

FY19 - Investment Request Summaries - IRSs - SP2007 migration



Planning & Performance Management >
FY19 - Investment Request Summaries - IRSs: SP2007 migration



nationalgrid		Investment Request Summary - IS US				FISCAL YEAR 2019								
INV ID:	3667	Project Name:	SP2007 migration											
Program:	Service Strategy Roadmap					IRS Status: ACTIVE								
Sponsor:	Gilbert, John			Title: Global Head of IS Service Delivery										
Relationship Manager:	Brian Detota			Title: IS Relationship Manager, Global IS										
Progr Delivery Director:	Helen Smith			Title: Head of Programme Delivery										
Paper Author:	Nicola Pennington / Steve Trezza			Title: Business Consultant - Corporate IS / Service Strategy										
<input type="checkbox"/> In-Flight Project?		Invest Classification:	Medium	Category:	Mandatory	Business Area:	IS - Infrastructure	Portfolio:	IS for IS	Primary Policy Driver:	Not Policy Driven	Region:	Global	
Strategic Program:		End to End Process (Primary):			Business Priority:		Imperative	IS Focus Area:		Stay Legal & Compliant		Application Strategy:		Decommission
		End to End Process (Secondary):												
<p>Project Description: The context for the project with background information Sharepoint 2007 is a global content management service and went out of mainstream support in 2012 and extended support will only be available until 2017. This gives an increasing risk to the stability of the environment and the ability to maintain security. Work is required to move existing content from this service onto appropriate strategic services and decommission SP2007. The current environment has 50+ servers running on Windows 2003.</p> <p>Project Rationale: Highlight business challenge, capability or process the project addresses The current service is no longer able to meet current business requirements both for service level requirements and functional requirements,. In addition there are many active sites and applications still working in the SP2007 internal farms, and whose capacity is maxed out.</p> <p>This isn't just a decommission project its a migration project. It hasn't been done up until now because there is a lot of customisation so migration is expected to be complex. In addition a lot of data is old and potentially no longer required. Therefore the project is required to review with the business whether data can be deleted/archived or needs to be migrated.</p> <p>Due to the complexities of the project the first phase of this will be an F&A study. This form includes ROM amounts expected for the full project</p> <p>Project Scope: Explain what is in scope and what is not in scope for the project The SP2007 farm is global - it does web collaboration (sharepoint team sites), also does a number of custom applications (eg engage) Also supports some infonet 2. Full project scope would be to identify data that can be deleted, migrate data that needs to be retained that sits in the web and collaboration space and decommission the web and collaboration space. Scope of full project is not to upgrade applications using 2007 - but project needs to understand roadmap of each application to determine when 2007 can be decommissioned. (eg engage) First phase is F&A -</p> <ul style="list-style-type: none"> • Web Collaboration : An analysis of sites within the SP2007 how much we know about them , how many have business owners - can we tell if its been used? • High level discussion with the business on approach - potential approaches - move it all or try to identify as much as possible that can be deleted first. • Costing of approach for web collaboration space. • Applications and infonet 2 uses - identify with owners and BRMS - and if possible roadmaps for each of these to come off SP2007. <p>Project Dependencies: Identify any core program or project dependencies, please include INVP numbers if known</p> <p>Basic Project Assumptions: It is assumed that the majority of content held on SP2007 will be able to move to SP Online - so there will be no requirement to set up new services - effort is for migration only.</p>														
Indicative Project Costs by Fiscal Year														
(\$M)	Prior Years	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total				
CapEx		0.200	0.200	0.000						0.400				
OpEx		0.100	0.100	0.000						0.200				

