



US Sanction Paper

3 Sanction Paper Detail

Title:	Network Modernization	Sanction Paper #:	USSC-18-313 v2
Project #:	INVP 5309 Capex: S007971	Sanction Type:	Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	3/13/2019
Author:	Morgan Matthews / Andrew Yee	Sponsor:	Barry Sheils VP IT Infrastructure & Operations
Utility Service:	IT	Project Manager:	Andrew Costello

3.1 Background

The Network Modernization Program has identified a series of projects that will modernize the National Grid network (replacing outdated, aged and unsupported network equipment and streamlining processes). The paper request funds for the following initiatives listed under the Program INVP 5309 - Network Modernization:

- 5310: Governance
 - Video Conferencing (EOS Maintenance Model / Webex Video Bridging and Tandberg Replacement)
 - WAAS (Wide Area Application Service) Decommissioning
 - SRST (Survivable Remote Site Telephony) Decommissioning
- 5311: InfoBlox / IP Platform Management
- 5312: Ethernet/SD-WAN Upgrade
- 5313: Zscaler Cloud Security Gateway
- 5314: eBond/NSSR/Service Catalog

INVP 5310 – Network Modernization Governance

A). Video Conferencing: EOS Maintenance Model, Webex Video Bridging, and Tandberg Replacement

This solution was developed in partnership with Verizon and EOS to deliver an enhanced video support service and on premise video bridging functionality that enhances the Webex video bridging in use today. This solution provides for video bridges (Webex Video Mesh (WVM) bridges) to be deployed in the US Verizon Strategic Internet Gateways (VSTIGs) and dedicated for National Grid's use.

Verizon's third party vendor, EOS, will take over management and maintenance of the video platform from Verizon's current third party vendor (YorkTel). In addition, four new video units will replace Tandberg units that are at end of life. The new video units will be installed in the following US locations: (2) Syracuse, NY(1) Metrotech, NY(1) Albany, NY.



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B). WAAS (Wide Area Application Service) Decommissioning

As part of the Verizon contract renewal extension, Verizon identified that National Grid would be more efficient if the WAAS was decommissioned and physically removed in thirty-one (31) locations. Traffic studies indicate that this technology is at end of life, end of support, and no longer provides an effective solution for enhancing WAN performance.

C). SRST (Survivable Remote Site Telephony) Decommissioning

As part of a Verizon contract renewal extension, National Grid determined it could take advantage of efficiency if SRST were 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.

INVP 5311 – Network Modernization InfoBlox / IP Platform Management

The Internet Protocol Management Platform provides Domain Name System (DNS), Dynamic Host Configuration Protocol (DHCP) and manages IP addresses, which every device on the National Grid network requires to function. The DNS service translates to user-friendly IP addresses which can be recognized by users and programs to reference devices on the network.

The existing IP management platform reached end-of-life in 2018 and needs to be replaced with an alternative service. It has a complex integration process and minimal automation functionality resulting in significant integrating delays and no self-service capability. At end of life, the software and hardware will no longer be serviced via software upgrades, patches or hardware replacements and left vulnerable to security attack and operational risk. Should there be a failure, this would be resolved on a reasonable endeavors basis only.

Upgrading to InfoBlox allows an interface with Service Now via an API (Application Program Interface) to enable a self-service infrastructure through automation which leads to efficiency for National Grid.

INVP 5312 – Network Modernization Ethernet/SD-WAN Upgrade

The current Network architecture is experiencing performance and capacity issues that impacts our ability to successfully manage the growing network demand for National Grid's cloud-based digital initiatives, infrastructure and operational upgrades.

- **WAN Ethernet Network Upgrade**

The majority of National Grid's WAN circuits are based on the outdated Time Division Multiplexing (TDM) technology. Migrating to Ethernet technology will be more efficient and allow for bandwidth upgrades in a more efficient manner.



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This project is being coordinated with the SD-WAN project. Any sites in scope of the SD-WAN project which do not already have an Ethernet connection will be migrated before they can be implemented. We are currently looking at seven (7) sites that require procurement, installation, testing and replacement of local access circuits.

- **SD-WAN (Software Defined – Wide Area Network) Upgrade**

The current network architecture is experiencing performance and capacity issues that impact our ability to successfully manage the growing network demand for National Grid's cloud -based digital initiatives, infrastructure and operational upgrades.

The existing WAN (Wide Area Network) architecture is not able to deliver the application performance as desired for National Grid business, *i.e.*, the global application deployment process is cumbersome and error prone due to complexity on tools, scripts and procedures. Implementing SD-WAN (Software Defined Wide Area network) architecture can efficiently manage National Grid's network traffic, application deployment and implement routing based on business application requirements.

The SD-WAN architecture upgrade will increase agility by simplifying network policy configuration, management, and provide higher performance by leveraging multiple paths and broadband connections.

There are twenty-five (25) sites targeted for the SD WAN architecture upgrade.

INVP 5313 – Network Modernization Zscaler Cloud Security Gateway

Part of the Network Modernization program is to implement a cloud-based internet security solution, Zscaler Internet Access (ZIA), to support the increased security requirements of software-defined networking and support the increased proxy port demand of Office 365. This will allow National Grid to use online collaborative tools.

This project will also enable a cloud platform service to direct all National Grid users through secured gateway, *i.e.*, National Grid corporate users onsite and remote will access National Grid's applications based on National Grid's security policy in a seamless manner.

National Grid plans to use software defined networking (SD WAN) to route internet traffic from the sites enabled for SD WAN directly to the Internet (local internet breakout) and thereby bypass the National Grid WAN and VSTIG infrastructure (that is, the current Internet Security). To make the SD-WAN local Internet breakout solution secure, a cloud-based proxy service was selected as the most appropriate solution. Zscaler will provide the Internet controls for access to external sites and feed the results and required logs into Digital Risk & Security (DR&S) security tools to provide security and event alerting.



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The implementation of Zscaler will reduce the usage of existing National Grid's Multi-Protocol Label Switching (MPLS) private network from 30% to 40%.

A workshop will be conducted to better understand Zscaler Private Access (ZPA). To see if ZPA is viable to replace current Juniper Virtual Private Network (VPN) solution and associated Network Connect client with a Zscaler security platform services in coordination with the Zscaler Private Access (ZPA) solution

INVP 5314 – Network Modernization eBond/NSSR (Non-Standard Service Request)/Service Catalog

As part of the Verizon contract renewal extension, this project will remove manual processes, and refine / automate existing processes to create a more efficient end user experience by delivering three initiatives:

- **E-Bond for Service Requests (E-Bonding is the act of automating the data exchange between business enterprises to reduce or remove manual intervention)**
 - Mapping of all tasks currently undertaken by the manual process (swivel chair) for Service Request Management. (Moves, Adds, Changes, Deletions (MACD))
 - Creation of automated process for exchanging, acknowledging receipt and fulfilment of requests between ETMS (Enterprise Ticket Management System) and ServiceNow
 - Synchronizing the systems so that notifications can be triggered
 - Enabling more uniform processing and tracking of requests for more accurate reporting

- **Service Catalog Integration**
 - Establish a catalog of items frequently procured from Verizon in ServiceNow
 - Establish an interim version of the catalog for use while ServiceNow Catalog is being created
 - Create a governance process around the use of the Service Catalog

- **NSSR Automation**
 - Establish an automated instance of the NSSR process with Verizon in ServiceNow
 - Create a governance process around the use of the NSSR process in ServiceNow



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- o Include suitable functionality to enable other vendors to be onboarded

3.2 Drivers

The main driver of this program is a modernized network for Infrastructure.

3.3 Project Description

INVP #	Project Title	Project Description
Network Modernization: Governance		
5310 CAPEX \$0.599M OPEX \$0.177M	Video Conferencing	This project is to deliver enhance video support and on premise video bridging functionality that enhances the Webex video bridging in use today. Verizon's third party vendor EOS will take over management and maintenance of the video platform from Verizon's current third party vendor. In addition, four new video units will be installed in conference rooms that had end of life Tandberg units.
	Turn Down of the WAAS US	Verizon's engineering traffic studies have identified Wide Area Application Service (WAAS) does not provide an effective solution for enhancing WAN performance at most of the sites where it was deployed. This project is to disable and physically remove the WAAS for thirty-one (31) locations.
	Decommission of the SRST	With the increase of cell phones, there is no longer a need for the survivable remote site telephony (SRST) in non-operational office sites to make outbound calls in the event of a WAN failure. National Grid has requested Verizon to remove the aging SRST technology from 116 sites that do not have a control center functional requirement for continued outbound calling.
Network Modernization: InfoBlox		
5311 CAPEX \$2.872M	InfoBlox	This project will replace the current IP management platform, (BP Diamond) which reached end of life in 2018, by InfoBlox to provide better IP Management platform with secure DHS, DHCP.



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OPEX \$0.264M		
Network Modernization: Ethernet/SD-WAN Upgrade		
5312 CAPEX \$1.468M OPEX \$0.171M	WAN Ethernet Network Upgrade SD-WAN Upgrade	<p>This project is a pre-requisite for the SD-WAN project, which will migrate WAN Circuits on the existing sites to an Ethernet interface to achieve cost benefits by implementing the SD-WAN project.</p> <p>This project will be implementing SD-WAN (Software Defined Wide Area network) architecture to improve network performances and capacity issues, and to successfully manage the growing network demand for cloud-based digital IT solutions by replacing the existing WAN (Wide Area Network) architecture that is not able to deliver the desired network performance and capabilities.</p>
5313 CAPEX \$0.463M OPEX \$1.142M	Zscaler Cloud Security Gateway	<p>With the increase of cloud based services, such as Office 365, being used across National Grid, this project will implement Zscaler Cloud Security Gateway to provide internet security controls for access to external sites and provide logs for DR&S security tools which will provide security and event alerting identifying and preventing cyber-attack.</p>
Network Modernization: eBond/NSSR/SVC Catalogue		
5314 CAPEX \$0.252M OPEX \$0.093M	Ebond NSSR	<p>This project will provide better IT service management by integrating the National Grid Service Now tool and Verizon Service Request Management (SRM) tool (case exchange), to efficiently manage IT service requests.</p> <p>This project will streamline the Non-Standard Service Request (NSSR) process between National Grid and Verizon to make the process more user friendly.</p>



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	Service Catalog	This project will enable end users (employees, suppliers and vendors) to raise any service request through the Service Now tool (<i>i.e.</i> , via Service Catalog) and have the service fulfilled. The Service Catalog includes information about deliverables, prices, contact points, ordering and request Processes. Based on the approval process the requested service will be fulfilled.
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3.4 Benefits Summary

- The current end of life BT IP management platform will be retired and services will have moved across to a new, supported platform
- An IP address self-service request portal will be deployed
- Thirty-three (33) sites connected via SD-WAN resulting in improved operational support
- Local internet breakout will improve responsiveness of internet applications and reduce bandwidth requirement of VSTIG Internet connections
- Central Policy Management will reduce time of wide scale network changes
- Implementation of the Zscaler, which is an enabler for the SD-WAN project and will immediately support the traffic volumes estimated for O365
- More standardized and user friendly interface with Service Catalog
- Streamline the NSSR process

3.5 Business and Customer Issues

N/A

3.6 Alternatives

Alternative 1: Defer project/ Do Nothing –

Rejected: This option is not viable as it will not address network modernization and the benefits listed in Section 3.4.

Indicative Costs: N/A

3.7 Safety, Environmental and Project Planning Issues

There are no significant issues beyond what has been described elsewhere.



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3.8 Execution Risk Appraisal

Risk Breakdown Structure Category	Qualitative Assessment / Risk Response Strategy				Risk Score	
	Risk ID + Title	IF Statement	THEN Statement	Risk Response Strategy		
1. Weather	R1 - Weather	IF there are adverse weather conditions	THEN key change activities could be impacted thereby impacting project timescales	Accept	Effective and proactive planning will be critical as a workaround	9
2. Additional Scope	R2 - Additional Scope	IF the scope changes currently under review are required	THEN there can an impact to cost and the overall schedule.	Mitigate	Utilize the risk margin to absorb the additional cost to avoid re-sanction. Change process will be utilized for any areas that can not be covered within the risk margin.	9
3. Security	R3 - DR&S	IF DR&S is implementing the same security policies, procedures, that are in place today and identify additional security or penn testing is required	THEN DR&S will open up risks in the Archer database for Acceptance, Mitigation, Transfer, or Avoidance.	Accept	Senior leadership has agreed to implementing a "like for like" environments and will accept the risks. Change process will be utilized for any areas that need to be included and added in as new scope.	9

3.9 Permitting

N/A

3.10 Investment Recovery

3.10.1 Investment Recovery and Regulatory Implications

Recovery will occur at the time of the next rate case for any operating company receiving allocations of these costs.

3.10.2 Customer Impact

N/A

3.10.3 CIAC / Reimbursement

N/A

3.11 Financial Impact to National Grid

3.11.1 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend (\$M)	Prior Yrs	Current Planning Horizon						Total	
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
					2019/20	2020/21	2021/22	2022/23	2023/24	2024/25		
INVP 5309 Capex: S007971	Network Modernization	Est Lm (e.g. +/- 10%)	CapEx	4.635	1.021	0.000	0.000	0.000	0.000	0.000	0.000	5.655
			OpEx	1.856	0.400	0.000	0.000	0.000	0.000	0.000	0.000	2.256
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	6.491	1.420	0.000	0.000	0.000	0.000	0.000	0.000	7.911



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3.11.2 Project Budget Summary Table

Project Costs Per Business Plan

	Prior Yrs (Actual)	Current Planning Horizon						Total
		Yr. 1 2019/20	Yr. 2 2020/21	Yr. 3 2021/22	Yr. 4 2022/23	Yr. 5 2023/24	Yr. 6 + 2024/25	
\$M								
CapEx	4.635	0.685	0.000	0.000	0.000	0.000	0.000	5.320
OpEx	1.856	0.323	0.000	0.000	0.000	0.000	0.000	2.179
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	6.491	1.008	0.000	0.000	0.000	0.000	0.000	7.499

Variance (Business Plan-Project Estimate)

	Prior Yrs (Actual)	Current Planning Horizon						Total
		Yr. 1 2019/20	Yr. 2 2020/21	Yr. 3 2021/22	Yr. 4 2022/23	Yr. 5 2023/24	Yr. 6 + 2024/25	
\$M								
CapEx	0.000	(0.336)	0.000	0.000	0.000	0.000	0.000	(0.336)
OpEx	0.000	(0.077)	0.000	0.000	0.000	0.000	0.000	(0.077)
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	(0.412)	0.000	0.000	0.000	0.000	0.000	(0.412)

3.11.3 Cost Assumptions

The cost estimates come from proposals from multiple vendors (Verizon, DXC) coupled with National Grid labor to manage and implement these solutions. All proposals were reviewed and validated through R&D and payment milestone schedules were agreed to in the calendar year.

3.11.4 Net Present Value / Cost Benefit Analysis

3.11.4.1 NPV Summary Table

N/A

3.11.4.2 NPV Assumptions and Calculations

N/A

3.11.5 Additional Impacts

N/A

3.12 Statements of Support



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3.12.1 Supporters

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

Department	Individual	Responsibilities
Business Department	Adriano Antiquera	Business Representative
Business Partner (BP)	Caitlin Davidson	Relationship Manager
Program Delivery Management (PDM)	Doug Campbell	Program Delivery Director
IT Finance	Michelle Harris	Manager
IT Regulatory	Dan DeMauro	Director
Digital Risk and Security (DR&S)	Peter Shattuck	Manager
Service Delivery	Mark Mirizio	Manager
Enterprise Architecture	Svetlana Lyba	Manager

3.12.2 Reviewers

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

Function	Individual
Regulatory	Harvey, Maria
Jurisdictional Delegate - Electric NE	Easterly, Patricia
Jurisdictional Delegate - Electric NY	Harbaugh, Mark A.
Jurisdictional Delegate - FERC	Hill, Terron
Jurisdictional Delegate - Gas NE	Currie, John
Jurisdictional Delegate - Gas NY	Wolf, Don
Procurement	Chevere, Diego

4 Appendices

4.1 *Sanction Request Breakdown by Project*

N/A



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4.2 Project Cost Breakdown

Project Cost Breakdown \$ (millions)						
Cost Category	sub-category	Value of Work to Date (VOWD)	Forecast to Complete (FTC)	Forecast At Completion (FAC=VOWD+FTC)	Name of Firm(s) providing resources	
Personnel	NG Resources		-	-		
	SDC Time & Materials			-	-	IBM
				-	-	WiPro
				-	-	DXC
				-	-	Verizon
	SDC Fixed-Price			-	-	IBM
				-	-	WiPro
				-	-	DXC
				-	-	Verizon
	All other personnel		-	-		
TOTAL Personnel Costs	-	-	-			
Hardware	Purchase		-	-		
	Lease		-	-		
Software			-	-		
Risk Margin			-	-		
AFUDC			-	-		
Other		4.208	3.703	7.911		
TOTAL Costs		4.208	3.703	7.911		



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4.3 Benefiting Operating Companies

Operating Company Name	Business Area	State
National Grid USA Parent	Parent	
KeySpan Energy Development Corporation	Non-Regulated	NY
KeySpan Services Inc.	Service Company	
KeySpan Energy Corp.	Service Company	
KeySpan Energy Delivery New York	Gas Distribution	NY
KeySpan Energy Delivery Long Island	Gas Distribution	NY
KeySpan Generation LLC (PSA)	Generation	NY
KeySpan Glenwood Energy Center	Generation	NY
KeySpan Port Jefferson Energy Center	Generation	NY
Keyspan Energy Trading Services	Other	NY
Niagara Mohawk Power Corp.- Electric Distr.	Electric Distribution	NY
Niagara Mohawk Power Corp. - Gas	Gas Distribution	NY
Niagara Mohawk Power Corp. - Transmission	Transmission	NY
Massachusetts Electric Company	Electric Distribution	MA
Massachusetts Electric Company – Transmission	Transmission	MA
Nantucket Electric Company	Electric Distribution	MA
Boston Gas Company	Gas Distribution	MA
Colonial Gas Company	Gas Distribution	MA
Narragansett Gas Company	Gas Distribution	RI
Narragansett Electric Company	Electric Distribution	RI
Narragansett Electric Company – Transmission	Transmission	RI
New England Power Company – Transmission	Transmission	MA,NH,RI,VT
New England Hydro - Trans Corp.	Inter Connector	MA, NH
New England Electric Trans Corp	Inter Connector	MA
NG LNG LP Regulated Entity	Gas Distribution	MA,NY,RI
Trans Gas Inc.	Non-Regulated	NY



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4.4 IT Ongoing Operational Costs (RTB):

This project will increase/decrease IT ongoing operations support costs as per the following table. These are also known as Run the Business (RTB) costs.

All figures in \$ thousands	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Total
	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23	
Last Sanctioned Net Impact to RTB						
Last Sanction IS Net Impact to RTB						-
Last Sanction Business Net Impact to RTB						-
Last Sanction Total Net Impact to RTB	-	-	-	-	-	-
Planned/Budgeted Net Impact to RTB						
IS Investment Plan Net Impact to RTB						-
Business Budgeted Net Impact to RTB						-
Currently Forecasted Net Impact to RTB						
IS Funded Net Impact to RTB Forecasted at Go-Live	32.2	1,989.8	2,472.7	2,472.7	2,472.7	9,440.1
Business Funded Net Impact to RTB Forecasted at Go-Live	-	-	-	-	-	-
Variance to Planned/Budgeted Net Impact to RTB						
IS Investment Plan Net Impact to RTB Variance	(32.2)	(1,989.8)	(2,472.7)	(2,472.7)	(2,472.7)	(9,440.1)
Business Budgeted Net Impact to RTB Variance	-	-	-	-	-	-

4.5 NPV Summary (if applicable)

N/A

4.6 Customer Outreach Plan

N/A



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4.7 Glossary

Terminology/Jargon/Abbreviation	Meaning
AD	Active Directory
BRD	Business Requirements Document
CNI	Critical National Grid Infrastructure
DAAS	Desktop-as-a-service
DNS	Domain Name System
DHCP	Dynamic Host Control Protocol
DR&S	Digital Risk & Security
EOS	Verizon's third party vendor
InfoBlox	Company that focuses on managing and identifying devices connect to networks – specifically for the DNS, DHCP and IP address management
IPAM	Internet Protocol Address Management System
L2 / L3	Layer 2 / Layer 3
NG	National Grid
O365	Office 365
PAC	Proxy Auto Configuration
RTO	Recovery Time Objective
RPO	Recovery Point Objective
SD-WAN	Software Defined - Wide Area Network
SLA	Service Level Agreement
SRM	Service Request Management
SRST	Survivable Remote Site Telephony
SSL	Secured Socket Layer
SSMA	Single Scan Multi-Action
Tandberg	Company offering video conferencing solutions
TDM	Time-division multiplexing (TDM) is a method of transmitting and receiving independent signals over a common signal path by means of synchronized switches at each end of the transmission line so that each signal appears on the line only a fraction of time in an alternating pattern
UAT	User Acceptance Testing
VPN	Virtual Private Network
vSTIGS	A scalable plugin-based PowerCLI application intended for setting and auditing of security policies for VMware vSphere 5.X environments
WAAS	Wide Area Application Service
WAN	Wide Area Network
WVM	Webex Video Mesh
ZAB	Zscaler Authentication Bridge
ZIA	Zscaler Internet Access
ZPA	Zscaler private access
Zscaler	Global cloud-based information security company



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Title:	Network Modernization	Sanction Paper #:	USSC-18-313
Project #:	INVP 5309 Capex: S007971	Sanction Type:	Partial Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	10/16/2018
Author:	Andrew Yee / Aravind Lochan / Neha Verma	Sponsor:	Barry Sheils VP IT Infrastructure & Operations
Utility Service:	IT	Project Manager:	Andrew Costello

1 Executive Summary

1.1 Sanctioning Summary

This document requests partial sanction of program paper INVP 5309 - Network Modernization in the amount of \$2.991M with a tolerance of +/- 10% for the purposes of Requirement and Design.

