Before the Public Service Commission

KeySpan Gas East Corporation d/b/a National Grid and

The Brooklyn Union Gas Company d/b/a National Grid NY

Direct Testimony

of

Information Technology Panel

Dated: April 2019

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I. Introduction and Qualifications

Q. Please introduce the members of the Information Technology ("IT") Panel.

A. The IT Panel consists of Stephen Olive, Daniel J. DeMauro, Mukund Ravipaty, and Jeffrey Martin.

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

A. My name is Stephen Olive. My business address is 40 Sylvan Road, Waltham, Massachusetts 02451.

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

A. I am employed by National Grid USA Service Company, Inc. ("National Grid Service Company"), a subsidiary of National Grid USA ("National Grid"), as Senior Vice President and US Chief Information Officer ("CIO"). My responsibilities include leading and continuously improving the performance of the IT organization in the US, overseeing internal IT workforce development, and partnering with National Grid's electric and gas distribution businesses to develop, build, and implement new technologies and IT strategies to support business initiatives and customer needs.

Q. Please describe your educational background and professional experience.

A. I graduated from Northeastern University in Boston, Massachusetts in 1987 with a Bachelor of Science in Electrical Engineering Technology. In 1996, I received a Master of Business Administration degree with an IT concentration from Northeastern University. From 2002 to 2011, I had various roles at Raytheon Company including Vice President and CIO, Information Technology - Integrated Defense Systems. At Raytheon, I provided leadership in the design and execution of the IT strategy and ensured that IT investments contributed to Raytheon's business goals and objectives. From 2012 to 2016, I was with Royal Philips, an organization spanning 100 countries with over 117,000 employees and annual revenue over $33 billion dollars. I held various senior positions at Royal Philips, including Global CIO, and led the IT organization on transforming the business by designing end-to-end processes and deploying IT solutions. From 2016 to 2018, I was the Global CIO for Owens & Minor, a leading healthcare industry solutions provider. At Owens & Minor, I helped develop a transformational strategy and deployment roadmap focused on maximizing productivity and cost effectiveness across several integrated supply chain services. In 2018, I joined National Grid as Senior Vice President and US CIO.

Q. Mr. DeMauro, please state your name and business address.

A. My name is Daniel J. DeMauro. My business address is 300 Erie Boulevard West, Syracuse, New York 13202.

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

A. I am employed by National Grid Service Company, as Director, IT Regulatory. My responsibilities include oversight of IT activities in regulatory proceedings for all of National Grid's New York electric and gas distribution operations, including Niagara Mohawk Power Corporation d/b/a National Grid ("Niagara Mohawk"), KeySpan Gas East Corporation d/b/a National Grid ("KEDLI"), and The Brooklyn Union Gas Company d/b/a National Grid NY ("KEDNY") (KEDNY and KEDLI hereafter referred to collectively as "the Companies").

Q. Please describe your educational background and business experience.

A. I graduated from LeMoyne College in Syracuse, New York in 1983 with a Bachelor of Science in Accounting. In 1986, I joined Niagara Mohawk as an Accountant. In 1991, I became Plant Accounting Manager after holding several other positions in the financial accounting department for Niagara Mohawk. In 2006, I became Director, Internal Audit US, for

National Grid Service Company. From 2007 through 2015, I held several positions in the accounting department, including Director – Finance Integration, Director – Balance Sheet Integrity, and Accounting Program Director. In these roles, I was directly involved with several National Grid accounting processes, including oversight of the Fixed Asset Accounting, Cash Accounting, Account Reconciliations, and Revenue Accounting work teams. I was promoted to my current position in January 2016.

Q. Have you previously testified before the Commission?

A. Yes. I have previously testified before the Commission on behalf of Niagara Mohawk in Cases 17-E-0238 and 17-G-0239 (the "2017 NMPC Rate Case").

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

A. My name is Mukund Ravipaty. My business address is 40 Sylvan Road, Waltham, Massachusetts 02451.

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

A. I am employed by National Grid Service Company as Director, Security Services, Design, and Architecture. My responsibilities include overseeing the development of cyber-security strategy and architecture to

ensure that National Grid's cyber and security protections are developed to keep pace with the evolving threats and capabilities of hostile individuals, groups, and nations, thereby enabling and supporting resilient business operations and customer service.

Q. Please describe your educational background and professional experience.

A. In 1998, I received a Bachelor of Science degree in Computer Science from Andhra University in India. In 2018, I received a Master of Business Administration degree at the Massachusetts Institute of Technology Sloan School of Management. I have over 20 years of professional experience focused exclusively on cyber-security. I joined National Grid in 2011. Prior to joining National Grid, I worked across multiple information security domains in the outsourcing, local government, banking, utility, telecom, new media, and internet sectors.

Q. Have you previously testified before the Commission?

A. Yes. I testified before the Commission on behalf of Niagara Mohawk in the 2017 NMPC Rate Case.

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

A. My name is Jeffrey P. Martin. My business address is 300 Erie Boulevard West, Syracuse, New York 13202.

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

A. I am employed by the National Grid Service Company as Director, Billing and Revenue Strategy. My current responsibilities include developing customer strategy and designing the future state of National Grid's customer systems.

Q. Please describe your educational background and professional experience.

A. I hold a Bachelor of Science degree in Information Systems Management from the State University College at Buffalo. In 1994, I joined Niagara Mohawk's Information Systems department and transitioned to National Grid following its 2002 acquisition of Niagara Mohawk. Prior to assuming my present responsibilities, I was the Director of Billing Operations for all National Grid operating companies and oversaw billing for the Long Island Power Authority ("LIPA") during the term of National Grid's management services contract with LIPA. I have also managed National Grid's Retail Choice, Meter Data Services, and Accounts Processing departments. I have worked on and managed various aspects

of several major customer system conversion projects, including system conversions for Niagara Mohawk in 1999, New England Electric in 2008, Narragansett Electric (Rhode Island electric and gas) in 2012, and KEDLI in 2013.

Q. Have you previously testified before the Commission?

A. Yes. I have testified before the Commission in several proceedings.

Q. Does the Panel sponsor any exhibits as part of its testimony in this proceeding?

A. Yes. The Panel sponsors the following exhibits that were prepared or compiled under our supervision and direction:

(i) Exhibit __ (ITP-1) presents a graphical depiction of the IT management organization;

(ii) Exhibit __ (ITP-2) presents the allocation codes used to determine the forecast annual rent expense to KEDLI and KEDNY for IT projects in the Rate Year (the twelve months ending March 31, 2021), Data Year 1 (the twelve months ending March 31, 2022), Data Year 2 (the twelve months ending March 31, 2023), and Data Year 3 (the twelve months ending March 31, 2024) (Data Years 1, 2, and 3 are collectively the "Data Years");

(iii) Exhibit __ (ITP-3) presents the operating expenses incurred by KEDLI and KEDNY, respectively, for IT during the twelve months ended December 31, 2018 ("Historic Test Year");

(iv) Exhibit __ (ITP-4) presents in-flight and new IT capital projects and investments planned for the Rate Year and Data Years;

(v) Exhibit __ (ITP-5) summarizes the IT Technology Modernization projects in the Rate Year and Data Years;

(vi) Exhibit __ (ITP-6) presents a list of National Grid's cyber security IT projects in the Rate Year and Data Years;

(vii) Exhibit __ (ITP-7) provides details of incremental operating expenses associated with in-flight and planned IT projects in the Rate Year and Data Years, shown as incremental, project-specific operating expenses and "run-the-business" costs; and

(viii) Exhibit __ (ITP-8) presents the IT operating expenses in the Historic Test Year, as well as projected IT operating expenses for the Rate Year and Data Years.

II. Purpose of Testimony

Q. What is the purpose of the IT Panel's testimony?

A. The IT Panel's testimony describes National Grid's IT function, specifically as it relates to KEDNY and KEDLI. The testimony will

explain the services provided by IT and how IT provides these services. The IT Panel will describe the major IT investments and initiatives during the Rate Year and Data Years, including investments in technology modernization, cyber and physical security, a customer information system replacement, and other investment priorities. Finally, the IT Panel will discuss the operating costs that National Grid and KEDNY/KEDLI will incur in the Rate Year and Data Years for IT services.

III. Structure of and Services Provided by National Grid IT

Q. Please describe the role of the IT function at National Grid.

A. IT services range from critical gas transmission/distribution support systems to standard office desktop applications. These services underpin the safe, reliable, and secure physical and commercial operation of KEDNY and KEDLI's gas distribution businesses. IT also provides a suite of software applications that serve the needs of customers and allow for the effective management and operation of KEDNY and KEDLI. National Grid operates these applications on hardware systems that are centrally located as well as distributed to employees in the form of personal computers and other devices. IT also provides KEDNY and KEDLI with asset and work management systems that provide the administrative support required to manage gas service.

The utilization of information technology is an important tool for utilities to improve the efficiency of energy delivery networks, and will be a central enabler for all parts of network operation. Reducing energy usage, balancing energy demands, and providing more reliable energy delivery can only be achieved by advancements in technology. All this change comes with a new regulatory landscape, and changes in National Grid's risk portfolio.

To prepare for current and future needs, the IT organization is transitioning from being primarily an order taker and service delivery organization to a key partner with the business in developing strategies to address the most pressing business needs. This has resulted in National Grid reskilling its IT workforce to become more customer focused and changing our engagement model with suppliers.

Q. Please summarize the structure of National Grid's IT organization.

A. The IT organization is structured to ensure accountability for achieving its goals. The organization includes four CIO positions (US CIO, UK CIO, Group Functions CIO, and Ventures CIO) who report to the Group Chief Information and Digital Officer. The US CIO is fully responsible for US IT operations including developing the current and future capabilities and

skills of the teams that serve National Grid's US businesses. The US CIO is a member of the executive management team overseeing US business operations and is the face of IT for National Grid's US business, as well as the conduit for presenting business requirements to the overall IT organization.

Reporting to the US CIO are five US IT Business Partners (*i.e.*, Electric, Gas, Transmission and Capital Delivery, Customer, and Finance and Business Services). The Business Partners sit on the management teams of their respective business segments and are responsible for the relationship with the business stakeholders. They also are responsible for long-term planning, development of annual budgets, and ensuring IT programs and projects deliver the promised business benefits and enable the businesses to deliver their commitments to customers.

The Business Partners work with National Grid's IT Delivery Center leaders to ensure that resources with appropriate skill sets are available to meet the forecast demands of National Grid's businesses. Delivery Center leaders are accountable for providing services at agreed levels of cost, time, and quality by developing and implementing common ways of

working across the US. The IT organization contains the following Delivery Centers: Strategy and Innovation; Architecture; Solution Delivery; Infrastructure and Operations; Digital Risk and Security; Commercial and Vendor Management; and Data Management. A simplified graphic depiction of National Grid's IT organization is provided in Exhibit __ (ITP-1).

Q. What services does the IT function provide to the Companies?

A. National Grid's IT function provides, maintains, and manages the computer hardware, software, security (cyber and physical) telecommunications, and other related infrastructure, systems, and services for National Grid's business operations across all National Grid service territories.

Q. Please explain National Grid's approach to IT service delivery.

A. As described earlier, National Grid has a robust IT organizational structure designed to effectively manage the IT needs of the entire business. To deliver on the service needs of the business, National Grid's IT organization utilizes several external partners, each of which performs a specific IT function. These functions include:

- Application development and maintenance: This includes a full range of application services, such as developing new applications and day-to-day support of existing applications.
- Internet, collaboration, and e-mail: This function manages email, web conferencing, instant messaging and collaboration tools, such as SharePoint, operated on vendor-owned and hosted infrastructure.
- Networks and communications: This function manages a single network service that consolidates National Grid's Local Area Network ("LAN"), Wide Area Network ("WAN"), telephony, and video and audio conferencing.
- Data center and client services/enterprise services: This function provides data center services (*e.g.*, servers, data storage); manages hardware, software, and storage located in data centers; back-up capability and disaster recovery services; and client services, such as the provision and support of end user devices (*e.g.,* laptops), and deployment of the operating systems and applications that run on those devices.
- Managed print: This function manages support services for a refreshed and standardized fleet of print devices, enabling increased security for printing, copying, faxing, and scanning.

These core IT services enable the effective operation of the entire organization.

Q. Please describe how the Company develops the IT investment plan.

A. To determine which projects to include in the IT investment plan, IT engages in an iterative process that involves collaboration with representatives of the various jurisdictions (*e.g.*, New York, Massachusetts, Rhode Island, and FERC) and business units (*e.g.,* Gas, Electric, Transmission and Capital Delivery) to identify the highest priority projects. IT collaborates with the jurisdictions and business units to assess infrastructure requirements, sequencing, resource availability and capability, size and impact of investment requests, and the overall benefits of the investments. First, IT considers in-flight multi-year investments and identifies the amount of work remaining and the delivery timeline for those projects. Second, IT adds new investments needed to comply with legal or regulatory requirements/mandates or other critical corporate objectives. Third, IT adds projects to address IT infrastructure - primarily investments to upgrade/replace/add functionality to maintain reliability in systems and establish foundational capabilities required for future operational needs of the businesses. Finally, IT works through the Business Partners to prioritize project requests of the business. After this

process, IT distributes a draft investment plan to the business units, jurisdictional representatives, and other key stakeholders for feedback on the plan. A final investment plan review occurs each fiscal year ("FY") with the Jurisdictional Presidents and business unit leadership. Once the Jurisdictional Presidents and business unit executives review and approve the investment plan, the consolidated financial information from the plan, which is organized by jurisdiction and operating company, is incorporated with the IT operation and maintenance ("O&M") requirements into the IT budget. The IT budget is then reviewed and approved by the US CIO, Global CIO, and Corporate Finance, and incorporated into a consolidated National Grid budget.

IV. IT Cost Allocation and Historic Test Year Costs

Q. How are the costs of IT projects and investments charged to KEDNY and KEDLI?

A. IT capital projects and investments that are shared investments across operating companies are implemented and owned by National Grid Service Company. The costs of these investments are allocated to KEDNY and KEDLI (and the other operating companies that utilize and/or benefit from the investments) in the form of rent expense. Exhibit __ (ITP-2) provides the allocation factors utilized to determine the forecast

annual rent expense for the IT projects planned for the Rate Year and Data Years.

Q. How are the costs of IT capital projects recovered?

A. The costs of IT capital projects are amortized over a period of years. The amortization period is determined by the average service lives of the assets. In general, many of the IT-related assets on the books of the National Grid Service Company are either software intangibles or portable general plant equipment that is being depreciated/amortized and recovered over a period equal to their planned usefulness or expected lives. The actual physical replacement of assets is determined by business decisions to maintain, refresh, replace, and/or decommission assets, and that evaluation is conducted based on variables such as operational risk, cost to be incurred, and the availability of replacement options. Recovery of hardware and equipment and amortization of software intangible assets will approximate the useful life of the new system, taking into consideration technological and functional obsolescence.

Q. What were KEDNY's and KEDLI's IT costs for the Historic Test Year?

A. KEDNY's and KEDLI's IT costs for the Historic Test Year were $45.3 million and $28.9 million, respectively, and consisted of $27.8 million and $18.7 million of operating expenses, as set forth on Exhibit __ (ITP-3), and $17.5 million and $10.2 million of service company rents respectively, as set forth on Exhibit __ (RRP-11), the Workpapers to Exhibit __ (RRP-3), Schedule 9, Workpaper 1.

Q. What are the projected total rent expenses for IT projects and investments to KEDNY and KEDLI in the Rate Year and Data Years?

A. The rent expense in the Rate Year and Data Years is shown in KEDNY and KEDLI's Revenue Requirement Panels' Exhibit __ (RRP-11), Workpapers to Exhibit __ (RRP-3), Schedule 9, Workpapers 2, 3, 5, 6, 8, 9, 11, and 12. As shown in Exhibit ___ (RRP-3), Schedule 9, Page 6, KEDNY and KEDLI are forecasting IT rent expense in the Rate Year of $34.6_million and $22.0 million, respectively. This level of rent expense is driven by new IT capital projects planned to be implemented in the Rate Year and Data Years. Tables 1 and 2, below, summarize the IT rent expense to KEDNY and KEDLI, respectively, for the Rate Year and Data Years, along with the investment areas contributing to the incremental rent expense.

Table 1. KEDNY IT Rent Expense: FY21-FY24

IT KEDNY SC Rents Revenue Requirement				
	RY21	DY22	DY23	DY24
Existing Projects	$ 14,414,762	$ 13,302,817	$ 10,478,537	$ 6,330,145
Technology Modernization	$ 3,527,402	$ 5,894,552	$ 6,088,924	$ 7,270,845
Cyber Security	$ 802,449	$ 1,023,620	$ 1,375,803	$ 1,836,355
Compliance & Mandates	$ 1,388,400	$ 2,930,678	$ 2,502,262	$ 2,952,053
GBE	$ 11,726,441	$ 18,379,685	$ 17,636,185	$ 16,892,685
CIS	$ -	$ -	$ 5,064,783	$ 4,866,501
Other Initiatives	$ 2,736,139	$ 2,706,279	$ 5,483,480	$ 6,678,920
Grand Total	**$ 34,595,594**	**$ 44,237,631**	**$ 48,629,975**	**$ 46,827,503**

Table 2. KEDLI IT Rent Expense: FY21-FY24

IT KEDLI SC Rents Revenue Requirement				
	RY21	DY22	DY23	DY24
Existing Projects	$ 8,646,310	$ 7,980,386	$ 6,246,031	$ 3,813,610
Technology Modernization	$ 2,053,355	$ 2,898,625	$ 3,656,431	$ 4,397,739
Cyber Security	$ 498,734	$ 618,519	$ 855,799	$ 1,142,591
Compliance & Mandates	$ 843,910	$ 1,211,475	$ 1,526,302	$ 1,807,881
GBE	$ 8,585,954	$ 8,336,551	$ 7,991,201	$ 7,645,851
CIS	$ -	$ -	$ 2,350,836	$ 2,258,803
Other Initiatives	$ 1,403,929	$ 2,060,358	$ 3,164,342	$ 3,954,816
Grand Total	**$ 22,032,193**	**$ 23,105,913**	**$ 25,790,941**	**$ 25,021,291**

V. Planned IT Capital Projects and Initiatives

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

A. This Panel discusses the need for and benefits of IT investments that enable the Companies to provide safe, reliable, and efficient service to customers. The Panel also specifically addresses some major programs and projects covered by the proposals in these filings, including the Technology Modernization program, Cyber Security program, and SAP S/4 HANA project. In addition, the Panel provides support for the

Customer Information System ("CIS") replacement project and Gas Business Enablement ("GBE") program. Primary support for the CIS and GBE programs are provided in the testimony of the Shared Services Panel and Company Witness Christopher J. Connolly, respectively. Exhibit __ (ITP-4) lists the IT capital investment projects included in the Rate Year and Data Years. The exhibit breaks out the projects by program (*e.g.,* cyber security, CIS, Customer Transformation, Corporate IT, Gas Operations, *et cetera*). Although other witness panels discuss the business need for and benefits of some of the significant IT investment programs, the costs of all IT capital investment projects included in the Rate Year and Data Years are supported by this Panel and are included in Exhibit __ (ITP-4). Exhibit __ (RRP-3), Schedule 9, Page 7, to KEDNY and KEDLI's Revenue Requirements Panels' testimony further breaks out the IT investments reflected in these rate filings.

Q. What are National Grid's main IT investment priorities that will affect KEDNY and KEDLI during the period covered by this filing?

A. In addition to the baseline information technology needed to simply run the business, there also are several significant IT programs and initiatives already underway or planned for the period covered by this filing that will benefit KEDNY and KEDLI. These include: (i) Technology

Modernization; (ii) Cyber and Physical Security; (iii) CIS Replacement; (iv) SAP S/4 HANA; (v) GBE program; and (vi) and Customer Transformation. National Grid also is implementing IT projects in support of Gas Operations, Complex Capital Delivery, Compliance and Mandates, Corporate IT, and other work areas that also will benefit KEDNY and KEDLI customers.

A. Technology Modernization

Q. Please describe the Technology Modernization Program.

A. The Technology Modernization Program is an investment program aimed at updating National Grid's IT infrastructure and applications to enable continued reliable and efficient operation. The key investment areas include: the infrastructure and network that are used to compute, store, and transfer data and the business applications that support National Grid's Gas and Electric Operations. National Grid's long-term legacy systems have served it well in the past. However, the IT infrastructure and applications estate has become aged and increasingly prone to failure, resulting in costly disruptions to business operations. Further, because of the fast pace of technology change, many of the applications and infrastructure components within the IT estate are no longer supported by the vendors, such that some software applications are currently supported

by application maintenance vendors on a "best endeavors" basis only, and some replacement hardware is no longer available from the manufacturer and must be sourced from secondary markets. There are risks with operating critical applications and infrastructure that are aged and no longer supported including reduced reliability, resiliency, and maintainability; operational inefficiencies due to manual workarounds; data security issues; decreased service levels and vendor support; and potential system failure. Additionally, National Grid's current IT systems and platforms are heavily customized, lack the flexibility to accommodate new business needs, and will not support near term change and regulatory initiatives.

Investment to replace and upgrade applications and infrastructure components will improve the ability to respond to evolving business and market demands and improve operation of the energy system in the future so that it runs more efficiently, reliably, and safely. Specifically, the IT Technology Modernization Program will deliver the following benefits:

- With respect to <u>applications</u>, the program will:
  - upgrade applications at end of life to current and supported versions
  - retire at-risk applications
  - consolidate core systems to simplify the application landscape

- develop architecture that allows reuse and easy application "plug-in"
- reduce cyber risk through upgrades to operating systems and/or applications
- implement new tools to manage applications and automate business processing
- ensure applications are upgraded in accordance with application roadmaps

- 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)
  - adopt strategic data centers to mitigate risk and enable robust, scalable infrastructure solutions

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

A. The Technology Modernization program includes several substantial, multi-year projects planned for the Rate Year and Data Years. Among the more significant projects within the Technology Modernization program are the Application Rationalization project, the Infrastructure Remediation and Lifecycle Refresh project, and the Network Security Infrastructure program.

Q. Please describe the Application Rationalization initiative that is part of the Technology Modernization program.

A. National Grid has a complex application landscape, with over 500 applications. The Company is seeking to rationalize the portfolio through consolidation and decommissioning. Many of these applications have reached, or are reaching, end-of-life and are in dire need of upgrade or replacement. This is impacting the organization by creating needs for intense manual processing (*e.g.*, manual bill creation, US field force time entry). To maintain existing efficiencies, it will be important to consolidate National Grid's application portfolio.