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Impact on RTB		0.000	0.000	0.000					0.000
Indicative Project Costs by Delivery Phase									
(\$M)	Start-up		R & D		D & I		Closure		Total
CapEx			0.100		0.300				0.400
OpEx	0.005		0.035		0.150		.01		0.200
Project Benefits - Type I only									
(\$M)	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total
Type I - CapEx									0.000
Type I - OpEx									0.000
Revenue Generation									0.000
<p>Key Business Benefits: Describe benefits, both financial and non-financial, and when those benefits will be delivered. Provide a clear & concise business case stating the investment drivers – why do we need to do something and why now? Explain any Regulatory considerations and how this initiative aligns with the US Business Strategy. Improving services supporting mobile, flexible and collaborative working. Will see productivity improvements across the company.</p>									
Investment Prioritization									
Benefits		Impact	Weight	Score	Cost		Impact	Weight	Score
OpEx Annual Savings			10.3%	0	OpEx Cost		0.200	-24.4%	-0.732
CapEx Annual Savings			5.1%	0	CapEx Cost		0.400	-11.2%	0
Revenue Generation (annual)			6.2%	0	RTB Efficiency		0.000	% -22.5%	0
Financial Control	Low		6.2%	0.062	Union/Labor Relations	Low		-9.8%	0
Soft Financial Benefits	Low		3.8%	0.038	Dependencies	Low		-10.6%	-0.106
Regulatory Impact	Low		11.2%	0.112	EIapse Time Duration	Medium		-6.6%	-0.198
Process & Personal Safety	Low		19.4%	0.194	Change Management Effort	Medium		-14.9%	-0.447
Reliability	High		10.9%	0.981					
Customer & Community Responsiveness	Medium		5.3%	0.159					
Employee Satisfaction	Medium		4.6%	0.138					
Mitigates a Corporate Risk / Risk of not Doing	High= 40 or more		8.9%	0.801					
Jurisdictional Engagement	High		8.2%	1					
			Benefit Score:	3.22			Cost Score:	-1.69	
Overall Priority Score: 1.53									
Investment Risk and Complexity									
Project Risk Score:	46	Risk Score Description: Risk Impact = 6 and Risk Likelihood = 7							
Project Complexity Score::	21	Project Complexity Score Description:							
Key Risks Description: Provide detail on project risks & mitigation strategy:									

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Out of support legacy infrastructure creates security risk as security patches cannot be applied. Unreliable technology is out of date and suppliers will only fix on a best endeavors basis. In addition continuing to run legacy infrastructure creates increased run costs

There is a risk that End of Life Servers and associated hardware, located in legacy data centers (and transformed) will fail resulting in potential degradation, loss of service and difficulty in recovery due to the age of kit and a lack of spares. The current environment has 50+ servers running on Windows 2003