This sanction amount is \$2.991M broken down into:

- \$2.109M Capex*
- \$0.882M Opex*
- \$0.000M Removal*

NOTE the potential investment of \$4.844M with a tolerance of +/- 25%, contingent upon submittal and approval of a Program Sanction (Phase 2) paper following completion of Requirements and Design.

1.2 Program & Project Summary

The Network Modernization Program has identified a series of projects that will modernize the National Grid network (replacing outdated, aged and unsupported network equipment and streamlining processes). The purpose of this program paper is to request the funds for the following initiatives listed under the Program INVP 5309 - Network Modernization:

- 5310: Governance
 - Video Conferencing (EOS Maintenance Model / Webex Video Bridging and Tandberg Replacement)
 - WAAS (Wide Area Application Service) Decommissioning
 - SRST (Survivable Remote Site Telephony) Decommissioning
- 5311: InfoBlox / IP Platform Management
- 5312: Ethernet/SD-WAN Upgrade



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- 5313: Zscaler Cloud Security Gateway
- 5314: eBond/ Non-Standard Service Request (NSSR)/Service Catalog

1.3 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
INVP 5309		Network Modernization	4.844
Total			4.844

1.4 Associated Projects

N/A

1.5 Prior Sanctioning History

N/A

1.6 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review
March 2019	Project Sanction

1.7 Category

Category	Reference to Mandate, Policy, NPV, or Other
<input type="radio"/> Mandatory <input checked="" type="radio"/> Policy- Driven <input type="radio"/> Justified NPV <input type="radio"/> Other	This is a policy driven project (program) to modernize the National Grid network.

1.8 Asset Management Risk Score

Asset Management Risk Score: 41



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Primary Risk Score Driver: (Policy Driven Projects Only)

- Reliability
 Environment
 Health & Safety
 Not Policy Driven

1.9 Complexity Level

- High Complexity
 Medium Complexity
 Low Complexity
 N/A

Complexity Score: 22

1.10 Process Hazard Assessment

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

- Yes
 No

1.11 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
IS Investment Plan FY19 – 23	<input type="radio"/> Yes <input checked="" type="radio"/> No	<input checked="" type="radio"/> Over <input type="radio"/> Under <input type="radio"/> NA	\$4.844M

1.12 If cost > approved Business Plan how will this be funded?

Re-allocation of budget within the IT business has been managed to meet jurisdictional budgetary, statutory and regulatory requirements.



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1.13 Current Planning Horizon

\$M	Prior Yrs	Current Planning Horizon						Total
		Yr. 1 2018/19	Yr. 2 2019/20	Yr. 3 2020/21	Yr. 4 2021/22	Yr. 5 2022/23	Yr. 6 + 2023/24	
CapEx	0.000	3.728	0.000	0.000	0.000	0.000	0.000	3.728
OpEx	0.000	1.054	0.062	0.000	0.000	0.000	0.000	1.116
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CIAC/Reimbursement	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	0.000	4.782	0.062	0.000	0.000	0.000	0.000	4.844

1.14 Key Milestones

Milestone	Target Date: (Month Year)
Start Up	September 2018
Partial Sanction	October 2018
Begin Requirements and Design	September 2018
Sanction	March 2019
Begin Development and Implementation	March 2019
Move to Production / Last Go Live	May 2019
Project Closure	July 2019

1.15 Resources, Operations and Procurement

Resource Sourcing			
Engineering & Design Resources to be provided	<input checked="" type="checkbox"/> Internal	<input type="checkbox"/> Contractor	
Construction/Implementation Resources to be provided	<input checked="" type="checkbox"/> Internal	<input checked="" type="checkbox"/> Contractor	
Resource Delivery			
Availability of internal resources to deliver project:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green
Availability of external resources to deliver project:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green
Operational Impact			
Outage impact on network system:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green
Procurement Impact			



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Procurement impact on network system:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green
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1.16 Key Issues (include mitigation of Red or Amber Resources)

N/A

1.17 Climate Change

Contribution to National Grid's 2050 80% emissions reduction target:	<input checked="" type="radio"/> Neutral	<input type="radio"/> Positive	<input type="radio"/> Negative
Impact on adaptability of network for future climate change:	<input checked="" type="radio"/> Neutral	<input type="radio"/> Positive	<input type="radio"/> Negative

1.18 List References

N/A



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2 Decisions

The US Sanctioning Committee (USSC) at a meeting held on 10/16/2018

- (a) APPROVE the investment of \$ 2.991M and a tolerance of +/- 10% for the purposes of Requirements | Design | Development | Implementation
- (b) NOTE the potential investment \$ 4.844M and a tolerance of +/- 25%, contingent upon submittal and approval of a Project Sanction paper following completion of requirements and design.
- (c) NOTE that Andrew Costello is the Project Manager has the approved financial delegation

Signature..... Date.....

David H. Campbell, Vice President ServCo Business Partnering, USSC Chair



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3 Sanction Paper Detail

Title:	Network Modernization	Sanction Paper #:	
Project #:	INVP 5309 Capex: S007971	Sanction Type:	Partial Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	10/16/2018
Author:	Andrew Yee / Aravind Lochan / Neha Verma	Sponsor:	Barry Sheils VP IT Infrastructure & Operations
Utility Service:	IT	Project Manager:	Andrew Costello

3.1 Background

The Network Modernization Program has identified a series of projects that will modernize the National Grid network (replacing outdated, aged and unsupported network equipment and streamlining processes). The purpose of this program paper is to request the funds for the following initiatives listed under the Program INVP 5309 - Network Modernization:

- 5310: Governance
 - o Video Conferencing (EOS Maintenance Model / Webex Video Bridging and Tandberg Replacement)
 - o WAAS (Wide Area Application Service) Decommissioning
 - o SRST (Survivable Remote Site Telephony) Decommissioning
- 5311: InfoBlox / IP Platform Management
- 5312: Ethernet/SD-WAN Upgrade
- 5313: Zscaler Cloud Security Gateway
- 5314: eBond/NSSR/Service Catalog

INVP 5310 – Network Modernization Governance

A). Video Conferencing: EOS Maintenance Model, Webex Video Bridging, and Tandberg Replacement

This solution was developed in partnership with Verizon and EOS to deliver an enhanced video support service and on premise video bridging functionality that enhances the Webex video bridging in use today. This solution provides for video bridges (Webex Video Mesh (WVM) bridges) to be deployed in the US VSTIGs and dedicated for National Grid’s use. The implementation of the WVMs and the EOS Management VPN will occur in the following locations: Ashburn, VA / Billerica, MA.

Verizon’s third party vendor, EOS, will take over management and maintenance of the video platform from Verizon’s current third party vendor (YorkTel). In addition, four new



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video units will replace Tandberg units that are at end of life. The new video units will be installed in the following US locations: (2) Syracuse, NY(1) Metrotech, NY(1) Albany, NY.

B). WAAS (Wide Area Application Service) Decommissioning

As part of the Verizon contract renewal extension, Verizon identified that National Grid would be more efficient if the WAAS was decommissioned and physically removed in (31) locations. Traffic studies indicate that this technology is at end of life, end of support and no longer provides an effective solution for enhancing WAN performance.

C). SRST (Survivable Remote Site Telephony) Decommissioning

As part of a Verizon contract renewal extension, National Grid determined it could take advantage of efficiency if SRST were 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.

INVP 5311 – Network Modernization InfoBlox / IP Platform Management

The IP management platform provides Domain Name System (DNS), Dynamic Host Configuration Protocol (DHCP) and manages IP addresses, which every device on the National Grid network requires to function. The DNS service translates to user-friendly IP addresses which can be recognized by users and programs to reference devices on the network.

The existing IP management platform is approaching end-of-life in 2018 and needs to be replaced with an alternative service. It has a complex integration process and minimal automation functionality resulting in significant integrating delays and no self-service capability. At end of life, the software and hardware will no longer be serviced via software upgrades, patches or hardware replacements and left vulnerable to security attack and operational risk. Should there be a failure, this would be resolved on a reasonable endeavors basis only.

Upgrading to InfoBlox allows an interface with Service Now via an API (Application Program Interface) to enable a self-service infrastructure through automation which leads to efficiency for National Grid.

INVP 5312 – Network Modernization Ethernet/SD-WAN Upgrade

The current Network architecture is experiencing performance and capacity issues that impacts our ability to successfully manage the growing network demand for National Grid's cloud-based digital initiatives, infrastructure and operational upgrades.

- **WAN Ethernet Network Upgrade**



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The majority of National Grid's WAN circuits are based on outdated Time Division Multiplexing (TDM) technology. Migrating to Ethernet technology will be more efficient and allow for bandwidth upgrades in a more efficient manner.

This project is being coordinated with the SD-WAN project, any sites in scope of the SD-WAN project which do not already have an Ethernet connection, and will be migrated before they can be implemented. We are currently looking at (7) sites that require procurement, installation, testing and replacement of local access circuits.

- **SD-WAN (Software Defined – Wide Area Network) Upgrade**

The current Network architecture is experiencing performance and capacity issues that impact our ability to successfully manage the growing network demand for National Grid's cloud-based digital initiatives, infrastructure and operational upgrades

The existing WAN (Wide Area Network) architecture is not able to deliver the application performance as desired for National Grid business, *i.e.*, global application deployment process is cumbersome and error prone due to complexity on tools, scripts and procedures. Implementing SD-WAN (Software Defined Wide Area network) architecture can efficiently manage National Grid's network traffic, application deployment and implement routing based on business application requirements.

The SD-WAN architecture upgrade will increase agility by simplifying network policy configuration, management, and provide higher performance by leveraging multiple paths and broadband connections.

There are (25) sites targeted for the SD WAN architecture upgrade.

INVP 5313 – Network Modernization Zscaler Cloud Security Gateway

Part of the Network Modernization program is to implement a cloud-based internet security solution, ZScaler Internet Access (ZIA), to support the increased security requirements of software-defined networking and support the increased proxy port demand of Office 365. Which will allow national Grid to use online collaborative tools.

This project will also enable a cloud platform service to direct all National Grid users through secured gateway, *i.e.*, National Grid corporate users onsite and remote will access National Grid's applications based on National Grid's security policy in a seamless manner and will.

National Grid plans to use software defined networking (SD WAN) to route internet traffic from the sites enabled for SD WAN directly to the Internet (local internet breakout) and thereby bypass the National Grid WAN and VSTIG infrastructure (that is, the current Internet Security). To make the SD-WAN local Internet breakout solution secure, a cloud-based proxy service was selected as the most appropriate solution. ZScaler will



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provide the Internet controls for access to external sites and feed the results and required logs into Digital Risk & Security (DR&S) security tools to provide security and event alerting.

The implementation of ZScaler will reduce the usage of existing National Grid's Multi-Protocol Label Switching (MPLS) private network from 30% to 40%.

INVP 5314 – Network Modernization eBond/NSSR (Non-Standard Service Request)/Service Catalog

As part of the Verizon contract renewal extension, this project will remove manual processes, and refine / automate existing processes to create a more efficient end user experience by delivering three initiatives:

- **E-Bond for Service Requests (E-Bonding is the act of automating the data exchange between business enterprises to reduce or remove manual intervention)**
 - Mapping of all tasks currently undertaken by the manual process (swivel chair) for Service Request Management. (Moves, Adds, Changes, Deletions (MACD))
 - Creation of automated process for exchanging, acknowledging receipt and fulfilment of requests between ETMS (Enterprise Ticket Management System) and ServiceNow
 - Synchronizing the systems so that notifications can be triggered
 - Enabling more uniform processing and tracking of requests for more accurate reporting

- **Service Catalog Integration**
 - Establish a catalog of items frequently procured from Verizon in ServiceNow
 - Establish an interim version of the catalog for use while ServiceNow Catalog is being created
 - Create a governance process around the use of the Service Catalog

- **NSSR Automation**
 - Establish an automated instance of the NSSR process with Verizon in ServiceNow
 - Create a governance process around the use of the NSSR process in ServiceNow
 - Include suitable functionality to enable other vendors to be onboarded



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Network Modernization: Ethernet/SD-WAN Upgrade		
5312 OPEX \$.146 CAPEX \$.868	WAN Ethernet Network Upgrade SD-WAN Upgrade	<p>This project is a pre-requisite for the SD-WAN project, which will migrate WAN Circuits on the existing sites to an Ethernet interface to achieve cost benefits by implementing the SD-WAN project.</p> <p>This project will be implementing SD-WAN (Software Defined Wide Area network) architecture to improve network performances and capacity issues, and to successfully manage the growing network demand for cloud-based digital IT solutions by replacing the existing WAN (Wide Area Network) architecture that is not able to deliver the desired network performance and capabilities</p>
5313 OPEX \$.590 CAPEX \$.451	Zscaler Cloud Security Gateway	With the increase of cloud based services, such as Office 365, being used across National Grid, this project will implement Zscaler Cloud Security Gateway to provide internet security controls for access to external sites and provide logs for DR&S security tools which will provide security and event alerting identifying and preventing cyber-attack.
Network Modernization: eBond/NSSR/SVC Catalogue		
5314 OPEX \$.154 CAPEX \$.319	eBond NSSR Service Catalog	<p>This project will provide better IT service management by integrating National Grid Service Now tool and Verizon Service Request Management (SRM) tool (case exchange), to efficiently manage IT service requests.</p> <p>This project will streamline the Non-Standard Service Request (NSSR) process between National Grid and Verizon to make the process more user friendly.</p> <p>This project will enable end user (employees, suppliers and vendors) to raise any service request through Service Now tool (<i>i.e.</i>, via Service Catalog) and have the service fulfilled. The Service Catalog includes information about deliverables, prices, contact points, ordering and request Processes. Based on the approval process the requested service will be fulfilled.</p>



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3.4 *Benefits Summary*

- The current end of life BT IP management platform will be retired and services will have moved across to a new, supported platform.
- An IP address self-service request portal will be deployed.
- (33) sites connected via SD-WAN resulting in improved operational support
- Local internet breakout will improve responsiveness of internet applications and reduce bandwidth requirement of VSTIG Internet connections
- Central Policy Management will reduce time of wide scale network changes
- Implementation of the Zscaler which is an enabler for the SD-WAN project and will immediately support the traffic volumes estimated for O365.
- More standardized and user friendly interface with Service Catalog
- Streamline the NSSR process

3.5 *Business and Customer Issues*

N/A

3.6 *Alternatives*

Alternative 1: Defer project/ Do Nothing –

This option is not viable as it will not address network modernization and the benefits listed in section 3.4.

3.7 *Safety, Environmental and Project Planning Issues*

There are no significant issues beyond what has been described elsewhere.



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3.8 Execution Risk Appraisal

Number	Detailed Description of Risk / Opportunity	Probability	Impact		Score		Strategy	Pre-Trigger Mitigation Plan	Residual Risk	Post Trigger Mitigation Plan
			Cost	Schedule	Cost	Schedule				
1	There is a risk in that the United Steelworkers work stoppage may impact the Massachusetts locations across all workstreams.	5	3	5	15	25	Accept	Workstreams to front load schedules with Non Mass locations	This could impact time and cost	Engage key stakeholders and manage expectations
2	There is a risk that there will not be enough money in FY19 budget to support the Network Modernization Program	3	3	3	9	9	Mitigate	Work with Finance to Re-allocate budget within the IS business portfolio	This could impact time and cost	Engage key stakeholders and manage expectations
3	There is a risk in that key deliverables could be delayed impacted due to end of year change freeze and delay activity.	3	3	3	9	9	Accept	Liaise with service delivery to confirm the change freeze dates to proactively manage tasks around these dates.	This could impact time and cost	Engage key stakeholders and manage expectations
4	There is a risk of adverse weather conditions impacting key activities thereby impacting project timescales.	3	3	3	9	9	Accept	Project must accept this risk. However, effective and proactive planning will be critical as a workaround	This could impact time and cost	Engage key stakeholders and manage expectations
5					-	-				
6					-	-				
7					-	-				
8					-	-				

3.9 Permitting

N/A

3.10 Investment Recovery

3.10.1 Investment Recovery and Regulatory Implications

Recovery will occur at the time of the next rate case for any operating company receiving allocations of these costs.

3.10.2 Customer Impact

N/A

3.10.3 CIAC / Reimbursement

N/A



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3.11 Financial Impact to National Grid

3.11.1 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend (\$M)	Prior Yrs	Current Planning Horizon						Total	
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
					2018/19	2019/20	2020/21	2021/22	2022/23	2023/24		
INVP 5309	NetworkModernization	Est Lvl (e.g. +/- 10%)	CapEx	0.000	0.419	0.000	0.000	0.000	0.000	0.000	0.000	0.419
			OpEx	0.000	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.011
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	0.430	0.000	0.000	0.000	0.000	0.000	0.000	0.430
INVP 5310	NetMod Governance	Est Lvl (e.g. +/- 10%)	CapEx	0.000	0.453	0.000	0.000	0.000	0.000	0.000	0.000	0.453
			OpEx	0.000	0.173	0.000	0.000	0.000	0.000	0.000	0.000	0.173
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	0.626	0.000	0.000	0.000	0.000	0.000	0.000	0.626
INVP 5311	NetMod Infoblox	Est Lvl (e.g. +/- 10%)	CapEx	0.000	1.219	0.000	0.000	0.000	0.000	0.000	0.000	1.219
			OpEx	0.000	0.042	0.000	0.000	0.000	0.000	0.000	0.000	0.042
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	1.261	0.000	0.000	0.000	0.000	0.000	0.000	1.261
INVP 5312	NetMod Ethernet SD WAN	Est Lvl (e.g. +/- 10%)	CapEx	0.000	0.868	0.000	0.000	0.000	0.000	0.000	0.000	0.868
			OpEx	0.000	0.084	0.062	0.000	0.000	0.000	0.000	0.000	0.146
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	0.952	0.062	0.000	0.000	0.000	0.000	0.000	1.014
INVP 5313	NetMod Z-Scaler Cloud Security	Est Lvl (e.g. +/- 10%)	CapEx	0.000	0.451	0.000	0.000	0.000	0.000	0.000	0.000	0.451
			OpEx	0.000	0.590	0.000	0.000	0.000	0.000	0.000	0.000	0.590
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	1.040	0.000	0.000	0.000	0.000	0.000	0.000	1.040
INVP 5314	NetMod NSSR SVC E-Bond	Est Lvl (e.g. +/- 10%)	CapEx	0.000	0.319	0.000	0.000	0.000	0.000	0.000	0.000	0.319
			OpEx	0.000	0.154	0.000	0.000	0.000	0.000	0.000	0.000	0.154
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	0.473	0.000	0.000	0.000	0.000	0.000	0.000	0.473
Total Program Sanction			CapEx	0.000	3.728	0.000	0.000	0.000	0.000	0.000	0.000	3.728
			OpEx	0.000	1.054	0.062	0.000	0.000	0.000	0.000	0.000	1.116
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	4.781	0.062	0.000	0.000	0.000	0.000	0.000	4.844

3.11.2 Project Budget Summary Table

Project Costs Per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
		2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Variance (Business Plan-Project Estimate)



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\$M	Prior Yrs (Actual)	Current Planning Horizon						
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	Total
		2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	
CapEx	0.000	(3.728)	0.000	0.000	0.000	0.000	0.000	(3.728)
OpEx	0.000	(1.054)	(0.062)	0.000	0.000	0.000	0.000	(1.116)
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	(4.782)	(0.062)	0.000	0.000	0.000	0.000	(4.844)