Q. What is the Infrastructure Remediation and Lifecycle Refresh project?

A. The Infrastructure Remediation and Lifecycle Refresh project will deliver refresh and updates to the Data Center infrastructure to ensure that services continue to be appropriately secure and maintain the reliability required by the business. It is estimated that approximately 70 percent of the infrastructure is no longer supported and storage capability is nearing capacity. This investment is needed to maintain the operating environment at a supportable level, and represents a positive step change in reducing infrastructure nearing the end of its useful life.

Q. What is the Network Security Infrastructure program?

A. For network services to remain secure and reliable, it is important that the services are maintained with vendor support and new capabilities are added as technology advances. In addition, the changing threat landscape and expanding use of cloud-based services requires a change from premise-based security appliances towards more agile cloud and virtual security platforms. The Network Security Infrastructure program will deliver capability improvements to network security infrastructure to ensure continued network security and reliability.

Descriptions of all the individual capital projects and programs included in the Technology Modernization Program for the Rate Year and Data Years are provided in Exhibit __ (ITP-5).

Q. What capital costs are associated with the IT Technology Modernization Program?

A. Details by year of the specific project and program capital costs in the Technology Modernization program are provided in Exhibit __ (ITP-4). The capital costs of the Technology Modernization program include

$121.277 million through FY20, $53.342 million in the Rate Year, $53.922 million in Data Year 1, $56.721 million in Data Year 2, and $55.699 million in Data Year 3. As shown in Exhibit __ (RRP-11), the Workpapers to Exhibit __ (RRP-3), Schedule 9, Workpaper 3, the Rate Year incremental rent expense forecast for these investments is $3.527 million and $2.053 million for KEDNY and KEDLI, respectively. Exhibit __ (RRP-11), the Workpapers to Exhibit __ (RRP-3), Schedule 9, Workpapers 6, 9 and 12 also show the forecast rent expense for the projects to KEDNY and KEDLI in the Data Years.

B. Cyber Security and Physical Security

Q. How are KEDNY and KEDLI addressing cyber security threats?

A. In 2010, National Grid established the Digital Risk and Security organization within the IT organization to protect National Grid's energy networks, IT systems, and confidential company and customer information from cyber security threats. Digital Risk and Security is responsible for identifying and managing cyber risk, development and delivery of secure solutions, identifying, evaluating, and addressing known and emerging threats against National Grid's environments, and implementing a program of cyber security initiatives to proactively identify and protect National Grid from emerging threats.

The Digital Risk and Security organization established a Cyber Security Program outlining a multi-year investment strategy, continuously evaluated based on emerging threats, to enhance National Grid's cyber capabilities. The aim of the Cyber Security Program is to address cyber security threats to the Enterprise, Critical Network Infrastructure ("CNI"), and Operational Technology network systems and environments. The Cyber Security Program focuses on cyber capabilities and the development of safeguards to address key threat areas, including:

- Unauthorized Access / Insider Attack
- System Availability / Malfunction
- Malware / Virus Attack
- Advanced Persistent Threat / External Attack
- Data Leakage / Loss / Privacy
- Regulatory Non-Compliance

Q. Does National Grid work with others on cyber security issues?

A. Yes. National Grid leverages industry and governmental agencies to stay informed of emerging threats. National Grid participates in government information sharing programs that support threat identification and risk reduction. National Grid collaborates with government agencies such as

the Federal Bureau of Investigation, Electricity Information Sharing and Analysis Center, and the US Department of Homeland Security, through the National Cybersecurity and Communications Integration Center. These agencies provide situational awareness on security threats, including alerts, near-real time cyber threat indicator sharing, remediation, incident response, and other security specific resources.

Q. What is National Grid's plan to address cyber security in the Rate Year and Data Years?

A. National Grid's approach to cyber security continues to evolve to keep pace with changing threats across the entire enterprise. Digital Risk and Security's strategy aims to enable the strategic goals and objectives of the business, deliver the appropriate safeguards to protect the organization's most critical assets, ensure a robust cyber security workforce and first line of defense, and establish risk management and governance frameworks to appropriately identify, manage, mitigate, and communicate cyber risk and ensure proportionate measures are delivered to address the most pertinent areas of risk.

Q. What steps does National Grid take to review its cyber security program to ensure it is meeting its objective?

A. National Grid continuously reviews and updates the program to enhance the ability to protect enterprise and CNI systems and operations as technology changes and new threats emerge. National Grid will continue to advance its cyber security capabilities to address threats while also making investments focused on improving the cyber security posture of operational technology systems.

National Grid has adopted the National Institute of Standards and Technology ("NIST") Cyber Security Framework ("CSF") as the methodology to manage cyber risk and associated mitigation plans and improve its cyber posture. The NIST CSF provides a structured approach to identifying and managing risk, providing a comprehensive range of security controls and measures that when implemented will decrease the likelihood of threats of unauthorized access, compromise, disruption, and destruction to core systems and infrastructure. The Cyber Security program will ensure continued deployment of capabilities to enterprise, CNI, and operational technology systems, in alignment with the NIST CSF, to predict and detect attacks, respond effectively to incidents through continued investment in defense-in-depth architectures, and controls to prevent unauthorized attacks and compromise of critical environments.

Q. Please describe the major work streams National Grid is implementing to address cyber security issues.

A. The Cyber Security Program has been categorized into work streams that highlight the primary focus of the initiatives. These are:

Enhance the Foundation Cyber Security Program – Improve foundational cyber security capabilities, security services, and controls to be better postured to respond to cyber threats as threats emerge in alignment with industry leading best practices.

Threat Resistant Networks Cyber Security Program – Implement greater network segmentation, continuing to build upon defense-in-depth to improve redundancy and resiliency of networks, and localize failures and vulnerabilities from affecting the wider enterprise networks.

Robust Identity and Controls Cyber Security Program - Improve and simplify identity management across the organization, to safeguard cloud and application access, prevent insider threats, and deliver actionable identity intelligence of user access and activity.

Secure Endpoints Cyber Security Program - Strengthen endpoints against attack, increase visibility of anomalous endpoint activity, and ensure only known devices are authorized to access the network.

Security Operations and Monitoring Cyber Security Program – Improved monitoring and discovery across data centers, networks, and endpoints. Improved visibility of network activity across the organization and strengthened capability to detect anomalous and malicious activity.

Culture and Awareness Cyber Security Program - Improve cyber security culture and awareness across the enterprise, strengthening the organizations first-line of defense through appropriate training, as well as ensure the organization can recruit, retain, and grow best in-class talent.

Q. What projects are included in the IT Cyber Security Program?

A. The capital projects included in the IT Cyber Security Program for the Rate Year and Data Years are listed in Exhibit __ (ITP-6).

Q. What are the projected costs of the cyber security projects National Grid has planned for the Rate Year and Data Years?

A. The cyber security projects are forecast to require incremental capital investment of $27.841 million through FY20, $10.232 million in the Rate Year, $16.504 million in Data Year 1, $17.729 million in Data Year 2, and $17.329 million in Data Year 3. As shown in Exhibit __ (RRP-11), the Workpapers to Exhibit __ (RRP-3), Schedule 9, Workpaper 3, the Rate Year incremental rent expense forecast for these investments is $0.802 million and $0.499 million for KEDNY and KEDLI, respectively. Exhibit __ (RRP-11), the Workpapers to Exhibit __ (RRP-3), Schedule 9, Workpapers 6, 9 and 12 also show the forecast rent expense for the projects to KEDNY and KEDLI in the Data Years.

Q. What is the purpose of National Grid's physical security investments?

A. National Grid operates electric and gas energy infrastructure that could be subject to physical attack. Physical security threats include the risk that unauthorized individuals will attempt to enter the Companies' facilities with the intent of vandalizing property, equipment or facilities, theft of tangible or intellectual property, or damage of critical equipment. National Grid's physical security measures are intended to mitigate the risk of such threats by deploying enhanced security systems across the Companies' networks and facilities to detect and deter physical attacks.

Q. Please describe the physical security counter measures in place for KEDNY and KEDLI.

A. There has been a heightened understanding of evolving physical security risks over the past several years. To address this, National Grid significantly increased its deployment of physical security assets, such as facility access card readers, security cameras, and alarm systems, to meet regulatory requirements, enhance customer and employee safety, and safeguard assets. In 2013, National Grid created a centralized organization to address physical security issues, the Physical Security Control Center ("Security Control Center"). The Security Control Center operates around the clock to monitor physical security incidents and provide immediate operations and emergency response for all National Grid facilities, including those of KEDNY and KEDLI. The staff of the Security Control Center disseminates security information and notifications, monitor cameras, and receives and responds to alarms. National Grid has, and is continuing to increase, the number of sites monitored by the Security Control Center.

Q. What are the projected costs of the physical security projects National Grid has planned for the Rate Year and Data Years?

A. The physical security projects are forecast to require incremental capital investment of $2.643 million through FY20, $1.724 million in the Rate Year, $2.125 million in Data Year 1, $2.215 million in Data Year 2, and $2.235 million in Data Year 3. As shown in Exhibit __ (RRP-11), the Workpapers to Exhibit __ (RRP-3), Schedule 9, Workpaper 3, the Rate Year incremental rent expense forecast for these investments is $0.165 million and $0.106 million for KEDNY and KEDLI, respectively. Exhibit __ (RRP-11), the Workpapers to Exhibit __ (RRP-3), Schedule 9, Workpapers 6, 9 and 12 also show the forecast rent expense for the projects to KEDNY and KEDLI in the Data Years.

C. Customer Information System ("CIS") Replacement Project

Q. Please describe the planned implementation of a new customer information system for KEDNY and KEDLI.

A. As described in the testimony of the Shared Services Panel, National Grid is planning to implement a new CIS to replace its legacy systems. KEDNY currently is supported by the Customer Related Information System ("CRIS"), which is 30 years old. KEDLI is supported by the Customer Service System ("CSS") (the same system that supports Niagara

Mohawk), which is more than 20 years old. These systems are increasingly challenged in meeting the heightened expectations of customers, and the increasing needs of an ever-advancing technology and regulatory billing environment. The Shared Services Panel describes the need to replace these aged systems with a modern, fully functional customer system designed to meet customer expectations and address marketplace and regulatory objectives.

Q. Has the Company prepared a business case that supports the need for the planned CIS replacement?

A. Yes. The Company has prepared a detailed CIS Business Case, which is included in Exhibit __ (SSP-5) to the testimony of the Shared Services Panel.

Q. What is National Grid's projected capital spend for the CIS replacement project?

A. The CIS replacement project is forecast to require incremental capital investment of $46.235 million through FY20, $62.675 million in the Rate Year, $58.666 million in Data Year 1, $41.201 million in Data Year 2, and $39.946 million in Data Year 3. The CIS replacement project is not expected to go into service for KEDNY or KEDLI until Data Year 2

(FY23). Therefore, there would be no Rate Year rent expense associated with this project. Exhibit __ (RRP-11), the Workpapers to Exhibit __ (RRP-3), Schedule 9, Workpaper 9 shows the forecast rent expense for the project beginning in Data Year 2 of $5.065 million and $2.351 million to KEDNY and KEDLI, respectively.

D. SAP S/4 HANA Project

Q. What is the SAP S/4 HANA project?

A. National Grid uses SAP ERP as its back-office platform supporting various essential functions, including Finance, Payroll, Human Resources, and Supply Chain. S/4 HANA refers to SAP's Business Suite 4, which is SAP's next generation platform.

Q. How does the S/4 HANA product compare to National Grid's existing SAP platform?

A. National Grid implemented its current version of SAP (SAP ECC 6.0) near the end of calendar year 2012. That implementation was very complex and involved replacing disparate legacy systems that had been in place over many years for multiple companies. Although the current version of SAP is providing accurate and robust information and services

to meet the organization's needs, as discussed below, it will no longer be supported by SAP.

The new S/4 HANA platform is built on a modern, in-memory database and offers personalized user experiences through SAP Fiori. SAP S/4HANA provides a unified financial and management platform to centralize process execution, planning, and reporting based on the same (single source of the truth) data. This solution is equipped with a simple and intuitive user experience, and the solution offers one common, real-time view of financial and operational data to help ensure enterprise-wide consistency and reduce reconciliation time and errors, thus minimizing and/or eliminating the need for human touch-points to enable financial process success.

Q. Why is the S/4 HANA Project proposed now?

A. SAP will no longer support the version of the SAP platform currently deployed at National Grid after 2025. Allowing a critical system such as the organization's back-office financial engine to go out of support carries a high degree of risk. This includes the inability to implement any critical security or compliance patches issued by SAP to address any vulnerabilities discovered, software incompatibility with future products

and services offered by SAP, inability to scale in an increasing digital world to take advantage of leading practices, and overall higher operating costs, decreased performance, and reduced overall reliability. Therefore, National Grid is initiating the effort now to determine the best path forward to transition onto the next generation SAP platform, S/4 HANA.

Q. The 2012 initial SAP implementation did not go smoothly. What confidence does National Grid have that the move to S/4 HANA will go well?

A. The 2012 implementation indeed was challenging. However, National Grid has learned much from that implementation to inform the move to S/4 HANA. As an initial matter, the scope of the 2012 implementation and the S/4 HANA project are vastly different. The 2012 implementation involved replacing disparate, aged systems with a brand-new system. Here, the transition is from an earlier generation of SAP to the latest version of the application. National Grid also is planning for ample upfront review and exploration to determine the optimum solution to be implemented. In addition, the IT organizational structure described previously, along with the scaled agile delivery model, will provide for improved oversight and accountability as well as greater management and control of solution deployment risk. Lastly, as discussed in more detail

below, National Grid is bringing together all change programs such as CIS and S/4 HANA into a central transformation team to better implement and coordinate these programs.

Q. What is the anticipated schedule for developing and implementing the S/4 HANA project?

A. As mentioned above, support for National Grid's current SAP application terminates at the end of 2025. National Grid plans to perform discovery phase work in FY20. Such efforts would consider future process inventories and mapping those future processes to software solutions to limit and rationalize customizations; evaluating onsite vs. cloud hosting options; future technology and infrastructure; organizational and human resources; and sequencing the scope (processes/systems) into potential deployment scenarios.

Following the discovery phase, the project would move into the design phase in FY21. The design phase would refine the accuracy of the operations and capital cost developed during the discovery phase, as well as the timeline of the project. This would include developing design principles and a detailed Target Operating Model; creating an overall release, sprint and test plan; developing a detailed business case, with

benefit profiles, governance and planning; establishing a quality gate process; creating a Program Management Office; and designing an appropriate change management plan.

The results of the design phase would be used in the realize/build and test phase on the project. The build and test phase is anticipated to be structured on the scaled agile model, which will incorporate multiple incremental releases (minimum viable products) to reduce risk and manage the process. However, details of how this would be structured necessarily must await the results on the preceding project phases.

Q. What costs are included for the S/4 HANA project during the period covered by this rate filing?

A. National Grid forecasts $34.650 million of operating expense in the Rate Year for the design phase of the project that it will be undertaking in FY21. This amount is reflected in Exhibits __ (ITP-7) and __ (ITP-8) and contributes to the incremental IT operating expenses allocated to KEDNY and KEDLI in the Rate Year. There are no capital costs included in the Companies' filings for the S/4 HANA project.

Q. Are these the only costs the Company expects to incur during the period?

A. No. However, until the design phase is matured, National Grid will not have a clear estimate of potential project costs. Rather than present a project cost estimate based on insufficient information, the Companies propose to (i) provide the Commission with an update of the costs as part of their corrections and updates filing and (ii) defer for future recovery the differences between the costs recovered in rates and the Companies' actual costs.

E. Gas Business Enablement ("GBE")

Q. Please describe National Grid's 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 US gas business. The US gas business faces several challenges, including 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. The GBE Program was developed through a collaboration among the US gas business, IT, and various other functions within National Grid. IT's role

within GBE is to support the delivery of improvements across systems and technology to strengthen operational and safety performance and build a modern platform that supports customer demands. The GBE Program is described in detail in the testimony of Company Witness Christopher J. Connolly.

Q. What costs are associated with the GBE Program in the Rate Year and Data Years?

A. As shown in Exhibit __ (RRP-11), the Workpapers to Exhibit __ (RRP-3), Schedule 9, Workpaper 3, the Rate Year rent expense forecast for the GBE Program is $11.726 million and $8.586 million for KEDNY and KEDLI, respectively. Exhibit __ (RRP-11), the Workpapers to Exhibit __ (RRP-3), Schedule 9, Workpapers 6, 9 and 12 also show the forecast rent expense for the program to KEDNY and KEDLI in the Data Years.

F. Customer Transformation

Q. Please describe the Customer Transformation Program.

A. The Customer Transformation program (also referred to as Customer Experience Transformation ("CXT")) is a comprehensive program to change how National Grid interacts, serves, and communicates with customers. This program will replace out-of-support platforms to mitigate

existing risk to National Grid's self-service billing, payment, and communications portals. It will set the foundation for the processes and technology changes needed to drive step improvements to the customer experience. The program will focus on re-engineering customers' digital interactions to create a universal and seamless customer experience through multiple service options, including web, mobile, text, email, and future emerging channels.

Q. What capital costs are associated with the Customer Transformation projects in the Rate Year and Data Years?

A. Details by year of the specific project and program capital costs in the Customer Transformation program are provided in Exhibit __ (ITP-4). The aggregate annual capital costs of the Customer Transformation program include $19.460 million through FY20, $6.143 million in the Rate Year, $3.400 million in Data Year 1, $3.000 million in Data Year 2, and $3.000 million in Data Year 3. As shown in Exhibit __ (RRP-11), the Workpapers to Exhibit __ (RRP-3), Schedule 9, Workpaper 3, the Rate Year incremental rent expense forecast for these investments is $0.662 million and $0.281 million for KEDNY and KEDLI, respectively. Exhibit __ (RRP-11), the Workpapers to Exhibit __ (RRP-3), Schedule 9,

Workpapers 6, 9, and 12 also show the forecast rent expense for the projects to KEDNY and KEDLI in the Data Years.

G. Other IT Capital Work Streams

Q. Please describe the other work streams the IT function will be supporting with capital projects in the Rate Year and Data Years.

A. In addition to the work streams we have previously described, the IT function will be implementing capital projects in support of National Grid's Gas Operations area, Complex Capital Delivery, Compliance and Mandates, and Corporate IT.

Q. Please describe the IT projects associated with Gas Operations.

A. The IT projects in the plan to support Gas Operations are primarily aimed at supporting the new consolidated gas control rooms and upgrades to the hardware and operating systems that are considered to be end of life. Further, the current version of the SCADA application will require an upgrade due to its incompatibility with the new operating systems.

Q. What are the projected capital costs for Gas Operations projects in the Rate Year and Data Years?

A. Details by year of the specific project and program capital costs in the Gas Operations program are provided in Exhibit __ (ITP-4). The aggregate annual capital costs of the Gas Operations program include $19.373 million through FY20, $2.982 million in the Rate Year, $6.500 million in Data Year 1, $5.000 million in Data Year 2, and $5.500 million in Data Year 3. As shown in Exhibit __ (RRP-11), the Workpapers to Exhibit __ (RRP-3), Schedule 9, Workpaper 3, the Rate Year incremental rent expense forecast for these investments is $1.267 million and $0.622 million for KEDNY and KEDLI, respectively. Exhibit __ (RRP-11), the Workpapers to Exhibit __ (RRP-3), Schedule 9, Workpapers 6, 9 and 12 also show the forecast rent expense for the projects to KEDNY and KEDLI in the Data Years

Q. Please describe National Grid's IT projects in support of the Complex Capital Delivery work stream.

A. National Grid recently created a Capital Delivery organization that is tasked with systematically improving the ability to develop and execute its capital plan more efficiently for complex projects and eventually for the entire capital program. As part of this effort, National Grid is working to identify efficiencies and opportunities for better ways of working that may

reduce costs. Essential to this effort is the updating and upgrading of IT systems that support the capital delivery process.

Q. What are the projected capital costs for the IT Complex Capital Delivery work stream in the Rate Year and Data Years?

A. Details by year of the specific project and program capital costs in the Complex Capital Delivery work stream are provided in Exhibit __ (ITP-4). The aggregate annual capital costs of the Complex Capital Delivery program include $5.711 million through FY20, $4.937 million in the Rate Year, $5.200 million in Data Year 1, $7.013 million in Data Year 2, and $1.240 million in Data Year 3. As shown in Exhibit __ (RRP-11), the Workpapers to Exhibit __ (RRP-3), Schedule 9, Workpaper 3, the Rate Year incremental rent expense forecast for these investments is $0.182 million and $0.113 million for KEDNY and KEDLI, respectively. Exhibit __ (RRP-11), the Workpapers to Exhibit __ (RRP-3), Schedule 9, Workpapers 6, 9 and 12 also show the forecast rent expense for the projects to KEDNY and KEDLI in the Data Years

Q. Please describe the Compliance and Mandates work stream.

A. This program also includes various support capabilities that are driven by new regulations, safety and reliability requirements and include Gas

Control Simulator and Integration of standard operating procedures with work management. The work stream also includes equipment such as remotely operated flood sensors and fixed communication systems to monitor and control shut-off valves that will be installed in FEMA flood-zones to mitigate the risk of flood damage to the gas facilities.

Q. What are the projected capital costs for the Compliance and Mandates work stream in the Rate Year and Data Years?

A. Details by year of the specific project and program capital costs in the Compliance and Mandates work stream are provided in Exhibit __ (ITP-4). The aggregate annual capital costs of the Compliance and Mandates projects include $25.062 million through FY20, $22.155 million in the Rate Year, $21.659 million in Data Year 1, $21.200 million in Data Year 2, and $21.200 million in Data Year 3. As shown in Exhibit __ (RRP-11), the Workpapers to Exhibit __ (RRP-3), Schedule 9, Workpaper 3, the Rate Year incremental rent expense forecast for these investments is $1.388 million and $0.844 million for KEDNY and KEDLI, respectively. Exhibit __ (RRP-11), the Workpapers to Exhibit __ (RRP-3), Schedule 9, Workpapers 6, 9 and 12 also show the forecast rent expense for the projects to KEDNY and KEDLI in the Data Years

Q. Please describe the Corporate IT work stream.

A. The size and nature of National Grid's operations, as well as the comprehensive regulatory environment in which it operates, demand that it has comprehensive and sophisticated systems in place to manage and support corporate activities, including human resources, assurance, legal, tax, treasury, audit, claims, and other functions. Investments in this area support that goal. The Future of Finance program is an example of a significant program of work in the Corporate IT work stream. The Future of Finance program will enhance, upgrade, and replace applications within the Finance function (including Tax, Treasury, Audit, Claims, and Assurance) to address such areas as digitization, robotic process automation, workflow tooling, analytics, mobility reporting, and controls. In addition, this program will support strategic assessments and implementations/upgrades of tax software (Sabrix/Vertex), PowerPlan fixed asset system, and Governance Risk and Compliance.

