



Closure Paper

Title:	Concur Expenses	Sanction Paper #:	USSC-17-301 v2
Project #:	INVP 4662 Capex: S007732	Sanction Type:	Closure
Operating Company:	National Grid USA Svc. Co.	Date of Request:	2/5/2019
Author / NG Representative:	Anil Garg / Ella Weisbord	Sponsor:	Christopher McConnachie, VP Finance Services
Utility Service:	IT	Project Manager:	Samir Parikh

1 Executive Summary

This paper is presented to close INVP 4662. The total spend was \$3.058M. The original sanctioned amount for this project was \$3.418M at +/- 10%.

2 Project Summary

This project allows National Grid to implement an end-to-end corporate travel booking and expense process. Concur allows setup of customizable audit rules which should reduce review time of expense items. It also will auto-generate notifications out to end users on outstanding expense items, which currently is manually triggered. Both the audit rules and automated notifications should cut down on administrative efforts. This is the second phase of the investment, following last year’s license agreement which was completed as part of a broader negotiation with SAP, via a discounted pricing model.

3 Variance Analysis

3.1 Cost Summary Table

Actual Spending (\$M) vs. Sanction (\$M)				
Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
INVP 4662 Concur Expenses Capex: S007732	Capex	2.498	2.456	(0.042)
	Opex	0.560	0.962	0.402
	Removal	0.000	0.000	0.000
	Total	3.058	3.418	0.360



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3.2 Cost Variance Analysis

The original go-live date in February 2018 was recognized as a risk to the year-end close activities and potential for additional audits. The project was asked to move the go-live date out to April 2018 and the related costs were covered by US Finance in the budget.

Project was delivered under budget by \$0.360M, which was driven by effective risk mitigations as well as the post Go-Live costs of \$0.374M provided by US Finance in the budget.

3.3 Schedule Variance Table

Schedule Variance	
Project Grade - Ready for Use Date	5/31/2018
Actual Ready for Use Date	4/23/2018
Schedule Variance	- 0 years, 1 months, 8 days

3.4 Schedule Variance Explanation

N/A

4 Final Cost by Project

Actual Spending (\$M) vs. Sanction (\$M)				
Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
INVP 4662 Concur Expenses Capex: S007732	Capex	2.498	2.456	(0.042)
	Opex	0.560	0.962	0.402
	Removal	0.000	0.000	0.000
	Total	3.058	3.418	0.360

5 Improvements / Lessons Learned / Root Cause

- 2018-LL-630 Gain approval from Finance before selecting a go-live date in Q4 (Jan- Mar).
- 2019-LL-631 Need to account for additional network and security vendors (budget and resources) when implementing/upgrading cloud applications.



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6 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
Gate E checklist completed (appl. only to CCD)	<input type="radio"/> Yes <input checked="" type="radio"/> N/A
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed	<input checked="" type="radio"/> Yes <input type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All IT Service Transition activities have been completed	<input checked="" type="radio"/> Yes <input type="radio"/> No
All lessons learned have been entered appropriately into the IT Knowledge Management Tool (KMT) lesson learned database	<input checked="" type="radio"/> Yes <input type="radio"/> No

7 Statements of Support

7.1 Supporters

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

Department	Individual	Responsibilities
Business Department	Elisabeth Ziankoski	Business Representative
Business Partner (BP)	Joel Semel	Relationship Manager
Program Delivery Management (PDM)	Samir Parikh	Program Delivery Director
IT Finance	Michele Harris	Manager
IT Regulatory	Daniel DeMauro	Director
Digital Risk and Security (DR&S)	Peter Shattuck	Director
Service Delivery	Mark Mirizio	Manager
Enterprise Architecture	Joe Clinchot	Director



Closure Paper

7.2 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



Closure Paper

8 Decisions

I approve this paper.

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

**Closure: US Sanction Paper**

Title:	Enhance and Enable End User Capabilities	Sanction Paper #:	USSC-17-010 C
Project #:	INVP 4663	Sanction Type:	Closure
Capex #:	S007575		
Operating Company:	National Grid USA Svc. Co.	Date of Request:	6/12/2019
Author:	Bucceri, Michael Yee, Andrew	Sponsor:	Olive, Stephen Chief Information Officer
Utility Service:	IT	Project Manager:	Granata, Chris

Executive Summary

This paper is presented to close INVP 4663. The total spend was \$7.173M. The original sanctioned amount for this project was \$7.478M at +/- 10%.

Project Summary

This program of work was to maintain and enhance the following key services:

Delivery of Operational Services for Data Centers, End User Computing and Networks (4605)

- This portion of the project ensured that our current infrastructure plans support the latest business strategies. The work assessed the current state and plans, determined if the strategies and plans supported the achievement of business strategies, and delivered a recommended path forward. The timing of this project was vital as a number of key strategic supplier contracts were approaching renewal.

Res Woods Video Conferencing Upgrade (4632)

- Improvements to the effectiveness of meetings through video conference services. The video conference services at Reservoir Woods were inconsistent; users found them difficult to use and performance of the service was unreliable. This restricted the number of people using the service and minimized the Company's opportunity to provide services to its customers. To improve consistency, the project upgraded 12 conference rooms with video conference capability at Reservoir Woods and 1 conference room in Metrotech. This improved the user interface, compatibility, and flexibility for future upgrades.

Wireless Application Protocol (WAP) Density Deployment (4680)

- The increasing number of mobile devices using available Wi-Fi bandwidth in Company facilities caused a strain to the capability of Company wireless facilities to provide adequate service levels. This project upgraded wireless networks to sufficient bandwidth for all users to connect 3 devices (e.g. phone, tablet, and laptop.) This project included provisions to deploy WLAN (Wireless Local Area Network) at locations that did not have it and implemented higher density at locations that already had, to support users with multiple devices. It also provided specific support for training centers and storm responses.

Zscaler (4681)

- This project was a successful proof of concept for Zscaler, which is an Internet-based proxy service that would replace our existing forward proxies. As part of the service, zScaler provides internet security, web security, next-generation firewalls, antivirus, vulnerability management and granular control of user activity.

MaaS 360 Payoff (4682)

- There were 2 years left of a 3-year contract to provide a Mobile Device Management service for mobile field devices that are used to document PVC gas pipe fusions. Paying upfront for the final 2 years provided a decrease in annual operation costs.

Schedule Variance Table

	Schedule Variance
Project Grade - Ready to use Date	2/28/2018
Actual Ready to use Date	3/28/2018
Schedule Variance	0 year(s), 0 month(s), 28 day(s)

Schedule Variance Explanation

This is a Program Closure Paper.

Cost Summary Table

Project Sanction Summary (\$M)	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance Over/ Under
	Capex	3.985	3.983	(0.002)
	Opex	3.188	3.495	0.307

Removal	0.000	0.000	0.000
Total	7.173	7.478	0.305

Cost Variance Analysis

The project is within the 10% +/- cost variance.

Final Cost by Project

Actual Spending (\$M) vs. Sanction (\$M)

Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance Over/ Under
Enhance and Enable End User Capabilities	Capex	3.985	3.983	(0.002)
	Opex	3.188	3.495	0.307
	Removal	0.000	0.000	0.000
	Total	7.173	7.478	0.305

Project Sanction Summary (\$M)

	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance Over/ Under
Total	Capex	3.985	3.983	(0.002)
	Opex	3.188	3.495	0.307
	Removal	0.000	0.000	0.000
	Total	7.173	7.478	0.305

Improvements / Lessons Learned

- Start contract negotiations earlier in the process.
- Assign dedicated resources in the early stages of the project.
- Drive to the project deadlines and deliverables to ensure a timely product is delivered. Be rigorous with the work and the socialized and expected completion.
- Early involvement and communications with vendor is essential.
- Understand the expertise of the suppliers to avoid delays due to learnings required.
- Delay in closure due to supplier invoices being significantly delayed.

Closeout Activities

ACTIVITY	COMPLETED
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
Gate E checklist completed (appl. only to CCD)	<input type="radio"/> Yes <input checked="" type="radio"/> N/A
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed	<input checked="" type="radio"/> Yes <input type="radio"/> No
All unused material have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed	<input checked="" type="radio"/> Yes <input type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database	<input checked="" type="radio"/> Yes <input type="radio"/> No

Statement of Support		
Department	Individual	Responsibilities
Business Department	Page, Douglas B.	Business Representative
Business Partner (BP)	Davidson, Caitlin	Relationship Manager
Program Delivery Management (PDM)	Granata, Chris	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	Clinchot, Joseph J.	Director

Reviewers	
<i>Function</i>	<i>Individual</i>
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

Appendix



Closure: US Sanction Paper

Title:	Reinforce Core Infrastructure	Sanction Paper #:	USSC-17-008C
Project #:	INVP 4664	Sanction Type:	Closure
Capex #:	S007576		
Operating Company:	National Grid USA Svc. Co.	Date of Request:	5/14/2019
Author:	Bucceri, Michael Yee, Andrew	Sponsor:	Olive, Stephen
Utility Service:	IT	Project Manager:	Granata, Chris

Executive Summary

This paper is presented to close INVP 4664. The total spend was \$1.923M. The original sanctioned amount for this project was \$2.018M at +/- 10%.

Project Summary

This program of work was to maintain and upgrade the core IS infrastructure services, including the following core services:

Azure Core Enablement (3899)

- This project configured an IP Security VPN tunnel from Billerica VSTIG to the Azure Cloud, provision servers for Tableau / Alteryx, leverage Blue Metal as our Copilot enabled the Core Azure foundational elements, DevOps principles, and the Cloud Center of Excellence (CCoE) framework.

Log Logic Replacement (4674)

- The logging Infrastructure in the Verizon Data Center was at the end of life and as of the 30th of November in 2016, the supplier considered them to be out of support and only supported them on best endeavors basis. This project refreshed the logging infrastructure to ensure the logging functionality operates in a fully supported environment. This project was sanctioned for hardware implementation and network connectivity.

Forward Proxy Upgrade (4676)

- Forward Proxy Upgrade replaced the end of life proxy appliances with new like for like proxy appliances. The proxy appliances are primarily responsible for allowing National Grid employees access to the internet. The new proxy appliances support increased throughput, operate at higher processing speeds and are under full support by National Grid's network provider and the original equipment manufacturer (OEM). The end of life proxy appliances has been decommissioned. Hence, this project was implemented successfully.

Application Monitoring POC (4677)

- The goal of this project was to enable a step-change reduction in incident identification and resolution. The scope was to implement a Proof of Concept implementation for evaluating the capabilities of the Solar Winds monitoring platform on several National Grid applications.
- The monitoring system was implemented as part of the Proof of Concept which provided an overall level of monitoring; while separate groups currently had monitoring tools in place they could not provide the entire picture (end to end.) Types of monitoring demonstrated included Web Transactions, Wintel Servers using WMI, Network devices using SNMP, Database Monitoring and Application Monitoring.

Schedule Variance Table

Schedule Variance	
Project Grade - Ready to use Date	2/28/2018
Actual Ready to use Date	12/18/2017
Schedule Variance	0 year(s), 2 month(s), 12 day(s)

Schedule Variance Explanation

This is a Program Closure Paper.

Cost Summary Table

Project Sanction Summary (\$M)	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance Over/ Under
	Capex	1.221	1.516	0.295
	Opex	0.702	0.502	(0.200)
	Removal	0.000	0.000	0.000
	Total	1.923	2.018	0.095

Cost Variance Analysis

The cost variance is negative \$0.095M because:

Azure Core enablement (3899)

- The actual expenditures were within the tolerance, 5% below the sanctioned amount. This was due to the following two efficiencies:
 - 1: Accurate Estimate
 - 2: Excellent Project Management

Log Logic Replacement (4674)

- The Opex variance is due to the National Grid labor assigned to the project. The total variance is due to close management of the project scope and resources.

Forward Proxy Upgrade (4676)

- The project exceeded the sanction amount by \$0.155M. The project's objectives were met but the overspend was a result of Verizon's implementation being almost 3 months behind schedule.

Application Monitoring PPOC (4677)

- The project was completed within the allocated budget. Underspend against sanction value was due to reduction in overall project scope. Original scope for proof of concept included three applications to be monitored (2 in U.S. and one in U.K.) Consensus was to remove the U.K. applications from scope due to technical constraints.

Final Cost by Project

Actual Spending (\$M) vs. Sanction (\$M)				
Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance Over/ Under

Reinforce Core Infrastructure	Capex	1.221	1.516	0.295
	Opex	0.702	0.502	(0.200)
	Removal	0.000	0.000	0.000
	Total	1.923	2.018	0.095

Project Sanction Summary (\$M)				
	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance Over/ Under
Total	Capex	1.221	1.516	0.295
	Opex	0.702	0.502	(0.200)
	Removal	0.000	0.000	0.000
	Total	1.923	2.018	0.095

Improvements / Lessons Learned

Azure Core Enablement (3899)

- Solution Architecture staff needs to be more technical all around. They need to better understand cloud, application, capacity and SLA's. Approaching the Cloud COE team with a wish list from the vendors is subject to higher expenses and "Over" architected resources. Guided Workshops given by Cloud COE with focus in : VM sizing(Especially DB & Clusters). This will help the resource rationalization process to be better informed and skilled.
- Document Architecture requirements, including power capacity within supplier data center racks, to avoid lack of power to run the equipment.

Log Logic Replacement (4674)

- Start contract negotiations earlier in the process to avoid delays in project kickoff.
- Fully documented architecture documents including the power capacity within the data center racks to avoid lack of power to run the equipment.
- Significant delay in closure due to supplier invoices being significantly delayed.

Forward Proxy Upgrade (4676)

- Verizon delivered poor quality design and build leading to much re-work and long delays to the project timeline. There were items missed in the original design and build which required additional changes to be made. This was escalated to Verizon engineering management. Implement better peer reviews of all designs and record or change (ROC) requests.
- Verizon planning and project management was poor; the Verizon project manager (PM) did not provide an end to end timeline or make any effort to baseline the project plan. The PM did not use best practice project tracking.
- Verizon operates as a matrix organization where project teams are comprised of resources from multiple organizational groups. There is no one person who has end-to-end technical authority and accountability and this lead to delays with the solution. We recommend that a Technical Lead or Solution Architect be assigned for all infrastructure projects the span more than one group.

Application Monitoring POC (4677)

- Detailed Requirements Analysis before tool selection.
- Issues w/ Legacy Infrastructure and tool selection
- Close coordination with partner PM and partner team.

Closeout Activities

ACTIVITY	COMPLETED
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- All work has been completed in accordance with all National Grid policies Yes No
- Gate E checklist completed (appl. only to CCD) Yes N/A
- All relevant costs have been charged to project Yes No
- All work orders and funding projects have been closed Yes No
- All unused material have been returned Yes No
- All as-builts have been completed Yes No
- All lessons learned have been entered appropriately into the lesson learned database Yes No

Statement of Support

Department	Individual	Responsibilities
Business Department	Page, Douglas B.	Business Representative
Business Partner (BP)	Davidson, Caitlin	Relationship Manager
Program Delivery Management (PDM)	Granata, Chris	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	Clinchot, Joseph J.	Director

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 approve this paper.

Signature David H. Campbell

Date 6/12/19

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

Appendix

**Closure: US Sanction Paper**

Title:	System Communications Upgrade	Sanction Paper #:	USSC-17-009 C
Project #:	INVP 4665	Sanction Type:	Closure
Capex #:	S007577		
Operating Company:	National Grid USA Svc. Co.	Date of Request:	5/14/2019
Author:	Bucceri, Michael Yee, Andrew	Sponsor:	Olive, Stephen Chief Information Officer
Utility Service:	IT	Project Manager:	Granata, Chris

Executive Summary

This paper is presented to close INVP 4665. The total spend was \$2.457M. The original sanctioned amount for this project was \$3.423M at +/- 10%.

Project Summary

This program of work was to maintain and upgrade the following areas of system communications:

Software Defined Networking Enablement F&A (4575)

- Software Defined Networking Enablement (SD WAN) is an approach to computer networking that offers several benefits compared to traditional router-based networks. This project delivered an SD WAN strategy and design, the initial hardware which was purchased for four US locations. This was implemented and completed for the Proof of Concept at the four US locations.

Call Manager Upgrade (4577)

- Refresh of the Cisco Call Manager hardware and software upgrade. This project consolidated the call manager from two clusters to one cluster and provides monthly RTB savings under an updated financial model.

Refresh of EoL network equipment (4645)

- This project successfully replaced the aged and unsupported network infrastructure across National Grid's Verizon managed sites. The infrastructure was purchased in FY17 and implementation completed in FY18.

Network Tx-CEMS (4648)

- The legacy infrastructure supporting the Continuous Emissions monitoring System (CEMS) is supported on a break/fix basis only. This project successfully replaced the CEMS equipment at multiple sites. The new production environment is part of the transformed network and is a fully supported service under the supplier contract.

RSA Token Purchase (4683)

- This project purchased 5,000 tokens (3,000 soft tokens & 2,000 hard tokens) that were set to expire. The tokens are utilized for two factor authentication for remote access to National Grid corporate networks.
- Previously tokens were leased from Verizon but over time the management of tokens and licenses has become very inefficient. The purchase of RSA tokens improves National Grid's ability to better manage the costs and asset life. In addition the purchase eliminates RTB costs associated with the leases.