<p>IS Project Dependencies if you don't see a project in the drop-down please contact the Planning & Performance team.</p> <p>IS Projects: 3667 - SP2007 migration</p> <p>1. Has a dependency on IS Project;</p> <p>2. Has a dependency on IS Project;</p> <p>3. Has a dependency on IS Project;</p> <p>4. Has a dependency on IS Project;</p> <p>5. Has a dependency on IS Project;</p> <p>6. Has a dependency on IS Project;</p>		<p>Benefiting Operating Companies: Check all that apply</p> <p><input type="checkbox"/> Select All Companies <input type="checkbox"/> Clear All Companies <input type="checkbox"/> Select All Gas <input type="checkbox"/> Select All Electric <input type="checkbox"/> Select All Gen</p> <p><input checked="" type="checkbox"/> National Grid USA Parent <input checked="" type="checkbox"/> KeySpan Energy Development Corporation <input checked="" type="checkbox"/> KeySpan Services Inc. <input checked="" type="checkbox"/> KeySpan Energy Corp <input checked="" type="checkbox"/> KeySpan Energy Delivery New York <input checked="" type="checkbox"/> KeySpan Energy Delivery Long Island <input checked="" type="checkbox"/> KeySpan Generation LLC (PSA) <input checked="" type="checkbox"/> KeySpan Glenwood Energy Center <input checked="" type="checkbox"/> KeySpan Port Jefferson Energy Center <input checked="" type="checkbox"/> KeySpan Energy Trading Svc LLC <input checked="" type="checkbox"/> Niagara Mohawk Power Corp- Electric Distribution <input checked="" type="checkbox"/> Niagara Mohawk Power Corp - Gas <input checked="" type="checkbox"/> Niagara Mohawk Power Corp - Transmission <input checked="" type="checkbox"/> Massachusetts Electric Company <input checked="" type="checkbox"/> Massachusetts Electric Company - Transmission <input checked="" type="checkbox"/> Nantucket Electric Company <input checked="" type="checkbox"/> Boston Gas Company <input checked="" type="checkbox"/> Colonial Gas Company <input checked="" type="checkbox"/> Narragansett Gas Company <input checked="" type="checkbox"/> Narragansett Electric Company <input checked="" type="checkbox"/> Narragansett Electric Company - Transmission <input checked="" type="checkbox"/> New England Power Company - Transmission <input checked="" type="checkbox"/> New England Hydro - Trans Corp <input checked="" type="checkbox"/> New England Electric Trans Corp <input type="checkbox"/> NE Hydro Trans Electric Co <input checked="" type="checkbox"/> NG LNG LP Regulated Entity</p>
<p>Business Initiative Dependencies</p> <p>IS Projects: 3667 - SP2007 migration</p> <p>1. Has a dependency on Biz Initiative,</p> <p>2. Has a dependency on Biz Initiative,</p> <p>3. Has a dependency on Biz Initiative,</p> <p>4. Has a dependency on Biz Initiative,</p>		
<p>Project Relationships</p> <p><input type="checkbox"/> Minor Works Project Relationship:</p> <p>Related Projects:</p>		

Enabling IS Capabilities check all that apply

<input checked="" type="checkbox"/> Enterprise Content Management (ECM)	<input checked="" type="checkbox"/> Enterprise Mobility
<input type="checkbox"/> Comprehensive Integration Services (CIS)	<input checked="" type="checkbox"/> Reporting and Analytics
<input checked="" type="checkbox"/> Hybrid Cloud	<input type="checkbox"/> Networks
<input checked="" type="checkbox"/> Next Gen Workplace	

Key Milestone Dates: Select the 1st, 15th or last day of the month

Begin	Begin	Begin	Begin	Go Live	Project Completion	Project Closure
Start-up	Requirements & Deign	Development & Implementation	User Acceptance Testing			
May, 2018					September, 2019	

Indicative Estimated Duration (Months):

Business Resource Estimates: # of Full Time Equivalents

Start-up	Requirements & Deign	Develop & Implement	Business Resources UAT	Go Live Readiness	Post Go Live Support
0	0	0	0	0	0

Resourcing Strategy:
This project will be resourced using Solution Delivery Centre (SDC) partners, Systems integrator and IS resources.

Attached Supporting Documents

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Recommendation Sign-off			
<i>Role</i>	<i>Name</i>	<i>Title</i>	<i>Date</i>
<i>Business Project Sponsor</i>	<i>Gilbert, John</i>	<i>Global Head of IS Service Delivery</i>	
<i>Business Relationship Manager</i>	<i>Brian Detota</i>	<i>IS Business Relationship Manager</i>	
<i>IS Program Delivery Manager</i>	<i>Helen Smith</i>	<i>IS Program Delivery Manager</i>	





US Sanction Paper

Title:	Service Now 17-18 Maintain and Improve	Sanction Paper #:	
Project #:	INVP 4261	Sanction Type:	Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	Aug xx, 2017
Author:	Deepa Kothari	Sponsor:	Dave Westwood, Service Strategy Manager
Utility Service:	IS	Project Manager:	Ben Moorhouse

1 Executive Summary

1.1 Sanctioning Summary

This paper requests sanction of INVP 4261 in the amount \$0.472M with a tolerance of +/- 10% for the purposes of Full implementation

This sanction amount is \$472k broken down into:

- \$0.277M Capex*
- \$0.195M Opex*

1.2 Project Summary

This paper seeks investment to establish a development capability to supplement the significantly in house ServiceNow operating model to develop and configure; enhancements to existing tooled process, build new process, system functionality, orchestrate workflow within Enterprise ServiceNow, in support of Global Service Delivery objectives focused on delivering improve customer experience and providing greater service reliability and resilience.

