the next phase with metrics for delivery, readiness and benefits
Poor risk awareness	Risk reviewed weekly by the project team in the project hub. Key risks fed into the Steering Group on a monthly basis. Actions/owners are documented and follow ups tracked.
Poor management of Business Objectives, Budget, and Schedule trade-offs	Design Authority implemented with business VPs to ensure program is aligned to business needs and effectively manages tradeoffs. Steering Group in place to have oversight program is running to costs & schedule

Uniqueness can add risk to a program. The main elements of the backbone solution are industry standard and are not unique. Software selection is still in progress, but all the core solutions identified have been demonstrated at scale and can be integrated as necessary with legacy National Grid systems. The 'cloud first' and agile approaches are somewhat new to National Grid but well used in other industries. There is one area where a more innovative approach is being proposed - the interaction platform for customers. Negotiations continue to develop this solution in partnership with one of the biggest customer relationship management (CRM) providers in the world. This new approach is being progressed because of the significant strategic value it provides. It will be closely managed and there are standard utility approaches to fall back to if necessary.

3. What options were considered, what is the investment for the preferred option?

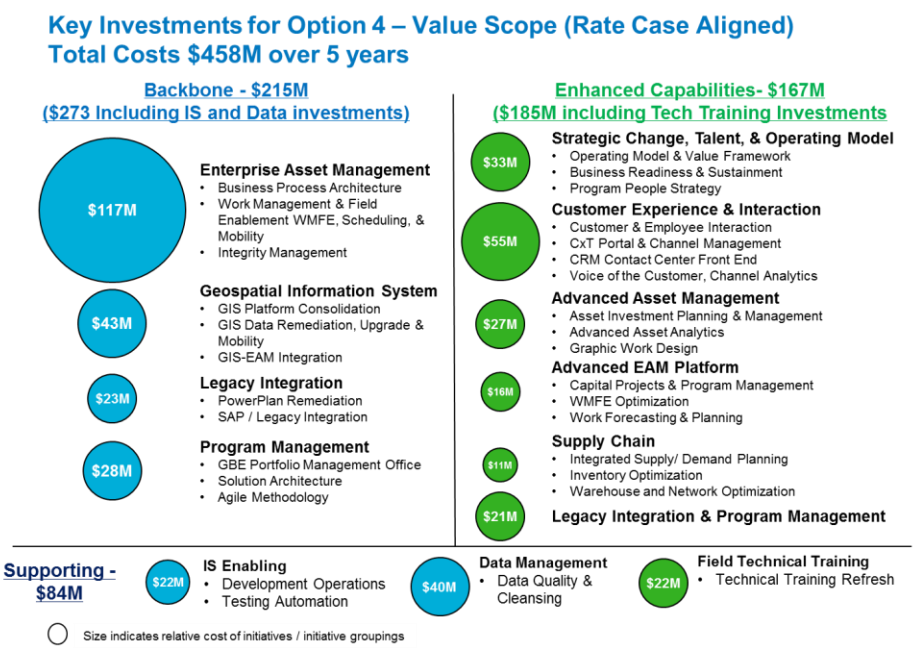
Five main options below were considered. Complete deferral was not considered as a credible option based on the challenges identified in this paper and the need as a minimum to address the aging IS systems:

1. *Legacy Stabilization* – this option would deliver tactical patches, upgrades and replacement of the legacy systems, without looking to enhance or integrate (i.e., a temporary solution).
2. *Backbone Only* – this option is primarily a technology replacement program focused on reducing risk by replacing the legacy solutions with industry standard enterprise asset and work management solutions. This was identified as a 'de-scoped' alternative to options three and four if they were deemed too ambitious or unaffordable.
3. *Value Scope (Transformation Prioritized)* – this option recommends a prioritized business transformation focused on implementing the backbone solution over three years and enhanced capabilities over five years to support incremental value realization.
4. *Value Scope (Rate Case Aligned)* – this option has a similar transformational scope and cost as option three, however the phasing was extended to better align with anticipated rate case revenues. In this option the backbone is replaced over four years.
5. *Value Scope (Big Bang Approach)* – this option looked to implement a holistic business transformation solution as quickly as possible (~3 years).

The table to the right shows a summary assessment of the options. It can be seen option 4 is the preferred and recommended option as it scores the highest overall by best balancing risk reduction, timely delivery of benefits and cost recovery.

Option:	Risk Mitigation	Time to value	Benefits	Regulatory Recovery
1. Legacy Stabilization	◔	◔	○	◑
2. Backbone Only	◑	◕	◔	◕
3. Value Scope *Transformation Prioritized*	◕	◕	◕	◑
4. Value Scope *Rate Case Aligned*	●	◑	◕	◕
5. Value Scope *Big Bang Approach*	◔	●	◕	◔

The forecasted total investment for the recommended Option 4 is $458M (+$61M contingency) over 5 years for the US enterprise. It should be noted that the first-year request is for $84M (+ $9M contingency). A summary of major components of the investment can be seen below; further detail on FY18's investments can be seen in Appendix C. A detailed breakdown in costs by year, OpCo and Capex/Opex can be seen in Appendix D. It is estimated that RTB costs will increase by $18M a year as a fully supported model for all major platforms is reintroduced. The investment estimates were developed with Accenture and validated by PWC. Accenture has a track record for developing prudent forecasts that have been successfully delivered.



The governance and program approach has been designed around an annual Executive Committee review & sanctioning process. This will allow the program to be modified based on regulatory support, delivery performance, and any changing market conditions that the program needs to respond to. This would also enable the program to be stopped if necessary. However, stopping the program in the first four years would involve a write off as the early years contain multiyear foundational activities.

4. What are the anticipated benefits and business case for this investment?

The first objective of GBE is to consolidate the many duplicate and aging applications and replace a number of aged systems across the enterprise. The primary benefit is the reduced operational risk. This is the focus of the 'backbone' investments and, as such, should be seen as asset replacement investment, similar to replacing leak prone pipe with plastic pipe. They do lay the foundation for enhanced capabilities that will drive a broader range of benefits and performance improvements. The table below summarizes the range of benefits associated with the backbone and enhanced capabilities investments. The close alignment with Shaping our Future can be seen.

Summary of Option 4 benefits for the Backbone and Enhanced Capabilities Investments:

	Stabilize the Core	Step Change in Core	Grow our Core	Future Proof our Business
Program Investment Scope				
Benefits	• Reduced technical & operational risk • Improved pipeline safety & compliance • Greater availability / reliability of systems • Improved access to information • Simplified regulatory reporting	• Enhanced safety performance • Enhanced pipeline safety & compliance (e.g. eliminating fines) • Improved regulatory relationships • Enhanced efficiency • Improved customer experience and satisfaction • Improved employee technical training & skills • Performance-oriented culture	• Deliver future capital growth • Support new customer acquisitions and conversions • Merger and acquisition platform	• Flexible core systems • IS development operations • Automated testing • Agile development capabilities • Data management capabilities • Advanced work and asset analytics capabilities • Customer engagement platform • Platform for electric

Backbone Investments
Enhanced Capabilities Investments

Once embedded, there are anticipated benefits of $40M a year associated with the enhanced capability investments, including creating additional capacity (*i.e.* through productivity improvements). In many cases, it is anticipated that this capacity will be used for incremental work, avoiding incremental hires, rather than a direct reduction in costs. The major components are as follows:

- $17.1M in capacity realized through incremental work, reduced overtime and contractor usage through better planning, resource optimization and reduction in non-productive activities enabled by the new processes, systems, metrics and visibility.
- $4.4M in resource reallocation as a result of enhanced program capabilities allowing for a shift in focus for clerical support staff.
- $13.5M in reduced compliance fines as a result of more accurate data collection, improved scheduling transparency and more robust reporting.

Further detail including the remaining components, a breakdown by year, OpCo, and Capex/Opex can be seen in Appendix E.

Over a 5-year period, the $40M annual benefits will amount to $198M, which is greater than the $185M investment in the enhanced capabilities. It is anticipated that these costs and benefits will be filed in each of our rate cases starting with Niagara Mohawk in April 2017, with the anticipation that they will be recovered if prudency can be demonstrated.

While accountability for successful program delivery sits with the GBE team, accountability for realizing performance improvements and associated benefits lies with the US gas team. A value framework is being developed to create operational KPIs that will track and support realization of the aspirational benefits. These will be aligned to the new dedicated process leads and operational VPs to drive benefits realization. A more detailed RACI table can be found in Appendix F.

5. What are the key risks to the program and how are you mitigating them?

Beyond those risks outlined earlier in the paper, the following table summarizes the key delivery risks to the GBE program and their mitigations:

Risk	Definition	Key Mitigations
Scope creep	Scope and cost of program increases because of failure to stay focused on objectives	Value framework helps manage scope/value tradeoffs Agile approaches help identify most relevant solutions Sanctioning waves allow total costs to be reevaluated
Cost overruns	Costs of program are greater than forecast due to unbudgeted challenges, poor management or poor forecasting	Experienced partners used to build plan and forecast Robust project management approach with governance to provide clear visibility to progress to plan
Data quality	Cost and complexity of data conversion and cleansing is much greater than anticipated	Data discovery allows bottom up profiling of data and data quality
Resources / Capabilities	Business is unable to provide adequate resources and delivery capabilities to successfully manage the program	Resource plan has manageable ramp up Strong business support to date Robust commercial process to find partners with desired capability at the right price
Change Capacity	The business' capacity to incorporate new capabilities and absorb change limits the pace of the program	Change office and ongoing organizational health metrics to diagnose organizational state GBE manages change portfolio for gas business
Process Change	The program is unable to overcome organizational inertia and culture to achieve changes in operating practices and behaviors	Agile approaches to engage employees more actively in design of new practices and processes Alignment of operating model attributes to drive accountability for desired behaviors and outcomes
Business disruption	The program causes performance of the business to be reduced because of disruptions to operations	Disciplined release planning anticipates complications Change Office reinforces disciplined role and change planning
Sustainment of performance and value	Program fails to realize sustainable improvement in the performance of the business	Value framework identifies specific performance parameters for every initiative Operating Model strengthens accountability framework for the business
Market context	Capabilities delivered lose relevance because of dramatic changes in market and or regulatory environment	Waves revisits context of each investment Agile approaches improve relevance of solution approach
Change in strategic priorities	Business priorities change over time and reduce priority for further program investments	Sanction schedule provides for regular investments Input from US leadership and Group Executive Ongoing input from GBE steering group

6. What visibility/controls are there to ensure the program does not go off track?

GBE is a significant and complex program that will need to actively manage many risks to ensure success. There are several layers of governance and controls to help the program stay on track and give visibility to any challenges:

1. National Grid's Critical Success Factors have been fully implemented. This includes the creation of a strong program team with talent from across the organization including several senior leaders dedicated to the program.
2. A Design Authority of business and IS leaders ensures that critical design features of the solution and operating practices are understood and the business can support.
3. During the strategic assessment phase, significant value was created using an Assurance Partner. An assurance partner will continue to be used in the next phase, with a key part of their role focused on providing progress feedback directly into the Steering Group.
4. The program has a Steering Group including two Executive Committee members that meets monthly to review progress, support key decisions and ensure the program stays on track

5. Group Audit is building a capability to provide incremental program assurance capabilities. Early pulse checks of GBE have been positive. However, they will continue to assess the program's progress.
6. The proposed annual sanctioning approach has been designed to give regular visibility to the Executive Committee on progress against defined milestones, giving optionality as the program progresses to deliver maximum value.
7. External audit will monitor the program's performance throughout implementation, and conduct audits as is deemed necessary.

Ultimately it will be the business results that will demonstrate successful delivery of the program. However, there will be a number of milestones as the program progresses that will be leading indicators for success. The table below has the key outputs that the Committee should anticipate the program delivering by September and March in FY18 to measure progress as support is requested for FY19 spend:

By September 2017
1. Selection, contracting and mobilization with System Integrator (SI) Partner(s)
2. On boarding and mobilization of internal resources with a target of 60 resources by September 2017
3. Software selections and contracting for Enterprise Asset Management (EAM) and Scheduling & Mobility vendors
4. Successfully filed GBE as part of Niagara Mohawk (NY), Boston and Colonial Gas (MA) rate cases
5. Refined program plan, change plan and program forecast with updated budgets for FY18 & FY19
6. Value framework developed to identify business KPIs to drive the benefits
By March 2018
1. Standardized enterprise wide business process architecture designed and agreed with the Business down to L4
2. Basic scheduling, dispatch, field data capture and field collections of payments functionality in RI
3. Field device deployments to I&R, Corrosion and CMS Collections representatives in RI
4. EAM/Work Management system capabilities with improved data quality supporting RI
5. Successfully filed GBE as part of Narragansett Gas (RI) rate case

CONCLUSION

The US Gas Business is facing significant risk and performance challenges that require action. The recommended GBE roadmap addresses these challenges and leaves the business well placed to meet future regulatory, customer and stakeholder needs. The program applies lessons from the past to facilitate successful delivery. The immediate need, expected regulatory support and anticipated benefits support the overall approach and investment.

APPENDICES:

A – Initiative List

B – High Level Roadmap of Capabilities

C – Year 1 Capabilities / Assets Delivered

D – Cost Detail

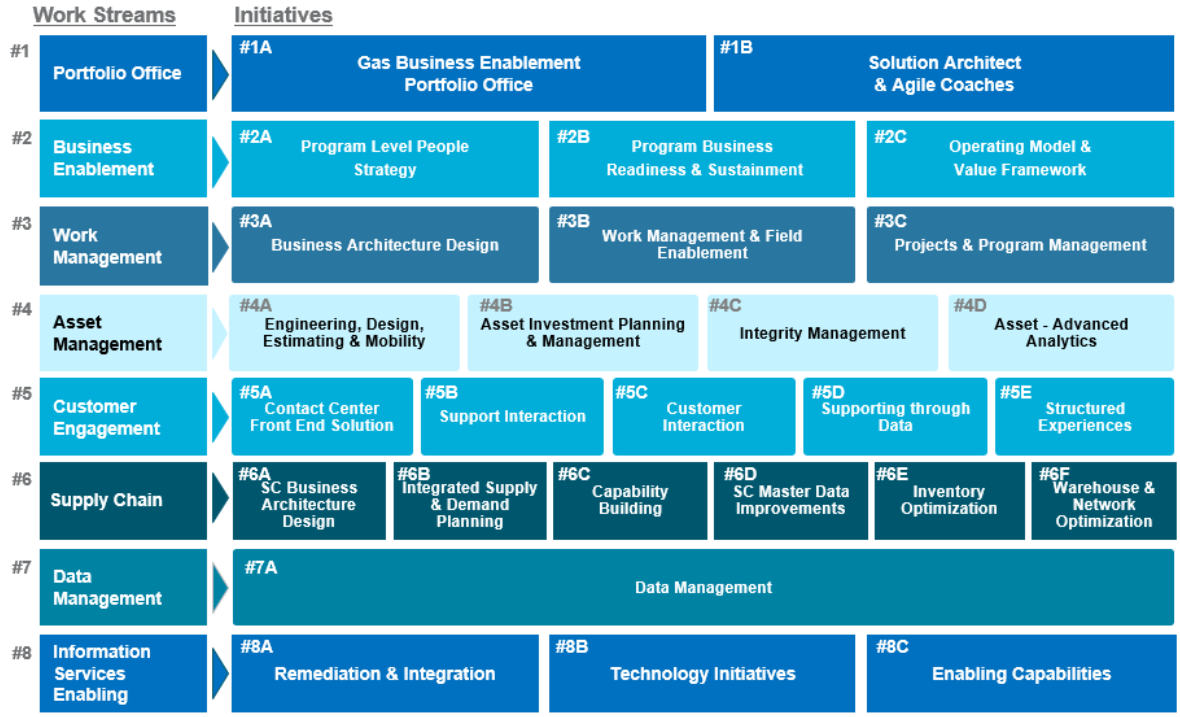
E – Benefits Detail

F – Accountability matrix for GBE program

G – Customer & Employee Experience Benefits

APPENDIX A – Initiatives list

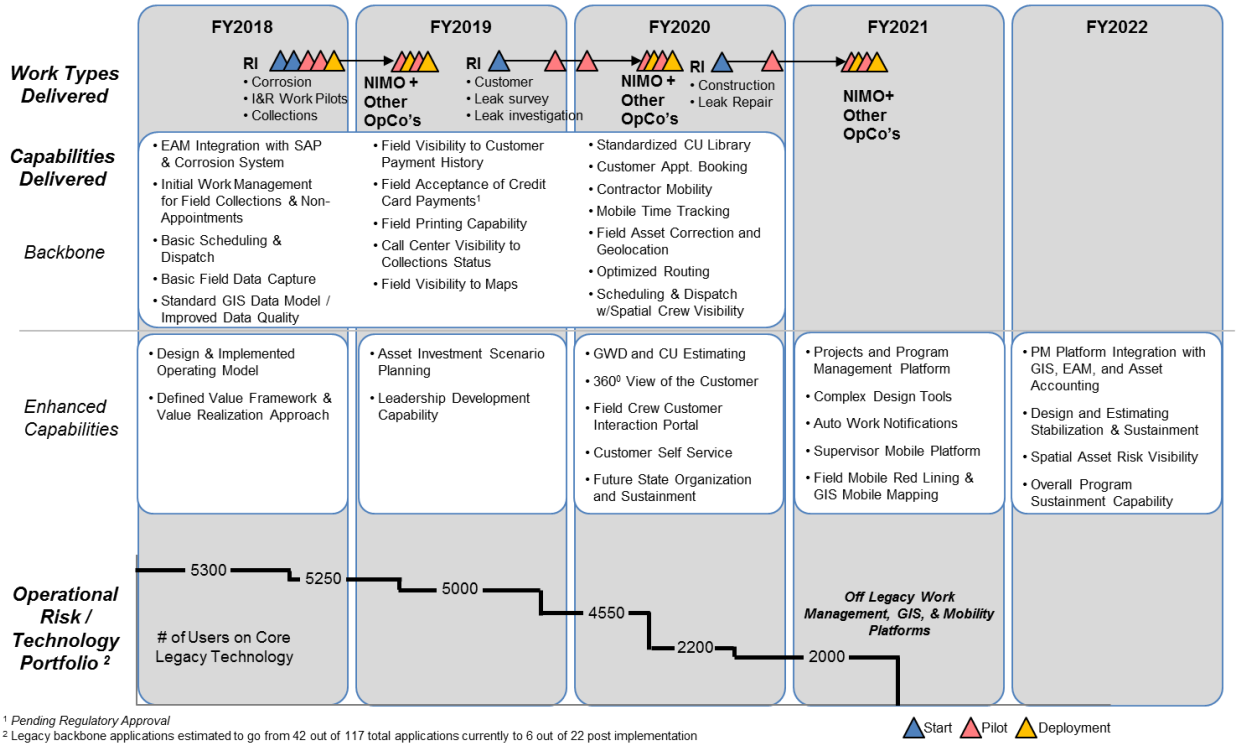
The program work streams and the initiatives within each work stream.



APPENDIX B – High Level Roadmap of Capabilities to be delivered over five years

The backbone capabilities will be delivered in just under four full years while the enhanced capabilities will be delivered over the full five-year timeframe. The bottom portion of the depiction highlights the # of users on legacy EAM, Scheduling, Mobility and GIS platforms that will transition to the new platforms over time illustrating the reduction in technology risk.

Backbone and Enhanced Capabilities Delivered by FY



[1] *Pending Regulatory Approval*
[2] Legacy backbone applications estimated to go from 42 out of 117 total applications currently to 6 out of 22 post implementation

APPENDIX C – Year 1 Capabilities / Assets Delivered and/or Work Commenced

The following list details the capabilities and assets that are expected to be delivered in FY2018 as well as work to commence.

- Business Enablement
  - Complete Future State Culture Definition
  - Commence Labor Contract Strategy & Implementation Support
  - Commence Leadership Capability Development
- Work Management
  - Complete Powerplan Remediation
  - Complete Business Architecture Design (Level 4 Process Design)
  - Deploy Initial Corrosion, I&R and Collections Work Management Capabilities in RI
- Asset Management
  - Complete Asset Investment Planning Management (AIPM) Enhancements including Integrations
  - Complete Integrity Management – Pressure Regulating Facilities & Risk Management Solution for Transmission and Distribution Mains
  - Commence GIS Data Remediation and Consolidation
- Customer Experience
  - Complete Customer & Employee Journey Mobilization
- Data Management
  - Complete Pre-GBE Deployment & Data Profiling
- IS
  - Complete Application (Environment) Infrastructure Upgrades
  - Complete First Iteration of Development Operations & BPA Enablement
  - Complete Comprehensive Integration Services Enhancements

APPENDIX D – Cost Detail ($m)

CapEx Allocated to OpCo's by FY

OpCo	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	Total
Brooklyn Union Gas (KEDNY)	($16.3)	($30.3)	($21.1)	($13.6)	($2.9)	($0.2)	($84.3)
Keyspan Gas East (KEDLI)	($11.7)	($21.7)	($15.1)	($9.7)	($2.1)	($0.2)	($60.4)
NiagraMohawk Gas	($6.8)	($12.5)	($8.7)	($5.6)	($1.2)	($0.1)	($34.9)
Boston Gas	($12.6)	($23.4)	($16.3)	($10.5)	($2.2)	($0.2)	($65.3)
Colonial Gas	($2.8)	($5.2)	($3.6)	($2.3)	($0.5)	($0.0)	($14.6)
Narragansett Gas	($4.0)	($7.5)	($5.2)	($3.3)	($0.7)	($0.1)	($20.8)
Total CapEx	($54.3)	($100.5)	($69.9)	($45.1)	($9.6)	($0.7)	($280.2)

Opex Allocated to OpCo's by FY

OpCo	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	Total
Brooklyn Union Gas (KEDNY)	($9.1)	($20.5)	($13.6)	($7.2)	($2.9)	($0.2)	($53.6)
Keyspan Gas East (KEDLI)	($6.5)	($14.7)	($9.7)	($5.1)	($2.1)	($0.2)	($38.3)
NiagraMohawk Gas	($3.8)	($8.5)	($5.6)	($3.0)	($1.2)	($0.1)	($22.1)
Boston Gas	($7.0)	($15.9)	($10.5)	($5.6)	($2.3)	($0.2)	($41.4)
Colonial Gas	($1.6)	($3.6)	($2.3)	($1.2)	($0.5)	($0.0)	($9.3)
Narragansett Gas	($2.2)	($5.1)	($3.3)	($1.8)	($0.7)	($0.1)	($13.2)
Total Opex	($30.2)	($68.2)	($45.1)	($23.9)	($9.8)	($0.8)	($177.9)

Total CapEx and Opex Allocated to OpCo's by FY

OpCo	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	Total
Brooklyn Union Gas (KEDNY)	($25.4)	($50.8)	($34.6)	($20.7)	($5.8)	($0.5)	($137.9)
Keyspan Gas East (KEDLI)	($18.2)	($36.4)	($24.8)	($14.9)	($4.2)	($0.3)	($98.7)
NiagraMohawk Gas	($10.5)	($21.0)	($14.3)	($8.6)	($2.4)	($0.2)	($57.0)
Boston Gas	($19.7)	($39.3)	($26.8)	($16.1)	($4.5)	($0.4)	($106.7)
Colonial Gas	($4.4)	($8.8)	($6.0)	($3.6)	($1.0)	($0.1)	($23.9)
Narragansett Gas	($6.3)	($12.5)	($8.5)	($5.1)	($1.4)	($0.1)	($33.9)
Total	($84.5)	($168.7)	($115.0)	($68.9)	($19.4)	($1.5)	($458.1)

APPENDIX E – Benefits Detail

Breakdown of the $40M of annual benefits by category, Capex/Opex and Type 1(direct savings) and Type 2 (measurable KPI improvements) and benefits over time:

Enhanced Capabilities	Value Drivers	Example Metrics [1]	Aspirational Ann. Benefit (Ms) Enterprise
Strategic Change, Talent, & Operating Model	• Process efficiency • Improved performance mgmt. • Performance culture	• Supervisor time in the field • Quality of coaching conversations	N/A[2]
Customer Experience & Interactions	• Self-service • New service growth • Increased customer satisfaction	• Services initiated via self-service • Move requests completed via self-service • Status updates received via self-service • Service quality penalties • Contact center call volume • Average time per contact center call	$2.4
Asset Management	• Reduced material spend • Reduced opex spend reduction • Capex effectiveness	• Estimating accuracy • Mapping cycle time • Opex spend • Risk reduced / $ spent	$4.1
EAM / Work Management Platform	• Appointments met / kept • Increase Supervisor time in field • Route optimization • Reduced overtime • Reduced contractor spend • Back office productivity • Improved operational data	• Unable to complete rate • Schedule adherence • Jobs scheduled / dispatched automatically • # / rate of jobs bundled • Travel time • Available / idle time • Pre-requisite fulfillment rate • Summonses / other penalties	$17.0
Supply Chain	• Reduced capex project delays • Reduced material spend • Reduced inventory carrying costs	• Material stock-outs • Rate of jobs requiring expedite • Inventory turnover • Inventory carrying cost	$2.5
Field Technical Training	• Reduced compliance violations • Reduced compliance penalties	• # / type compliance violations • Penalties incurred	$13.5
			$39.6

[1] Performance metrics to be defined as part of value framework in Q1 2017
[2] Capabilities Increase likelihood of program success and enhance the probability of delivering program benefits.