Network Tx-NB/MTC (4687)

- This project successfully implemented new core distribution switches on Metrotech and Northborough.

Legacy DMZ Firewalls (4688)

- This project replaced end of life firewalls at Henry Clay Boulevard and Metrotech. New Checkpoint firewalls were purchased to support the legacy internet gateway (referred to as the legacy DMZ) at Metrotech and Henry Clay Boulevard. The project was implemented successfully.

Schedule Variance Table

	Schedule Variance
Project Grade - Ready to use Date	2/28/2018
Actual Ready to use Date	9/30/2018
Schedule Variance	0 year(s), 7 month(s), 4 day(s)

Schedule Variance Explanation

Network Tx-BB/MTC (4687)

The completion of the Network Transformation at Northboro and MetroTech was originally sanctioned for a go live by November 2017. Due to significant delays caused by the work stoppage, sanction go live date approved by the Project Management Board (PMB) was September 30, 2018.

Cost Summary Table

Project Sanction Summary (\$M)

	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance Over/ Under
	Capex	2.103	3.419	1.316
	Opex	0.354	0.004	(0.350)
	Removal	0.000	0.000	0.000
	Total	2.457	3.423	0.966

Cost Variance Analysis

- INVP 4575 cost variance of \$ 0.231M is due to the cancellation of the project after the completion of the strategy and design phase only.
- INVP 4645 cost variance of \$ 0.153M variance is due to National Grid labor assigned to the project combined with the overall underspend that was due to overestimation of the cost to implement and configure the hardware.
- INVP 4687 had a positive variance of \$0.583M. The project discovery occurred after the sanction of the program. It was determined that the scope would not be as significant as originally thought based on this early phase of the project.

Final Cost by Project

Actual Spending (\$M) vs. Sanction (\$M)

Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance Over/ Under
System Communications Upgrade	Capex	2.103	3.419	1.316
	Opex	0.354	0.004	(0.350)
	Removal	0.000	0.000	0.000
	Total	2.457	3.423	0.966

Project Sanction Summary (\$M)

	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance Over/ Under
Total	Capex	2.103	3.419	1.316
	Opex	0.354	0.004	(0.350)
	Removal	0.000	0.000	0.000
	Total	2.457	3.423	0.966

Improvements / Lessons Learned

- Delay in closure due to supplier invoices being significantly delayed.
- Start contract negotiations earlier in the process to avoid delays in project kickoff.
- Understand and verify the technical dependencies of a project on another.
- Coordinate with the business so they are aware of the overall project plans.
- Verizon statement of work (SOW) does not include any performance metrics or agreed delivery milestones. Verizon failure to deliver on time and on quality carry no penalties for commercial impact. The recommended actions for this is to recommend delivery schedule for all Verizon work and if

possible obtain liquidated damages for failed performance levels.

Closeout Activities

ACTIVITY	COMPLETED
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
Gate E checklist completed (appl. only to CCD)	<input type="radio"/> Yes <input checked="" type="radio"/> N/A
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed	<input checked="" type="radio"/> Yes <input type="radio"/> No
All unused material have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed	<input checked="" type="radio"/> Yes <input type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database	<input checked="" type="radio"/> Yes <input type="radio"/> No

Statement of Support

Department	Individual	Responsibilities
Business Department	Page, Douglas B.	Business Representative
Business Partner (BP)	Davidson, Caitlin	Relationship Manager
Program Delivery Management (PDM)	Granata, Chris	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	Clinchot, Joseph J.	Director

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 approve this paper.

Signature David H. Campbell

Date 6/12/19

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

Appendix

N/A



Closure Paper

Title:	WAP Density Deployment	Sanction Paper #:	
Project #:	INVP 4680 Capex: S007575	Sanction Type:	Closure
Operating Company:	National Grid USA Svc. Co.	Date of Request:	3/20/2019
Author:	Robert Thomas	Sponsor:	Barry Sheils
Utility Service:	IT	Project Manager:	Milena Passarelli / Ken Wermann

1 Executive Summary

This paper is presented to close INVP 4680. The total spend was \$ 2.190 M. The original sanctioned amount for this project was \$2.305 M at +/- 10%.

2 Project Summary

This project is part of the Technology Improvement Program (TIP) under INVP 4663 Enhanced and Enabled End User Capabilities and deployed new wireless access points in high density configurations which improved wireless capacity and coverage at 30 identified U.S. sites. In addition, it decommissioned and replaced unsupported wireless bridge equipment migrating the risks associated with failure of that equipment.

3 Variance Analysis

Cost Summary Table

Project Sanction Summary (\$M)				
Title	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
WAP Density Deployment	Capex	2.128	2.117	(0.011)
	Opex	0.063	0.188	0.125
	Removal	0.000	0.000	0.000
	Total	2.190	2.305	0.115

Cost Variance Analysis

The project cost variance is within tolerance.



Closure Paper

3.1 Schedule Variance Table

Schedule Variance	
Project Grade - Ready for Use Date	2/28/2018
Actual Ready for Use Date	3/28/2018
Schedule Variance	0 years, 1 months, 0 days

3.2 Schedule Variance Explanation

Schedule variance is within tolerance.

4 Final Cost by Project

Actual Spending (\$M) vs. Sanction (\$M)				
Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
WAP Density Deployment	Capex	2.128	2.117	(0.011)
	Opex	0.063	0.188	0.125
	Removal	0.000	0.000	0.000
	Total	2.190	2.305	0.115

5 Improvements / Lessons Learned/Root Cause

KM Tool Reference Number: 2018-LL-629

Closure Paper

6 Closeout Activities

The following closeout activities have been completed.

Activity		Completed
All work has been completed in accordance with all National Grid policies		<input checked="" type="radio"/> Yes <input type="radio"/> No
Gate E checklist completed (appl. only to CCD)		<input type="radio"/> Yes <input checked="" type="radio"/> N/A
All relevant costs have been charged to project		<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed		<input checked="" type="radio"/> Yes <input type="radio"/> No
All unused materials have been returned		<input checked="" type="radio"/> Yes <input type="radio"/> No
All IT Service Transition activities have been completed		<input checked="" type="radio"/> Yes <input type="radio"/> No
All lessons learned have been entered appropriately into the IT Knowledge Management Tool (KMT) lesson learned database		<input checked="" type="radio"/> Yes <input type="radio"/> No

7 Statements of Support

7.1 Supporters

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

Department	Individual	Responsibilities
Business Department	Barry Shiels	Business Representative
Program Delivery Management/PDM	Helen Smith	Head of PDM
Business Partner (BP)	Caitlin Davidson	Relationship Manager
Program Delivery Management (PDM)	Kenneth Wermann	Program Delivery Director
IT Finance	Michelle Harris	Manager
IT Regulatory	Dan DeMauro	Director
Digital Risk and Security (DR&S)	Elaine Wilson	Director
Service Delivery	Brian Detota	Manager
Enterprise Architecture	Joe Clinchot	Manager



Closure Paper

7.2 Reviewers

N/A



Closure Paper

8 Decisions

Program Sponsor has reviewed and approved this paper.

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

Barry Sheils
VP IS Infrastructure & Operations - Global IS

Closure Paper

Title:	Network Tx-NB/MTC	Sanction Paper #:	USSC-17-009 V2
Project #:	INVP 4687 Capex: S007577	Sanction Type:	Closure
Operating Company:	National Grid USA Svc. Co.	Date of Request:	4/5/2019
Author:	Andrew Yee / Michael Bucceri	Sponsor:	Barry Sheils, Vice President IS Infrastructure & Operations
Utility Service:	IT	Project Manager:	Ginelle Davidson

1 Executive Summary

This paper is presented to close INVP 4687. The total spend was \$0.305M. The original sanctioned amount for this project was \$0.888M at +/- 10%.

2 Project Summary

The Network Transformation Continuation of Northboro and Metro Tech was to bring the core distribution switches up to date and onto the managed services contracts with Verizon.

3 Variance Analysis**Cost Summary Table**

Project Sanction Summary (\$M)				
Network Tx-NB/MTC	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
INVP 4687 Capex: S007577	Capex	0.287	0.888	0.601
	Opex	0.017	0.000	(0.017)
	Removal	0.000	0.000	0.000
	Total	0.304	0.888	0.584

Cost Variance Analysis

The project had a positive variance of \$.583M. The project discovery occurred after the sanction of the program. It was determined that the scope would not be as significant as originally thought based on this early phase of the project.

Closure Paper

3.1 Schedule Variance Table

Schedule Variance	
Project Grade - Ready for Use Date	11/30/2017
Actual Ready for Use Date	9/30/2018
Schedule Variance	0 years, 10 months, 0 days

3.2 Schedule Variance Explanation

The completion of the Network Transformation at Nothboro and MetroTech was originally sanctioned for go live by November 2017. Due to significant delays concluded by the work stoppage, the updated sanction go live date approved by the PMB was September 30, 2018.

4 Final Cost by Project

Actual Spending (\$M) vs. Sanction (\$M)				
Network Tx-NB/MTC	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
INVP 4687 Capex: S007577	Capex	0.287	0.888	0.601
	Opex	0.017	0.000	(0.017)
	Removal	0.000	0.000	0.000
	Total	0.304	0.888	0.584

5 Improvements / Lessons Learned/Root Cause

KM Tool Reference Number: 2018-LL-487

Closure Paper**6 Closeout Activities**

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
Gate E checklist completed (appl. only to CCD)	<input type="radio"/> Yes <input checked="" type="radio"/> N/A
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed	<input checked="" type="radio"/> Yes <input type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All IT Service Transition activities have been completed	<input checked="" type="radio"/> Yes <input type="radio"/> No
All lessons learned have been entered appropriately into the IT Knowledge Management Tool (KMT) lesson learned database	<input checked="" type="radio"/> Yes <input type="radio"/> No

7 Statements of Support**7.1 Supporters**

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

Department	Individual	Responsibilities
Business Partner	Doug Page	Business Representative
Business Partner (BP)	Caitlin Davidson	Relationship Manager
Program Delivery Management (PDM)	Chris Granata	Program Delivery Director
IT Regulatory	Dan De Mauro	Director
IT Finance	Michelle Harris	Manager
Digital Risk and Security (DR&S)	Peter Shattuck	DR&S Lead
Service Delivery	Mark Mirizio	Manager
Enterprise Architecture	Joe Clinchot	Manager

7.2 Reviewers

N/A



Closure Paper

8 Decisions

The US ITSC Sanctioning Committee and Executive Sponsor has reviewed and approved this paper.

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

Premjith Singh
VP IT Tower Lead – Gas Business Partner



Closure Template

Title:	Legacy DMZ Firewalls	Sanction Paper #:	
Project #:	INVP 4688	Sanction Type:	Closure
Operating Company:	National Grid USA Svc. Co.	Date of Request:	10/5/2018
Author:	Chris Gatland	Sponsor:	John Gilbert, Global Head IS Service Delivery
Utility Service:	IS	Project Manager:	Chris Gatland

1 Executive Summary

This paper is presented to close INVP 4688. The total spend was \$0.563M. The sanctioned amount for this project was \$0.523M at +/- 10%.

2 Project Summary

Replace end of life firewalls at Henry Clay Boulevard and Metrotech. New Checkpoint firewalls were purchased to support the legacy internet gateway (referred to as the legacy DMZ) at Metrotech and Henry Clay Boulevard. The project was implemented successfully

3 Variance Analysis

3.1 Cost Summary Table

Project Sanction Summary (\$M)				
Title	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
Legacy DMZ Firewalls	Capex	0.558	0.523	(0.035)
	Opex	0.005	0.000	(0.005)
	Removal	0.000	0.000	0.000
	Total	0.563	0.523	(0.040)

3.2 Cost Variance Analysis

The project has exceeded it sanction amount by \$40K which is within the 10% sanctioned risk margin.



Closure Template

3.3 Schedule Variance Table

Schedule Variance	
Project Grade - Ready for Use Date	10/31/2017
Actual Ready for Use Date	12/16/2017
Schedule Variance	0 years, 1 months, 15 days

3.4 Schedule Variance Explanation

Not applicable

4 Final Cost by Project

Actual Spending (\$M) vs. Sanction (\$M)				
Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
4688	Capex	0.558	0.523	(0.035)
	Opex	0.005	0.000	(0.005)
	Removal	0.000	0.000	0.000
	Total	0.563	0.523	(0.040)

5 Improvements / Lessons Learned/Root Cause

There were lessons to be learned from this project which could help future infrastructure projects:

No	Description	Recommendation
1	Verizon statement of work (SOW) does not include any performance metrics or agreed delivery milestones. Verizon failure to deliver on time and on quality carry no penalties or commercial impact.	It is recommended that all Verizon SOWs, at a minimum, include a delivery schedule and if possible liquidated damages or performance levers.



Closure Template

6 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
Gate E checklist completed (appl. only to CCD)	<input type="radio"/> Yes <input checked="" type="radio"/> N/A
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed	<input checked="" type="radio"/> Yes <input type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All IS Service Transition activities have been completed	<input checked="" type="radio"/> Yes <input type="radio"/> No
All lessons learned have been entered appropriately into the IS Knowledge Management Tool (KMT) lesson learned database	<input checked="" type="radio"/> Yes <input type="radio"/> No

7 Statements of Support

7.1 Supporters

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

Department	Individual	Responsibilities
Business Department	Doug Page	Business Representative
PDM	Helen Smith	Head of PDM
BRM	Brian Detota	Relationship Manager
PDM	Chris Granata	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	Director

7.2 Reviewers

Not Applicable



Closure Template

8 Decisions

The US ISSC Sanctioning Committee and Executive Sponsor has reviewed and approved this paper.

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

Premjith Singh
VP IS Tower Lead, Ops & Network

Closure Paper

Title:	Exstream Upgrade v9.5	Sanction Paper #:	
Project #:	INVP 4697	Sanction Type:	Closure
Operating Company:	National Grid USA Svc. Co.	Date of Request:	11/9/2018
Author / NG Representative:	Diane Beard / Tejal Patel	Sponsor:	Jody Allison, VP Billings and Collections Strategy
Utility Service:	IS	Project Manager:	Deb Rollins

1 Executive Summary

This paper is presented to close INVP 4697. The total spend was \$0.202M. The original sanctioned amount for this project was \$0.219M at +/- 10%.

2 Project Summary

This policy-driven project upgraded the HP Exstream software from version 7.0 to 9.5. The software is used to create, manage, and communicate electronic and printed bills and letters to customers. It ensures conformity across channels. National Grid was operating on version 7, which was no longer supported by the vendor, and upgraded to version 9.5.

3 Variance Analysis**3.1 Cost Summary Table**

Project Sanction Summary (\$M)				
Title	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
INVP 4697 HP Exstream Upgrade	Capex	0.000	0.000	0.000
	Opex	0.202	0.219	0.017
	Removal	0.000	0.000	0.000
	Total	0.202	0.219	0.017

3.2 Cost Variance Analysis

The INVP 4697 project followed the standard waterfall delivery approach and was delivered within budget. Project costs were well within the sanctioned budget resulting in no utilization of sanctioned risk dollars.

Closure Paper**3.3 Schedule Variance Table**

Schedule Variance	
Project Grade - Ready for Use Date	4/2/2018
Actual Ready for Use Date	9/30/2017
Schedule Variance	- 0 years, 6 months, 3 days

3.4 Schedule Variance Explanation

The project was delivered six months behind schedule due to starting the project three months behind the original scheduled kickoff date. There were delays in onboarding the OpenText consultant. Additionally, the project encountered several issues around the Exstream software installation and packaging of reports which extended the user acceptance testing by an additional three months

4 Final Cost by Project

Actual Spending (\$M) vs. Sanction (\$M)				
Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
INVP 4697 HP Exstream Upgrade	Capex	0.000	0.000	0.000
	Opex	0.202	0.219	0.017
	Removal	0.000	0.000	0.000
	Total	0.202	0.219	0.017

5 Improvements / Lessons Learned / Root Cause

[Ref# 2018-LL-604] Challenges with the licenses and software configuration between versions extended the project timeline. Keeping the databases in sync while upgrading between versions will keep the two databases with compatible data. The licenses needed to be released manually and re-attached to a new MAC address.

Closure Paper

6 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
Gate E checklist completed (appl. only to CCD)	<input type="radio"/> Yes <input checked="" type="radio"/> N/A
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed	<input checked="" type="radio"/> Yes <input type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All IS Service Transition activities have been completed	<input checked="" type="radio"/> Yes <input type="radio"/> No
All lessons learned have been entered appropriately into the IS Knowledge Management Tool (KMT) lesson learned database	<input checked="" type="radio"/> Yes <input type="radio"/> No

7 Statements of Support

7.1 Supporters

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

Department	Individual	Responsibilities
Business Department	Jody Allison	Business Representative
PDM	Deb Rollins	Head of PDM
BRM	Joel Semel	Relationship Manager
PDM	Michael Pawlowski	Program Delivery Director
IS Finance	Michelle Harris	Manager
IS Regulatory	Tom Gill	Manager
DR&S	Elaine Wilson	Director
Service Delivery	Mark Mirizio	Manager
Enterprise Architecture	Joe Clinchot	Director

7.2 Reviewers

N/A



Closure Template

8 Decisions

The US ISSC Sanctioning Committee and Executive Sponsor has reviewed and approved this paper.