Q. What are the costs for the Corporate IT projects for the Rate Year and Data Years?

A. Details by year of the specific project and program capital costs in the Corporate IT work stream are provided in Exhibit __ (ITP-4). The aggregate annual capital costs of the Corporate IT projects include

$18.668 million through FY20, $25.646 million in the Rate Year, $14.619 million in Data Year 1, $15.011 million in Data Year 2, and $11.600 million in Data Year 3. As shown in Exhibit __ (RRP-11), the Workpapers to Exhibit __ (RRP-3), Schedule 9, Workpaper 3, the Rate Year incremental rent expense forecast for these investments is $0.208 million and $0.130 million for KEDNY and KEDLI, respectively. Exhibit __ (RRP-11), the Workpapers to Exhibit __ (RRP-3), Schedule 9, Workpapers 6, 9 and 12 also show the forecast rent expense for the projects to KEDNY and KEDLI in the Data Years.

Q. What other IT capital projects are planned for the Rate Year and Data Years that affect KEDNY and KEDLI?

A. The list of all IT capital projects planned for the Rate Year and Data Years, inclusive of all the projects the Panel previously described, is provided in Exhibit __ (ITP-4).

Q. What are the total projected capital costs of the IT projects shown in Exhibit __ (ITP-4) for the Rate Year and Data Years, and the corresponding Rate Year impacts on KEDNY and KEDLI?

A. The aggregate annual capital costs of the IT projects include $294.901 million through FY20, $194.288 million in the Rate Year, $185.595

million in Data Year 1, $171.090 million in Data Year 2, and $160.561 million in Data Year 3. As shown in Exhibit __ (RRP-11), the Workpapers to Exhibit __ (RRP-3), Schedule 9, Workpaper 3, the Rate Year incremental rent expense forecast for these investments is $8.430 million and $4.785 million for KEDNY and KEDLI, respectively. Exhibit __ (RRP-11), the Workpapers to Exhibit __ (RRP-3), Schedule 9, Workpapers 6, 9, and 12 also show the forecast rent expense for the projects to KEDNY and KEDLI in the Data Years.

VI. Delivering the IT Capital Plan

Q. National Grid is planning to develop and implement a significant number of major IT projects over the next few years. How will National Grid ensure its ability to deliver these projects in a timely and cost-effective manner?

A. National Grid appreciates that today's utilities rely increasingly on information technology, and the pace of change is unprecedented in both the utility industry and in the IT landscape in general. That is why National Grid has made a focused effort to create a robust, well-organized IT organization that can meet the challenges facing it. The structure of the IT organization provides the visibility and controls necessary across the organization to effectively coordinate and manage multiple resources and

projects. IT delivery centers are organized such that resources can be appropriately rationalized to meet prioritized business needs. Further, National Grid's supplier relationships enhance resource availability and flexibility.

Q. Please expand upon the steps being taken to ensure the timely and cost effective delivery of IT projects.

A. The steps being undertaken to ensure timely and cost effective delivery of the IT investments are as follows:

- IT has modified its organizational structure so that it is tightly aligned to the National Grid business units such that the IT Business Partners are accountable for the delivery of programs to time and budget.
- At the same time, the Company has insourced and will continue to insource numerous key technology roles including Project Managers and Enterprise Architects. IT is bringing these roles back in-house to enhance project delivery capability and modernize the solution delivery process. The Architects will provide simplification and standardization across the application portfolio. The Project Managers that are being brought on-board are skilled in modern delivery frameworks which will allow projects to be delivered in releases. resulting in faster time to market and an increase in productivity and

quality.

- In addition, the recent re-negotiation of the Application Development and Application Maintenance contract resulted in an increase to the number of IT solution vendors from two to four; thereby increasing National Grid's overall ability to scale up and respond to the increase in business demand.
- National Grid is bringing together all large change programs such as CIS and SAP S/4 HANA into a central transformation team. This consolidation will help ensure that these transformative investments are delivered into the business on time and in a manner that maximizes value to customers. The creation of a central team will ensure that the multiple change programs are implemented in a coordinated and efficient manner across the organization.

For major projects, such as the ones the Panel describes above, National Grid also establishes individual project control boards. These project control boards manage project scope and work to assure the availability of resources needed to deliver the respective project.

VII. IT Operating Costs in the Rate Year and Data Years

Q. What comprises operating costs for the IT function?

A. In simple terms, IT operating costs consist of: (i) initial project expenses and post-implementation costs incurred with new projects; and (ii) costs of running the projects once they are placed in service. The first category of costs includes O&M incurred to support investment planning during the startup stage and post application development costs that may not be capitalized under applicable accounting rules. The second category of costs are those costs of running a project once it is in service ("run-the-business" or "RTB" costs). These RTB costs include: software licensing and maintenance agreements, hardware maintenance agreements, third party contracts, consultant/contractor costs, and internal labor.

Q. What are the Companies' projected IT incremental operating costs for the Rate Year and the Data Years?

A. KEDNY's and KEDLI's projected incremental operating costs for the Rate Year and Data Years (excluding the costs of the GBE Program, which are presented in the testimony of Company Witness Christopher P. Connolly) can be found in Exhibit __ (ITP-8). These incremental costs consist primarily of incremental IT project operating expenses and RTB costs for new capital projects (details of which appear in Exhibit __ (ITP-

7), incremental operating expenses associated with the CIS Replacement program, design phase costs for the S/4 HANA project, and inflation from the Historic Test Year. The projected amounts of these costs for National Grid appear on page 1 of Exhibit __ (ITP-8).

These costs are then allocated to KEDNY and KEDLI using the allocators identified in Exhibit __ (ITP-8) to arrive at the following incremental IT operating expense amounts:

KEDNY:

- Rate Year: $18.1 million
- Data Year 1: $16.5 million
- Data Year 2: $9.7 million
- Data Year 3: $3.7 million

KEDLI:

- Rate Year: $9.1 million
- Data Year 1: $7.6 million
- Data Year 2: $4.4 million
- Data Year 3: $1.7 million

These incremental operating costs already reflect substantial operating cost savings National Grid is planning to realize in connection with its Accelerate Program, which is described in KEDNY's and KEDLI's Revenue Requirements Panels' testimonies. IT-related Accelerate Program initiatives include the re-negotiation of the Verizon Network and Application Development and Maintenance contracts, and the transition to a new SAP hosting provider. These savings are shown in Exhibit __

(RRP-3), Schedule 34, Workpaper 1, and reflected in the Infrastructure and Operations line on page 1 of Exhibit __ (ITP-8). Absent these savings, the projected incremental IT operating costs would be higher.

VIII. Reporting

Q. What steps do the Companies propose to implement to keep the Commission advised of their progress in implementing the IT investment plan?

A. As part of the 2017 NMPC Rate Case, Department of Public Service Staff proposed that Niagara Mohawk implement periodic reporting of IT project development and investment activity in a manner comparable to the comprehensive periodic reporting already performed for electric and gas capital investment activities. Niagara Mohawk's implementation of those reporting measures have not only served to better apprise Staff of the status of the company's IT investment projects, it has also brought greater internal attention to IT project status and monitoring. Given the beneficial effects such reporting has achieved for Niagara Mohawk, the Companies propose to establish IT-related reporting requirements like those adopted by the Commission in the 2017 NMPC Rate Case. Specifically, the Companies propose that:

(i) at the beginning of each Rate Year, the Companies will file

with the Secretary their IT capital investment plan for that Rate Year, including a narrative explanation of the plan and an identification of all proposed IT projects and their costs;

(ii) they will file IT-related quarterly variance reports within 60 days of the end of each Rate Year quarter that will contain the same information as is being provided by Niagara Mohawk; and

(iii) on a semi-annual basis, the Companies will meet with Department of Public Service Staff to discuss the IT investment plan and the progress being made on fulfilling the goals of the plan.

Throughout this process, the Companies will work in good faith with Staff to identify any additional information that would be useful to include in the quarterly reports.

Q. Does this conclude your testimony?

A. Yes.

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Exhibit ___ (ITP-1)

Graphical depiction of the IT Management Organization

KeySpan Gas East Corporation d/b/a National Grid, The Brooklyn Union Gas Company d/b/a National Grid NY
ITP-1 Information Technology (IT) Operational Model

IT operating model

nationalgrid

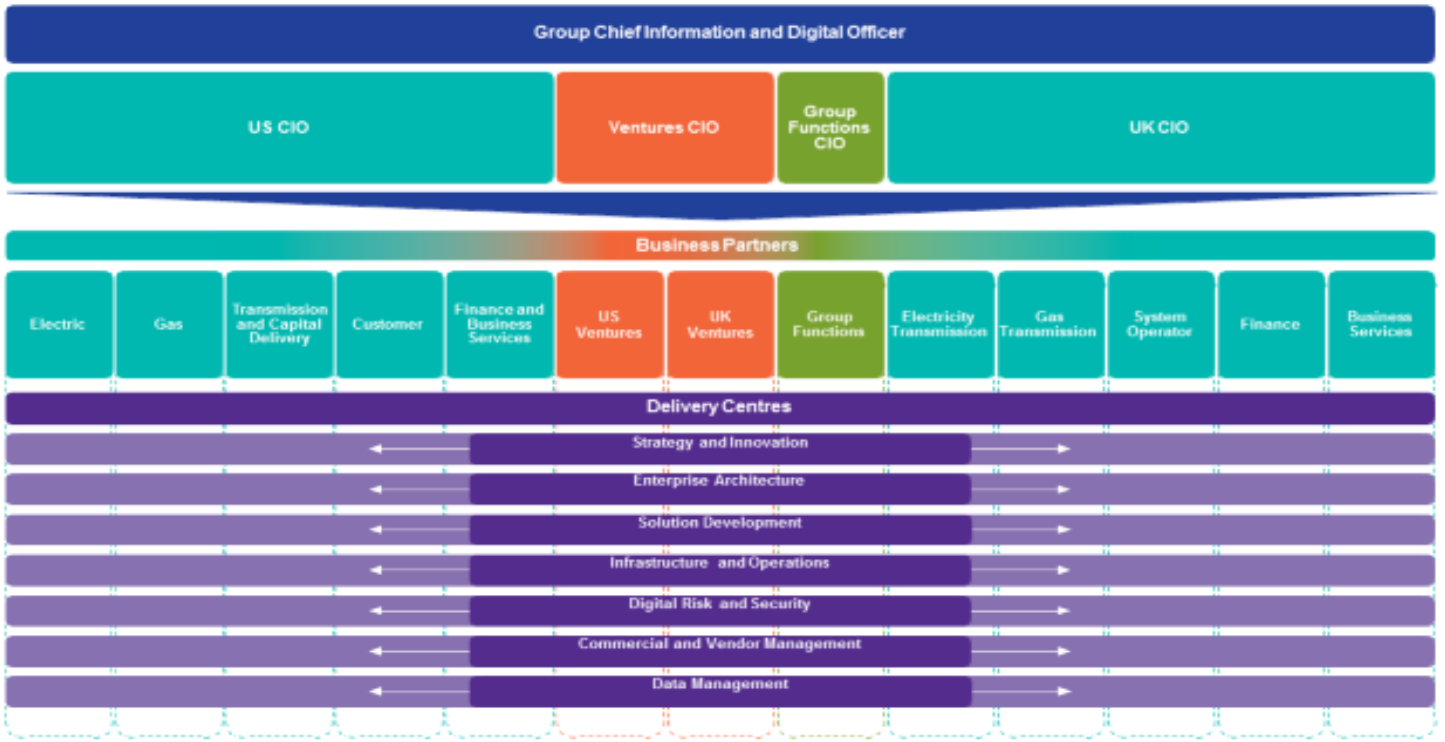

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Exhibit ___ (ITP-2)

Allocations Used for IT Projects

KeySpan Gas East Corporation d/b/a National Grid, The Brooklyn Union Gas Company d/b/a National Grid NY
ITP-2 Allocations used for Information Technology (IT) Projects

SAP Alloc. Code	Description	Allocation Basis	KEDNY	KEDLI	ALL OTHER CO's	TOTAL
5220-G	KeySpan Energy Delivery New York	Direct Charge	100.00%	0.00%	0.00%	100.00%
5230-G	KeySpan Energy Delivery Long Island	Direct Charge	0.00%	100.00%	0.00%	100.00%
C-170	NMPC-E&G, KEDNY, KEDLI	C - Number of Customers via Count of Meters Installed	30.68%	14.24%	55.08%	100.00%
C-175	All Retail Companies	C - Number of Customers via Count of Meters Installed	17.78%	8.25%	73.97%	100.00%
C-210	All Gas Retails	C - Number of Customers via Count of Meters Installed	34.72%	16.12%	49.16%	100.00%
C-225	KEDNY and KEDLI	C - Number of Customers via Count of Meters Installed	68.30%	31.70%	0.00%	100.00%
C-239	KEDNY, KEDLI, Boston Gas and Colonial Gas	C - Number of Customers via Count of Meters Installed	45.89%	21.30%	32.81%	100.00%
C-343	KEDNY, Boston Gas and Colonial Gas	C - Number of Customers via Count of Meters Installed	58.31%	0.00%	41.69%	100.00%
G-004	All Retail incl NMPC-T, Mass-T, Narr-T	G - General Allocator, 3-Point Formula	14.86%	9.28%	75.86%	100.00%
G-012	All Companies (largest set) Parents, Retail, TRAN, Hydros, NG LNG Reg, KS Generation, GW, Port Jefferson, Metrowest	G - General Allocator, 3-Point Formula	13.31%	8.29%	78.40%	100.00%
G-020	Realty, Wayfinder, Transgas, KS Energy Development, KS Services Inc	G - General Allocator, 3-Point Formula	13.31%	8.29%	78.40%	100.00%
G-116	Niagara Mohawk (Elec, Gas and Trans), KEDNY and KEDLI	G - General Allocator, 3-Point Formula	28.39%	17.16%	54.45%	100.00%
G-148	Retails, Transission	G - General Allocator, 3-Point Formula	14.04%	8.72%	77.24%	100.00%
G-149	All Retails, TRAN, Hydros, NG LNG Reg, KS Generation, GW and Port Jefferson	G - General Allocator, 3-Point Formula	13.47%	8.37%	78.16%	100.00%
G-175	All Retail Companies	G - General Allocator, 3-Point Formula	16.38%	10.32%	73.30%	100.00%
G-210	All Gas Retails	G - General Allocator, 3-Point Formula	34.13%	20.60%	45.27%	100.00%
G-225	KEDNY and KEDLI	G - General Allocator, 3-Point Formula	62.47%	37.53%	0.00%	100.00%
G-251	KEDLI, KS Generation	G - General Allocator, 3-Point Formula	0.00%	68.94%	31.06%	100.00%
G-327	All Retail and Trans segments, NEP-T, Hydros	G - General Allocator, 3-Point Formula	13.99%	8.69%	77.32%	100.00%
G-331	Parents, All Retail and Trans segments, Mass., NEP -T, KS Generation	G - General Allocator, 3-Point Formula	13.48%	8.39%	78.13%	100.00%
G-434	Legacy NG Retails and KEDLI	G - General Allocator, 3-Point Formula	0.00%	15.01%	84.99%	100.00%
N-012	All Companies (largest set)	N - Number of Employees	15.04%	7.23%	77.73%	100.00%

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Exhibit ___ (ITP-3)

Historic Test Year IT Operating Expenses

The Brooklyn Union Gas Company d/b/a National Grid NY
ITP-3 KEDNY's Share of Historic Test Year IT Operating Expenses ($Millions)

Operational Cost	**12 months ending December 31, 2018 (HTY)**
Commercial Management	2.9
Cyber Security	1.0
Physical Security	3.1
Group Functions	0.2
Infrastructure & Operations	13.9
Enterprise Projects	0.0
Administration	2.6
Subtotal Operational Cost	23.9
Investment Plan	
Investment Plan Project Opex/RTB	3.9
Investment Plan Total	3.9
CTA (IT Transformation)	0.0
Total IT Opex Allocated to The Brooklyn Union Gas Company (KEDNY)	**27.8**

KeySpan Gas East Corporation d/b/a National Grid
ITP-3 KEDLI's Share of Historic Test Year IT Operating Expenses ($Millions)

Operational Cost	**12 months ending December 31, 2018 (HTY)**
Commercial Management	1.8
Cyber Security	0.7
Physical Security	1.0
Group Functions	0.1
Infrastructure & Operations	10.4
Enterprise Projects	0.0
Administration	1.7
Subtotal Operational Cost	15.7
Investment Plan	
IT Base Projects	3.0
Investment Plan Total	3.0
CTA (IT Transformation)	0.0
Total IT Opex Allocated to KeySpan Gas Corporation (KEDLI)	**18.7**

Testimony of Information Technology Panel

Exhibit ___ (ITP-4)

In-flight and Forecasted IT Capital Projects

KeySpan Gas East Corporation d/b/a National Grid, The Brooklyn Union Gas Company d/b/a National Grid NY
ITP-4 In-Flight and Forecasted Information Technology (IT) Capital Projects