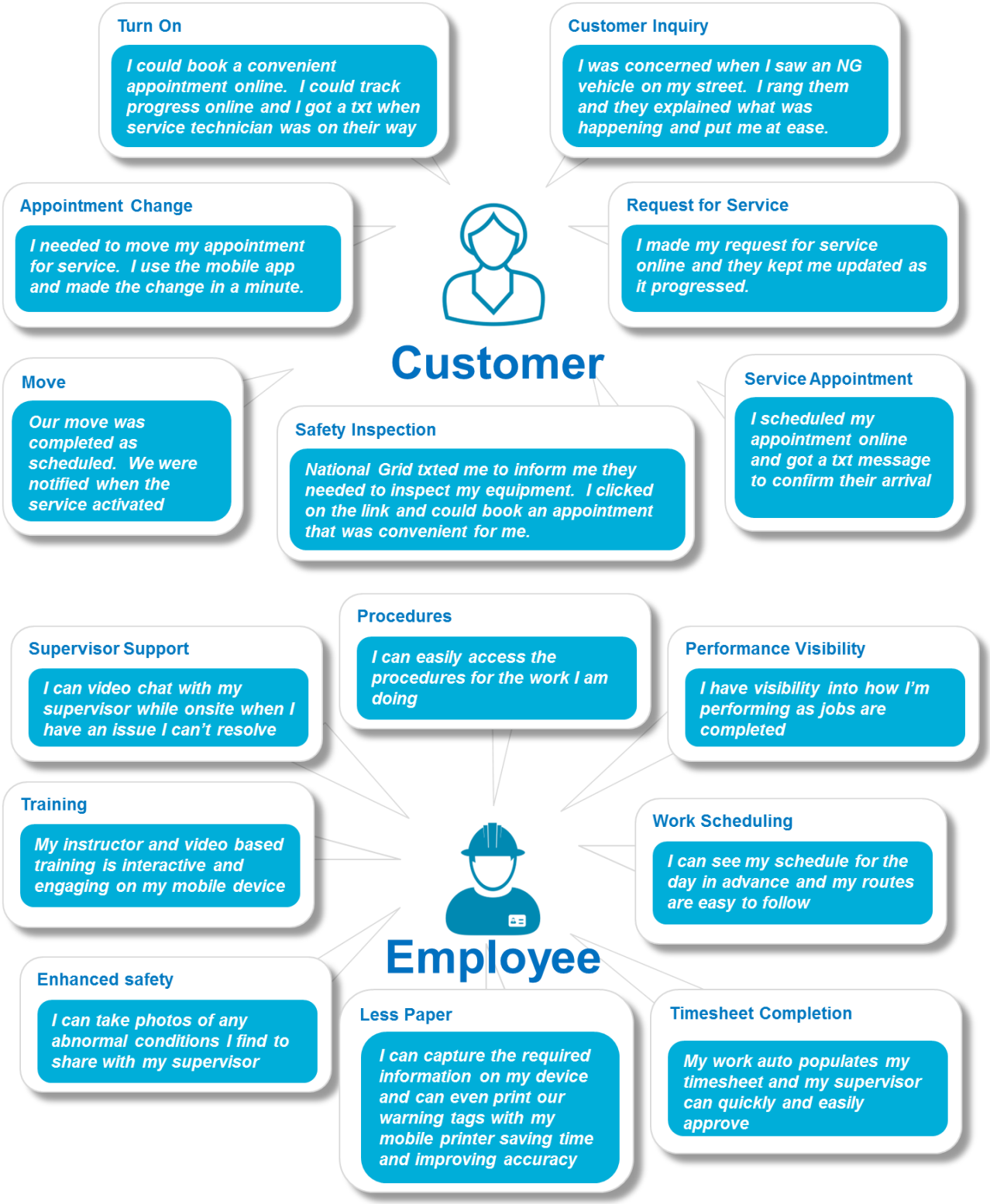
Area		Aspirational Annual Benefit
Customer Experience & Interactions	**Total**	**$2.4**
	CapEx:	$0.0
	Opex:	$2.4
	Type 1:	$0.9
	Type 2:	$1.5
Asset Management	**Total**	**$4.1**
	CapEx:	$1.0
	Opex:	$3.1
	Type 1:	$2.0
	Type 2:	$2.1
EAM / Work Management Platform	**Total**	**$17.1**
	CapEx:	$7.4
	Opex:	$9.7
	Type 1:	$2.1
	Type 2:	$15.0
Supply Chain	**Total**	**$2.5**
	CapEx:	$2.2
	Opex:	$0.3
	Type 1:	$0.0
	Type 2:	$2.5
Field Technical Training / Compliance	**Total**	**$13.5**
	CapEx:	$0.0
	Opex:	$13.5
	Type 1:	$0.0
	Type 2:	$13.5
Totals	**Total**	**$39.6**
	CapEx:	**$10.6**
	Opex:	**$29.0**
	Type 1:	**$5.0**
	Type 2:	**$34.6**

Initiative	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024
Asset - Advanced Analytics	$0	$0	$0	$28	$1,705	$1,980	$1,980
Customer Interaction	$0	$0	$0	$185	$1,552	$2,069	$2,340
Data Management	$0	$53	$486	$761	$761	$761	$761
Engineering, Design, Estimating & Mobility	$0	$143	$582	$1,178	$2,069	$2,118	$2,118
Integrated Supply & Demand Planning	$0	$0	$35	$2,187	$2,540	$2,540	$2,540
Regulatory/ Compliance	$0	$313	$3,944	$8,451	$12,644	$13,521	$13,521
Work Management & Field Enablement	$0	$0	$2,715	$14,227	$16,293	$16,293	$16,293
Total	**$0**	**$509**	**$7,762**	**$27,017**	**$37,565**	**$39,282**	**$39,553**

APPENDIX F – Accountability Matrix for GBE Program

	Group Executive	US Exec	Steering Group	Design Authority	Gas Business	GBE Team	IS	Regulation
Program Scope & Direction	I	C	**A**	R	C	R	C	C
Annual Sanctioning	**A**	I	R	I	I	R	I	I
Program Delivery to time, scope & budget	I	I	I	C	R	**A/R**	R	I
Program Scope Changes	I	I	**A**	R	C	R	C	C
Business Readiness	I	**A**	I	R	R	R	R	-
Go/No-Go Decisions	I	I	**A**	R	C	R	C	I
Benefits Delivery	I	**A**	I	R	R	R	R	I
Regulatory Recovery	I	**A**	C	C	R	R	R	R
On-going support Post Implementation	I	**A**	I	C	C	C	R	I

APPENDIX G – Customer & Employee Experience Benefits



Date of Request: June 26, 2019 Request No. DPS-275 IS-4 SUPPLEMENTAL
Due Date: July 6, 2017 NMPC Req. No. NM-738

NIAGARA MOHAWK POWER CORPORATION d/b/a NATIONAL GRID
Case No. 17-E-0238 and 17-G-0239 –
Niagara Mohawk Power Corporation d/b/a National Grid – Electric and Gas Rates

Request for Information

FROM: DPS Staff, Andy Timbrook

TO: National Grid, Information Services Panel

SUBJECT: **IS PROJECT JUSTIFICATIONS**

Request:

In this interrogatory, all requests for data, workpapers or supporting calculations should be construed as requesting any Word, Excel or other computer spreadsheet models in original electronic format with all formulae intact.

Provide the following information for each proposed project listed in Exhibit__(ISP-3):

1. A full description of the project.

2. All whitepapers and/or sanction papers associated with the project. This should include a cost/benefit analysis and a list of alternatives considered, with the reasoning as to why those alternatives were not selected. Include all management presentations, business case analysis, budget presentations and actual management approvals as they relate to the approved project.

3. The analysis for selecting an in-house solution or lease/software-as-a-service solution, where applicable.

Response:

2. Please see Attachment 5, which was inadvertently omitted from the Company's initial response.

Name of Respondent: Date of Reply:
Thomas Gill July 3, 2017

Form 103

US Sanction Paper

nationalgrid

Title:	Gas Business Enablement	**Sanction Paper #:**	USSC-17-222
Project #:	INVP 4572	**Sanction Type:**	Partial Sanction
Operating Company:	National Grid Svc Company	**Date of Request:**	May 30, 2017
Author:	Wayne S. Watkins / Kenneth C. Healy	**Sponsor:**	Johnny Johnston-SVP Gas Business Enablement
Utility Service:	Gas	**Project Manager:**	Kenneth C. Healy

1 Executive Summary

1.1 Sanctioning Summary

This paper requests partial sanction of INVP 4572 in the amount of $84.5 million, with a tolerance of +/- 10% for the purposes of completing the first of five years of development and implementation of the Gas Business Enablement program (GBE), this phase of which is expected to be completed during the period April 2017 through March 2018 (FY18). The partial funding approach will provide transparency of progress as the program moves through its various stages.

This sanction amount is $84.5 million broken down into:

$56.5 million Capex
$28.0 million Opex
$0 Removal

NOTE the total anticipated investment in GBE is $478.284 million with a tolerance of +/- 13%, contingent upon submittal and approval of additional program partial sanction papers as new phases of the program are presented. The total anticipated investment includes $20.142 million which was invested in FY17 for assessment of processes and applications, high level design for the program, development of the business case, early enabling investments and procurement and mobilization activities. The $84.500 million for FY18 is not a standalone investment; future investments will be required to complete GBE and enable further capabilities along a five-year roadmap from the initial investments.

NOTE that the GBE Program has adopted an annual sanctioning approach, which will include periodic reviews of project progress, deliverables, and funding requirements over multiple sanctions, with the GBE Steering Group providing oversight of the program's progress.

1.2 Project Summary

The US Gas Business is facing significant challenges. These include improving gas safety performance, continuing to successfully deliver the growing capital program, meeting the demand for customer connections, supporting evolving customer and regulatory expectations, and running the business more effectively. These challenges are amplified by the complexity created by disparate legacy processes and systems currently in use across the business. This is particularly acute with regards to information systems, most of which are nearing end of life, and are beginning to create unacceptable risks to core operations and future growth.

The proposed solution is focused on standardizing and simplifying operational processes into new asset management, work management, and mobility systems (the core backbone). Enhanced capabilities focused on the customer experience, asset and work management, and data supplement the core backbone. A refined operating model and value framework will embed and sustain a culture of accountability and compliance. Industry standard solutions, an innovative release strategy, modern delivery methods, and robust governance will support the successful delivery of the desired business outcomes.

Although primarily an asset replacement program, there are a broad range of anticipated benefits including improved gas safety and operational performance, as well as enhanced customer experience and service.

1.3 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount ($M)
4572		Gas Business Enablement	478.284
		Total	478.284

1.4 Associated Projects

N/A

1.5 Prior Sanctioning History

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Paper Title	Sanction Type	Tolerance

1.6 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review
November 2017	Partial Sanction – GBE Phase 2

1.7 Category

Category	Reference to Mandate, Policy, NPV, or Other
○ Mandatory ◉ Policy- Driven ○ Justified NPV ○ Other	GBE is primarily an asset replacement program.

1.8 Asset Management Risk Score

Asset Management Risk Score: 49

Primary Risk Score Driver: (Policy Driven Projects Only)

◉ Reliability ○ Environment ○ Health & Safety ○ Not Policy Driven

nationalgrid

1.9 Complexity Level

⦿ High Complexity ○ Medium Complexity ○ Low Complexity ○ N/A

Complexity Score: 30

1.10 Process Hazard Assessment

A Process Hazard Assessment (PHA) is required for this project:

○ Yes ⦿ No

1.11 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan ($)
Gas Business Enablement. FY18-FY23	⦿ Yes ○ No	⦿ Over ○ Under ○ NA	$373.7m

1.12 If cost is not aligned with approved Business Plan how will this be funded?

GBE is replacing aged and core systems to manage our related gas assets and support the safe delivery of service to our customers. The Company will request recovery of costs of GBE through future rate cases. In the interim, the Senior Executive Sanctioning Committee has approved funding through FY18. The full program costs will be built into the next iteration of the business plan for future years.

1.13 Current Planning Horizon

		Current Planning Horizon						
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
$M	Prior Yrs	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	Total
CapEx	0.000	56.504	104.639	73.693	47.613	10.332	0.815	293.596
OpEx	20.142	27.972	64.102	41.339	21.317	9.087	0.729	184.688
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CIAC/Reimbursement	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	20.142	84.476	168.741	115.032	68.930	19.419	1.544	478.284

1.14 Key Milestones

Milestone	Target Date: (Month/Year)
Start Up	04/2017
Partial Sanction	05/2017
Begin Requirements and Design	05/2017
Begin Development and Implementation	07/2017
Partial Sanction	11/2017
Partial Sanction	11/2018
Partial Sanction	11/2019
Full Sanction	11/2020
Move to Production / Last Go Live	03/2021
Project Complete	03/2022
Project Closure Sanction	07/2022

NOTE that the timelines above cover the anticipated GBE roadmap, including beyond this partial sanction. The sanctioning approach will include periodic reviews of project progress, deliverables, and funding requirements over multiple sanctions. The next sanction request will occur in Q3 FY18.

1.14 Resources, Operations and Procurement

Resource Sourcing			
Engineering & Design Resources to be provided	☑ Internal		☑ Contractor
Construction/Implementation Resources to be provided	☑ Internal		☑ Contractor
Resource Delivery			
Availability of internal resources to deliver project:	○ Red	⊙ Amber	○ Green
Availability of external resources to deliver project:	○ Red	○ Amber	⊙ Green

Operational Impact			
Outage impact on network system:	○ Red	○ Amber	⦿ Green
Procurement Impact			
Procurement impact on network system:	○ Red	○ Amber	⦿ Green

1.15 Key Issues (include mitigation of Red or Amber Resources)

1	To successfully deliver a program of this scale requires a strong internal team. To date, 59 resources have been hired into the GBE team; over the next 12 months that number will grow significantly with a mix of internal, external, and consulting resources to ensure that National Grid has the required resources to complete the plans for FY18 and beyond. GBE has a dedicated HR Business Partner and recruiter to support the team in hiring of these resources, and a resource plan has been developed which includes sufficient lead time to hire resources as they are needed. This is amber to acknowledge the significant ramp up in resources required, although appropriate sourcing plans are in place.

1.16 Climate Change

Contribution to National Grid's 2050 80% emissions reduction target:	⦿ Neutral	○ Positive	○ Negative
Impact on adaptability of network for future climate change:	⦿ Neutral	○ Positive	○ Negative

1.17 List References

N/A

2 Decisions

The Senior Executive Sanctioning Committee (SESC) at a meeting held on May 30, 2017.

(a) APPROVED the investment of $84.5M and a tolerance of 10% for the purposes of Gas Business Enablement in FY18.

(b) APPROVED the potential RTB impact of $17.676M in FY22 (per annum) for an estimated 5 years. RTB impact begins in FY19 at $7.105M and increases through FY22 to $17.676M.

(c) APPROVED the potential investment of $478.284M and a tolerance of 13% contingent upon submittal and approval of Project Sanctions for each stage following continued successful delivery of the previous stage.

(d) NOTED that Johnny Johnston has the approved financial delegation to undertake the activities stated in (a).

Signature.....Date.6/12/17

Margaret Smyth
US Chief Financial Officer
Chair, Senior Executive Sanctioning Committee

3 Sanction Paper Detail

Title:	Gas Business Enablement	**Sanction Paper #:**	USSC-17-222
Project #:	INVP 4572	**Sanction Type:**	Partial Sanction
Operating Company:	National Grid Svc Company	**Date of Request:**	May 30, 2017
Author:	Wayne S. Watkins / Kenneth C. Healy	**Sponsor:**	Johnny Johnston-SVP Gas Business Enablement
Utility Service:	Gas	**Project Manager:**	Kenneth C. Healy

3.1 Background

The US Gas Business is facing significant challenges. These include improving gas safety performance, continuing to successfully deliver the growing capital program, meeting the demand for customer connections, supporting evolving customer and regulatory expectations, and running the business more effectively. These challenges are amplified by the complexity created by disparate legacy processes and systems currently in use across the business. This is particularly acute with regards to information systems, most of which are nearing end of life, and are beginning to create unacceptable risks to core operations and future growth.

The proposed solution, the GBE program, is expected to span five years. It is focused on standardizing and simplifying operational processes into new asset, work management, and mobility systems (the core backbone). Enhanced capabilities focused on the customer experience, asset and work management, and data supplement the core backbone. A refined operating model and value framework will embed and sustain a culture of accountability and compliance. Industry standard solutions, an innovative release strategy, modern delivery methods, and robust governance will support the successful delivery of the desired business outcomes.

GBE has been collaboratively developed with the US Gas Business, Information Services, Procurement, Human Resources, and other departments to meet these challenges. Its objectives are to reduce risk, deliver a step change in business performance, and enable future growth.

3.2 Drivers

The growing list of aging information systems which support core operations is beginning to create unacceptable risks to the gas business. Within two years, 94% of the gas business front office systems will be at "end of life", up from 79% today. The average age of these systems is 14 years, and it is increasingly difficult to make changes to these systems to meet the expectations of our customers, our regulators, and our business operations. System "down time" is also growing.

A step change in our business performance is required. We must drive continuous improvement in gas safety performance. We continue to be heavily reliant on paper-based processes and paper records, which impedes our ability to streamline systems, and jeopardizes the integrity of our records. In short, our current systems no longer support the way the gas business needs to work, manage performance, and empower our employees to serve our customers.

Over recent years, the capital program has tripled to over $2 billion per year, largely in response to customer and regulatory requirements. This has strained the legacy approach and the supply chain. Modern supported solutions with integrated supply chain are necessary to allow National Grid to deliver in this significant growth area.

3.3 Project Description

The program team was mobilized in June 2016, with the support of the gas business and information services to ensure that the program had the right capabilities and experience from the outset. National Grid has engaged two of the top system integrators in the US, conducted a number of visits to other companies, implemented pilots to test new concepts, and heavily engaged the gas business to assist in the develop of the roadmap and solution.

The proposed solution is focused on standardizing and simplifying operational processes into new asset, work management, and mobility systems (the core backbone). Enhanced capabilities focused on the customer experience, asset and work management, and data supplement the core backbone. A refined operating model and value framework will embed and sustain a culture of accountability and compliance. Industry standard solutions, an innovative release strategy, modern delivery methods, and robust governance will support the successful delivery of the desired business outcomes.

The roadmap for the program is phased and prioritized over five years to reduce operational risk while balancing deliverability and accelerating value creation

where possible. The core backbone and enhanced capabilities will produce a solid framework for the business to adapt to future needs and dramatically improve the customer experience. The technical solution will also provide a strong base for expansion to the electric business.

The GBE program includes three key elements to address its current challenges.

- Integration, standardization, and simplification of our core processes and systems into a modern platform (19 best of breed solutions from the current 99), including asset management, work management, geospatial information, and records administration.
- Development of a flexible, digital interaction platform on top of our core systems that allows our customers, call center representatives, and field employees to operate on the same platform.
- Creation of a performance-focused organization, with emphasis on end-to-end process desired outcomes, and defined accountabilities designed to create the behavioral change necessary to achieve the desired business outcomes.

The initiatives and high level roadmap can be seen in Appendix 4.2 and 4.3 respectively.

<u>What is the approach to implementing GBE?</u>

This is a large program that will take multiple years to complete. The roadmap leverages modern approaches to minimize risk and maximize the likelihood that the desired business outcomes are successfully delivered. This includes:

- **Developing a core backbone solution and building incremental enhanced capabilities.** The core includes implementing asset management, work management and mapping solutions over the first four years, focusing on risk reduction. The core solution uses tried and tested utility solutions that will be implemented with minimal customization and standardized business processes across the enterprise. The enhanced capabilities build on the core and are focused on adding incremental value to National Grid's customers throughout the five-year program.
- **Phasing implementation.** The approach avoids a "big bang" implementation by breaking down the program based on work types and geography and prioritizing work types to accelerate delivery and manage risks. For geography, Rhode Island has been identified as the optimal test bed given its significant reliance today on paper-based operations and its manageable scale.
- **Leveraging agile development techniques.** Traditionally, projects like this would be developed using waterfall techniques with long cycle time between business requirements and a solution. In agile development, the

business and IS teams work more collaboratively in short-cycle scrums to prioritize functionality and get to a minimum viable product (MVP). This is the simplest solution that can be implemented, with future enhancements continuously prioritized by value and added as the team learns with the solution. Agile development offers many benefits including earlier release of initial functionality, continuously reprioritized enhancements based on learning, and higher success rates. Agile is a well-established approach utilized by a growing number of utilities.

- **Taking a 'cloud first' approach.** Putting as much of the solution into the cloud as appropriate will provide several benefits, including faster implementation and enhancement adoption, fewer upgrades to legacy infrastructure, reduced risk of obsolescence, and the opportunity to enhance security.

Lessons from previous programs have been built into GBE from the start. National Grid's Critical Success Factors have also been embedded into the GBE program from the beginning. In addition, National Grid is planning to engage a value assurance partner to provide an independent assessment of program delivery.

3.4 Benefits Summary

The primary benefit of the GBE is reduced operational risk through the replacement of the aging information systems and processes across the organization. GBE is, therefore, primarily an asset replacement investment. This asset replacement, however, will lay the foundation for enhanced capabilities which will drive a broader range of benefits and performance improvements. Below is a partial list of those additional benefits.

- Enhanced pipeline safety and compliance performance.
- Improved customer experience and satisfaction through improved information and the creation of a customer engagement platform.
- Enhanced employee enablement with modern field devices.
- Advanced work and asset analytics capabilities.
- Data management capabilities.
- Improved employee technical training and skills.

National Grid estimates that there will also be a total of approximately $40 million in quantifiable annual benefits beginning after the enhanced capabilities are fully embedded in FY24. A portion of these benefits will result in cost savings to customers. Further details can be seen in Appendix 4.4.

		Current Planning Horizon						
$M	Prior Yrs	Yr 1 18/19	Yr 2 19/20	Yr 3 20/21	Yr 4 21/22	Yr 5 22/23	Yr 6+ 23/24	Total
Benefits	0	1.020	7.772	24.198	30.675	36.394	39.615	139.674
	0	1.020	7.772	24.198	30.675	36.394	39.615	139.674

3.5 Business and Customer Issues

None other than stated elsewhere in this paper.

3.6 Alternatives

Alternative 1: Stabilize the legacy information systems, with no functional enhancements or additional integration. This option was rejected since it was only a temporary measure that offered no significant immediate business benefits and did not position the gas business for the future, and the replacement investment would still be required in the near future.

Alternative 2: Technical replacement of the legacy systems with industry standard asset and work management solutions without focus on customer or business improvement. This option, which was rejected, offered some level of risk mitigation, but had a higher likelihood of failure as it didn't address the people aspects of the change, nor did it deliver significant improvement in how our customers are served, and ultimately did not position the business for the future.

Alternative 3: Value Scope implemented as a "big bang" approach to minimize implementation time. This option was rejected due to the significant risk associated with implementation across the gas business regions at the same time.

Alternative 4: Implementing a similar scope to the recommended scope but rather than doing enterprise wide, doing operating company by operating company to directly align costs to each company. This was rejected as the total costs were significantly higher and would take longer to implement due to the complexity.

3.7 Safety, Environmental and Project Planning Issues

N/A

3.8 Execution Risk Appraisal

Number	Detailed Description of Risk / Opportunity	Probability	Impact		Score		Strategy	Pre-Trigger Mitigation Plan	Residual Risk	Post Trigger Mitigation Plan
			Cost	Schedule	Cost	Schedule				
1	Mis-alignment / lack of integration and coordination between programs	3	3	3	9	9	Avoid	Agile Delivery Methodology to be leveraged is structured to provide key checkpoints on a frequent cadence through Agile Program Increments Sessions. Additionally, the GBE Program will leverage independent third party expertise to provide insight into methodology and delivery effectiveness	Low	Agile approaches help identify most relevant solutions. Program will retain independent expertise to provide proactive feedback on the effectiveness of program integration activities
2	Delays in the SI procurement process will delay the start of critical Phase 2 projects and programs	3	2	3	6	9	Avoid	Robust commercial process to find partners with desired capability at the right price is underway and on schedule, with the goal of downselecting an SI partner that will be onboarded by July 1st. Program is executing pre-mobilization plan to reduce SI mobilization timelines	None	
3	A large group of people will be impacted by new devices and tools. Learning curve could be steep, especially in regions that are currently only using basic system tools to complete their work. This could impact operations and slow the realization of construction work	4	3	3	12	12	Mitigate	Leverage Pilots - to build learning early; Phased implementations to manage risk and manage change; Agile development approaches to engage employees more actively in design of new practices and processes; Alignment of operating model attributes to drive accountability for desired behaviors and outcomes.	Low	Change office and ongoing organizational health metrics to diagnose organizational state
4	GBE will not be able to staff the program to peak levels with the necessary SMEs given current scope and schedule	3	3	3	9	9	Mitigate	Developing realistic resource plan for recruitment of program full-time resources and engaging HR early, Engaging business leadership on a weekly basis to provide visibility into part time SME resource requirements, Robust commercial process to find partners with the ability to provide appropriate expertise as a short-term measure to fill gaps	Low	Continue proactively engaging with Business leadership to provide transparency in resource planning.

3.9 Permitting

N/A

3.10 Investment Recovery

N/A

3.10.1 Investment Recovery and Regulatory Implications

National Grid will seek recovery of program costs through rate cases or other additional regulatory filings as appropriate.

3.10.2 Customer Impact

Noted elsewhere in this paper.

3.10.3 CIAC / Reimbursement

N/A

3.11 Financial Impact to National Grid

3.11.1 Cost Summary Table

					Current Planning Horizon						
Project Number	Project Title	Project Estimate Level (%)	Spend ($M)	Prior Yrs	Yr. 1 2017/18	Yr. 2 2018/19	Yr. 3 2019/20	Yr. 4 2020/21	Yr. 5 2021/22	Yr. 6 + 2022/23	Total
4572	Gas Business Enablement	+/- 13%	CapEx	0.000	56.504	104.639	73.693	47.613	10.332	0.815	293.596
			OpEx	20.142	27.972	64.102	41.339	21.317	9.087	0.729	184.688
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	20.142	84.476	168.741	115.032	68.930	19.419	1.544	478.284
Total Project Sanction			CapEx	0.000	56.504	104.639	73.693	47.613	10.332	0.815	293.596
			OpEx	20.142	27.972	64.102	41.339	21.317	9.087	0.729	184.688
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	20.142	84.476	168.741	115.032	68.930	19.419	1.544	478.284

3.11.2 Project Budget Summary Table

		Current Planning Horizon						
	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
$M	(Actual)	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	Total
CapEx	0.000	56.504	0.000	0.000	0.000	0.000	0.000	56.504
OpEx	25.400	27.972	0.000	0.000	0.000	0.000	0.000	53.372
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	25.400	84.476	0.000	0.000	0.000	0.000	0.000	109.876

Project Costs Per Business Plan

Variance (Business Plan-Project Estimate)

		Current Planning Horizon						
	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
$M	(Actual)	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	Total
CapEx	0.000	0.000	(104.639)	(73.693)	(47.613)	(10.332)	(0.815)	(237.092)
OpEx	5.258	0.000	(64.102)	(41.339)	(21.317)	(9.087)	(0.729)	(131.316)
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	5.258	0.000	(168.741)	(115.032)	(68.930)	(19.419)	(1.544)	(368.408)

3.11.3 Cost Assumptions

Costs were developed using proprietary tools from an experienced consulting partner, and further validated by the National Grid program team and an experienced design assurance partner.