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

Premjith Singh
VP IT Tower Lead – Gas Business Partner



Closure: US Sanction Paper

Title:	Apps Interface Remediation	Sanction Paper #:	USSC-18-172 C
Project #:	INVP 4706	Sanction Type:	Closure
Capex #:	S007837		
Operating Company:	National Grid USA Svc. Co.	Date of Request:	5/14/2019
Author:	Bucceri, Michael Yee, Andrew	Sponsor:	Olive, Stephen Chief Information Officer
Utility Service:	IT	Project Manager:	Brosnan, William

Executive Summary

This paper is presented to close INVP 4706. The total spend was \$1.013M. The original sanctioned amount for this project was \$1.117M at +/- 10%.

Project Summary

This project transformed 76 JCAPS DMS interfaces residing on unsupported legacy middleware infrastructure to the current National Grid strategic middleware platform using the Comprehensive Integration Services Framework (CISF).

Following phases were completed for this project :-

Phase 1 (Requirements and Design Phase) of this project analyzed current interfaces, gathered requirements, and developed a design to transform 76 JCAPS interfaces to the new CISF infrastructure.

Phase 2 of this project completed the development, testing and implementation of the new design created in Phase 1 to transform the current unsupported 76 JCAPS interfaces to the new CISF.

Schedule Variance Table

Schedule Variance	
Project Grade - Ready to use Date	12/1/2018
Actual Ready to use Date	12/11/2018
Schedule Variance	0 year(s), 0 month(s), 10 day(s)

Schedule Variance Explanation

Cost Summary Table

Project Sanction Summary (\$M)				
	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance Over/ Under
	Capex	0.768	0.899	0.131
	Opex			

	0.245	0.218	(0.027)
Removal	0.000	0.000	0.000
Total	1.013	1.117	0.104

Cost Variance Analysis

In the negative \$0.104M cost variance; The project team took advantage of the opportunities to Go-Live earlier, therefore requiring less resources from our eco-partner with a time and material (T&M) contract with National Grid, and also requiring less National Grid in-house resources.

Final Cost by Project

Actual Spending (\$M) vs. Sanction (\$M)

Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance Over/ Under
Apps Interface Remediation	Capex	0.768	0.899	0.131
	Opex	0.245	0.218	(0.027)
	Removal	0.000	0.000	0.000
	Total	1.013	1.117	0.104

Project Sanction Summary (\$M)

	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance Over/ Under
Total	Capex	0.768	0.899	0.131
	Opex	0.245	0.218	(0.027)
	Removal	0.000	0.000	0.000
	Total	1.013	1.117	0.104

Improvements / Lessons Learned

1. Consider detailed discussion of archival process(if any) in details along with Who/How during requirement analysis.
2. To verify the status of ESP client on servers(interfacing application) well in advance of End to End testing as part of End to End testing preparation.
3. To communicate Business teams and seek availability for UAT (User Acceptance Testing) as per project timeline during the initial phase.
4. To compare CIS environments of Test and Production environments as part of Pre-deployment activity.
5. To cross verify with Source application team if there is any other additional Target to these files in scope apart from the one part of project.
6. To verify the file name at the Source as well as Target during deployment plan walk through.
7. To compare the final hop of existing file transfer with the new CIS file transfer to ensure that the file is transferred on time(neither early nor late).
 1. **Definition of Hop:** Each point-to-point link is technically a hop. It pertains only to devices between the start and end of the end to end flow of a data being transferred. As a result, "Middleware", "Internal Applications" and "Mainframe which perform data transfer are all considered as a hop."

8. Capture the Target application side file trigger based ESP jobs. Plan for additional monitoring activity and additional ESP job schedule change, if any.
9. Capture the details of Mainframe outbound file transfers where flat file datasets are created and plan for mitigation.

Closeout Activities

ACTIVITY	COMPLETED
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
Gate E checklist completed (appl. only to CCD)	<input type="radio"/> Yes <input checked="" type="radio"/> N/A
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed	<input checked="" type="radio"/> Yes <input type="radio"/> No
All unused material have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed	<input checked="" type="radio"/> Yes <input type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database	<input checked="" type="radio"/> Yes <input type="radio"/> No

Statement of Support

Department	Individual	Responsibilities
Business Department	Bergelson, Gregory	Business Representative
Business Partner (BP)	Davidson, Caitlin	Relationship Manager
Program Delivery Management (PDM)	Granata, Chris	Program Delivery Director
IT Finance	Harris, Michelle	Manager
IT Regulatory	DeMauro, Daniel J.	Director
Digital Risk and Security (DR&S)	Wilson, Elaine	Director
Service Delivery	Mirizio, Mark	Manager
Enterprise Architecture	Lyba, Svetlana	Director

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 approve this paper.

Signature D.H.C. phell
Date 5/28/19

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

Appendix

N/A



US Sanction Paper

Title:	Data Security	Sanction Paper #:	
Project #:	INVP 4710	Sanction Type:	Partial Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	10/25/2018
Author:	Neha Verma / Andrew Yee	Sponsor:	Barry Sheils, VP Infrastructure and Operations
Utility Service:	IS	Project Manager:	Neha Verma

1 Executive Summary

1.1 Sanctioning Summary

This paper requests partial sanction of INVP 4710 in the amount of \$0.072M with a tolerance of +/- 10% for the purposes of Requirements and Design.

This sanction amount is \$0.072M broken down into:

- \$0.000M Capex*
- \$0.072M Opex*
- \$0.000M Removal*

NOTE the potential investment of \$0.179M 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 project will enable Microsoft Office365 collaboration capabilities (SharePoint, OneDrive, and Teams) with external National Grid partners. This project will review security capabilities and enable collaboration with external partners with approval from the Digital Risk and Security team.

1.3 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
INVP 4710		Data Security	0.179
Total			0.179



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
December 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 review security capabilities, security postures and enable external sharing services within Office 365.

1.8 Asset Management Risk Score

Asset Management Risk Score: 39

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: 16



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 checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input checked="" type="radio"/> Under <input type="radio"/> NA	\$0.421M

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

N/A

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	0.179	0.000	0.000	0.000	0.000	0.000	0.179
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	0.179	0.000	0.000	0.000	0.000	0.000	0.179

1.14 Key Milestones

Milestone	Target Date: (Month Year)
Start Up	September 2018
Partial Sanction	October 2018
Begin Requirements and Design	October 2018
Project Sanction	December 2018
Begin Development and Implementation	December 2018
Project Complete	March 2019
Project Closure	May 2019



US Sanction Paper

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

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

- (a) APPROVE the investment of \$0.072M and a tolerance of +/- 10% for the purposes of Requirements and Design.
- (b) NOTE the potential investment \$ 0.179M and a tolerance of +/- 25%, contingent upon submittal and approval of a Project Sanction paper following completion of requirements and design.
- (c) NOTE that Neha Verma/Ken Wermann has the approved financial delegation to undertake the activities stated in (a).

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

Premjith Singh
VP IS Tower Lead, Ops & Network



US Sanction Paper

3 Sanction Paper Detail

Title:	Data Security	Sanction Paper #:	
Project #:	INVP 4710	Sanction Type:	Partial Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	10/25/2018
Author:	Neha Verma / Andrew Yee	Sponsor:	Barry Sheils, VP Infrastructure and Operations
Utility Service:	IS	Project Manager:	Neha Verma

3.1 *Background*

This project will enable O365 collaboration capabilities with external National Grid partners. The goal of this project is to enable external National Grid partners to share documents and communicate with National Grid personnel in SharePoint, OneDrive, and Teams. This project will review security capabilities and enable them with approval from the Digital Risk and Security team.

3.2 *Drivers*

The main driver for this projects is increased capabilities and an enriched user experience to allow National Grid employees to increase efficiency and productivity.

3.3 *Project Description*

This project will enable Office 365 collaboration capabilities with external National Grid partners. This project will review security capabilities and enable them with approval from Digital Risk and Security team.

The scope includes the following activities:

- Engage DR & S Team
- Review Security posture documentation
- Identify external customer types
- Review O365 sharing controls
- Enable O365 external collaboration aligned to security policies
- Data Loss Prevention
- Rights Management
- Test external sharing (Minimal)
- Business adoption



US Sanction Paper

3.4 Benefits Summary

Following are the key benefits of this project: -

- Improves productivity
- Better support for Jurisdictional and business function initiatives
- Enables a better Customer Experience by enabling employees to collaborate with external vendors

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

By choosing this option, NG will not be able to optimize the benefits of external sharing capabilities of Office 365

Alternative 2: Defer Project

Deferring the project NG will delay in optimizing the benefits of external sharing capabilities of Office 365

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	Work Stoppage - Change Freeze Project can be impacted due to the change freeze related to the Work Stoppage. In case any change request is required it may not be approved. Impact is minimum at this point since project is at the start up phase.	1	1	1	1	1				



US Sanction Paper

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

Not applicable

3.10.3 CIAC / Reimbursement

Not applicable

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 4710	Data Security	Est Lvl (e.g. +/- 25%)	CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			OpEx	0.000	0.179	0.000	0.000	0.000	0.000	0.000	0.000	0.179
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	0.179	0.000	0.000	0.000	0.000	0.000	0.000	0.179
Total Project Sanction			CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			OpEx	0.000	0.179	0.000	0.000	0.000	0.000	0.000	0.000	0.179
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	0.179	0.000	0.000	0.000	0.000	0.000	0.000	0.179



US Sanction Paper

3.11.2 Project Budget Summary Table

Project Costs Per Business Plan

	Prior Yrs (Actual)	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	
\$M								
CapEx	0.000	0.300	0.120	0.000	0.000	0.000	0.000	0.420
OpEx	0.000	0.145	0.035	0.000	0.000	0.000	0.000	0.180
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.445	0.155	0.000	0.000	0.000	0.000	0.600

Variance (Business Plan-Project Estimate)

	Prior Yrs (Actual)	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	
\$M								
CapEx	0.000	0.300	0.120	0.000	0.000	0.000	0.000	0.420
OpEx	0.000	(0.034)	0.035	0.000	0.000	0.000	0.000	0.001
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.266	0.155	0.000	0.000	0.000	0.000	0.421

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

3.11.4.2 NPV Assumptions and Calculations

Not applicable

3.11.5 Additional Impacts

Not applicable



US Sanction Paper

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	Martin Evans	Business Representative
PDM	Helen Smith	Head of PDM
BRM	Caitlin Davidson	Relationship Manager
PDM	Ken Wermann	Program Delivery Director
IS Finance	Michelle Harris	Manager
IS Regulatory	Tom Gill	Manager
DR&S	Elaine Wilson	Director
Service Delivery	Mark Mirizio	Manager
Enterprise Architecture	Joseph Clinchot	Director

3.12.2 Reviewers

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

Not applicable

4 Appendices

4.1 Sanction Request Breakdown by Project

\$M	INVP 4710	Proj Num	Total							
CapEx	0.000									0.000
OpEx	0.072									0.072
Removal										0.000
Total	0.072	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.072



US Sanction Paper

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		0.103	0.103	
	SDC Time & Materials		-	-	IBM
			-	-	WiPro
			-	-	DXC
			-	-	Verizon
	SDC Fixed-Price		-	-	IBM
			-	-	WiPro
			-	-	DXC
All other personnel		0.058	0.058		
TOTAL Personnel Costs	-	0.161	0.161		
Hardware	Purchase		-	-	
	Lease		-	-	
Software			-	-	
Risk Margin			0.016	0.016	
AFUDC			-	-	
Other			0.002	0.002	
TOTAL Costs	-		0.179	0.179	

4.2.2 Benefiting Operating Companies

Benefiting Operating Companies	Business Area	State
Niagara Mohawk Power Corp.- Electric Distr.	Electric Distribution	NY
Massachusetts Electric Company	Electric Distribution	MA
KeySpan Energy Delivery New York	Gas Distribution	NY
KeySpan Energy Delivery Long Island	Gas Distribution	NY
Boston Gas Company	Gas Distribution	MA
Narragansett Electric Company	Electric Distribution	RI
Niagara Mohawk Power Corp. - Transmission	Transmission	NY
Niagara Mohawk Power Corp. - Gas	Gas Distribution	NY
New England Power Company – Transmission	Transmission	MA, NH, RI,VT
KeySpan Generation LLC (PSA)	Generation	NY



US Sanction Paper

Narragansett Gas Company	Gas Distribution	RI
Colonial Gas Company	Gas Distribution	MA
Narragansett Electric Company – Transmission	Transmission	RI
National Grid USA Parent	Parent Company	
Nantucket Electric Company	Electric Distribution	MA
NE Hydro - Trans Electric Co.	Inter Connector	MA, NH
KeySpan Energy Development Corporation	Non-Regulated	NY
KeySpan Port Jefferson Energy Center	Generation	NY
New England Hydro - Trans Corp.	Inter Connector	MA, NH
KeySpan Services Inc. Service Company	Service Company	
KeySpan Glenwood Energy Center	Generation	NY
Massachusetts Electric Company –Transmission	Transmission	MA
NG LNG LP Regulated Entity	Gas Distribution	MA, NY, RI
Transgas Inc	Non-Regulated	NY
Keyspan Energy Trading Services	Other	NY
KeySpan Energy Corp. Service Company	Service Company	
New England Electric Trans Corp	Inter Connector	MA
New England Electric Trans Corp	InterConnector	MA

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:	Virtual Desktop DaaS	Sanction Paper #:	
Project #:	INVP 4727 Capex: S007575	Sanction Type:	Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	10/30/2018
Author:	Susan Stallard / John Braziel	Sponsor:	Barry Sheils, Vice President IS Infrastructure & Operations
Utility Service:	IS	Project Manager:	John Braziel / Ken Wermann

1 Executive Summary

1.1 Sanctioning Summary

This paper requests sanction of INVP 4727 in the amount of \$0.598M with a tolerance of +/- 10% for the purposes of Development and Implementation.

This sanction amount is \$0.598 broken down into:

- \$0.364M Capex*
- \$0.234M Opex*
- \$0.000M Removal*

1.2 Project Summary

The scope of this project is to deploy a virtual desktop (VMware) environment starting with the IT Support Staff and other groups such as KPMG who have requested this capability. This will transform the end-user computing desktops to a secure, centralized desktop environment for local and remote users using a virtual desktop infrastructure (VDI) solution.

1.3 Summary of Projects

Project Number	Project Title	Estimate Amount (\$M)
INVP 4727	Virtual Directory DaaS	0.598
Total		0.598

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
8/15/17	ISSC	\$0.268M	\$0.492M	Partial	+/- 25%

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	The investment impacts on the Customer are (a) Improves reliability and productivity; (b) Improved end user experience.

1.8 Asset Management Risk Score

Asset Management Risk Score: 39

Primary Risk Score Driver: (Policy Driven Projects Only)



US Sanction Paper

- Reliability
 Environment
 Health & Safety
 Not Policy Driven

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 (\$)
IS Investment Plan FY19 - 23	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Over <input type="radio"/> Under <input type="radio"/> NA	\$0.210M

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.



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	0.122	0.242	0.000	0.000	0.000	0.000	0.000	0.364
OpEx	0.038	0.193	0.003	0.000	0.000	0.000	0.000	0.234
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	0.160	0.435	0.003	0.000	0.000	0.000	0.000	0.598

1.14 Key Milestones

Milestone	Target Date: (Month/Year)
Start Up	July 2018
Partial Sanction	August 2017
Begin Requirements and Design	August 2017
Project Sanction	October 2018
Begin Development and Implementation	October 2018
Move to Production / Last Go Live	February 2019
Project Closure	May 2019



US Sanction Paper

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)

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

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

- (a) APPROVED this paper and the investment of \$0.598M and a tolerance of +/- 10% for the purposes of Development and Implementation.
- (b) APPROVED the run-the-business (RTB) of \$0.009M for FY19 and \$0.216M (per annum) for 4 years.
- (c) NOTED that Ken Wermann is the Project Manager and has the approved financial delegation.

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

Premjith Singh
VP IT Tower Lead, Ops & Network



US Sanction Paper

3 Sanction Paper Detail

Title:	Virtual Desktop DaaS	Sanction Paper #:	
Project #:	INVP 4727 Capex: S007575	Sanction Type:	Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	10/30/2018
Author:	Susan Stallard / John Braziel	Sponsor:	Barry Sheils, Vice President IS Infrastructure & Operations
Utility Service:	IS	Project Manager:	John Braziel / Ken Wermann

3.1 *Background*

National Grid has implemented a Virtual Desktop environment (VMware Horizon Air) to replace a Legacy Stop gap solution for the IBM offshore applications support team. The solution is built on a cloud platform and provides true scalability and predictable costs. This project will build on the Virtual Desktop (VD) capability put in place for the project INVP 3901 Virtual Desktop Offshore, rolling this functionality out to National Grid IT Support Staff vendor resources who currently use National Grid devices for connectivity to National Grid applications.

The VD allows a user's desktop environment (icons, wallpaper, windows, folders, toolbars, widgets, etc.) to be stored on a remote server, rather than on a designated Personal Computer (PC). Implementing a virtual desktop environment will replace the traditional model of providing a device to each user.