3.11.3 Cost Assumptions

3.11.4 Net Present Value / Cost Benefit Analysis

3.11.4.1 NPV Summary Table

N/A

3.11.4.2 NPV Assumptions and Calculations

N/A

3.11.5 Additional Impacts

N/A

3.12 Statements of Support

3.12.1 Supporters

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

Department	Individual	Responsibilities
Business Department	Adriano Antiquera	Business Representative
Program Delivery Management (PDM)	Helen Smith	Head of PDM
Business Partner (BP)	Caitlin Davidson	Relationship Manager
Program Delivery Management (PDM)	Doug Campbell	Program Delivery Director
IS Finance	Michelle Harris	Manager
IS Regulatory	Dan DeMauro	Director
Digital Risk and Security (DR&S)	Peter Shattuck	Manager
Service Delivery	Mark Mirizio	Manager
Enterprise Architecture	Svetlana Lyba	Manager



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3.12.2 Reviewers

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

Function	Individual
Regulatory	Harvey, Maria
Jurisdictional Delegate - Electric NE	Easterly, Patricia
Jurisdictional Delegate - Electric NY	Harbaugh, Mark A.
Jurisdictional Delegate - FERC	Hill, Terron
Jurisdictional Delegate - Gas NE	Currie, John
Jurisdictional Delegate - Gas NY	Wolf, Don
Procurement	Chevere, Diego

4 Appendices

4.1 Sanction Request Breakdown by Project

N/A

4.2 Other Appendices

Glossary:

Terminology/Jargon/Abbreviation	Meaning
AD	Active Directory
BRD	Business Requirements Document
CNI	Critical National Grid Infrastructure
DAAS	Desktop-as-a-service
DNS	Domain Name System
DHCP	Dynamic Host Control Protocol
DR&S	Digital Risk & Security
EOS	Verizon's third party vendor
InfoBlox	Company that focuses on managing and identifying devices connect to networks – specifically for the DNS, DHCP and IP address management
IPAM	Internet Protocol Address Management System
L2 / L3	Layer 2 / Layer 3
NG	National Grid
O365	Office 365
PAC	Proxy Auto Configuration
RTO	Recovery Time Objective
RPO	Recovery Point Objective
SD-WAN	Software Defined - <u>Wide</u> Area Network



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SLA	Service Level Agreement
SRM	Service Request Management
SRST	Survivable Remote Site Telephony
SSL	Secured Socket Layer
SSMA	Single Scan Multi-Action
Tandberg	Company offering video conferencing solutions
TDM	Time-division multiplexing (TDM) is a method of transmitting and receiving independent signals over a common signal path by means of synchronized switches at each end of the transmission line so that each signal appears on the line only a fraction of time in an alternating pattern
UAT	User Acceptance Testing
VPN	Virtual Private Network
vSTIGS	A scalable plugin-based PowerCLI application intended for setting and auditing of security policies for VMware vSphere 5.X environments
WAAS	Wide Area Application Service
WAN	<u>Wide Area Network</u>
WVM	Webex Video Mesh
ZAB	Zscaler Authentication Bridge
ZIA	Zscaler Internet Access
ZPA	Zscaler private access
Zscaler	is a global <u>cloud-based information security</u> company



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4.2.1 Project Cost Breakdown

Project Cost Breakdown \$ (millions)					
Cost Category	sub-category	Value of Work to Date (VOWD)	Forecast to Complete (FTC)	Forecast At Completion (FAC=VOWD+FTC)	Name of Firm(s) providing resources
Personnel	NG Resources		-	-	
	SDC Time & Materials		-	-	IBM
			-	-	WiPro
			-	-	DXC
			-	-	Verizon
	SDC Fixed-Price		-	-	IBM
			-	-	WiPro
			0.380	0.380	Verizon
All other personnel		-	-		
TOTAL Personnel Costs	-	0.380	0.380		
Hardware	Purchase		-	-	
	Lease		-	-	
Software			-	-	
Risk Margin			-	-	
AFUDC			-	-	
Other			4.464	4.464	
TOTAL Costs		-	4.844	4.844	

4.2.2 Benefiting Operating Companies

Operating Company Name	Business Area	State
National Grid USA Parent	Parent	
KeySpan Energy Development Corporation	Non-Regulated	NY
KeySpan Services Inc.	Service Company	
KeySpan Energy Corp.	Service Company	
KeySpan Energy Delivery New York	Gas Distribution	NY
KeySpan Energy Delivery Long Island	Gas Distribution	NY
KeySpan Generation LLC (PSA)	Generation	NY
KeySpan Glenwood Energy Center	Generation	NY
KeySpan Port Jefferson Energy Center	Generation	NY
Keyspan Energy Trading Services	Other	NY
Niagara Mohawk Power Corp.- Electric Distr.	Electric Distribution	NY
Niagara Mohawk Power Corp. - Gas	Gas Distribution	NY
Niagara Mohawk Power Corp. - Transmission	Transmission	NY
Massachusetts Electric Company	Electric Distribution	MA
Massachusetts Electric Company – Transmission	Transmission	MA
Nantucket Electric Company	Electric Distribution	MA



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Boston Gas Company	Gas Distribution	MA
Colonial Gas Company	Gas Distribution	MA
Narragansett Gas Company	Gas Distribution	RI
Narragansett Electric Company	Electric Distribution	RI
Narragansett Electric Company – Transmission	Transmission	RI
New England Power Company – Transmission	Transmission	MA,NH,RI,VT
New England Hydro - Trans Corp.	Inter Connector	MA, NH
New England Electric Trans Corp	Inter Connector	MA
NG LNG LP Regulated Entity	Gas Distribution	MA,NY,RI
Trans Gas Inc.	Non-Regulated	NY

4.2.3 IT Ongoing Operational Costs (RTB):

RTB to be determined during the R&D phase.

4.3 NPV Summary (if applicable)

N/A

4.4 Customer Outreach Plan

N/A



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Title:	Zscaler Cloud Security Gateway Project	Sanction Paper #:	
Project #:	INVP 5313	Sanction Type:	Partial Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	10/2/2018
Author:	Andrew Yee / Aravind Lochan	Sponsor:	Barry Sheils, Global Head IS Service Delivery
Utility Service:	IS	Project Manager:	Chris Gatland

1 Executive Summary

1.1 Sanctioning Summary

This paper requests partial sanction of INVP 5313 in the amount of \$0.546M with a tolerance of +/- 10% for the purposes of Requirement and Design.

This sanction amount is \$0.546M broken down into:

- \$0.090M Capex*
- \$0.456M Opex*
- \$0.000M Removal*

NOTE the potential investment of \$1.041M with a tolerance of +/- 25%, contingent upon submittal and approval of a Project Sanction paper following completion of Requirements and Design.

1.2 Project Summary

The Network modernization initiative has identified a series of activities required to enable delivery a global savings of \$22M per annum. This project paper is to request the funds to achieve initiatives of Zscaler Cloud Security Gateway.

1.3 Summary of Projects

Project Number	Project Title	Estimate Amount (\$M)
5313	INVP 5313 - Zscaler Cloud Security Gateway	1.041
Total		1.041



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1.4 Associated Projects

Project Number	Project Title	Estimate Amount (\$M)
INVP 5312	SD WAN Upgrade Project	0.600
Total		0.600

1.5 Prior Sanctioning History

N/A

1.6 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review
October 2018	Project Sanction

1.7 Category

Category	Reference to Mandate, Policy, NPV, or Other
<input type="radio"/> Mandatory <input checked="" type="radio"/> Policy- Driven <input type="radio"/> Justified NPV <input type="radio"/> Other	This project will upgrade and improve National Grid’s network platform. This investment will enable National Grid’s users access National Grid network with secured Zscaler cloud gateway.

1.8 Asset Management Risk Score

Asset Management Risk Score: 6

Primary Risk Score Driver: (Policy Driven Projects Only)

- Reliability
 Environment
 Health & Safety
 Not Policy Driven

1.9 Complexity Level

- High Complexity
 Medium Complexity
 Low Complexity
 N/A

Complexity Score: 14



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1.10 Process Hazard Assessment

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

Yes No

1.11 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
IS Investment Plan FY19 - 23	<input type="radio"/> Yes <input checked="" type="radio"/> No	<input checked="" type="radio"/> Over <input type="radio"/> Under <input type="radio"/> NA	\$1.041M

1.12 If cost > approved Business Plan how will this be funded?

Re-allocation of budget within the IS business has been managed to meet jurisdictional budgetary, statutory and regulatory requirements.

1.13 Current Planning Horizon

		Current Planning Horizon						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
\$M	Prior Yrs	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	
CapEx	0.000	0.451	0.000	0.000	0.000	0.000	0.000	0.451
OpEx	0.000	0.590	0.000	0.000	0.000	0.000	0.000	0.590
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CIAC/Reimbursement	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	0.000	1.041	0.000	0.000	0.000	0.000	0.000	1.041



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1.14 Key Milestones

Milestone	Target Date: (Month Year)
Partial Sanction	October 2018
Begin Requirements and Design	August 2018
Project Sanction	October 2018
Begin Development and Implementation	November 2018
Move to Production / Last Go Live	December 2018
Project Closure	January 2019

1.15 Resources, Operations and Procurement

Resource Sourcing			
Engineering & Design Resources to be provided	<input checked="" type="checkbox"/> Internal	<input checked="" type="checkbox"/> Contractor	
Construction/Implementation Resources to be provided	Internal	<input checked="" type="checkbox"/> Contractor	
Resource Delivery			
Availability of internal resources to deliver project:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green
Availability of external resources to deliver project:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green
Operational Impact			
Outage impact on network system:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green
Procurement Impact			
Procurement impact on network system:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green

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

N/A



US Sanction Paper

1.17 Climate Change

Contribution to National Grid's 2050 80% emissions reduction target:	<input checked="" type="radio"/> Neutral	<input type="radio"/> Positive	<input type="radio"/> Negative
Impact on adaptability of network for future climate change:	<input checked="" type="radio"/> Neutral	<input type="radio"/> Positive	<input type="radio"/> Negative

1.18 List References

N/A



US Sanction Paper

2 Decisions

I:

- (a) APPROVED the investment of \$ 0.546M and a tolerance of +/- 10% for the purposes of Requirements and Design
- (b) NOTED the potential run-the-business (RTB) impact of \$ 1.634M (per annum) for 5 years.
- (c) NOTED the potential investment \$ 1.041M and a tolerance of +/- 25%, contingent upon submittal and approval of a Project Sanction paper following completion of requirements and design.
- (d) NOTED that Chris Gatland is the Project Manager has the approved financial delegation

Signature..... Date.....

David H. Campbell, Vice President ServCo Business Partnering, USSC Chair



US Sanction Paper

3 Sanction Paper Detail

Title:	Zscaler Cloud Security Gateway Project	Sanction Paper #:	
Project #:	INVP 5313	Sanction Type:	Partial Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	10/2/2018
Author:	Andrew Yee / Aravind Lochan	Sponsor:	Barry Sheils, Global Head IS Service Delivery
Utility Service:	IS	Project Manager:	Chris Gatland

3.1 Background

Part of the Network Modernization program is to implement a cloud-based internet security solution ZIA (Zscaler Internet Access) to support the increased security requirements of software defined networking and support the increased proxy port demand of O365 (Office 365).

National Grid plans to use software defined networking SD-WAN (Software Defined Wide Area Network) to route internet traffic from the sites enabled for SD-WAN directly to the Internet (local internet breakout) and thereby bypassing the National Grid WAN (Wide Area Network) and VSTIG (Verizon Secure Telecommunications Internet Gateway) infrastructure (i.e., the current Internet Security). To make the SD-WAN local Internet breakout solution secure, a cloud-based proxy service was selected as the most appropriate solution. Zscaler will provide the Internet controls for access to external sites and feed the results and required logs into DR&S (Digital Risk and Security) security tools which will provide security and event alerting.

3.2 Drivers

Financial Saving & Standardization:

- Centralized ZIA implemented at the VSTIG data centers to provide a forward proxy / security functions to support O365 and other Internet connectivity requirements.
- Standard enterprise security wherever you are, in the office, or at home, Zscaler cloud security gateway delivers a centrally managed and consistent security policy that has no scalability constraints and thereby removes the dependency on constantly upgrading on premise infrastructure due to growing demand from cloud services.



US Sanction Paper

- When SD-WAN is implemented, Internet traffic at those sites will no longer need to be routed via the centralized security gateway i.e. VSTIG. If Z-Scaler is not deployed, National Grid will not have appropriate security services in place to take advantage of local Internet breakout at the edge sites
- Zscaler will provide internet security controls for access to external sites and provide logs for DR&S security tools which will provide security and event alerting identifying and preventing cyber attack
- The roll out of O365 (Office 365) has created an increased load on the VSTIG. Each O365 user requires multiple outbound ports on the forward proxies which will result in logical port exhaustion after only approx. 1000 users are migrated. Zscaler is a cloud-based subscription service so capacity is elastic and it will support the expected user and bandwidth growth
- Implementation of Zscaler is required before the SD-WAN project implement local Internet breakout

3.3 Project Description

The project will:

- Purchase the licenses for Zscaler
- Set up the tunnels to Zscaler from each SD-WAN site
- Define the controls to be applied to traffic flows
- 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 Bluecoat VSTIG forward proxies will not be utilized for end user devices and thereby removing the inherent physical limitations of the Bluecoat forward proxies in the VSTIG. Zscaler is a cloud-based subscription service so capacity is elastic and it will support the expected user and bandwidth growth.

3.4 Benefits Summary

Type	Description
Tangible (Indirect benefits)	<ul style="list-style-type: none"> • Cost Saving achieved by reduced investment in capital infrastructure, Savings over 3 Years of \$22M
Non-Tangible	<ul style="list-style-type: none"> • Cost avoidance of VSTIG upgrade to support 10Gb Internet connection



US Sanction Paper

	<ul style="list-style-type: none"> • Unconstrained secured Internet capacity (current proxies are constrained to 5000 logical ports, whereas the Cloud Solution does not have any constraints) • Security and monitoring available for users wherever they are including sites which have local internet breakout • Better reporting and inspection of users browsing activity
--	---

3.5 Business and Customer Issues

There are no significant business issues beyond what has been described elsewhere.

3.6 Alternatives

Alternative 1: Do Nothing – This option is not viable as National Grid is deploying O365 (Office 365) which is a cloud based version of the Microsoft Office Suite which includes a new version of Outlook email. As many of the features of O365 are on line, the connectivity to this service requires more connections or logical “ports” be open between our forward proxy server and the Internet. With over 10,000 O365 users each using approximately 25-30 ports, our forward proxy servers should support approximately 250,000 to 300,000 ports. Today our forward proxy servers can support only 50,000 open ports. Doing nothing would limit our deployment of O365 to approximately 1700- 2,000 users. Not supporting a full deployment of O365 will not support the company’s objectives around use of consistent tools, efficiency, and remote working. Failure to address this limitation would stop the O365 deployment and eliminate the potential benefits of its use.

Alternative 2: Deploy additional physical forward proxies – As stated above, our existing forward proxies can only support approximately 50,000 open ports. To support a full O365 deployment we would need approximately 5 to 6 times the capacity of our existing physical proxies. This option was reviewed and have an estimated cost of \$10M. The option was rejected due to the large one-time costs and remaining physical limitations that would remain that may limit additional use of O365 or other cloud services that required additional logical port capacity. In addition to the above limitation, additional physical proxies do not support the delivery of additional security services to our remote WAN locations. Since Zscaler is cloud based, its security services can be leveraged from any location and will be a critical security component in support of the SD-WAN deployment (INVP 5312). Using only physical proxies in our DMZ (DeMilitarized Zone) eliminates the ability to utilize the Zscaler cloud service and would require additional security services or devices be deployed at all WAN locations at resulting in a significant work effort and additional expense.



US Sanction Paper

3.7 Safety, Environmental and Project Planning Issues

There are no significant issues beyond what has been described elsewhere.

3.8 Execution Risk Appraisal

Number	Detailed Description of Risk / Opportunity	Probability	Impact		Score		Strategy	Pre-Trigger Mitigation Plan	Residual Risk	Post Trigger Mitigation Plan
			Cost	Schedule	Cost	Schedule				
1	There is a dependency risk on the provisioning of VMWare capacity in Verizon data center by another project (InfoBlox INVP5312). This could delay this project and increase the costs	1	3	2	3	2	Mitigate	Program Management and Service Strategy are expediting the VMWare PWO with Verizon as a priority		The project can use DXC or Azure VM capacity as a work around for any InfoBlox delays
2	There is a dependency risk on the Active Directory project provision AD pass through or password hash synchronization in the Azure Active Directory. This could delay the project and increase the costs	1	2	2	2	2	Avoid	Enterprise Architecture, DR&S Solution Architecture, and Project Solution Architecture and AD Subject Matter Expert are fully engaged to reduce this impact		If the risk is triggered the project will seek and security exemption to synchronize Hash password in Azure AD Cloud
3	There is a risk that delays in the go live date due to vendors delay and other dependencies will increase the costs as the subscription costs are charged as project opex cost until the project goes live	3	4	3	12	9	Accept	Project Manager will proactively be managed the schedule to minimize this risk		NA

3.9 Permitting

N/A

3.10 Investment Recovery

3.10.1 Investment Recovery and Regulatory Implications

Recovery will occur at the time of the next rate case for any operating company receiving allocations of these costs.



US Sanction Paper

3.10.2 Customer Impact

N/A

3.10.3 CIAC / Reimbursement

N/A

3.11 Financial Impact to National Grid

3.11.1 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend (\$M)	Prior Yrs	Current Planning Horizon						Total	
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
					2018/19	2019/20	2020/21	2021/22	2022/23	2023/24		
5313	INVP 5313 - Zscaler Cloud Security Gateway	Est Lvl (e.g. +/- 25%)	CapEx	0.000	0.451	0.000	0.000	0.000	0.000	0.000	0.000	0.451
			OpEx	0.000	0.590	0.000	0.000	0.000	0.000	0.000	0.000	0.590
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	1.041	0.000	0.000	0.000	0.000	0.000	0.000	1.041
Total Project Sanction			CapEx	0.000	0.451	0.000	0.000	0.000	0.000	0.000	0.000	0.451
			OpEx	0.000	0.590	0.000	0.000	0.000	0.000	0.000	0.000	0.590
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	1.041	0.000	0.000	0.000	0.000	0.000	0.000	1.041

3.11.2 Project Budget Summary Table

Project Costs Per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
		2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
		2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	
CapEx	0.000	(0.451)	0.000	0.000	0.000	0.000	0.000	(0.451)
OpEx	0.000	(0.590)	0.000	0.000	0.000	0.000	0.000	(0.590)
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	(1.041)	0.000	0.000	0.000	0.000	0.000	(1.041)



US Sanction Paper

3.11.3 Cost Assumptions

This estimate was developed in 2018 using the Standard IS Estimating Methodology which includes an assessment of project resource needs. Example of these resource needs include Zscaler Security as-a-Service licenses, internal and contract labor required to deliver the project. The accuracy level of estimate for each project is identified in Table 3.11.1 & 4.2.1.