3.11.4 Net Present Value / Cost Benefit Analysis

3.11.4.1 NPV Summary Table

N/A

3.11.4.2 NPV Assumptions and Calculations

N/A

3.11.5 Additional Impacts

N/A

3.12 Statements of Support

3.12.1 Supporters

The supporters listed have aligned their part of the business to support the project.

Role	Individual's Name
Head of PDM	Deb Rollins
Relationship Manager	Rick Sheer
Program Delivery Manager	Sally Seltzer
IS Finance Management	Chip Benson
IS Regulatory	Dan DeMauro
DR&S	Muks Ravipaty
Service Delivery	Brian Detota
Enterprise Architecture	Joe Clinchot

3.12.2 Reviewers

The reviewers have provided feedback on the content/language of the paper.

Function	Individual	Area
Regulatory	Zschokke, Peter	All
Jurisdictional Delegate(s)	Currie, John	Gas - NE
	Brown, Laurie	Gas - NY
	Easterly, Patricia	Rhode Island
	Collinson, Mark	Massachusetts
	McNeill, Brian	New York
	Morris, Bernadette	New York
Procurement	Curran, Art	All

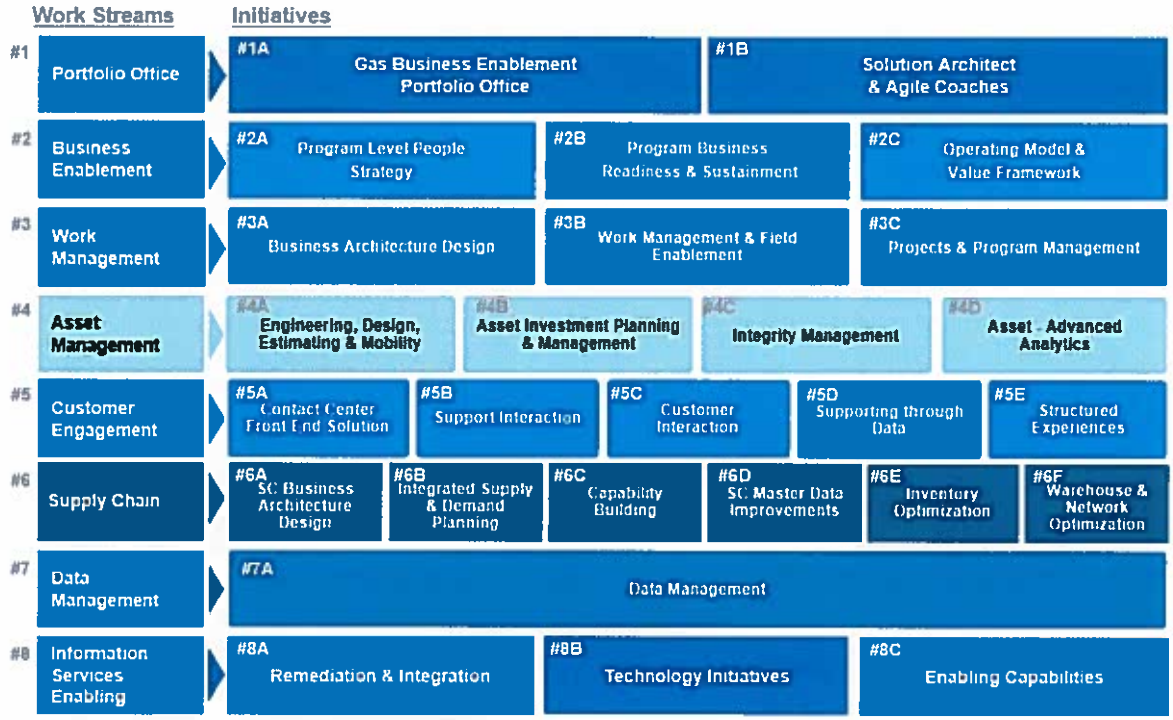
4 Appendices

4.1 Sanction Request Breakdown by Project

$M	4572	Proj Num	Proj Num	Proj Num	Proj Num	Proj Num	Proj Num	Proj Num	Proj Num	Total
CapEx	56.504									56.504
OpEx	27.972									27.972
Removal										0.000
Total	84.476	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	84.476

4.2 Initiatives List

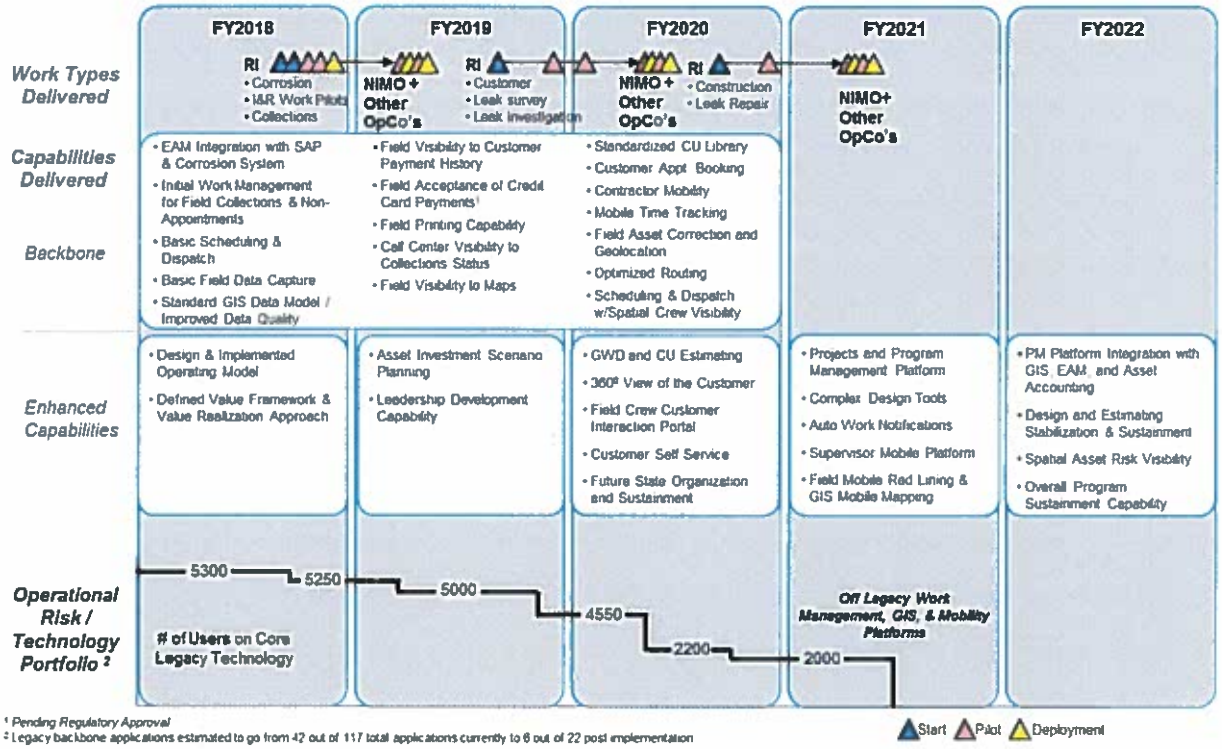
The program work streams and the initiatives within each work stream.



4.3 High Level Roadmap of Capabilities to be delivered over five years

The backbone capabilities will be delivered in just under four full years while the enhanced capabilities will be delivered over the full five-year timeframe. The bottom portion of the depiction highlights the number of users on legacy EAM, Scheduling, Mobility and GIS platforms that will transition to the new platforms over time illustrating the reduction in technology risk.

Backbone and Enhanced Capabilities Delivered by FY



[1] *Pending Regulatory Approval*
[2] Legacy backbone applications estimated to go from 42 out of 117 total applications currently to 6 out of 22 post implementation

4.4 Benefits Detail

Breakdown of the $40M of annual capex and opex benefits by category, Type 1 (direct savings) and Type 2 (measurable KPI improvements) and benefits over time:

Enhanced Capabilities	Value Drivers	Example Metrics [1]	Aspirational Ann. Benefit (Ms) Enterprise
Strategic Change, Talent, & Operating Model	• Process efficiency • Improved performance mgmt. • Performance culture	• Supervisor time in the field • Quality of coaching conversations	N/A[2]
Customer Experience & Interactions	• Self-service • New service growth • Increased customer satisfaction	• Services initiated via self-service • Move requests completed via self-service • Status updates received via self-service • Service quality penalties • Contact center call volume • Average time per contact center call	$2.4
Asset Management	• Reduced material spend • Reduced opex spend reduction • Capex effectiveness	• Estimating accuracy • Mapping cycle time • Opex spend • Risk reduced / $ spent	$2.8
EAM / Work Management Platform	• Appointments met / kept • Increase Supervisor time in field • Route optimization • Reduced overtime • Reduced contractor spend • Back office productivity • Improved operational data	• Unable to complete rate • Schedule adherence • Jobs scheduled / dispatched automatically • # / rate of jobs bundled • Travel time • Available / idle time • Pre-requisite fulfillment rate • Summonses / other penalties	$18.4
Supply Chain	• Reduced capex project delays • Reduced material spend • Reduced inventory carrying costs	• Material stock-outs • Rate of jobs requiring expedite • Inventory turnover • Inventory carrying cost	$2.5
Field Technical Training	• Reduced compliance violations • Reduced compliance penalties	• # / type compliance violations • Penalties incurred	$13.5
			$39.6

[1] Performance metrics to be defined as part of value framework in Q1 2017
[2] Capabilities increase likelihood of program success and enhance the probability of delivering program benefits. Benefits includes capex and opex benefits, Type 1 & Type 11

nationalgrid

US Sanction Paper

Detailed benefits breakdown:

Initiative Descriptic	Benefit Description	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	Type I	$0	$0	$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	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	Type I	$0	$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	Type I	$0	$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	Type I	$0	$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	Type II	$0	$0	$0	$0	$642,130	$906,536	$906,536	$906,536	$906,536
Customer Interaction	Reduce Non-Move Call Volume through Self-Service	Type II	$0	$0	$61,278	$502,480	$588,270	$588,270	$588,270	$588,270	$588,270
Data Management	Reduction in Data Cleansing / Scrubbing Effort - Analysts	Type II	$0	$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	Type II	$0	$0	$4,886	$302,941	$351,803	$351,803	$351,803	$351,803	$351,803
Engineering, Design, Estimating & Mobility	Complex Jobs - Estimating Accuracy Fine Avoidance	Type II	$0	$0	$0	$45,833	$550,000	$550,000	$550,000	$550,000	$550,000
Engineering, Design, Estimating & Mobility	Reduction in Mappers via Field Data Entry	Type II	$0	$8,934	$553,899	$643,238	$643,238	$643,238	$643,238	$643,238	$643,238
Integrated Supply & Demand Planning	Improved Project Delivery - Construction	Type II	$0	$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	Type II	$0	$0	$0	$0	$629,809	$889,142	$889,142	$889,142	$889,142
Regulatory/ Compliance	Reduced Compliance and Gas Safety Penalties	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	Type II	$0	$0	$0	$0	$117,384	$165,718	$165,718	$165,718	$165,718
Work Management & Field Enablement	CMS Collections Jobs - Reduction in Travel Time	Type II	$0	$0	$0	$0	$561,142	$792,200	$792,200	$792,200	$792,200
Work Management & Field Enablement	CMS Planned Jobs - Reduction in Available Time via Autodispatch	Type II	$0	$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	Type II	$0	$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	Type II	$0	$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	Type II	$0	$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	Type II	$0	$90,007	$120,009	$120,009	$120,009	$120,009	$120,009	$120,009	$120,009
Work Management & Field Enablement	Inspections - Reduced Travel Mileage	Type II	$0	$0	$0	$0	$3,718	$5,249	$5,249	$5,249	$5,249
Work Management & Field Enablement	Inspections - Reduced Travel Time	Type II	$0	$0	$0	$0	$19,064	$26,914	$26,914	$26,914	$26,914
Work Management & Field Enablement	M&C and CMS Jobs - Reduced Summonses	Type II	$0	$0	$0	$0	$2,037,959	$4,446,457	$4,446,457	$4,446,457	$4,446,457
Work Management & Field Enablement	Reduction in Field Tech Communications	Type II	$0	$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	Type II	$0	$121,024	$161,365	$161,365	$161,365	$161,365	$161,365	$161,365	$161,365
	Total Benefits Forecasted as a result		**$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**

4.5 Operating Company Allocation

Allocations Based on Number of Gas Retail Customers (C-210) and Number of Electric Retail Customers (C-198)

Dollars in millions

Total Expenditure

Operating Company	FY18	FY19	FY20	FY21	FY22	FY23	Total
Niagara Mohawk Power Corp. - Gas	$ 13.9	$ 27.5	$ 18.3	$ 11.6	$ 3.3	$ 0.3	**$ 74.8**
KeySpan Energy Delivery New York	$ 28.8	$ 56.7	$ 37.7	$ 24.0	$ 6.8	$ 0.5	**$ 154.5**
KeySpan Energy Delivery Long Island	$ 13.4	$ 26.4	$ 17.6	$ 11.2	$ 3.2	$ 0.3	**$ 72.1**
Boston Gas Company	$ 15.7	$ 30.9	$ 20.6	$ 13.1	$ 3.7	$ 0.3	**$ 84.3**
Colonial Gas Company	$ 4.6	$ 9.1	$ 6.0	$ 3.8	$ 1.1	$ 0.1	**$ 24.7**
Narragansett Gas Company	$ 6.1	$ 12.0	$ 8.0	$ 5.1	$ 1.4	$ 0.1	**$ 32.7**
Niagara Mohawk Power Corp.- Electric Distr.	$ 1.0	$ 3.0	$ 3.2	$ -	$ -	$ -	**$ 7.2**
Massachusetts Electric Company	$ 0.8	$ 2.3	$ 2.6	$ -	$ -	$ -	**$ 5.7**
Nantucket Electric Company	$ 0.0	$ 0.0	$ 0.0	$ -	$ -	$ -	**$ 0.1**
Narragansett Electric Company	$ 0.3	$ 0.9	$ 1.0	$ -	$ -	$ -	**$ 2.1**
Total	$ 84.5	$ 168.7	$ 115.0	$ 68.9	$ 19.4	$ 1.5	$ 458.1

Operational Expenditure

Operating Company	FY18	FY19	FY20	FY21	FY22	FY23	Total
Niagara Mohawk Power Corp. - Gas	$ 4.7	$ 10.7	$ 6.9	$ 3.6	$ 1.5	$ 0.1	**$ 27.6**
KeySpan Energy Delivery New York	$ 9.7	$ 22.2	$ 14.2	$ 7.4	$ 3.2	$ 0.3	**$ 57.0**
KeySpan Energy Delivery Long Island	$ 4.5	$ 10.4	$ 6.6	$ 3.5	$ 1.5	$ 0.1	**$ 26.6**
Boston Gas Company	$ 5.3	$ 12.1	$ 7.7	$ 4.1	$ 1.7	$ 0.1	**$ 31.1**
Colonial Gas Company	$ 1.6	$ 3.6	$ 2.3	$ 1.2	$ 0.5	$ 0.0	**$ 9.1**
Narragansett Gas Company	$ 2.1	$ 4.7	$ 3.0	$ 1.6	$ 0.7	$ 0.1	**$ 12.0**
Niagara Mohawk Power Corp.- Electric Distr.	$ 0.0	$ 0.2	$ 0.3	$ -	$ -	$ -	**$ 0.6**
Massachusetts Electric Company	$ 0.0	$ 0.2	$ 0.2	$ -	$ -	$ -	**$ 0.4**
Nantucket Electric Company	$ 0.0	$ 0.0	$ 0.0	$ -	$ -	$ -	**$ 0.0**
Narragansett Electric Company	$ 0.0	$ 0.1	$ 0.1	$ -	$ -	$ -	**$ 0.2**
Total	$ 28.0	$ 64.1	$ 41.3	$ 21.3	$ 9.1	$ 0.7	$ 164.5

Capital Expenditure

Operating Company	FY18	FY19	FY20	FY21	FY22	FY23	Total
Niagara Mohawk Power Corp. - Gas	$ 9.2	$ 16.7	$ 11.4	$ 8.0	$ 1.7	$ 0.1	**$ 47.3**
KeySpan Energy Delivery New York	$ 19.0	$ 34.5	$ 23.5	$ 16.6	$ 3.6	$ 0.3	**$ 97.6**
KeySpan Energy Delivery Long Island	$ 8.9	$ 16.1	$ 11.0	$ 7.7	$ 1.7	$ 0.1	**$ 45.5**
Boston Gas Company	$ 10.4	$ 18.8	$ 12.8	$ 9.1	$ 2.0	$ 0.2	**$ 53.2**
Colonial Gas Company	$ 3.0	$ 5.5	$ 3.8	$ 2.7	$ 0.6	$ 0.0	**$ 15.6**
Narragansett Gas Company	$ 4.0	$ 7.3	$ 5.0	$ 3.5	$ 0.8	$ 0.1	**$ 20.6**
Niagara Mohawk Power Corp.- Electric Distr.	$ 0.9	$ 2.7	$ 2.9	$ -	$ -	$ -	**$ 6.6**
Massachusetts Electric Company	$ 0.7	$ 2.2	$ 2.3	$ -	$ -	$ -	**$ 5.2**
Nantucket Electric Company	$ 0.0	$ 0.0	$ 0.0	$ -	$ -	$ -	**$ 0.1**
Narragansett Electric Company	$ 0.3	$ 0.8	$ 0.9	$ -	$ -	$ -	**$ 2.0**
Total	$ 56.5	$ 104.6	$ 73.7	$ 47.6	$ 10.3	$ 0.8	$ 293.6

4.6 NPV Summary

N/A

4.7 Customer Outreach Plan

N/A

Date of Request: June 28, 2017 Request No. DPS-430 AT-3
Due Date: July 10, 2017 NMPC Req. No. NM-1003

NIAGARA MOHAWK POWER CORPORATION d/b/a NATIONAL GRID
Case No. 17-E-0238 and 17-G-0239 –
Niagara Mohawk Power Corporation d/b/a National Grid – Electric and Gas Rates

Request for Information

FROM: DPS Staff, Andy Timbrook

TO: National Grid, Gas Infrastructure and Operations Panel

SUBJECT: **GAS BUSINESS ENABLEMENT (GBE) SAVINGS**

Request:

In this interrogatory, all requests for data, workpapers or supporting calculations should be construed as requesting any Word, Excel or other computer spreadsheet models in original electronic format with all formulae intact.

1. In Exhibit__(GIOP-12), Schedule 1 page 2, the Company estimates the customer benefits resulting from GBE. For all Type 1 benefits listed, provide the following:
a. The calculation of the projected benefit, by rate year and data year;
b. All assumptions and inputs used when estimating the benefit; and
c. An explanation of the benefit's timing.

2. List any customer benefit(s) from GBE that the Company was unable to quantify in Exhibit__(GIOP-12), but expects to realize with program rollout.

Response:

1. Please see Attachment 1 and the discussion below for the calculation, assumptions, and timing of each of the Type 1 benefits in Exhibit __ (GIOP-12), page 2.

Asset – Advanced Analytics - Reduction / Redirection in OPEX via AIPM

Delivery of an integrated Asset Investment Planning and Management tool with advanced analytics capabilities is intended to improve National Grid's ability to incorporate asset health and performance factors into its investment plan. For

purposes of calculating Type I benefits, National Grid assumed that improved investment planning will result in a reduction in controllable opex spend through increased efficiencies in delivering capital investments and more informed repair vs. replace decisions. The calculation of the full benefit ("Total Annual Benefit") once the enabling solutions are fully embedded, as reflected in the "Asset Analytics OpEx" tab of Attachment 1, was based on an estimated percentage reduction in the annual controllable OPEX spend (utilizing the total gas O&M spend for Niagara Mohawk in FY2017). The estimated percentage reduction was based on the expertise of internal gas business and GBE team subject matter experts, as well as on the expert judgment and expertise of National Grid's external partners.

Benefits for Niagara Mohawk phase-in beginning FY21 and Total Annual Benefits will not be realized for a full year until FY23, as reflected in the "Benefits – Detailed" tab of Attachment 1 and Exhibit __ (GIOP-12), page 2. The timing of the benefits is based on the current planned implementation schedule for the enabling asset management, data, financial integration, GIS and mobile GBE solutions, and functionality planned for Niagara Mohawk. In addition, the timing of the realization of full benefits is due to "new" history that must be created to collect and analyze data under the new systems to enable better decision making.

Engineering Design, Estimating and Mobility / Reduction in Damages due to Data Quality Errors

National Grid collects and retains information on the number of damages due to data quality errors. Each of these damages requires a repair of some sort to be made by National Grid personnel. Calculation of the estimated benefit was performed by using the actual number of mismarks due to records and locate errors from CY13-15 and comparing that to American Gas Association ("AGA") 3-year average published in 2015 for similar size companies. The benefits assume National Grid will move closer to the AGA average of number of mismarks by 50%. The target level of improvement would place the Company's gas business at the median of its peer set within the AGA information.
The 3-year average Niagara Mohawk cost was then applied to the number of reduced damages. The calculation of the full benefit ("Total Annual Benefit") once the enabling solutions are fully embedded is reflected in the "Data Management Damage" tab of Attachment 1. A capital/operating expense split is applied at 45/55% based on historical cost splits to arrive at the total annual Type I operating savings once benefits are fully embedded (reflected in the "O&M Benefits" column of tab "Benefits – Detailed" tab of Attachment 1).

Benefits for Niagara Mohawk phase-in beginning FY19 and Total Annual Benefits will not be realized for a full year until FY20, as reflected in the "Benefits – Detailed" tab of Attachment 1 and Exhibit __ (GIOP-12), page 2. The timing of the benefit was based on the current planned implementation schedule

for the enabling asset management, GIS, data and system integration GBE solutions, and functionality planned for Niagara Mohawk.

Work Management and Field Enablement / Clerical/Back Office Productivity Improvement

Because few of the systems currently used by National Grid are integrated, even data captured electronically needs to be entered manually into multiple systems. This manual effort will be greatly reduced with implementation of the new platforms. Calculation of the estimated benefit once fully embedded ("Total Annual Benefit") was performed by using an estimated productivity increase of two hours saving per day associated with implementation of the new platforms and applying the productivity increase to Niagara Mohawk's total annual costs for clerks (determined by multiplying the total annual hours of Niagara Mohawk clerks by the average daily rate for the clerical/back office job classifications). The calculation is detailed in tab "Clerical Productivity" of Attachment 1. A capital/operating expense split is applied at 32/68% based on historical cost splits to arrive at the total annual Type I operating savings once benefits are fully embedded (reflected in the "O&M Benefits" column of tab "Benefits – Detailed" tab of Attachment 1). The estimated productivity increase of two hours of savings per day was determined by subject matter experts within the Company's gas business, members of the GBE project team, and external consulting partners.

Benefits for Niagara Mohawk phase-in beginning FY20 and Total Annual Benefits will not be realized for a full year until FY22, as reflected in the "Benefits – Detailed" tab of Attachment 1. The timing of the benefit was based on the current planned implementation schedule for the enabling GBE work management and system integration solutions and functionality planned for Niagara Mohawk that allow field data to be transferred to customer, work management, and payroll systems among others.

Please note that in the course of preparing this response, the Company realized that it inadvertently utilized the "Total Annual Benefits" calculated for the gas segment of the Narragansett Electric Company in the Type I benefits reflected in Exhibit __ (GIOP-12), page 2. In the tab, "Corrected GIOP-12 Page 2," tab of Attachment 1, the Company includes the appropriate allocation for Niagara Mohawk for this Type I benefit. Because the error was only recently discovered, this correction is not reflected in the Company's July 10, 2017 Corrections and Updates filing.

Work Management and Field Enablement / Damage Prevention – Reduced Travel Mileage

The actual routes driven by technicians for Niagara Mohawk were sampled. These same routes were then analyzed by routing optimization software to obtain an optimized travel plan for technicians to follow. A mileage reduction percentage was determined based on the difference between the routes actually driven by the technicians and the routes identified by the routing optimization software. Calculation of the estimated benefit when fully embedded ("Total Annual Benefit") was performed by applying the mileage reduction percentage to the average number of miles driven between jobs for Niagara Mohawk damage prevention workers. The calculation is detailed in tab "Damage Prevention Travel" of Attachment 1. A capital/operating expense split of 19/81% (based on historical cost splits) was used to arrive at the total annual Type I operating savings once benefits are fully embedded (reflected in the "O&M Benefits" column of tab "Benefits – Detailed" tab of Attachment 1).

Benefits for Niagara Mohawk phase-in beginning FY20 and Total Annual Benefits will not be realized for a full year until FY21, as reflected in the "Benefits – Detailed" tab of Attachment 1 and Exhibit __ (GIOP-12), page 2. The timing of the benefit was based on the current planned implementation schedule for the enabling GBE work management, field mobility, and dispatch, solutions and functionality planned for Niagara Mohawk.

Work Management and Field Enablement / M&C Productivity Improvements – Base

Current data capture in the field is inefficient due to the use of paper forms and outdated field devices. Implementation of the new platforms will enable field technicians to capture field information more efficiently by taking advantage of current technology. Also, integration of systems will allow technicians to find relevant job information in an expedited fashion rather than searching individually in multiple systems to find the information. To calculate the benefit, the Company assumed that the use of new technology will reduce the time required to enter data on paper forms and outdated field devices. The calculation of the full benefits applies a 3% improvement to total hours worked by field technicians to arrive at the hours reduction in overtime. Applying the hours reduction in overtime at the hourly overtime rate results in the "Total Annual Benefit" shown in the "M&C Productivity Improve" tab in Attachment 1. A capital/operating expense split is applied at 45/55% based on historical cost splits to arrive at the total annual Type I operating savings once benefits are fully embedded (reflected in the "O&M Benefits" column of tab "Benefits – Detailed" tab of Attachment 1). The estimated 3% improvement was based on the expertise of internal gas business and GBE team subject matter experts, as well as on the expert judgment and expertise of our external partners.