3.2 *Drivers*

Provide support staff access to the National Grid systems that is:

- Cost effective, by reducing the number of National Grid devices needed;
- Reduces new user set up time; and
- Meets Digital Risk & Security (DR&S) standards.

3.3 *Project Description*

Deploy a Virtual Desktop (DaaS) solution and virtual desktop (VMware) environment for approximately 300 devices for IT Support Staff and other groups such as KPMG who



US Sanction Paper

have requested this capability. National Grid users will receive a thin client device, while the service partner users will use a device provided by the partner.

Activities will include:

- Selecting and deploying to a pilot group of approximately 50 vendor IT Support Staff users;
- Full deployment to the remaining 250 identified third party support users; and
- Creation of a secondary environment Virtual Desktop environment providing redundancy for the VD environment.

3.4 Benefits Summary

The Virtual Desktop DaaS solution will provide:

- A reduction in cost of new physical PCs. (Current new PC cost is \$448)
- A reduction in cost of hardware maintenance as the end point device is a Dumb Terminal, Thin Client Device;
- The ability to offload end point cost or extend the lifecycle of existing PCs; and
- Scalability to add more users as needed.

Note that RTB costs are projected to increase as the DaaS solution will require VMWare license fees and Annuta support costs. These RTB costs will offset the savings realized due to the lower physical hardware and maintenance costs achieved by these license and support costs.

3.5 Business and Customer Issues

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

3.6 Alternatives

Alternative 1: Do Nothing / Defer the investment - This option does not address the project drivers nor deliver the expected benefits. Not delivering this project is that National Grid will continue to operate with a security risk and impacts Enterprise Service Delivery's ability to support the development model.

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	Risk of entering a minimum 2 year commitment for the Virtual Desktop service; NG may have to pay stranded costs (i.e. the amount remaining between the end of the contract and the end of the minimum 2 year period for the VDI service).	2	4	2	8	4	Mitigate	PM to noegotiate with the service contract with the Vendor to end the current contract early to avoid paying stranded costs.		

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

\$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	0.122	0.242	0.000	0.000	0.000	0.000	0.000	0.364
OpEx	0.038	0.193	0.003	0.000	0.000	0.000	0.000	0.234
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	0.160	0.435	0.003	0.000	0.000	0.000	0.000	0.598

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	0.122	0.223	0.000	0.000	0.000	0.000	0.000	0.345
OpEx	0.038	0.005	0.000	0.000	0.000	0.000	0.000	0.043
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.160	0.228	0.000	0.000	0.000	0.000	0.000	0.388

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	(0.019)	0.000	0.000	0.000	0.000	0.000	(0.019)
OpEx	0.000	(0.188)	(0.003)	0.000	0.000	0.000	0.000	(0.191)
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	(0.207)	(0.003)	0.000	0.000	0.000	0.000	(0.210)

3.11.3 Cost Assumptions

This estimate was developed in 2018 using the standard IS estimating methodology. The accuracy level of estimate for each project is identified in table 3.11.1.

3.11.4 Net Present Value / Cost Benefit Analysis

3.11.4.1 NPV Summary Table

This is not an NPV project.



US Sanction Paper

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	Andrea Costa	Business Representative
PDM	Helen Smith	Head of PDM
BRM	Caitlin Davidson	Relationship Manager
PDM	Ken Wermann	Program Delivery Director
IS Finance	Michelle Harris	Manager
IS Regulatory	Tom Gill	Manager
DR&S	Elaine Wilson	Director
Service Delivery	Mark Mirizio	Manager
Enterprise Architecture	Joe Clinchot	Director

3.12.2 Reviewers

N/A



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	0.027	0.030	0.057	
	SDC Time & Materials	0.101	0.028	0.129	IBM
		0	-	-	WiPro
		0	0.019	0.019	DXC
		0	-	-	Verizon
	SDC Fixed-Price	0	-	-	IBM
		0	-	-	WiPro
		0	-	-	DXC
		0	-	-	Verizon
	All other personnel	0.063	0.056	0.119	
TOTAL Personnel Costs	0.191	0.133	0.324		
Hardware	Purchase	0	0.068	0.068	
	Lease	0	-	-	
Software		0.103	0.020	0.123	
Risk Margin			-	-	
AFUDC		0.001	0.013	0.014	
Other		0	0.069	0.069	
	TOTAL Costs	0.295	0.303	0.598	Should match Financial Summary Total



US Sanction Paper

4.2.2 Benefiting Operating Companies

The following are the benefiting operating companies:

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



US Sanction Paper

Massachusetts Electric Company – Transmission	Transmission	MA
NG LNG LP Regulated Entity	Gas Distribution	MA, NY, RI
Transgas Inc	Non-Regulated	NY
Keyspan Energy Trading Services	Other	NY
KeySpan Energy Corp.	Service Company	
New England Electric Trans Corp	Inter Connector	MA



US Sanction Paper

4.2.3 IS Ongoing Operational Costs (RTB):

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

Increases to RTB costs are due to:

- Increased storage needed for Appvolumes;
- Horizon Cloud Services;
- VMWare License fees;
- Annuta support costs.

The RTB increase will be offset by:

- The return of NG supplied laptops to partner resources.

all figures in \$ thousands						
INV ID:	4727				Forecast Date:	09/12/18
Investment Name:	Virtual Desktop DaaS				Go-Live Date:	Apr-19
Project Manager:	John Braziel			PDM:	Ken Wermann	
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	346.0	346.0	346.0	346.0		1,384.0
Last Sanction Business Net Impact to RTB						-
Last Sanction Total Net Impact to RTB	346.0	346.0	346.0	346.0	-	1,384.0
Planned/Budgeted Net Impact to RTB						
IS Investment Plan Net Impact to RTB	346.0	346.0	346.0	346.0		1,384.0
Business Budgeted Net Impact to RTB						-
Currently Forecasted Net Impact to RTB						
IS Funded Net Impact to RTB Forecasted at Go-Live	9.7	216.6	216.6	216.6	216.6	876.0
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	336.3	129.4	129.4	129.4	(216.6)	508.1
Business Budgeted Net Impact to RTB Variance	-	-	-	-	-	-



Closure Paper

Title:	Customer Systems Operational and Regulatory Requirements and Upgrades - FY18	Sanction Paper #:	
Project #:	INVP 4740	Sanction Type:	Closure
Operating Company:	National Grid USA Svc. Co.	Date of Request:	11/20/2018
Author:	Tejal Patel	Sponsor:	Jody Allison, VP Billings and Collections Strategy
Utility Service:	IT	Project Manager:	Joel Semel

1 Executive Summary

This paper is presented to close INVP 4740. The total spend was \$0.747M. The original sanctioned amount for this project was \$0.675M at +/- 10%.

NOTE: The latest sanction amount was \$.0875M

2 Project Summary

This project provides a funding base and governance structure that allows the IS organization to effectively deliver system changes to the Shared Services - Customer application portfolio, in response to any regulatory mandates and operational requirements that will occur during the course of the year.

Minor works requests funded by this project will support the Accounts Processing, Billing Operations and other organizations requesting changes to the Customer systems to meet a regulatory mandate or operational requirement.

3 Variance Analysis

3.1 Cost Summary Table

Actual Spending (\$M) vs. Sanction (\$M)				
Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
INVP 4740	Capex	0.000	0.000	0.000
	Opex	0.747	0.675	(0.072)
	Removal	0.000	0.000	0.000
	Total	0.747	0.675	(0.072)



Closure Paper

3.2 Cost Variance Analysis

This project has an underspend of \$0.128M. The funds were designated only for mandated requests and there were less mandatory requirements than anticipated at the re-sanction.

3.3 Schedule Variance Table

Schedule Variance	
Project Grade - Ready for Use Date	3/31/2018
Actual Ready for Use Date	3/31/2018
Schedule Variance	- 0 years, 0 months, 0 days

3.4 Schedule Variance Explanation

NA

4 Final Cost by Project

Actual Spending (\$M) vs. Sanction (\$M)				
Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
INVP 4740	Capex	0.000	0.000	0.000
	Opex	0.747	0.675	(0.072)
	Removal	0.000	0.000	0.000
	Total	0.747	0.675	(0.072)

5 Improvements / Lessons Learned/Root Cause

NA

6 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No

Closure Paper

Gate E checklist completed (appl. only to CCD)	<input type="radio"/> Yes <input checked="" type="radio"/> N/A
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed	<input checked="" type="radio"/> Yes <input type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All IT Service Transition activities have been completed	<input checked="" type="radio"/> Yes <input type="radio"/> No
All lessons learned have been entered appropriately into the IT Knowledge Management Tool (KMT) lesson learned database	<input checked="" type="radio"/> Yes <input type="radio"/> No

7 Statements of Support

7.1 Supporters

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

Department	Individual	Responsibilities
Business Department	Jody Allison	Business Representative
PDM	Narayan Devireddy	Head of PDM
BRM	Joel Semel	Relationship Manager
PDM	Narayan Devireddy	Program Delivery Director
IS Finance	Michelle Harris	Manager
IS Regulatory	Tom Gill	Manager
DR&S	Elaine Wilson	Director
Service Delivery	Mark Mirizio	Manager
Enterprise Architecture	Joe Clinchot	Director

7.2 Reviewers

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

NA



Closure Paper

8 Decisions

The US ISSC Sanctioning Committee and Executive Sponsor has reviewed and approved this paper.

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

Premjith Singh

VP IT Tower, Operations and Network Strategy



Closure Paper

Title:	Add Effective Date to CRIS	Sanction Paper #:	
Project #:	INVP 4746	Sanction Type:	Closure
Operating Company:	National Grid USA Svc. Co.	Date of Request:	1/11/2019
Author:	Dan Luby/Mike Pawlowski	Sponsor:	Jody Allison
Utility Service:	Gas	Project Manager:	Dan Luby/Mike Pawlowski

1 Executive Summary

This paper is presented to close INVP4746. The total spend was \$.282M. The original sanctioned amount for this project was \$.332M at +/- 10%.

2 Project Summary

The project objectives were to process customer payments that are transmitted from specific financial institutions to use the actual date payments were made to the vendor instead of the date the payments are processed in the Customer Related Information System (CRIS) as the effective date.

3 Variance Analysis

3.1 Cost Summary Table

Project Sanction Summary (\$M)				
INVP 4746	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
Add Effective Date to CRS	Capex	0.000	0.000	0.000
	Opex	0.282	0.332	0.050
	Removal	0.000	0.000	0.000
	Total	0.282	0.332	0.050

3.2 Cost Variance Analysis

The project variation reflects a reduction in overall effort due to a reduction of scope. The decision was made during the D&I phase. The business stakeholders reduced the number of financial institutions whose payments were included in the original estimates.

The project cost variance is within tolerance,



Closure Paper

3.3 Schedule Variance Table

Schedule Variance	
Project Grade - Ready for Use Date	9/30/2018
Actual Ready for Use Date	7/20/2018
Schedule Variance	- 0 years, 2 months, 10 days

3.4 Schedule Variance Explanation

N/A

4 Final Cost by Project

Actual Spending (\$M) vs. Sanction (\$M)				
Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
INVP 4746	Capex	0.000	0.000	0.000
	Opex	0.282	0.332	0.050
	Removal	0.000	0.000	0.000
	Total	0.282	0.332	0.050

Actual Spending (\$M) vs. Sanction (\$M)				
Total	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
Total	Capex	0.000	0.000	0.000
	Opex	0.282	0.332	0.050
	Removal	0.000	0.000	0.000
	Total	0.282	0.332	0.050

5 Improvements / Lessons Learned/Root Cause

2018-LL-622 – Engage payment vendors prior to or during start up to confirm their ability to support project work.



Closure Paper

6 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
Gate E checklist completed (appl. only to CCD)	<input type="radio"/> Yes <input checked="" type="radio"/> N/A
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed	<input checked="" type="radio"/> Yes <input type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All IT Service Transition activities have been completed	<input checked="" type="radio"/> Yes <input type="radio"/> No
All lessons learned have been entered appropriately into the IT Knowledge Management Tool (KMT) lesson learned database	<input checked="" type="radio"/> Yes <input type="radio"/> No

7 Statements of Support

7.1 Supporters

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

Department	Individual	Responsibilities
Business Department	Lee Smith	Business Representative
Business Partner (BP)	Joel Semel	Relationship Manager
Program Delivery Management (PDM)	Mike Pawlowski	Program Delivery Director
IT Finance	Michelle Harris	Manager
IT Regulatory	Dan Demauro	Director IT Regulatory
Digital Risk and Security (DR&S)	Elaine Wilson	Director DR&S
Service Delivery	Jim Lozito	Service Owner
Enterprise Architecture	Joe Clinchot	Director Enterprise Architecture



Closure Paper

7.2 Reviewers

N/A

8 Decisions

The US ITSC Sanctioning Committee and Executive Sponsor has reviewed and approved this paper.

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

Premjith Singh
VP IT Tower Lead – Gas Business Partner

Closure Paper

Title:	VSTIG Refresh – IDS Card Replacement	Sanction Paper #:	
Project #:	INVP 4749	Sanction Type:	Closure
Operating Company:	National Grid USA Svc. Co.	Date of Request:	10/25/2018
Author:	Ken Little	Sponsor:	John Gilbert, Global Head IS Service Delivery
Utility Service:	IS	Project Manager:	Ken Little

1 Executive Summary

This paper is presented to close INVP 4749. The total spend was \$0.195M. The original sanctioned amount for this project was \$0.320M at +/- 10%.

2 Project Summary

The project upgraded the Intrusion Detection System (IDS) cards and increased the port speed of Multi-Protocol Label Switching (MPLS) in the Verizon Secure Telecommunications Internet Gateway (VSTIG). These infrastructure upgrades were performed to support the existing network infrastructure and future network enhancements.

3 Variance Analysis**3.1 Cost Summary Table**

Project Sanction Summary (\$M)				
Title	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
VSTIG Refresh – IDS Card Replacement	Capex	0.148	0.300	0.152
	Opex	0.047	0.020	(0.027)
	Removal	0.000	0.000	0.000
	Total	0.195	0.320	0.125

3.2 Cost Variance Analysis

Capex variance of \$0.152M is due to:

- The final project cost for the purchase, installation and configuration was less than the vendor proposal.

Closure Paper**3.3 Schedule Variance Table**

Schedule Variance	
Project Grade - Ready for Use Date	9/30/2017
Actual Ready for Use Date	2/15/2018
Schedule Variance	0 years, 4 months, 16 days

3.4 Schedule Variance Explanation

The vendor underestimated the duration required to perform the engineering, installation and installation of the IDS cards and the process to increase the IDS card port speed.

4 Final Cost by Project

Actual Spending (\$M) vs. Sanction (\$M)				
Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
4749	Capex	0.148	0.300	0.152
	Opex	0.047	0.020	(0.027)
	Removal	0.000	0.000	0.000
	Total	0.195	0.320	0.125

5 Improvements / Lessons Learned/Root Cause

Identified that the vendor's timeline submitted for the project was not accurate to complete the scope of work. Project managers are reviewing the on-time track record of timelines for projects by the vendor to identify trends (2018-LL-591).

6 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
Gate E checklist completed (appl. only to CCD)	<input type="radio"/> Yes <input checked="" type="radio"/> N/A
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed	<input checked="" type="radio"/> Yes <input type="radio"/> No

Closure Paper

All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All IS Service Transition activities have been completed	<input checked="" type="radio"/> Yes <input type="radio"/> No
All lessons learned have been entered appropriately into the IS Knowledge Management Tool (KMT) lesson learned database	<input checked="" type="radio"/> Yes <input type="radio"/> No

7 Statements of Support**7.1 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	Chris Granata	Program Delivery Director
IS Finance	Michelle Harris	Director
IS Regulatory	Thomas Gill	Manager
DR&S	Elaine Wilson	Director
Service Delivery	Mark Mirizio	Director
Enterprise Architecture	Svetlana Lyba	Director

7.2 Reviewers

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

N/A



Closure Template

8 Decisions

The US ISSC Sanctioning Committee and Executive Sponsor has reviewed and approved this paper.

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

Premjith Singh
VP IS Tower Lead, Ops & Network



US Sanction Paper

Title:	Customer Experience Transformation Technology Program	Sanction Paper #:	USSC-17-276 v2
Project #:	INVP 4750 Capex: S007692	Sanction Type:	Partial Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	12/12/2018
Author:	Suzanne Rodriques	Sponsor:	Kelly Carney, VP Customer Exp and Systems Transformation
Utility Service:	IT	Project Manager:	Jeffrey Dailey

1 Executive Summary

1.1 Sanctioning Summary

This paper requests partial sanction of INVP 4750 in the amount of \$12.569M with a tolerance of +/- 10% for the purposes of Partial Development and Implementation (D-I).

This sanction amount is \$12.569M broken down into:

- \$9.730M Capex*
- \$2.839M Opex*
- \$0.000M Removal*

NOTE the potential investment of \$18.775M with a tolerance of +/- 25%, contingent upon submittal and approval of a Project Sanction paper following completion of Partial Development and Implementation (D-I).

1.2 Project Summary

This program will replace out-of-support platforms to mitigate existing risk to National Grid's self-service billing, payment and communications portals. It will set the foundation for the processes and technology changes needed to drive step improvements to the customer experience. The program will help manage increasing future operating costs through the migration of customers to self-service channels, and through re-engineering of processes and transactions. The program will focus on re-engineering the customer's digital interactions to create a universal and seamless customer experience through multiple service options: Web, Mobile, Text, Email, and future emerging channels.