Investment Name	Program	INVP #	Bill Pool	In Service Date	Amortization Period	Inception to Date+ FY20	FY21 CAPEX	FY22 CAPEX	FY23 CAPEX	FY24 CAPEX	Total US Capex Spend
Customer Information Systems Replacement (KEDNY Release)(R1)	CIS	5503	C239	4/1/2022	120	$ 12,275,094	$ 19,537,925	$ -	$ -	$ -	$ 31,813,019
Customer Information Systems Replacement (KEDLI Release)(R1)	CIS	5503	C239	4/1/2022	120	$ 5,696,218	$ 9,066,511	$ -	$ -	$ -	$ 14,762,729
Customer Information Systems Replacement (Boston Gas Release)(R1)	CIS	5503	C239	4/1/2022	120	$ 6,798,066	$ 10,820,292	$ -	$ -	$ -	$ 17,618,358
Customer Information Systems Replacement (Colonial Gas Release)(R1)	CIS	5503	C239	4/1/2022	120	$ 1,977,892	$ 3,148,156	$ -	$ -	$ -	$ 5,126,048
Customer Information Systems Replacement (KEDNY Release)(R2)	CIS	5503	CXXX	4/30/2024	120	$ -	$ -	$ 5,671,315	$ 12,916,477	$ 20,383,157	$ 38,970,948
Customer Information Systems Replacement (KEDLI Release)(R2)	CIS	5503	CXXX	4/30/2024	120	$ -	$ -	$ 57,600	$ 131,185	$ 207,020	$ 395,806
Customer Information Systems Replacement (Boston Gas Release)(R2)	CIS	5503	CXXX	4/30/2024	120	$ -	$ -	$ 2,667,998	$ 1,981,319	$ 2,013,530	$ 6,662,846
Customer Information Systems Replacement (Colonial Gas Release)(R2)	CIS	5503	CXXX	4/30/2024	120	$ -	$ -	$ 7,151,435	$ 5,310,827	$ 5,397,166	$ 17,859,428
Customer Information Systems Replacement (Narr Gas Release)(R2)	CIS	5503	CXXX	4/30/2024	120	$ 1,199,992	$ 1,237,835	$ 18,274,604	$ 6,127,085	$ 42,666	$ 26,882,181
Customer Information Systems Replacement (Narr Electric Release)(R2)	CIS	5503	CXXX	4/30/2024	120	$ 2,209,921	$ 2,279,614	$ 8,480,271	$ 2,843,254	$ 19,799	$ 15,832,859
Customer Information Systems Replacement (Mass Electric Release)(R2)	CIS	5503	CXXX	4/30/2024	120	$ 5,864,426	$ 6,049,370	$ 10,120,653	$ 3,393,239	$ 23,629	$ 25,451,317
Customer Information Systems Replacement (Nantucket Electric Release)(R2)	CIS	5503	CXXX	4/30/2024	120	$ 59,562	$ 61,440	$ 2,944,597	$ 987,260	$ 6,875	$ 4,059,733
Customer Information Systems Replacement (NMPC Gas Release)(R3)	CIS	5503	C113	4/1/2026	120	$ 2,758,844	$ 2,845,849	$ 1,160,477	$ 2,642,997	$ 4,170,846	$ 13,579,013
Customer Information Systems Replacement (NMPC Electric Release)(R3)	CIS	5503	C113	4/1/2026	120	$ 7,394,945	$ 7,628,155	$ 2,137,150	$ 4,867,380	$ 7,681,086	$ 29,708,715
Capital Delivery IS Initiative US	Complex Capital Delivery	4771B	G148	5/28/2019	84	$ 2,385,539	$ -	$ -	$ -	$ -	$ 2,385,539
Primavera Upgrade/Stabilization	Complex Capital Delivery	4990	G004	2/28/2020	84	$ 2,818,548	$ -	$ -	$ -	$ -	$ 2,818,548
Downstate NY Capacity Automation Enhancement	Complex Capital Delivery	5136	G225	12/1/2020	84	$ -	$ 480,000	$ -	$ -	$ -	$ 480,000
New Storms Response Management System	Complex Capital Delivery	5274	G148	3/31/2021	84	$ 507,000	$ 457,000	$ -	$ -	$ -	$ 964,000
CDI Demand Enablement Program	Complex Capital Delivery	5599	G004	3/31/2021	84	$ -	$ 4,000,000	$ -	$ -	$ -	$ 4,000,000
CDI Demand Enablement Program	Complex Capital Delivery	5599	G004	3/31/2022	84	$ -	$ -	$ 1,700,000	$ -	$ -	$ 1,700,000
Document Management System for CDI	Complex Capital Delivery	4945	G148	1/31/2023	84	$ -	$ -	$ 1,700,000	$ 2,544,000	$ -	$ 4,244,000
Post Award Non-Complex Contract Management System	Complex Capital Delivery	5275	G148	1/31/2023	84	$ -	$ -	$ 1,800,000	$ 1,669,000	$ -	$ 3,469,000
CDI Demand Enablement Program	Complex Capital Delivery	5599	G004	3/31/2023	84	$ -	$ -	$ -	$ 2,000,000	$ -	$ 2,000,000
CDI Demand Enablement Program	Complex Capital Delivery	5599	G004	3/31/2024	84	$ -	$ -	$ -	$ -	$ 840,000	$ 840,000
GTIS Datamart and Advanced Reporting Capability	Complex Capital Delivery	5602	G210	9/1/2024	84	$ -	$ -	$ -	$ 800,000	$ 400,000	$ 1,200,000
NY Gas Service Line Inspection	Compliance & Mandates	5175	G116	3/29/2019	84	$ 820,563	$ -	$ -	$ -	$ -	$ 820,563
EPA Portfolio Manager Integration Phase	Compliance & Mandates	5099	C175	4/11/2019	84	$ 387,788	$ -	$ -	$ -	$ -	$ 387,788
Docusign	Compliance & Mandates	4802	G020	4/29/2019	84	$ 486,740	$ -	$ -	$ -	$ -	$ 486,740
Lease Accounting Updates and Contract Ma	Compliance & Mandates	5360	G020	6/1/2019	84	$ 4,798,941	$ -	$ -	$ -	$ -	$ 4,798,941
AVLS Old 3G Modem Replacement	Compliance & Mandates	5226	G175	8/31/2019	84	$ 3,096,619	$ -	$ -	$ -	$ -	$ 3,096,619
Gas Storm Hardening Using Remote Service	Compliance & Mandates	4769	G225	9/20/2019	84	$ 5,671,511	$ -	$ -	$ -	$ -	$ 5,671,511
NY Tax Remittance and Reporting Correction	Compliance & Mandates	4821	G116	10/25/2019	84	$ 1,643,240	$ -	$ -	$ -	$ -	$ 1,643,240
FY20 Mandated Projects	Compliance & Mandates	5343	G020	2/29/2020	84	$ 5,200,000	$ -	$ -	$ -	$ -	$ 5,200,000
Annual HR & Payroll Mandatory Service Pack Upgrade (HRSP) FY20	Compliance & Mandates	5379	G020	2/29/2020	84	$ 1,157,000	$ -	$ -	$ -	$ -	$ 1,157,000
CDG Low Income Bill Discount Program	Compliance & Mandates	5474	G116	6/30/2020	84	$ 1,800,000	$ 600,000	$ -	$ -	$ -	$ 2,400,000
Annual HR & Payroll Mandatory Service Pack Upgrade (HRSP) FY21	Compliance & Mandates	5609	G020	3/1/2021	84	$ -	$ 1,200,000	$ -	$ -	$ -	$ 1,200,000
FY21 Mandated Projects	Compliance & Mandates	5650	G020	3/31/2021	84	$ -	$ 20,000,000	$ -	$ -	$ -	$ 20,000,000
Flood Zone Protection Packages	Compliance & Mandates	5161	C225	7/31/2021	84	$ -	$ 355,000	$ 158,000	$ -	$ -	$ 513,000
AMAG: Automated Interface for New Hires	Compliance & Mandates	4997	N012	9/30/2021	84	$ -	$ -	$ 301,408	$ -	$ -	$ 301,408
Annual HR & Payroll Mandatory Service Pack Upgrade (HRSP) FY22	Compliance & Mandates	5610	G020	3/1/2022	84	$ -	$ -	$ 1,200,000	$ -	$ -	$ 1,200,000
FY22 Mandated Projects	Compliance & Mandates	5650	G020	3/31/2022	84	$ -	$ -	$ 20,000,000	$ -	$ -	$ 20,000,000
Annual HR & Payroll Mandatory Service Pack Upgrade (HRSP) FY23	Compliance & Mandates	5611	G020	3/1/2023	84	$ -	$ -	$ -	$ 1,200,000	$ -	$ 1,200,000
FY23 Mandated Projects	Compliance & Mandates	5650	G020	3/31/2023	84	$ -	$ -	$ -	$ 20,000,000	$ -	$ 20,000,000
Annual HR & Payroll Mandatory Service Pack Upgrade (HRSP) FY24	Compliance & Mandates	5612	G020	3/1/2024	84	$ -	$ -	$ -	$ -	$ 1,200,000	$ 1,200,000
FY24 Mandated Projects	Compliance & Mandates	5650	G020	3/31/2024	84	$ -	$ -	$ -	$ -	$ 20,000,000	$ 20,000,000
Software License Asset Management	Corporate IT	5364US	G020	11/25/2019	84	$ 639,328	$ -	$ -	$ -	$ -	$ 639,328
Materials, Repair, Operation Optimization	Corporate IT	5544	G004	1/31/2020	84	$ 558,000	$ -	$ -	$ -	$ -	$ 558,000
Upgrade Servers for CCAE Reporting	Corporate IT	4904	G020	2/29/2020	84	$ 300,000	$ -	$ -	$ -	$ -	$ 300,000
Program Delivery Enablement Project	Corporate IT	3431	G020	3/31/2020	84	$ 1,230,000	$ -	$ -	$ -	$ -	$ 1,230,000
US Global Assurance: NY Certification and Rate Case Track Re-platform	Corporate IT	5477	G020	3/31/2020	84	$ 250,000	$ -	$ -	$ -	$ -	$ 250,000
US Legal: Document Management	Corporate IT	5507	G020	3/31/2020	84	$ 400,000	$ -	$ -	$ -	$ -	$ 400,000
Digital Finance	Corporate IT	5559	G020	3/31/2020	84	$ 325,000	$ -	$ -	$ -	$ -	$ 325,000
Total Reward Statement	Corporate IT	5461	G020	4/1/2020	84	$ 310,000	$ -	$ -	$ -	$ -	$ 310,000
Billing and Payments Implementation	Corporate IT	5345	G148	4/20/2020	84	$ 846,000	$ 154,000	$ -	$ -	$ -	$ 1,000,000
Lease Accounting Updates and CMM - Phase 2	Corporate IT	5497	G020	6/30/2020	84	$ 2,600,000	$ 292,000	$ -	$ -	$ -	$ 2,892,000
Allegro Upgrade to Horizon	Corporate IT	4998	G020	10/31/2020	84	$ 1,300,000	$ 700,000	$ -	$ -	$ -	$ 2,000,000
Program Delivery Enablement Project	Corporate IT	3431	G020	3/31/2021	84	$ -	$ 650,000	$ -	$ -	$ -	$ 650,000
MyHub Compliance & Enhancements	Corporate IT	5158	G020	3/31/2021	84	$ 1,330,000	$ 400,000	$ -	$ -	$ -	$ 1,730,000
Future of HR Programme	Corporate IT	5362	G020	3/31/2021	84	$ 1,500,000	$ 650,000	$ -	$ -	$ -	$ 2,150,000
AMAG HW and SW Upgrade	Corporate IT	5466	G020	6/30/2021	84	$ 2,330,000	$ 2,800,000	$ 315,000	$ -	$ -	$ 5,445,000
Future of Finance Program of Work	Corporate IT	5380	G020	3/31/2022	84	$ 4,750,000	$ 18,000,000	$ 7,000,000	$ -	$ -	$ 29,750,000
Digital Services	Corporate IT	5614	G020	3/31/2022	84	$ -	$ -	$ 650,000	$ -	$ -	$ 650,000
US Corporate Strategic Program	Corporate IT	5630	G020	3/31/2022	84	$ -	$ 2,000,000	$ 2,000,000	$ -	$ -	$ 4,000,000
IT Strategic Tooling	Corporate IT	5619	G020	12/30/2022	84	$ -	$ -	$ 1,300,000	$ -	$ -	$ 1,300,000
Legal Strategic Tooling	Corporate IT	5620	G020	12/30/2022	84	$ -	$ -	$ 1,365,000	$ -	$ -	$ 1,365,000
Implementation costs following F& A for Property Systems ReviewNew	Corporate IT	5623	G020	3/31/2023	84	$ -	$ -	$ 689,000	$ 811,000	$ -	$ 1,500,000
Future of Finance Program of Work	Corporate IT	5380	G020	3/31/2024	84	$ -	$ -	$ -	$ 7,000,000	$ 7,000,000	$ 14,000,000
MyHub Upgrade & Refresh	Corporate IT	5621	G020	3/31/2024	84	$ -	$ -	$ 1,300,000	$ 5,200,000	$ 2,600,000	$ 9,100,000
US Corporate Strategic Program	Corporate IT	5630	G020	3/31/2024	84	$ -	$ -	$ -	$ 2,000,000	$ 2,000,000	$ 4,000,000
Enable Transactional Email in CRS	Customer Transformation	5180	C343	1/28/2019	84	$ 513,940	$ -	$ -	$ -	$ -	$ 513,940

Exhibit __ (ITP-4)
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KeySpan Gas East Corporation d/b/a National Grid, The Brooklyn Union Gas Company d/b/a National Grid NY
ITP-4 In-Flight and Forecasted Information Technology (IT) Capital Projects

Investment Name	Program	INVP #	Bill Pool	In Service Date	Amortization Period	Inception to Date+ FY20	FY21 CAPEX	FY22 CAPEX	FY23 CAPEX	FY24 CAPEX	Total US Capex Spend
CXT MyAccount - Customer Personalization Management	Customer Transformation	4750H	C175	1/31/2020	84	$ 930,000	$ -	$ -	$ -	$ -	$ 930,000
CXT MyAccount MVP	Customer Transformation	4750D	C175	2/6/2020	84	$ 15,157,332	$ -	$ -	$ -	$ -	$ 15,157,332
CXT - AIMS Evolution Program	Customer Transformation	5066	C175	5/31/2020	84	$ 1,131,342	$ 339,000	$ -	$ -	$ -	$ 1,470,342
CXT MyAccount - CSS Responsive Web	Customer Transformation	4750F	C175	5/1/2021	84	$ 1,727,000	$ 4,204,000	$ -	$ -	$ -	$ 5,931,000
CIAC process system enhancements program	Customer Transformation	5130	C175	7/31/2021	84	$ -	$ 800,000	$ 200,000	$ -	$ -	$ 1,000,000
Low Income Order Additional Compliance scope	Customer Transformation	5386	C170	8/31/2021	84	$ -	$ 800,000	$ 200,000	$ -	$ -	$ 1,000,000
Customer Experience Transformation (CXT) Phase 2 Program - MyAccount	Customer Transformation	5129	C175	3/31/2022	84	$ -	$ -	$ 3,000,000	$ -	$ -	$ 3,000,000
Customer Experience Transformation (CXT) Phase 2 Program - MyAccount	Customer Transformation	5129	C175	3/31/2023	84	$ -	$ -	$ -	$ 3,000,000	$ -	$ 3,000,000
Customer Experience Transformation (CXT) Phase 2 Program - MyAccount	Customer Transformation	5129	C175	3/31/2024	84	$ -	$ -	$ -	$ -	$ 3,000,000	$ 3,000,000
Perimeter enhancements	Cyber Security	4975USA	G020	2/28/2019	84	$ 257,154	$ -	$ -	$ -	$ -	$ 257,154
CASB 2	Cyber Security	3683USAQ	G020	3/29/2019	84	$ 994,679	$ -	$ -	$ -	$ -	$ 994,679
Gateway Upgrades	Cyber Security	4975USG	G020	3/29/2019	84	$ 422,988	$ -	$ -	$ -	$ -	$ 422,988
IAM: Role Based Access control	Cyber Security	3683USP	G020	4/17/2019	84	$ 779,707	$ 103,900	$ -	$ -	$ -	$ 883,607
CNI Intrusion Detection System (IDS) ref	Cyber Security	4975USB	G020	5/22/2019	84	$ 505,793	$ -	$ -	$ -	$ -	$ 505,793
CNI Secure Communication	Cyber Security	3614B7	G020	5/31/2019	84	$ 7,368,875	$ -	$ -	$ -	$ -	$ 7,368,875
IAM Privilege Access Management (PAM)	Cyber Security	3683USAP	G020	5/31/2019	84	$ 781,288	$ -	$ -	$ -	$ -	$ 781,288
Multi factor Authentication (MFA)	Cyber Security	4975USC	G020	5/31/2019	84	$ 799,506	$ -	$ -	$ -	$ -	$ 799,506
IT/OT Discovery and Implementation Phase	Cyber Security	3683USAO	G020	7/16/2019	84	$ 2,039,917	$ 1,579,354	$ -	$ -	$ -	$ 3,619,271
Develop Robust Incident Response	Cyber Security	3683USD	G020	7/31/2019	84	$ 1,747,634	$ -	$ -	$ -	$ -	$ 1,747,634
DNS Resolution & Protection	Cyber Security	3683USAN	G020	8/14/2019	84	$ 433,935	$ -	$ -	$ -	$ -	$ 433,935
US Endpoint Security	Cyber Security	3683USA	G020	10/31/2019	84	$ 2,175,866	$ -	$ -	$ -	$ -	$ 2,175,866
Enterprise Centralized Patch Management	Cyber Security	3683USF	G020	12/4/2019	84	$ 268,937	$ -	$ -	$ -	$ -	$ 268,937
Azure CoE Vulnerability Scanning	Cyber Security	3683USAR	G020	1/13/2020	84	$ 325,356	$ -	$ -	$ -	$ -	$ 325,356
Sustainable RedTeam Service Model	Cyber Security	3683USI	G020	1/22/2020	84	$ 482,044	$ -	$ -	$ -	$ -	$ 482,044
Gas Business Enablement Cyber Security E	Cyber Security	5571	G210	1/30/2020	84	$ 685,000	$ -	$ -	$ -	$ -	$ 685,000
CNI Forensic Pack capture	Cyber Security	3683USV	G020	1/30/2020	84	$ 55,650	$ 1,197,360	$ -	$ -	$ -	$ 1,253,010
Continuous review of Reference Security	Cyber Security	3683USZ	G020	2/12/2020	84	$ 706,562	$ 23,409	$ -	$ -	$ -	$ 729,971
Application Security As a Service	Cyber Security	3683USX	G020	2/25/2020	84	$ 401,300	$ -	$ -	$ -	$ -	$ 401,300
Network Segregation	Cyber Security	3683USO	G020	3/30/2020	84	$ 1,919,564	$ -	$ -	$ -	$ -	$ 1,919,564
Internal Public Key Infrastructure (PKI)	Cyber Security	4975USF	G020	3/31/2020	84	$ 1,229,901	$ -	$ -	$ -	$ -	$ 1,229,901
Enhanced Phishing protection & awareness	Cyber Security	3683USG	G020	6/1/2020	84	$ 707,118	$ 133,954	$ -	$ -	$ -	$ 841,071
Security Data Visualization	Cyber Security	3683USAH	G020	8/27/2020	84	$ -	$ -	$ 1,207,101	$ -	$ -	$ 1,207,101
Insider Threat Detection	Cyber Security	3683USL	G020	9/27/2020	84	$ 477,000	$ 1,478,607	$ -	$ -	$ -	$ 1,955,607
Security Research Lab	Cyber Security	3683USR	G020	11/30/2020	84	$ 377,685	$ 50,000	$ -	$ -	$ -	$ 427,685
Threat Behavior Modeling	Cyber Security	3683USS	G020	11/30/2020	84	$ 365,680	$ 612,112	$ -	$ -	$ -	$ 977,792
Virtualized Browser	Cyber Security	3683USM	G020	12/31/2020	84	$ 127,190	$ 214,637	$ -	$ -	$ -	$ 341,827
AntiMalware Gateway	Cyber Security	3683USY	G020	2/1/2021	84	$ 328,600	$ -	$ -	$ -	$ -	$ 328,600
Enhanced DLP Gateway & Endpoint	Cyber Security	3683USAB	G020	3/1/2021	84	$ -	$ 2,765,203	$ 17,122	$ -	$ -	$ 2,782,325
CNI Security Enhancements: Phase 1	Cyber Security	3683USAM	G020	5/1/2021	84	$ -	$ 1,584,180	$ 15,900	$ -	$ -	$ 1,600,080
CNI Intrusion Detection/Prevention: Phase 2	Cyber Security	3683USAC	G020	3/1/2022	84	$ -	$ -	$ 1,033,435	$ 31,798	$ -	$ 1,065,233
Operational Technology Cyber Security Program	Cyber Security	5591	G020	3/31/2022	84	$ -	$ -	$ 3,281,216	$ -	$ -	$ 3,281,216
Security Operations and Monitoring Cyber Security Program	Cyber Security	5592	G020	3/31/2022	84	$ -	$ -	$ 2,415,501	$ -	$ -	$ 2,415,501
Enhance the Foundation Cyber Security Program	Cyber Security	5593	G020	3/31/2022	84	$ -	$ -	$ 371,021	$ -	$ -	$ 371,021
Culture and Awareness Cyber Security Program	Cyber Security	5594	G020	3/31/2022	84	$ -	$ -	$ 463,776	$ -	$ -	$ 463,776
Threat Resistant Networks Cyber Security Program	Cyber Security	5595	G020	3/31/2022	84	$ -	$ -	$ 425,128	$ -	$ -	$ 425,128
Robust Identity and Controls Cyber Security Program	Cyber Security	5596	G020	3/31/2022	84	$ -	$ -	$ 1,352,680	$ -	$ -	$ 1,352,680
Secure Endpoints Cyber Security Program	Cyber Security	5597	G020	3/31/2022	84	$ -	$ -	$ 966,200	$ -	$ -	$ 966,200
IAM: Shared Area Access Management	Cyber Security	3683USAG	G020	6/1/2022	84	$ -	$ -	$ 3,076,457	$ 31,798	$ -	$ 3,108,255
Removable Media Control - Full Roll out	Cyber Security	3683USW	G020	6/1/2022	84	$ -	$ 489,200	$ 798,619	$ 23,849	$ -	$ 1,311,668
GPS Project	Cyber Security	3683USAA	G020	11/1/2022	84	$ -	$ -	$ 324,458	$ -	$ -	$ 324,458
Security Incident & Event Management: Phase 5	Cyber Security	3683USAF	G020	11/1/2022	84	$ -	$ -	$ 357,728	$ 1,273,755	$ -	$ 1,631,482
Big Data Security Analytics: Phase 2	Cyber Security	3683USAD	G020	12/31/2022	84	$ -	$ -	$ 397,475	$ 3,165,124	$ -	$ 3,562,599
Big Data Security Analytics: Phase 1	Cyber Security	3683USQ	G020	12/31/2022	84	$ 1,076,397	$ -	$ -	$ -	$ -	$ 1,076,397
Operational Technology Cyber Security Program	Cyber Security	5591	G020	3/31/2023	84	$ -	$ -	$ -	$ 5,148,910	$ -	$ 5,148,910
Security Operations and Monitoring Cyber Security Program	Cyber Security	5592	G020	3/31/2023	84	$ -	$ -	$ -	$ 3,432,607	$ -	$ 3,432,607
Enhance the Foundation Cyber Security Program	Cyber Security	5593	G020	3/31/2023	84	$ -	$ -	$ -	$ 396,070	$ -	$ 396,070
Culture and Awareness Cyber Security Program	Cyber Security	5594	G020	3/31/2023	84	$ -	$ -	$ -	$ 528,093	$ -	$ 528,093
Threat Resistant Networks Cyber Security Program	Cyber Security	5595	G020	3/31/2023	84	$ -	$ -	$ -	$ 660,117	$ -	$ 660,117
Robust Identity and Controls Cyber Security Program	Cyber Security	5596	G020	3/31/2023	84	$ -	$ -	$ -	$ 1,980,350	$ -	$ 1,980,350
Secure Endpoints Cyber Security Program	Cyber Security	5597	G020	3/31/2023	84	$ -	$ -	$ -	$ 1,056,187	$ -	$ 1,056,187
Operational Technology Cyber Security Program	Cyber Security	5591	G020	3/31/2024	84	$ -	$ -	$ -	$ -	$ 7,104,893	$ 7,104,893
Security Operations and Monitoring Cyber Security Program	Cyber Security	5592	G020	3/31/2024	84	$ -	$ -	$ -	$ -	$ 4,852,122	$ 4,852,122
Enhance the Foundation Cyber Security Program	Cyber Security	5593	G020	3/31/2024	84	$ -	$ -	$ -	$ -	$ 519,870	$ 519,870
Culture and Awareness Cyber Security Program	Cyber Security	5594	G020	3/31/2024	84	$ -	$ -	$ -	$ -	$ 519,870	$ 519,870
Threat Resistant Networks Cyber Security Program	Cyber Security	5595	G020	3/31/2024	84	$ -	$ -	$ -	$ -	$ 693,160	$ 693,160
Robust Identity and Controls Cyber Security Program	Cyber Security	5596	G020	3/31/2024	84	$ -	$ -	$ -	$ -	$ 2,599,351	$ 2,599,351
Secure Endpoints Cyber Security Program	Cyber Security	5597	G020	3/31/2024	84	$ -	$ -	$ -	$ -	$ 1,039,740	$ 1,039,740
Gas Capacity Review Database	Gas Operations	4468	C210	2/12/2019	84	$ 1,447,759	$ -	$ -	$ -	$ -	$ 1,447,759
Gas Service Database DNY (LI and NYC)	Gas Operations	3948	G225	3/10/2019	84	$ 408,889	$ -	$ -	$ -	$ -	$ 408,889
US CNI GMSSCADA Upgrade and Consolidation	Gas Operations	3737	C210	3/20/2019	84	$ 16,272,805	$ -	$ -	$ -	$ -	$ 16,272,805
Fortis Upgrade	Gas Operations	5531	G210	12/31/2019	84	$ 387,000	$ -	$ -	$ -	$ -	$ 387,000

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KeySpan Gas East Corporation d/b/a National Grid, The Brooklyn Union Gas Company d/b/a National Grid NY
ITP-4 In-Flight and Forecasted Information Technology (IT) Capital Projects