Benefits for Niagara Mohawk phase-in beginning FY20, as reflected in in the "Benefits – Detailed" tab of Attachment 1 and Exhibit __ (GIOP-12), page 2 with

Total Annual Benefits not realized for a full year until FY22. The timing of the benefit was based on the current planned implementation schedule for the enabling GBE work management, data, financial integration, GIS and mobile solutions GBE initiatives, and functionality planned for Niagara Mohawk. In addition, the timing in the realization of full benefits reflects the time field supervisors, dispatchers, technicians, and crews, as well as clerks will need to become fully trained and proficient in the new software, processes, and systems.

2. There are many benefits of the GBE program that cannot be quantified. First and foremost, GBE addresses the significant and increasing risk of using aging and unsupported information systems to support the gas business.

   These benefits are described in the Pre-Filed Testimony of the GIOP Panel, most prominently pp. 87 – 92, 94, and 102 – 103 and Exhibit __ (GIOP-9). Some examples of specific customer and operational benefits are noted below.

   - Interactions between Company personnel and customers will change dramatically. Integrated systems will contain information not only about work being performed at a customer's premise, but about work being performed in the customer's neighborhood. With GBE, customer representatives will be able to view work (rather than calling field supervision for an explanation), and can explain the circumstances to the customer.

   - With GBE, customers will have expanded opportunities to schedule appointments with the Company for service. In addition, contact with the customer as the appointment approaches will significantly reduce missed and rescheduled appointments.

   - Records will be kept in GBE systems that will show the work that needs to be done at a customer's premise, and work can be combined in a single visit, thus reducing inconvenience to customers.

   - Customers will be able to communicate with the Company through multiple channels, such as online, land telephone, mobile telephone, and text.

   - When considering conversion to gas, customers will be able to take advantage of online estimating tools to assist them in reaching a decision.

- Customers and field workers will be able to attach photographs and documents to communications vs. paper copies, mail, or in-person visits.

Name of Respondent:
Johnny Johnston

Date of Reply:
July 10, 2017

Corrected GIOP-12 Page 2

Niagara Mohawk Power Corporation d/b/a National Grid
Gas Business Enablement
Customer Benefits - Forecasted for Niagara Mohawk Power Corporation
For Rate Year Ending March 31, 2019 and Data Years Ending March 31, 2020 and 2021

Line	Benefit Description	Benefit Type	12-Months Ending March 31, 2019	12-Months Ending March 31, 2020	12-Months Ending March 31, 2021
1	Clerical / Back Office Productivity Improvement	Type I	$0	$1,706	$105,767
2	Damage Prevention - Reduced Travel Mileage	Type I	$0	$4,627	$6,169
3	M&C Productivity Improvements - Base	Type I	$0	$124,375	$883,064
4	Reduction / Redirection in Opex via AIPM	Type I	$0	$0	$2,279
5	Reduction in Damages due to Data Quality Errors	Type I	$6,937	$27,748	$27,748
6			$6,937	$158,456	$1,025,028
7					
8	All Type I Benefits Included in Revenue Requirement, Exhibit____(RRP-3), Schedule 27		$6,937	$158,456	$1,025,028
9					
10	*Revised Clerical / Back Office Productivity Improvement	Type I	$0	$2,957	$183,329
11					

12 *In Exhibit __ (GIOP-12), Page 2, Narragansett benefit estimate was used in error. Above is the corrected NMPC benefit.

Benefits - Detailed

Work Stream	Initiative	Operating Company	Value Lever	Value Lever Detail	Benefit Lookup Field	Benefit Type	Capital / O&M	%	Work Type	Total Benefits	O&M Benefits	Benefit Start Month	Month Index	Benefit Ramp Months	On/Off	x	x	x	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	x	Row
Work Management	Work Management & Field Enablement	NiagaraMohawk Gas	Increase Clerk / Backoffice Productivity	Clerical / Back Office Productivity Improvement	NiagaraMohawk GasClerical / Back Office Productivity Improvement	Type 1	O&M	68%	Clerk	$313,086	$212,899	4/1/20	39	6 month	TRUE				$0	$0	$0	$2,957	$183,329	$212,899	$212,899	$212,899	$212,899	$212,899	$159,674		2
Work Management	Work Management & Field Enablement	NiagaraMohawk Gas	Reduced Fleet Costs	Damage Prevention - Reduced Travel Mileage	NiagaraMohawk GasDamage Prevention - Reduced Travel Mileage	Type 1	O&M	81%	Damage Prevention	$7,617	$6,169	7/1/19	30	3 month	TRUE				$0	$0	$0	$4,627	$6,169	$6,169	$6,169	$6,169	$6,169	$6,169	$4,627		3
Work Management	Work Management & Field Enablement	NiagaraMohawk Gas	Field Productivity	M&C Productivity Improvements - Base	NiagaraMohawk GasM&C Productivity Improvements - Base	Type 1	O&M	55%	Maintenace and Construction	$1,628,185	$895,502	1/1/20	36	6 month	TRUE				$0	$0	$0	$124,375	$883,064	$895,502	$895,502	$895,502	$895,502	$895,502	$671,626		4
Asset Management	Asset - Advanced Analytics	NiagaraMohawk Gas	OpEx Requirement Reduction/Redirection	Reduction / Redirection in Opex via AIPM	NiagaraMohawk GasReduction / Redirection in Opex via AIPM	Type 1	O&M	100%	M&C - All Opex Jobs	$328,242	$328,242	4/1/21	51	12 month	TRUE				$0	$0	$0	$0	$2,279	$202,872	$328,242	$328,242	$328,242	$328,242	$246,181		5
Asset Management	Engineering, Design, Estimating & Mobility	NiagaraMohawk Gas	Reduced Damages	Reduction in Damages due to Data Quality Errors	NiagaraMohawk GasReduction in Damages due to Data Quality Errors	Type 1	O&M	55%	M&C Construction Jobs	$50,451	$27,748	1/1/19	24	3 month	TRUE				$0	$0	$6,937	$27,748	$27,748	$27,748	$27,748	$27,748	$27,748	$27,748	$20,811		6

Note
Month Index is measured as the number of months from GBE Program start-up and corresponds to the Benefits Start Month

Asset Analytics OpEx

Reduction / Redirection in Opex

	FY2017 Controllable O&M [1]	% of Total Opex	% Reduction	Benefits
Boston Gas	$ 76,358,000	32%	0.82%	$ 628,814
Colonial Gas	$ 10,443,000	4%	0.82%	$ 85,999
Brooklyn Union Gas (KEDNY)	$ 74,664,000	31%	0.82%	$ 614,864
Keyspan Gas East (KEDLI)	$ 25,587,000	11%	0.82%	$ 210,711
NiagaraMohawk Gas	$ 39,859,000	17%	0.82%	$ 328,242
Narragansett Gas	$ 13,524,000	6%	0.82%	$ 111,371
Total	$ 240,435,000			$ 1,980,000

Assumptions / Sources / Notes
1 Source: US Gas OpEx Review 201609 September (06+06) with Forecast

Data Management Damage

Improved Data Quality - Record Error Damages - M&C Complex Engineering Jobs [1]

		2013		2014		2015					
Op Co	Category	# of Errors	Cost	# of Errors	Cost	# of Errors	Cost	3 yr Average	% Reduction to Median [3]	% Reduction Estimated for NG	Potential Savings
UNY	Mismark - Record Errors	4	$ 14,354	38	$ 89,690	41	$ 241,907	$ 115,317	88%	44%	$ 50,451
UNY	Mismark - Locator Errors (Internal)		$ -		$ -		$ -	$ -	40%	20%	$ -
NYC	Mismark - Record Errors	46	$ 25,698	54	$ 20,492	60	$ 20,181	$ 22,124	88%	44%	$ 9,679
NYC	Mismark - Locator Errors (Internal)	3	$ 700		$ -		$ -	$ 233	40%	20%	$ 47
LI	Mismark - Record Errors	52	$ 84,517	63	$ 514,509	70	$ 169,928	$ 256,318	88%	44%	$ 112,139
LI	Mismark - Locator Errors (Internal)	4	$ 5,339	6	$ 15,866		$ -	$ 7,069	40%	20%	$ 1,422
MA	Mismark - Record Errors	139	$ 465,112	139	$ 379,541	123	$ 300,815	$ 381,823	88%	44%	$ 167,048
MA	Mismark - Locator Errors (Internal)	3	$ 3,408	2	$ 577		$ -	$ 1,328	40%	20%	$ 267
RI	Mismark - Record Errors	23	$ 376,726.87	29	$ 475,003.44	45	$ 737,074	$ 529,602	88%	44%	$ 231,701
RI	Mismark - Locator Errors (Internal)	1	$ 1,884.92	2	$ 3,769.84	1	$ 1,885	$ 2,513	40%	20%	$ 506
Total	Total Mismark - Record Errors	264	$ 966,409	323	$ 1,479,236	339	$ 1,469,905	$ 1,305,183	88%	44%	$ 571,018
Total	Total Mismark - Locator Errors	11	$ 11,332	10	$ 20,213	1	$ 1,885	$ 11,143	40%	20%	$ 2,241
TOTAL								$ 1,316,327			$ 573,259

RI	Average Cost of Mismark - Record Errors	$ 16,379
RI	Average Cost of Mismark - Locator Errors (Internal)	$ 1,885

Damage Benchmarking [2]	National Grid Gas Performance - # of Damages 2015	Quartile Ranking per AGA Gas Peers	Median per AGA Gas Peers	Range per AGA Gas Peers	Reduction in # of Damages Needed to Move to the Median [3]
Number of Damages due to Locate Errors – Mains	11	2nd	13	3 to 197	0%
Number of Damages due to Locate Errors – Services	76	3rd	39	17 to 380	49%
Number of Damages due to Record Errors – Mains	43	4th	9	0 to 71	79%
Number of Damages due to Record Errors – Services	293	4th	33	0 to 354	89%
Total Number of Damages due to Record Errors	336		42		88%
Total Number of Damages due to Locate Errors	87		52		40%

Benefity by Operating Company

Boston Gas *	$ 137,198
Colonial Gas *	$ 30,117
Brooklyn Union Gas (KEDNY)	$ 9,726
Keyspan Gas East (KEDLI)	$ 113,561
NiagaraMohawk Gas	$ 50,451
Narragansett Gas	$ 232,206
Total	$ 573,259

Assumptions / Sources / Notes

1 Source: Report of damages provided by Matthew Murlin (Sr. Analyst, Misc & Special Billing), Robert Tejeson (Manager Damage Prevent LI), and Steven Bennett (Manager Damage Prevention NE Gas)

2 Benchmarking of damages performed by Accenture using 2015 AGA data

3 Possible reduction in damages is estimated to move National Grid Gas to the median of its peer set per 2015 AGA data; agreed / confirmed by Nick Raad

4 Boston Gas and Colonial Gas benefits split based on the general allocator %s (Boston Gas - 82%, Colonial Gas - 18%)

Clerical Productivity

Improved Clerical / Back Office Productivity - All M&C and CMS Jobs

Operating Company	# of Clerks / Work Support [1]	# of Annual Workdays per Clerk	Total # of Workdays	Total $	Productivity Improvement as a Result of New Platforms & Mobile Devices [2]	Clerical Hourly Rate [3]	Productivity Benefits
Boston Gas Company	69	240	16,560	$ 3,323,529	25%	$ 25.09	$ 830,882
Colonial Gas Company	17	240	4,080	$ 818,840	25%	$ 25.09	$ 204,710
Brooklyn Union Gas-KEDNY	28	240	6,720	$ 1,348,678	25%	$ 25.09	$ 337,170
KS Gas East Corp-KEDLI	22	240	5,280	$ 1,059,676	25%	$ 25.09	$ 264,919
Narragansett Electric Co	15	240	3,600	$ 722,506	25%	$ 25.09	$ 180,627
Niagara Mohawk Power Corp	26	240	6,240	$ 1,252,344	25%	$ 25.09	$ 313,086
Total	177		42,480	$ 8,525,574			$ 2,131,393

Benefity by Operating Company

Boston Gas	$ 830,882
Colonial Gas	$ 204,710
Brooklyn Union Gas (KEDNY)	$ 337,170
Keyspan Gas East (KEDLI)	$ 264,919
NiagaraMohawk Gas	$ 313,086
Narragansett Gas	$ 180,627
Total	$ 2,131,393

Assumptions / Sources / Notes

1 # of Clerks derived from HRIS extract provided by J'Wynn DeRamos; resources with Clerk or "CLK" in their titles in M&C, CMS, and Ops Support / Work Support were counted in this analysis

2 Estimate of % productivity improvement as result of new platforms and mobile devices provided by Danielle Morrissey and Mark Scaparotti

3 Clerk rate provided by NG Finance; hourly rate assumes an average for that category of employee if there were multiple titles / levels (e.g., Clerk, CMS Clerk, etc.)

Damage Prevention Travel

Reduced Drive Time and Reduced Mileage - M&C Damage Prevention Jobs

			Travel Time								Mileage					
Opex	Category	Units (Mains = Miles, Services = Units) [1]	Travel Mins Per Job [2]	Total Travel Mins	Cost Basis	Travel Time Reduction [3]	Total Time Saved in Mins	Field Woker Hourly Rate [4]	Travel Time Benefits	Miles Per Job [2]	Assumed Miles Driven	Cost Basis	Reduction [3]	Miles Reduced	Cost Per Mile [5]	Fleet Benefits
Boston Gas	Damage Prevention	130,880	14	1,832,320	$1,066,716	2.5%	45,808	$ 34.93	$ 26,668	4.17	546,410	$ 377,023	2.5%	13,660	$ 0.69	$ 9,426
Colonial Gas	Damage Prevention	47,609	14	666,526	$ 388,029	2.5%	16,663	$ 34.93	$ 9,701	4.17	198,763	$ 137,146	2.5%	4,969	$ 0.69	$ 3,429
KEDNY	Damage Prevention	190,066	11	2,090,726	$1,217,151	2.5%	52,268	$ 34.93	$ 30,429	4.17	793,505	$ 547,519	2.5%	19,838	$ 0.69	$ 13,688
KEDLI	Damage Prevention	154,225	10	1,542,250	$ 897,847	2.5%	38,556	$ 34.93	$ 22,446	4.17	643,873	$ 444,272	2.5%	16,097	$ 0.69	$ 11,107
Niagara Mohawk	Damage Prevention	105,761	13	1,374,893	$ 800,417	2.5%	34,372	$ 34.93	$ 20,010	4.17	441,541	$ 304,663	2.5%	11,039	$ 0.69	$ 7,617
RI	Damage Prevention	61,581	12	738,972	$ 430,205	2.5%	18,474	$ 34.93	$ 10,755	4.17	257,094	$ 177,395	2.5%	6,427	$ 0.69	$ 4,435
TOTAL BENEFITS		690,122		8,245,687	$4,800,364		206,142		$ 120,009		2,881,186	$1,988,018		72,030		$ 49,700

Assumptions / Sources / Notes

1 Source: US Gas OpEx Review 201609 September (06+06) with Forecast

2 Travel time and miles per job for damage prevention is assumed to be similar to CMS planned work by OpCo; travel time and miles per job is not tracked for M&C

3 Damage prevention % reduction is assumed to be similar to the % reduction for CMS planned work which was calculated using OptimoRoute software; assumption based on the fact that damage prevention resources can be pulled for emergent work

4 Tech rate provided by NG Finance; hourly rate assumes an average for that category of employee if there were multiple titles / levels (e.g., Field Tech, Mechanic, etc.)

5 Fleet cost for mile provided by Joseph Nicoletti, Supply Chain / Fleet; cost includes fuel, parts, and external maintenance only

M&C Productivity Improve

Field Productivity Improvement via Improved Platforms - All M&C Work Types

					Improvement in Productivity		
	Straight Hours [1, 5]	OT Hours [5]	Total Hours	% of OT	Improvement Rate [2]	Hours of Improvement	Benefit
Boston Gas	1,116,603	401,446	1,518,048	26%	3.00%	33,498	$ 1,755,132
Colonial Gas	177,186	53,456	230,641	23%	3.00%	5,316	$ 278,509
KEDNY *	1,231,360	320,889	1,552,249	21%	3.00%	36,941	$ 1,935,513
KEDLI *	765,440	180,086	945,526	19%	3.00%	22,963	$ 1,203,157
Niagara Mohawk *	1,035,840	85,349	1,121,189	8%	3.00%	31,075	$ 1,628,185
RI	366,822	133,904	500,726	27%	3.00%	11,005	$ 576,589
Totals	4,693,250	1,175,129	5,868,379	20%	3.00%	140,798	$ 7,377,085

	Hourly Rate [3]	Hours per year	Annual Rate
Annual Rate	$ 34.93	2080	$ 72,654
OT Rate	$ 52.40	2080	$ 108,982

Field Techs [4]

Boston Gas Company	698
Colonial Gas Company	108
Brooklyn Union Gas-KEDNY	592
KS Gas East Corp-KEDLI	368
Niagara Mohawk Power Corp	498
Narragansett Electric Co	206
Grand Total	1876

Assumptions / Sources / Notes

1 For KEDNY, KEDLI, and Niagara Mohawk, calculated straight hours = # of field techs * 2080 hours per year

2 3% improvement rate = 15 minutes per day (480 minutes * 3%); % used is estimated based on time spent performing data capture with a crew size of 3 (5 minutes per person)

3 Tech rate provided by NG Finance; hourly rate assumes an average for that category of employee if there were multiple titles / levels (e.g., Field Tech, Mechanic, etc.)

4 # of Field Techs derived from HRIS extract provided by J'Wynn DeRamos; Field Techs in this benefit stream include I&R, Corrosion, and M&C Techs, Inspectors and Damage Prevention excluded

5 Source for Hours: NY - Yuan Zhou (Finance Business Partners- NY Budgeting & Forecasting) & Phillip Jeffrey; MA & RI - James Loschiavo (Financial Planning & Partnering)

Niagara Mohawk Power Corporation
Case 17-E-0238 and 17-G-0239
IS - Company Request

	Electric	Gas	
Service Company Rent Expense			
Facilities	1,674	390	A
Existing IS Projects	24,051	4,255	
Forecast IS Projects	15,501	4,526	
Total Service Company Rent Expense	41,226	9,171	
Operating Expenses			
HTY inflated (in various cost components)	2,956	567	B
Grid Modernization	16,210	29	C
GBE	198	9,631	D
All other new projects	4,156	797	E
Total Operating Expenses	23,520	11,024	
Run the Business Expenses			
HTY inflated (in various cost components)	51,633	9,907	B
Grid Modernization	3,640	-	C
GBE	-	1,200	D
All other new projects	2,602	499	E
Total RTB Expenses	57,875	11,606	
Total Revenue Requirement Request	122,622	31,801	

A Per Company Exhibit RRP-3, Schedule 9

B		OPEX	RTB	
	Expenses in HTY	11,800	206,100	1
	Inflation through RY	4.95%	4.95%	1
	Total Operating Expenses	12,385	216,311	
	NMPC - Electric Allocation	23.87%	23.87%	1
	NMPC - Electric Expense	2,956	51,633	
	NMPC - Gas Allocation	4.58%	4.58%	1
	NMPC - Gas Expense	567	9,907	

1 Per Company Exhibit ISP-8

C Per Company response to IR DPS-607

D Per Other Initiatives expense, Exhibit RRP-3, Sch 27, pages 7-8

E			
	Operating Expenses for new programs	26,279	2
	RTB Expenses for new programs	16,455	2
	Total Incremental	42,734	
	% OPEX	61%	
	% RTB	39%	

	Electric	Gas	
Total Incremental Exp	6,758	1,297	3
Portion Opex	4,156	797	
Portion RTB	2,602	499	

2 Per Company Exhibit ISP-7
3 Per Company Exhibit ISP-8

Niagara Mohawk Power Corporation
Case 17-E-0238 and 17-G-0239
IS - Summary of Adjustments

Capital Budget - Total Service Company	
Capital Budget per Company	285,927
Staff adj to remove specific projects	(35,075)
Staff adj for slippage	(91,800)
Capital budget per Staff	159,052

	Electric	**Gas**
Service Company Rent Expense		
Service Co Rent expense per Company	15,501	4,526
Staff adj to remove specific projects	(1,361)	(506)
Staff adj for slippage	(5,175)	(1,471)
Staff adj for ROR	(1,044)	(238)
Service Co Rent expense per Staff	7,921	2,311
Operating Expenses		
Operating expenses per Company	20,564	10,457
Staff adj to remove specific projects	(6,308)	(13)
Staff adj for slippage of GBE/Grid Mod	(3,710)	(3,535)
Staff adj for Opex as a % of Capex	(3,550)	(681)
Operating expenses per Staff	6,997	6,227
Run the Business Expenses		
RTB expenses per Company	6,242	1,699
Staff adj to remove specific projects	(977)	(6)
Staff adj for slippage	(1,927)	(620)
RTB expenses per Staff	3,338	1,074

Niagara Mohawk Power Corporation
Case 17-E-0238 and 17-G-0239
Individual Projects Adjustments

							Serv Co Rent			Serv Co Rent Adj			Opex			opex Adj			RTB			RTB Adj		
Line	Investment Name	Programs	INVP #	% disallowed	Service Co Capex FY19	Service Co Capex Adj FY19	Gas	Electric	Total	Gas	Electric	Total	Gas	Electric	Total	Gas	Electric	Total	Gas	Electric	Total	Gas	Electric	Total
206	Cyber Security	Grid Mod	4704N	31%	9,771,502	3,050,663	-	-	-	-	-	-	-	4,086,306	4,086,306	-	(1,275,745)	(1,275,745)	-	1,648,576	1,648,576	-	(514,685)	(514,685)
205	Cyber Security	Grid Mod	4704N	31%	6,514,334	2,033,775	-	-	-	-	-	-	-	2,724,204	2,724,204	-	(850,497)	(850,497)	-	1,099,051	1,099,050	-	(343,124)	(343,124)
200	AMI - Ent Service Bus & API Integration	Grid Mod	4704J	31%	3,762,093	1,150,072	-	-	-	-	-	-	-	449,852	449,852	-	(137,520)	(137,520)	-	234,883	234,883	-	(71,804)	(71,804)
202	AMI - Info Mgt & Advanced Analytics	Grid Mod	4704L	17%	8,399,335	1,451,405	-	-	-	-	-	-	-	277,549	277,549	-	(47,960)	(47,960)	-	-	-	-	-	-
199	AMI - Ent Service Bus & API Integration	Grid Mod	4704J	31%	1,690,216	516,699	-	-	-	-	-	-	-	202,107	202,107	-	(61,784)	(61,784)	-	105,527	105,527	-	(32,260)	(32,260)
204	IS-Cloud Computing & Data Lake	Grid Mod	4704M	17%	2,111,349	364,841	-	-	-	-	-	-	-	270,438	270,438	-	(46,732)	(46,732)	-	-	-	-	-	-
191	AMI - CSS Enhancements	Grid Mod	4704A	100%	5,319,147	5,319,147	-	-	-	-	-	-	-	226,195	226,195	-	(226,195)	(226,195)	-	-	-	-	-	-
201	AMI - Info Mgt & Advanced Analytics	Grid Mod	4704L	17%	1,720,346	297,276	-	-	-	-	-	-	-	56,847	56,847	-	(9,823)	(9,823)	-	-	-	-	-	-
203	IS-Cloud Computing & Data Lake	Grid Mod	4704M	17%	432,445	74,726	-	-	-	-	-	-	-	55,391	55,391	-	(9,571)	(9,571)	-	-	-	-	-	-
194	AMI - Telecoms	Grid Mod	4704I	26%	1,580,151	417,950	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
198	AMI - Telecoms	Grid Mod	4704I	26%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
193	DSP - DG IOAP	Grid Mod	4704F	100%	9,120,628	9,120,628	-	-	-	-	-	-	-	1,978,418	1,978,418	-	(1,978,418)	(1,978,418)	-	-	-	-	-	-
186	Load and DER Forecasting	Grid Mod	4729	100%	-	-	499,938	1,345,532	1,845,470	(499,938)	(1,345,532)	(1,845,470)	-	-	-	-	-	-	-	-	-	-	-	-
197	Grid MOD - ABB/ADMS & D-SCADA	Grid Mod	4704G	100%	9,345,188	9,345,188	-	-	-	-	-	-	-	1,626,900	1,626,900	-	(1,626,900)	(1,626,900)	-	-	-	-	-	-
88	Customer Bill Redesign	FY18 Plan	4704Q	100%	1,932,468	1,932,468	5,602	15,149	20,751	(5,602)	(15,149)	(20,751)	13,455	36,389	49,844	(13,455)	(36,389)	(49,844)	5,602	15,149	20,751	(5,602)	(15,149)	(20,751)
						35,074,838				(505,539)	(1,360,681)	(1,866,221)				(13,455)	(6,307,534)	(6,320,989)				(5,602)	(977,021)	(982,623)
				AMI		14,676,554				-	-	-				-	(2,665,827)	(2,665,827)				-	(961,872)	(961,872)
				Distribution		18,465,816				(499,938)	(1,345,532)	(1,845,470)				-	(3,605,318)	(3,605,318)				-	-	-
				Bill Redesign		1,932,468				(5,602)	(15,149)	(20,751)				(13,455)	(36,389)	(49,844)				(5,602)	(15,149)	(20,751)

Niagara Mohawk Power Corporation
Case 17-E-0238 and 17-G-0239
Slippage Adjustments

	2014	2015	2016		3 Year Average
FY Budget	166,902	124,527	108,483	A	133,304
FY Actual	74,659	85,314	93,590	A	84,521
(Under)/Over Spend	(92,243)	(39,213)	(14,893)		(48,783)
% Variance	55%	31%	14%		37%

Service Company Rent Expense Adjustment

	Electric	Gas
Service Co Rent expense per Company	15,501	4,526
Adjust to remove specific projects	(1,361)	(506)
Net Service Co Rent expense	14,140	4,020
Slippage Rate	-37%	-37%
Service Co Rent expense - Slippage Adj	(5,175)	(1,471)