3.11.4 Net Present Value / Cost Benefit Analysis

3.11.4.1 NPV Summary Table

N/A

3.11.4.2 NPV Assumptions and Calculations

N/A

3.11.5 Additional Impacts

N/A

3.12 Statements of Support

3.12.1 Supporters

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

Department	Individual	Responsibilities
Business Department	N/A	Business Representative
PDM	Helen Smith	Head of PDM
BRM	Brian Detota	Relationship Manager
PDM	Doug Campbell	Program Delivery Director
IS Finance	Michelle Harris	Director
IS Regulatory	Dan DeMauro	Director
DR&S	Elaine Wilson	Director
Service Delivery	Mark Mirizio	Manager
Enterprise Architecture	Svetlana Lyba	Director



US Sanction Paper

3.12.2 Reviewers

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

Function	Individual
Regulatory	Harvey, Maria
Jurisdictional Delegate - Electric NE	Patricia, Easterly
Jurisdictional Delegate - Electric NY	Harbaugh, Mark A.
Jurisdictional Delegate - FERC	Hill, Terron
Jurisdictional Delegate - Gas NE	Currie, John
Jurisdictional Delegate - Gas NY	Wolf, Don
Procurement	Chevere, Diego

4 Appendices

4.1 Sanction Request Breakdown by Project

N/A

4.2 Other Appendices

4.2.1 Project Cost Breakdown

Project Cost Breakdown \$ (millions)						
Cost Category	sub-category	VOWD	FTC	FAC=VOWD+FTC	Name of Firm(s) providing	
Personnel	NG Resources	0.000	0.181	0.181		
	SDC Time & Materials		0.000	-	-	IBM
			0.000	0.037	0.037	WiPro
			0.000	-	-	DXC
			0.000	-	-	Verizon
	SDC Fixed-Price		0.000	-	-	IBM
			0.000	-	-	WiPro
			0.000	-	-	DXC
			0.000	0.144	0.144	Verizon
	All other personnel	0.000	0.043	0.043		
TOTAL Personnel Costs	-	0.405	0.405			
Hardware	Purchase	0.000	0.064	0.064		
	Lease	0.000	-	-		
Software		0.000	-	-		
Risk Margin			0.138	0.138		
AFUDC		0.000	0.007	0.007		
Other		0.000	0.427	0.427	Software -as a service charges	
TOTAL Costs		-	1.040	1.040	Should match Financial Summary Total	



US Sanction Paper

4.2.2 Benefiting Operating Companies

Operating Company Name	Business Area	State
National Grid USA Parent	Parent	
KeySpan Energy Development Corporation	Non-Regulated	NY
KeySpan Services Inc.	Service Company	
KeySpan Energy Corp.	Service Company	
KeySpan Energy Delivery New York	Gas Distribution	NY
KeySpan Energy Delivery Long Island	Gas Distribution	NY
KeySpan Generation LLC (PSA)	Generation	NY
KeySpan Glenwood Energy Center	Generation	NY
KeySpan Port Jefferson Energy Center	Generation	NY
Keyspan Energy Trading Services	Other	NY
Niagara Mohawk Power Corp.- Electric Distr.	Electric Distribution	NY
Niagara Mohawk Power Corp. - Gas	Gas Distribution	NY
Niagara Mohawk Power Corp. - Transmission	Transmission	NY
Massachusetts Electric Company	Electric Distribution	MA
Massachusetts Electric Company – Transmission	Transmission	MA
Nantucket Electric Company	Electric Distribution	MA
Boston Gas Company	Gas Distribution	MA
Colonial Gas Company	Gas Distribution	MA
Narragansett Gas Company	Gas Distribution	RI
Narragansett Electric Company	Electric Distribution	RI
Narragansett Electric Company – Transmission	Transmission	RI
New England Power Company – Transmission	Transmission	MA,NH,RI,VT
New England Hydro - Trans Corp.	Inter Connector	MA, NH
New England Electric Trans Corp	Inter Connector	MA
NG LNG LP Regulated Entity	Gas Distribution	MA,NY,RI
Trans Gas Inc.	Non-Regulated	NY



US Sanction Paper

4.2.3 IS Ongoing Operational Costs (RTB):

This project will increase/decrease IS ongoing operations support costs as per the following table. These are also known as Run the Business (RTB) costs.

all figures in \$ thousands						
INV ID:	5313				Forecast Date:	11/30/18
Investment Name:	Z-Scaler Cloud Security				Go-Live Date:	11/30/2018
Project Manager:	Chris Gatland			PDM:	Doug Campbell	
All figures in \$ thousands	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Total
	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23	
Last Sanctioned Net Impact to RTB						
Last Sanction IS Net Impact to RTB						-
Last Sanction Business Net Impact to RTB						-
Last Sanction Total Net Impact to RTB	-	-	-	-	-	-
Planned/Budgeted Net Impact to RTB						
IS Investment Plan Net Impact to RTB	-	-	-	-	-	-
Business Budgeted Net Impact to RTB						-
Currently Forecasted Net Impact to RTB						
IS Funded Net Impact to RTB Forecasted at Go-Live	544,984.6	1,634,953.9	1,634,953.9	1,634,953.9	1,634,953.9	7,084,800.3
Business Funded Net Impact to RTB Forecasted at Go-Live	-	-	-	-	-	-
Variance to Planned/Budgeted Net Impact to RTB						
IS Investment Plan Net Impact to RTB Variance	(544,984.6)	(1,634,953.9)	(1,634,953.9)	(1,634,953.9)	(1,634,953.9)	(7,084,800.3)
Business Budgeted Net Impact to RTB Variance	-	-	-	-	-	-

4.3 NPV Summary (if applicable)

N/A

4.4 Customer Outreach Plan

N/A



US Sanction Paper

Title:	E-bonding, SVC & NSSR	Sanction Paper #:	
Project #:	INVP 5314	Sanction Type:	Partial Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	9/18/2018
Author:	Andrew Yee / Aravind Lochan	Sponsor:	Barry Sheils, Global Head IS Service Delivery
Utility Service:	IS	Project Manager:	Dave McCune

1 Executive Summary

1.1 Sanctioning Summary

This paper requests partial sanction of INVP 5314 in the amount of \$0.216M with a tolerance of +/- 10% for the purposes of Requirement and Design.

This sanction amount is \$0.216M broken down into:

- \$0.087M Capex*
- \$0.129M Opex*
- \$0.000M Removal*

NOTE: The potential investment of \$0.479M with a tolerance of +/- 25%, contingent upon submittal and approval of a Project Sanction paper following completion of Requirements and Design.

1.2 Project Summary

The Network Modernization initiative has identified a series of activities required to enable delivery a global savings of \$22M per annum. This project paper is to request the funds to achieve initiatives of E-Bond, SVC (Service Catalogue) and NSSR (Non-Standard Service Request).

1.3 Summary of Projects

Project Number	Project Title	Estimate Amount (\$M)
5314	INVP 5314 - E-Bond, SVC and NSSR	0.479
Total		0.479



US Sanction Paper

1.4 Associated Projects

N/A

1.5 Prior Sanctioning History

N/A

1.6 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review
October 2018	Project Sanction

1.7 Category

Category	Reference to Mandate, Policy, NPV, or Other
<input type="radio"/> Mandatory <input checked="" type="radio"/> Policy- Driven <input type="radio"/> Justified NPV <input type="radio"/> Other	This project will automate National Grid’s internal process using ServiceNow.

1.8 Asset Management Risk Score

Asset Management Risk Score: 3

Primary Risk Score Driver: (Policy Driven Projects Only)

- Reliability
 Environment
 Health & Safety
 Not Policy Driven



US Sanction Paper

1.9 Complexity Level

High Complexity Medium Complexity Low Complexity N/A

Complexity Score: 15

1.10 Process Hazard Assessment

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

Yes No

1.11 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
IS Investment Plan FY19 - 24	<input type="radio"/> Yes <input checked="" type="radio"/> No	<input checked="" type="radio"/> Over <input type="radio"/> Under <input type="radio"/> NA	\$0.479M

1.12 If cost > approved Business Plan how will this be funded?

Re-allocation of budget within the IS business has been managed to meet jurisdictional budgetary, statutory and regulatory requirements.

1.13 Current Planning Horizon

		Current Planning Horizon						Total
		Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	
\$M		2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	
CapEx	0.000	0.277	0.000	0.000	0.000	0.000	0.000	0.277
OpEx	0.000	0.202	0.000	0.000	0.000	0.000	0.000	0.202
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CIAC/Reimbursement	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	0.000	0.479	0.000	0.000	0.000	0.000	0.000	0.479



US Sanction Paper

1.14 Key Milestones

Milestone	Target Date: (Month Year)
Partial Sanction	September 2018
Begin Requirements and Design	August 2018
Project Sanction	October 2018
Begin Development and Implementation	October 2018
Move to Production / Last Go Live	December 2018
Project Closure	March 2019

1.15 Resources, Operations and Procurement

Resource Sourcing			
Engineering & Design Resources to be provided	<input checked="" type="checkbox"/> Internal	<input type="checkbox"/> Contractor	
Construction/Implementation Resources to be provided	<input checked="" type="checkbox"/> Internal	<input checked="" type="checkbox"/> Contractor	
Resource Delivery			
Availability of internal resources to deliver project:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green
Availability of external resources to deliver project:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green
Operational Impact			
Outage impact on network system:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green
Procurement Impact			
Procurement impact on network system:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green

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

N/A



US Sanction Paper

1.17 Climate Change

Contribution to National Grid's 2050 80% emissions reduction target:	<input checked="" type="radio"/> Neutral	<input type="radio"/> Positive	<input type="radio"/> Negative
Impact on adaptability of network for future climate change:	<input checked="" type="radio"/> Neutral	<input type="radio"/> Positive	<input type="radio"/> Negative

1.18 List References

N/A



US Sanction Paper

2 Decisions

I:

- (a) APPROVED the investment of \$ 0.216M and a tolerance of +/- 10% for the purposes of Requirements and Design
- (b) NOTED the potential run-the-business (RTB) impact of \$ 0.019M (per annum) for 5 years.
- (c) NOTED the potential investment \$ 0.479M and a tolerance of +/- 25%, contingent upon submittal and approval of a Project Sanction paper following completion of requirements and design.
- (d) NOTED that David McCune is the Project Manager has the approved financial delegation

Signature..... Date.....

David H. Campbell, Vice President ServCo Business Partnering, USSC Chair



US Sanction Paper

3 Sanction Paper Detail

Title:	E-bonding, SVC & NSSR	Sanction Paper #:	
Project #:	INVP 5314	Sanction Type:	Partial Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	9/18/2018
Author:	Andrew Yee / Aravind Lochan	Sponsor:	Barry Sheils, Global Head IS Service Delivery
Utility Service:	IS	Project Manager:	Dave McCune

3.1 Background

The Network Modernization initiative has identified a series of activities required to enable initiatives of E-Bond, NSSR and Service Catalogue.

E-Bond

Currently National Grid uses SNOW (ServiceNow) tool to manage Enterprise wide IT (Information Technology) service management request for creating and operating a service desk that provides efficient communication between the National Grid user community and the IT provider.

Verizon uses its ETMS (Enterprise Ticket Management System) as its IT service management tool to support National Grid user community. Connectivity between the two systems is currently by manual intervention (Swivel Chair). There are significant costs attached to this service. There are also potential delays on providing the acknowledgement, status, generates a different IT service ticket number and incorrect reporting of a IT service ticket leading to incorrect information to National Grid user community.

This project is intending to integrate directly between SNOW and Verizon ETMS tool to remove the costs for the swivel chair service and eliminate any potential delays on IT service management and enable the following solutions:

- Removal of the swivel chair process
- Establishing a ticket number that provides a unique key between systems
- Synchronizing the systems so that notifications can be triggered
- Transforming data for more uniform processing and
- Tracking service ticket activity for accurate reporting



US Sanction Paper

Service Catalogue

Currently National Grid uses NSSR to process requests which are not supplied as part of the overarching contract. These requests are analyzed, approved and discussed with service providers to fulfill the service request.

This project will create a Service Catalogue application in the ServiceNow tool to manage specified items which are considered as frequently used standard service offerings. The Service Catalogue application will include information about deliverables, prices, RTB (Run The Business) costs and ordering processes.

Non-Standard Service Request

Currently National Grid uses NSSR process for non-standard IT related service requests which are analyzed, approved and discussed with suppliers to fulfill the service request. This involves multiple teams between National Grid commercial teams and various vendors. Manually tracking multiple NSSRs requires significant time and often negatively impacts delivery time and costs.

This project is intending to automate the NSSR process to manage each service request by reducing the processing time and thereby the costs for National Grid and vendors.

3.2 Drivers

Financial Saving - Removal of swivel chair for change management

Standardization:

- Effectively manage NSSR process
- Enable National Grid users to raise a standard service request by eliminating both errors and waste
- Effectively manage the ongoing service operations and support demands.

Improve Productivity:

- Eliminate inefficiencies and redundancies in the existing support services by bringing all service requests and NSSR in ServiceNow platform, to improve productivity.
- Enable efficient support structure by integrating National Grid ServiceNow tool with Verizon's ETMS tool.



US Sanction Paper

3.3 Project Description

INVP #	Project Title	Project Description
Network Modernization – E-Bond, SVC and NSSR		
5314	E-Bond	This project will provide better IT service management by integrating NG SNOW tool and Verizon ETMS tool to efficiently manage IT service requests.
5314	SVC	This project will enable requestors to request standard items through Service Now tool i.e. via SVC (Service Catalogue) and have the service fulfilled.
5314	NSSR	This project will streamline the NSSR (Non-Standard Service Request) process between National Grid and Verizon to make the process more user friendly and to reduce the processing costs for both National Grid and Verizon.

3.4 Benefits Summary

Type	Benefit	Description
Intangible (Indirect benefits)	Digitization / Efficiency	<ul style="list-style-type: none"> 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 Cost reduction by removal of swivel chair

3.5 Business and Customer Issues

N/A

3.6 Alternatives

Alternative 1: Do Nothing – This option is not viable as it will not address the critical need for cost savings with Verizon and National Grid’s internal processes.

Alternative 2: Defer investment – This option is not recommended, as it does not mitigate the risk of following redundant processes.



US Sanction Paper

3.7 Safety, Environmental and Project Planning Issues

There are no significant issues beyond what has been described elsewhere.

3.8 Execution Risk Appraisal

Number	Detailed Description of Risk / Opportunity	Probability	Impact		Score		Strategy	Pre-Trigger Mitigation Plan	Residual Risk	Post Trigger Mitigation Plan
			Cost	Schedule	Cost	Schedule				
1	The project timeline and cost will be negatively impacted if there are delays getting through sanctioning process	3	3	2	3	3	Mitigate	Follow-up on sanction activities to have it approved quickly		
2	There is a risk of delay of third party deliverables	3	3	2	3	3	Mitigate	Engage early with third parties and follow-up		

3.9 Permitting

N/A

3.10 Investment Recovery

3.10.1 Investment Recovery and Regulatory Implications

Recovery will occur at the time of the next rate case for any operating company receiving allocations of these costs.

3.10.2 Customer Impact

N/A

3.10.3 CIAC / Reimbursement

N/A



US Sanction Paper

3.11 Financial Impact to National Grid

3.11.1 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend (\$M)	Prior Yrs	Current Planning Horizon						Total	
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
					2018/19	2019/20	2020/21	2021/22	2022/23	2023/24		
5314	INVP 5314 - E-Bond, SVC and NSSR	Est Lvl (e.g. +/- 10%)	CapEx	0.000	0.277	0.000	0.000	0.000	0.000	0.000	0.000	0.277
			OpEx	0.000	0.202	0.000	0.000	0.000	0.000	0.000	0.000	0.202
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	0.479	0.000	0.000	0.000	0.000	0.000	0.000	0.479
Total Project Sanction			CapEx	0.000	0.277	0.000	0.000	0.000	0.000	0.000	0.000	0.277
			OpEx	0.000	0.202	0.000	0.000	0.000	0.000	0.000	0.000	0.202
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	0.479	0.000	0.000	0.000	0.000	0.000	0.000	0.479

3.11.2 Project Budget Summary Table

Project Costs Per Business Plan

	Prior Yrs (Actual)	Current Planning Horizon						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
\$M		2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Variance (Business Plan-Project Estimate)

	Prior Yrs (Actual)	Current Planning Horizon						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
\$M		2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	
CapEx	0.000	(0.277)	0.000	0.000	0.000	0.000	0.000	(0.277)
OpEx	0.000	(0.202)	0.000	0.000	0.000	0.000	0.000	(0.202)
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	(0.479)	0.000	0.000	0.000	0.000	0.000	(0.479)



US Sanction Paper

3.11.3 Cost Assumptions

This estimate was developed in 2018 using the Standard IS Estimating Methodology which includes an assessment of project resource needs. Example of these resource needs include Hardware, software development, internal and contract labor required to deliver the project. The accuracy level of estimate for each project is identified in Table 3.11.1 & 4.2.1.

3.11.4 Net Present Value / Cost Benefit Analysis

3.11.4.1 NPV Summary Table

N/A

3.11.4.2 NPV Assumptions and Calculations

N/A

3.11.5 Additional Impacts

N/A

3.12 Statements of Support

3.12.1 Supporters

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

Department	Individual	Responsibilities
Business Department	N/A	Business Representative
PDM	Helen Smith	Head of PDM
BRM	Brian Detota	Relationship Manager
PDM	Doug Campbell	Program Delivery Director
IS Finance	Michelle Harris	Director
IS Regulatory	Dan DeMauro	Director
DR&S	Elaine Wilson	Director
Service Delivery	Mark Mirizio	Director
Enterprise Architecture	Joe Clinchot	SNOW Strategy



US Sanction Paper

3.12.2 Reviewers

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

Function	Individual
Regulatory	Harvey, Maria
Jurisdictional Delegate - Electric NE	Patricia, Easterly
Jurisdictional Delegate - Electric NY	Harbaugh, Mark A.
Jurisdictional Delegate - FERC	Hill, Terron
Jurisdictional Delegate - Gas NE	Currie, John
Jurisdictional Delegate - Gas NY	Wolf, Don
Procurement	Chevere, Diego

4 Appendices

4.1 Sanction Request Breakdown by Project

N/A

4.2 Other Appendices

4.2.1 Project Cost Breakdown

Project Cost Breakdown \$ (millions)					
Cost Category	sub-category	Value of Work to Date (VOWD)	Forecast to Complete (FTC)	Forecast At Completion (FAC=VOWD+FTC)	Name of Firm(s) providing resources
Personnel	NG Resources		0.167	0.167	
	SDC Time & Materials		-	-	IBM
			-	-	WiPro
			-	-	DXC
	SDC Fixed-Price		0.025	0.025	Verizon
			-	-	IBM
			-	-	WiPro
			-	-	DXC
All other personnel		-	-	Verizon	
TOTAL Personnel Costs		-	0.192	0.192	
Hardware	Purchase		0.003	0.003	
	Lease		-	-	
Software			0.232	0.232	
Risk Margin			0.039	0.039	
AFUDC			0.004	0.004	
Other			0.008	0.008	
TOTAL Costs		-	0.479	0.479	



US Sanction Paper

4.2.2 Benefiting Operating Companies

Operating Company Name	Business Area	State
National Grid USA Parent	Parent	
KeySpan Energy Development Corporation	Non-Regulated	NY
KeySpan Services Inc.	Service Company	
KeySpan Energy Corp.	Service Company	
KeySpan Energy Delivery New York	Gas Distribution	NY
KeySpan Energy Delivery Long Island	Gas Distribution	NY
KeySpan Generation LLC (PSA)	Generation	NY
KeySpan Glenwood Energy Center	Generation	NY
KeySpan Port Jefferson Energy Center	Generation	NY
KeySpan Energy Trading Services	Other	NY
Niagara Mohawk Power Corp.- Electric Distr.	Electric Distribution	NY
Niagara Mohawk Power Corp. - Gas	Gas Distribution	NY
Niagara Mohawk Power Corp. - Transmission	Transmission	NY
Massachusetts Electric Company	Electric Distribution	MA
Massachusetts Electric Company – Transmission	Transmission	MA
Nantucket Electric Company	Electric Distribution	MA
Boston Gas Company	Gas Distribution	MA
Colonial Gas Company	Gas Distribution	MA
Narragansett Gas Company	Gas Distribution	RI
Narragansett Electric Company	Electric Distribution	RI
Narragansett Electric Company – Transmission	Transmission	RI
New England Power Company – Transmission	Transmission	MA, NH, RI, VT
New England Hydro - Trans Corp.	Inter Connector	MA, NH
New England Electric Trans Corp	Inter Connector	MA
NG LNG LP Regulated Entity	Gas Distribution	MA, NY, RI
Trans Gas Inc.	Non-Regulated	NY



US Sanction Paper

4.2.3 IS Ongoing Operational Costs (RTB):

This project will increase/decrease IS ongoing operations support costs as per the following table. These are also known as Run the Business (RTB) costs.

all figures in \$ thousands						
INV ID:	5314				Date RTB Last Forecasted	04/01/2019
Investment Name:	Verizon CTA (NSSR, Service Catalogue & e-Bond)					
Project Manager:	Dave McCune			PDM:	Doug Campbell	
All figures in \$ thousands	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Total
	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	
Last Sanctioned Net Impact to RTB						
Last Sanction IS Net Impact to RTB						-
Last Sanction Business Net Impact to RTB						-
Last Sanction Total Net Impact to RTB	-	-	-	-	-	-
Planned/Budgeted Net Impact to RTB						
IS Investment Plan Net Impact to RTB						-
Business Budgeted Net Impact to RTB						-
Currently Forecasted Net Impact to RTB						
IS Funded Net Impact to RTB Forecasted at Go-Live	19.3	19.3	19.3	19.3	19.3	96.5
Business Funded Net Impact to RTB Forecasted at Go-Live	-	-	-	-	-	-
Variance to Planned/Budgeted Net Impact to RTB						
IS Investment Plan Net Impact to RTB Variance	(19.3)	(19.3)	(19.3)	(19.3)	(19.3)	(96.5)
Business Budgeted Net Impact to RTB Variance	-	-	-	-	-	-

4.3 NPV Summary (if applicable)

N/A

4.4 Customer Outreach Plan

N/A



US Sanction Paper

Title:	US T430 Refresh	Sanction Paper #:	USSC-18-301
Project #:	INVP 5316 Capex: S007956	Sanction Type:	Partial Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	9/25/2018
Author:	Andrew Yee / Neha Verma	Sponsor:	Andrea Costa, Director IT Infrastructure
Utility Service:	IS	Project Manager:	Donna McGuirk

1 Executive Summary

1.1 Sanctioning Summary

This paper requests partial sanction of INVP 5316 in the amount of \$1.548M with a tolerance of +/- 10% for the purposes of Requirements and Design.

This sanction amount is \$1.548M broken down into:

- \$1.518M Capex*
- \$0.030M Opex*
- \$0.000M Removal*

NOTE the potential investment of \$2.062M with a tolerance of +/- 25%, contingent upon submittal and approval of a Project Sanction paper following completion of Requirements and Design.