Investment Name	Program	INVP #	Bill Pool	In Service Date	Amortization Period	Inception to Date+ FY20	FY21 CAPEX	FY22 CAPEX	FY23 CAPEX	FY24 CAPEX	Total US Capex Spend
AVLS Modem Reconfiguration	Gas Operations	5486	G434	5/31/2020	84	$ 855,000	$ 232,949	$ -	$ -	$ -	$ 1,087,949
Gas Control Center Investments	Gas Operations	5590	G210	3/31/2021	84	$ -	$ 2,000,000	$ -	$ -	$ -	$ 2,000,000
Gas Control Center Investments	Gas Operations	5590	G210	3/31/2022	84	$ -	$ -	$ 3,000,000	$ -	$ -	$ 3,000,000
Gas Business Systems Maintenance of Business Projects	Gas Operations	5651	G210	3/31/2022	84	$ -	$ -	$ 500,000	$ -	$ -	$ 500,000
Gas Advanced Meter Infrastructure (AMI)	Gas Operations	5645	G225	12/30/2022	84	$ -	$ 750,000	$ 3,000,000	$ 1,500,000	$ -	$ 5,250,000
Gas Control Center Investments	Gas Operations	5590	G210	3/31/2023	84	$ -	$ -	$ -	$ 3,000,000	$ -	$ 3,000,000
Gas Business Systems Maintenance of Business Projects	Gas Operations	5651	G210	3/31/2023	84	$ -	$ -	$ -	$ 500,000	$ -	$ 500,000
Gas Control Center Investments	Gas Operations	5590	G210	3/31/2024	84	$ -	$ -	$ -	$ -	$ 5,000,000	$ 5,000,000
Gas Business Systems Maintenance of Business Projects	Gas Operations	5651	G210	3/31/2024	84	$ -	$ -	$ -	$ -	$ 500,000	$ 500,000
Identity and Access Management Business	Identity & Access Management	5278	G020	6/30/2020	84	$ 2,785,903	$ 1,218,226	$ -	$ -	$ -	$ 4,004,130
Physical Security	Physical Security	3617	G020	3/31/2019	60	$ 989,571	$ -	$ -	$ -	$ -	$ 989,571
Physical Security	Physical Security	3617	G020	3/31/2020	60	$ 1,070,000	$ -	$ -	$ -	$ -	$ 1,070,000
Physical Security	Physical Security	3617	G251	3/31/2020	60	$ 65,000	$ -	$ -	$ -	$ -	$ 65,000
Physical Security	Physical Security	3617	5220G	3/31/2020	60	$ 340,000	$ -	$ -	$ -	$ -	$ 340,000
Physical Security	Physical Security	3617	5230G	3/31/2020	60	$ 178,000	$ -	$ -	$ -	$ -	$ 178,000
Physical Security	Physical Security	3617	G020	3/31/2021	60	$ -	$ 1,112,000	$ -	$ -	$ -	$ 1,112,000
Physical Security	Physical Security	3617	G251	3/31/2021	60	$ -	$ 75,000	$ -	$ -	$ -	$ 75,000
Physical Security	Physical Security	3617	5220G	3/31/2021	60	$ -	$ 345,000	$ -	$ -	$ -	$ 345,000
Physical Security	Physical Security	3617	5230G	3/31/2021	60	$ -	$ 192,000	$ -	$ -	$ -	$ 192,000
Physical Security	Physical Security	3617	G020	3/31/2022	60	$ -	$ -	$ 1,025,000	$ -	$ -	$ 1,025,000
Physical Security	Physical Security	3617	G251	3/31/2022	60	$ -	$ -	$ 330,000	$ -	$ -	$ 330,000
Physical Security	Physical Security	3617	5220G	3/31/2022	60	$ -	$ -	$ 420,000	$ -	$ -	$ 420,000
Physical Security	Physical Security	3617	5230G	3/31/2022	60	$ -	$ -	$ 350,000	$ -	$ -	$ 350,000
Physical Security	Physical Security	3617	G020	3/31/2023	60	$ -	$ -	$ -	$ 1,025,000	$ -	$ 1,025,000
Physical Security	Physical Security	3617	G251	3/31/2023	60	$ -	$ -	$ -	$ 300,000	$ -	$ 300,000
Physical Security	Physical Security	3617	5220G	3/31/2023	60	$ -	$ -	$ -	$ 520,000	$ -	$ 520,000
Physical Security	Physical Security	3617	5230G	3/31/2023	60	$ -	$ -	$ -	$ 370,000	$ -	$ 370,000
Physical Security	Physical Security	3617	G020	3/31/2024	60	$ -	$ -	$ -	$ -	$ 1,025,000	$ 1,025,000
Physical Security	Physical Security	3617	G251	3/31/2024	60	$ -	$ -	$ -	$ -	$ 310,000	$ 310,000
Physical Security	Physical Security	3617	5220G	3/31/2024	60	$ -	$ -	$ -	$ -	$ 490,000	$ 490,000
Physical Security	Physical Security	3617	5230G	3/31/2024	60	$ -	$ -	$ -	$ -	$ 410,000	$ 410,000
US SAP: FERC on HANA (FOH) Upgrade	SAP	4563	G020	8/7/2019	84	$ 2,928,269	$ -	$ -	$ -	$ -	$ 2,928,269
US SAP: Business Warehouse (BW) Consolidation to HANA Enterprise Cloud (HEC)	SAP	4562	G020	4/30/2020	84	$ 1,000,000	$ 239,000	$ -	$ -	$ -	$ 1,239,000
Vision FM Replacement	Strategic Business Services	3870	G327	9/30/2020	84	$ 805,000	$ 695,000	$ -	$ -	$ -	$ 1,500,000
Revenue Cycle Mgmt. Non-CIS	Strategic Business Services	5625	G020	3/31/2021	84	$ -	$ 2,000,000	$ -	$ -	$ -	$ 2,000,000
Decision Software Analytics Implementation	Strategic Business Services	5624	G020	3/31/2022	84	$ -	$ -	$ 1,000,000	$ -	$ -	$ 1,000,000
Revenue Cycle Mgmt. Non-CIS	Strategic Business Services	5627	G020	3/31/2022	84	$ -	$ -	$ 2,000,000	$ -	$ -	$ 2,000,000
Revenue Cycle Mgmt. Non-CIS	Strategic Business Services	5628	G020	3/31/2023	84	$ -	$ -	$ -	$ 2,000,000	$ -	$ 2,000,000
Revenue Cycle Mgmt. Non-CIS	Strategic Business Services	5629	G020	3/31/2024	84	$ -	$ -	$ -	$ -	$ 2,000,000	$ 2,000,000
Supervisor Enablement iPads Rollout	Supervisor Enablement	4811	N012	9/17/2019	60	$ 859,272	$ -	$ -	$ -	$ -	$ 859,272
Supervisor Enablement iPad Advanced Capabilities	Supervisor Enablement	5384	G148	9/30/2020	84	$ 253,697	$ 298,303	$ -	$ -	$ -	$ 552,000
Apps Interface Remediation	Technology Modernization	4706	G020	12/11/2018	84	$ 765,419	$ -	$ -	$ -	$ -	$ 765,419
Data Visualization Evolution	Technology Modernization	4768	G020	1/25/2019	84	$ 2,426,754	$ -	$ -	$ -	$ -	$ 2,426,754
End User US T430 Refresh	Technology Modernization	5316	N012	1/31/2019	60	$ 2,346,121	$ -	$ -	$ -	$ -	$ 2,346,121
UPS Replacement for Data Communication C	Technology Modernization	4003	G020	2/5/2019	60	$ 154,193	$ -	$ -	$ -	$ -	$ 154,193
Unix51 Interface Migration	Technology Modernization	4461	G020	3/29/2019	84	$ 1,476,487	$ -	$ -	$ -	$ -	$ 1,476,487
Windows 10 HW	Technology Modernization	5089	G020	3/31/2019	60	$ 486,085	$ -	$ -	$ -	$ -	$ 486,085
Data Visualization	Technology Modernization	5582	G020	3/31/2019	84	$ 320,000	$ -	$ -	$ -	$ -	$ 320,000
Virtual Desktop DaaS	Technology Modernization	4727	G020	4/25/2019	84	$ 431,583	$ -	$ -	$ -	$ -	$ 431,583
NetMod eBond/NSSR/SVC Catalog	Technology Modernization	5314	G020	4/26/2019	84	$ 352,479	$ -	$ -	$ -	$ -	$ 352,479
AIX upgrade	Technology Modernization	5199	G020	4/30/2019	84	$ 2,045,422	$ -	$ -	$ -	$ -	$ 2,045,422
NetMod Zscaler Cloud Security Gateway	Technology Modernization	5313	G020	5/8/2019	84	$ 336,185	$ -	$ -	$ -	$ -	$ 336,185
EMM Phase2	Technology Modernization	4714	G020	5/31/2019	84	$ 1,435,290	$ -	$ -	$ -	$ -	$ 1,435,290
US Foundation Hosting Renewal	Technology Modernization	4761	G020	6/23/2019	84	$ 8,475,183	$ -	$ -	$ -	$ -	$ 8,475,183
ICE Replacement	Technology Modernization	4491	G020	6/28/2019	84	$ 9,616,970	$ -	$ -	$ -	$ -	$ 9,616,970
Active Directory Improvements	Technology Modernization	4489	G020	8/6/2019	84	$ 1,724,651	$ -	$ -	$ -	$ -	$ 1,724,651
Data Centre Decommission Melville	Technology Modernization	4377B	G020	8/30/2019	84	$ 378,851	$ -	$ -	$ -	$ -	$ 378,851
NetMod Infoblox	Technology Modernization	5311	G020	9/3/2019	84	$ 2,678,616	$ -	$ -	$ -	$ -	$ 2,678,616
NetMod Ethernet/SD WAN Upgrade	Technology Modernization	5312	G020	9/11/2019	84	$ 1,232,514	$ -	$ -	$ -	$ -	$ 1,232,514
Netmod Governance	Technology Modernization	5310	G020	9/17/2019	84	$ 524,952	$ -	$ -	$ -	$ -	$ 524,952
Customer Contact Center / SDC Technology	Technology Modernization	3932	C175	10/18/2019	84	$ 23,114,687	$ -	$ -	$ -	$ -	$ 23,114,687
GRC Archer Risk and Migration	Technology Modernization	5472	G020	10/18/2019	84	$ 1,525,276	$ -	$ -	$ -	$ -	$ 1,525,276
DMS Replacement Delivery	Technology Modernization	4408	G149	11/22/2019	84	$ 11,954,452	$ -	$ -	$ -	$ -	$ 11,954,452
Data Center Buildout (Hicksville)	Technology Modernization	5154	G020	12/6/2019	84	$ 813,265	$ -	$ -	$ -	$ -	$ 813,265
Collaboration & Unified Communications	Technology Modernization	5487	G020	3/31/2020	84	$ 3,410,000	$ -	$ -	$ -	$ -	$ 3,410,000
Customer Experience	Technology Modernization	5488	G175	3/31/2020	84	$ 2,843,000	$ -	$ -	$ -	$ -	$ 2,843,000
Emerging Technology	Technology Modernization	5489	N012	3/31/2020	84	$ 572,000	$ -	$ -	$ -	$ -	$ 572,000
Modern Workplace	Technology Modernization	5490	G020	3/31/2020	84	$ 4,542,000	$ -	$ -	$ -	$ -	$ 4,542,000
Enterprise Platforms	Technology Modernization	5505	G020	3/31/2020	84	$ 604,000	$ -	$ -	$ -	$ -	$ 604,000
Integration Services	Technology Modernization	5506	G020	3/31/2020	84	$ 1,490,000	$ -	$ -	$ -	$ -	$ 1,490,000
LAN Infrastructure Program	Technology Modernization	5521	G020	3/31/2020	84	$ 1,047,000	$ -	$ -	$ -	$ -	$ 1,047,000
Network Security Infrastructure Program	Technology Modernization	5522	G020	3/31/2020	84	$ 3,141,000	$ -	$ -	$ -	$ -	$ 3,141,000
Voice Infrastructure Program	Technology Modernization	5523	G020	3/31/2020	84	$ 1,047,000	$ -	$ -	$ -	$ -	$ 1,047,000

Exhibit __ (ITP-4)
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KeySpan Gas East Corporation d/b/a National Grid, The Brooklyn Union Gas Company d/b/a National Grid NY
ITP-4 In-Flight and Forecasted Information Technology (IT) Capital Projects

Investment Name	Program	INVP #	Bill Pool	In Service Date	Amortization Period	Inception to Date+ FY20	FY21 CAPEX	FY22 CAPEX	FY23 CAPEX	FY24 CAPEX	Total US Capex Spend
WAN Infrastructure Program	Technology Modernization	5524	G020	3/31/2020	84	$ 3,141,000	$ -	$ -	$ -	$ -	$ 3,141,000
Wireless Infrastructure Program	Technology Modernization	5525	G020	3/31/2020	84	$ 2,094,000	$ -	$ -	$ -	$ -	$ 2,094,000
Infrastructure Remediation and Lifecycle refresh	Technology Modernization	5540	G020	3/31/2020	84	$ 5,573,000	$ -	$ -	$ -	$ -	$ 5,573,000
Infrastructure New Capability	Technology Modernization	5541	G020	3/31/2020	84	$ 419,000	$ -	$ -	$ -	$ -	$ 419,000
Hosting RFP Build & Market Release	Technology Modernization	5579	G020	3/31/2020	84	$ 1,750,000	$ -	$ -	$ -	$ -	$ 1,750,000
Managed Workspace Services Transition & Tx	Technology Modernization	5580	G020	3/31/2020	84	$ 2,000,000	$ -	$ -	$ -	$ -	$ 2,000,000
DXC Hosting Tx Initiatives	Technology Modernization	5581	G020	3/31/2020	84	$ 3,000,000	$ -	$ -	$ -	$ -	$ 3,000,000
Application Rationalization	Technology Modernization	5598	G331	3/31/2020	84	$ 7,686,000	$ -	$ -	$ -	$ -	$ 7,686,000
SOE (Windows) Upgrade and Device Refresh	Technology Modernization	4987	G020	3/31/2021	84	$ 2,302,764	$ 3,201,429	$ -	$ -	$ -	$ 5,504,193
Collaboration & Unified Communications	Technology Modernization	5487	G020	3/31/2021	84	$ -	$ 4,318,000	$ -	$ -	$ -	$ 4,318,000
Customer Experience	Technology Modernization	5488	G175	3/31/2021	84	$ -	$ 3,598,000	$ -	$ -	$ -	$ 3,598,000
Emerging Technology	Technology Modernization	5489	N012	3/31/2021	84	$ -	$ 720,000	$ -	$ -	$ -	$ 720,000
Modern Workplace	Technology Modernization	5490	G020	3/31/2021	84	$ -	$ 5,757,000	$ -	$ -	$ -	$ 5,757,000
Enterprise Platforms	Technology Modernization	5505	G020	3/31/2021	84	$ -	$ 765,000	$ -	$ -	$ -	$ 765,000
Integration Services	Technology Modernization	5506	G020	3/31/2021	84	$ -	$ 1,887,000	$ -	$ -	$ -	$ 1,887,000
LAN Infrastructure Program	Technology Modernization	5521	G020	3/31/2021	84	$ -	$ 1,326,000	$ -	$ -	$ -	$ 1,326,000
Network Security Infrastructure Program	Technology Modernization	5522	G020	3/31/2021	84	$ -	$ 3,978,000	$ -	$ -	$ -	$ 3,978,000
Voice Infrastructure Program	Technology Modernization	5523	G020	3/31/2021	84	$ -	$ 1,326,000	$ -	$ -	$ -	$ 1,326,000
WAN Infrastructure Program	Technology Modernization	5524	G020	3/31/2021	84	$ -	$ 3,978,000	$ -	$ -	$ -	$ 3,978,000
Wireless Infrastructure Program	Technology Modernization	5525	G020	3/31/2021	84	$ -	$ 2,652,000	$ -	$ -	$ -	$ 2,652,000
Infrastructure Remediation and Lifecycle refresh	Technology Modernization	5540	G020	3/31/2021	84	$ -	$ 7,058,000	$ -	$ -	$ -	$ 7,058,000
Infrastructure New Capability	Technology Modernization	5541	G020	3/31/2021	84	$ -	$ 530,000	$ -	$ -	$ -	$ 530,000
Hosting RFP Build & Market Release	Technology Modernization	5579	G020	3/31/2021	84	$ -	$ 765,000	$ -	$ -	$ -	$ 765,000
Managed Workspace Services Transition & Tx	Technology Modernization	5580	G020	3/31/2021	84	$ -	$ 2,040,000	$ -	$ -	$ -	$ 2,040,000
DXC Hosting Tx Initiatives	Technology Modernization	5581	G020	3/31/2021	84	$ -	$ 2,040,000	$ -	$ -	$ -	$ 2,040,000
Application Rationalization	Technology Modernization	5598	G331	3/31/2021	84	$ -	$ 7,403,000	$ -	$ -	$ -	$ 7,403,000
Collaboration & Unified Communications	Technology Modernization	5487	G020	3/31/2022	84	$ -	$ -	$ 4,404,000	$ -	$ -	$ 4,404,000
Customer Experience	Technology Modernization	5488	G175	3/31/2022	84	$ -	$ -	$ 3,670,000	$ -	$ -	$ 3,670,000
Emerging Technology	Technology Modernization	5489	N012	3/31/2022	84	$ -	$ -	$ 734,000	$ -	$ -	$ 734,000
Modern Workplace	Technology Modernization	5490	G020	3/31/2022	84	$ -	$ -	$ 5,872,000	$ -	$ -	$ 5,872,000
Enterprise Platforms	Technology Modernization	5505	G020	3/31/2022	84	$ -	$ -	$ 780,000	$ -	$ -	$ 780,000
Integration Services	Technology Modernization	5506	G020	3/31/2022	84	$ -	$ -	$ 1,925,000	$ -	$ -	$ 1,925,000
LAN Infrastructure Program	Technology Modernization	5521	G020	3/31/2022	84	$ -	$ -	$ 1,353,000	$ -	$ -	$ 1,353,000
Network Security Infrastructure Program	Technology Modernization	5522	G020	3/31/2022	84	$ -	$ -	$ 4,058,000	$ -	$ -	$ 4,058,000
Voice Infrastructure Program	Technology Modernization	5523	G020	3/31/2022	84	$ -	$ -	$ 1,353,000	$ -	$ -	$ 1,353,000
WAN Infrastructure Program	Technology Modernization	5524	G020	3/31/2022	84	$ -	$ -	$ 4,058,000	$ -	$ -	$ 4,058,000
Wireless Infrastructure Program	Technology Modernization	5525	G020	3/31/2022	84	$ -	$ -	$ 2,705,000	$ -	$ -	$ 2,705,000
Infrastructure Remediation and Lifecycle refresh	Technology Modernization	5540	G020	3/31/2022	84	$ -	$ -	$ 7,200,000	$ -	$ -	$ 7,200,000
Infrastructure New Capability	Technology Modernization	5541	G020	3/31/2022	84	$ -	$ -	$ 541,000	$ -	$ -	$ 541,000
Hosting RFP Build & Market Release	Technology Modernization	5579	G020	3/31/2022	84	$ -	$ -	$ 780,000	$ -	$ -	$ 780,000
Managed Workspace Services Transition & Tx	Technology Modernization	5580	G020	3/31/2022	84	$ -	$ -	$ 2,081,000	$ -	$ -	$ 2,081,000
DXC Hosting Tx Initiatives	Technology Modernization	5581	G020	3/31/2022	84	$ -	$ -	$ 2,081,000	$ -	$ -	$ 2,081,000
Application Rationalization	Technology Modernization	5598	G331	3/31/2022	84	$ -	$ -	$ 8,070,000	$ -	$ -	$ 8,070,000
Case & Customer Complaint Management Solution	Technology Modernization	5169	G116	10/30/2022	84	$ -	$ -	$ 552,273	$ 348,000	$ -	$ 900,273
Collaboration & Unified Communications	Technology Modernization	5487	G020	3/31/2023	84	$ -	$ -	$ -	$ 4,492,000	$ -	$ 4,492,000
Customer Experience	Technology Modernization	5488	G175	3/31/2023	84	$ -	$ -	$ -	$ 3,743,000	$ -	$ 3,743,000
Emerging Technology	Technology Modernization	5489	N012	3/31/2023	84	$ -	$ -	$ -	$ 749,000	$ -	$ 749,000
Modern Workplace	Technology Modernization	5490	G020	3/31/2023	84	$ -	$ -	$ -	$ 5,989,000	$ -	$ 5,989,000
Enterprise Platforms	Technology Modernization	5505	G020	3/31/2023	84	$ -	$ -	$ -	$ 796,000	$ -	$ 796,000
Integration Services	Technology Modernization	5506	G020	3/31/2023	84	$ -	$ -	$ -	$ 1,963,000	$ -	$ 1,963,000
LAN Infrastructure Program	Technology Modernization	5521	G020	3/31/2023	84	$ -	$ -	$ -	$ 1,380,000	$ -	$ 1,380,000
Network Security Infrastructure Program	Technology Modernization	5522	G020	3/31/2023	84	$ -	$ -	$ -	$ 4,139,000	$ -	$ 4,139,000
Voice Infrastructure Program	Technology Modernization	5523	G020	3/31/2023	84	$ -	$ -	$ -	$ 1,380,000	$ -	$ 1,380,000
WAN Infrastructure Program	Technology Modernization	5524	G020	3/31/2023	84	$ -	$ -	$ -	$ 4,139,000	$ -	$ 4,139,000
Wireless Infrastructure Program	Technology Modernization	5525	G020	3/31/2023	84	$ -	$ -	$ -	$ 2,759,000	$ -	$ 2,759,000
Infrastructure Remediation and Lifecycle refresh	Technology Modernization	5540	G020	3/31/2023	84	$ -	$ -	$ -	$ 7,344,000	$ -	$ 7,344,000
Infrastructure New Capability	Technology Modernization	5541	G020	3/31/2023	84	$ -	$ -	$ -	$ 552,000	$ -	$ 552,000
Hosting RFP Build & Market Release	Technology Modernization	5579	G020	3/31/2023	84	$ -	$ -	$ -	$ 796,000	$ -	$ 796,000
Managed Workspace Services Transition & Tx	Technology Modernization	5580	G020	3/31/2023	84	$ -	$ -	$ -	$ 2,122,000	$ -	$ 2,122,000
DXC Hosting Tx Initiatives	Technology Modernization	5581	G020	3/31/2023	84	$ -	$ -	$ -	$ 2,122,000	$ -	$ 2,122,000
Application Rationalization	Technology Modernization	5598	G331	3/31/2023	84	$ -	$ -	$ -	$ 8,489,664	$ -	$ 8,489,664
Collaboration & Unified Communications	Technology Modernization	5487	G020	3/31/2024	84	$ -	$ -	$ -	$ -	$ 4,582,000	$ 4,582,000
Customer Experience	Technology Modernization	5488	G175	3/31/2024	84	$ -	$ -	$ -	$ -	$ 3,818,000	$ 3,818,000

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KeySpan Gas East Corporation d/b/a National Grid, The Brooklyn Union Gas Company d/b/a National Grid NY
ITP-4 In-Flight and Forecasted Information Technology (IT) Capital Projects