Operating Expense Adjustment

GBE	Electric	Gas	
Operating Expenses per Company	198	9,631	B
Adjust to remove specific projects	-	-	
Net Operating Expenses	198	9,631	
Slippage Rate	-37%	-37%	
GBE OPEX - Slippage Adj	(72)	(3,524)	

Grid Modernization	Electric	Gas	
Operating Expenses per Company	16,210	29	C
Adjust to remove specific projects	(6,271)	-	
Net Operating Expenses	9,939	29	
Slippage Rate	-37%	-37%	
Grid Mod OPEX - Slippage Adj	(3,637)	(10)	
Total Grid Mod/GBE OPEX Slippage Adj	(3,710)	(3,535)	

Run the Business Expense Adjustment

	Electric	Gas
RTB expense per Company	6,242	1,699
Adjust to remove specific projects	(977)	(6)
Net Run the Business expense	5,265	1,693
Slippage Rate	-37%	-37%
RTB expense - Slippage Adj	(1,927)	(620)

A	Per Company Response to IR DPS-077
B	Per Other Initiatives expense, Exhibit RRP-3, Sch 27, pages 7-8
C	Per Company Response to IR DPS-607

Niagara Mohawk Power Corporation
Case 17-E-0238 and 17-G-0239
OPEX % of CAPEX Adjustment

	2014	2015	2016		3 Year Average
Service Company Opex	9,500	15,200	11,800	A,B	12,167
Service Company Capex	79,724	79,985	58,832	A	72,847
% Opex to Capex	12%	19%	20%		17%

	Rate Year	
Service Company Capex Request per Company	285,927	
Adjustment to remove specific items	(35,075)	
Net Service Co Capex	250,852	
Slippage Rat	-37%	
Slippage Adj	(91,800)	
Net Service Company Capex	159,052	
Less: GBE	(65,923)	C
Less: Grid Mod	(25,976)	D
Staff Allowed Capex - Net of GBE/Grid Mod	67,154	
Three Year Average Opex %	17%	
RY Allowed Serv Co Opex - net of GBE/Grid Mod	11,216	
Co Req Opex - net of GBE/Grid Mod/Redesign	26,089	E
Adjustment - Service Company	(14,873)	
Eclectic Allocation Rate	23.87%	B
Electric Adjustment	(3,550)	
Gas Allocation Rate	4.58%	B
Gas Adjustment	(681)	

A	Per Company's response to IR DPS-631		
B	Per Company Exhibit ISP-8		
C	GBE Capex per ISP-3	104,639	
	Less: 37% slippage	(38,716)	
	GBE in Staff's cap forecast	65,923	
D	Grid Mod Capex per ISP-3	74,374	
	Less: Indiv Projects removed	(33,142)	
	Less: 37% slippage	(15,256)	
	Grid Mod in Staff's cap forecast	25,976	
E	Total Service Co Opex	26,279	1
	Less: Customer Bill Redesign	(190)	1
	Company Request	26,089	

1 Per Company Exhibit ISP-7

Niagara Mohawk Power Corporation
Case 17-E-0238 and 17-G-0239
Service Company Rate of Return

Service Company Rate of Return Adjustment

	Electric	Gas	
Service Co Rent Expense - Company Request	41,226	9,172	
Service Co Rent Expense - Staff Allowance	34,691	7,195	
Service Co Rent Expense - % Staff Allowance	84%	78%	
Total ROR adj at full allowance of Company's request	1,241	304	A
ROR Adj at Staff rent allowance	1,044	238	

		Electric	Gas
A	Serv Co Rent expense for facilities	1,674	390
	Expense at Pretax WACC of 8.74%	1,632	378
	Adjustment	42	12
	Serv Co Rent expense for existing leases	24,051	4,255
	Expense at Pretax WACC of 8.74%	23,462	4,150
	Adjustment	589	105
	Serv Co Rent expense for new leases	15,501	4,526
	Expense at Pretax WACC of 8.74%	14,891	4,339
	Adjustment	610	187
	Total Adj at allowance of Company's total request	1,241	304

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accenture

National Grid
Gas Business Enablement Program

Business Case Deliverable

December 9, 2016

Strategy | Consulting | Digital | Technology | Operations

Contents

- Executive Summary
- Program Context
- Options Considered & Recommendation
- Recommended Option Scope, Benefits, and Costs
- Appendix

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Executive Summary

Strategy | Consulting | Digital | Technology | Operations

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National Grid is proposing a gas business enablement program to address aging technology and gas safety and compliance challenges, improve performance, enhance the customer experience, and be able to adapt to a changing market framework.

Technology Risk

Aging Technology

14 Average age in years of the average application

~ **240** Hours of downtime in 2016

Market Context

Increasing Regulatory Scrutiny

Evolving Customer Preferences and Technology

Competition from Traditional and Non-Traditional Sources

Gas Business Enablement

Performance Challenges

Sub-Optimal Operational Performance

Inadequate Customer Experience

$40+M

Gas safety & compliance penalties received over the previous 3 years

Gas Safety and Compliance Challenges

Operational Risk

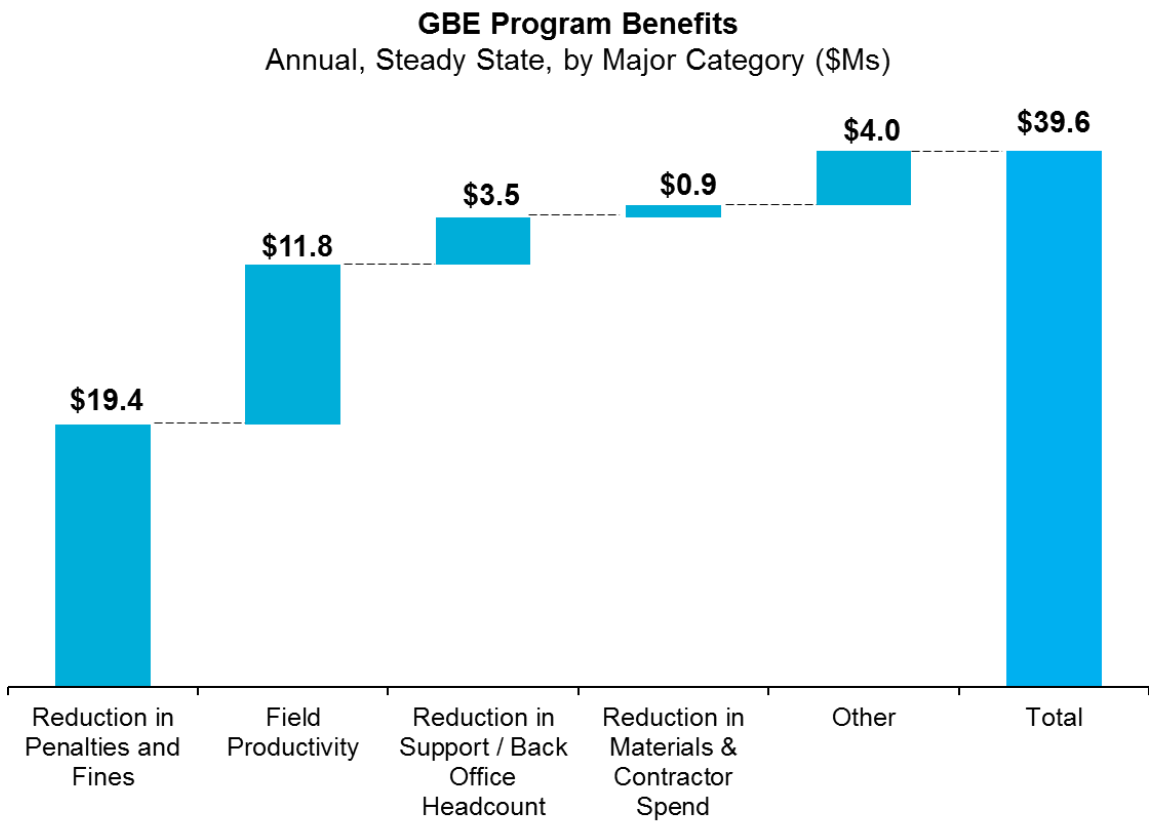
Of the five options that were evaluated, the jurisdiction deployment value oriented option best addresses National Grid's challenges and reduces delivery risk by deploying capabilities by jurisdiction.

Option	Characteristics	Duration	Investment
1 Tech Stabilization	• Continue to provide limited support for the current systems • Upgrade supporting infrastructure where possible	• Likely 3+ years [1]	$15M to $20M [3]
2 Like for Like Replacements	• Upgrade or replace current systems, where possible • Limited system consolidation; stand alone systems not integrated • No capability, process, or people / leadership improvements • Does not include improvements in data quality or technical training	• Likely 4+ years [2]	$221M+ [4]
3 Backbone	• Focused on replacing core AM/WM systems • Capability & process improvements limited to work and asset mgmt. • Scope limited to what is required to mitigate key risks	• 3 ½ years	$273M
4 Value Oriented – Jurisdiction Deployment	• Backbone scope + enhanced capabilities; initial focus on risk reduction • Enhanced capabilities include strategic change, talent, & operating model, customer interaction, advanced asset & work management, supply chain, & technical training • Addresses data quality and technical training gaps • Transitions support and maintenance to a modern SaaS model • Deployment by jurisdiction to allow for refinements prior to broader rollout	• 5 years	Total: $458M Enhanced Capabilities: $185M
5 Value Oriented – Accelerated Deployment	• Same as above except program accelerates delivery of capabilities • Takes more aggressive deployment approach	• 4 ½ years	Total: $466M Enhanced Capabilities: $193M

1 Potential IS budgetary / O&M constraints will influence timeframe
2 Assumes longer duration than backbone due to lack of system consolidation; more applications need to be replaced, upgraded, or remediated than in the backbone scenario
3 Tech stabilization investment assumes $200K per application which includes infrastructure and application updates
4 Like for like investment assumes major business and operational critical applications can be upgraded, remediated or replaced and are estimated as such; for custom and older technology with no replacement in the market, investment is assumed to be $200K for stabilization / remediation and $350K for upgrade per application

The jurisdiction deployment value oriented option delivers significant benefits over the useful life of the assets and financial benefits and considerably improves the customer experience.

Financial Benefits



Operational Benefits

- Increased employee and public safety
- Increased employee engagement and retention
- Asset risk reduction
- Simplified planning
- Enhanced regulatory relationship
- Optionality to support future opportunities

Customer Benefits

- Improved pipeline safety
- Increased ability to convert to gas
- Enhanced customer engagement through self-service options and simplified access to customer information to respond to customer inquiries
- Lower rates through reduction in O&M and increase in new gas customers
- Increased reliability
- Increased public safety
- Reduction in CO_2 emissions by enabling customers to switch from oil heat to natural gas heat

Investment Summary [1]

Program Cost

$458M

Program Benefits

$417M [2]

Annual Run the Business Cost

$22M

1 Costs and benefits are in nominal terms
2 Capabilities assumed to be fully deployed in FY21; benefits accumulated from FY19 to FY31 – benefits start prior to full deployment of capabilities

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Program Context

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The US Gas Business carries an unsustainable level of operational risk driven by aging technology and gas safety and compliance challenges.

Aging Technology

- Average age of the application portfolio is 14 years with some applications at 26 years
- 90% of the 'front office' systems will have reached end of life within 2 years
- Critical applications have missed availability targets 35% of the time causing ~240 hours of down[1]
- 99 disparate systems make it difficult to plan, manage, and report on compliance work

Gas Safety and Compliance Challenges

- In 2016, Internal Audit and two third party assessments[2] by industry experts identified significant gaps in gas field technical training governance, curriculum, and delivery, including lack of modern instructional design and technology
- In 2015, National Grid agreed to a Compliance Plan with the Mass. DPU based on systemic non-compliance associated with not completing mandated work in fifteen (15) program areas, paid a $450K fine (total exposure was $30M), and agreed to certain hiring, training, and qualification processes for field employees and Supervisors.
- Gas standards and procedures, although technically sound, are difficult for field workers to follow and not always aligned with training materials, leading to procedural non-compliance.
- $40+M in gas safety and compliance penalties have been received or are in negotiation over the last 3 years
- The total annual gas safety and compliance penalty exposure is more than $76M in NY and is largely unlimited in MA and RI with $2M maximum cap per violation

Operational risk impacts our ability to support safe, compliant operations and meet ongoing regulatory obligations.

1 A small # of applications are monitored for performance as many do not have SLAs for maintenance; timeframe Dec 15 through Dec 16

2 Pipeline Performance Improvement Company(P-Pic) performed a pipeline safety/compliance review utilizing API RP 1173. In addition, the Mosaic Company performed an assessment of our Field Technical Training program and developed recommended actions/roadmap to close significant gaps identified. Recommendations to improve our Pipeline Safety Management System and Field Technical Training are being incorporated into the GBE effort.

In addition, a step change is needed to improve operational performance and enhance the customer experience.

Operational Performance

- Disparate systems and heavy reliance on paper negatively impact our O&M and capital unit cost performance [1]
- Inefficiencies driven by inadequate technology, non-standard processes, reliance on paper, and a “make due” culture impact our ability to achieve allowed ROE and TSR targets [2]
- Operating model, system, and process improvements are needed to secure the delivery of our current $2B capital spend plan
- Increase in capital spend has materially reduced resource capacity limiting our ability to support additional growth opportunities (e.g., customer gas conversions)
- Non-standard processes and disparate tools limit our ability to understand performance results and course-correct as necessary.

Customer Experience and Value

- Disparate systems and information limit our ability to provide customers with status and other pertinent information in a timely manner
- Many customer inquiries take multiple interactions to resolve / address
- Lack of resource capacity limits our ability to meet the demand for new gas connections and conversion requests
- Lack of a modern, digital platform for effective and efficient interaction make it increasingly difficult for our customers to do business with us
- Customer preferences for communication (e.g., text message, apps) can’t be met with the current suite of capabilities and platforms
- Inefficient operations has negatively affected our ability to meet all customer commitments including appointments

1 Accenture analysis using 2015 AGA data reported by National Grid
2 ROE is below allowed in all operating companies with exception of Brooklyn Union Gas Company; TSR and ROE Source: SNL Financial

Finally, more flexible capabilities and platforms are needed to address the dramatically changing market framework.

Increasing Regulatory Scrutiny

- Gas safety incidents (e.g., San Bruno, East Harlem) have resulted in significant cost to gas utilities, stricter regulations, and newly recommended practices (e.g., API1173); National Grid must be able to quickly adopt new practices

Evolving Customer Preferences and Technology

- Customer preferences and technology have and will continue to change; National Grid must anticipate and incorporate these changes into it's operations

Competition from Traditional and Non-Traditional Sources

- Competition from traditional and non-traditional sources continue to evolve and become economically viable (e.g., geothermal heat, intelligent home); National Grid must be able to compete to protect and expand the business

As a result of the challenges faced, a Gas Business Enablement program was developed to reduce risk, improve business performance, and support future growth.

Objectives

What we want to achieve?

- **Reduce Risk**
- **Improve Business Performance**
- **Support Future Growth**

Value Levers

How we will achieve it?

- **Compliance & Operational Risk**
- **Capital Delivery**
- **Customer Experience**
- **Productivity & Efficiency**
- **Employee Enablement**
- **Agility**

Outcomes

What we will accomplish

- *Improved prioritization of compliance work*
- *Avoided gas safety / compliance fines*
- *Greater availability of systems*
- *Improved access to data*
- *Simplified regulatory reporting*

- *Increased capacity to deliver capital commitments*
- *Improved estimating accuracy*
- *Improved schedule adherence*
- *Improved pre-requisite fulfilment (e.g., materials)*
- *Reduced permit fines (e.g., summonses)*

- *360^0 view of the customer*
- *Robust self-service capabilities for services and status updates*
- *Improved and simplified interactions – call center and field*
- *Reduced contact center costs*
- *Diversity of contact channels to better meet current needs*
- *Improved commitments met & timely status updates*
- *Improved service quality - avoided service quality penalties*
- *Increased customer satisfaction*

- *Reduced overtime*
- *Reduced travel time and non-productive time*
- *Reduced repeat & unnecessary visits (e.g., meter # verifications)*
- *Reduced jobs unable to complete / CGIs*
- *Increased back office productivity*

- *Increased employee commitment*
- *Improved technical training & skills*
- *Focus on safety, performance, and outcomes*
- *Clear accountability for performance and results*

- *Flexible core systems*
- *IS development operations / automated testing*
- *Agile delivery capabilities*

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Options Considered & Recommendation

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Five Gas Business Enablement program options were assessed each differing in scope and characteristics.

Option	Characteristics	Duration
1 Tech Stabilization	• Continue to provide limited support for the current systems • Upgrade supporting infrastructure where possible	• Likely 3+ years • Potential IS budgetary / O&M constraints will influence timeframe
2 Like for Like Replacements	• Upgrade or replace current systems, where possible • Limited system consolidation; stand alone systems not integrated • No capability, process, or people / leadership improvements • Does not include improvements in data quality or technical training	• Likely 4+ years • Assumes longer duration due to potential IS capacity constraints & dependencies
3 Backbone	• Focused on replacing core AM/WM systems • Capability & process improvements limited to work and asset mgmt. • Scope limited to what is required to mitigate key risks	• 3 ½ years
4 Value Oriented – Jurisdiction Deployment	• Backbone scope + enhanced capabilities; initial focus on risk reduction • Capability, process, and people / leadership improvements • Addresses data quality and technical training gaps • Transitions support and maintenance to a modern SaaS model • Deployment by jurisdiction to allow for refinements prior to broader rollout	• 5 years
5 Value Oriented – Accelerated Deployment	• Same as above except program accelerates delivery of capabilities • Takes more aggressive deployment approach	• 4 ½ years

Each option was evaluated against National Grid's objectives to determine which option best addresses the challenges faced and is the most prudent investment.

Objectives	Evaluation Criteria The solution must…
Reduce Risk	• Improve Gas Safety and Compliance Performance • Secure Delivery of Capital Spend Plan • Improve Application Availability / Reduce Downtime
Improve Business Performance	• Improve Efficiency and Productivity • Improve the Customer Experience • Simplify Data Management / Improve Data Quality • Enable Quick Response to Regulatory Requests / Changes • Enable Consistent Measurement of Performance / Continuous Improvement
Support Future Growth	• Establish a Common Platform • Standardize Capabilities, Processes, and Practices • Establish a Platform to Enable an Electric Business Enablement & Future Enhancements

Three options partially or fully meet all three objectives and were further evaluated.

Option	Reduces Risk	Improves Business Performance	Supports Future Growth
1 Tech Stabilization	Limited impact to application availability No impact on gas safety and compliance risk No impact on capital delivery	No impact on efficiency and productivity, the customer experience, data management / data quality, regulatory response, and performance measurement	Disparate platforms Non-standardized capabilities, processes, and practices No platform for electric business enablement or future enhancements
2 Like for Like Replacements	Moderate impact to application availability No impact on gas safety and compliance risk No impact on capital delivery	Focuses on technology replacements / upgrades only No impact on efficiency and productivity, the customer experience, data management / data quality, regulatory response, and performance measurement	Disparate platforms Non-standardized capabilities, processes, and practices No platform for electric business enablement or future enhancements
3 Backbone	Improves application availability Partially addresses operational challenges; gas safety and compliance Improved work management systems supports capital delivery	Moderate impact on efficiency and productivity No impact to the customer experience Simplifies data management and improves data quality Improves ability to respond to regulatory requests Enables consistent performance measurement	Consolidates core AM / WM platforms Standardizes core AM/ WM capabilities, processes, and practices Establishes WM / AM platform to support electric business enablement and future enhancements
4 Value Oriented – Jurisdiction Deployment	Improves application availability Comprehensively addresses operational challenges; gas safety and compliance Improved work management systems & capabilities support capital delivery	Significant impact on efficiency and productivity Enhances the customer experience Simplifies data management and improves data quality Improves ability to respond to regulatory requests Enables consistent performance measurement	Consolidates major gas business platforms Standardizes capabilities, processes, and practices Establishes platforms to support electric business enablement and future enhancements
5 Value Oriented – Accelerated Deployment	Improves application availability Comprehensively addresses operational challenges; gas safety and compliance Improved work management systems & capabilities support capital delivery	Significant impact on efficiency and productivity Enhances the customer experience Simplifies data management and improves data quality Improves ability to respond to regulatory requests Enables consistent performance measurement	Consolidates major gas business platforms Standardizes capabilities, processes, and practices Establishes platforms to support electric business enablement and future enhancements

Legend Fully Meets | Partially Meets | Doesn't Meets

Of the three options evaluated, the jurisdiction and accelerated value oriented options deliver financial benefits by implementing enhanced capabilities which offset the investment.

Option	Investment	Financial Benefits	Payback
3 Backbone	$273M	None	N/A [1]
4 Value Oriented – Jurisdiction Deployment	$458M ○ *Enhanced Capabilities: $185M*	$39.6M	4Y 2M [2]
5 Value Oriented – Accelerated Deployment	$466M ○ *Enhanced Capabilities: $193M*	$39.6M	4Y 4M [2]

1 No payback analysis completed as capabilities that drive value (e.g., enhanced capabilities) are not being implemented in these three options
2 Payback based on the implementation of enhanced capabilities that drive value; the start of payback assumed to be year 5 which is the full deployment of the enhanced capabilities

In addition, the backbone and jurisdiction deployment value oriented options allow for delivery approaches that reduce overall delivery risk and minimize impact to the business.

Option	Delivery Approach: Method	Delivery Approach: Use of Pilots (Y/N)	Delivery Approach: Scope of Deployment [1]	Delivery Approach: Run New System In Parallel w/Old (Y/N)	Delivery Approach: Resource Ramp [2]	Reduces Delivery Risk / Minimizes Business Disruption
3 Backbone	Agile	Yes	Work Type / Application	Yes	Moderate	Yes
4 Value Oriented – Jurisdiction Deployment	Agile	Yes	Work Type / Application	Yes	Moderate	Yes
5 Value Oriented – Accelerated Deployment	Agile	Yes	Work Type / Application	Yes	Aggressive	Partially

Legend: Yes | Partially | No

1 More granular scope of deployment allows for small scale minimum viable product and hence less risk; work type by application is the least scope that could feasibly be deployed
2 The backbone option requires less resources overall compared to the value oriented options; the jurisdiction deployment option elongates some of the early deployments to allow for testing of the capability in a single jurisdiction before broader rollout

The jurisdiction deployment value oriented option is recommended; it meets all three objectives, delivers financial benefits, and minimizes delivery risk and potential business disruption.

Option	Decision Rationale
3 Backbone [1]	↓ Partially addresses technical and operational risk; exposure to gas safety and compliance penalties remains ↓ Provides no financial benefits / some non-financial benefits; no payback on investment ↑ Consolidates disparate business and operational critical platforms ↑ Requires less resources than value oriented options; slower ramp of resources minimizes delivery risk ↓ Partially supports the broader NG strategic ambition
4 Value Oriented – Jurisdiction Deployment	↑ Significantly reduces risk profile ↑ Provides potentially significant financial benefits and non-financial benefits; short payback on investment ↑ Consolidates disparate business and operational critical platforms ↑ Optimizes scope, cost, and value; aligns with rate case schedule; slower ramp of resources minimizes delivery risk ↑ Sufficient to deliver on the broader NG strategic ambition
5 Value Oriented – Accelerated Deployment	↑ Significantly reduces risk profile ↑ Provides potentially significant financial and non-financial benefits; short payback on investment ↑ Consolidates disparate business and operational critical platforms ↓ Accelerated delivery; requires significant ramp of resources ↑ Sufficient to deliver on the broader NG strategic ambition

Legend

↑ Positive ↓ Negative

1 Backbone option recommended as a reduced scope, fall back option to the rate case aligned, value oriented option

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Recommended Option Scope, Benefits, and Costs

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The jurisdiction deployment option scope includes backbone and enhanced capabilities and systems.

Backbone Scope

Enterprise Asset Management
- Work Management
- Scheduling, & Field Mobility
- Integrity Management

Geospatial Information System
- Platform Consolidation
- Data Remediation
- Field Mobility

Asset Management
- PowerPlan Remediation

Data Management
- Data Quality & Cleansing

IS Enabling
- Agile Methodology
- Development Operations
- Testing Automation

Enhanced Capabilities Scope

Strategic Change, Talent, & Operating Model
- Operating Model & Value Framework
- Business Readiness & Sustainment
- Program People Strategy

Customer Experience & Interaction
- Customer & Employee Interaction
- CxT Portal & Channel Management
- CRM Contact Center Front End
- Voice of the Customer, Channel Analytics

Advanced Asset Management
- Asset Investment Planning & Management
- Advanced Asset Analytics
- Graphical Work Design, Complex Design, & Estimating

Advanced EAM Platform
- Capital Projects & Program Management
- Work Management Optimization
- Work Forecasting & Planning

Supply Chain
- Integrated Supply/ Demand Planning
- Inventory Optimization
- Warehouse and Network Optimization

Field Technical Training
- Technical Training Refresh
- Work Methods and Procedures

The jurisdiction option materially reduces risk through implementation of the backbone systems and capabilities.

Backbone Capabilities and Systems

Enterprise Asset Management
- Work Management
- Scheduling, & Field Mobility
- Integrity Management

Geospatial Information System
- Platform Consolidation
- Data Remediation
- Field Mobility

Asset Management
- PowerPlan Remediation

Data Management
- Data Quality & Cleansing

IS Enabling
- Agile Methodology
- Development Operations
- Testing Automation

Risk	How Backbone Systems & Capabilities Reduce Risk
Gas Safety & Compliance Risk	• Standardized & simplified operational process reduce complexity and ambiguity • Improved visibility to planned compliance work and status reduces risk of missing critical dates or deadlines • Improved asset information, records, and transaction data accuracy reduces potential errors and/or incidents in the field • Advanced mobility tools allow real-time access to critical information in the field • Modernized core EAM platforms enables more effective work planning, forecasting, and execution of the capital delivery program • Integration with Supply Chain platform reduces fulfillment and logistics challenges & project delays enabling improved capital delivery execution
Technology Risk	• Modernized core EAM platforms improves application availability minimizing business disruption
Program Delivery Risk	• Agile methodology including development operations and automated testing allows small scale, minimum viable product to be deployed, piloted, and refined • Utilizing Agile enables faster risk reduction by addressing most pressing issues in a shorter timeframe

In addition to reducing risk, the program also improves business performance and delivers material financial benefits through the implementation of six key enhanced capabilities.