The product support team will develop and configure Proof of Concepts (POC's) that will form the foundation (following further enhancement) to deliver new production functionality. In additional they will also undertake Feasibility Assessments to determine the viability of strategic future developments.

Enterprise ServiceNow is a key tool that underpins the successful delivery of Global Service Delivery objectives; associated with delivering the following benefits to National Grid:

- Start and Finish with the customer in mind:
 - Reducing the time to on-board resources.
 - Efficiency improvements by enabling employee self-service and workflow automation.
- Fix the foundations to improve Service Reliability and Resilience:
 - Improved IS asset and configuration management.
 - Improvements to IS process and workflow automation



US Sanction Paper

We anticipate an enduring requirement for the development capability for the life of the ServiceNow Platform and will look to submit an annual investment paper to establish a minor works budget.

It should be noted that large ServiceNow functional extensions that require specialist knowledge, additional licencing or drive significant increases in RTB costs will subject to separate investment paper/s throughout the year.

1.3 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
INVP 4261	Project Type	Service Now 17/18 Maintain and Improve	0.472
Total			0.472

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
Apr 2018	Project closure

1.7 Category

Category	Reference to Mandate, Policy, NPV, or Other
<input type="radio"/> Mandatory	This project will improve efficiency, reliability and quality of outcomes as well as to improve user experience. It will also provide an enduring capability to support, maintain and enhance IS tooled processes as part of a broader continual service improvement (CSI) initiative aligned to the objectives of 'Bringing Energy to Life'.
<input checked="" type="radio"/> Policy- Driven	
<input type="radio"/> Justified NPV	
<input type="radio"/> Other	



US Sanction Paper

1.8 Asset Management Risk Score

N/A

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

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 FY18 - 22	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input checked="" type="radio"/> Under <input type="radio"/> NA	\$0.528M

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

N/A

1.13 Current Planning Horizon



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\$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	0.277	0.000	0.000	0.000	0.000	0.000	0.277
OpEx	0.000	0.195	0.000	0.000	0.000	0.000	0.000	0.195
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	0.472	0.000	0.000	0.000	0.000	0.000	0.472

1.14 Key Milestones

Milestone	Target Date: (Month/Year)
Start Up	Aug 2017
Full Sanction	Sept 2017
Project Team Ramp-up	Sep 2017
First Release Commence	Oct 2017
Final Project Complete	Mar 2018
Programme Complete	Mar 2018
Closure Sanction	Apr 2017

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



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

None determined at this time.

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

1	
2	
3	



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2 Decisions

The US IS Sanctioning Committee (ISSC) and Key External Stakeholders, reviewed and approved the content of the investment including:

- (a) APPROVE this paper and the investment of \$0.472M and a tolerance of +/-10%.
- (b) APPROVE the RTB Impact of \$0.069M (per annum) for 5 years.
- (c) NOTE that Ben Moorhouse is the Project Manager and has the approved financial delegation.

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

John Gilbert
Global Head of Service Delivery

US Sanction Paper

3 Sanction Paper Detail

Title:	Service Now 17-18 Maintain and Improve	Sanction Paper #:	
Project #:	INVP 4261	Sanction Type:	Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	Jul xx, 2017
Author:	Deepa Kothari	Sponsor:	Dave Westwood, Service Strategy Manager
Utility Service:	IS	Project Manager:	Ben Moorhouse

3.1 Background

ServiceNow has been implemented as the strategic tool upon which global IS Service Management processes can be standardised and configured. Foundational work on bringing these processes on to the tool will be completed in August 2017 by the ServiceNow Release 2 (R2) programme.