Investment Name	Program	INVP #	Bill Pool	In Service Date	Amortization Period	Inception to Date+ FY20	FY21 CAPEX	FY22 CAPEX	FY23 CAPEX	FY24 CAPEX	Total US Capex Spend
Emerging Technology	Technology Modernization	5489	N012	3/31/2024	84	$ -	$ -	$ -	$ -	$ 764,000	$ 764,000
Modern Workplace	Technology Modernization	5490	G020	3/31/2024	84	$ -	$ -	$ -	$ -	$ 6,109,000	$ 6,109,000
Enterprise Platforms	Technology Modernization	5505	G020	3/31/2024	84	$ -	$ -	$ -	$ -	$ 812,000	$ 812,000
Integration Services	Technology Modernization	5506	G020	3/31/2024	84	$ -	$ -	$ -	$ -	$ 2,002,000	$ 2,002,000
LAN Infrastructure Program	Technology Modernization	5521	G020	3/31/2024	84	$ -	$ -	$ -	$ -	$ 1,407,000	$ 1,407,000
Network Security Infrastructure Program	Technology Modernization	5522	G020	3/31/2024	84	$ -	$ -	$ -	$ -	$ 4,221,000	$ 4,221,000
Voice Infrastructure Program	Technology Modernization	5523	G020	3/31/2024	84	$ -	$ -	$ -	$ -	$ 1,407,000	$ 1,407,000
WAN Infrastructure Program	Technology Modernization	5524	G020	3/31/2024	84	$ -	$ -	$ -	$ -	$ 4,221,000	$ 4,221,000
Wireless Infrastructure Program	Technology Modernization	5525	G020	3/31/2024	84	$ -	$ -	$ -	$ -	$ 2,814,000	$ 2,814,000
Infrastructure Remediation and Lifecycle refresh	Technology Modernization	5540	G020	3/31/2024	84	$ -	$ -	$ -	$ -	$ 7,490,000	$ 7,490,000
Infrastructure New Capability	Technology Modernization	5541	G020	3/31/2024	84	$ -	$ -	$ -	$ -	$ 563,000	$ 563,000
Hosting RFP Build & Market Release	Technology Modernization	5579	G020	3/31/2024	84	$ -	$ -	$ -	$ -	$ 812,000	$ 812,000
Managed Workspace Services Transition & Tx	Technology Modernization	5580	G020	3/31/2024	84	$ -	$ -	$ -	$ -	$ 2,165,000	$ 2,165,000
DXC Hosting Tx Initiatives	Technology Modernization	5581	G020	3/31/2024	84	$ -	$ -	$ -	$ -	$ 2,165,000	$ 2,165,000
Application Rationalization	Technology Modernization	5598	G331	3/31/2024	84	$ -	$ -	$ -	$ -	$ 8,659,457	$ 8,659,457
Gas Transportation System Phase 3 GTIS	Technology Modernization	5388	G210	12/31/2024	84	$ -	$ -	$ 1,704,644	$ 3,418,654	$ 2,500,000	$ 7,623,297
Total						$ 294,901,081	$ 194,287,969	$ 185,595,240	$ 171,089,998	$ 160,561,236	$ 1,006,435,523

Exhibit __ (ITP-4)
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Testimony of Information Technology Panel

Exhibit ___ (ITP-5)

Technology Modernization Project Descriptions

KeySpan Gas East Corporation d/b/a National Grid, The Brooklyn Union Gas Company d/b/a National Grid NY
ITP-5 Technology Modernization Project Descriptions

Project/INVP#	In Service Date(s)	Description of Project
INVP 4003 - UPS Replacement for Data Communication Closets	2/5/2019	This project will purchase and replace new batteries in existing Uninterruptable Power Supply (UPS) units. These units support the trouble-free operation of National Grid's network and telephony equipment located at various corporate locations.
INVP 4727 - Virtual Desktop DaaS	4/25/2019	This project is to deploy a virtual desktop (VMware) environment. This will transform the end-user computing desktops to a secure, centralized desktop environment for local and remote users using a virtual desktop infrastructure (VDI) solution Benefits: - A reduction in cost of new physical PCs and hardware maintenance - The ability to offload end point cost or extend the lifecycle of existing PCs.
INVP 4987 - Standard Operating Environment (Windows) Upgrade and Device Refresh	3/31/2021	This project will transform the current Standard Operating Environment (SOE) at National Grid, Windows 7, to the new Windows 10 operating system provided by Microsoft. Microsoft will not support or provide security patches for as of January 14, 2020. To ensure the end user device estate continues to be reliable, remains secure and can meet new business demands, it is important that the operating system provides good performance and is fully supported by the software vendor. The current project will perform analysis of the current environment, gather requirements, and develop a design to roll out Windows 10 to all end users.
INVP 5089 - Windows 10 Foundation Deployment	3/31/2019	This is an initial piece of work for migrating to Windows 10. This project will perform the following activities: - Develop new production Windows 10 build to deploy to standard desktop devices - Complete testing to enable testing to standard office users (with standard enterprise applications only) - Purchase 300 devices and deploy them to 300 US users during the Windows 10 roll out - Upgrade System Center Configuration Manager (SCCM) to work on Windows 10.
INVP 5154 - Data Center Buildout (Hicksville)	12/6/2019	This project is required to review, migrate, and ,when possible, remove all remaining equipment (ex. servers, storage, hardware/software, etc.) from the US Hicksville Data Center and migrate to the DXC data centers in Norwich, Connecticut and Newark, Delaware. This project is needed to mitigate cyber security risk of legacy equipment. This work will modernized data center environment, allow applications will be hosted on supported hardware, and enable the decommissioning of legacy applications that are currently not in use.
INVP 5199 - AIX upgrade	4/30/2019	This project is for the purchase and installation of AIX servers, network switches, cabling and power in the DXC Newark data center. The current legacy AIX infrastructure does not have the capability to support high availability systems which are durable and minimize hardware failures. A new AIX infrastructure is required to support improved resiliency and failover capabilities. The new AIX servers will provide a level of resiliency that will allow for high availability of production hosted virtual servers and applications. This project will also perform the analysis of existing AIX hosted applications and migrate the applications to the new AIX servers and infrastructure.
INVP 5310 - Netmod Governance	9/17/2019	The Project will deliver an enhanced video support service and on premise video bridging functionality that enhances the WebEx video bridging in use today. As a part of the Verizon contract renewal extension, it was identified that National Grid would take advantage of a cost savings if the WAAS was decommissioned. Recent Verizon engineering traffic studies have shown Wide Area Application Service (WAAS) no longer provides the effective solution for enhancing WAN performance at most of the sites where it was deployed therefore, this project will disable and physically remove the WAAS at 31 locations. SRST (Survivable Remote Site Telephony) will also be decommissioned as it is largely obsolete due to the proliferation of cell phones. National Grid has requested Verizon to remove the SRST from (116) US National Grid non-operational critical sites which will result in a reduction of RTB.
INVP 5311 - NetMod Infoblox	9/3/2019	The existing IP management platform that is currently utilized by National Grid (BP Diamond) will be replaced with an alternate service as the current service reached the end its life in 2018. This project will result in vendor partner (Verizon) cost savings. Benefits: - National Grid will have a supported IP Network Management platform - Self-service portal will improve request turnaround times - Provide a platform that has the capability to deliver improved DNS security. - Significantly reduce the number of manual IP requests due to the self-service capability - Reduce the need for hardware refreshes

KeySpan Gas East Corporation d/b/a National Grid, The Brooklyn Union Gas Company d/b/a National Grid NY
ITP-5 Technology Modernization Project Descriptions

Project/INVP#	In Service Date(s)	Description of Project
INVP 5312 - NetMod Ethernet/SD WAN Upgrade	9/11/2019	Software Defined Networking will be implemented at a selection of sites in the US and that co WAN circuits in the US on the TDM interface are converted over to the Ethernet interface. This new technology has the capability to allow more centralized management of the Network, enabling greater flexibility in the routing of traffic via multiple transport paths. This project will result in vendor partner (Verizon) cost savings.
INVP 5313 - NetMod Zscaler Cloud Security Gateway	5/8/2019	The project will purchase licenses for Zscaler, set up the tunnels to Zscaler from each SD-WAN site, Define the controls to be applied to traffic flows, and define how results are sent and received by DR&S and their security tooling. This project will also setup the forward proxy function and other associated security services in Zscaler, so that the existing VSTIG forward proxies will not be utilized for end user devices and thereby removing the inherent physical limitations of the current system. Zscaler is a cloud-based subscription service so capacity is elastic and it will support the expected user and bandwidth growth.
INVP 5314 - NetMod eBond/NSSR/SVC Catalog	4/26/2019	The Network Modernization initiative has identified a series of activities required to enable delivery a global savings. This project will achieve initiatives of E-Bond, SVC (Service Catalogue) and NSSR (Non-Standard Service Request). This is a Policy Driven project and will automate National Grid's internal process using ServiceNow. Benefits: Digitization / Efficiency: - Streamlining current processes by eliminating redundant processes - Improved end user experience - Services can be monitored, reported, managed and delivered between National Grid ServiceNow and Verizon SRM (Service Request Management) Tool are integrated
INVP 5316 - End User US Laptop Refresh	1/31/2019	This project will refresh approx. 1,500 laptops devices in the US by replacing all devices over 4 years old as of December 31, 2018. This is to ensure that the end user device estate continues to be reliable, remains secure and can meet new business demands. It is important that the hardware can support the new application and security tool deployments to the standard operating environments (SOE's).

KeySpan Gas East Corporation d/b/a National Grid, The Brooklyn Union Gas Company d/b/a National Grid NY
ITP-5 Technology Modernization Project Descriptions

Project/INVP#	In Service Date(s)	Description of Project
INVP 5472 - GRC Archer Risk and Migration	10/18/2019	The project will enhance compliance with the Business Management System (BMS) Enterprise Risk Management Ethics Standards through improved end-user interfaces and reporting capabilities. Compliance tracking, particularly with new rate case requirements, will also be improved. Additionally implementation of the system will facilitate the Company's journey to an integrated assurance program and replace older and unsupported systems. Benefits: - IT saving associated with decommissioning of RSA 5.5 and GRMS - IT cost avoidance of on-going system maintenance to two legacy systems (Archer 5.5 and GRMS) and cost of GRMS replacement within next 5 years - Facilitating external partner submission of evidence and responses to assurance questionnaires - Enhanced management of risks and opportunities by the business through significantly enhanced capability for reporting and tracking eliminating use of current manual/time-consuming processes, duplication of effort and potential for human error - Provision of clearer, more accurate and more timely reporting to board level executives - Wider business use of the core data model provides greater data sharing and fluidity in responding to regulatory, operational, and financial risks and compliance needs - Integration to current and future enterprise data sources reduces the effort of manually correlating data from disparate systems - Enables business leaders (for example, first line of defense) to drive accountability for remediating weaknesses in risks and controls as identified in audit and assurance work
INVP 5582 - Data Visualization	3/31/2019	This project supports the purchase of licenses for data visualization tools Tableau and Alteryx, as the trial licenses originally acquired by the data analytics team, are expiring Benefits: - Ensure non-interrupted services for existing production workflows and reports - Confirm supportability of the solution
INVP 4377B - Data Centre Decommission Melville	8/30/2019	This project is part of the Melville Data Centre Clearance program under INVP 4377 umbrella. The planned end state for the Melville Data Center is the clearance of National Grid equipment (hardware/software) from Melville, which is now PSE&G's (Public Service Electric & Gas) regional facility for the Long Island region. This in turn could fully allow no long term requirement for space rental, or reverse Transition Service Agreement. The objective of this project is to migrate/remove all remaining equipment (servers, storage, hardware/software, etc.) from the Melville data center and migrate to the DXC data centers in Norwich, Connecticut and Newark Delaware. The increase in capacity at the DXC Data Centers has been split into an additional D&I investment paper (4377a) due to the requirement of two different funding sources. Both projects, when completed, will result in the project being able to migrate/remove all remaining equipment (servers, storage, hardware/software, etc.) from the Melville data center and migrate to the DXC data centers in Norwich, Connecticut and Newark Delaware.
INVP 5169 - Case & Customer Complaint Management Solution	10/30/2022	Remedy is the case management and customer complaints application used to track escalated customer complaints, in accordance with Public Service Commission regulations and rate case requirements. This project will complete a Feasibility & Analysis (F&A) study to select a new application to transition Remedy's case management and customer complaint capabilities to, as it is no longer supported and at risk for failure. Without the ability to run monthly reports, create quarterly Service Quality Metrics, and maintain information for 6 years after a case is closed, National Grid would be at risk for regulatory fines. There are various NG groups and departments using Remedy to log customer complaints. Corporate staffing form functionality from Remedy was transitioned to ServiceNow. These remaining groups using Remedy are using other modules in the application are at a risk by utilizing this unsupported application. The project is to move these users to an appropriate system and transfer related capabilities.

KeySpan Gas East Corporation d/b/a National Grid, The Brooklyn Union Gas Company d/b/a National Grid NY
ITP-5 Technology Modernization Project Descriptions

Project/INVP#	In Service Date(s)	Description of Project
INVP 5388 - Gas Transportation System Phase 3 GTIS	12/31/2024	The Gas Retail Choice programs for Upstate New York, Massachusetts, and Rhode Island are dependent on five legacy/ end of life applications: Broker Management System (BMS), Company Managed Contract Services (CMCS), Electronic Bulletin Board (EBB), Transportation Services Application (TSA-NE), and TSA-NY. These applications have been identified as being "at risk" due to end-of-life hardware and software supporting these services. This investment will fund a 3-year initiative to migrate the UNY, MA, and NE customers and processes to the Gas Transportation Information System, that went live in 2016. Included in this investment is a technology upgrade required by GTIS to support the additional workload, and provide GTIS with upgrades to its .NET environment and browser support. System enhancements will include integration with pipeline Electronic Data Interchange (EDI) automating the Nomination/ Confirmation process reducing National Grid effort on the process. This investment supports the Application Rationalization IT initiative. Migration of the Upstate New York, Massachusetts, and Rhode Island customers and Energy Service Companies (ESCOs) will allow the retirement of the five above mentioned applications.

KeySpan Gas East Corporation d/b/a National Grid, The Brooklyn Union Gas Company d/b/a National Grid NY
ITP-5 Technology Modernization Project Descriptions

Project/INVP#	In Service Date(s)	Description of Project
INVP 5487 - Collaboration & Unified Communications	3/31/2020 3/31/2021 3/31/2022 3/31/2023 3/31/2024	This project is a Program of work to provide technologies that will enable National Grid employees to increase productivity by enabling collaboration in newer and more efficient ways. Collaboration tools enable employees to improve productivity by enabling efficient communication. Having up to date infrastructure is an essential pre-requisite for maintaining the right levels of security for a company running key national infrastructure. Aged equipment consumes increasing resources and budget with diminishing return. Inflexible and outdated technology makes it difficult to support new business demands and our digital workplace . The current program of work is expected to include the following: - HPW - Conference Room of the Future (Audio, Video, Connectivity), - HPW - High Performance Workplace (w/ Facilities) F&A, - HPW - Video Conferencing Upgrades, - Collaboration Migration - SharePoint Standardization - Office 365 - Data Security Phase II, - Office 365 - Data Security Phase III, - Unified Communications transition to MS Teams Deploy, MS Teams Audio / Video Calling, - Office 365 - Tenant Consolidation, - Office 365 - Enhanced Application Deployment - EMM - US Infrastructure Buildout
INVP 5488 - Customer Experience	3/31/2020 3/31/2021 3/31/2022 3/31/2023 3/31/2024	This program of work will improve the employee experience using National Grid information technology core services; particularly focused on improving use of new services which are required support business projects. Activities include development of governance and frameworks for using new technology, development of operational best practice guidelines for new services, and adoption projects to increase use of new services. There will be an ongoing process of prioritization and efficiency improvements and more work will be included should there be capacity to do so. The current program of work is expected to include the following: - Digital Champions Exec Assistant / Personal Assistant Digital Adoption - Governance & Frameworks - Decommissioning frameworks - Governance & Frameworks - Development Framework for Office 365 - Governance & Frameworks - Frameworks for software deployments - Governance & Frameworks - Governing operational practices - Governance & Frameworks - Intake methodology - Governance & Frameworks - Operational Best Practices - Office 365 - Adoption - Social Media Expansion - Walkme Training Tools Benefits: - Fast adoption of new tools - Streamlined experience for training and how-to engagements - Frameworks establishing standard operating procedures for IT engagements - Employee engagement with IT on current and future initiatives - Self-service training capabilities - Engaged user community assisting other users

KeySpan Gas East Corporation d/b/a National Grid, The Brooklyn Union Gas Company d/b/a National Grid NY
ITP-5 Technology Modernization Project Descriptions

Project/INVP#	In Service Date(s)	Description of Project
INVP 5489 - Emerging Technology	3/31/2020 3/31/2021 3/31/2022 3/31/2023 3/31/2024	Program of work to analyze and implement disruptive/new technologies to improve the end user experience. This project will support business improvement through the introduction of these innovative and potentially disruptive technologies. Benefits: - Reduced operating costs as repeatable tasks can be moved to AI or Bots - The ability to fix devices in the field that may be breaking before the employee or customer is aware a problem exists - Limited 24/7 support services via chat services - Technology allowing IT to engage employees ahead of problems to repair issues - Ability to identify threat vectors ahead of notification from vendors

KeySpan Gas East Corporation d/b/a National Grid, The Brooklyn Union Gas Company d/b/a National Grid NY
ITP-5 Technology Modernization Project Descriptions

Project/INVP#	In Service Date(s)	Description of Project
INVP 5490 - Modern Workplace	3/31/2020 3/31/2021 3/31/2022 3/31/2023 3/31/2024	Program of work to implement a refreshed and continuously updated work environment for employees using modern tools and management techniques. Activities include: - Support for ongoing upgrades to core SaaS services (i.e. Windows 10 and O365) - Device Management tools The current program of work is expected to include the following: - Device Choice - DaaS - VDI Enterprise Service - Device Encryption - Macs - App Packaging, Device Management and Pilot - Modern Mgmt. - App Virtualization - Modern Mgmt. - Device Imaging - Modern Mgmt. - Implementation - Modern Mgmt. - Out of Box Experience (OOBE) - Modern Mgmt. - Tool Deploy Phase 1 - Modern Mgmt. - Tool Deploy Phase 2 - Modern Mgmt. - Unified Endpoint Mgmt. - Software - App Modernization Benefits: - Reduced costs associated with license management and application issue - Increased user morale created by an improved user experience - Choice of devices and applications business personnel find most effective for their specific job roles - Ease of administration provided by modern management toolsets - A trusted environment created by managed software/devices and associated security rules
INVP 5505 - Enterprise Platforms	3/31/2020 3/31/2021 3/31/2022 3/31/2023 3/31/2024	This project is to maintain and keep up to date the core middleware service in order to ensure ongoing security and reliability. Many of the integration requirements in business solutions, between business applications, suppliers, vendors, service providers and partners are handled by the core middleware service. This is a program of work consisting of the following sub-projects: - Horizon Hosted VDI - F&A - Horizon Hosted VDI - Full Project - Remedy Decommissioning - Service Now - Added Capability and Licensing Benefits: - Increased supportability - Increased security from modern services - Ability to support new business demands as they arise

Exhibit __ (ITP-5)
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KeySpan Gas East Corporation d/b/a National Grid, The Brooklyn Union Gas Company d/b/a National Grid NY
ITP-5 Technology Modernization Project Descriptions

Project/INVP#	In Service Date(s)	Description of Project
INVP 5506 - Integration Services	3/31/2020 3/31/2021 3/31/2022 3/31/2023 3/31/2024	This is a program of work consisting of the following sub-projects: - Apps Interface Remediation - Phase 2 - Comprehensive Automated Reporting (CAR) - Design & Deployment of Oracle Fusion Development & Pre-Production Platforms - Oracle Fusion SOA Upgrade Redesign and Redeployment of Oracle Fusion Production Platform Benefits: - Modernized environment - Ease of use & adoption by IT and Business organizations - Supported environment utilizing current technology - Flexible environment that is able to grow as needs increase
INVP 5521 - LAN Infrastructure Program	3/31/2020 3/31/2021 3/31/2022 3/31/2023 3/31/2024	This LAN Infrastructure Program will provide new capabilities and refresh to the Network environment. Refreshes and updates to the LAN (Local Area Network) Infrastructure will ensure that the services continue to be reliable, secure, and able to meet business demand. Given the expected rate of growth of network connected devices the service needs to be automated to keep up with the increased demand. It is anticipated that the resources (funds, and people) will not be sufficient to bring all of the estate into support within one year, therefore a multi-year program of work is required. Benefits: - Supports more efficient use of National Grid facilities - Rightsizing the LAN to support wireless and wired - Support of more device types in the environment - Improvement of end user experience
INVP 5522 - Network Security Infrastructure Program	3/31/2020 3/31/2021 3/31/2022 3/31/2023 3/31/2024	This is the Network Security Infrastructure Program that will provide new capabilities and refresh to the Network environment. This program will deliver refresh and capability improvements to the Network Security Infrastructure. To ensure that the services continue to be secure, reliable and efficient it is important that the services are maintained within support and new capabilities added as technology advances. In addition, the changing threat landscape and expanding use of cloud based services requires a change from premise based security appliances towards more agile cloud and virtual security platforms.
INVP 5523 - Voice Infrastructure Program	3/31/2020 3/31/2021 3/31/2022 3/31/2023 3/31/2024	This program will focus on the delivery to modernize legacy PBX platforms to IP telephony, specifically this includes control room environments and other key services still running on legacy PBX's that are out of support and at risk of failure. In addition, this program will look to advance the use of IP telephony (IPT) towards other platforms that support increased mobility and collaboration and integration with Microsoft productivity tools.
INVP 5524 - WAN Infrastructure Program	3/31/2020 3/31/2021 3/31/2022 3/31/2023 3/31/2024	This program will deliver refresh and updates to the WAN infrastructure through the implementation of a modern SD-WAN architecture. This will ensure that the services continue to be secure, reliable, efficient while migrating to a modern platform that can support future application and capacity requirements. The SD-WAN provides the ability to leverage multiple and diverse WAN access methods (e.g. MPLS, Internet and cellular to transport corporate applications) which will provide a more cost effective service. It is anticipated that the resources (funds, and people) will not be sufficient to bring all of the estate into support within one year, therefore a multi-year program of work is required. The program will prioritize the work and deliver the most critical first. Considering current and future needs of the business.
INVP 5525 - Wireless Infrastructure Program	3/31/2020 3/31/2021 3/31/2022 3/31/2023 3/31/2024	This program will deliver new technology, expand wireless to new locations and refresh the existing Wireless Infrastructure to drive the use of Wireless LAN (WLAN) as the primary access method for all network connectivity within National Grid. This program will prioritize the work to deliver new WLAN architecture and deliver new WLAN services to sites based on business need and will refresh existing WLAN devices to ensure they remain supportable.