US Sanction Paper

1.3 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
4750		Customer Transformation Technology Program	18.775
Total			18.775

1.4 Associated Projects

N/A

1.5 Prior Sanctioning History

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Sanction Type	Potential Investment Tolerance
8/9/17	USSC	\$6.730M	\$11.616M	Partial	25%

This is a partial sanction of a program that is continually being refined to deliver the best value to National Grid’s customers while aligning to the Company’s architecture strategy. The Strategic Alignment project within the program has revealed the following impacts that attribute to the increase in the program cost estimate:

- Architecture strategy decision to use Salesforce Marketing Cloud for Communications Management (20%)
- Determination of best-in-class architectural platform for customer self-service (45%)
- Partnering with a 3rd party vendor to design and deliver on Content Web and Transaction Web (10%)
- Resources and Administrative costs – (25%)

1.6 Next Planned Sanction Review

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



US Sanction Paper

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 program will address strategic business priorities to address the customer experience (CXT) and ensure reliability of the IT infrastructure that supports it.

1.8 Asset Management Risk Score

Asset Management Risk Score: 41

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: N/A

1.10 Process Hazard Assessment

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

- Yes
 No



US Sanction Paper

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 checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Over <input type="radio"/> Under <input type="radio"/> NA	\$5.632M

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 2017/18	Yr. 2 2018/19	Yr. 3 2019/20	Yr. 4 2020/21	Yr. 5 2021/22	Yr. 6 + 2022/23	
CapEx	0.000	0.160	6.459	9.082	0.000	0.000	0.000	15.700
OpEx	0.000	1.426	1.241	0.408	0.000	0.000	0.000	3.075
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	1.586	7.700	9.489	0.000	0.000	0.000	18.775

1.14 Key Milestones

Milestone	Target Date: (Month Year)
Start Up	April 2017
Partial Sanction	August 2017
Begin Requirements and Design	August 2017
Partial Sanction	December 2018
Program Sanction	June 2019
Move to Production	February 2020
Program Closure	June 2020



US Sanction Paper

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

The US Sanctioning Committee (USSC) at a meeting held on 12/12/2018:

- (a) APPROVED the investment of \$12.569M and a tolerance of +/- 10% for the purposes of Partial Development and Implementation.
- (b) NOTED the potential run-the-business (RTB) impact of \$0.341M (per annum) for 5 years.
- (c) NOTED the potential investment \$18.775M and a tolerance of +/- 25%, contingent upon submittal and approval of a Project Sanction paper following completion of final requirements and design.
- (d) NOTED that Jeffrey Dailey has the approved financial delegation to undertake the activities stated in (a).
- (e) NOTE: In the event that any Blanket/Programs are not approved prior to the start of the FY19/20 fiscal year, the FY19/20 approval limits will remain in effect until such time as the FY19/20 Blanket/Programs are approved by USSC and/or other appropriate authority for approval.

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

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



US Sanction Paper

3 Sanction Paper Detail

Title:	Customer Experience Transformation Technology Program	Sanction Paper #:	USSC-17-276 v2
Project #:	INVP 4750 Capex: S007692	Sanction Type:	Partial Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	12/12/2018
Author:	Suzanne Rodrigues	Sponsor:	Kelly Carney, VP Customer Exp and Systems Transformation
Utility Service:	IT	Project Manager:	Jeffrey Dailey

3.1 *Background*

National Grid has embarked on a comprehensive Customer Experience Transformation (CXT) program to change how we interact, serve and communicate with customers. This technology enabling program is a key element and building block to our Customer strategy.

National Grid has approximately 7 million gas and electric customers in New York, Massachusetts and Rhode Island, and was formed from of a series of mergers and acquisitions. Although a number of system and infrastructure consolidations have taken place, there are essentially two legacy infrastructures for Billing/Customer Information Systems and corresponding digital channels (Web and Interactive Voice Response) implementations that enable self-serve functions for our customers. National Grid is re-engineer the customer digital experience and supporting processes into a single set of digital channels while mitigating risks associated with using out-of-support legacy customer self-service platforms.

3.2 *Drivers*

The key drivers of this investment are to:

- Improve customer satisfaction (C-SAT) through consistent processes across all digital channels
- Manage operating cost through the migration of customer transactions to self-serve digital platforms



US Sanction Paper

- Create systems and processes capable of adapting to changing customer needs and expectations in support of furthering National Grid's reputation and position as a leader within the utility sector
- Mitigate operational risk associated with outdated technology platforms

3.3 *Project Description*

The CXT technology program includes developing a roadmap for the future state of customer related system capabilities as well as the number of projects needed to support the US Customer strategy. A key guiding principle of the program is to ensure stability and enhance functionality in the shortest timeline to improve how we service customers. In some cases, tactical decisions are made and implemented while the end state roadmap is still under development. These short term improvements are vetted against the end state vision and for alignment to other strategic projects, such as GBE.

The program has the following components:

4750A – CXT Strategic Assessment was completed in June 2018.

This Feasibility and Analysis study performed a detailed assessment of the customer facing website requirements, known as My Account. It identified interdependencies and synergies of the My Account Program with GBE and Agent Interaction Management System (AIMS). The project evaluated three solution architectures, data model development, release management, and communication fulfillment options. The project delivered a Program Roadmap that aligns to GBE and AIMS.

4750B – CXT-Tactical Customer Web Transaction Improvements was completed in October 2018.

This project delivered on improvements in Customer Experience and Satisfaction through re-engineering of web processes for low customer satisfaction (C-SAT) transactions to provide customers more access to the self-service channels. The updates included:

- Account Overview: Modification to Account Overview and Budget Plan enrollment webpages to allow customers to view more detailed information about their account status, budget enrollment status and the reason for ineligibility from the Budget Plan.
- Budget Bill Arrears and Suspended Charges: Modification to the existing eligibility criteria and messaging to reduce the number of self-service failures.
- Office Meter Off: increase the number of automated meter on/off processes which currently require back-office work.
- POS ID: Increase successful start service self-service by providing enhanced ID verification processes.



US Sanction Paper

- Check Svc Availability: increase usability by allowing a customer to check if an address is within our service territory prior to being required to create an online profile.

4750C – CXT IAM POC was completed in July 2018.

This Proof of Concept (POC) project for Identity Access Management (IAM) successfully determined the feasibility for using the Microsoft Azure Business-To-Customer (B2C) platform for the CXT 'MyAccount' Strategic Alignment implementation effort.

4750D – CXT MyAccount MVP

This project is focused on providing a better User Experience Portal (UXP) for desktop and mobile devices. The solution will align with GBE's current tactical and future strategic platforms. The program will accomplish the following:

- **Stable and Secure Infrastructure:**
 - Replace legacy downstate Siebel infrastructure that supports customer facing functions for the downstate New York Customers (CRIS). The updated site will be designed and built as a responsive website, and will be the basis for future conversion of the customers served by the CSS customer service system
 - Provide customer system integration services to support the new user experience. The existing services which are used to support the contact center agent desktop, Interactive Voice Response system (IVR) and web self-service channels depend on unsupported middleware infrastructure and out of date technology platforms
- **Improved Usage and Insights:** Seamlessly incorporate the Opower custom widgets for downstate New York and Massachusetts gas residential customers to provide enhanced usage information, bill comparison and energy savings tips, eliminating the need for a separate login.
- **User Experience across Multiple Device Types:** Provide a best-in-class responsive content website for all regions, eliminating the need for separately maintained content on the mobile website.
- **Identity Access Management (IAM):** Implementation of a strategic IAM solution integrated with the Business-to-Customer (B2C) Retail Web Portal. This new IAM solution will serve as a replacement for the legacy authentication and web account management solutions across National Grid territories, and include single-sign-on (SSO) for services provided to third-party partners who provide information to National Grid's customers through the self-service website (O-Power, Simple Energy, etc.)
- **Preference Management:** A new operational data store will be used to maintain and store a limited set of (as-is) account preferences for customers.



US Sanction Paper

- **Improved Availability:** Provide a 24x7 customer web experience for the downstate NY region through the creation of an operational data store (ODS) to replace the currently isolated information that is unavailable to process customer transactions while batch processes are running overnight.
- **Communication Engine:** A new communication engine will be established to replace the unsupported Siebel web email communication for CRIS customers and enable future multi-channel communication capabilities.

4750E – Two Way Text Notification for Appointment Scheduling F&A

This Feasibility and Analysis project will evaluate cost, timeline and vendor involvement for providing Customer Service Representatives a method to send appointment notifications to customers and allow customers to cancel or modify their appointment with National Grid.

4750G – CXT MyAccount Two Way Outage Communications

This project will enable two-way text capabilities for electric outage information. It will provide customers with two-way outage communication and notifications, enabling National Grid to increase customer satisfaction and trust, while shifting calls to the contact center to a more efficient method for providing critical information to customers during major storms.

3.4 Benefits Summary

This investment will deliver the following benefits:

- Improve customer satisfaction through improved and standardized processes across all digital channels
 - External research from AnswerLab and JD Power indicates that customers are more satisfied overall when they are successful at completing their transaction online, find websites easy to navigate, have mobile options available to them
 - Improving the overall experience builds trust and willingness to participate in programs offered
- Deliver Customer Value through Improved Experience
 - Create systems and processes capable of adapting to changing customer needs and expectations, and evolving National Grid vision
 - Improve two-way communications which allows near real time updates available to customers through their preferred channel
 - Expand availability of self-service options by mitigating problems with legacy back end systems
 - One view of all billing, services, transactions and communications no matter the channel for both the customer and company



US Sanction Paper

- Regulatory
 - Improved customer self-service and regulatory goodwill
- Operating Costs
 - Manage increase in future operating cost through the migration of customer transactions to self-serve digital platforms
- Risk Remediation
 - Mitigate operational risk associated with outdated technology platforms which provide support for over 3.5 million registered users, 1.3 million customers enrolled in paperless billing and \$1.5 billion per year in payments via the web self-serve and mobile channels representing 13% of National Grid's US revenue.
 - Mitigate cyber security exposure to National Grid and its customers from vendors not providing patches for out of support software
- Prepare for Future Demand
 - Support new demand for customer self-serve capabilities coming from large change programs including: Gas Business Enablement, NY REV, MA Grid Modernization, etc.

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 or Defer

Rejected. The Company is currently operating key areas of the business on technology that is outdated and no longer supported. The ability to service the entire legacy KeySpan segment that includes gas customers in MA and New York City is at risk. Furthermore, the C-SAT scores of all regions online self-service are not consistent with National Grid's vision. Deferring this program will also increase cyber security exposure due to vendors no longer supporting security patching of legacy versions of software.

Alternative 2: Convert Entire Self-Service to Responsive Now

Rejected. The increase in complexity and timeline would not allow delivery of environment stabilization in a timely manner.

Alternative 3: Utilize Existing Communication Methods



US Sanction Paper

Rejected. Although this option could allow delivery of the overall solution in a shorter timeline, there would be future rework to implement strategic initiatives within the company to streamline all communication.

Alternative 4: Convert the Downstate NY Customers Only to the new IAM Solution at this Time

Rejected. The effort to convert all customers during the 4750D CXT MyAccount MVP project will provide a significant benefit to the experience of customers who have accounts managed across the various back-end customer systems and reduce the learning curve of deploying the functionality in waves.

3.7 Safety, Environmental and Project Planning Issues

There are no significant business 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	Implementation plan and final budget is pending agency UX design and ODS effort/timeline. It is a risk that this could lead to the project running longer than planned and the budget is underfunded.	4	3	3	12	12	Mitigate	Team is working to refine and update the current MyAccount MVP provisional plan based on the schedule provided by Design Vendor. We are working closely with the Design Vendor to make sure that we can support that schedule.	Possible delays in planned efforts	Escalate to Senior Leadership
2	Project is being delivered in an agile manner, a new methodology in practice for the National Grid Team	4	2	2	8	8	Mitigate	National Grid IT has embedded resources experienced with agile delivery into the project team. Additionally, the business has secured an Agile Coach to support the project in defining overall structure	Possible delays in planned efforts	Escalate to Senior Leadership
3	Project does not have an understanding of the Marketing Cloud scope, schedule, and cost to be managed by MyAccount	4	2	2	8	8	Accept	Conduct accelerator workshops with Salesforce Marketing Cloud, Marketing, and MyAccount to define governance structure and scope.	Possible delays in planned efforts	Escalate to Senior Leadership

3.9 Permitting

N/A



US Sanction Paper

3.10 Investment Recovery

3.10.1 Investment Recovery and Regulatory Implications

Recovery will be reflected 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 +	
INVP 4750	Customer Transformation Technology Program	25%	CapEx	0.000	0.160	6.459	9.082	0.000	0.000	0.000	15.700
			OpEx	0.000	1.426	1.241	0.408	0.000	0.000	0.000	3.075
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	1.586	7.700	9.489	0.000	0.000	0.000	18.775
Total Project Sanction			CapEx	0.000	0.160	6.459	9.082	0.000	0.000	0.000	15.700
			OpEx	0.000	1.426	1.241	0.408	0.000	0.000	0.000	3.075
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	1.586	7.700	9.489	0.000	0.000	0.000	18.775



US Sanction Paper

3.11.2 Project Budget Summary Table

Project Costs per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon						
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	Total
		2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	
CapEx	0.000	0.160	9.981	0.000	0.000	0.000	0.000	10.141
OpEx	0.000	1.426	1.575	0.000	0.000	0.000	0.000	3.002
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	1.586	11.556	0.000	0.000	0.000	0.000	13.143

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon						
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	Total
		2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	
CapEx	0.000	0.000	3.522	(9.082)	0.000	0.000	0.000	(5.559)
OpEx	0.000	0.000	0.334	(0.408)	0.000	0.000	0.000	(0.073)
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	3.857	(9.489)	0.000	0.000	0.000	(5.632)

3.11.3 Cost Assumptions

This estimate was developed in 2018 using the standard IS estimating methodology, which includes an assessment of project costs. Examples of these project costs are internal and contract labor, hardware and software to deliver the project, cost of living adjustments for multi-year projects, AFUDC for capital investments, risk, and ongoing support costs. Standard rates are used in the estimate to promote consistency (ex: internal labor rates, cost of living adjustments %, AFUDC % and risk %). The accuracy level of estimate is identified in Table 3.11.1.

3.11.4 Net Present Value / Cost Benefit Analysis

This is not an NPV project.

3.11.5 Additional Impacts

None.



US Sanction Paper

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	Kelly Carney	Business Representative
Program Delivery Management (PDM)	Narayan Devireddy	VP Solution Delivery
Business Partner (BP)	Orla Daly	Relationship Manager
Program Delivery Management (PDM)	Jeffrey Dailey	Program Delivery Director
IS Finance	Michelle Harris	Manager
IS Regulatory	Daniel DeMauro	Director
Digital Risk and Security (DR&S)	Elaine Wilson	Director
Service Delivery	Mark Mirizio	Manager
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

\$M	INVP 4750	Total
CapEx	9.730	9.730
OpEx	2.839	2.839
Removal	0.000	0.000
Total	12.569	12.569

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	1.164	2.347	3.511		
	SDC Time & Materials		1.464	2.294	3.758	IBM
			0.241	0.612	0.853	WiPro
			0.000	-	-	DXC
			0.000	-	-	Verizon
	SDC Fixed-Price		0.000	-	-	IBM
			0.000	-	-	WiPro
			0.000	-	-	DXC
			0.000	-	-	Verizon
	All other personnel	0.784	-	0.784		
	TOTAL Personnel Costs	3.653	5.253	8.906		
Hardware	Purchase	0.000	0.005	0.005		
	Lease	0.000	-	-		
Software		0.000	0.141	0.141		
Risk Margin			0.177	0.177		
AFUDC		0.000	0.999	0.999		
Other		0.000	8.547	8.547		
TOTAL Costs		3.653	15.122	18.775	Should match Financial Summary Total	



US Sanction Paper

4.2.2 Benefiting Operating Companies

The following companies will benefit from this program. The allocation of these benefits will be based upon the number of customers, and will vary for each project within the program. The individual project sanction papers will include the actual allocation.

Operating Company Name	Business Area	State
Niagara Mohawk Power Corp - Electric	Electric Distribution	NY
Niagara Mohawk Power Corp – Gas	Gas Distribution	NY
Massachusetts Electric Company	Electric Distribution	MA
Nantucket Electric Company	Electric Distribution	MA
Narragansett Gas Company	Gas Distribution	RI
Narragansett Electric Company	Electric Distribution	RI
KeySpan Energy Delivery New York	Gas Distribution	NY
KeySpan Energy Delivery Long Island	Gas Distribution	NY
Boston Gas Company	Gas Distribution	MA
Colonial Gas Company	Gas Distribution	MA

4.2.3 IS Ongoing Operational Costs (RTB):

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

RTB costs are high level estimates at this time for the program. Individual projects within the program will identify their own RTB impacts in the respective sanction papers.