1.2 Project Summary

This policy-driven project will refresh approx. 1,500 laptops devices in the US to the T470 model. This project will look at all devices over 4 years old as part of the estate review but the bulk of the devices being replaced by this project are T430. 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).

1.3 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
INVP 5316		US T430 Refresh	2.062
Total			2.062



US Sanction Paper

1.4 Associated Projects

N/A

1.5 Prior Sanctioning History

N/A

1.6 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review
October 2018	Project Sanction

1.7 Category

Category	Reference to Mandate, Policy, NPV, or Other
<input type="radio"/> Mandatory	This policy driven project will refresh approx. 1500 laptop devices in the US older than 4 years old to the T470 model. Policy Reference: - As per the planned IT Infrastructure RIIO T2 Strategy, device refresh and modernization capabilities are required to support end user devices including a refresh on a four-year cycle - 25% a year
<input checked="" type="radio"/> Policy- Driven	
<input type="radio"/> Justified NPV	
<input type="radio"/> Other	

1.8 Asset Management Risk Score

Asset Management Risk Score: 37

Primary Risk Score Driver: (Policy Driven Projects Only)

- Reliability
 Environment
 Health & Safety
 Not Policy Driven

1.9 Complexity Level



US Sanction Paper

High Complexity Medium Complexity Low Complexity N/A

Complexity Score: 19

1.10 Process Hazard Assessment

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

Yes No

1.11 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
IS Investment Plan FY19 - FY 23	<input type="radio"/> Yes <input checked="" type="radio"/> No	<input checked="" type="radio"/> Over <input type="radio"/> Under <input type="radio"/> NA	\$2.062M

1.12 If cost > approved Business Plan how will this be funded?

Re-allocation of budget within the IS business has been managed to meet jurisdictional budgetary, statutory and regulatory requirements.

1.13 Current Planning Horizon

		Current Planning Horizon						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
\$M	Prior Yrs	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	
CapEx	0.000	2.032	0.000	0.000	0.000	0.000	0.000	2.032
OpEx	0.000	0.030	0.000	0.000	0.000	0.000	0.000	0.030
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CIAC/Reimbursement	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	0.000	2.062	0.000	0.000	0.000	0.000	0.000	2.062

1.14 Key Milestones

Milestone	Target Date: (Month Year)
Partial Sanction	September 2018



US Sanction Paper

Milestone	Target Date: (Month Year)
Begin Requirements and Design	September 2018
Project Sanction	October 2018
Begin Development and Implementation	October 2018
Move to Production / Last Go Live	October 2018
Project Closure	January 2019

1.15 Resources, Operations and Procurement

Resource Sourcing			
Engineering & Design Resources to be provided	<input checked="" type="checkbox"/> Internal	<input type="checkbox"/> Contractor	
Construction/Implementation Resources to be provided	<input checked="" type="checkbox"/> Internal	<input checked="" type="checkbox"/> Contractor	
Resource Delivery			
Availability of internal resources to deliver project:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green
Availability of external resources to deliver project:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green
Operational Impact			
Outage impact on network system:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green
Procurement Impact			
Procurement impact on network system:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green

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

N/A

1.17 Climate Change

Contribution to National Grid's 2050 80% emissions reduction target:	<input checked="" type="radio"/> Neutral	<input type="radio"/> Positive	<input type="radio"/> Negative
Impact on adaptability of network for future climate change:	<input checked="" type="radio"/> Neutral	<input type="radio"/> Positive	<input type="radio"/> Negative

1.18 List References

N/A



US Sanction Paper

2 Decisions

I:

- (a) APPROVE this paper and the investment of \$ 1.548M and a tolerance of +/- 10% for the purposes of Requirements & Design.
- (b) NOTE the potential investment \$ 2.062M and a tolerance of +/- 25%, contingent upon submittal and approval of a Project Sanction paper following completion of requirements and design.
- (c) NOTE that Donna McGuirk is the Project Manager and has the approved financial delegation.

Signature.....Date.....

David H. Campbell, Vice President ServCo Business Partnering, USSC Chair



US Sanction Paper

3 Sanction Paper Detail

Title:	US T430 Refresh	Sanction Paper #:	USSC-18-301
Project #:	INVP 5316 Capex: S007956	Sanction Type:	Partial Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	9/25/2018
Author:	Andrew Yee / Neha Verma	Sponsor:	Andrea Costa Director IT Infrastructure
Utility Service:	IS	Project Manager:	Donna McGuirk

3.1 *Background*

Laptop performance issues have been introduced to the environment because of new application and security tool deployments to the standard operating environments (SOE's) on legacy T430 laptops.

3.2 *Drivers*

The main drivers of the project are to ensure that the end user device estate continues to be reliable, remains secure and can meet new business demands.

There is a necessity to realize value of the project as early as possible, as well as having a highly efficient project team, closer alignment with the business and improved project visibility. This project will therefore be incorporating some agile techniques to try and help achieve these goals. It is not expected that a full agile / scrum approach will be adhered to but the main agile principles will be followed wherever possible:

- collaborative working
- iterative delivery
- business engagement
- flexibility to change and adapt
- frequent feedback loops

There is a need to refresh the devices as quickly as possible as the performance issues are impacting productivity, user experience and morale.

3.3 *Project Description*

The project is to refresh all T430 devices and devices greater than 4 years old across the US to T470 devices. This stage of the project will purchase the devices and determine the activities required to deploy the devices to the users. Another sanction will be for D and I (Design and Implementation) phase



US Sanction Paper

3.4 *Benefits Summary*

- Improved performance of the laptops will enable users to work more efficiently
- Improved employee morale. User's frustration will be reduced by the higher performance of the new laptops.

3.5 *Business and Customer Issues*

N/A

3.6 *Alternatives*

Alternative 1: Defer project/ Do Nothing – This option is not viable as it will not address the business driver or achieve the business benefits. Laptop performance will continue to be an issue.

3.7 *Safety, Environmental and Project Planning Issues*

There are no significant issues beyond what has been described elsewhere.



US Sanction Paper

3.8 Execution Risk Appraisal

Number	Detailed Description of Risk / Opportunity	Probability	Impact		Score		Strategy	Pre-Trigger Mitigation Plan	Residual Risk	Post Trigger Mitigation Plan
			Cost	Schedule	Cost	Schedule				
1	SOE is not available in production (Windows 7 and Office 2016)	4	2	4	8	16	Mitigate	Operations is working with DXC to test the SOE (windows 7 and Office 2016) to ensure we have an SOE for production	Can't get the SOE to work with Office 2016 on devices	Have DXC manually remove Office 2010 and install Office 2016
2	Delays in ordering/delivering T470s	5	2	5	10	25	Mitigate	DXC has a number of laptops in inventory and will pull those to begin imaging. DXC will order devices prior to a PO being created at NG	Time estimates for delivery may be to aggressive and delivery may take longer than anticipated	Acceptance
3	Installing SOE image on T470 - 5,500	5	4	5	20	25	Mitigate	Change Request is being created to increase DXC resources. Team is asking that the new laptops be pre-loaded with Windows 7 so that it will save time on imaging the devices.	Not enough time/resources to install the image on 5,500 devices	Acceptance
4	End User experience will be poor - data transfer, possibility of missing applications	4	3	5	12	20	Mitigate	Change Request is being created to increase DXC resources. Team is being asked for creative, quick, smooth, easy ways of transferring user data from old machine to new.	may miss applications that an end user has on existing laptop due to missing information in asset inventories. End users may not transfer data in time or at all. End User may not be able to get to location for drop-off/pickup of new device.	Acceptance

3.9 Permitting

N/A

3.10 Investment Recovery

Recovery will occur at the time of the next rate case for any operating company receiving allocations of these costs.

3.10.1 Investment Recovery and Regulatory Implications

3.10.2 Customer Impact

N/A



US Sanction Paper

3.10.3 CIAC / Reimbursement

N/A

3.11 Financial Impact to National Grid

3.11.1 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend (\$M)	Prior Yrs	Current Planning Horizon						Total	
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
Proj Num	Proj Name	Est Lvl (e.g. +/- 10%)	CapEx	0.000	2.032	0.000	0.000	0.000	0.000	0.000	0.000	2.032
			OpEx	0.000	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.030
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	2.062	0.000	0.000	0.000	0.000	0.000	0.000	2.062

Total Project Sanction	CapEx	0.000	2.032	0.000	0.000	0.000	0.000	0.000	0.000	2.032
	OpEx	0.000	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.030
	Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Total	0.000	2.062	0.000	0.000	0.000	0.000	0.000	0.000	2.062

3.11.2 Project Budget Summary Table

Project Costs Per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon							Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon							Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
CapEx	0.000	(2.032)	0.000	0.000	0.000	0.000	0.000	0.000	(2.032)
OpEx	0.000	(0.030)	0.000	0.000	0.000	0.000	0.000	0.000	(0.030)
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	(2.062)	0.000	0.000	0.000	0.000	0.000	0.000	(2.062)



US Sanction Paper

3.11.3 Cost Assumptions

3.11.4 Net Present Value / Cost Benefit Analysis

3.11.4.1 NPV Summary Table

N/A

3.11.4.2 NPV Assumptions and Calculations

N/A

3.11.5 Additional Impacts

3.12 Statements of Support

3.12.1 Supporters

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

Department	Individual	Responsibilities
Business Department	John Gilbert	Business Representative
PDM	Helen Smith	Head of PDM
BRM	Brian Detota	Relationship Manager
PDM	Ken Wermann	Program Delivery Director
IS Finance	Michelle Harris	Director
IS Regulatory	Dan DeMauro	Director
DR&S	Elaine Wilson	Director
Service Delivery	Mark Mirizio	Director
Enterprise Architecture	Svetlana Lyba	Director

3.12.2 Reviewers

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

Function	Individual
Regulatory	Harvey, Maria
Jurisdictional Delegate - Electric NE	Easterly, Patricia
Jurisdictional Delegate - Electric NY	Harbaugh, Mark A.
Jurisdictional Delegate - FERC	Hill, Terron
Jurisdictional Delegate - Gas NE	Currie, John
Jurisdictional Delegate - Gas NY	Wolf, Don
Procurement	Chevere, Diego



US Sanction Paper

4 Appendices

4.1 Sanction Request Breakdown by Project

N/A

4.2 Other Appendices

4.2.1 Project Cost Breakdown

Project Cost Breakdown \$ (millions)					
Cost Category	sub-category	VOWD	FTC	FAC=VOWD+FTC	Name of Firm(s) providing
Personnel	NG Resources	0.000	0.095	0.095	
	SDC Time & Materials	0.000	-	-	IBM
		0.000	-	-	WiPro
		0.000	0.212	0.212	DXC
		0.000	-	-	Verizon
	SDC Fixed-Price	0.000	-	-	IBM
		0.000	-	-	WiPro
		0.000	-	-	DXC
		0.000	-	-	Verizon
	All other personnel	0.000	-	-	
TOTAL Personnel Costs	-	0.307	0.307		
Hardware	Purchase	0.000	1.484	1.484	
	Lease	0.000	-	-	
Software		0.000	-	-	
Risk Margin			0.213	0.213	
AFUDC		0.000	0.017	0.017	
Other		0.000	0.041	0.041	
TOTAL Costs		-	2.062	2.062	Should match Financial Summary Total

4.2.2 Benefiting Operating Companies

Operating Company Name	Business Area	State
National Grid USA Parent	Parent	
KeySpan Energy Development Corporation	Non-Regulated	NY
KeySpan Services Inc.	Service Company	
KeySpan Energy Corp.	Service Company	
KeySpan Energy Delivery New York	Gas Distribution	NY



US Sanction Paper

KeySpan Energy Delivery Long Island	Gas Distribution	NY
KeySpan Generation LLC (PSA)	Generation	NY
KeySpan Glenwood Energy Center	Generation	NY
KeySpan Port Jefferson Energy Center	Generation	NY
Keyspan Energy Trading Services	Other	NY
Niagara Mohawk Power Corp.- Electric Distr.	Electric Distribution	NY
Niagara Mohawk Power Corp. - Gas	Gas Distribution	NY
Niagara Mohawk Power Corp. - Transmission	Transmission	NY
Massachusetts Electric Company	Electric Distribution	MA
Massachusetts Electric Company – Transmission	Transmission	MA
Nantucket Electric Company	Electric Distribution	MA
Boston Gas Company	Gas Distribution	MA
Colonial Gas Company	Gas Distribution	MA
Narragansett Gas Company	Gas Distribution	RI
Narragansett Electric Company	Electric Distribution	RI
Narragansett Electric Company – Transmission	Transmission	RI
New England Power Company – Transmission	Transmission	MA,NH,RI,VT
New England Hydro - Trans Corp.	Inter Connector	MA, NH
New England Electric Trans Corp	Inter Connector	MA
NG LNG LP Regulated Entity	Gas Distribution	MA,NY,RI
Trans Gas Inc.	Non-Regulated	NY

4.2.3 IS Ongoing Operational Costs (RTB):

No impacts to IS ongoing operational costs (RTB) as a result of this project

4.3 NPV Summary (if applicable)

N/A

4.4 Customer Outreach Plan

N/A



US Sanction Paper

Title:	US T430 Refresh	Sanction Paper #:	USSC-18-301
Project #:	INVP 5316 Capex: S007956	Sanction Type:	Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	2/5/2019
Author:	Neha Verma / Donna McGuirk	Sponsor:	Barry Sheils, VP Infrastructure and Operations
Utility Service:	IT	Project Manager:	Donna McGuirk

1 Executive Summary

1.1 Sanctioning Summary

This paper requests full sanction of INVP5316 in the amount of \$2.433M with a tolerance of +/- 10% for the purposes of full implementation.

This sanction amount is \$2.433M broken down into:

- \$2.280M Capex*
- \$0.153M Opex*
- \$0.000M Removal*

1.2 Project Summary

This policy-driven project will refresh approx. 1,500 laptops devices in the US to the T470 model. This project will replace all devices over 4 years old as of December 31, 2018, with models T430, T440, T450, X220 and X230s. The bulk of the devices being replaced by this project are T430. 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).

1.3 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
INVP 5316 Capex: S007956		T 430 Device Replacement	2.433
Total			2.433



US Sanction Paper

1.4 Associated Projects

Not Applicable

1.5 Prior Sanctioning History

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Sanction Type	Potential Investment Tolerance
9/25/2018	USSC	\$1.548M	\$2.062	Partial	+/-25%

1.6 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review
March 2019	Project Closure Sanction

1.7 Category

Category	Reference to Mandate, Policy, NPV, or Other
<input type="radio"/> Mandatory <input checked="" type="radio"/> Policy- Driven <input type="radio"/> Justified NPV <input type="radio"/> Other	<p>This policy driven project will refresh approx. 1500 laptop devices in the US older than 4 years old to the T470 model.</p> <p>Policy Reference: - As per the planned IT Infrastructure RIIO T2 Strategy, device refresh and modernization capabilities are required to support end user devices including a refresh on a four-year cycle - 25% a year</p>

1.8 Asset Management Risk Score

Asset Management Risk Score: 37

Primary Risk Score Driver: (Policy Driven Projects Only)

- Reliability
 Environment
 Health & Safety
 Not Policy Driven



US Sanction Paper

1.9 Complexity Level

High Complexity Medium Complexity Low Complexity N/A

Complexity Score: 19

1.10 Process Hazard Assessment

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

Yes No

1.11 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
IT Investment Plan FY19 - FY 23	<input type="radio"/> Yes <input checked="" type="radio"/> No	<input checked="" type="radio"/> Over <input type="radio"/> Under <input type="radio"/> NA	\$2.433M

1.12 If cost > approved Business Plan how will this be funded?

Re-allocation of budget within the IT business has been managed to meet jurisdictional budgetary, statutory and regulatory requirements.



US Sanction Paper

1.13 Current Planning Horizon

\$M	Prior Yrs	Current Planning Horizon						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
		2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	
CapEx	0.000	2.280	0.000	0.000	0.000	0.000	0.000	2.280
OpEx	0.000	0.153	0.000	0.000	0.000	0.000	0.000	0.153
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CIAC/Reimbursement	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	0.000	2.433	0.000	0.000	0.000	0.000	0.000	2.433

1.14 Key Milestones

Milestone	Target Date: (Month Year)
Partial Sanction	September 2018
Begin Requirements and Design	September 2018
Project Sanction	February 2019
Begin Development and Implementation	February 2019
Move to Production / Last Go Live	February 2019
Project Closure	March 2019

1.15 Resources, Operations and Procurement

Resource Sourcing			
Engineering & Design Resources to be provided	<input checked="" type="checkbox"/> Internal	<input type="checkbox"/> Contractor	
Construction/Implementation Resources to be provided	<input checked="" type="checkbox"/> Internal	<input checked="" type="checkbox"/> Contractor	
Resource Delivery			
Availability of internal resources to deliver project:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green
Availability of external resources to deliver project:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green
Operational Impact			
Outage impact on network system:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green
Procurement Impact			
Procurement impact on network system:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green



US Sanction Paper

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

Not Applicable

1.17 Climate Change

Contribution to National Grid's 2050 80% emissions reduction target:	<input checked="" type="radio"/> Neutral	<input type="radio"/> Positive	<input type="radio"/> Negative
Impact on adaptability of network for future climate change:	<input checked="" type="radio"/> Neutral	<input type="radio"/> Positive	<input type="radio"/> Negative

1.18 List References

Not Applicable



US Sanction Paper

2 Decisions

I:

- (a) APPROVE this paper and the investment of \$2.433M and a tolerance of +/-10% for the purposes of Full Implementation
- (b) NOTE that Donna McGuirk is the Project Manager and has the approved financial delegation.

Signature.....Date.....

David H. Campbell, Vice President ServCo Business Partnering, USSC Chair



US Sanction Paper

3 Sanction Paper Detail

Title:	US T430 Refresh	Sanction Paper #:	USSC-18-301
Project #:	INVP 5316 Capex: S007956	Sanction Type:	Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	2/5/2019
Author:	Neha Verma / Donna McGuirk	Sponsor:	Barry Sheils, VP Infrastructure and Operations
Utility Service:	IT	Project Manager:	Donna McGuirk

3.1 *Background*

Laptop performance issues have been introduced to the environment because of new application and security tool deployments to the standard operating environments (SOE's) on legacy T430 laptops.

3.2 *Drivers*

The main drivers of the project are to ensure that the end user device estate continues to be reliable, remains secure and can meet new business demands.

There is a necessity to realize value of the project as early as possible, as well as having a highly efficient project team, closer alignment with the business and improved project visibility. This project will therefore be incorporating some agile techniques to try and help achieve these goals. It is not expected that a full agile / scrum approach will be adhered to but the main agile principles will be followed wherever possible:

- collaborative working
- iterative delivery
- business engagement
- flexibility to change and adapt
- frequent feedback loops

There is a need to refresh the devices as quickly as possible as the performance issues are impacting productivity, user experience and morale.

3.3 *Project Description*

During the implementation of the project, the following will be accomplished:

- Roll out remaining devices.



US Sanction Paper

3.4 *Benefits Summary*

- Improved performance of the laptops will enable users to work more efficiently
- Improved employee morale. User's frustration will be reduced by the higher performance of the new laptops.

3.5 *Business and Customer Issues*

There are no significant business issues beyond what has been described elsewhere.

3.6 *Alternatives*

Alternative 1: Defer project/ Do Nothing – This option is not viable as it will not address the business driver or achieve the business benefits. Laptop performance will continue to be an issue.

Note :- No other engagement options are available due to contractual obligations under the IT End User Services Contract.

3.7 *Safety, Environmental and Project Planning Issues*

There are no significant issues beyond what has been described elsewhere.



US Sanction Paper

3.8 Execution Risk Appraisal

Number	Detailed Description of Risk / Opportunity	Probability	Impact		Score		Strategy	Pre-Trigger Mitigation Plan	Residual Risk	Post Trigger Mitigation Plan
			Cost	Schedule	Cost	Schedule				
1	SOE is not available in production (Windows 7 and Office 2016)	4	2	4	8	16	Mitigate	Operations is working with DXC to test the SOE (windows 7 and Office 2016) to ensure we have an SOE for production	Can't get the SOE to work with Office 2016 on devices	Have DXC manually remove Office 2010 and install Office 2016
2	Delays in ordering/delivering T470s	5	2	5	10	25	Mitigate	DXC has a number of laptops in inventory and will pull those to begin imaging. DXC will order devices prior to a PO being created at NG	Time estimates for delivery may be to aggressive and delivery may take longer than anticipated	Acceptance
3	Installing SOE image on T470 - 5,500	5	4	5	20	25	Mitigate	Change Request is being created to increase DXC resources. Team is asking that the new laptops be pre-loaded with Windows 7 so that it will save time on imaging the devices.	Not enough time/resources to install the image on 5,500 devices	Acceptance
4	End User experience will be poor - data transfer, possibility of missing applications	4	3	5	12	20	Mitigate	Change Request is being created to increase DXC resources. Team is being asked for creative, quick, smooth, easy ways of transferring user data from old machine to new.	may miss applications that an end user has on existing laptop due to missing information in asset inventories. End users may not transfer data in time or at all. End User may not be able to get to location for drop-off/pickup of new device.	Acceptance

3.9 Permitting

Not applicable

3.10 Investment Recovery

3.10.1 Investment Recovery and Regulatory Implications

Recovery will occur at the time of the next rate case for any operating company receiving allocations of these costs.