KeySpan Gas East Corporation d/b/a National Grid, The Brooklyn Union Gas Company d/b/a National Grid NY
ITP-5 Technology Modernization Project Descriptions

Project/INVP#	In Service Date(s)	Description of Project
INVP 5540 - Infrastructure Remediation and Lifecycle refresh	3/31/2020 3/31/2021 3/31/2022 3/31/2023 3/31/2024	This program will deliver refresh and updates to the Data Center Infrastructure to ensure that the services continue to be appropriately secure and maintain the reliability as required by the business. It's estimated that 70% of the infrastructure is out of support and storage capacity is nearing capacity. This investment is to maintain the current operating environment to a supportable level. This will support a positive step change in reducing end of life infrastructure, time to repair and unplanned outages. This will include the following: - Refresh and expansion of storage - Refresh of compute converged technology - Refresh of compute - non converged technology Benefits: - Reduced infrastructure risk profile - out of support assets no longer receive security updates and therefore become an increasing security risk. - Increased stability - There is increased risk of failure as the asset becomes older, and once out of support can only be remediated on a reasonable endeavors basis only. refreshing assets bringing them into support will improve reliability of the service - Deployment of enhancements to current applications will be more efficient due to improved infrastructure being available.
INVP 5541 - Infrastructure New Capability	3/31/2020 3/31/2021 3/31/2022 3/31/2023 3/31/2024	Program of work to improve and enhance capability within Cloud and Hosting. These new services are required to support business projects providing improved flexibility and agility. Will deliver improved management of the services. Proposed projects include : Cloud adoption, New cloud offerings (for back up, storage, database, disaster recovery), Enterprise monitoring, estate discovery tools. Benefits: - Separating application from the hardware to enable faster and therefore cheaper upgrades - Increased ability to adapt to new demand - Faster time to market for applications - Increased options to support new services - enabling reduction of costs and improvements in service. - Improved reliability of services through proactive management enabled through monitoring tools
INVP 5579 - Hosting RFP Build & Market Release	3/31/2020 3/31/2021 3/31/2022 3/31/2023 3/31/2024	This project is required as National Grid is at the end of the 7 year hosting contract which included a base 5 year contract with 2 -1 year renewals. National Grid is required to go out to RFP for Hybrid hosting strategy including on premise hosting and cloud management as there are no renewal years left on the contract. These services will include the physical hosting and management of the infrastructure and operating environment. This includes the plan, build and operationally run of compute, storage and mainframe technologies. Benefits: - A service provider that can deliver infrastructure in a timely manner - A service provider that will monitor & maintain the infrastructure to ensure it is current - All financial obligations will be completely transparent - Infrastructure will be scalable as per the business demand

KeySpan Gas East Corporation d/b/a National Grid, The Brooklyn Union Gas Company d/b/a National Grid NY
ITP-5 Technology Modernization Project Descriptions

Project/INVP#	In Service Date(s)	Description of Project
INVP 5580 - Managed Workspace Services Transition & Tx	3/31/2020 3/31/2021 3/31/2022 3/31/2023 3/31/2024	The Managed Workspace Services (MWS) program will drive a step chance experience across the end user community and will deliver a new holistic end user experience with a frictionless support model covering customer support, client services, managed print, SAAS management and mobile device management. The project scope will be: - Transition of service desk, field force help desk & tech b@r mgmt. - Management and deployment of the desktop operating environment and hardware - Transition of managed print services - Management of Active Directory services Benefits: - Enhanced end user experience - Increased end user productivity - Will deliver an annual end user device refresh
INVP 5581 - DXC Hosting Tx Initiatives	3/31/2020 3/31/2021 3/31/2022 3/31/2023 3/31/2024	This project will favorably position National Grid for the required Hosting RFP. Several initiatives include: address aged server and storage estate as well as the modernization of legacy applications. The scope of this project will be: Deploy new storage and server hardware - Migrate from legacy to new - This program will conduct a feasibility study of moving applications to the cloud - This program will also rationalize the Citrix estate Benefits: - Mitigates risk - Modernizes the estate - Prepares National Grid for future needs
INVP 5598 - Application Rationalization	3/31/2020 3/31/2021 3/31/2022 3/31/2023 3/31/2024	This multi-year program will rationalize the portfolio, of approximately 500 business applications, through consolidation and decommissioning. Several critical applications have reached or are reaching end of life and are in dire need of upgrade or replacement and this is impacting the organization through: higher operational costs (i.e. costs to make changes), increased manual workarounds caused by the vendor no longer introducing new functionality and the increased risk of operating applications that lack modern security controls. To keep IT run-the-business costs down and minimize operational risks, it will be critical to consolidate the application portfolio.

Testimony of Information Technology Panel

Exhibit ___ (ITP-6)

Cyber Security Projects

KeySpan Gas East Corporation d/b/a National Grid, The Brooklyn Union Gas Company d/b/a National Grid NY
ITP-6 Cyber Security Projects

Project/INVP #	In Service Date	Description of Project
INVP 4975USA - Perimeter Enhancements	2/28/2019	Project descriptions have been removed due to the sensitivity of the information.
INVP 3683USAQ - CASB 2	3/29/2019	
INVP 4975USG - Gateway Upgrades	3/29/2019	
INVP 3683USP - IAM: Role Based Access control	4/17/2019	
INVP 4975USB - CNI Intrusion Detection System (IDS) ref	5/22/2019	
INVP 3614B7 - CNI Secure Communication	5/31/2019	
INVP 3683USAP - IAM Privilege Access Management (PAM)	5/31/2019	
INVP 4975USC - Multi factor Authentication (MFA)	5/31/2019	
INVP 3683USAO - IT/OT Discovery and Implementation Phase	7/16/2019	
INVP 3683USD - Develop Robust Incident Response	7/31/2019	
INVP 3683USAN - DNS Resolution & Protection	8/14/2019	
INVP 3683USA - US Endpoint Security	10/31/2019	
INVP 3683USF - Enterprise Centralized Patch Management	12/4/2019	
INVP 3683USAR - Azure CoE Vulnerability Scanning	1/13/2020	
INVP 3683USI - Sustainable RedTeam Service Model	1/22/2020	
INVP 5571 - Gas Business Enablement Cyber Security	1/30/2020	
INVP 3683USV - CNI Forensic Pack capture	1/30/2020	
INVP 3683USZ - Continuous Review of Reference Security	2/12/2020	
INVP 3683USX - Application Security As a Service	2/25/2020	
INVP 3683USO - Network Segregation	3/30/2020	
INVP 4975USF - Internal Public Key Infrastructure (PKI)	3/31/2020	
INVP 3683USG - Enhanced Phishing Protection & Awareness	6/1/2020	
INVP 3683USAH - Security Data Visualization	8/27/2020	
INVP 3683USL - Insider Threat Detection	9/27/2020	
INVP 3683USR - Security Research Lab	11/30/2020	
INVP 3683USS - Threat Behavior Modeling	11/30/2020	
INVP 3683USM - Virtualized Browser	12/31/2020	
INVP 3683USY - AntiMalware Gateway	2/1/2021	
INVP 3683USAB - Enhanced DLP Gateway & Endpoint	3/1/2021	
INVP 3683USAM - CNI Security Enhancements: Phase 1	5/1/2021	
INVP 3683USAC - CNI Intrusion Detection/Prevention: Phase 2	3/1/2022	
INVP 3683USAG - IAM: Shared Area Access Management	6/1/2022	
INVP 3683USW - Removable Media Control - Full Roll out	6/1/2022	
INVP 3683USAA - GPS Project	11/1/2022	
INVP 3683USAF - Security Incident & Event Management: Phase 5	11/1/2022	
INVP 3683USQ - Big Data Security Analytics: Phase 1	12/31/2022	
INVP 3683USAD - Big Data Security Analytics: Phase 2	12/31/2022	
INVP 5591 - Operational Technology Cyber Security Program	Annual Program - 3/31/2022, 3/31/2023, 3/31/2024	
INVP 5592 - Security Operations and Monitoring Cyber Security Program	Annual Program - 3/31/2022, 3/31/2023, 3/31/2024	
INVP 5593 - Enhance the Foundation Cyber Security Program	Annual Program - 3/31/2022, 3/31/2023, 3/31/2024	
INVP 5594 - Culture and Awareness Cyber Security Program	Annual Program - 3/31/2022, 3/31/2023, 3/31/2024	
INVP 5595 - Threat Resistant Networks Cyber Security Program	Annual Program - 3/31/2022, 3/31/2023, 3/31/2024	
INVP 5596 - Robust Identity and Controls Cyber Security Program	Annual Program - 3/31/2022, 3/31/2023, 3/31/2024	
INVP 5597 - Secure Endpoints Cyber Security Program	Annual Program - 3/31/2022, 3/31/2023, 3/31/2024	

Testimony of Information Technology Panel

Exhibit ___ (ITP-7)

IT Investment Plan Project Operating Expenses and Run the Business

KeySpan Gas East Corporation d/b/a National Grid, The Brooklyn Union Gas Company d/b/a National Grid N
ITP-7 Information Technology (IT) Investment Plan Project Operating Expenses (Opex) & Run the Business (RT

			FY21 Rate Year		FY22 Data Year		FY23 Data Year		FY24 Data Year	
Investment Name	Program	INVP #	FY21 OPEX	FY21 RTB	FY22 OPEX	FY22 RTB	FY23 OPEX	FY23 RTB	FY24 OPEX	FY24 RTB
Document Management System for CD	Complex Capital Delivery	4945	$ -	$ -	$ 655,000	$ -	$ 281,000	$ 578,000	$ -	$ 660,000
Downstate NY Capacity Automation Enhancement	Complex Capital Delivery	5136	$ 120,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
New Storms Response Management Systen	Complex Capital Delivery	5274	$ 259,000	$ 108,000	$ -	$ 215,000	$ -	$ 215,000	$ -	$ 215,000
Post Award Non-Complex Contract Management Systen	Complex Capital Delivery	5275	$ -	$ -	$ 1,000,000	$ -	$ 451,000	$ 1,942,000	$ -	$ 1,924,000
CDI Demand Enablement Program	Complex Capital Delivery	5599	$ 159,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
CDI Demand Enablement Program	Complex Capital Delivery	5599			$ 51,000	$ -	$ -	$ -	$ -	$ -
CDI Demand Enablement Program	Complex Capital Delivery	5599					$ 13,000	$ -	$ -	$ -
CDI Demand Enablement Program	Complex Capital Delivery	5599							$ 88,000	$ -
GTIS Datamart and Advanced Reporting Capabilit	Complex Capital Delivery	5602	$ -	$ -	$ -	$ -	$ 200,000	$ -	$ 100,000	$ -
Capital Delivery IS Initiative U	Complex Capital Delivery	4771B	$ -	$ 652,088	$ -	$ -	$ -	$ -	$ -	$ -
AMAG: Automated Interface for New Hires	Compliance & Mandates	4997	$ -	$ -	$ 602,817	$ -	$ -	$ -	$ -	$ -
Flood Zone Protection Packages	Compliance & Mandates	5161	$ 73,000	$ -	$ 33,000	$ 17,500	$ -	$ 30,000	$ -	$ 30,000
AVLS Old 3G Modem Replacement	Compliance & Mandates	5226	$ -	$ 20,000	$ -	$ -	$ -	$ -	$ -	$ -
Lease Accounting Updates and Contract M	Compliance & Mandates	5360	$ -	$ 480,000	$ -	$ -	$ -	$ -	$ -	$ -
CDG Low Income Bill Discount Program	Compliance & Mandates	5474	$ 150,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Annual HR & Payroll Mandatory Service Pack Upgrade (HRSP) FY2	Compliance & Mandates	5609	$ 400,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Annual HR & Payroll Mandatory Service Pack Upgrade (HRSP) FY2	Compliance & Mandates	5610	$ -	$ -	$ 400,000	$ -	$ -	$ -	$ -	$ -
Annual HR & Payroll Mandatory Service Pack Upgrade (HRSP) FY2	Compliance & Mandates	5611	$ -	$ -	$ -	$ -	$ 400,000	$ -	$ -	$ -
Annual HR & Payroll Mandatory Service Pack Upgrade (HRSP) FY2	Compliance & Mandates	5612	$ -	$ -	$ -	$ -	$ -	$ -	$ 400,000	$ -
FY21 Mandated Projects	Compliance & Mandates	5650	$ 1,500,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FY22 Mandated Projects	Compliance & Mandates	5650	$ -	$ -	$ 2,500,000	$ -	$ -	$ -	$ -	$ -
FY23 Mandated Projects	Compliance & Mandates	5650	$ -	$ -	$ -	$ -	$ 2,000,000	$ -	$ -	$ -
FY24 Mandated Projects	Compliance & Mandates	5650	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,000,000	$ -
Program Delivery Enablement Projec	Corporate IT	3431	$ 330,000	$ 200,000	$ -	$ -	$ -	$ -	$ -	$ -
Allegro Upgrade to Horizor	Corporate IT	4998	$ 180,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
MyHub Compliance & Enhancement	Corporate IT	5158	$ 200,000	$ -	$ 130,000	$ -	$ -	$ -	$ -	$ -
Billing and Payments Implementatio	Corporate IT	5345	$ 46,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Future of HR Programme	Corporate IT	5362	$ 300,000	$ 500,000	$ -	$ -	$ -	$ -	$ -	$ -
Future of Finance Program of Work	Corporate IT	5380	$ 3,000,000	$ 200,000	$ 3,000,000	$ 200,000	$ -	$ -	$ -	$ -
Future of Finance Program of Work	Corporate IT	5380	$ -	$ -	$ -	$ -	$ 5,000,000	$ -	$ 4,000,000	$ -
AMAG HW and SW Upgrade	Corporate IT	5466	$ 50,000	$ -	$ 210,000	$ -	$ -	$ -	$ -	$ -
Lease Accounting Updates and CMM - Phase 2	Corporate IT	5497	$ 165,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
US Legal: Document Managemen	Corporate IT	5507	$ 30,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Materials, Repair, Operation Optimizatior	Corporate IT	5544	$ -	$ 12,000	$ -	$ 12,000	$ -	$ 12,000	$ -	$ 12,000
Digital Services	Corporate IT	5614			$ 325,000		$ 260,000			
IT Strategic Tooling	Corporate IT	5619			$ 260,000		$ 65,000		$ 260,000	
Legal Strategic Tooling	Corporate IT	5620			$ 390,000				$ 195,000	
MyHub Upgrade & Refresh	Corporate IT	5621			$ 130,000		$ 325,000		$ 130,000	
Implementation costs following F& A for Property Systems ReviewNe	Corporate IT	5623	$ -	$ -	$ 345,000	$ 75,000	$ 405,000	$ 45,000	$ -	$ -
US Corporate Strategic Program	Corporate IT	5630	$ 750,000	$ -	$ 750,000	$ -	$ -	$ -	$ -	$ -
US Corporate Strategic Program	Corporate IT	5630	$ -	$ -	$ -	$ -	$ 750,000	$ -	$ 750,000	$ -
Software License Asset Managemen	Corporate IT	5364US	$ -	$ -		$ 25,000		$ 25,000		
CXT - AIMS Evolution Program	Customer Transformatior	5066	$ 76,256	$ 20,000	$ -	$ 30,000	$ -	$ 30,000	$ -	$ 30,000
Customer Solutions Technology Upgrade Program	Customer Transformatior	5100				$ 100,000		$ 200,000		$ 300,000
Customer Experience Transformation (CXT) Phase 2 Program - MyAccour	Customer Transformatior	5129	$ -	$ -	$ 300,000	$ 100,000	$ -	$ -	$ -	$ -
Customer Experience Transformation (CXT) Phase 2 Program - MyAccour	Customer Transformatior	5129	$ -	$ -	$ -	$ -	$ 300,000	$ 100,000	$ -	$ -
Customer Experience Transformation (CXT) Phase 2 Program - MyAccour	Customer Transformatior	5129	$ -	$ -	$ -	$ -	$ -	$ -	$ 300,000	$ 200,000
CIAC process system enhancements program	Customer Transformatior	5130	$ 200,000	$ 30,000		$ 50,000	$ -	$ 50,000	$ -	$ 50,000
Customer Minor Works FY20	Customer Transformatior	5383		$ 15,000		$ 15,000		$ 15,000		$ 15,000
Low Income Order Additional Compliance scop	Customer Transformatior	5386	$ 200,000	$ 30,000	$ 100,000	$ 50,000	$ -	$ 50,000	$ -	$ 50,000
Gas Business Enablement Cyber Security I	Cyber Security	5571	$ -	$ -	$ -	$ 250,000	$ -	$ 250,000	$ -	$ 250,000
Operational Technology Cyber Security Program	Cyber Security	5591	$ -	$ -	$ 496,892	$ -	$ -	$ -	$ -	$ -
Operational Technology Cyber Security Program	Cyber Security	5591	$ -	$ -	$ -	$ -	$ 1,281,704	$ 258,847	$ -	$ -
Operational Technology Cyber Security Program	Cyber Security	5591	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,414,804	$ 800,323
Security Operations and Monitoring Cyber Security Prograr	Cyber Security	5592	$ -	$ -	$ 365,792	$ -	$ -	$ -	$ -	$ -
Security Operations and Monitoring Cyber Security Prograr	Cyber Security	5592	$ -	$ -	$ -	$ -	$ 854,469	$ 190,553	$ -	$ -
Security Operations and Monitoring Cyber Security Prograr	Cyber Security	5592	$ -	$ -	$ -	$ -	$ -	$ -	$ 966,207	$ 562,330
Enhance the Foundation Cyber Security Program	Cyber Security	5593	$ -	$ -	$ 56,186	$ -	$ -	$ -	$ -	$ -
Enhance the Foundation Cyber Security Program	Cyber Security	5593	$ -	$ -	$ -	$ -	$ 98,593	$ 29,269	$ -	$ -
Enhance the Foundation Cyber Security Program	Cyber Security	5593	$ -	$ -	$ -	$ -	$ -	$ -	$ 103,522	$ 76,535
Culture and Awareness Cyber Security Program	Cyber Security	5594	$ -	$ -	$ 70,232	$ -	$ -	$ -	$ -	$ -
Culture and Awareness Cyber Security Program	Cyber Security	5594	$ -	$ -	$ -	$ -	$ 131,457	$ 36,586	$ -	$ -
Culture and Awareness Cyber Security Program	Cyber Security	5594	$ -	$ -	$ -	$ -	$ -	$ -	$ 103,533	$ 98,145
Threat Resistant Networks Cyber Security Prograr	Cyber Security	5595	$ -	$ -	$ 64,379	$ -	$ -	$ -	$ -	$ -
Threat Resistant Networks Cyber Security Prograr	Cyber Security	5595	$ -	$ -	$ -	$ -	$ 164,321	$ 33,537	$ -	$ -
Threat Resistant Networks Cyber Security Prograr	Cyber Security	5595	$ -	$ -	$ -	$ -	$ -	$ -	$ 138,030	$ 103,168
Robust Identity and Controls Cyber Security Prograr	Cyber Security	5596	$ -	$ -	$ 204,844	$ -	$ -	$ -	$ -	$ -
Robust Identity and Controls Cyber Security Prograr	Cyber Security	5596	$ -	$ -	$ -	$ -	$ 492,963	$ 106,710	$ -	$ -
Robust Identity and Controls Cyber Security Prograr	Cyber Security	5596	$ -	$ -	$ -	$ -	$ -	$ -	$ 517,611	$ 319,261
Secure Endpoints Cyber Security Progran	Cyber Security	5597	$ -	$ -	$ 146,317	$ -	$ -	$ -	$ -	$ -
Secure Endpoints Cyber Security Progran	Cyber Security	5597	$ -	$ -	$ -	$ -	$ 262,914	$ 76,221	$ -	$ -
Secure Endpoints Cyber Security Progran	Cyber Security	5597	$ -	$ -	$ -	$ -	$ -	$ -	$ 207,044	$ 201,168
CNI Secure Communicatior	Cyber Security	3614B7	$ -	$ 760,513	$ -	$ -	$ -	$ -	$ -	$ -
US Endpoint Security	Cyber Security	3683USA	$ -	$ 994,068	$ -	$ 1,031,500	$ -	$ 1,031,500	$ -	$ 1,031,500
GPS Project	Cyber Security	3683USAA	$ 331,900	$ -	$ 84,230	$ -	$ -	$ 58,695	$ -	$ 58,695
Enhanced DLP Gateway & Endpoin	Cyber Security	3683USAB	$ 372,995	$ 55,900	$ -	$ 335,400	$ -	$ 335,400	$ -	$ 335,400
CNI Intrusion Detection/Prevention: Phase	Cyber Security	3683USAC	$ 316,795	$ -	$ -	$ 24,375	$ -	$ 146,250	$ -	$ 146,250
Big Data Security Analytics: Phase 2	Cyber Security	3683USAD	$ -	$ -	$ 991,980	$ -	$ -	$ 425,100	$ -	$ 425,100
Security Incident & Event Management: Phase	Cyber Security	3683USAF	$ -	$ -	$ 616,792	$ -	$ -	$ 208,650	$ -	$ 208,650
IAM: Shared Area Access Managemen	Cyber Security	3683USAG	$ 733,746	$ -	$ -	$ 66,137	$ -	$ 396,825	$ -	$ 396,825
Security Data Visualizatior	Cyber Security	3683USAH	$ 347,622	$ -	$ -	$ 109,200	$ -	$ 163,800	$ -	$ 163,800
CNI Security Enhancements: Phase I	Cyber Security	3683USAM	$ 264,000	$ -	$ -	$ 190,000	$ -	$ 190,000	$ -	$ 190,000
DNS Resolution & Protectior	Cyber Security	3683USAN	$ -	$ -	$ -	$ 388,500	$ -	$ 388,500	$ -	$ 388,500
IT/OT Discovery and Implementation Phas	Cyber Security	3683USAO	$ 16,140	$ -	$ 32,280	$ 348,000	$ -	$ 348,000	$ -	$ 348,000
CASB 2	Cyber Security	3683USAQ	$ -	$ 540,000	$ -	$ 540,000	$ -	$ 540,000	$ -	$ 540,000
Develop Robust Incident Respons	Cyber Security	3683USD	$ -	$ 150,000	$ -	$ 150,000	$ -	$ 150,000	$ -	$ 150,000
Enhanced Phishing protection & awarenes	Cyber Security	3683USG	$ 68,420	$ 160,000	$ -	$ 240,000	$ -	$ 240,000	$ -	$ 240,000
Insider Threat Detectior	Cyber Security	3683USL	$ -	$ 150,000	$ -	$ 257,000	$ -	$ 257,000	$ -	$ 257,000
Virtualized Browser	Cyber Security	3683USM	$ -	$ 56,360	$ -	$ 56,355	$ -	$ 56,355	$ -	$ 56,355
IAM: Role Based Access control	Cyber Security	3683USP	$ 56,865	$ 267,150	$ -	$ 267,150	$ -	$ 267,150	$ -	$ 267,150
Security Research Lab	Cyber Security	3683USR	$ -	$ 56,550	$ -	$ 56,550	$ -	$ 56,550	$ -	$ 56,550
Threat Behavior Modeling	Cyber Security	3683USS	$ -	$ 67,795	$ -	$ 116,220	$ -	$ 116,220	$ -	$ 116,220
CNI Forensic Pack capture	Cyber Security	3683USV	$ 90,222	$ 40,625	$ -	$ 243,750	$ -	$ 243,750	$ -	$ 243,750
Removable Media Control - Full Roll ou	Cyber Security	3683USW	$ 260,589	$ -	$ -	$ -	$ -	$ 181,350	$ -	$ 181,350
Application Security As a Service	Cyber Security	3683USX	$ -	$ 432,000	$ -	$ 432,000	$ -	$ 432,000	$ -	$ 432,000
Continuous review of Reference Security	Cyber Security	3683USZ	$ -	$ 77,463	$ -	$ 34,856	$ -	$ 34,856	$ -	$ 34,856
CNI Intrusion Detection System (IDS) re	Cyber Security	4975USB	$ -	$ 11,328	$ -	$ -	$ -	$ -	$ -	$ -
Multi factor Authentication (MFA	Cyber Security	4975USC	$ -	$ (350,448)	$ -	$ (352,965)	$ -	$ (352,965)	$ -	$ (352,965)
Internal Public Key Infrastructure (PKI	Cyber Security	4975USF	$ -	$ 552,000	$ -	$ 552,000	$ -	$ 552,000	$ -	$ 552,000
US CNI GMSSCADA Upgrade and Consolidat	Gas Operations	3737	$ -	$ 885,000	$ -	$ -	$ -	$ -	$ -	$ -
Gas Service Database DNY (LI and NYC	Gas Operations	3948	$ -	$ 9,300	$ -	$ -	$ -	$ -	$ -	$ -
Gas Capacity Review Database	Gas Operations	4468	$ -	$ 60,000	$ -	$ -	$ -	$ -	$ -	$ -
Single Voice Dispatch System	Gas Operations	4978	$ -	$ 19,000	$ -	$ 19,000	$ -	$ 19,000	$ -	$ 19,000
AVLS Modem Reconfiguratior	Gas Operations	5486	$ 10,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Gas Control Center Investments	Gas Operations	5590		$ 200,000						
Gas Control Center Investments	Gas Operations	5590				$ 200,000				
Gas Control Center Investments	Gas Operations	5590						$ 200,000		
Gas Control Center Investments	Gas Operations	5590								$ 200,000