INV ID:	4750				Forecast Date:	08/16/18
Investment Name:	CXT Program				Go-Live Date:	9/1/2020
Project Manager:	Tom Towne			PDM:	Jeff Dailey	
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	78.0	276.4	331.4	341.0	351.0	1,377.8
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	(78.0)	(276.4)	(331.4)	(341.0)	(351.0)	(1,377.8)
Business Budgeted Net Impact to RTB Variance	-	-	-	-	-	-



US Sanction Paper

4.3 *NPV Summary (if applicable)*

N/A

4.4 *Customer Outreach Plan*

N/A



Long: US Sanction Paper

Title:	Customer Experience Transformation Technology Program	Sanction Paper #:	USSC-17-276 v3
Project #:	INVP 4750	Sanction Type:	Sanction
Capex #:	5007692		
Operating Company:	National Grid USA Svc. Co.	Date of Request:	7/22/2019
Author:	Olesker, Michael	Sponsor:	Carney, Kelly VP Customer Solutions
Utility Service:	IT	Project Manager:	Gauba, Shalini

Executive Summary

This paper requests Sanction of INVP 4750 in the amount of \$24.515M with a tolerance of +/-10% for the purposes of Full Implementation.

This sanction amount is \$24.515M broken down into:

- \$20.026M Capex
- \$4.489M Opex
- \$0.000M Removal

Project Summary

This program's focus is on re-engineering the National Grid customers' interactions to create a universal and seamless customer experience through multiple service options: Phone, Web, Mobile, Text, Email, and future emerging channels. The program will replace out-of-support platforms to mitigate existing risk to National Grid's self-service billing, payment and communications portals. It will maximize customer and company benefits from technical capabilities delivered by the Agent & Interaction Management Systems (AIMS) program delivered in June 2019. It will also deliver strategic customer care and communication capabilities to meet and exceed customer expectation as stated in the National Grid vision. It will set the foundation for the processes and technology changes needed to drive step improvements to the customer experience. The program will help manage increasing future operating costs through the migration of customers to self-service channels, and through re-engineering of processes and transactions.

Background

National Grid has embarked on a comprehensive Customer Experience Transformation (CXT) program to change how we interact, serve and communicate with customers. This technology enabling program is a key element and building block to our Customer strategy.

National Grid has approximately 7 million gas and electric customers in New York, Massachusetts and Rhode Island, and was formed from of a series of mergers and acquisitions. Although a number of system and infrastructure consolidations have taken place, there are essentially two legacy infrastructures for Billing/Customer Information Systems and corresponding digital channels (Web and Interactive Voice

Response) implementations that enable self-serve functions for our customers. National Grid is re-engineering the customer digital experience and supporting processes into a single set of digital channels, while mitigating risks associated with using out-of-support legacy customer self-service platforms.

Project Descriptions

The CXT technology program incorporates Business value streams referred to as Product Lines that have been adopted for implementation within a Scaled Agile Framework and operating model to support the US Customer strategy. A key guiding principle of the program is to ensure stability and enhance functionality in the shortest timeline to improve how we service customers. In some cases, tactical decisions are made and implemented while the end state roadmap is still under development. These short-term improvements are vetted against the end state vision and for alignment to other strategic projects, such as Gas Business Enablement (GBE).

Where able, the program will be delivering core enterprise capabilities and infrastructure that will be the base for future advancements within National Grid.

The program will be delivering incremental functional capabilities and enhancements following agile methodology. These deliverables will be aligned with following Product Lines:

Web Self-Service Platform – Continue with the work initiated in FY19 as MyAccount MVP which focuses on providing a better User Experience Portal (UXP) that is accessible through desktop and mobile devices. The program will accomplish the following:

- **Stable and Secure Infrastructure:**
 - Replace legacy downstate Siebel infrastructure that supports customer facing functions for the downstate New York Customers (CRIS). The updated site will be designed and built as a responsive website, and will be the basis for future conversion of the customers served by the CSS customer service system
 - Provide customer system integration services to support the new user experience. The existing services which are used to support the contact center agent desktop, Interactive Voice Response system (IVR) and web self-service channels depend on unsupported middleware infrastructure and out of date technology platforms
- **Improved Usage and Insights:** Seamlessly incorporate a third-party vendor product for downstate New York residential customers to provide enhanced usage information, bill comparison and energy savings tips, eliminating the need for a separate login.
- **User Experience across Multiple Device Types:** Provide a best-in-class responsive transactional website for all regions, eliminating the need for separately maintained content on the mobile website.
- **Identity Access Management (IAM):** Implementation of a strategic IAM solution integrated with the Business-to-Customer (B2C) Retail Web Portal. This new IAM solution will serve as a replacement for the legacy authentication and web account management solutions across National Grid territories, and include single-sign-on (SSO) for services provided to third-party partners who provide information to National Grid's customers through the self-service website.
- **Preference Management:** A new operational data store will be used to maintain and store a limited set of (as-is) account preferences for customers.
- **Communication Engine:** A new communication engine will be established to replace the unsupported Siebel web email communication for CRIS customers and enable future multi-channel communication capabilities.

Operational Data Store (ODS) - Improved Availability by providing a 24x7 customer web experience for the downstate NY region through the creation of an operational data store (ODS) to replace the currently isolated information that is unavailable to process customer transactions while batch processes are running overnight. This work will be completed in conjunction with and support of the web self-service platform.

Personalization

– Expand the personalization pilot across all contact centers by providing customer specific data to the representatives that will enable them to deliver personalized customer service with use of a vendor managed portal. Drive personalized, targeted offers and solutions to customer by incorporating personalization management. The personalized offers will be based on predictive propensity modeling that takes in account multiple aspects of the customer including past behaviors (programs enrolled in, high bill, collections, etc.), locations, and other third-party information and provide a vehicle to serve personalized and targeted

solutions to a segment of customers, through preferred communication channels

Automated Customer - This product provides a platform that allows our National Grid customers to communicate to our service departments directly. It will maximize benefits from technical capabilities delivered in INVP 3932 Agent & Interaction Management Systems (AIMS) project in June 2019. This workstream will plan to provide and integrate omni-channel capabilities, such as chat and email. It will also integrate the strategic knowledge management solution developed under GBE/CXT to ensure universal rollout. It will also target expansion of the home agents to 20-30 percent of the workforce to support disaster recovery and contingency capabilities.

The program had the following components delivered in prior sanctioning phases:

4750A – CXT Strategic Assessment was completed in June 2018.

This Feasibility and Analysis study performed a detailed assessment of the customer facing website requirements, known as My Account. It identified interdependencies and synergies of the My Account Program with GBE and Agent Interaction Management System (AIMS). The project evaluated three solution architectures, data model development, release management, and communication fulfillment options. The project delivered a Program Roadmap that aligns to GBE and AIMS.

4750B – CXT-Tactical Customer Web Transaction Improvements was completed in October 2018.

This project delivered on improvements in Customer Experience and Satisfaction through re-engineering of web processes for low customer satisfaction (C-SAT) transactions to provide customers more access to the self-service channels.

4750C – CXT IAM POC was completed in July 2018.

This Proof of Concept (POC) project for Identity Access Management (IAM) successfully determined the feasibility for using the Microsoft Azure Business-To-Customer (B2C) platform for the CXT 'MyAccount' Strategic Alignment implementation effort.

4750D – CXT MyAccount MVP – Content Web

This phase of the project was focused on providing a better User Experience Portal (UXP) for desktop and mobile devices by developing a best-in-class responsive content website for all regions, eliminating the need for separately maintained content on the mobile website.

Following deployment of the Content web in June 2019 as a part of INVP 4750D scope, the product will focus on agile incremental delivery of capabilities aligned with web self-service.

4750G – CXT MyAccount Two Way Outage Communications

This project enables two-way text capabilities for electric outage information. It will provide customers with two-way outage communication and notifications, enabling National Grid to increase customer satisfaction and trust, while shifting calls from the contact center to a more efficient method for providing critical information to customers during major storms. Note: This is targeted to be delivered in June 2019.

Summary of Benefits

This investment will deliver the following benefits:

- Improve customer satisfaction through improved and standardized processes across all digital channels
 - External research from AnswerLab and JD Power indicates that customers are more satisfied overall when they are successful at completing their transaction online, find websites easy to navigate, and have mobile options available to them;
 - Improving the overall experience builds trust and willingness to participate in programs offered
- Deliver Customer Value through Improved Experience
 - Create systems and processes capable of adapting to changing customer needs and expectations, and evolving National Grid vision
 - Improve two-way communications which allows near real time updates available to customers through their preferred channel
 - Expand availability of self-service options by mitigating problems with legacy back end systems
 - One view of all billing, services, transactions and communications no matter the channel for both the

customer and company

- Regulatory
 - Improved customer self-service
- Operating Costs
 - Manage increase in future operating cost through the migration of customer transactions to self-serve digital platforms
- Risk Remediation
 - Mitigate operational risk associated with outdated technology platforms which provide support for over 3.5 million registered users, 1.3 million customers enrolled in paperless billing and \$2.16 billion per year in payments via the web self-serve and mobile channels representing 14% of National Grid's US revenue.
 - Mitigate cyber security exposure to National Grid and its customers from vendors not providing patches for out of support software
- Prepare for Future Demand

Support new demand for customer self-serve capabilities coming from large change programs including: Gas Business Enablement, NY REV, MA Grid Modernization, etc

Business and Customer Issues

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

Alternatives

<i>Number</i>	<i>Title</i>
1	<p>Do Nothing or Defer</p> <p>Rejected. The Company is currently operating key areas of the business on technology that is outdated and no longer supported. The ability to service the entire legacy KeySpan segment that includes gas customers in MA and New York City is at risk. Furthermore, the C-SAT scores in all regions for online self-service capabilities are not consistent with National Grid's vision. Deferring this program will also increase cyber security exposure due to vendors no longer supporting security patching of legacy versions of software.</p> <p>Indicative cost N/A</p>
2	

Other Alternatives considered during previous phases of the program

Following alternatives have been described and rejected during prior partial sanctioning of this program:

Convert Entire Self-Service to Responsive

Rejected. The increase in complexity and timeline would not allow delivery of environment stabilization in a timely manner

Utilize Existing Communication Methods

Rejected. Although this option could allow delivery of the overall solution in a shorter timeline, there would be future rework to implement strategic initiatives within the company to streamline all communication.

Convert the Downstate NY Customers Only to the new IAM Solution at this Time

Rejected. The effort to convert all customers during the 4750D CXT MyAccount MVP project will provide a significant benefit to the experience of customers who have accounts managed across the various back-end customer systems and reduce the learning curve of deploying the functionality in waves.

Indicative cost N/A

Related Projects, Scoring and Budget

Summary of Projects

<i>Project Number</i>	<i>Project Type (Elec only)</i>	<i>Project Title</i>	<i>Estimate Amount(\$M)</i>
4750		Customer Experience Transformation Technology Program	24.515
Total:			24.515

Associated Projects

<i>Project Number</i>	<i>Project Title</i>	<i>Estimate Amount (\$M)</i>
3932	Customer Contact Center / SDC Technology Upgrade Implement Solution	30.382
		30.382

Prior Sanctioning History

<i>Date</i>	<i>Governance Body</i>	<i>Sanctioned Amount</i>	<i>Potential Project Investment</i>	<i>Sanction Type</i>	<i>Sanction Paper</i>	<i>Potential Investment Tolerance</i>
12/12/2018	USSC	\$12.569M	\$18.775M	Partial Sanction	4750	25%
8/9/2017	USSC	\$6.730M	\$11.616M	Partial Sanction	4750	25%

This sanction of the program to continue with work defined through FY20 to deliver the best value to National Grid's customers while aligning to the Company's architecture strategy within the agile development methodology. This sanction request amount increase reflects:

- Scope increase to this program, with the addition of previously identified unsanctioned projects from the approved IT FY20 plan accounts for \$3.227M variance.
- Costs attributed to selected vendors hosting charges accounts for \$0.949M variance
- Fuller understanding of previously sanctioned scope and cost to facilitate earlier delivery of customer benefits accounts for \$1.464M variance

Lessons Learned:

For strategic capability initiatives such as this CXP program it is beneficial to recognize early if a product management based approach vs. traditional waterfall project delivery is appropriate for driving changes. A product can be anything from a physical product, to a software or a service. It goes through a life cycle, being developed and introduced on the market

Key Milestones	
Milestone	Date (Month / Year)
Start Up	April, 2017
Partial Sanction	August, 2017
Begin Requirements and Design	August, 2017
Partial Sanction	December, 2018
Project Sanction	July, 2019
Move to Production / Final Go Live	March, 2020
Project Closure Sanction	June, 2020
Next Planned Sanction	
Date (Month/Year)	Purpose of Sanction Review
June, 2020	Closure

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 program will enable us to meet our Strategic Business Objectives for customer Trust and Ease. It also drives further compliance with National Grid BMS Standard 06 "Customer Management" customer Core Principals and requirements. This program is in support of our Corporate Vision and directly aligns with our Strategic Priorities, specifically "drive a step change in our core business performance".</p> <p>This program will mitigate operational risk associated with outdated technology platforms which provide support for over 3.5 million registered users, 1.3 million customers enrolled in paperless billing and \$2.16B per year in payments via the web self-serve and mobile channels representing 14% of National Grid's US revenue. In addition, it will reduce cyber security exposure to National Grid and its customers from vendors not providing patches for out of support software.</p>

Asset Management Risk Score: 41

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	5.060	14.966	0.000	0.000	0.000	0.000	0.000	20.026
Opex	2.690	1.799	0.000	0.000	0.000	0.000	0.000	4.489
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	7.750	16.765	0.000	0.000	0.000	0.000	0.000	24.515

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

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		
13. Project Management	R1 - On-boarding additional development resources	There is risk that the project will experience delays in on-boarding additional development resources as required for different project phases	Possible delays in implementation	Reduce	Aggressive hiring plan has been approved by ITLT. Escalate to senior leadership as necessary.	15
18. Specific Risk	R2 - IT Development Operations tools availability	There is risk that build-out of the DevOps tools will not align with project timelines	Possible delays in implementation and unnecessary complications in build-out of deliverables	Reduce	Work with dev ops and solution delivery teams on building out tools; look at interim solutions. Escalate to senior leadership as necessary.	12
18. Specific Risk	R3 - Agile software development is an approach to software development	The project is delivered using new to National Grid agile methodology	Possible delays in planned efforts attributed to learning curve	Reduce	National Grid IT to utilize new Agile Transformation Office (ATO) organization capabilities, hired Agile Business Coach and embedded IT resources experienced with agile delivery methodology	4

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 FY20 - 25	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input checked="" type="radio"/> Under <input type="radio"/> N/A	0.010

If Cost > Approved

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

Drivers

The key drivers of this investment are to:

- Improve customer satisfaction (C-SAT) through consistent processes across all digital channels
- Manage operating cost through the migration of customer transactions to self-serve digital platforms
- Create systems and processes capable of adapting to changing customer needs and expectations in support of furthering National Grid's reputation and position as a leader within the utility sector
- Mitigate operational risk associated with outdated technology platforms
- Improve effectiveness of customer support function and reduce the risk of noncompliance with regulatory standards

CIAC Reimbursement

N/A

Cost Summary Table

Project Number	4750	Project Title	Customer Experience Transformation Technology Program						Project Estimate Level	10%
Spend	Prior Yrs	Yr 1 2020	Yr 2 2021	Yr 3 2022	Yr 4 2023	Yr 5 2024	Yr 6 2025	Total		
Capex	5.060	14.966	0.000	0.000	0.000	0.000	0.000	20.026		
Opex	2.690	1.799	0.000	0.000	0.000	0.000	0.000	4.489		
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
Total	7.750	16.765	0.000	0.000	0.000	0.000	0.000	24.515		

Total Project Sanction

Capex	5.060	14.966	0.000	0.000	0.000	0.000	0.000	20.026
Opex	2.690	1.799	0.000	0.000	0.000	0.000	0.000	4.489
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	7.750	16.765	0.000	0.000	0.000	0.000	0.000	24.515

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	5.060	14.973	0.000	0.000	0.000	0.000	0.000	20.033
Opex	2.690	1.802	0.000	0.000	0.000	0.000	0.000	4.492
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	7.750	16.775	0.000	0.000	0.000	0.000	0.000	24.525
Variance								
	Prior Yrs	Yr 1 2020	Yr 2 2021	Yr 3 2022	Yr 4 2023	Yr 5 2024	Yr 6 2025	Total
\$M								
Capex	0.000	0.007	0.000	0.000	0.000	0.000	0.000	0.007
Opex	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.003
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Variance	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.010

Cost Assumptions

The accuracy level of estimate for each project is identified in the Cost Summary Table

Net Present Value / Cost Benefit Analysis

N/A

NPV Assumptions & Calculations

N/A

Additional Impacts

Statement of Support

Department	Individual	Responsibilities
Business Department	Carney, Kelly	Business Representative
Business Partner (BP)	Daly, Orta	Relationship Manager
Program Delivery Management (PDM)	Selvaganapathy, Venky	Program Delivery Director
IT Finance	Harris, Michelle	Manager
IT Regulatory	DeMauro, Daniel J.	Director
Digital Risk and Security (DR&S)	Wilson, Elaine	Director
Service Delivery	Mirizio, Mark	Manager
Enterprise Architecture	Clinchot, Joseph J.	Director
Enterprise Portfolio Management	Cronin, Daniel	Analyst

Reviewers

<i>Function</i>	<i>Individual</i>
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

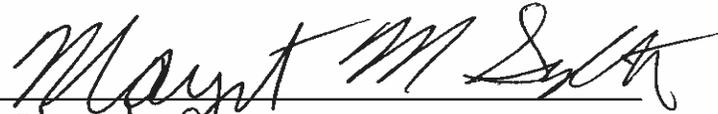
The Senior Executive Sanctioning Committee (SESC) approved this paper at a meeting held on 07/22/2019:

(a) APPROVE the investment of \$24.515M and a tolerance of +/-10% for Full Implementation.