Enhanced Capabilities	Value Drivers	Annual Benefit ($M)
Strategic Change, Talent, & Operating Model	• Process efficiency • Improved performance management • Performance oriented culture	N/A[1]
Customer Experience & Interactions	• Increased use of self-service • New service growth • Increased customer satisfaction	$4.5
Advanced Asset Management	• Reduced material spend • Reduced O&M spend reduction • Capex effectiveness	$4.1
Advanced EAM Platform	• Appointments met / kept; reduced penalties • Improved field productivity & utilization • Back office efficiency • Improved operational data / less wasted time analyzing	$14.9
Supply Chain	• Reduced capex project delays • Reduced material spend • Reduced inventory carrying costs	$2.5
Field Technical Training	• Reduced gas safety & compliance violations	$13.5

Total Annual Benefits ($M) $39.6

[1] Capabilities increase likelihood of program success and probability of delivering program benefits.
[2] The threshold benefits are included in the business case and will be part of our rate case submissions. There is a high degree of confidence these will be delivered

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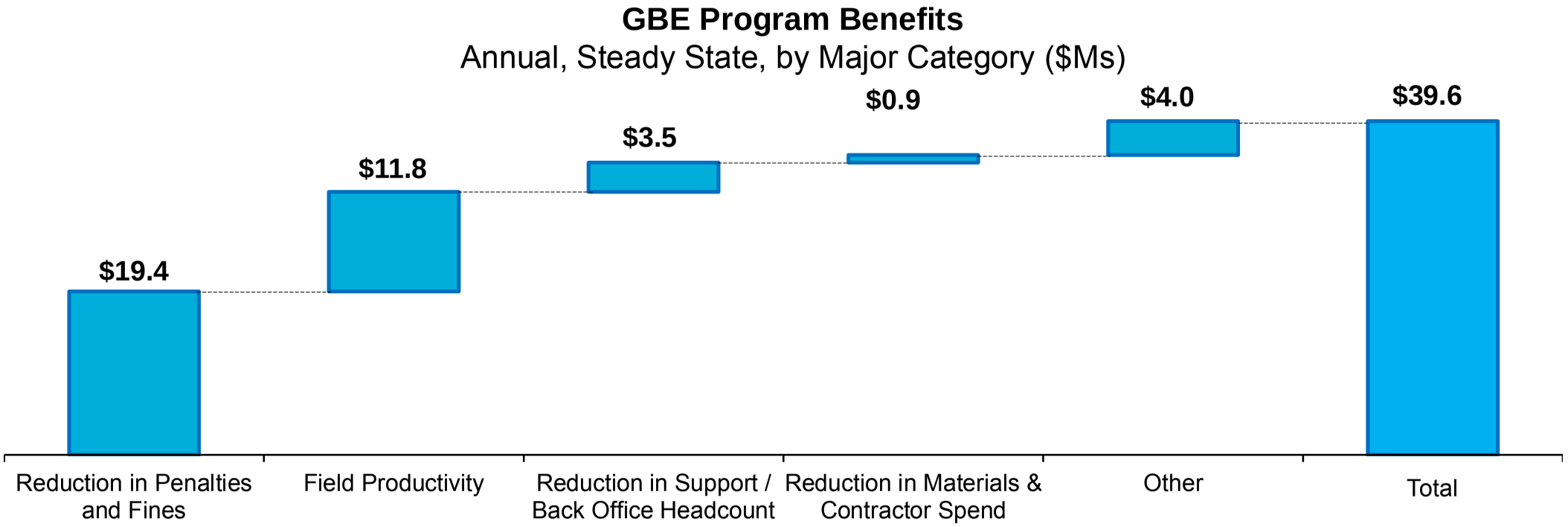
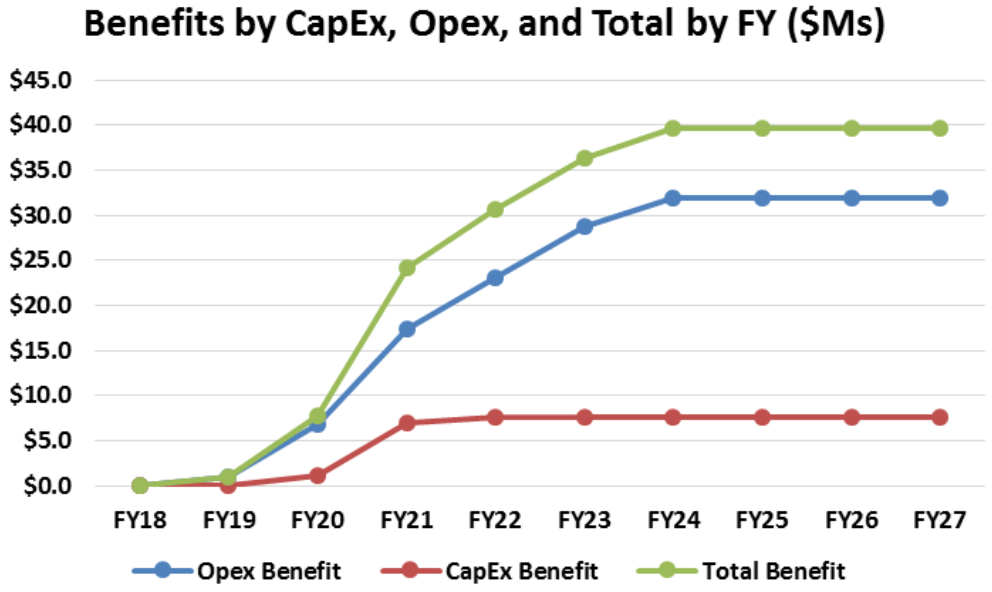
These financial benefits can be categorized into four main categories.



Key Points

- Approximately 50% of the benefits come from reduced penalties and fines; almost all fines are associated with three categories - gas safety, compliance, and service quality
- Field productivity benefits span both M&C and CMS and come from reducing travel time, CGIs, and non-productive time (e.g., available time in CMS), as well as reducing or eliminating repeat visits (e.g., meter verifications)
- Back office and support benefits come from reducing clerical and mapping / records support through improved field mobility capabilities (e.g., electronic time sheets, electronic red-line updates, etc.)

Benefits start to be realized in FY19 and achieve an annual steady state run rate of $39.6M by FY24.



Key Points

- Benefits assumed to be realized after the deployment of the enhanced capabilities
- The first enhanced capabilities to be deployed are Advanced Asset Management Engineering and Technical Training capabilities which start to drive value in FY19
- Start of benefits assumes a lag period after the deployment of the enhanced capabilities to allow for a stabilization period; the typical lag period is between three (3) and nine (9) months depending on the type of benefits
- Benefits ramp from the start of realization to a full annual run rate over a number of months; the typical ramp period is between three (3) and eighteen (18) months depending on the type of benefits; NOTE: benefits that require culture / performance changes typically take longer to ramp to than benefits that require simple technology or process changes

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In addition to financial benefits, significant non-financial benefits are achieved through the implementation of enhanced capabilities.

Operational Benefits

Operations will see a number of benefits:

- **Employee Engagement and Retention:** Robust systems and tools, standardized processes, and simplified work methods make it easier for employees to do their jobs leading to improved engagement, morale, and retention
- **Asset Risk Reduction:** Robust asset investment planning capabilities, tools, and analytics allow for more effective asset replacement and maintenance prioritization thus reducing asset risk for each dollar spent
- **Simplified Planning:** Visibility to all work in one core platform coupled with seamless, electronic integration of work demand with other key platforms (e.g., HR, supply chain) reduces planning complexity
- **Regulatory Relationship:** Simplified regulatory reporting and improved safety and compliance performance will enhance our regulatory relationships
- **Safety:** Advanced and consistent technical training improves employees' technical skills and simplified work methods reduce ambiguity in the field leading to increased safety performance
- **Optionality:** Common platforms, processes, practices and an efficient and effective operating model provides an opportunity to capture inorganic growth opportunities (e.g., M&A)

Customer Benefits

Customers will see a number of benefits:

- **Ability to Convert to Gas:** Increased ability to meet the demand for new gas connections and conversion requests reducing customer energy costs by approximately $1,500 per year [1]
- **Customer Engagement Benefits:** Robust self-service platform will allow our customers to interact with us via the internet and avoid having to call the contact center and spend an average 5 minutes interacting per call; consolidated customer information to allow us to respond quickly and accurately to customer inquires
- **Rate Benefits:** Reduction in O&M and increase in new gas customers results in downward pressure on rates
- **Reliability:** Delivery of our main replacement program ($2Bln in FY18) enables us to reduce the number of leaks and potential outages our customers may face
- **Safety:** Reduction in leaks reduces the probability of a significant event occurrence improving public safety
- **Environmental:** Significant reduction in CO_2 emissions (44 pounds per BTU) by enabling customers to switch from oil heat to natural gas heat [2]

1 Mass DOER 2016/2017 Heating Season Costs
2 Oil – 161.3 pounds per BTU, Natural Gas – 117 pounds per BTU; Source: https://www.eia.gov/environment/emissions/co2_vol_mass.cfm

Backbone capabilities are delivered over three and a half years, prioritized to reduce operational risk and reduce the # of uses on legacy technology, with enhanced capabilities delivered in five years.

	FY2018	FY2019	FY2020	FY2021	FY2022
Work Types Delivered	**RI** • Corrosion • I&R Work	**Other OpCo's**	**RI** • Customer • Leak survey • Leak investigation	**Other OpCo's**	**RI** • Construction • Leak Repair **Other OpCo's**
Capabilities Delivered *Backbone*	• EAM Integration with SAP & Corrosion System • Scheduling & Dispatch w/Spatial Crew Visibility • Basic Field Data Capture • Field Visibility to Maps • Standard GIS Data Model / Improved Data Quality	• Field Visibility to Customer Payment History • Field Acceptance of Credit Card Payments[1] • Field Printing Capability • Call Center Visibility to Collections Status	• Standardized CU Library • Customer Appt. Booking • Contractor Mobility • Mobile Time Tracking • Field Asset Correction and Geolocation • Optimized Routing		
Enhanced Capabilities	• Design & Implemented Operating Model • Defined Value Framework & Value Realization Approach	• Asset Investment Scenario Planning • Leadership Development Capability	• GWD and CU Estimating • 360^0 View of the Customer • Field Crew Customer Interaction Portal • Customer Self Service • Future State Organization and Sustainment	• Projects and Program Management Platform • Complex Design Tools • Auto Work Notifications • Supervisor Mobile Platform • Field Mobile Red Lining & GIS Mobile Mapping	• PM Platform Integration with GIS, EAM, and Asset Accounting • Design and Estimating Stabilization & Sustainment • Spatial Asset Risk Visibility • Overall Program Sustainment Capability
Operational Risk / Technology Portfolio [1]	5300 5250 # of Users on Core Legacy Technology	5000	4550 2200	2000 ***Off Legacy Work Management, GIS, & Mobility Platforms***	

[1] Legacy backbone applications estimated to go from 42 out of 117 total applications currently to 6 out of 22 post implementation

The $458M[1] investment includes $211M for backbone capabilities, $163M for enhanced capabilities, and $84M for supporting investments.

Backbone - $211M
($273 Including IS and Data investments)

$117M

Enterprise Asset Management
- Business Process Architecture
- Work Management & Field Enablement WMFE, Scheduling, & Mobility
- Integrity Management

$43M

Geospatial Information System
- GIS Platform Consolidation
- GIS Data Remediation, Upgrade & Mobility
- GIS-EAM Integration

$23M

Legacy Integration
- PowerPlan Remediation
- SAP / Legacy Integration

$28M

Program Management
- GBE Portfolio Management Office
- Solution Architecture
- Agile Methodology

Enhanced Capabilities- $163M
($185M including Tech Training Investments

$33M

Strategic Change, Talent, & Operating Model
- Operating Model & Value Framework
- Business Readiness & Sustainment
- Program People Strategy

$55M

Customer Experience & Interaction
- Customer & Employee Interaction
- CxT Portal & Channel Management
- CRM Contact Center Front End
- Voice of the Customer, Channel Analytics

$27M

Advanced Asset Management
- Asset Investment Planning & Management
- Advanced Asset Analytics
- Graphic Work Design

$16M

Advanced EAM Platform
- Capital Projects & Program Management
- WMFE Optimization
- Work Forecasting & Planning

$11M

Supply Chain
- Integrated Supply/ Demand Planning
- Inventory Optimization
- Warehouse and Network Optimization

$21M

Legacy Integration & Program Management

Supporting Investments- $84M

$22M

IS Enabling
- Development Operations
- Testing Automation

$40M

Data Management
- Data Quality & Cleansing

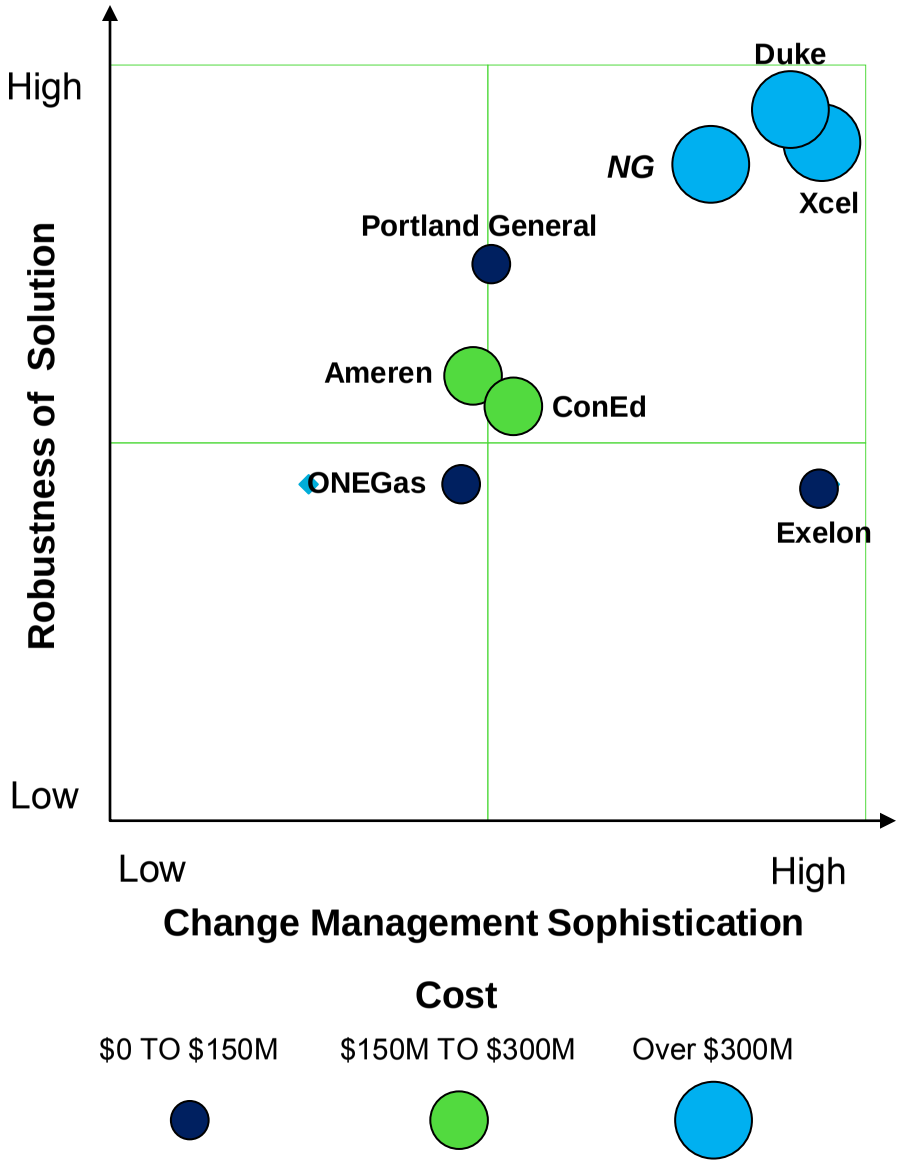
$22M

Field Technical Training
- Technical Training Refresh

[1] Investment does not include contingency of $61M

Size indicates relative cost of initiatives / initiative groupings

The investment relative to the robustness of the proposed solution and change management sophistication is in line with other large programs.



Key Points

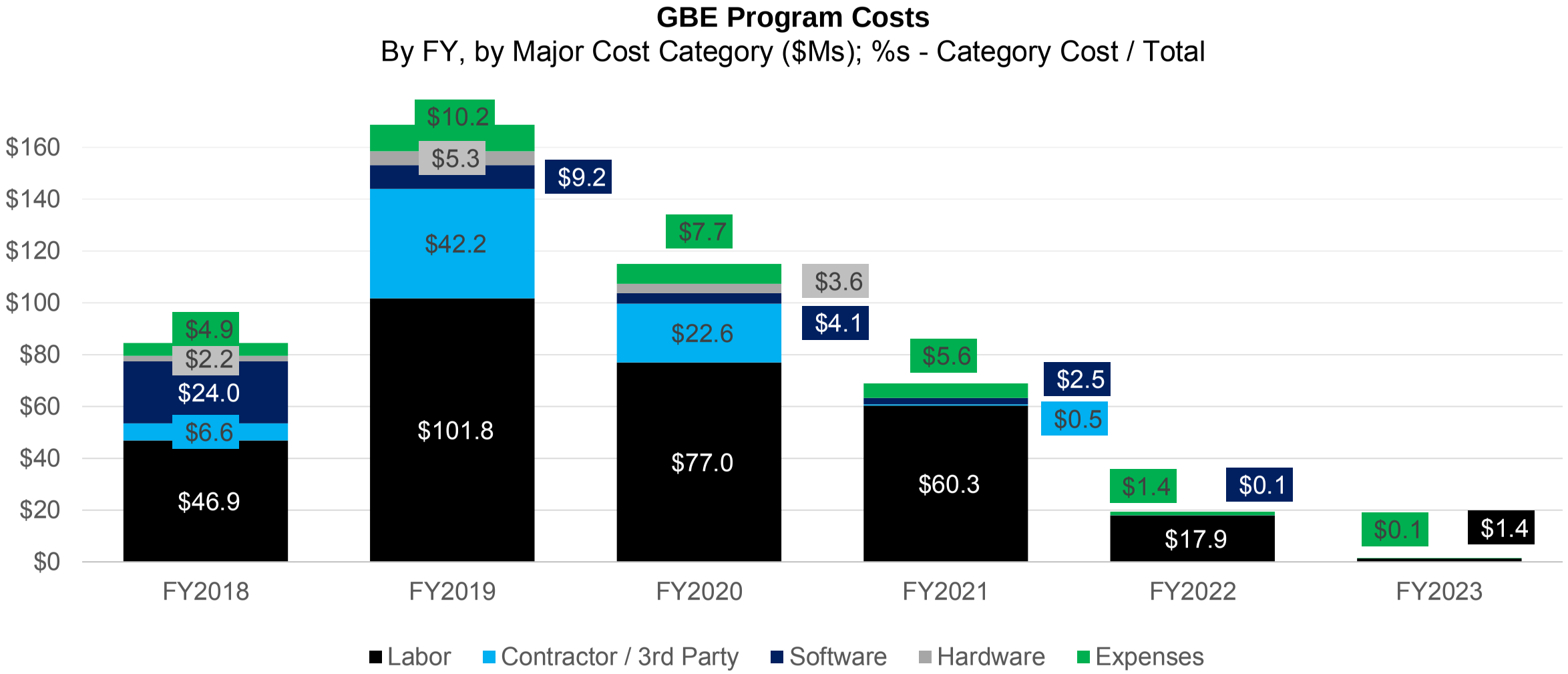
- Core Work and Asset Management with Mobility is a common denominator of the programs
- Duke Energy continues to integrate the acquisitions and has implemented all lines of business including Supply Chain, Generation, Gas and Electric onto a single instance/platform
- Xcel Energy has implemented the first major release for electric in Energy Supply; T&D Operations to follow in Summer 2017
- Portland General Electric is a consolidated platform built on standard processes
- Exelon is focused on merger integration and is more of a technical upgrade with less emphasis on standardization of processes
- ONE Gas standardized processes and platforms and change management was a minimalistic approach

The $458M investment excludes estimated contingency of $61M over the life of the program. [1]

Category & Initiative	FY18	FY19	FY20	FY21	FY22	FY23	Total
Backbone	**($45,365)**	**($80,946)**	**($58,311)**	**($23,868)**	**($2,698)**	**$0**	**($211,187)**
Core EAM Platform	($23,006)	($46,599)	($32,882)	($13,576)	($1,135)	$0	**($117,199)**
GIS	($6,569)	($18,689)	($14,105)	($3,528)	$0	$0	**($42,890)**
Legacy Integration	($10,055)	($6,991)	($3,579)	($2,161)	($548)	$0	**($23,334)**
Program Management	($5,736)	($8,666)	($7,745)	($4,603)	($1,015)	$0	**($27,765)**
Enhanced Capabilities	**($16,094)**	**($63,968)**	**($37,989)**	**($33,177)**	**($10,924)**	**($669)**	**($162,821)**
Advanced Asset Management	($2,544)	($4,187)	($6,936)	($12,660)	($943)	$0	**($27,270)**
Advanced EAM Platform	($150)	($361)	($766)	($8,796)	($6,066)	$0	**($16,139)**
Customer Experience & Interactions	($1,387)	($30,038)	($18,027)	($4,839)	($566)	$0	**($54,857)**
Strategic Change, Talent, & Operating Model	($7,689)	($13,349)	($4,970)	($3,295)	($2,589)	($669)	**($32,561)**
Supply Chain	$0	($9,104)	($1,748)	$0	$0	$0	**($10,852)**
Legacy Integration	($1,300)	($2,613)	($1,504)	($765)	($137)	$0	**($6,319)**
Program Management	($3,024)	($4,317)	($4,038)	($2,821)	($622)	$0	**($14,822)**
Supporting Investments	**($23,017)**	**($23,827)**	**($18,731)**	**($11,885)**	**($5,798)**	**($875)**	**($84,133)**
Data Management	($14,481)	($8,122)	($7,152)	($6,870)	($3,658)	$0	**($40,283)**
Regulatory/ Compliance	($3,900)	($10,500)	($7,100)	($500)	$0	$0	**($22,000)**
IS Enabling	($4,636)	($5,205)	($4,480)	($4,515)	($2,140)	($875)	**($21,850)**
Total Before Contingency	**($84,476)**	**($168,741)**	**($115,032)**	**($68,930)**	**($19,419)**	**($1,544)**	**($458,141)**
Contingency	**($9,383)**	**($20,356)**	**($15,407)**	**($12,068)**	**($3,588)**	**($279)**	**($61,082)**
Total	**($93,859)**	**($189,097)**	**($130,438)**	**($80,998)**	**($23,007)**	**($1,823)**	**($519,223)**

[1] Contingency equals 20% applied to program labor cost only

Labor and 3rd party contractor costs make up 82% of the total program cost.



NOTE: Labor cost is inclusive of the cost internal National Grid labor and external consulting / system integrator labor needed to deliver the program; an exercise in ongoing to determine how much of the internal National Grid labor has been included in the rate base and how much is incremental.

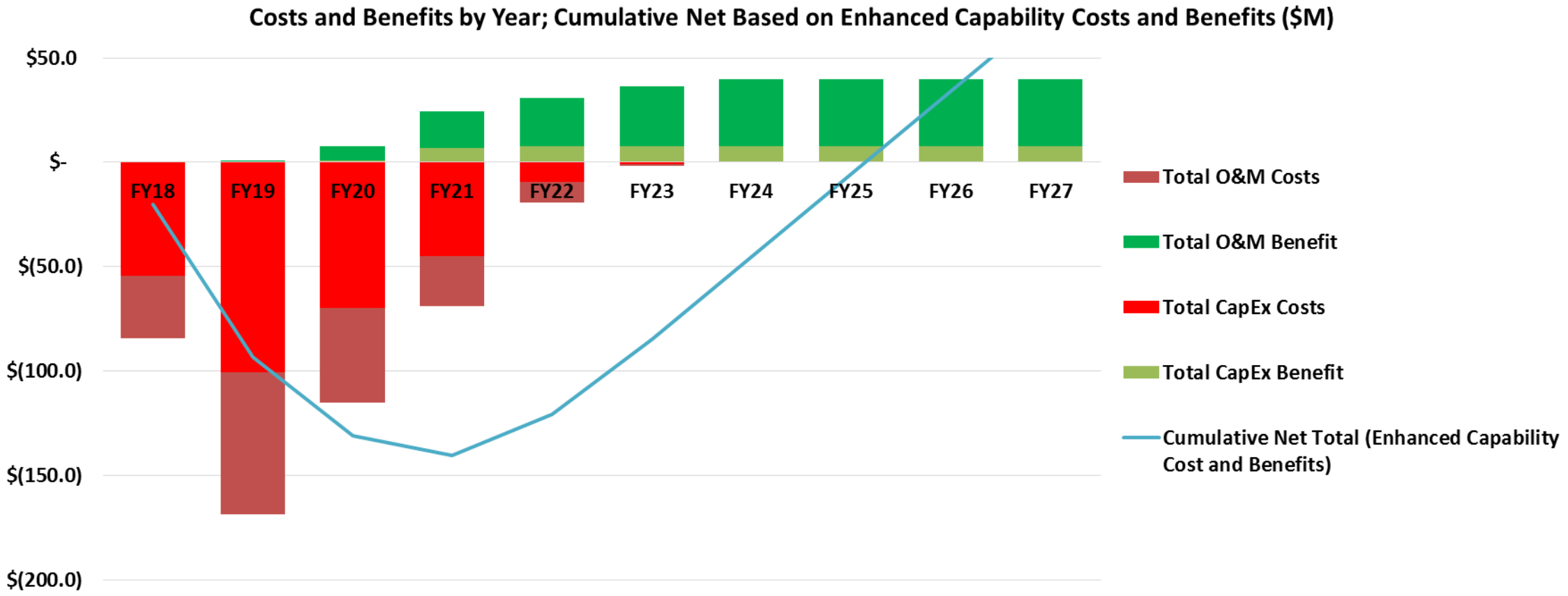
Ongoing run the business costs to support, maintain, and update the new platforms is $22.3M.