3.10.2 Customer Impact

Not applicable

3.10.3 CIAC / Reimbursement

Not applicable



US Sanction Paper

3.11 Financial Impact to National Grid

3.11.1 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend (\$M)	Prior Yrs	Current Planning Horizon						Total	
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
					2018/19	2019/20	2020/21	2021/22	2022/23	2023/24		
INVP 5316 Capex: S007956	T 430 Device Replacement	Est Lvl (e.g. +/- 10%)	CapEx	0.000	2.280	0.000	0.000	0.000	0.000	0.000	0.000	2.280
			OpEx	0.000	0.153	0.000	0.000	0.000	0.000	0.000	0.000	0.153
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	2.433	0.000	0.000	0.000	0.000	0.000	0.000	2.433

3.11.2 Project Budget Summary Table

Project Costs Per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon							Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
		2018/19	2019/20	2020/21	2021/22	2022/23	2023/24		
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon							Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
		2018/19	2019/20	2020/21	2021/22	2022/23	2023/24		
CapEx	0.000	(2.280)	0.000	0.000	0.000	0.000	0.000	0.000	(2.280)
OpEx	0.000	(0.153)	0.000	0.000	0.000	0.000	0.000	0.000	(0.153)
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	(2.433)	0.000	0.000	0.000	0.000	0.000	0.000	(2.433)

3.11.3 Cost Assumptions

Not applicable

3.11.4 Net Present Value / Cost Benefit Analysis

3.11.4.1 NPV Summary Table

Not Applicable



US Sanction Paper

3.11.4.2 NPV Assumptions and Calculations

Not Applicable

3.11.5 Additional Impacts

Not applicable

3.12 Statements of Support

3.12.1 Supporters

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

Department	Individual	Responsibilities
Business Department	John Gilbert	Business Representative
Business Partner (BP)	Caitlin Davidson	Relationship Manager
Program Delivery Management (PDM)	Ken Wermann	Program Delivery Director
IT Finance	Michelle Harris	Director
IT Regulatory	Dan DeMauro	Director
Digital Risk and Security (DR&S)	Peter Shattuck	Director
Service Delivery	Mark Mirizio	Director
Enterprise Architecture	Joseph Clinchot	Director

3.12.2 Reviewers

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

Function	Individual
Regulatory	Harvey, Maria
Jurisdictional Delegate - Electric NE	Easterly, Patricia
Jurisdictional Delegate - Electric NY	Harbaugh, Mark A.
Jurisdictional Delegate - FERC	Hill, Terron
Jurisdictional Delegate - Gas NE	Currie, John
Jurisdictional Delegate - Gas NY	Wolf, Don
Procurement	Chevere, Diego



US Sanction Paper

4 Appendices

4.1 Sanction Request Breakdown by Project

Not Applicable

4.2 Project Cost Breakdown

Project Cost Breakdown \$ (millions)					
Cost Category	sub-category	Value of Work to Date (VOWD)	Forecast to Complete (FTC)	Forecast At Completion (FAC=VOWD+FTC)	Name of Firm(s) providing resources
Personnel	NG Resources	0.053	0.032	0.085	
	SDC Time & Materials		-	-	IBM
			-	-	WiPro
			0.240	0.240	DXC
			-	-	Verizon
	SDC Fixed-Price		-	-	IBM
			-	-	WiPro
		0.074	-	0.074	DXC
		-	-	Verizon	
	All other personnel	0.300	-	0.300	
TOTAL Personnel Costs	0.427	0.272	0.699		
Hardware	Purchase	1.388	-	1.388	
	Lease		-	-	
Software			-	-	
Risk Margin			-	-	
AFUDC			0.040	0.040	
Other			0.306	0.306	
TOTAL Costs		1.815	0.618	2.433	



US Sanction Paper

4.3 Benefiting Operating Companies

Operating Company Name	Business Area	State
Niagara Mohawk Power Corp.- Electric Distr.	Electric Distribution	NY
Niagara Mohawk Power Corp. - Gas	Gas Distribution	NY
Niagara Mohawk Power Corp. - Transmission	Transmission	NY
KeySpan Energy Delivery New York	Gas Distribution	NY
KeySpan Energy Delivery Long Island	Gas Distribution	NY
Massachusetts Electric Company	Electric Distribution	MA
Nantucket Electric Company	Electric Distribution	MA
Boston Gas Company	Gas Distribution	MA
Narragansett Electric Company	Electric Distribution	RI
Narragansett Gas Company	Gas Distribution	RI
KeySpan LNG LP Regulated Entity	Generation	NY
KeySpan Generation LLC (PSA)	Generation	NY
Transgas Inc	Non-Regulated	NY

4.4 IT Ongoing Operational Costs (RTB):

No impacts to IT ongoing operational costs (RTB) as a result of this project



US Sanction Paper

Title:	US T430 Refresh	Sanction Paper #:	USSC-18-301
Project #:	INVP 5316 Capex: S007956	Sanction Type:	Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	2/5/2019
Author:	Neha Verma / Donna McGuirk	Sponsor:	Barry Sheils, VP Infrastructure and Operations
Utility Service:	IT	Project Manager:	Donna McGuirk

1 Executive Summary

1.1 Sanctioning Summary

This paper requests full sanction of INVP5316 in the amount of \$2.433M with a tolerance of +/- 10% for the purposes of full implementation.

This sanction amount is \$2.433M broken down into:

- \$2.280M Capex*
- \$0.153M Opex*
- \$0.000M Removal*

1.2 Project Summary

This policy-driven project will refresh approx. 1,500 laptops devices in the US to the T470 model. This project will replace all devices over 4 years old as of December 31, 2018, with models T430, T440, T450, X220 and X230s. The bulk of the devices being replaced by this project are T430. 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).

1.3 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
INVP 5316 Capex: S007956		T 430 Device Replacement	2.433
Total			2.433



US Sanction Paper

1.4 Associated Projects

Not Applicable

1.5 Prior Sanctioning History

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Sanction Type	Potential Investment Tolerance
9/25/2018	USSC	\$1.548M	\$2.062	Partial	+/-25%

1.6 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review
March 2019	Project Closure Sanction

1.7 Category

Category	Reference to Mandate, Policy, NPV, or Other
<input type="radio"/> Mandatory <input checked="" type="radio"/> Policy- Driven <input type="radio"/> Justified NPV <input type="radio"/> Other	<p>This policy driven project will refresh approx. 1500 laptop devices in the US older than 4 years old to the T470 model.</p> <p>Policy Reference: - As per the planned IT Infrastructure RIIO T2 Strategy, device refresh and modernization capabilities are required to support end user devices including a refresh on a four-year cycle - 25% a year</p>

1.8 Asset Management Risk Score

Asset Management Risk Score: 37

Primary Risk Score Driver: (Policy Driven Projects Only)

- Reliability
 Environment
 Health & Safety
 Not Policy Driven



US Sanction Paper

1.9 Complexity Level

High Complexity Medium Complexity Low Complexity N/A

Complexity Score: 19

1.10 Process Hazard Assessment

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

Yes No

1.11 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
IT Investment Plan FY19 - FY 23	<input type="radio"/> Yes <input checked="" type="radio"/> No	<input checked="" type="radio"/> Over <input type="radio"/> Under <input type="radio"/> NA	\$2.433M

1.12 If cost > approved Business Plan how will this be funded?

Re-allocation of budget within the IT business has been managed to meet jurisdictional budgetary, statutory and regulatory requirements.



US Sanction Paper

1.13 Current Planning Horizon

\$M	Prior Yrs	Current Planning Horizon						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
		2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	
CapEx	0.000	2.280	0.000	0.000	0.000	0.000	0.000	2.280
OpEx	0.000	0.153	0.000	0.000	0.000	0.000	0.000	0.153
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CIAC/Reimbursement	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	0.000	2.433	0.000	0.000	0.000	0.000	0.000	2.433

1.14 Key Milestones

Milestone	Target Date: (Month Year)
Partial Sanction	September 2018
Begin Requirements and Design	September 2018
Project Sanction	February 2019
Begin Development and Implementation	February 2019
Move to Production / Last Go Live	February 2019
Project Closure	March 2019

1.15 Resources, Operations and Procurement

Resource Sourcing			
Engineering & Design Resources to be provided	<input checked="" type="checkbox"/> Internal	<input type="checkbox"/> Contractor	
Construction/Implementation Resources to be provided	<input checked="" type="checkbox"/> Internal	<input checked="" type="checkbox"/> Contractor	
Resource Delivery			
Availability of internal resources to deliver project:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green
Availability of external resources to deliver project:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green
Operational Impact			
Outage impact on network system:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green
Procurement Impact			
Procurement impact on network system:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green



US Sanction Paper

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

Not Applicable

1.17 Climate Change

Contribution to National Grid's 2050 80% emissions reduction target:	<input checked="" type="radio"/> Neutral	<input type="radio"/> Positive	<input type="radio"/> Negative
Impact on adaptability of network for future climate change:	<input checked="" type="radio"/> Neutral	<input type="radio"/> Positive	<input type="radio"/> Negative

1.18 List References

Not Applicable



US Sanction Paper

2 Decisions

I:

- (a) APPROVE this paper and the investment of \$2.433M and a tolerance of +/-10% for the purposes of Full Implementation
- (b) NOTE that Donna McGuirk is the Project Manager and has the approved financial delegation.

Signature.....Date.....

David H. Campbell, Vice President ServCo Business Partnering, USSC Chair



US Sanction Paper

3 Sanction Paper Detail

Title:	US T430 Refresh	Sanction Paper #:	USSC-18-301
Project #:	INVP 5316 Capex: S007956	Sanction Type:	Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	2/5/2019
Author:	Neha Verma / Donna McGuirk	Sponsor:	Barry Sheils, VP Infrastructure and Operations
Utility Service:	IT	Project Manager:	Donna McGuirk

3.1 *Background*

Laptop performance issues have been introduced to the environment because of new application and security tool deployments to the standard operating environments (SOE's) on legacy T430 laptops.

3.2 *Drivers*

The main drivers of the project are to ensure that the end user device estate continues to be reliable, remains secure and can meet new business demands.

There is a necessity to realize value of the project as early as possible, as well as having a highly efficient project team, closer alignment with the business and improved project visibility. This project will therefore be incorporating some agile techniques to try and help achieve these goals. It is not expected that a full agile / scrum approach will be adhered to but the main agile principles will be followed wherever possible:

- collaborative working
- iterative delivery
- business engagement
- flexibility to change and adapt
- frequent feedback loops

There is a need to refresh the devices as quickly as possible as the performance issues are impacting productivity, user experience and morale.

3.3 *Project Description*

During the implementation of the project, the following will be accomplished:

- Roll out remaining devices.



US Sanction Paper

3.4 *Benefits Summary*

- Improved performance of the laptops will enable users to work more efficiently
- Improved employee morale. User's frustration will be reduced by the higher performance of the new laptops.

3.5 *Business and Customer Issues*

There are no significant business issues beyond what has been described elsewhere.

3.6 *Alternatives*

Alternative 1: Defer project/ Do Nothing – This option is not viable as it will not address the business driver or achieve the business benefits. Laptop performance will continue to be an issue.

Note :- No other engagement options are available due to contractual obligations under the IT End User Services Contract.

3.7 *Safety, Environmental and Project Planning Issues*

There are no significant issues beyond what has been described elsewhere.



US Sanction Paper

3.8 Execution Risk Appraisal

Number	Detailed Description of Risk / Opportunity	Probability	Impact		Score		Strategy	Pre-Trigger Mitigation Plan	Residual Risk	Post Trigger Mitigation Plan
			Cost	Schedule	Cost	Schedule				
1	SOE is not available in production (Windows 7 and Office 2016)	4	2	4	8	16	Mitigate	Operations is working with DXC to test the SOE (windows 7 and Office 2016) to ensure we have an SOE for production	Can't get the SOE to work with Office 2016 on devices	Have DXC manually remove Office 2010 and install Office 2016
2	Delays in ordering/delivering T470s	5	2	5	10	25	Mitigate	DXC has a number of laptops in inventory and will pull those to begin imaging. DXC will order devices prior to a PO being created at NG	Time estimates for delivery may be to aggressive and delivery may take longer than anticipated	Acceptance
3	Installing SOE image on T470 - 5,500	5	4	5	20	25	Mitigate	Change Request is being created to increase DXC resources. Team is asking that the new laptops be pre-loaded with Windows 7 so that it will save time on imaging the devices.	Not enough time/resources to install the image on 5,500 devices	Acceptance
4	End User experience will be poor - data transfer, possibility of missing applications	4	3	5	12	20	Mitigate	Change Request is being created to increase DXC resources. Team is being asked for creative, quick, smooth, easy ways of transferring user data from old machine to new.	may miss applications that an end user has on existing laptop due to missing information in asset inventories. End users may not transfer data in time or at all. End User may not be able to get to location for drop-off/pickup of new device.	Acceptance

3.9 Permitting

Not applicable

3.10 Investment Recovery

3.10.1 Investment Recovery and Regulatory Implications

Recovery will occur at the time of the next rate case for any operating company receiving allocations of these costs.

3.10.2 Customer Impact

Not applicable

3.10.3 CIAC / Reimbursement

Not applicable



US Sanction Paper

3.11 Financial Impact to National Grid

3.11.1 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend (\$M)	Prior Yrs	Current Planning Horizon						Total	
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
					2018/19	2019/20	2020/21	2021/22	2022/23	2023/24		
INVP 5316 Capex: S007956	T 430 Device Replacement	Est Lvl (e.g. +/- 10%)	CapEx	0.000	2.280	0.000	0.000	0.000	0.000	0.000	0.000	2.280
			OpEx	0.000	0.153	0.000	0.000	0.000	0.000	0.000	0.000	0.153
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	2.433	0.000	0.000	0.000	0.000	0.000	0.000	2.433

3.11.2 Project Budget Summary Table

Project Costs Per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon							Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
		2018/19	2019/20	2020/21	2021/22	2022/23	2023/24		
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon							Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
		2018/19	2019/20	2020/21	2021/22	2022/23	2023/24		
CapEx	0.000	(2.280)	0.000	0.000	0.000	0.000	0.000	0.000	(2.280)
OpEx	0.000	(0.153)	0.000	0.000	0.000	0.000	0.000	0.000	(0.153)
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	(2.433)	0.000	0.000	0.000	0.000	0.000	0.000	(2.433)

3.11.3 Cost Assumptions

Not applicable

3.11.4 Net Present Value / Cost Benefit Analysis

3.11.4.1 NPV Summary Table

Not Applicable



US Sanction Paper

3.11.4.2 NPV Assumptions and Calculations

Not Applicable

3.11.5 Additional Impacts

Not applicable

3.12 Statements of Support

3.12.1 Supporters

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

Department	Individual	Responsibilities
Business Department	John Gilbert	Business Representative
Business Partner (BP)	Caitlin Davidson	Relationship Manager
Program Delivery Management (PDM)	Ken Wermann	Program Delivery Director
IT Finance	Michelle Harris	Director
IT Regulatory	Dan DeMauro	Director
Digital Risk and Security (DR&S)	Peter Shattuck	Director
Service Delivery	Mark Mirizio	Director
Enterprise Architecture	Joseph Clinchot	Director

3.12.2 Reviewers

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

Function	Individual
Regulatory	Harvey, Maria
Jurisdictional Delegate - Electric NE	Easterly, Patricia
Jurisdictional Delegate - Electric NY	Harbaugh, Mark A.
Jurisdictional Delegate - FERC	Hill, Terron
Jurisdictional Delegate - Gas NE	Currie, John
Jurisdictional Delegate - Gas NY	Wolf, Don
Procurement	Chevere, Diego



US Sanction Paper

4 Appendices

4.1 Sanction Request Breakdown by Project

Not Applicable

4.2 Project Cost Breakdown

Project Cost Breakdown \$ (millions)						
Cost Category	sub-category	Value of Work to Date (VOWD)	Forecast to Complete (FTC)	Forecast At Completion (FAC=VOWD+FTC)	Name of Firm(s) providing resources	
Personnel	NG Resources	0.053	0.032	0.085		
	SDC Time & Materials			-	-	IBM
				-	-	WiPro
				0.240	0.240	DXC
				-	-	Verizon
	SDC Fixed-Price			-	-	IBM
				-	-	WiPro
			0.074	-	0.074	DXC
				-	-	Verizon
	All other personnel	0.300	-	0.300		
TOTAL Personnel Costs	0.427	0.272	0.699			
Hardware	Purchase	1.388	-	1.388		
	Lease		-	-		
Software			-	-		
Risk Margin			-	-		
AFUDC			0.040	0.040		
Other			0.306	0.306		
TOTAL Costs		1.815	0.618	2.433		



US Sanction Paper

4.3 Benefiting Operating Companies

Operating Company Name	Business Area	State
Niagara Mohawk Power Corp.- Electric Distr.	Electric Distribution	NY
Niagara Mohawk Power Corp. - Gas	Gas Distribution	NY
Niagara Mohawk Power Corp. - Transmission	Transmission	NY
KeySpan Energy Delivery New York	Gas Distribution	NY
KeySpan Energy Delivery Long Island	Gas Distribution	NY
Massachusetts Electric Company	Electric Distribution	MA
Nantucket Electric Company	Electric Distribution	MA
Boston Gas Company	Gas Distribution	MA
Narragansett Electric Company	Electric Distribution	RI
Narragansett Gas Company	Gas Distribution	RI
KeySpan LNG LP Regulated Entity	Generation	NY
KeySpan Generation LLC (PSA)	Generation	NY
Transgas Inc	Non-Regulated	NY

4.4 IT Ongoing Operational Costs (RTB):

No impacts to IT ongoing operational costs (RTB) as a result of this project



Long: US Sanction Paper

Title:	Employee Digital Workplace	Sanction Paper #:	USSC-19-272
Project #:	INVP 5317 -S008048	Sanction Type:	Sanction
Capex #:			
Operating Company:	National Grid USA Svc. Co.	Date of Request:	5/21/2019
Author:	Fordham, Damon	Sponsor:	Karaboutis, Adriana Wyld, Barney Chief Information & Digital Officer
Utility Service:	IT	Project Manager:	Karelia, Ravi

Executive Summary

This paper requests Sanction of INVP 5317 in the amount of \$2.531M with a tolerance of +/-10% for the purposes of Full Implementation.

This sanction amount is \$2.531M broken down into:

- \$0.986M Capex
- \$1.545M Opex
- \$0.000M Removal

Project Summary

National Grid's intranet isn't fit for purpose, it can be difficult to find the latest documents, old content isn't always removed and it isn't an effective communication channel being limited to laptop users in our offices. This program will establish the primary portal to access all others as part of a modern digital workplace. It will transform employee productivity, experience and engagement by connecting people, knowledge and tasks. It will be accessible via mobile, tablets and desktops. This Sanction paper is for US spend only.*

Background

Our vision is for our employees to see the workplace as:

- A "go to" location to help me every day
- A place that helps me make sense of my environment
- A place that gives me quick access to things that matter; people, content and connections
- Accessible to me how I choose via phone, laptop, tablet, (any device)

Project Descriptions

This Sanction paper is for US spend only.*

To successfully build, configure test and deploy the Employee Digital Workplace as a Managed Service for National Grid. This work includes setup of the hosting environment, testing the solution, it's interfaces and end to end performance to ensure it is ready to provide live service.

We will validate Disaster Recovery, Service Transition arrangements, Change Management and Training support. A pilot will be conducted to ensure the new solution is fit for purpose and then we will start a phased rollout selected by region, office and persona (HR people groups e.g. Office Worker, Field Worker).

The high level activities to deliver the program are shown in the table below:

User Experience	<ul style="list-style-type: none"> • Establish an intuitive, modern and mobile frictionless environment • Effective transmission channel for our purpose, vision and values • Develop our priorities based on user feedback and metrics • Maintain relevance by removing waste and retiring redundant content • Available any time, any place and anywhere
Content	<ul style="list-style-type: none"> • Work with business teams to produce essential content that is valued by users and promote it • Create a personalized experience for colleagues so they see relevant content • Use and build on key data from owned by Finance, HR and other systems to drive consistent experiences that delight our colleagues (see Appendix B for more details)
Service	<ul style="list-style-type: none"> • Create a new team to on-board business areas and develop new requirements, maintaining a roadmap for change • A clear and transparent service with fit for purpose governance • Published metrics and KPIs to drive the service evolution
Technology	<ul style="list-style-type: none"> • Implement new digital technologies to enable a rapid delivery of our MVP and provide a foundation for future growth • A working search facility, returning up to date materials and relevant items • Flexible to change to remain aligned with employee needs

Delivery approach and the sourcing strategy:

A procurement event has been run where “competitive dialogue” has been used to select the vendor and product. An Agile approach will be adopted for delivery driven by a product backlog.