(b) NOTED that Gauba, Shalini has the approved financial delegation

(c) Approved the run-the-business (RTB) of \$2.153M (per annum) for 5 years.

Signature



Date

8/7/19

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

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	4.100	2.108	6.208	
	SDC Time & Materials	2.100	2.250	4.350	IBM
		0.560	0.386	0.946	WiPro
				-	DXC
				-	Verizon
	SDC Fixed-Price			-	IBM
				-	WiPro
				-	DXC
				-	Verizon
	All other personnel	2.119	5.794	7.913	
TOTAL Personnel Costs	8.879	10.539	19.418		
Hardware	Purchase			-	
	Lease		0.144	0.144	
Software			0.090	0.090	
Risk Margin				-	
AFUDC			0.324	0.324	
Other			4.540	4.540	
TOTAL Costs		8.879	15.637	24.516	

all figures in \$ thousands

INV ID:	4750	Date RTB Last Forecasted	06,
---------	------	--------------------------	-----

Investment Name:	CXT Program					
Project Manager:	TBD			PDM:	Venky Selvagan	
All figures in \$ thousands	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	
	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	78.0	276.4	331.4	341.0	351.0	
Last Sanction Business Net Impact to RTB	-	-	-	-	-	
Last Sanction Total Net Impact to RTB	78.0	276.4	331.4	341.0	351.0	
Planned/Budgeted Net Impact to RTB						
IS Investment Plan Net Impact to RTB	191.0	2,138.0	2,158.0	2,158.0	2,158.0	
Business Budgeted Net Impact to RTB	-	-	-	-	-	
Currently Forecasted Net Impact to RTB						
IS Funded Net Impact to RTB Forecasted at Go-Live	573.4	2,758.5	2,768.5	2,778.5	2,778.5	
Business Funded Net Impact to RTB Forecasted at Go-Live	38.0	500.0	500.0	500.0	500.0	
Variance to Planned/Budgeted Net Impact to RTB						
IS Investment Plan Net Impact to RTB Variance	(382.4)	(620.5)	(610.5)	(620.5)	(620.5)	
Business Budgeted Net Impact to RTB Variance	(38.0)	(500.0)	(500.0)	(500.0)	(500.0)	

Company Name	SAP Co.	SAP Seg	Jurisdiction	BU
Niagara Mohawk Power Corp.- Electric Distr.	5210	NYELEC	NY	Electric
Niagara Mohawk Power Corp. - Gas	5210	NYGASD	NY	Gas
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
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 Gas Company	5360	RIGASD	RI	Gas



Closure Template

Title:	Cloud Enhancements (Azure Core Service) Closure Paper	Sanction Paper #:	
Project #:	INVP 4757	Sanction Type:	Closure
Operating Company:	National Grid USA Svc. Co.	Date of Request:	9/14/2018
Author:	Neha Verma / Andrew Yee	Sponsor:	John Gilbert, Global Head IS Service Delivery
Utility Service:	IS	Project Manager:	Andrew Costello /David McCune

1 Executive Summary

This paper is presented to close INVP 4757. The total spend was \$0.438M. The sanctioned amount for this project was \$0.599M at +/- 10%.

2 Project Summary

This project provided enhancements to the Cloud Enablement project to enable a production ready environment to host the onboarding of applications using cloud services and thereby reducing the demand on the physical data centers. This project also enabled SSE (Storage Service Encryption), configured express routing, installed checkpoint appliances, built an Azure secondary location and integrated a support model with Service Now to manage the infrastructure.

3 Variance Analysis

3.1 Cost Summary Table

Project Sanction Summary (\$M)				
Title	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over)/ Under
Cloud Enhancements (Azure Core Service)	Capex	0.262	0.433	0.171
	Opex	0.176	0.166	(0.010)
	Removal	0.000	0.000	0.000
	Total	0.438	0.599	0.161

Closure Template

3.2 Cost Variance Analysis

\$171K Underspend in Capex

- This would have been used to address the additional scope for Checkpoint but a vendor to address this was not selected and still is not as of today
- All agreed to close this project out and ADDITIONAL SCOPE is being pursued via a new INVP

\$10K overspend in OPEX

- Primary Stakeholders asked to keep the project open while they and IS Commercial explored options and solicited vendors for proposals to support the Checkpoint Appliances placed in Azure
- Management of these Checkpoint appliances was raised as a risk by DR&S
- The project was kept over four months incurring opex charges and while multiple vendors were contacted, none were selected.

3.3 Schedule Variance

Schedule Variance	
Project Grade - Ready for Use Date	10/31/2017
Actual Ready for Use Date	10/31/2017
Schedule Variance	- 0 years, 0 months, 0 days

4 Final Cost by Project

Actual Spending (\$M) vs. Sanction (\$M)				
Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
4757	Capex	0.262	0.433	0.171
	Opex	0.176	0.166	(0.010)
	Removal	0.000	0.000	0.000
	Total	0.438	0.599	0.161

Closure Template**5 Improvements / Lessons Learned/Root Cause**

- Guided Workshops given by Cloud COE with focus in : VM sizing(Especially DB & Clusters). This will help the resource rationalization process to be better informed and skilled. – (2018-LL-504)
- As we grow in size and projects increase , we need to have separate teams to perform specific roles (Onboarding Architect, NW/Infrastructure Architect, etc) (2018-LL-505)
- Reset stakeholder expectations and follow the SDF lifecycle process to eliminate risk and issues. (2018-LL-507)
- Conduct checkpoints with Service Delivery to ensure they are aware of the deliverables, scope, and responsibilities. (2018-LL-508)

6 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
Gate E checklist completed (appl. only to CCD)	<input type="radio"/> Yes <input checked="" type="radio"/> N/A
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed	<input checked="" type="radio"/> Yes <input type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All IS Service Transition activities have been completed	<input checked="" type="radio"/> Yes <input type="radio"/> No
All lessons learned have been entered appropriately into the IS Knowledge Management Tool (KMT) lesson learned database	<input checked="" type="radio"/> Yes <input type="radio"/> No

Closure Template

7 Statements of Support

7.1 Supporters

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

Department	Individual	Responsibilities
Business Department	Elaine Hatzis	Business Representative
PDM	Helen Smith	Head of PDM
BRM	Bill Kearns	Relationship Manager
PDM	Dave McCune	Program Delivery Director
IS Finance	Chip Benson	Director
IS Regulatory	Tom Gill	Director
DR&S	Elaine Wilson	Director
Service Delivery	Brian Detota	Director
Enterprise Architecture	Svetlana Lyba	Director

7.2 Reviewers

N/A



Closure Template

8 Decisions

The US ISSC Sanctioning Committee and Executive Sponsor has reviewed and approved this paper.

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

John Gilbert, Global Head of Service Delivery

Acting US CIO

Closure Paper

Title:	Critical Application Resiliency Testing	Sanction Paper #:	
Project #:	INVP 4758	Sanction Type:	Closure
Operating Company:	National Grid USA Svc. Co.	Date of Request:	9/28/2018
Author:	Ken Little	Sponsor:	John Gilbert, Global Head IS Service Delivery
Utility Service:	IS	Project Manager:	Ken Little

1 Executive Summary

This paper is presented to close INVP 4758. The total spend was \$0.187M. The original sanctioned amount for this project was \$0.300M at +/- 10%.

2 Project Summary

This project verified the backup and restore capabilities for application data and/or application configuration information for 95 identified business critical applications in the US. The project leveraged the results of successful application disaster recovery tests or successful backup and restore requests performed in 2017 as evidence of a successful application data and/or application configuration restore.

3 Variance Analysis**3.1 Cost Summary Table**

Project Sanction Summary (\$M)				
Title	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
Critical Application Resiliency Testing	Capex	0.000	0.000	0.000
	Opex	0.187	0.300	0.113
	Removal	0.000	0.000	0.000
	Total	0.187	0.300	0.113

3.2 Cost Variance Analysis

Opex variance of \$0.113M is due to:

- The final project cost for application support being less than the vendor proposal
- Restore activities were performed as Business As Usual (BAU) activity and did not incur costs to the project

Closure Paper**3.3 Schedule Variance Table**

Schedule Variance	
Project Grade - Ready for Use Date	5/1/2018
Actual Ready for Use Date	4/27/2018
Schedule Variance	- 0 years, 0 months, 4 days

3.4 Schedule Variance Explanation

N/A

4 Final Cost by Project

Actual Spending (\$M) vs. Sanction (\$M)				
Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
INVP4758	Capex	0.000	0.000	0.000
	Opex	0.187	0.300	0.113
	Removal	0.000	0.000	0.000
	Total	0.187	0.300	0.113

5 Improvements / Lessons Learned/Root Cause

Identified that configuration scripts that are configured for data restores are not configured to restore to a location other than the original data source. The infrastructure and application support vendors have noted this for future requests (2018-LL-574).

6 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
Gate E checklist completed (appl. only to CCD)	<input type="radio"/> Yes <input checked="" type="radio"/> N/A
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed	<input checked="" type="radio"/> Yes <input type="radio"/> No

Closure Paper

All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All IS Service Transition activities have been completed	<input checked="" type="radio"/> Yes <input type="radio"/> No
All lessons learned have been entered appropriately into the IS Knowledge Management Tool (KMT) lesson learned database	<input checked="" type="radio"/> Yes <input type="radio"/> No

7 Statements of Support**7.1 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	Chris Granata	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

7.2 Reviewers

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

N/A



Closure Template

8 Decisions

The US ISSC Sanctioning Committee and Executive Sponsor has reviewed and approved this paper.

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

Premjith Singh

VP IS Tower Lead, Ops & Network

Closure Paper

Title:	MTC and Syracuse Boardrooms & Auditoriums	Sanction Paper #:	
Project #:	INVP 4759 Capex: S007690	Sanction Type:	Closure
Operating Company:	National Grid USA Svc. Co.	Date of Request:	4/2/2019
Author:	Michael Bucceri / Andrew Yee	Sponsor:	Barry Sheils, Vice President IS Infrastructure & Operations
Utility Service:	IT	Project Manager:	John Braziel / Dan Castonguay

1 Executive Summary

This paper is presented to close INVP4759. The total spend was \$0.353M. The original sanctioned amount for this project was \$0.417M with a tolerance of +/- 10%.

2 Project Summary

This project upgraded the Video Conferencing (VC) equipment by installing and configuring the selected National Grid Boardrooms and Conference rooms. In result, it allowed for flexible reliability eliminating inconsistent performance issues and generating improved support for the VC environment between the National Grid locations.

3 Variance Analysis**Cost Summary Table**

Project Sanction Summary (\$M)				
MTC and Syracuse Boardrooms & Auditoriums	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
INVP 4759 Capex: S007690	Capex	0.295	0.352	0.057
	Opex	0.058	0.065	0.007
	Removal	0.000	0.000	0.000
	Total	0.353	0.417	0.064

Cost Variance Analysis

The VC equipment estimates which the sanction paper was generated from were in fact higher than the actual cost.

Closure Paper

3.1 Schedule Variance Table

Schedule Variance	
Project Grade - Ready for Use Date	11/30/2017
Actual Ready for Use Date	5/1/2018
Schedule Variance	0 years, 5 months, 1 days

3.2 Schedule Variance Explanation

The order of customized equipment was delayed.

4 Final Cost by Project

Actual Spending (\$M) vs. Sanction (\$M)				
MTC and Syracuse Boardrooms & Auditoriums	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
INVP 4759 Capex: S007690	Capex	0.295	0.352	0.057
	Opex	0.058	0.065	0.007
	Removal	0.000	0.000	0.000
	Total	0.353	0.417	0.064

5 Improvements / Lessons Learned/Root Cause

2018-LL-548: Early involvement of the IS group was essential to identify business needs and video technology selection processes. Early involvement and communications with vendors, CSM's and SO's is essential.

2018-LL-551: Longer planned duration of test time was needed in the project plan to validate, order, and build the video equipment. On almost every instance of the equipment build, we exceeded the original time estimate by 100% (from 15 days to 30 days per VC Unit).

2018-LL-553: Longer planned duration of implementation and test time was needed in the project plan to identify, validate, and implement VC equipment. On almost every instance of the VC equipment install process, we exceeded the original time estimate by 200% (from 30 days to 60 days per install attempt).

Closure Paper

6 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
Gate E checklist completed (appl. only to CCD)	<input type="radio"/> Yes <input checked="" type="radio"/> N/A
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed	<input checked="" type="radio"/> Yes <input type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All IT Service Transition activities have been completed	<input checked="" type="radio"/> Yes <input type="radio"/> No
All lessons learned have been entered appropriately into the IT Knowledge Management Tool (KMT) lesson learned database	<input checked="" type="radio"/> Yes <input type="radio"/> No

7 Statements of Support

7.1 Supporters

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

Department	Individual	Responsibilities
Business Department	Elaine Hatzis	Business Representative
Business Partner (BP)	Caitlin Davidson	Relationship Manager
Program Delivery Management (PDM)	Chris Granata	Program Delivery Director
IT Finance	Michelle Harris	Manager
IT Regulatory	Tom Gill	Manager
Digital Risk and Security (DR&S)	Peter Shattuck	Director
Service Delivery	Mark Mirizio	Manager
Enterprise Architecture	Joe Clinchot	Director

7.2 Reviewers

NA



Closure Paper

8 Decisions

The US ITSC Sanctioning Committee and Executive Sponsor has reviewed and approved this paper.

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

Premjith Singh

VP IT Tower Lead – Gas Business Partner



Resanction: US Sanction Paper

Title:	US Foundation Hosting Renewal	Sanction Paper #:	USSC-17-333v3
Project #:	INVP 4761	Sanction Type:	Resanction
Capex #:	Capex: S007739		
Operating Company:	National Grid USA Svc. Co.	Date of Request:	7/10/2019
Author:	Granata, Chris	Sponsor:	Devireddy, Narayan Vice President, Global Delivery, Informa
Utility Service:	IT	Project Manager:	Conroy, Brian

Executive Summary

This paper requests Resanction of INVP 4761 in the amount of \$14.120M with a tolerance of +/-10% for the purposes of Full Implementation.

This sanction amount is \$14.120M broken down into:

- \$9.972M Capex
- \$4.148M Opex
- \$0.000M Removal

Note the originally requested sanction amount of \$6.193M

Project Summary

To address its growing business environment, National Grid must enhance its SAP and High Performance Analytic Appliance (HANA) application support and hosting services. Currently, the application hosting support is provided by T-Systems out of Houston, Texas and SAP HANA services provided by SAP HANA Enterprise Cloud (HEC) out of Virginia. This project and Freudenberg Information Technology (FIT) will consolidate these two datacenters under one platform for both primary and Disaster Recovery (DR) in the US. The new service provider FIT was selected through a formal Request For Proposal (RFP) process supported by INVP 3924.

FIT will supply Platform as a Service (PaaS) for SAP and HANA applications, and ancillary applications including PowerPlan, Open Text, uPerform and SABRIX. National Grid IT will work with FIT to move the SAP application portfolio to a new datacenter.

By moving to the new platform, National Grid will eliminate the need to renegotiate contract extensions with current hosting providers SAP, T-Systems and Wipro as well as having to conduct costly upgrades of the existing SAP infrastructure hosted by T-Systems.

The following factors have contributed to the extension of the Project timeline and increased costs:

- The Master Service Agreement (MSA) contract negotiations with FIT took longer than expected (4 months to complete)
- Initial environment builds at FIT and data copies from T-Systems and HEC datacenters took longer than expected and encountered a number of issues
- Constraints with Month-End Close processing periods and payroll processing windows

In November of 2018, NG Leadership determined the SOX-Compliance risk associated with the project going live in January 2019 was higher than acceptable given all the calendar year-end and fiscal year-end activity within the same time frame. The decision was made to split the implementation into 2 phases: December 17th 2018 for the HANA systems and October 2019 for the SAP systems at T-Systems.