Support Cost Category	FY18	FY19	FY20	FY21	FY22	FY23
Software License Maintenance/Subscriptions	$ 1,085,149	$ 3,396,499	$ 7,933,079	$ 10,851,487	$ 10,851,487	$ 10,851,487
Hardware License Maintenance / Mobile Subscriptions	$ 516,033	$ 1,615,176	$ 3,772,506	$ 5,160,330	$ 5,160,330	$ 5,160,330
Internal & External Labor	$ -	$ 2,817,960	$ 5,635,920	$ 5,635,920	$ 5,635,920	$ 5,635,920
Gas Business Enablement Support Cost	$ 1,601,182	$ 7,829,635	$ 17,341,505	$ 21,647,737	$ 21,647,737	$ 21,647,737
Reduction in Ongoing Legacy Application Support (Net of Any Increase)	$ -	$ 192,717	$ 658,866	$ 1,621,222	$ 2,272,003	$ 2,272,003
Incremental Gas Business Enablement Support Cost	**$ 1,895,961**	**$ 8,559,572**	**$ 18,837,649**	**$ 22,974,305**	**$ 22,323,525**	**$ 22,323,525**

Key Points

- Support costs ramp from FY18 to a steady state run rate of $24.6M in FY21
- As a result of replacing a significant portion of the legacy application portfolio, existing ongoing legacy support would decrease by $2.3M annually per year by FY22 offsetting the increase in new support costs
- Software License Maintenance / Subscriptions consists of Software as a Service (SaaS) support for the EAM, scheduling, mobility, IS development operations, visualization, and big data platforms
- Traditional license maintenance support model is utilized for the GIS, PowerPlan, and Copperleaf platforms as well as all other software packages implemented as part of the program
- Hardware License Maintenance / Mobile Subscriptions consist of traditional hardware license maintenance for those platforms not supported via a SaaS model (e.g., servers, mobile devices, etc.)
- Internal and external represent the National Grid IS and application maintenance provides required to support those platforms not supported via a SaaS model

Aligning the investment in enhanced capabilities against the benefits yields a break even in early FY26.



Key Points

- Full deployment of the advanced capabilities is assumed to occur in FY21; some capabilities will be deployed in FY22 but the major capabilities will have been deployed by end of FY21
- Break even point occurs within the first two months of FY26, representing a 4Y 2M payback period; key assumption - year 1 is FY22

The investment yields a 10 year NPV of ~$100M assuming the life of the solutions implemented is 15 years driving recurring investment to sustain benefits.

Free Cash Flow

($000)

		Type	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
Opex Benefits																	
	Capacity Savings		-	-	1,242	6,990	7,814	8,486	8,722	8,722	8,722	8,722	8,722	8,722	8,722	8,722	8,722
	Compliance		-	876	5,070	9,577	13,254	16,739	19,406	19,406	19,406	19,406	19,406	19,406	19,406	19,406	19,406
	Spend Reduction		-	79	425	754	2,010	3,527	3,841	3,841	3,841	3,841	3,841	3,841	3,841	3,841	3,841
Total Opex Benefits			-	955	6,737	17,321	23,077	28,752	31,969	31,969	31,969	31,969	31,969	31,969	31,969	31,969	31,969
Opex Expenses																	
	Labor	Investment	(9,571)	(22,379)	(10,181)	(7,052)	(3,676)	(534)	-	-	-	-	-	-	-	-	-
	Contractor / 3rd Party	Investment	(3,150)	(10,152)	(6,823)	(500)	-	-	-	-	-	-	-	-	-	-	-
	Program Expenses	Investment	(1,101)	(2,389)	(833)	(465)	(262)	(21)	-	-	-	-	-	-	-	-	-
	SW / HW Support	Maintenance	-	(577)	(2,866)	(6,229)	(7,393)	(7,131)	(7,131)	(7,131)	(7,131)	(7,131)	(7,131)	(7,131)	(7,131)	(7,131)	(7,131)
Total Opex Expenses			(13,823)	(35,497)	(20,704)	(14,245)	(11,332)	(7,685)	(7,131)	(7,131)	(7,131)	(7,131)	(7,131)	(7,131)	(7,131)	(7,131)	(7,131)
EBITDA			**(13,823)**	**(34,542)**	**(13,966)**	**3,076**	**11,746**	**21,067**	**24,838**	**24,838**	**24,838**	**24,838**	**24,838**	**24,838**	**24,838**	**24,838**	**24,838**
Depreciation (Book, Net)			(179)	(1,324)	(2,084)	(2,629)	(2,611)	(2,393)	(2,171)	(1,949)	(1,728)	(1,506)	(1,284)	(1,063)	(841)	(619)	(397)
EBIT			**(14,002)**	**(35,866)**	**(16,051)**	**447**	**9,135**	**18,674**	**22,667**	**22,889**	**23,111**	**23,332**	**23,554**	**23,776**	**23,998**	**24,219**	**24,441**
Income Taxes			5,601	14,346	6,420	(179)	(3,654)	(7,470)	(9,067)	(9,156)	(9,244)	(9,333)	(9,422)	(9,510)	(9,599)	(9,688)	(9,776)
Net Income			**(8,401)**	**(21,520)**	**(9,630)**	**268**	**5,481**	**11,205**	**13,600**	**13,733**	**13,866**	**13,999**	**14,132**	**14,265**	**14,399**	**14,532**	**14,665**
Depreciation (Book, Net)			179	1,324	2,084	2,629	2,611	2,393	2,171	1,949	1,728	1,506	1,284	1,063	841	619	397
Net Capex			(6,171)	(39,484)	(26,217)	(18,783)	612	7,527	7,646	7,646	7,646	7,646	7,646	7,646	7,646	7,646	7,646
Deferred Income Taxes			281	2,335	5,001	5,963	5,616	4,033	2,915	2,293	1,335	94	(899)	(1,529)	(1,704)	(1,753)	(1,801)
Free Cash Flow			**$ (14,112)**	**$ (57,345)**	**$ (28,762)**	**$ (9,923)**	**$ 14,320**	**$ 25,157**	**$ 26,333**	**$ 25,622**	**$ 24,575**	**$ 23,246**	**$ 22,164**	**$ 21,445**	**$ 21,182**	**$ 21,044**	**$ 20,907**

NPV	
3-year	$16,004
5-year	$41,427
10-year	$99,389

Terminal Value Calculation	
Average 15 Year Cash Flows*	$ 9,057
Cost/Benefit Growth Rate**	2.00%
Rate of Return	9.98%
Terminal Value	$ 113,495

* Terminal value average cash flows assumes the solution will need to be replaced every 15 years to maintain the benefit stream; terminal value annual cash flow is the average annual free cash flow over the 15 year period from FY18 to FY32.
** Growth rate is equivalent to the rate of inflation

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Appendix

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Key business case assumptions and inputs.

Rates

External

Application Maintenance Provider Onshore	$3,800
Application Maintenance Provider Offshore	$1,600
Business/Management Consultant Onshore	$2,315
Business/Management Consultant Offshore	$1,240
System Integrator Onshore	$1,680
System Integrator Offshore	$390

NOTE: External rates have an annual 3% escalation

Internal

Client Executive Onshore	$1,430
Client Business – Non-Executive Onshore	$908
Client IS – Non-Executive Onshore	$880

NOTE: Internal rates have an annual 2% escalation

Expenses

17% on External / Onshore Labor
10% on National Grid Labor
NOTE: Client rates inclusive of 10% expenses; external rates exclude expenses

Contingency

20% contingency added to labor

General Operating Company Allocator

New York	30.10%
New York	21.55%
New York	12.44%
Massachusetts	23.29%
Massachusetts	5.21%
Rhode Island	7.41%

NOTE: General allocator used for costs and some benefits

Days / Horus

Days Per Month	20
Hours Per Day	8
Hours Per Month	160

Benefits

Lag Period

Lag period defined as the time between deployment of a capability (e.g., system, process, etc.) and the time benefits start to be achieved. Benefit lag period can be 3, 6, or 9 months depending on the type of benefits.

Ramp

Ramp defined as the time benefits start to be achieved to the time benefits are at full steady state run rate. Ramps can be 0 months (e.g., benefits realized immediately) to 36 months and like lag period, depends on the type of benefits.

Options, investment, financial benefits, and payback

Option	Investment	Financial Benefits	Payback
1 Tech Stabilization	$15M to $20M	None	N/A [1]
2 Like for Like Replacement	$174M	None	N/A [1]
3 Backbone Only	$273M	None	N/A [1]
4 Value Oriented – Jurisdiction Deployment	$458M ○ *Enhanced Capabilities: $185M*	$39.6M	4Y 4M [2]
5 Value Oriented – Accelerated Deployment	$466M ○ *Enhanced Capabilities: $193M*	$39.6M	4Y 2M [2]

[1] No payback analysis completed as capabilities that drive value (e.g., enhanced capabilities) are not being implemented in these three options

[2] Payback based on the implementation of enhanced capabilities that drive value; the start of payback assumed to be Year 5 which is the full deployment of the enhanced capabilities; payback calculation = enhanced capability cost / enhanced capability benefits

Work streams and initiatives

Work Streams	Initiatives					
GBE Portfolio Office						
Business Enablement	Program Level People Strategy	Operating Model & Value Framework	Program Business Readiness & Sustainment	Leadership Capability		
Work Management	Process Architecture	Work Management and Field Enablement	Work Management Analytics	Projects & Program Management		
Asset Management	Engineering, Design, Estimating & Mobility	Asset Investment Planning and Management	Integrity Management	Asset - Advanced Analytics		
Regulatory/ Compliance	Standards Operating Procedure Documentation	Document Management	Technical Training			
Customer Engagement	Customer Interaction	Customer Employee Journey	CRM / Contact Center	Channel Analytics		
Data Management	Data Management	Data Quality & Cleansing	Remediation & Integration			
Supply Chain	SC Process Architecture	Integrated Supply & Demand Planning	Capability Building	SC Master Data Improvements	Inventory Optimization	Warehouse & Network Optimization
Information Systems Enabling						

Cost by initiative category and backbone, enhanced capabilities, and supporting investments

Initiative Category	Backbone $Ms	Enhanced Capabilities $Ms	Supporting Investments $Ms	Total Cost $Ms [1, 2]	% of Total Investment
Advanced Asset Management		$27		$27	6%
Advanced EAM Platform		$16		$16	4%
Core EAM Platform	$117			$117	26%
Customer Experience & Interactions		$55		$55	12%
Data Management			$40	$40	9%
Field Technical Training	$43			$43	9%
GIS			$22	$22	5%
IS Enabling	$23	$6		$30	6%
Legacy Integration	$28	$15		$43	9%
Program Management			$22	$22	5%
Strategic Change, Talent, & Operating Model		$33		$33	7%
Supply Chain		$11		$11	2%
Total before Contingency	$211	$163	$84	$458	100%
% of Total	46%	36%	18%		
Contingency				$61	
Total				**$519**	

[1] Costs include expenses (17% external, onshore labor cost; 10% internal labor costs); cost includes HW/SW)
[2] Average Daily Rates: NG - $845; External - $1,001 (External Onshore - $1,711; External Offshore - $326)
[3] Contingency equals 20% applied to labor cost only; not applied to support (RTB) costs

Cost by operating company, capex / opex ($000s)

CapEx Cost Incurred	FY18	FY19	FY20	FY21	FY22	FY23	Total [1,2]
Brooklyn Union Gas (KEDNY)	($16,341)	($30,265)	($21,051)	($13,567)	($2,896)	($222)	**$ (84,342)**
Keyspan Gas East (KEDLI)	($11,699)	($21,668)	($15,071)	($9,713)	($2,073)	($159)	**$ (60,384)**
NiagraMohawk Gas	($6,753)	($12,508)	($8,700)	($5,607)	($1,197)	($92)	**$ (34,857)**
Boston Gas	($12,644)	($23,418)	($16,288)	($10,498)	($2,240)	($172)	**$ (65,260)**
Colonial Gas	($2,828)	($5,239)	($3,644)	($2,348)	($501)	($38)	**$ (14,599)**
Narragansett Gas	($4,023)	($7,451)	($5,182)	($3,340)	($713)	($55)	**$ (20,763)**
Total:	**$ (54,288)**	**$ (100,549)**	**$ (69,937)**	**$ (45,073)**	**$ (9,620)**	**$ (738)**	**$ (280,205)**

Opex Cost Incurred	FY18	FY19	FY20	FY21	FY22	FY23	Total [1,2]
Brooklyn Union Gas (KEDNY)	($9,086)	($20,526)	($13,573)	($7,181)	($2,950)	($243)	**$ (53,559)**
Keyspan Gas East (KEDLI)	($6,505)	($14,695)	($9,718)	($5,141)	($2,112)	($174)	**$ (38,345)**
NiagraMohawk Gas	($3,755)	($8,483)	($5,610)	($2,968)	($1,219)	($100)	**$ (22,135)**
Boston Gas	($7,031)	($15,882)	($10,502)	($5,556)	($2,282)	($188)	**$ (41,441)**
Colonial Gas	($1,573)	($3,553)	($2,349)	($1,243)	($511)	($42)	**$ (9,270)**
Narragansett Gas	($2,237)	($5,053)	($3,341)	($1,768)	($726)	($60)	**$ (13,185)**
Total:	**$ (30,188)**	**$ (68,192)**	**$ (45,094)**	**$ (23,857)**	**$ (9,800)**	**$ (806)**	**$ (177,936)**

Total Cost Incurred	FY18	FY19	FY20	FY21	FY22	FY23	Total [1,2]
Brooklyn Union Gas (KEDNY)	($25,427)	($50,791)	($34,624)	($20,748)	($5,845)	($465)	**$ (137,901)**
Keyspan Gas East (KEDLI)	($18,204)	($36,364)	($24,789)	($14,854)	($4,185)	($333)	**$ (98,729)**
NiagraMohawk Gas	($10,509)	($20,991)	($14,310)	($8,575)	($2,416)	($192)	**$ (56,993)**
Boston Gas	($19,674)	($39,300)	($26,791)	($16,054)	($4,523)	($360)	**$ (106,701)**
Colonial Gas	($4,401)	($8,791)	($5,993)	($3,591)	($1,012)	($80)	**$ (23,869)**
Narragansett Gas	($6,260)	($12,504)	($8,524)	($5,108)	($1,439)	($114)	**$ (33,948)**
Total:	**$ (84,476)**	**$ (168,741)**	**$ (115,032)**	**$ (68,930)**	**$ (19,419)**	**$ (1,544)**	**$ (458,141)**

[1] Costs include expenses (17% external, onshore labor cost; 10% internal labor costs); cost includes HW/SW)
[2] Average Daily Rates: NG - $845; External - $1,001 (External Onshore - $1,711; External Offshore - $326)

Capex / opex benefit splits

Job Category	CapEx	O&M	Notes
Analysts	15%	85%	Assume some work performed as part of capital program
CMS Clerk (Electric and Gas)	10%	90%	FY18 CMS workplan; assume same split as field worker
CMS Field Worker - Other CMS (Electric and Gas)	10%	90%	FY18 CMS workplan
CMS Field Worker - Collections (Electric and Gas)	0%	100%	FY18 CMS workplan
CMS Field Worker - Meter Verifications (Electric and Gas)	0%	100%	FY18 CMS workplan
CMS Field Supervisor (Electric and Gas)	5%	95%	Assume less capex than field worker as some administrative work charged as O&M
Dispatcher	10%	90%	FY18 CMS workplan split
Dispatch Supervisor	5%	95%	Assumed less capex than dispatcher as some administrative work charges as O&M
Engineer – AM	30%	70%	NG Finance
Engineer / Designer – Systems Engineering	70%	30%	NG Finance
Mapper	70%	30%	NG Finance
Field Ops Field Worker (M&C)	45%	55%	Based on FY17 OT report with base and OT hours and $ (Feb through April)
Field Ops Field Worker (I&R)	13%	87%	Based on FY17 OT report with base and OT hours and $ (Feb through April)
Field Ops Field Worker (Corrosion)	13%	87%	Based on FY17 OT report with base and OT hours and $ (Feb through April)
Field Ops Field Worker (Damage Prevention)	19%	81%	Based on FY17 OT report with base and OT hours and $ (Feb through April)
Field Ops Supervisor (PM&CC)	71%	29%	Based on FY17 OT report with base and OT hours and $ (Feb through April)
Field Ops Supervisor (All)	32%	68%	Based on FY17 OT report with base and OT hours and $ (Feb through April) – average of all work
Field Ops Support (Coordinator)	32%	68%	Assume same as supervisor – average of all work
Field Ops Support (Clerk)	32%	68%	Assume same as supervisor – average of all work
QA/QC Inspector	0%	100%	Based on type of work
Project Manager	71%	29%	Based on type of work – PM&CC
Call Center Rep	0%	100%	Based on type of work
Material Handler / Stock Clerk	0%	100%	Based on type of work
Materials	87%	13%	Based on category
Inventory Carrying Cost	0%	100%	Based on category
Inventory Write Offs	0%	100%	Based on category
Fleet Operating Cost	0%	100%	Based on category; includes mileage, minor maintenance and parts
Alliance Contractor Spend (Capital Projects)	90%	10%	Based on category

Sources: FY18 CMS Work Plan – Annemarie Westerlind NG Resource Planning; FY17 OT Report – Artie Georgacopoulos NG Resource Planning; NG Finance Review and Confirmation

Capex / opex cost splits by initiative (1 of 2)

Initiatives	Releases	CapEx	Opex
Gas Business Enablement Portfolio Management Office	Portfolio Management Leadership	0%	100%
AIPM	Asset Analytics Integration	100%	0%
	EAM-FIN Integration	100%	0%
	Enhancements	95%	5%
	GIS (GWD/CU) - PPM Integration	100%	0%
AM Program Leadership	AM Program Leadership	0%	100%
Asset - Advanced Analytics	Use Case No.1 - Asset Risk	95%	5%
Business Architecture Design	Business Architecture Design	80%	20%
Customer Experience Program Leadership	Customer Experience Program Leadership	0%	100%
Customer Interaction	Customer Interaction	95%	5%
	CxT Portal & Channel Management	95%	5%
	Large Commercial & Landlord Interaction	95%	5%
Data Management	Building An Advanced Analytics Capability	0%	100%
	Building Score Cards & Metrics Capability	0%	100%
	Data Enrichment Through Record Digitization	0%	100%
	Data Management Implementation (Quality & Cleansing)	0%	100%
	Enable the Data Archive Process	90%	10%
	Pre GBE Deployment & Data Profiling	0%	100%
	Data Governance Assessment & Implementation	0%	100%
	Data Management & Governance Program Leadership	0%	100%
Enabling Capabilities	Comprehensive Integration Services (Enhancements)	100%	0%
	Development Operations & BPA Enablement	80%	20%
	IS Operating Model (Delivery / Support, Run)	0%	100%
	Security Enhancements (CASB, MDM)	100%	0%
	Testing Center of Excellence	80%	20%
Engineering, Design, Estimating & Mobility	Complex Design (CAD) & Estimating (ESW)	90%	10%
	GIS Upgrade/ Migration & GIS Mobility	95%	5%
	GIS Data Remediation	0%	100%
	Design & Estimating Process Stabilization	0%	100%
	Design (GWD), Estimating (CU), & Mobility	90%	10%
	GIS-EAM Integration	100%	0%
Integrity Management	Additional IM Modules	90%	10%
	Integrity Management Integrations	100%	0%
	Pressure Reg Station (Prelim Work)	0%	100%
	Risk Management (Tx Mains & Dx Mains)	90%	10%
Integrated Supply & Demand Planning	Construction Planning	0%	100%
	Maintenance & Inspection Planning	0%	100%
	Program and Project Management Planning	0%	100%
Integrated Supply Feasibility Evaluation and Strategy	Integrated Supply Feasibility Assessment	0%	100%
Inventory Optimization	Inventory Optimization	0%	100%
	Inventory Strategy	0%	100%
Operating Model & Value Framework	Business Architecture - Organization Design & Transition	0%	100%
	Operations Performance, Governance & Value Realization	0%	100%
	Skills/ Capability Assessment & Curriculum Redesign	0%	100%
	Future State Culture Definition	0%	100%
	Leadership Capability Development	0%	100%

Source: NG Finance / Technical Accounting – Enzo Ciccia

Capex / opex cost splits by initiative (2 of 2)

Initiatives	Releases	CapEx	Opex
Program Business Readiness & Sustainment	Program Business Readiness	0%	100%
	Program Business Sustainment	0%	100%
	Knowledge Transition & Collaboration Strategy	0%	100%
Program Level People Strategy	Program Learning Management	25%	75%
	Program Transformational Change Office	15%	85%
	Workforce Strategy Planning & Implementation Support	0%	100%
	Labor Contract Strategy & Implementation Support	0%	100%
Projects & Program Management	Core Projects & Program Management	90%	10%
Remediation & Integration	Powerplan Remediation	90%	10%
	SAP and Application Integration Development- Release 1	100%	0%
	SAP and Application Integration Development- Release 2	100%	0%
	SAP and Application Integration Development- Release 3	100%	0%
Regulatory/ Compliance	Technical Training	14%	86%
SC - Business Architecture Design	SC - Business Architecture Design	0%	100%
Structured Experiences	Customer & Employee Journey Mobilization	0%	100%
Supply Chain Master Data Improvements	Data Cleansing Execution	0%	100%
	Defined Data Cleansing Approach	0%	100%
Supply Chain Program Leadership	Supply Chain Program Leadership	0%	100%
Supporting through Data	Campaign Management	0%	100%
	Channel Analytics	0%	100%
Solution Architects & Agile Coaches	Solution Architects & Agile Coaches	90%	10%
Support Interaction	CRM / Contact Center	95%	5%
	Employee Support Interaction	95%	5%
Technology Initiatives	Application (Environment) Infrastructure	100%	0%
	Mobility CoE & End-User Computing	100%	0%
	Network Enhancements	100%	0%
	Operations/System Monitoring	95%	5%
WMFE Program Leadership	WMFE Program Leadership	0%	100%
Work Management & Field Enablement	Company Driven Work: Collections and non-Appointment Offs	90%	10%
	Construction Work & Leak Repair	90%	10%
	Corrosion and I&R Work	90%	10%
	CU Governance & Library - process	90%	10%
	Customer, Leak Investigation & Inspections	90%	10%
	PowerPlan Integration & Enhancements	90%	10%
	WMFE Optimization	90%	10%
	Work Forecasting & Planning - solution	90%	10%
Warehousing and Network Optimization	Networking Transportation & Optimization Analysis	0%	100%
	Networking Transportation & Optimization Implementation	0%	100%
	Warehousing Optimization	0%	100%

Source: NG Finance / Technical Accounting – Enzo Ciccia

Benefit types

Type	Description	Examples
Type 1	▪ Have a direct and certain impact on bottom line and there is a clear cause and effect relationship between the project and benefit. Direct P&L impact ▪ Is a permanent reduction in costs / assets or increased revenue ▪ Stated in dollars ($)	▪ Reduction in labor ▪ Scrap or Material reductions ▪ Inventory reduction ▪ Incremental sales
Type 2	▪ Not a direct and immediate bottom line impact ▪ Consists of expenses re-assigned, resources freed up or future cost avoidance ▪ Often stated in terms such as “5 person-days freed up”, etc.	▪ Existing resources (capital or human) are re-assigned ▪ Future resource (capital or human) requirements are reduced because of process improvements ▪ Space requirements are reduced but we are unable to vacate the building
Type 3	▪ Difficult to establish a clear cause and effect relationship to the bottom line ▪ Typically operational / non-financial savings ▪ Typically stated in units specific to the benefit (e.g. SAIFI)	▪ Safety ▪ Customer satisfaction and loyalty ▪ Employee engagement ▪ Mandatory statutory requirements

SOURCE: National Grid Corporate Finance

Annual benefits by category, capex / opex, and type

Area		Threshold Benefit
Customer Experience & Interactions	**Total**	**$4.5**
	CapEx:	$0.0
	Opex:	$4.5
	Type 1:	$0.6
	Type 2:	$3.9
Asset Management	**Total**	**$4.1**
	CapEx:	$1.0
	Opex:	$3.1
	Type 1:	$2.0
	Type 2:	$2.1
EAM / Work Management Platform	**Total**	**$14.9**
	CapEx:	$6.4
	Opex:	$8.5
	Type 1:	$1.8
	Type 2:	$13.1
Supply Chain	**Total**	**$2.5**
	CapEx:	$2.2
	Opex:	$0.3
	Type 1:	$0.0
	Type 2:	$2.5
Field Technical Training	**Total**	**$13.5**
	CapEx:	$0.0
	Opex:	$13.5
	Type 1:	$0.0
	Type 2:	$13.5
Totals	**Total**	**$39.6**
	CapEx:	**$9.7**
	Opex:	**$29.9**
	Type 1:	**$4.4**
	Type 2:	**$35.2**

Cost by Initiative, capex / opex (000's)