KeySpan Gas East Corporation d/b/a National Grid, The Brooklyn Union Gas Company d/b/a National Grid N
ITP-7 Information Technology (IT) Investment Plan Project Operating Expenses (Opex) & Run the Business (RT

Investment Name	Program	INVP #	FY21 Rate Year FY21 OPEX	FY21 Rate Year FY21 RTB	FY22 Data Year FY22 OPEX	FY22 Data Year FY22 RTB	FY23 Data Year FY23 OPEX	FY23 Data Year FY23 RTB	FY24 Data Year FY24 OPEX	FY24 Data Year FY24 RTB
Gas Advanced Meter Infrastructure (AMI	Gas Operations	5645	$ 500,000	$ 150,000	$ 500,000	$ -	$ 500,000	$ -		$ 1,500,000
Gas Business Systems Maintenance of Business Project	Gas Operations	5651			$ 1,550,000					
Gas Business Systems Maintenance of Business Project	Gas Operations	5651					$ 1,450,000			
Gas Business Systems Maintenance of Business Project	Gas Operations	5651							$ 1,350,000	
Identity and Access Management Business	Identity & Access Manageme	5278	$ 278,176	$ -	$ -	$ -	$ -	$ -	$ -	$ -
US SAP: Business Warehouse (BW) Consolidation to HANA Enterpris										
Cloud (HEC)	SAP	4562	$ 84,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Vision FM Replacement	Strategic Business Services	3870	$ 274,000	$ 40,000	$ -	$ 46,000	$ -	$ 53,000	$ -	$ 61,000
Property Management Systems Review	Strategic Business Services	3903	$ 49,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Decision Software Analytics Implementatio	Strategic Business Services	5624	$ -	$ -	$ 1,000,000	$ -	$ -	$ -	$ -	$ -
Revenue Cycle Mgmt. Non-CIS	Strategic Business Services	5625	$ 1,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Revenue Cycle Mgmt. Non-CIS	Strategic Business Services	5627	$ -	$ -	$ 1,000,000	$ -	$ -	$ -	$ -	$ -
Revenue Cycle Mgmt. Non-CIS	Strategic Business Services	5628	$ -	$ -	$ -	$ -	$ 1,000,000	$ -	$ -	$ -
Revenue Cycle Mgmt. Non-CIS	Strategic Business Services	5629	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,000,000	$ -
Supervisor Enablement iPad Advanced Capabilitie	Supervisor Enablemen	5384	$ 73,000	$ 86,000	$ -	$ 86,000	$ -	$ 86,000	$ -	$ 86,000
Active Directory Improvement	Technology Modernizatior	4489	$ -	$ 99,100	$ -	$ -	$ -	$ -	$ -	$ -
ICE Replacement	Technology Modernizatior	4491	$ -	$ 1,945,020	$ -	$ -	$ -	$ -	$ -	$ -
US Foundation Hosting Renewa	Technology Modernizatior	4761	$ -	$ (1,701,696)	$ -	$ -	$ -	$ -	$ -	$ -
SOE (Windows) Upgrade and Device Refresh	Technology Modernizatior	4987	$ 319,000	$ 150,000	$ -	$ -	$ -	$ -	$ -	$ -
Case & Customer Complaint Management Solutio	Technology Modernizatior	5169	$ -	$ -	$ 350,000	$ 60,000	$ 150,000	$ 100,000	$ -	$ 100,000
NetMod Infoblox	Technology Modernizatior	5311	$ -	$ 765,867	$ -	$ -	$ -	$ -	$ -	$ -
NetMod Ethernet/SD WAN Upgrade	Technology Modernizatior	5312	$ -	$ 2,062,476	$ -	$ -	$ -	$ -	$ -	$ -
NetMod Zscaler Cloud Security Gateway	Technology Modernizatior	5313	$ -	$ 1,514,100	$ -	$ -	$ -	$ -	$ -	$ -
NetMod eBond/NSSR/SVC Catalog	Technology Modernizatior	5314	$ -	$ 19,320	$ -	$ -	$ -	$ -	$ -	$ -
Gas Transportation System Phase 3 GTIS	Technology Modernizatior	5388	$ -	$ -	$ 394,333	$ 1,040,000	$ 790,833	$ 1,040,000	$ 3,418,654	$ 1,040,000
GRC Archer Risk and Migratior	Technology Modernizatior	5472	$ -	$ (76,524)	$ -	$ -	$ -	$ -	$ -	$ -
Collaboration & Unified Communication	Technology Modernizatior	5487	$ 529,000	$ 235,000	$ -	$ -	$ -	$ -	$ -	$ -
Collaboration & Unified Communication	Technology Modernizatior	5487	$ -	$ -	$ 540,000	$ 240,000	$ -	$ -	$ -	$ -
Collaboration & Unified Communication	Technology Modernizatior	5487	$ -	$ -	$ -	$ -	$ 551,000	$ 245,000	$ -	$ -
Collaboration & Unified Communication	Technology Modernizatior	5487	$ -	$ -	$ -	$ -	$ -	$ -	$ 562,000	$ 250,000
Customer Experience	Technology Modernizatior	5488	$ 441,000	$ 51,000	$ -	$ -	$ -	$ -	$ -	$ -
Customer Experience	Technology Modernizatior	5488	$ -	$ -	$ 450,000	$ 52,000	$ -	$ -	$ -	$ -
Customer Experience	Technology Modernizatior	5488	$ -	$ -	$ -	$ -	$ 459,000	$ 53,000	$ -	$ -
Customer Experience	Technology Modernizatior	5488	$ -	$ -	$ -	$ -	$ -	$ -	$ 468,000	$ 54,000
Emerging Technology	Technology Modernizatior	5489	$ 88,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Emerging Technology	Technology Modernizatior	5489	$ -	$ -	$ 90,000	$ -	$ -	$ -	$ -	$ -
Emerging Technology	Technology Modernizatior	5489	$ -	$ -	$ -	$ -	$ 92,000	$ -	$ -	$ -
Emerging Technology	Technology Modernizatior	5489	$ -	$ -	$ -	$ -	$ -	$ -	$ 94,000	$ -
Modern Workplace	Technology Modernizatior	5490	$ 706,000	$ 245,000	$ -	$ -	$ -	$ -	$ -	$ -
Modern Workplace	Technology Modernizatior	5490	$ -	$ -	$ 720,000	$ 250,000	$ -	$ -	$ -	$ -
Modern Workplace	Technology Modernizatior	5490	$ -	$ -	$ -	$ -	$ 734,000	$ 255,000	$ -	$ -
Modern Workplace	Technology Modernizatior	5490	$ -	$ -	$ -	$ -	$ -	$ -	$ 749,000	$ 260,000
Enterprise Platforms	Technology Modernizatior	5505	$ 530,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Enterprise Platforms	Technology Modernizatior	5505	$ -	$ -	$ 541,000	$ -	$ -	$ -	$ -	$ -
Enterprise Platforms	Technology Modernizatior	5505	$ -	$ -	$ -	$ -	$ 552,000	$ -	$ -	$ -
Enterprise Platforms	Technology Modernizatior	5505	$ -	$ -	$ -	$ -	$ -	$ -	$ 563,000	$ -
Integration Services	Technology Modernizatior	5506	$ 530,000	$ 125,000	$ -	$ -	$ -	$ -	$ -	$ -
Integration Services	Technology Modernizatior	5506	$ -	$ -	$ 541,000	$ 128,000	$ -	$ -	$ -	$ -
Integration Services	Technology Modernizatior	5506	$ -	$ -	$ -	$ -	$ 552,000	$ 131,000	$ -	$ -
Integration Services	Technology Modernizatior	5506	$ -	$ -	$ -	$ -	$ -	$ -	$ 563,000	$ 134,000
LAN Infrastructure Program	Technology Modernizatior	5521	$ 102,000	$ 46,000	$ -	$ -	$ -	$ -	$ -	$ -
LAN Infrastructure Program	Technology Modernizatior	5521	$ -	$ -	$ 104,000	$ 47,000	$ -	$ -	$ -	$ -
LAN Infrastructure Program	Technology Modernizatior	5521	$ -	$ -	$ -	$ -	$ 106,000	$ 48,000	$ -	$ -
LAN Infrastructure Program	Technology Modernizatior	5521	$ -	$ -	$ -	$ -	$ -	$ -	$ 108,000	$ 49,000
Network Security Infrastructure Program	Technology Modernizatior	5522	$ 316,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Network Security Infrastructure Program	Technology Modernizatior	5522	$ -	$ -	$ 323,000	$ -	$ -	$ -	$ -	$ -
Network Security Infrastructure Program	Technology Modernizatior	5522	$ -	$ -	$ -	$ -	$ 329,000	$ -	$ -	$ -
Network Security Infrastructure Program	Technology Modernizatior	5522	$ -	$ -	$ -	$ -	$ -	$ -	$ 336,000	$ -
Voice Infrastructure Program	Technology Modernizatior	5523	$ 102,000	$ 20,000	$ -	$ -	$ -	$ -	$ -	$ -
Voice Infrastructure Program	Technology Modernizatior	5523	$ -	$ -	$ 104,000	$ 20,000	$ -	$ -	$ -	$ -
Voice Infrastructure Program	Technology Modernizatior	5523	$ -	$ -	$ -	$ -	$ 106,000	$ -	$ -	$ -
Voice Infrastructure Program	Technology Modernizatior	5523	$ -	$ -	$ -	$ -	$ -	$ -	$ 108,000	$ -
WAN Infrastructure Program	Technology Modernizatior	5524	$ 316,000	$ 1,530,000	$ -	$ -	$ -	$ -	$ -	$ -
WAN Infrastructure Program	Technology Modernizatior	5524	$ -	$ -	$ 323,000	$ 1,560,000	$ -	$ -	$ -	$ -
WAN Infrastructure Program	Technology Modernizatior	5524	$ -	$ -	$ -	$ -	$ 329,000	$ 1,590,000	$ -	$ -
WAN Infrastructure Program	Technology Modernizatior	5524	$ -	$ -	$ -	$ -	$ -	$ -	$ 336,000	$ 1,620,000
Wireless Infrastructure Program	Technology Modernizatior	5525	$ 214,000	$ 81,000	$ -	$ -	$ -	$ -	$ -	$ -
Wireless Infrastructure Program	Technology Modernizatior	5525	$ -	$ -	$ 218,000	$ 83,000	$ -	$ -	$ -	$ -
Wireless Infrastructure Program	Technology Modernizatior	5525	$ -	$ -	$ -	$ -	$ 223,000	$ 85,000	$ -	$ -
Wireless Infrastructure Program	Technology Modernizatior	5525	$ -	$ -	$ -	$ -	$ -	$ -	$ 227,000	$ 87,000
Infrastructure Remediation and Lifecycle refresh	Technology Modernizatior	5540	$ 2,703,000	$ 1,224,000	$ -	$ -	$ -	$ -	$ -	$ -
Infrastructure Remediation and Lifecycle refresh	Technology Modernizatior	5540	$ -	$ -	$ 2,757,000	$ 1,248,000	$ -	$ -	$ -	$ -
Infrastructure Remediation and Lifecycle refresh	Technology Modernizatior	5540	$ -	$ -	$ -	$ -	$ 2,812,000	$ 1,272,000	$ -	$ -
Infrastructure Remediation and Lifecycle refresh	Technology Modernizatior	5540	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,868,000	$ 1,296,000
Infrastructure New Capability	Technology Modernizatior	5541	$ 459,000	$ 51,000	$ -	$ -	$ -	$ -	$ -	$ -
Infrastructure New Capability	Technology Modernizatior	5541	$ -	$ -	$ 468,000	$ 52,000	$ -	$ -	$ -	$ -
Infrastructure New Capability	Technology Modernizatior	5541	$ -	$ -	$ -	$ -	$ 478,000	$ 53,000	$ -	$ -
Infrastructure New Capability	Technology Modernizatior	5541	$ -	$ -	$ -	$ -	$ -	$ -	$ 487,000	$ 54,000
Hosting RFP Build & Market Release	Technology Modernizatior	5579	$ 1,530,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hosting RFP Build & Market Release	Technology Modernizatior	5579	$ -	$ -	$ 1,561,000	$ -	$ -	$ -	$ -	$ -
Hosting RFP Build & Market Release	Technology Modernizatior	5579	$ -	$ -	$ -	$ -	$ 1,592,000	$ -	$ -	$ -
Hosting RFP Build & Market Release	Technology Modernizatior	5579	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,624,000	$ -
Managed Workspace Services Transition & T:	Technology Modernizatior	5580	$ 1,020,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Managed Workspace Services Transition & T:	Technology Modernizatior	5580	$ -	$ -	$ 1,040,000	$ -	$ -	$ -	$ -	$ -
Managed Workspace Services Transition & T:	Technology Modernizatior	5580	$ -	$ -	$ -	$ -	$ 1,061,000	$ -	$ -	$ -
Managed Workspace Services Transition & T:	Technology Modernizatior	5580	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,082,000	$ -
DXC Hosting Tx Initiative:	Technology Modernizatior	5581	$ 1,530,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
DXC Hosting Tx Initiative:	Technology Modernizatior	5581	$ -	$ -	$ 1,561,000	$ -	$ -	$ -	$ -	$ -
DXC Hosting Tx Initiative:	Technology Modernizatior	5581	$ -	$ -	$ -	$ -	$ 1,592,000	$ -	$ -	$ -
DXC Hosting Tx Initiative:	Technology Modernizatior	5581	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,624,000	$ -
Application Rationalization	Technology Modernizatior	5598	$ 3,010,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Application Rationalization	Technology Modernizatior	5598	$ -	$ -	$ 2,888,000	$ -	$ -	$ -	$ -	$ -
Application Rationalization	Technology Modernizatior	5598	$ -	$ -	$ -	$ -	$ 3,183,000	$ -	$ -	$ -
Application Rationalization	Technology Modernizatior	5598	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,247,000	$ -
			$27,760,726	*$16,123,355*	*$33,335,074*	*$11,356,528*	*$32,378,253*	*$15,970,709*	*$32,488,405*	*$19,173,917*
Total Investment Plan Project Opex/RTB			**$43,884,081**		**$44,691,602**		**$48,348,962**		**$51,662,322**	
Customer Information Systems Replacement	CIS	5503	$ 22,175,211	$ -	$ 30,293,514	$ -	$ 13,526,845	$ -	$ -	$ -
Customer Information Systems Replacement	CIS	5503	$ -	$ -	$ -	$ -	$ 15,386,928	$ -	$ 29,193,262	$ -
Customer Information Systems Replacement	CIS	5503	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Customer Information Systems Replacement	CIS	5503	$ -	$ -	$ -	$ -	$ 4,062,836	$ -	$ 4,377,307	$ -
Customer Information Systems Replacement	CIS	5503	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Customer Information Systems Replacement	CIS	5503	$ 20,326,231	$ -	$ 19,321,424	$ -	$ 16,121,296	$ -	$ 15,293,260	$ -
Total Customer Information System Replacement (CIS) Opex/RTB			**$ 42,501,443**	**$ -**	**$ 49,614,937**	**$ -**	**$ 49,097,905**	**$ -**	**$ 48,863,829**	**$ -**
SAP: S4 Hana (Design Phase)	SAP	5646	$ 34,650,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Investment Plan Project Opex/RTB			**$ 34,650,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**

Testimony of Information Technology Panel

Exhibit ___ (ITP-8)

IT Total and Incremental Operating Expenses ($Millions)

KeySpan Gas East Corporation d/b/a National Grid, The Brooklyn Union Gas Company d/b/a National Grid NY
ITP-8 Information Technology (IT) Total and Incremental Operating Expenses ($Millions)

Total IT Operating Expenses

Operational Cost	CY18 (HTY)	FY21 Rate Year	FY22 Data Year 1	FY23 Data Year 2	FY24 Data Year 3
Commercial Supplier Management	21.0	22.1	22.5	23.0	23.4
Cyber Security	9.5	10.0	10.2	10.4	10.6
Physical Security	11.6	12.2	12.4	12.7	12.9
Group Functions	1.6	1.7	1.7	1.8	1.8
Infrastructure & Operations	125.6	110.8	113.1	115.3	117.5
Enterprise Projects (GBE RTB) (1)	0.4	-	-	-	-
Administration	23.1	24.2	24.7	25.2	25.6
Burdens	20.4	21.3	21.8	22.2	22.6
Subtotal Operational Cost	$213.3	$202.3	$206.4	$210.5	$214.6
Investment Plan Project Opex/RTB (2)	28.4	43.9	44.7	48.4	51.7
Customer Information System Replacement (CIS) Opex/RTB	-	42.5	49.6	49.1	48.9
SAP S4 Hana (Design Phase)	-	34.7	-	-	-
Burdens	2.1	1.5	2.2	2.3	2.5
Investment Plan Inflation		6.0	2.0	2.0	2.0
Investment Plan	$30.6	$128.5	$98.5	$101.7	$105.0
CTA (IT Transformation)	$0.3	$0.0	$0.0	$0.0	$0.0
Total IT Opex	$244.2	$330.8	$305.0	$312.3	$319.6

(1) Run the business (RTB) costs associated Gas Business Enablement (GBE) is included in GBE Testimony

(2) Project Details for Investment Plan Project Opex/RTB are found in IT Panel Testimony on Exhibit_ITP-7

Exhibit__(ITP-8)
Page 1 of 2

KeySpan Gas East Corporation d/b/a National Grid, The Brooklyn Union Gas Company d/b/a National Grid NY
ITP-8 Information Technology (IT) Total and Incremental Operating Expenses ($Millions)

Incremental IT Operating Expenses (HTY Adjusted for Inflation)					
	CY18 (HTY)	FY21 Rate Year	FY22 Data Year 1	FY23 Data Year 2	FY24 Data Year 3
General Inflation Rates		4.87%	2.04%	1.99%	1.92%
Total IT Opex in CY18 (HTY)	$244.2				
Incremental Inflation		$11.9	$5.2	$5.2	$5.1
CY18 (HTY) Opex Adjusted for inflation (Already embedded in RR)		$256.1	$261.3	$266.5	$271.6
Total IT Opex		$330.8	$305.0	$312.3	$319.6
Total Incremental IT Opex		**$74.7**	**$43.7**	**$45.8**	**$47.9**

Allocation of Incremental IT Opex					
	Allocation %				
G012 Allocator - KEDNY share of IT OPEX (Excluding CIS Project)	13.31%	$4.3	($0.8)	($0.4)	($0.1)
G012 Allocator - KEDLI Share of IT OPEX (Excluding CIS Project)	8.29%	$2.7	($0.5)	($0.3)	($0.1)
C239 Allocator - KEDNY share of CIS Project	45.89%	$10.2	$13.9	$6.2	$0.0
C239 Allocator - KEDLI Share of CIS Project	21.30%	$4.7	$6.5	$2.9	$0.0
NEW Allocator - KEDNY share of CIS Project	26.11%	$0.0	$0.0	$1.1	$1.1
NEW Allocator - KEDLI Share of CIS Project	12.12%	$0.0	$0.0	$0.5	$0.5
C175 Allocator - KEDNY share of CIS Project	17.78%	$3.6	$3.4	$2.9	$2.7
C175 Allocator - KEDLI Share of CIS Project	8.25%	$1.7	$1.6	$1.3	$1.3
Incremental IT Opex Allocated to The Brooklyn Union Gas Company (KEDNY)		**$18.1**	**$16.5**	**$9.7**	**$3.7**
Incremental IT Opex Allocated to KeySpan Gas Corporation (KEDLI)		**$9.1**	**$7.6**	**$4.4**	**$1.7**
Incremental IT Opex Allocated to other operating companies		$47.5	$19.6	$31.7	$42.5
		$74.7	**$43.7**	**$45.8**	**$47.9**

Exhibit__(ITP-8)
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