Summary of Benefits

The Employee Digital Workplace seeks to improve productivity by saving employees time locating content needed for their roles. Less time will be needed to get to the information due to mobile access which can be easily consumed when needed, reducing employee frustration. The content will be built from a clean start ensuring that only relevant information is available and provide a single source of the truth. This will help increase satisfaction because people will feel more supported in their work life.

The experience will be personalized, a US employee will not see unnecessary communications for UK workers and vice versa allowing a more focused conversation. Yammer integration and social functionality will be provided enabling a more open and engaged workforce. This will help strengthen our company culture and enable the channel to communicate our purpose vision and values to all employees.

Business and Customer Issues

There are no significant business or customer issues beyond what has been described elsewhere.

Alternatives

Number	Title
1	Solution from Avanade Rejected: Takes longer to implement (making it costly) and would increase implementation risks vs buying an already developed product that we can configure. It would increase costs of ongoing development to maintain and remain modern from National Grid. Vendor pulled out in recognition of being unable to meet requirement during the final stages of competitive dialogue.
2	SharePoint (minimum cost alternative) Rejected: Whilst a potentially lower cost (from a licensing perspective) the time, effort and risks are high as this option requires handcrafting to deliver the desired user experience. Also moves away from the core principle of buy rather than build to reduce implementation risks.

Related Projects, Scoring and Budget

Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount(\$M)
INVP 5317		Employee Digital Workplace	2.531
Total:			2.531

Associated Projects

Project Number	Project Title	Estimate Amount (\$M)
N/A	N/A	0.000

Prior Sanctioning History

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Sanction Type	Sanction Paper	Potential Investment Tolerance
N/A						

Key Milestones

Milestone	Date (Month / Year)
Start Up	August, 2018
Begin Requirements and Design	January, 2019
Project Sanction	May, 2019
Begin Development and Implementation	June, 2019
Begin User Acceptance Testing	September, 2019
Move to Production / Last Go Live	November, 2019
Project Closure	March, 2020

Next Planned Sanction

Date (Month/Year)	Purpose of Sanction Review
March, 2020	Closure

Category

Category	Reference to Mandate, Policy, NPV, or Other
<input type="radio"/> Mandatory <input type="radio"/> Policy-Driven <input type="radio"/> Justified NPV <input checked="" type="radio"/> Other	This program will establish the primary portal to access all others as part of a modern digital workplace. It will transform employee productivity, experience and engagement by connecting people, knowledge and tasks. The digital workplace will be employee-centric, trusted and valued as a daily "go to" location. It will be mobile first and accessible via a desktop. The workplace will provide common standards, yet will be flexible and adaptable to cater to our globally diverse workforce and the local nuances of the UK and US businesses. It will be key cultural tool, allowing us to effectively communicate with our audiences and demonstrate our purpose, vision and values.

Asset Management Risk Score:

PRIMARY RISK SCORE DRIVER

Reliability Environment Health & Safety Not Policy Driven

Complexity Level: 24

High Complexity Medium Complexity Low Complexity N/A

Process Hazard Assessment

A Process Hazard Assessment (PHA) is required for this project: Yes No

Current Planning Horizon

Capex	0.000	0.986	0.000	0.000	0.000	0.000	0.000	0.986
Opex	0.000	1.545	0.000	0.000	0.000	0.000	0.000	1.545
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	0.000	2.531	0.000	0.000	0.000	0.000	0.000	2.531

Resources, Operations, & Procurement

RESOURCE SOURCING

Engineering & design Resources to be provided Internal Contractor

Construction/Implementation Resources to be provided Internal Contractor

RESOURCE DELIVERY

Availability of internal resources to delivery project: Red Amber Green

Availability of external resources to delivery project: Red Amber Green

OPERATIONAL IMPACT

Outage impact on network system Red Amber Green

PROCUREMENT IMPACT

Procurement impact on network system: Red Amber Green

Key Issues

Delays with gaining full sanction due to a change in funding strategy has impacted the start of the implementation phase and contract award. Timelines will be re-visited once full sanction has been achieved.

Climate Change

Contribution to National Grid's 2050 80% emissions reduction target:

Neutral

Positive

Negative

Impact on adaptability of network for future climate change:

Neutral

Positive

Negative

List References

N/A

Safety, Environmental and Project Planning Issues

There are no significant issues beyond what has been described elsewhere.

Permitting

N/A

Investment Recovery and Customer Impact

Investment Recovery

Recovery will occur at the time of the next rate case for any operating company receiving allocations of these costs.

Customer Impact

N/A

Execution Risk Appraisal

Risk Breakdown Structure Category	Qualitative Assessment / Risk Response Strategy				Risk Score	
	Risk ID + Title	IF Statement	THEN Statement	Risk Response Strategy		
1. Resources	R1 - Resources	IF resources are not available when required	THEN it will impact timelines, budget and potentially benefits	Reduce	Recruit externally (augment teams)	12
2. Strategic Direction	R2 - Programme direction/scope	IF there is a failure to agree direction and scope	THEN this will impact timeline, costs and benefits	Reduce	Maintain alignment with vision and core benefit through consensus	5
3. External Dependency	R3 - People/Employee Data	IF People Data in Active Directory is of insufficient quality	THEN this will impact the ability to deliver a personalised experience for employees	Avoid	Work with IAM and HR Teams deliver quality data updated to AD	16
4. Content	R4 - Content Delivery	IF High quality, value driven content is not delivered on time	THEN this will impact timeline, costs and benefits	Reduce	1) Ensure Editors, Business Leads are in place to deliver this when needed 2) Ensure standards in place to deliver the content	15
5. User Experience	R5 - User Experience	IF Employee Digital Workplace does not deliver the desired user experience	THEN primary benefit (improve employee productivity) will not be realised	Reduce	1) Leverage UX experience from Vendor and augment this with National Grid SMEs 2) Carry out pilot and adjust based on feedback	12
6. Change Management	R6 - Adoption	IF Users are not ready to adopt EDW	THEN this will impact the timeline, budget and benefit realisation	Reduce	Implement robust change management process taking on board lessons from past projects	12

Business Plan

Business Plan Name & Period	Project Included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$M)
IT Investment Plan FY 20-24	<input type="radio"/> Yes <input checked="" type="radio"/> No	<input checked="" type="radio"/> Over <input type="radio"/> Under <input type="radio"/> N/A	(2.531)

If Cost > Approved

if costs > approved Business Plan how will this be funded?

Re-allocation of budget from all Business Function areas to the IT business will be managed to meet jurisdictional budgetary, statutory and regulatory requirements. This program is now part of the investment plan and approved by Business Partners and Business Functions (IT, Corporate Affairs)

Drivers

Employee productivity is being impacted and can be improved through a purposeful intranet. The current Intranet – the “InfoNet” is not actively governed, with little challenge and response to the quality of content provided. It relies on employees making the right choices for what content get shown and has become a dumping ground for information. It doesn’t enable employees to access the information they need at a time they need it. People are working around the problem daily without access to the correct information and data. It is not modern and mobile and is not fit for purpose to help develop a “frictionless” workforce.

CIAC Reimbursement

N/A

Cost Summary Table

Project Number	Project Title	Project Estimate Level	Spend	Prior Yrs	Yr 1 2020	Yr 2 2021	Yr 3 2022	Yr 4 2023	Yr 5 2024	Yr 6 2025	Total
INVP 5317	Employee Digital Workplace		Capex	0.000	0.986	0.000	0.000	0.000	0.000	0.000	0.986
			Opex	0.000	1.545	0.000	0.000	0.000	0.000	0.000	1.545
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	2.531	0.000	0.000	0.000	0.000	0.000	2.531
Total Project Sanction			Capex	0.000	0.986	0.000	0.000	0.000	0.000	0.000	0.986
			Opex	0.000	1.545	0.000	0.000	0.000	0.000	0.000	1.545
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	2.531	0.000	0.000	0.000	0.000	0.000	2.531

Project Costs per Business Plan

\$M	Prior Yrs	Yr 1 2020	Yr 2 2021	Yr 3 2022	Yr 4 2023	Yr 5 2024	Yr 6 2025	Total
Capex	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Opex	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
\$M	Prior Yrs	Yr 1 2020	Yr 2 2021	Yr 3 2022	Yr 4 2023	Yr 5 2024	Yr 6 2025	Total
Capex	0.000	(0.986)	0.000	0.000	0.000	0.000	0.000	(0.986)
Opex	0.000	(1.545)	0.000	0.000	0.000	0.000	0.000	(1.545)
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Variance	0.000	(2.531)	0.000	0.000	0.000	0.000	0.000	(2.531)

Cost Assumptions

N/A

Net Present Value / Cost Benefit Analysis

N/A

NPV Assumptions & Calculations

N/A

Additional Impacts

Statement of Support

Department	Individual	Responsibilities
Business Department	Gould, James	Business Representative
Business Partner (BP)	Pool, Graham	Relationship Manager
Program Delivery Management (PDM)	Adam, Joanne	Program Delivery Director
IT Finance	Harris, Michelle	Manager
IT Regulatory	DeMauro, Daniel J.	Director
Digital Risk and Security (DR&S)	Shattuck, Peter	Manager
Service Delivery	Mirizio, Mark	Manager
Enterprise Architecture	Kilborn, Paul	Manager

Reviewers

Function	Individual
Regulatory	Mancinelli, Lauri A.
Jurisdictional Delegate - Electric NE	Easterly, Patricia
Jurisdictional Delegate - Electric NY	Harbaugh, Mark A.
Jurisdictional Delegate - FERC	Hill, Terron
Jurisdictional Delegate - Gas NE	Smith, Amy
Jurisdictional Delegate - Gas NY	Wolf, Don
Procurement	Chevere, Diego

Decisions

I:

(a) APPROVE the investment of \$2.531M and a tolerance of +/-10% for Full Implementation.

(b) NOTED that Karelia, Ravi has the approved financial delegation

(c) Approved the run-the-business (RTB) of \$0.273M (per annum) for 5 years.

Signature David H. Campbell
Date 5/29/19

David H. Campbell, Vice President US Treasury, USSC Chair

Appendix

Project Cost Breakdown \$ (millions)						
Cost Category	sub-category	Value of Work to Date (VOWD)	Forecast to Complete (FTC)	Forecast At Completion (FAC=VOWD+FTC)	Name of Firm(s) providing resources	
Personnel	NG Resources		1.791	1.791		
			0.239	0.239	Unily	
	SDC Time & Materials					
	SDC Fixed-Price					
	All other personnel					
TOTAL Personnel Costs	-	2.030	2.030			
Hardware	Purchase		0.050	0.050		
	Lease					
Software			0.167	0.167	Unily SaaS costs	
Risk Margin			0.284	0.284		
AFUDC						
Other						
TOTAL Costs		-	2.531	2.531		

all figures in \$ thousands						
INV ID:	5317				Date RTB Last Forecasted	05/10/2019
Investment Name:	Employee Digital Workplace					
Project Manager:	Ravi Karelia			PDM:	Joanne Adam	
All figures in \$ thousands	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Total
	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	
Last Sanctioned Net Impact to RTB						
Last Sanction IS Net Impact to RTB						-
Last Sanction Business Net Impact to RTB						-
Last Sanction Total Net Impact to RTB	-	-	-	-	-	-
Planned/Budgeted Net Impact to RTB						
IS Investment Plan Net Impact to RTB						-
Business Budgeted Net Impact to RTB						-
Currently Forecasted Net Impact to RTB						
IS Funded Net Impact to RTB Forecasted at Go-Live	26.7	273.4	273.4	273.4	199.6	1,046.3
Business Funded Net Impact to RTB Forecasted at Go-Live	160.0	321.3	-	-	(13.3)	468.0
Variance to Planned/Budgeted Net Impact to RTB						
IS Investment Plan Net Impact to RTB Variance	(27)	(273)	(273)	(273)	(200)	(1,046)
Business Budgeted Net Impact to RTB Variance	(160.0)	(321.3)	-	-	13.3	(468.0)

Company Name	SAP Co.	SAP Seg	Jurisdiction	BU
National Grid USA Parent	5020	PARENT	PARENT	
KeySpan Energy Corp.	5040	PARENT	PARENT	
National Grid Elec. Services	5180	SERVCO	SERVCO	Electric
Niagara Mohawk Power Corp.- Electric Distr.	5210	NYELEC	NY	Electric
Niagara Mohawk Power Corp. - Gas	5210	NYGASD	NY	Gas
Niagara Mohawk Power Corp. - Transmission	5210	NYTRAN	NY	Transmission
KeySpan Energy Delivery New York	5220	NYGASD	NY	Gas
KeySpan Energy Delivery Long Island	5230	NYGASD	NY	Gas
Massachusetts Electric Company	5310	MAELEC	MA	Electric
Massachusetts Electric Company - GNSC	5310	FRELEC	FERC	Electric
Massachusetts Electric Company - Transmission	5310	FRTRAN	FERC	Transmission
Nantucket Electric Company	5320	MAELEC	MA	Electric
Boston Gas Company	5330	MAGASD	MA	Gas
Colonial Gas Company	5340	MAGASD	MA	Gas
Narragansett Electric Company	5360	RIELEC	RI	Electric
Narragansett Electric Company - GNSC	5360	FRELEC	FERC	Electric
Narragansett Gas Company	5360	RIGASD	RI	Gas
Narragansett Electric Company - Transmission	5360	FRTRAN	FERC	Transmission
New England Power Company - GNSC	5410	FRELEC	FERC	Electric
New England Power Company - Transmission	5410	FRTRAN	FERC	Transmission
NE Hydro - Trans Electric Co.	5411	FRELEC	FERC	Transmission - Hydro
New England Hydro - Trans Corp.	5412	FRELEC	FERC	Transmission - Hydro
New England Electric Trans Corp	5413	FRELEC	FERC	Transmission - Hydro
NG LNG LP Regulated Entity	5420	FRGASO	FERC	Gas
NG LNG LP LLC	5421	FRGASO	FERC	Gas
KeySpan Generation LLC (PSA)	5430	FRPGEN	FERC	Transmission
KeySpan Glenwood Energy Center	5431	FRPGEN	FERC	Transmission
KeySpan Port Jefferson Energy Center	5432	FRPGEN	FERC	Transmission
NG Transmission Services Corp	5802	NONREG	NONREG	
Metrowest Realty LLC	5803	NONREG	NONREG	
Wayfinder Group	5804	NONREG	NONREG	
NEES Energy, Inc.	5810	NONREG	NONREG	
KS Energy Trading	5820	PARENT	PARENT	
Transgas Inc	5825	NONREG	NONREG	
KeySpan Energy Development Corporation	5840	NONREG	NONREG	
KeySpan Services Inc.	5850	NONREG	NONREG	
NG Energy Management LLC	5860	NONREG	NONREG	
KS Energy Devlp Co.	5885	NONREG	NONREG	
Valley Appliance & Merch	5970	NONREG	NONREG	



US Sanction Paper

Title:	Tallyman Upgrade	Sanction Paper #:	
Project #:	INVP 5333	Sanction Type:	Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	11/9/2018
Author:	Tejal Patel	Sponsor:	Jody Allison, VP Billing and Collections Strategy
Utility Service:	IT	Project Manager:	Riziel Bower Cruz Amit Kapur

1 Executive Summary

1.1 Sanctioning Summary

This paper requests sanction of INVP 5333 in the amount of \$0.219M with a tolerance of +/- 10% Full Implementation.

This sanction amount is \$0.219M broken down into:

- \$0.000M Capex*
- \$0.219M Opex*
- \$0.000M Removal*

1.2 Project Summary

National Grid’s Credit and Collections uses an Experian application, Tallyman. The Experian Decision Analytics Tallyman solution is a customizable agency management application used to streamline the agency management process. Tallyman is a vital software application for our Credit and Collections department for decision analytics collections in managing bad debt. National Grid is currently utilizing version 3.6.4 of Experian’s Tallyman. Experian has an internal mandate to upgrade all Tallyman clients to version 3.9.4 to remediate security vulnerabilities.

1.3 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
INVP 5333		Tallyman Upgrade	0.219
Total			0.219

1.4 Associated Projects

NA



US Sanction Paper

1.5 Prior Sanctioning History

NA

1.6 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review
May 2019	Project Closure Sanction

1.7 Category

Category	Reference to Mandate, Policy, NPV, or Other
<input type="radio"/> Mandatory <input checked="" type="radio"/> Policy- Driven <input type="radio"/> Justified NPV <input type="radio"/> Other	To remediate security risk.

1.8 Asset Management Risk Score

Asset Management Risk Score: 49

Primary Risk Score Driver: (Policy Driven Projects Only)

- Reliability
 Environment
 Health & Safety
 Not Policy Driven

1.9 Complexity Level

- High Complexity
 Medium Complexity
 Low Complexity
 N/A

Complexity Score: 17



US Sanction Paper

1.10 Process Hazard Assessment

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

Yes No

1.11 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
IS Investment Plan FY19 - 23	<input type="radio"/> Yes <input checked="" type="radio"/> No	<input checked="" type="radio"/> Over <input type="radio"/> Under <input type="radio"/> NA	\$0.219M

1.12 If cost > approved Business Plan how will this be funded?

Re-allocation of budget within the IS business has been managed to meet jurisdictional budgetary, statutory and regulatory requirements.

1.13 Current Planning Horizon

\$M	Prior Yrs	Current Planning Horizon						Total
		Yr. 1 2018/19	Yr. 2 2019/20	Yr. 3 2020/21	Yr. 4 2021/22	Yr. 5 2022/23	Yr. 6 + 2023/24	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.219	0.000	0.000	0.000	0.000	0.000	0.219
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CIAC/Reimbursement	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	0.000	0.219	0.000	0.000	0.000	0.000	0.000	0.219

1.14 Key Milestones



US Sanction Paper

Milestone	Target Date: (Month Year)
Start Up	September 2018
Project Sanction (Full Sanction)	November 2018
Begin Requirements and Design	October 2018
Begin Development and Implementation	April 2019
Begin User Acceptance Testing	April 2019
Move to Production / Last Go Live	April 2019
Project Closure	May 2019

1.15 Resources, Operations and Procurement

Resource Sourcing			
Engineering & Design Resources to be provided	<input checked="" type="checkbox"/> Internal	<input checked="" type="checkbox"/> Contractor	
Construction/Implementation Resources to be provided	<input checked="" type="checkbox"/> Internal	<input checked="" type="checkbox"/> Contractor	
Resource Delivery			
Availability of internal resources to deliver project:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green
Availability of external resources to deliver project:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green
Operational Impact			
Outage impact on network system:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green
Procurement Impact			
Procurement impact on network system:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green

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

NA

1.17 Climate Change

Contribution to National Grid's 2050 80% emissions reduction target:	<input checked="" type="radio"/> Neutral	<input type="radio"/> Positive	<input type="radio"/> Negative
Impact on adaptability of network for future climate change:	<input checked="" type="radio"/> Neutral	<input type="radio"/> Positive	<input type="radio"/> Negative



US Sanction Paper

1.18 ***List References***
NA



US Sanction Paper

2 Decisions

The US IS Sanctioning Committee (ISSC) and Executive Sponsor have reviewed and approved this paper:

- (a) APPROVED this paper and the investment of \$0.219 and a tolerance of +/- 10% for the purposes of Implementation .
- (b) NOTED that Riziel Bower Cruz is the Project Manager and has the approved financial delegation.

Signature.....Date.....

Premjith Singh
VP IT Tower Lead – Gas Business Partner



US Sanction Paper

3 Sanction Paper Detail

Title:	Tallyman Upgrade	Sanction Paper #:	
Project #:	INVP 5333	Sanction Type:	Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	11/9/2018
Author:	Tejal Patel	Sponsor:	Jody Allison, VP Billing and Collections Strategy
Utility Service:	IT	Project Manager:	Riziel Bower Cruz Amit Kapur

3.1 *Background*

National Grid’s Credit and Collections uses Tallyman to manage account segmentation and agency assignment for all final bill accounts. The process of account management will provide time driven management of risk based segments for the final bill portfolio. All residential and commercial final accounts with a balance greater than \$0.00 will be sent to Tallyman at the time the final bill is generated. Certain accounts are excluded from this process such as bankrupt, direct voucher, guarantee, government and lien accounts. Experian mandates all of its clients to upgrade to Tallyman version 3.9.4 to remediate security vulnerabilities.

3.2 *Drivers*

National Grid needs to comply with this internal mandate from Experian to avoid any security vulnerability as well as a version that will no longer be supported by Experian.