Related Projects, Scoring and Budget

Summary of Projects

<i>Project Number</i>	<i>Project Type (Elec only)</i>	<i>Project Title</i>	<i>Estimate Amount(\$M)</i>
4761		US SAP Foundation Hosting Renewal	14.120
Total:			14.120

Prior Sanctioning History

<i>Date</i>	<i>Governance Body</i>	<i>Sanctioned Amount</i>	<i>Potential Project Investment</i>	<i>Sanction Type</i>	<i>Sanction Paper</i>	<i>Potential Investment Tolerance</i>
10/10/2018	USSC	8.361	8.361	Resanction	USSC-17-333 v2	10%
10/11/2017	USSC	6.193	6.193	Sanction	USSC-17-333	10%

Over / Under Expenditure Analysis

Summary Analysis	Capex	Opex	Removal	Total
Resanction Amount	9.972	4.148	0.000	14.120
Latest Approval	6.624	1.737	0.000	8.361
Change	3.348	2.411	0.000	5.759

Key Milestones

Milestone	Date (Month / Year)
Start Up	August, 2017
Begin Requirements and Design	April, 2017
Project Sanction	October, 2017
Begin Development and Implementation	January, 2018
Project Sanction	October, 2018
Phase I - Move HANA to Production / Go Live	December, 2018
Phase II Start Up	January, 2019
Regression Testing	June, 2019
Re-sanction	July, 2019
Mock Run	July, 2019
Move to Production / Final Go Live	October, 2019
Project Closure Sanction	February, 2020

Next Planned Sanction

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

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 FY20-24	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Over <input type="radio"/> Under <input type="radio"/> N/A	(3.191)

If Cost > Approved

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

Re-allocation of funds within the IT portfolio has been managed by the IT Relationship Manager with the Planning Analyst assistance to meet jurisdictional budgetary, statutory and regulatory requirements.

Drivers

Explanation for each of the cost drivers:

T-Systems Migration:

Due the project duration and final transition taking longer than originally expected, additional effort and cost incurred from T-Systems to keep current environments running. Additional effort and cost for T-Systems support with data copies and for keeping copies of our prod environment for 45 days after go-live.
Additional Cost: \$2.040M

Wipro Phase II Support:

Due the project duration and final transition taking longer than originally expected, additional cost for Wipro to perform required additional testing than agreed statement of work, additional FTE to lead cutover workstream and additional costs as a result of extending the go live date.
Additional Cost: \$0.983M

IBM:

Due the project duration and final transition taking longer than originally expected, additional cost for IBM to perform required additional testing than agreed statement of work, and additional costs as a result of extending the go live date.
Additional Cost: \$0.297M

Freudenberg-IT (FIT):

Due the project duration and final transition taking longer than originally expected, additional cost for FIT for keeping multiple environments running longer due to the extended go live date and milestone payments due as part of the contract.
Additional Cost: \$1.438M

Verizon:

Additional work required for security testing as a result of extending the go live date.
Additional Cost: \$0.128M

DXC:

Additional costs as a result of extending the go live date.
Additional Cost: \$0.051M

Other:

To support Security and Compliance, professional services from Securicon to perform testing; OneSource support for Sabrix, KPMG support for Sabrix, Success Factors for testing, and Airwatch testing
Additional Cost: \$0.245M

Detailed Analysis Table

<i>Detail Analysis</i>	<i>Over/Under Expenditure?</i>	<i>Amount (M's)</i>
T-Systems Migration Cost	<input checked="" type="radio"/> Over <input type="radio"/> Under	2.040
Wipro Phase II Support Cost	<input checked="" type="radio"/> Over <input type="radio"/> Under	0.983
IBM PowerPlan	<input checked="" type="radio"/> Over <input type="radio"/> Under	0.297
Freudenberg-IT (FIT)	<input checked="" type="radio"/> Over <input type="radio"/> Under	1.438
Other	<input checked="" type="radio"/> Over <input type="radio"/> Under	0.245
Verizon	<input checked="" type="radio"/> Over <input type="radio"/> Under	0.128
DXC	<input checked="" type="radio"/> Over <input type="radio"/> Under	0.051

Explanation of Key Variations

Due to the risk of encountering Sox/Compliance issues during Q4 reviews, the National Grid leadership team determined a two-phased implementation would be the best course of action. A decision was made to implement the first phase in December of 2018 and the second phase in October 2019.

- Phase I consisted of the HANA reporting systems running at SAP-HEC in Virginia. This was convert to FIT Dec 17th 2018.
- Phase II consists of the SAP portion, currently running at T-Systems in Houston, TX; which represents the SAP Application and ancillary systems including PowerPlan. This is now scheduled to Go-Live at FIT October 2019.
- Increased cost was incurred with the decision to use a two-phased approach:
 - a) Project timeline has been extended 10 months
 - b) Partner/vendor extensions needed to be re-negotiated.
 - c) Testing rework and additional scope have been added due to system and data changes since Phase 1 Go-Live.

Cost Summary Table

Project Number 4761	Project Title	US SAP Foundation Hosting Renewal						Project Estimate 10% Level	Total
		Prior Yrs	Yr 1 2020	Yr 2 2021	Yr 3 2022	Yr 4 2023	Yr 5 2024		
Spend									
Capex	6.529	3.443	0.000	0.000	0.000	0.000	0.000	9.972	
Opex	1.875	2.273	0.000	0.000	0.000	0.000	0.000	4.148	
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Total	8.404	5.716	0.000	0.000	0.000	0.000	0.000	14.120	

Total Project Sanction

Capex	6.529	3.443	0.000	0.000	0.000	0.000	0.000	9.972
Opex	1.875	2.273	0.000	0.000	0.000	0.000	0.000	4.148
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	8.404	5.716	0.000	0.000	0.000	0.000	0.000	14.120

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	6.529	2.149	0.000	0.000	0.000	0.000	0.000	8.678
Opex	1.875	0.376	0.000	0.000	0.000	0.000	0.000	2.251
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	8.404	2.525	0.000	0.000	0.000	0.000	0.000	10.929
Variance								

\$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	(1.294)	0.000	0.000	0.000	0.000	0.000	(1.294)
Opex	0.000	(1.897)	0.000	0.000	0.000	0.000	0.000	(1.897)
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Variance	0.000	(3.191)	0.000	0.000	0.000	0.000	0.000	(3.191)

Statement of Support

Department	Individual	Responsibilities
Business Department	Donoghue, William F.	Business Representative
Business Partner (BP)	Semel, Joel	Relationship Manager
Program Delivery Management (PDM)	Parikh, Samir	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	Clinchot, Joseph J.	Director
Enterprise Portfolio Management	Cronin, Daniel	Analyst

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

The US Sanctioning Committee (USSC) approved this paper at a meeting held on 05/08/2019:

(a) APPROVE the investment of \$14.120M and a tolerance of +/-10% for Full Implementation.

(b) NOTED that Conroy, Brian has the approved financial delegation

(c) Approved the run-the-business (RTB) of \$-1.295M (per annum) for 5 years.

Signature David H. Campbell
Date 7/19/19

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	0.356	0.050	0.406	
	SDC Time & Materials	0.231	0.297	0.528	IBM
		0.904	0.983	1.887	WiPro
		0.058	0.051	0.109	DXC
		0.104	0.128	0.232	Verizon
		0.000	-	-	IBM
	SDC Fixed-Price	0.000	-	-	WiPro
		0.000	-	-	DXC
		0.000	-	-	Verizon
		0.000	-	-	
	All other personnel	5.930	0.201	6.131	
TOTAL Personnel Costs	7.583	1.710	9.293		
Hardware	Purchase		-	-	
	Lease		-	-	
Software			-	-	
Risk Margin			-	-	
AFUDC		0.275	0.098	0.373	
Other		0.909	3.553	4.462	
TOTAL Costs		8.767	5.361	14.128	

Benefiting Operating Companies	Business Area	State
Niagara Mohawk Power Corp.- Electric Distr.	Electric Distribution	NY
Massachusetts Electric Company	Electric Distribution	MA

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

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	(2,261.0)	(2,559.0)	(2,559.0)	(2,559.0)	(2,559.0)	(12,497.0)
Last Sanction Business Net Impact to RTB	-	-	-	-	-	-
Last Sanction Total Net Impact to RTB	(2,261.0)	(2,559.0)	(2,559.0)	(2,559.0)	(2,559.0)	(12,497.0)
Planned/Budgeted Net Impact to RTB						
IS Investment Plan Net Impact to RTB	-	(1,688.2)	(1,295.7)	(1,295.7)	(1,295.7)	(5,575.3)
Business						

Budgeted Net Impact to RTB	-	-	-	-	-	-
Currently Forecasted Net Impact to RTB						
IS Funded Net Impact to RTB Forecasted at Go-Live	54.6	(286.7)	(1,295.7)	(1,295.7)	(1,295.7)	(4,119.3)
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	(54.6)	(1,401.5)	0.0	0.0	0.0	(1,456.0)
Business Budgeted Net Impact to RTB Variance	-	-	-	-	-	-



Re-sanction Request

Title:	US Foundation Hosting Renewal	Sanction Paper #:	USSC-17-333 v2
Project #:	INVP 4761 Capex: S007739	Sanction Type:	Re-sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	10/10/2018
Author:	David P. Petrick / Keith Gutchess	Sponsor:	John Gilbert, Global Head IS Service Delivery
Utility Service:	IS	Project Manager:	David P. Petrick

1 Executive Summary

This paper requests re-sanction of INVP 4761 in the amount of \$8.361M with a tolerance of +/- 10% for the purposes of full implementation

This re-sanction amount is \$8.361M broken down into:

\$6.624 M Capex

\$1.737 M Opex

\$0.000 M Removal

Note the originally requested sanction amount of \$6.193 M

2 Resanction Details

2.1 Project Summary

To address its growing business environment, National Grid must enhance its SAP and High Performance Analytic Appliance (HANA) application support and hosting services. Currently, the application hosting support is provided by T-Systems out of Houston, Texas and SAP HANA services are provided by SAP HANA Enterprise Cloud (HEC) out of Virginia. This project and Freudenberg Information Technology (FIT) will consolidate these two datacenters under one platform for both primary and Disaster Recovery (DR) in the US. The new service provider FIT was selected through a formal Request For Proposal (RFP) process supported by INVP 3924.

FIT will supply Platform as a Service (PaaS) for SAP and HANA applications, and ancillary applications including PowerPlan, Open Text, uPerform and SABRIX. National Grid IS will work with FIT to move the SAP application portfolio to a new datacenter.

By moving to the new platform, National Grid will eliminate the need to renegotiate contract extensions with current hosting providers SAP, T-Systems and Wipro as well as having to conduct costly upgrades of the existing SAP infrastructure hosted by T-Systems.



Re-sanction Request

The Master Service Agreement (MSA) contract negotiations with FIT took longer than expected (6 months to complete) causing the initial go-live date to shift. Also, timing and scheduling challenges given the large volume of SAP-related development activity like YouConnect, coupled with production payroll window conflicts, have contributed to expanded testing scope and cost.

2.2 Summary of Projects

Project Number	Project Type (Elect only)	Project Title	Estimate Amount (\$M)
INVP 4761	Project type	US SAP Foundation Hosting Renewal	8.361

2.3 Prior Sanctioning History

Describe previous sanctions for the projects included in the scope of this paper (Newest to Oldest).

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Sanction Type	Sanction Paper #	Potential Investment Tolerance
10/11/2017	USSC	\$6.193M	\$6.193M	Full	USSC-17-333	+/- 10%

Over / Under Expenditure Analysis

Summary Analysis (\$M)	Capex	Opex	Removal	Total
Resanction Amount	6.624	1.737	0.000	8.361
Latest Approval	4.821	1.372	0.000	6.193
Change*	1.803	0.365	0.000	2.168

*Change = (Re-sanction – Amount Latest Approval)

2.4 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 checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Over <input type="radio"/> Under <input type="radio"/> N/A	\$4.066M



Re-sanction Request

2.5 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.

2.6 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend (\$M)	Prior Yrs.	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	
INVP 4761	US SAP Foundation Hosting Renewal	Est Lvl (e.g. +/- 10%)	CapEx	0.613	6.011	0.000	0.000	0.000	0.000	0.000	6.624
			OpEx	0.659	1.078	0.000	0.000	0.000	0.000	0.000	1.737
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	1.272	7.089	0.000	0.000	0.000	0.000	0.000	8.361

2.7 Project Budget Summary Table

Project Costs per Business Plan

	Prior Yrs. (Actual)	Current Planning Horizon (\$M)						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	0.613	2.618	0.000	0.000	0.000	0.000	0.000	3.231
OpEx	0.659	0.405	0.000	0.000	0.000	0.000	0.000	1.064
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	1.272	3.023	0.000	0.000	0.000	0.000	0.000	4.295

Variance (Business Plan-Project Estimate)

	Prior Yrs. (Actual)	Current Planning Horizon (\$M)						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	(3.393)	0.000	0.000	0.000	0.000	0.000	(3.393)
OpEx	0.000	(0.673)	0.000	0.000	0.000	0.000	0.000	(0.673)
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	(4.066)	0.000	0.000	0.000	0.000	0.000	(4.066)



Re-sanction Request

2.8 Drivers

2.8.1 Detailed Analysis Table

Detail Analysis	Over/Under Expenditure?	Amount (\$M)
Timeline Extension – Labor	<input checked="" type="checkbox"/> Over <input type="checkbox"/> Under	0.551M
Verizon Network Needs	<input checked="" type="checkbox"/> Over <input type="checkbox"/> Under	0.401M
Cognizant Technology Solutions Labor due to Wipro risk	<input checked="" type="checkbox"/> Over <input type="checkbox"/> Under	0.285M
T-Systems Migration Cost	<input checked="" type="checkbox"/> Over <input type="checkbox"/> Under	0.484M
Wipro Workpack Support Cost	<input checked="" type="checkbox"/> Over <input type="checkbox"/> Under	1.350M
IBM PowerPlan	<input checked="" type="checkbox"/> Over <input type="checkbox"/> Under	0.241M
Sabrix Support	<input checked="" type="checkbox"/> Over <input type="checkbox"/> Under	0.103M
FIT Migration Serv.	<input checked="" type="checkbox"/> Over <input type="checkbox"/> Under	1.357M
DXC Support	<input checked="" type="checkbox"/> Over <input type="checkbox"/> Under	0.042M
CA-ESP	<input checked="" type="checkbox"/> Over <input type="checkbox"/> Under	0.025M

2.8.2 Explanation of Key Variations

- ✓ Extended Timeline Due to MSA negotiations:
 - The time required to document, assemble and negotiate the MSA took six months instead of the two that were initially planned. This led to the production go-live being pushed from the end of June to early December due to conflicts with other SAP related financial projects and financial change freeze periods. Because of this extension, project labor was increased to cover the period from July through February.
 - ❖ Under the agreed contract, we were able to secure an arrangement with FIT that combined the SAP related services of T-Systems and HEC under one provider; while reducing the service cost overall from what is paid today for these same services. The deal is for three years with a National Grid option to extend it to five.
 - Along with extending the overall timeline of the project go-live, much of the significant project spend shifted from FY18 to FY19. It also delayed FIT’s ability to submit the HP Equipment Order for our NG Environment Buildout until June of 2018. (FY19)



Re-sanction Request

- ✓ Verizon Network:
 - A scope modification has required the building of a bigger network pipe to be used for data transfer and testing between T-Systems and FIT. This was necessary due to:
 - a) The need for more bandwidth to support the production data transfers to keep the systems in sync during testing. This will also provide a quicker go-live migration path to FIT at the time of true cut-over.
 - b) Current usage statistics showed a need for more general bandwidth over what was currently in place.
 - c) The network upgrade also positions National Grid for future planned increases in SAP services going forward.

- ✓ T-Systems Support:
 - Migration equipment and labor cost have proven to be higher than originally expected based on revised scope definition for the number of data migration instances needed.
 - a) We will be doing practice cut-over drills to verify the steps and timing needed for the cut-over to FIT. We refer to this as a Full Dress-Rehearsal test. To execute this, we need an additional environment with a full production copy to support Full-Dress-Rehearsal testing so it can be executed in parallel with our Prod-POC regression testing activities.
 - b) Increased network connection requirements to support the data transfer design for migration.
 - c) Increased file storage capacity to support the file transfer process as well.

- ✓ Cognizant Labor:
 - Due to current IS business and legal issue pertaining to Wipro Consulting, a decision was made to bring in three additional resources to participate and monitor Wipro project activity for accuracy and completeness.

- ✓ Wipro Workpack:
 - The US SAP Application support is heavily dependent on Wipro services. This coupled with the need for more extensive Knowledge Transfer Services than expected due to Wipro contractual issues, increased the fixed-price quote beyond the original forecast.



Re-sanction Request

2.9 Key Milestones

Milestone	Target Date:
Start Up	August 2017
Begin Requirements and Design <small>*Requirements done under INVP 3924RFP effort</small>	April 2017
Project Sanction	October 2017
Begin Development and Implementation	January 2018
Project Resanction	October 2018
Move to Production / Last Go Live	December 2018
Project Closure	March 2019

Next Planned Sanction Review

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

3 Statements of Support

3.1 Supporters

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

Department	Role	Individual
Global Head of Service Delivery	Business Representative	John Gilbert
Head of Global Infrastructure Program Deliver	Head of PDM	Helen Smith
Acting IS Governance CoE	Governance Manager	Brian Detota
Infrastructure Project Deliver	Program Delivery Director	Chris Granata
IS Regulatory	Director - IS Regulatory	Daniel DeMauro
IS Digital Risk & Security	Director - DR&S	Elaine Wilson
IS Architecture	Director – IS Enterprise Architecture	Joe Clinchot

3.2 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
Financial	Michelle Harris



Re-sanction Request

4 Decisions

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

- (a) APPROVED this paper and the investment of \$8.361M and a tolerance of +/-10% for the purposes of Requirements | Design | Development | Implementation
- (b) APPROVED the run-the-business (RTB) of (\$1.701M) (per annum) for 5 years.
- (c) NOTED that David Petrick is the Project Manager and has the approved financial delegation.

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

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