Category & Initiative	Total Cost	Total CapEx Cost	CapEx as % of Total	Total O&M Cost	O&M as % of Total
Backbone	**($211,187)**	**($151,315)**	**54%**	**($59,872)**	**34%**
Core EAM Platform	**($117,199)**	**($102,750)**	**37%**	**($14,448)**	**8%**
Business Architecture Design	($3,755)	($3,004)	1%	($751)	0%
WMFE Program Leadership	($5,201)	$0	0%	($5,201)	3%
Work Management & Field Enablement	($98,148)	($90,340)	32%	($7,808)	4%
Data Management	($2,422)	($2,179)	1%	($242)	0%
Enabling Capabilities	($79)	($79)	0%	$0	0%
Integrity Management	($4,333)	($3,916)	1%	($417)	0%
Technology Initiatives	($3,262)	($3,232)	1%	($29)	0%
GIS	**($42,890)**	**($19,131)**	**7%**	**($23,760)**	**13%**
AM Program Leadership	($2,804)	$0	0%	($2,804)	2%
Engineering, Design, Estimating & Mobility	($40,086)	($19,131)	7%	($20,956)	12%
Legacy Integration	**($23,334)**	**($22,825)**	**8%**	**($509)**	**0%**
Remediation & Integration	($23,334)	($22,825)	8%	($509)	0%
Program Management	**($27,765)**	**($6,609)**	**2%**	**($21,156)**	**12%**
Gas Business Enablement Portfolio Management Office	($20,378)	$0	0%	($20,378)	11%
Solution Architects & Agile Coaches	($7,387)	($6,609)	2%	($778)	0%
Performance	**($162,821)**	**($96,673)**	**35%**	**($66,148)**	**37%**
Advanced Asset Management	**($27,270)**	**($23,091)**	**8%**	**($4,179)**	**2%**
AM Program Leadership	($1,948)	$0	0%	($1,948)	1%
AIPM	($7,109)	($7,048)	3%	($61)	0%
Asset - Advanced Analytics	($3,898)	($3,703)	1%	($195)	0%
Engineering, Design, Estimating & Mobility	($14,314)	($12,340)	4%	($1,974)	1%
Advanced EAM Platform	**($16,139)**	**($13,634)**	**5%**	**($2,505)**	**1%**
WMFE Program Leadership	($991)	$0	0%	($991)	1%
Projects & Program Management	($4,756)	($4,281)	2%	($476)	0%
Work Management & Field Enablement	($10,392)	($9,353)	3%	($1,039)	1%
Customer Experience & Interactions	**($54,857)**	**($47,913)**	**17%**	**($6,945)**	**4%**
Customer Experience Program Leadership	($2,919)	$0	0%	($2,919)	2%
Customer Interaction	($21,754)	($20,666)	7%	($1,088)	1%
Structured Experiences	($1,387)	$0	0%	($1,387)	1%
Support Interaction	($28,681)	($27,247)	10%	($1,434)	1%
Supporting through Data	($117)	$0	0%	($117)	0%
Strategic Change, Talent, & Operating Model	**($32,561)**	**($3,578)**	**1%**	**($28,983)**	**16%**
Operating Model & Value Framework	($10,239)	$0	0%	($10,239)	6%
Program Business Readiness & Sustainment	($7,283)	$0	0%	($7,283)	4%
Program Level People Strategy	($15,040)	($3,578)	1%	($11,461)	6%
Supply Chain	**($10,852)**	**$0**	**0%**	**($10,852)**	**6%**
Legacy Integration	**($6,319)**	**($6,319)**	**2%**	**$0**	**0%**
Remediation & Integration	($6,319)	($6,319)	2%	$0	0%
Program Management	**($14,822)**	**($2,138)**	**1%**	**($12,684)**	**7%**
Gas Business Enablement Portfolio Management Office	($12,490)	$0	0%	($12,490)	7%
Solution Architects & Agile Coaches	($2,333)	($2,138)	1%	($194)	0%
Supporting Investments	**($84,133)**	**($32,217)**	**11%**	**($51,916)**	**29%**
Data Management	**($40,283)**	**($11,100)**	**4%**	**($29,183)**	**16%**
Regulatory/ Compliance	**($22,000)**	**($3,000)**	**1%**	**($19,000)**	**11%**
IS Enabling	**($21,850)**	**($18,117)**	**6%**	**($3,734)**	**2%**
Enabling Capabilities	($18,186)	($14,452)	5%	($3,734)	2%
Technology Initiatives	($3,665)	($3,665)	1%	$0	0%
Total	**($458,141)**	**($280,205)**	**61%**	**($177,936)**	**39%**

Cost by initiative, year over year (000's)

Category & Initiative	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	Total
Backbone	**($45,365)**	**($80,946)**	**($58,311)**	**($23,868)**	**($2,698)**	**$0**	**($211,187)**
Core EAM Platform	**($23,006)**	**($46,599)**	**($32,882)**	**($13,576)**	**($1,135)**	**$0**	**($117,199)**
Business Architecture Design	($3,755)	$0	$0	$0	$0	$0	($3,755)
WMFE Program Leadership	($786)	($1,894)	($1,999)	($521)	$0	$0	($5,201)
Work Management & Field Enablement	($13,235)	($40,756)	($29,967)	($13,055)	($1,135)	$0	($98,148)
Data Management	$0	($2,347)	($75)	$0	$0	$0	($2,422)
Enabling Capabilities	($79)	$0	$0	$0	$0	$0	($79)
Integrity Management	($2,476)	($1,015)	($841)	$0	$0	$0	($4,333)
Technology Initiatives	($2,674)	($587)	$0	$0	$0	$0	($3,262)
GIS	**($6,569)**	**($18,689)**	**($14,105)**	**($3,528)**	**$0**	**$0**	**($42,890)**
AM Program Leadership	($654)	($941)	($964)	($245)	$0	$0	($2,804)
Engineering, Design, Estimating & Mobility	($5,915)	($17,748)	($13,141)	($3,282)	$0	$0	($40,086)
Legacy Integration	**($10,055)**	**($6,991)**	**($3,579)**	**($2,161)**	**($548)**	**$0**	**($23,334)**
Remediation & Integration	($10,055)	($6,991)	($3,579)	($2,161)	($548)	$0	($23,334)
Program Management	**($5,736)**	**($8,666)**	**($7,745)**	**($4,603)**	**($1,015)**	**$0**	**($27,765)**
Gas Business Enablement Portfolio Management Office	($4,082)	($5,318)	($5,360)	($4,603)	($1,015)	$0	($20,378)
Solution Architects & Agile Coaches	($1,654)	($3,348)	($2,385)	$0	$0	$0	($7,387)
Performance	**($16,094)**	**($63,968)**	**($37,989)**	**($33,177)**	**($10,924)**	**($669)**	**($162,821)**
Advanced Asset Management	**($2,544)**	**($4,187)**	**($6,936)**	**($12,660)**	**($943)**	**$0**	**($27,270)**
AM Program Leadership	($454)	($654)	($670)	($170)	$0	$0	($1,948)
AIPM	($2,089)	($1,612)	($799)	($2,609)	$0	$0	($7,109)
Asset - Advanced Analytics	$0	$0	$0	($3,780)	($118)	$0	($3,898)
Engineering, Design, Estimating & Mobility	$0	($1,921)	($5,467)	($6,100)	($825)	$0	($14,314)
Advanced EAM Platform	**($150)**	**($361)**	**($766)**	**($8,796)**	**($6,066)**	**$0**	**($16,139)**
WMFE Program Leadership	($150)	($361)	($381)	($99)	$0	$0	($991)
Projects & Program Management	$0	$0	$0	($3,482)	($1,274)	$0	($4,756)
Work Management & Field Enablement	$0	$0	($385)	($5,215)	($4,792)	$0	($10,392)
Customer Experience & Interactions	**($1,387)**	**($30,038)**	**($18,027)**	**($4,839)**	**($566)**	**$0**	**($54,857)**
Customer Experience Program Leadership	$0	($1,041)	($1,065)	($813)	$0	$0	($2,919)
Customer Interaction	$0	($8,922)	($8,664)	($3,601)	($566)	$0	($21,754)
Structured Experiences	($1,387)	$0	$0	$0	$0	$0	($1,387)
Support Interaction	$0	($20,075)	($8,298)	($308)	$0	$0	($28,681)
Supporting through Data	$0	$0	$0	($117)	$0	$0	($117)
Strategic Change, Talent, & Operating Model	**($7,689)**	**($13,349)**	**($4,970)**	**($3,295)**	**($2,589)**	**($669)**	**($32,561)**
Operating Model & Value Framework	($3,660)	($5,683)	($722)	($173)	$0	$0	($10,239)
Program Business Readiness & Sustainment	($526)	($2,125)	($1,127)	($1,352)	($1,685)	($469)	($7,283)
Program Level People Strategy	($3,503)	($5,541)	($3,122)	($1,770)	($904)	($200)	($15,040)
Supply Chain	**$0**	**($9,104)**	**($1,748)**	**$0**	**$0**	**$0**	**($10,852)**
Legacy Integration	**($1,300)**	**($2,613)**	**($1,504)**	**($765)**	**($137)**	**$0**	**($6,319)**
Remediation & Integration	($1,300)	($2,613)	($1,504)	($765)	($137)	$0	($6,319)
Program Management	**($3,024)**	**($4,317)**	**($4,038)**	**($2,821)**	**($622)**	**$0**	**($14,822)**
Gas Business Enablement Portfolio Management Office	($2,502)	($3,260)	($3,285)	($2,821)	($622)	$0	($12,490)
Solution Architects & Agile Coaches	($522)	($1,057)	($753)	$0	$0	$0	($2,333)
Supporting Investments	**($23,017)**	**($23,827)**	**($18,731)**	**($11,885)**	**($5,798)**	**($875)**	**($84,133)**
Data Management	**($14,481)**	**($8,122)**	**($7,152)**	**($6,870)**	**($3,658)**	**$0**	**($40,283)**
Regulatory/ Compliance	**($3,900)**	**($10,500)**	**($7,100)**	**($500)**	**$0**	**$0**	**($22,000)**
IS Enabling	**($4,636)**	**($5,205)**	**($4,480)**	**($4,515)**	**($2,140)**	**($875)**	**($21,850)**
Enabling Capabilities	($4,031)	($4,284)	($3,448)	($3,563)	($1,985)	($875)	($18,186)
Technology Initiatives	($605)	($921)	($1,032)	($953)	($155)	$0	($3,665)
Total	**($84,476)**	**($168,741)**	**($115,032)**	**($68,930)**	**($19,419)**	**($1,544)**	**($458,141)**

The Narragansett Electric Company
d/b/a National Grid
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Cost detail by category, capex / opex (000's)

Cost Category	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	Total
O&M	($30,188)	($68,192)	($45,094)	($23,857)	($9,800)	($806)	($177,936)
Labor	($21,549)	($43,893)	($29,445)	($22,031)	($9,313)	($755)	($126,988)
External	($12,801)	($25,814)	($13,137)	($8,849)	($3,398)	($312)	($64,310)
OnShore	($12,284)	($23,217)	($11,918)	($7,797)	($2,860)	($301)	($58,376)
Application Maintenance Provider	($15)	($95)	($12)	($12)	$0	$0	($135)
Business / Management Consultant	($8,557)	($17,494)	($7,695)	($4,009)	($1,442)	($161)	($39,358)
System Integrator	($3,712)	($5,628)	($4,210)	($3,776)	($1,418)	($140)	($18,883)
OffShore	($517)	($2,597)	($1,219)	($1,052)	($538)	($11)	($5,935)
Application Maintenance Provider	$0	($20)	$0	$0	$0	$0	($20)
Business / Management Consultant	($74)	($766)	$0	$0	$0	$0	($841)
System Integrator	($442)	($1,811)	($1,219)	($1,052)	($538)	($11)	($5,074)
Internal	($8,749)	($18,079)	($16,308)	($13,182)	($5,916)	($443)	($62,677)
Executive	($2,911)	($6,264)	($5,992)	($2,617)	($263)	$0	($18,046)
Business	($3,999)	($7,898)	($6,350)	($5,751)	($4,275)	($443)	($28,717)
IS	($1,839)	($3,917)	($3,965)	($4,814)	($1,378)	$0	($15,914)
Contractor / 3rd Party	($6,550)	($20,352)	($13,623)	($500)	$0	$0	($41,025)
Expenses	($2,088)	($3,947)	($2,026)	($1,325)	($486)	($51)	($9,924)
CapEx	($54,288)	($100,549)	($69,937)	($45,073)	($9,620)	($738)	($280,205)
Software	($23,963)	($9,163)	($4,080)	($2,498)	($50)	$0	($39,753)
Hardware	($2,162)	($5,340)	($3,603)	$0	$0	$0	($11,105)
Labor	($25,367)	($57,888)	($47,589)	($38,309)	($8,626)	($642)	($178,422)
External	($21,293)	($48,097)	($39,567)	($31,116)	($6,745)	($604)	($147,422)
OnShore	($16,444)	($36,936)	($33,351)	($25,097)	($5,553)	($561)	($117,942)
Application Maintenance Provider	($61)	($852)	($112)	($112)	$0	$0	($1,137)
Business / Management Consultant	($4,360)	($3,990)	($2,491)	($2,311)	($70)	$0	($13,224)
System Integrator	($12,023)	($32,094)	($30,748)	($22,673)	($5,482)	($561)	($103,581)
OffShore	($4,849)	($11,161)	($6,215)	($6,019)	($1,193)	($43)	($29,480)
Application Maintenance Provider	($1,252)	($2,655)	($204)	$0	$0	$0	($4,110)
Business / Management Consultant	($372)	$0	$0	$0	$0	$0	($372)
System Integrator	($3,225)	($8,506)	($6,012)	($6,019)	($1,193)	($43)	($24,998)
Internal	($4,075)	($9,791)	($8,023)	($7,193)	($1,880)	($38)	($31,000)
Executive	($774)	($1,371)	($2,079)	($1,092)	($273)	$0	($5,590)
Business	($2,068)	($3,786)	($3,453)	($3,222)	($942)	($38)	($13,509)
IS	($1,232)	($4,635)	($2,491)	($2,878)	($665)	$0	($11,901)
Contractor / 3rd Party	$0	($21,880)	($8,995)	$0	$0	$0	($30,875)
Expenses	($2,795)	($6,279)	($5,670)	($4,267)	($944)	($95)	($20,050)
Total	($84,476)	($168,741)	($115,032)	($68,930)	($19,419)	($1,544)	($458,141)

Benefits by initiative, capex / opex (000's)

Initiative	Total O&M Benefit	Total CapEx Benefit	Total Benefit
AIPM	$ -	$ -	$ -
Asset - Advanced Analytics	$ 1,980,000	$ -	$ 1,980,000
Customer Interaction	$ 2,383,948	$ -	$ 2,383,948
Data Management	$ 647,186	$ 114,209	$ 761,396
Engineering, Design, Estimating & Mobility	$ 1,163,805	$ 954,495	$ 2,118,300
Integrated Supply & Demand Planning	$ 330,200	$ 2,209,800	$ 2,540,000
Integrated Supply Feasibility Evaluation and Strategy	$ -	$ -	$ -
Inventory Optimization	$ -	$ -	$ -
Regulatory/ Compliance	$ 13,520,800	$ -	$ 13,520,800
Work Management & Field Enablement	$ 11,943,042	$ 4,367,762	$ 16,310,804
Grand Total	**$ 31,968,981**	**$ 7,646,267**	**$ 39,615,248**

* Note: Work Management & Field Enablement contains Data Management benefits

Benefits by initiative, year over year (000's)

Initiative	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026
AIPM	$0	$0	$0	$0	$0	$0	$0	$0	$0
Asset - Advanced Analytics	$0	$0	$0	$13,750	$1,223,750	$1,980,000	$1,980,000	$1,980,000	$1,980,000
Customer Interaction	$0	$0	$0	$61,278	$502,480	$1,860,208	$2,383,948	$2,383,948	$2,383,948
Data Management	$0	$0	$105,749	$750,821	$761,396	$761,396	$761,396	$761,396	$761,396
Engineering, Design, Estimating & Mobility	$0	$143,315	$582,193	$1,132,045	$1,565,272	$2,118,300	$2,118,300	$2,118,300	$2,118,300
Integrated Supply & Demand Planning	$0	$0	$35,278	$2,187,222	$2,540,000	$2,540,000	$2,540,000	$2,540,000	$2,540,000
Integrated Supply Feasibility Evaluation and Strategy	$0	$0	$0	$0	$0	$0	$0	$0	$0
Inventory Optimization	$0	$0	$0	$0	$0	$0	$0	$0	$0
Regulatory/ Compliance	$0	$876,348	$5,070,300	$9,577,233	$13,207,819	$13,520,800	$13,520,800	$13,520,800	$13,520,800
Work Management & Field Enablement	$0	$0	$1,978,971	$10,475,779	$10,874,265	$13,613,533	$16,310,804	$16,310,804	$16,310,804
Grand Total	**$0**	**$1,019,663**	**$7,772,492**	**$24,198,128**	**$30,674,982**	**$36,394,237**	**$39,615,248**	**$39,615,248**	**$39,615,248**

Benefits by operating company, capex / opex (000's)

Operating Company	Total O&M Benefit	Total CapEx Benefit	Total Benefit
Boston Gas	$ 4,144,024	$ 2,029,060	$ 6,173,083
Brooklyn Union Gas (KEDNY)	$ 12,161,205	$ 1,942,221	$ 14,103,426
Colonial Gas	$ 806,069	$ 407,517	$ 1,213,586
Keyspan Gas East (KEDLI)	$ 2,402,076	$ 1,320,565	$ 3,722,641
Narragansett Gas	$ 1,317,229	$ 720,239	$ 2,037,468
NiagaraMohawk Gas	$ 11,138,377	$ 1,226,665	$ 12,365,042
Total	**$ 31,968,981**	**$ 7,646,267**	**$ 39,615,248**

NPV Analysis Assumptions

Inputs	
Depreciation	**Composite Rate / Useful Life**
Hardware - Book	2.9%
Hardware - MACRS	5
Software – Book	2.9%
Software – MACRS	7
Plant & Machinery - Book	2.9%
Plant & Machinery - MACRS	20
Depreciation	**Values**
After-tax WACC	9.89%
Marginal Corporate Tax Rate	40.00%
Growth Rate	**Values**
Terminal Value Growth Rate	2%

Sources: Book Depreciation % - Sam McClemont; MACRS Useful Life – Howard Kamenski; WAAC MA: William Richer; WAAC RI: Melissa Little; WAAC NY: Melissa Barnes; Marginal Corporate Tax Rate – Christine Yordt; WAAC calculated as the average across the operating companies using the general allocator; terminal value growth rate calculated at 2% assuming costs and benefits will increase with inflation

Gas Business Enablement (GBE)

Executive Owner(s): Dean Seavers, US CEO

Forum: Executive Committee | Meeting Date: 16/2/2017

Executive Summary

CONTEXT

The US Gas Business is facing significant challenges. These include improving compliance performance, continuing to successfully deliver the growing capital program, meeting the demand for customer connections, supporting evolving customer and regulatory expectations, and ultimately making the business run more effectively. These significant challenges are amplified by the complexity created by the disparate legacy processes and systems currently utilized across the operating companies. Further, many of the IS systems are nearing the end of their life, adding to the risk that core operations and future growth will be jeopardized.

The Gas Business Enablement (GBE) program has been co-developed with the US Gas Business, IS, Procurement and HR to meet these challenges. Its objectives are to reduce risk, deliver a step change in business performance, and enable future growth. The program team was mobilized in June 2016 with the support of key resources from the Gas Business and IS to ensure the program had the right capabilities and experience from the start. Since then they have engaged industry experts, completed 'go-see' visits, formed links with other National Grid programs in the US and UK, implemented pilots to test new concepts, and heavily engaged the gas business to develop a solution, roadmap and business case.

The solution is focused on standardizing and simplifying operational processes onto new asset, work and mobility systems (a core backbone). A discrete set of enhanced capabilities focused on customer, asset management and data supplement the backbone. A refined operating model and value framework aim to embed and sustain a culture of accountability and compliance. Industry standard solutions, an innovative release strategy, modern delivery methods and robust governance are used to support the successful delivery of the desired business outcomes.

The roadmap is phased and prioritized over five years to reduce operational risk while balancing deliverability, accelerating value creation where possible, and aligned to support regulatory recovery. The backbone and enhanced capabilities will leave the business well positioned to adapt to future needs including changing regulations, expanding to the electric business, and delivering enhanced customer services in the context of NY REV, MA Gridmod or RI Docket 4600.

The recommended roadmap is forecast to cost $458M over 5 years with a first-year cost of $84M. Once fully implemented there are estimated incremental support costs (RTB) of $18M a year. Although this is primarily an asset replacement program, there are a broad range of tangible and intangible benefits associated with the investment. These include quantifiable annual benefits of $40M a year to be achieved once the system is fully implemented and stabilized. The costs and benefits will be included in future US rate cases starting with Niagara Mohawk in early FY18. An annual sanctioning approach will give the Committee visibility of progress and optionality for the future trajectory of the roadmap based on performance, regulatory support and market needs.

QUESTIONS

1. What is Gas Business Enablement and why is it needed now?
2. What is the approach to the solution and is there anything unique?
3. What options were considered, what is the investment for the preferred option?
4. What are the anticipated benefits and business case for this investment?
5. What are the key risks to the program and how are you mitigating them?
6. What visibility/controls are there to ensure the program does not go off track?

Author(s): Johnny Johnston, SVP, Gas Business Enablement

BEFORE THE
STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

In the Matter of

Niagara Mohawk Power Corporation d/b/a National Grid

Cases 17-E-0238 and 17-G-0239

August 2017

Prepared Testimony of:

Staff Gas Rates Panel

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are the Company's largest gas account, the Panel believes that the Company should have a current zero intercept study as a basis to allocate costs.

Q. Why does the Company no longer collect the information required for a zero intercept study?

A. According to the Company's response to IR DPS-283, its current plant accounting system, PowerPlant, tracks main installation data with the exception of pipe diameter. The pipe diameter information is instead currently tracked in the Company's Geographic Information System (GIS) system. The Company's previous plant accounting system tracked pipe installation data including pipe diameter. When it was replaced, however, the Company decided to track pipe installation data through both its plant accounting software and its GIS system. The Company explained in response to IR DPS-283 that, "[b]ecause pipe diameter data is not tracked in Form 103 PowerPlant, the Company is unable to obtain all of the necessary cost component data for recent main installations for purposes of supporting the Embedded Cost of

Service Study and, therefore, relied on the results of the study that was used in the 2008 rate case."

Q. Does the Panel have any recommendations regarding the Company's zero intercept study?

A. Yes. We recommend that the Company collect the data required for a zero intercept study so that the study can be updated in the Company's next rate case. We understand that Gas Business Enablement will allow the Company to track and record the data required to perform a zero intercept study.

Q. How did the Company use the results of the ECOS study?

A. The Company used the results of the ECOS study to guide revenue allocation and rate design, and to establish components of the Merchant Function Charge and Billing Charge.

Q. Does the Panel agree with the Company's use the ECOS study results?

A. Partially. We would prefer the Company use a historical ECOS study to guide the revenue allocation process. A pro-forma study is forward looking and, in our opinion, can

PROCEEDING ON MOTION OF THE COMMISSION AS TO THE RATES, CHARGES, RULES AND REGULATIONS OF NIAGARA MOHAWK POWER CORPORATION FOR ELECTRIC AND GAS SERVICE

Testimony and Attachments of:
Simi Rose George

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Case 17-E-0238

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Environmental Defense Fund

Before the New York State Public Service Commission

Direct Testimony

of

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detection technologies being employed.[39] As utilities start adopting more sensitive surveying equipment, leak backlogs are likely to grow, increasing the need for, and benefits of, prioritizing leak abatement activities by considering leak flow rate. PG&E, for instance, plans to test this technology for the purposes of quantifying the volume of fugitive emissions associated with its facilities, recognizing that this would improve site efficiency and safety, minimize losses and reduce greenhouse gas emissions.[40]

A 2016 report by PricewaterhouseCoopers which discusses the benefits of using new data analytics for improved utility asset management, and opportunities to integrate data gathered using cutting edge technologies, such as mobile leak detection technology, into utilities' risk management efforts[41] includes a case study relating to a major gas distribution utility which sought to optimize its prioritization of capital replacement projects. The company used data gathered using mobile leak detection technology along with historical data to develop a predictive leak model. For a $15 million asset portfolio, this effort led to the following outcomes: an estimated 3.9 times more leaks avoided, 3.6 times greater leaks/mile replaced and 4.1 times more O&M cost savings for the same capital investment.[42] This is a powerful example of the significant benefits to utilities from using data that can now be gathered using cutting edge technologies to enhance their asset management efforts.

Q. Please outline potential opportunities to integrate leak quantification methods into the Company's operations in the context of its proposal in this case.

A. While the Company's proposed use of residential methane detectors to facilitate early detection of gas leaks, and changes to its LPP retirement algorithm to include Type 3 leaks and service leaks

[39] Mrowka et al., "Analysis of the Utilities' May 15th, 2015, Methane Leak and Emissions Reports Required by Senate Bill (SB) 1371 (Leno) and Rulemaking (R.) 15-01-008", 2016.
[40] Pacific Gas & Electric Company, Prepared Testimony Exhibit (PG&E-3) on Gas Distribution, Chapter 9 (Gas Operations Technology), 2017 General Rate Case, Case No. A.15-09-001, at p. 9-24.
[41] *Supra* note 20, at p. 6.
[42] *Ibid.*

are positive steps, there remains significant unexplored potential for leak quantification methods to be leveraged in order to reduce methane emissions from its system.

The proposed Gas Business Enablement ("GBE") program, aimed at enhancing the Company's existing operational and risk analytics processes, presents a unique opportunity for the Company to explore the integration of advanced leak detection and quantification capabilities into its operations. The Company's objective of ensuring that GBE investments drive "continuous improvement in regulatory compliance and transparency with *more complete data capture and reporting*"[43] can be advanced in a significant way using advanced leak detection and quantification methods.

The Company notes that the GBE Program will allow for GIS with accurate foundation maps, available with mobile functionality, and an Asset Investment Planning and Management software application to perform asset condition assessment and risk ranking/prioritization of asset replacement.[44] As explained in an earlier section of this testimony, leak quantification methods can provide information around the leakiness of underground pipe infrastructure, thereby serving as a critical data point in the assessment of asset condition, and ultimately, infrastructure risk ranking and prioritization of LPP replacement. Integrating leak flow rate data gathered using leak quantification methods into the Company's Asset Investment Planning and Management tool can, therefore, enhance the overall functionality and quality of asset condition assessment produced by this tool, beyond the improvements contemplated under the GBE program.

Q. What are your recommendations in relation to the implementation of the Company's LPP replacement efforts?

A. Generally, EDF supports the levels of investment proposed by the Company to replace LPP but recommends that in terms of implementation, the Company be required to integrate advanced leak quantification methods into its operations as detailed below. By way of background, the settlement

[43] *Supra* note 4, at p. 90.
[44] *Id.* at p. 91.