3.3 *Project Description*

Experian has mandated its clients to upgrade to version 3.9.4 of Tallyman. In this upgrade, Tallyman has made a significant update to their user authentication module. The new module will use SSO (Single Sign On) which requires a re-registration of user credentials in their system. On registration, a new temporary password will be issued to the users and then this password will be reset on their 1st login. National Grid will be testing the entire user migration process with SSO.

Tallyman 3.9.4 is not making any change to the interfaces, file formats, networks, or IP addresses. Therefore, there is no impact to the National Grid connectivity to Experian but would need conformance testing to validate the file transfer process. Additionally, there is no change in business functionality. Retesting of files inbound and outbound is required to ensure that



US Sanction Paper

Tallyman and National Grid will still be able to process and handle the account segmentation and final bill account agency assignments.

3.4 *Benefits Summary*

Improved Application Security.

3.5 *Business and Customer Issues*

There are no significant business issues beyond what has been described elsewhere.

3.6 *Alternatives*

Alternative 1: Do Nothing: Defer Project

This alternative was not selected for the following reasons:

- National Grid would be exposed security vulnerabilities

3.7 *Safety, Environmental and Project Planning Issues*

There are no significant issues beyond what has been described elsewhere.

3.8 *Execution Risk Appraisal*

3.9 *Permitting*

NA



US Sanction Paper

3.10 Investment Recovery

Number	Detailed Description of Risk / Opportunity	Probability	Impact		Score		Strategy	Pre-Trigger Mitigation Plan	Residual Risk	Post Trigger Mitigation Plan
			Cost	Schedule	Cost	Schedule				
1	If project is not initiated as soon as possible it's a Risk for Current version of tallyman to be out of support after 30th April, 2019	2	4	3	8	6	Mitigate	Sanction process has been initiated and request is submitted as high priority.		If there is delay in sanction, other activities need to be done in parallel to compress the schedule to meet 30th Apr timeline.
2	Integration team needs to be engaged to pass files from CSS to experian and back.	2	3	2	6	4	Mitigate	Wipro Integration team are already informed of the upgrade and their involvement to process the files.		If there is delay in engagement, other activities need to be done in parallel to compress the schedule to meet 30th Apr timeline.
3	Business needs to be available to do UAT and Regression testing.	2	3	3	6	6	Mitigate	Business is already aware about the upgrade and are aligned to perform the testing as soon as UAT environment is available		Testing activities need to be done in parallel to compress the schedule to meet 30th Apr timeline.
4	UAT/Test Environment needs to be setup by Experian team by end of March to perform Testing and Signoff from business	3	3	3	9	9	Mitigate	Experian team is already aligned and sensitized to get UAT environment ready as soon as possible.		Testing activities need to be done in parallel to compress the schedule to meet 30th Apr timeline.
5	Input files need to be created to pass on files to tallyman for testing	2	2	2	4	4	Mitigate	Team is already aligned to work on creating Input files		Testing activities need to be done in parallel to compress the schedule to meet 30th Apr timeline.
6	Test Scripts need to be created for end to end testing.	2	2	2	4	4	Mitigate	Team is already aligned to work on creating Test cases and scripts.		Testing activities need to be done in parallel to compress the schedule to meet 30th Apr timeline.

3.10.1 Investment Recovery and Regulatory Implications

NA

3.10.2 Customer Impact

NA

3.10.3 CIAC / Reimbursement

NA



US Sanction Paper

3.11 Financial Impact to National Grid

3.11.1 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend (\$M)	Prior Yrs	Current Planning Horizon						Total	
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
INVP 5333	Tallyman Upgrade	Est Lvl (e.g. +/- 10%)	CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			OpEx	0.000	0.219	0.000	0.000	0.000	0.000	0.000	0.000	0.219
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	0.219	0.000	0.000	0.000	0.000	0.000	0.000	0.219
Total Project Sanction			CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
			OpEx	0.000	0.219	0.000	0.000	0.000	0.000	0.000	0.219	
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
			Total	0.000	0.219	0.000	0.000	0.000	0.000	0.000	0.219	

3.11.2 Project Budget Summary Table

Project Costs per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	(0.219)	0.000	0.000	0.000	0.000	0.000	(0.219)
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	(0.219)	0.000	0.000	0.000	0.000	0.000	(0.219)

3.11.3 Cost Assumptions

3.11.4 Net Present Value / Cost Benefit Analysis



US Sanction Paper

3.11.4.1 NPV Summary Table

NA

3.11.4.2 NPV Assumptions and Calculations

3.11.5 Additional Impacts

3.12 Statements of Support

3.12.1 Supporters

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

Department	Individual	Responsibilities
Business Department	Jody Allison	Business Representative
Global Solutions Development	Narayan Devireddy	VP of Global Solutions Development
Business Partner	Joel Semel	Director
Global Solutions Development	Riziel Bower Cruz	Director
IS Finance	Michelle Harris	Manager
IS Regulatory	Dan DeMauro	Director
DR&S	Elaine Wilson	Director
Service Delivery	Mark Mirizio	Manager
Enterprise Architecture	Joe Clinchot	Director

3.12.2 Reviewers

NA

4 Appendices

4.1 Sanction Request Breakdown by Project

NA



US Sanction Paper

4.2 Other Appendices

4.2.1 Project Cost Breakdown

Project Cost Breakdown \$ (millions)					
Cost Category	sub-category	VOWD	FTC	FAC=VOWD+FTC	Name of Firm(s) providing
Personnel	NG Resources	0.000	0.033	0.033	
	SDC Time & Materials	0.000	0.127	0.127	IBM
		0.000	0.006	0.006	WiPro
		0.000	-	-	DXC
		0.000	0.026	0.026	Verizon
	SDC Fixed-Price	0.000	-	-	IBM
		0.000	-	-	WiPro
		0.000	-	-	DXC
		0.000	-	-	Verizon
	All other personnel	0.000	0.005	0.005	
TOTAL Personnel Costs	-	0.196	0.196		
Hardware	Purchase	0.000	-	-	
	Lease	0.000	-	-	
Software		0.000	-	-	
Risk Margin			0.019	0.019	
AFUDC		0.000	-	-	
Other		0.000	0.005	0.005	
TOTAL Costs		-	0.219	0.219	Should match Financial Summary Total

4.2.2 Benefiting Operating Companies

Operating Company Name	Business Area	State
Niagara Mohawk Power Corp.- Electric Distr.	Electric Distribution	NY
Niagara Mohawk Power Corp. - Gas	Gas Distribution	NY
KeySpan Energy Delivery Long Island	Gas Distribution	NY
Massachusetts Electric Company	Electric Distribution	MA
Nantucket Electric Company	Electric Distribution	MA
Narragansett Electric Company	Electric Distribution	RI
Narragansett Gas Company	Gas Distribution	RI

4.2.3 IS Ongoing Operational Costs (RTB):

There will be no incremental Run the Business (RTB) costs for this upgrad.



US Sanction Paper

all figures in \$ thousands						
INV ID:	5333				Forecast Date:	09/06/18
Investment Name:	Experian Tallyman Upgrade				Go-Live Date:	4/30/2019
Project Manager:	Amit Kapur			PDM:	Riziel Bower	
All figures in \$ thousands	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Total
	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23	
Last Sanctioned Net Impact to RTB						
Last Sanction IS Net Impact to RTB						-
Last Sanction Business Net Impact to RTB						-
Last Sanction Total Net Impact to RTB	-	-	-	-	-	-
Planned/Budgeted Net Impact to RTB						
IS Investment Plan Net Impact to RTB						-
Business Budgeted Net Impact to RTB						-
Currently Forecasted Net Impact to RTB						
IS Funded Net Impact to RTB Forecasted at Go-Live	-	-	-	-	-	-
Business Funded Net Impact to RTB Forecasted at Go-Live	-	-	-	-	-	-
Variance to Planned/Budgeted Net Impact to RTB						
IS Investment Plan Net Impact to RTB Variance	-	-	-	-	-	-
Business Budgeted Net Impact to RTB Variance	-	-	-	-	-	-

4.3 NPV Summary (if applicable)

NA

4.4 Customer Outreach Plan

NA



US Sanction Paper

Title:	North Andover Storm Site	Sanction Paper #:	
Project #:	INVP 5354 Capex: S008008	Sanction Type:	Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	2/8/2019
Author:	Daniel Castonguay / Andrew Yee	Sponsor:	Barry Sheils, Vice President IS Infrastructure & Operations
Utility Service:	IT	Project Manager:	Daniel Castonguay Douglas Campbell

1 Executive Summary

1.1 Sanctioning Summary

This paper requests sanction of INVP 5354 in the amount of \$0.167M with a tolerance of +/- 10% for the purposes of Full Implementation

This sanction amount is \$0.167M broken down into:

- \$0.127M Capex*
- \$0.040M Opex*
- \$0.000M Removal*

1.2 Project Summary

The North Andover facility is used as a storm central site. During last year's storm season the sites data circuits went down due to lack of power, putting this location down for dispatch to our customers. The remediation of this is to add 2 new fiber data circuits which will resolve this issue for the site.

1.3 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
INVP 5354 Capex: S008008		North Andover Storm Site	0.167
Total			0.167

1.4 Associated Projects

N/A



US Sanction Paper

1.5 Prior Sanctioning History

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Sanction Type	Potential Investment Tolerance
11/20/18	ITSC	\$0.040M	\$0.147M	Full	+/-10%

1.6 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review
March 2019	Project Closure Sanction

1.7 Category

Category	Reference to Mandate, Policy, NPV, or Other
<input type="radio"/> Mandatory <input type="radio"/> Policy- Driven <input type="radio"/> Justified NPV <input checked="" type="radio"/> Other	This project will add 2 Ethernet fiber data circuits, replacing the old legacy data circuits at the North Andover site to remediate the failure of these circuits during last year’s storm season.

1.8 Asset Management Risk Score

Asset Management Risk Score: 36

Primary Risk Score Driver: (Policy Driven Projects Only)

- Reliability
 Environment
 Health & Safety
 Not Policy Driven



US Sanction Paper

1.9 Complexity Level

High Complexity Medium Complexity Low Complexity N/A

Complexity Score: 14

1.10 Process Hazard Assessment

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

Yes No

1.11 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
IT Investment Plan FY19 - 23	<input type="radio"/> Yes <input checked="" type="radio"/> No	<input checked="" type="radio"/> Over <input type="radio"/> Under <input type="radio"/> NA	\$0.167M

1.12 If cost > approved Business Plan how will this be funded?

Re-allocation of budget within the IT business has been managed to meet jurisdictional budgetary, statutory and regulatory requirements.

1.13 Current Planning Horizon

\$M	Prior Yrs	Current Planning Horizon						Total
		Yr. 1 2018/19	Yr. 2 2019/20	Yr. 3 2020/21	Yr. 4 2021/22	Yr. 5 2022/23	Yr. 6 + 2023/24	
CapEx	0.000	0.127	0.000	0.000	0.000	0.000	0.000	0.127
OpEx	0.000	0.040	0.000	0.000	0.000	0.000	0.000	0.040
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CIAC/Reimbursement	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	0.000	0.167	0.000	0.000	0.000	0.000	0.000	0.167



US Sanction Paper

1.14 Key Milestones

Milestone	Target Date: (Month Year)
Start Up	January 2019
Begin Requirements and Design	February 2019
Project Sanction	February 2019
Begin Development and Implementation	March 2019
Begin User Acceptance Testing	March 2019
Move to Production / Last Go Live	March 2019
Project Closure	March 2019

1.15 Resources, Operations and Procurement

Resource Sourcing			
Engineering & Design Resources to be provided	<input checked="" type="checkbox"/> Internal	<input type="checkbox"/> Contractor	
Construction/Implementation Resources to be provided	<input checked="" type="checkbox"/> Internal	<input checked="" type="checkbox"/> Contractor	
Resource Delivery			
Availability of internal resources to deliver project:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green
Availability of external resources to deliver project:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green
Operational Impact			
Outage impact on network system:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green
Procurement Impact			
Procurement impact on network system:	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green

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

N/A



US Sanction Paper

1.17 Climate Change

Contribution to National Grid's 2050 80% emissions reduction target:	<input checked="" type="radio"/> Neutral	<input type="radio"/> Positive	<input type="radio"/> Negative
Impact on adaptability of network for future climate change:	<input checked="" type="radio"/> Neutral	<input type="radio"/> Positive	<input type="radio"/> Negative

1.18 List References

N/A



US Sanction Paper

2 Decisions

The US IS Sanctioning Committee (ITSC) and Executive Sponsor have reviewed and approved this paper:

- (a) APPROVE this paper and the investment of \$0.167M and a tolerance of +/- 10% for the purposes of Implementation.
- (b) APPROVE the run-the-business (RTB) impact of \$0.253M (per annum) for 5 years.
- (c) NOTE Douglas Campbell is the Program Delivery Manager and has the approved financial delegation.

Signature.....Date.....

Premjith Singh,
VP IS Tower Lead – Gas Business Partner



US Sanction Paper

3 Sanction Paper Detail

Title:	North Andover Storm Site	Sanction Paper #:	
Project #:	INVP 5354 Capex: S008008	Sanction Type:	Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	2/5/2019
Author:	Daniel Castonguay/ Andrew Yee	Sponsor:	Barry Sheils, Vice President IS Infrastructure & Operations
Utility Service:	IT	Project Manager:	Daniel Castonguay Douglas Campbell

3.1 *Background*

The North Andover storm site lost power to its existing data circuits rendering the site in active until a portable generator was obtained and manned. This need for new Ethernet circuits is required to avoid the past issue during storm situation coverage.

3.2 *Drivers*

The North Andover site was down during a critical storm coverage time when it was critical to service our customers.

3.3 *Project Description*

The object of this project is to add 2 new Primary and Secondary Ethernet circuits to the site that do not require the same power to run as the old copper circuits, thus eliminating the critical path that North Andover was put into last year during storm coverage.

This project will provide the following:

- Document Business and Technical Requirements
- Conduct Current State Technical and Functional Assessment
- Develop Solution Implementation Roadmap
- Create Business Requirements Document
- Develop Solution Design
- Development and testing of the interfaces in scope
- Testing of end-to-end system connectivity and solution setup



US Sanction Paper

3.4 Benefits Summary

- The site will no longer be subject to power failures for these circuits during storm events or regular RTB day to day operations.
- The new circuits also add greater throughput of data increasing the capacity of the sites efficiency.
- New circuits added now would not require this site to need any upgrades to circuits for some period of time.

3.5 Business and Customer Issues

N/A

3.6 Alternatives

Alternative 1: Do Nothing

Rejected: At this time there are no feasible alternatives, other than to replace the circuits with new Ethernet circuits to avoid the issue that was experienced last year. Therefore, they must be upgraded to ensure the current RTB model of day to day operations and during storm support.

Indicative cost N/A

3.7 Safety, Environmental and Project Planning Issues

There are no significant issues beyond what has been described elsewhere.



US Sanction Paper

3.8 Execution Risk Appraisal

Number	Detailed Description of Risk / Opportunity	Probability	Impact		Score		Strategy	Pre-Trigger Mitigation Plan	Residual Risk	Post Trigger Mitigation Plan
			Cost	Schedule	Cost	Schedule				
1	Verizon site survey uncovers more work than was scoped and budgeted for.	3	3	3	9	9	Mitigate	Work with Verizon to find alternative solutions, if necessary.	Cost will be more.	Work Closely with mamangement to keep project and process moving.
2	Get sanctioning approved in a timely manner.	3	3	3	9	9	Mitigate	Manage obstacles to get sanction paper approved.	The longer it takes to get the paper approved, the longer it will be before these circuits are in place for storm season.	Work Closely with mamangement to keep project and process moving.
3	Work stoppage could impact work.	3	3	3	9	9	Mitigate	Work with local contact and management to try to find times that will not impede progress.	Site not enterable due to work stoppage.	Work Closely with mamangement to keep project and process moving.

3.9 Permitting

N/A

3.10 Investment Recovery

Recovery will occur at the time of the next rate case for any operating company receiving allocations of these costs.

3.10.1 Investment Recovery and Regulatory Implications

3.10.2 Customer Impact

N/A

3.10.3 CIAC / Reimbursement

N/A



US Sanction Paper

3.11 Financial Impact to National Grid

3.11.1 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend (\$M)	Prior Yrs	Current Planning Horizon						Total	
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
					2018/19	2019/20	2020/21	2021/22	2022/23	2023/24		
INVP 5354 Capex: S008008	North Andover Storm Site	Est Lvl (e.g. +/- 10%)	CapEx	0.000	0.127	0.000	0.000	0.000	0.000	0.000	0.000	0.127
			OpEx	0.000	0.040	0.000	0.000	0.000	0.000	0.000	0.000	0.040
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	0.167	0.000	0.000	0.000	0.000	0.000	0.000	0.167

3.11.2 Project Budget Summary Table

Project Costs Per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon							Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
		2018/19	2019/20	2020/21	2021/22	2022/23	2023/24		
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon							Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
		2018/19	2019/20	2020/21	2021/22	2022/23	2023/24		
CapEx	0.000	0.127	0.000	0.000	0.000	0.000	0.000	0.000	0.127
OpEx	0.000	0.040	0.000	0.000	0.000	0.000	0.000	0.000	0.040
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.167	0.000	0.000	0.000	0.000	0.000	0.000	0.167

3.11.3 Cost Assumptions

N/A

3.11.4 Net Present Value / Cost Benefit Analysis

N/A

3.11.4.1 NPV Summary Table

3.11.4.2 NPV Assumptions and Calculations



US Sanction Paper

3.11.5 Additional Impacts

N/A

3.12 Statements of Support

3.12.1 Supporters

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

Department	Individual	Responsibilities
Business Department	Adraino Antiquera	Business Representative
Business Partner (BP)	Caitlin Davidson	Relationship Manager
Program Delivery Management (PDM)	Doug Campbell	Program Delivery Director
IT Finance	Michelle Harris	Manager
IT Regulatory	Dan DeMauro	Director
Digital Risk and Security (DR&S)	Peter Shattuck	Director
Service Delivery	Mark Mirizio	Manager
Enterprise Architecture	Svetlana Lyba	Manager

3.12.2 Reviewers

N/A



US Sanction Paper

4 Appendices

4.1 Sanction Request Breakdown by Project

N/A

4.2 Project Cost Breakdown

Project Cost Breakdown \$ (millions)					
Cost Category	sub-category	Value of Work to Date (VOWD)	Forecast to Complete (FTC)	Forecast At Completion (FAC=VOWD+FTC)	Name of Firm(s) providing resources
Personnel	NG Resources		0.030	0.030	
	SDC Time & Materials		-	-	IBM
			-	-	WiPro
			-	-	DXC
			-	-	Verizon
	SDC Fixed-Price		-	-	IBM
			-	-	WiPro
			-	-	DXC
		0.042	0.042	Verizon	
	All other personnel		0.076	0.076	
	TOTAL Personnel Costs	-	0.149	0.149	
Hardware	Purchase		-	-	
	Lease		-	-	
Software			-	-	
Risk Margin			0.015	0.015	
AFUDC			0.002	0.002	
Other			0.002	0.002	
	TOTAL Costs	-	0.167	0.167	

4.3 Benefiting Operating Companies

Operating Company Name	Business Area	State
Niagara Mohawk Power Corp.- Electric Distr.	Electric Distribution	NY
Massachusetts Electric Company	Electric Distribution	MA
Nantucket Electric Company	Electric Distribution	MA
Narragansett Electric Company	Electric Distribution	RI



US Sanction Paper

4.4 IT Ongoing Operational Costs (RTB):

This project will increase IT ongoing operations support costs as per the following table. These are also known as Run the Business (RTB) costs

INV ID:	5354					Date RTB Last Forecasted	10/31/2018
Investment Name:	North Andover Storm Site						
Project Manager:	Dan Castonguay			PDM:	Doug Campbell		
All figures in \$ thousands	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Total	
	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23		
Last Sanctioned Net Impact to RTB							
Last Sanction IS Net Impact to RTB						-	
Last Sanction Business Net Impact to RTB						-	
Last Sanction Total Net Impact to RTB	-	-	-	-	-	-	
Planned/Budgeted Net Impact to RTB							
IS Investment Plan Net Impact to RTB						-	
Business Budgeted Net Impact to RTB						-	
Currently Forecasted Net Impact to RTB							
IS Funded Net Impact to RTB Forecasted at Go-Live	-	253.2	253.2	253.2	253.2	1,012.8	
Business Funded Net Impact to RTB Forecasted at Go-Live	-	-	-	-	-	-	
Variance to Planned/Budgeted Net Impact to RTB							
IS Investment Plan Net Impact to RTB Variance	-	(253.2)	(253.2)	(253.2)	(253.2)	(1,012.8)	
Business Budgeted Net Impact to RTB Variance	-	-	-	-	-	-	

4.5 NPV Summary (if applicable)

N/A

4.6 Customer Outreach Plan

N/A