A ServiceNow CoE (Centre of Excellence) has established a capability and an associated operating model to develop and configure; enhancements to existing tooling process, build new process & system functionality and develop fixes for issues within Enterprise ServiceNow. The CoE will also provide the intellectual capability to impact assess and support the introduction of changes in the broader environment.

3.2 Drivers

This investment will enable the establishment of a development capability to support and build enhancements to extend the capabilities of Enterprise ServiceNow.

The processes implemented will be subject to ongoing improvements as ServiceNow knowledge matures within the Service Management Centre (SMC) and there is a need to improve efficiency, reliability and quality of their outcomes as well as user experience. Additionally the environment in which ServiceNow operates will also be subject to ongoing change; changing ecosystem partners introduced by the 'IS Sourcing Programme', changes to source data systems 'You Connect' and changes to user authentication 'Azure AD'.

Agile, Fit for purpose, stable support processes are essential for the smooth running of the National Grid businesses.

3.3 Project Description

In order to maintain, enhance and extend the ServiceNow the investment will focus on delivering the following three areas:

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1) Maintain

- Unresolved / new defects arising from R2 will be developed and fixed by the development team in order to maintain the efficient operation of the tool.
- Release 2 will introduce a number of manual support process and minor work arounds additional configuration and development work will be undertaken to automate these process.
- In order to maintain agreed support for the ServiceNow cloud platform there will need to be an annual platform upgrade to the latest N-1 version. The upgrade process will require extensive regression testing and the development for fixes for any defects identified.

2) Improve

- Following R1 go-live tooled processes have been subject to ongoing business demands to improve the efficiency, reliability and quality of their outcomes as well as improvements to user experience. Business demand for change will to continue grow following release 2, as more foundational processes are tooled and the volume of system users expands across National Grid and Supplier organisations.
 - A backlog of SMC, Customer Management, and Strategic enhancements is being maintained a developed and this investment will support the development, configuration, testing and implementation of these new requirements.
 - Tooling these process enhancements will support the delivery of key Service Delivery objectives see 3.4

3) Enhance

- Delivery of Azure Cloud Orchestration proof of concept (POC). This will allow instant (>10minutes) Azure infrastructure provisioning, improved governance and cost transparency. If this POC is a success, it will form the foundation of implementation into production. Further funding will be required for this move.
- Developing and implementing the capability to issue Short Message Service (SMS) messages directly from ServiceNow using the 'Notify' plugin. For Major Incident Management this will:
 - Reduce the time required for communicating a major incident by 50%.
 - Increase communication accuracy.
 - Improve the quality of communications by reducing manual errors inherent in the current solution.

Enabling SMS capability within ServiceNow has the potential to improve:

- Field Force Held Desk (FFHD) and Enterprise Service Desk customer satisfaction surveys.
- Pro-active alerting to support teams.
- Re-active incident response times.
- Configuration Management Database (CMDB) Discovery F&A is part of a broader objective to improve the accuracy and completeness of the CMDB. The feasibility assessment will:
 - Document the required outcomes of automated discovery.
 - Compare the capabilities of existing and new auto discovery tools.

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- Provide a recommendation, high level design and indicative Total Cost of Ownership.

A Service Management Governance forum has been established to ensure that ServiceNow enhancements are prioritised to meet business demand and to maximise the delivery of business value from this investment. The forum will have the responsibility to confirm business priorities, approve release plans and ensure that all people and process changes are delivered in alignment with ServiceNow enhancements.



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3.4 Benefits Summary

Benefit	Benefit owner	Target Measure; post go-live (Unit/Metric)
<p>Maintain Service Performance</p> <p>Annual upgrade ServiceNow within to support version of the product ensures that the service remains within support and therefore that the operational performance of the service is maintained</p>	<p>Dave Westwood</p>	<p>Maintain ServiceNow agreed support SLA.</p>
<p>Support SMC objectives, which include:</p> <ul style="list-style-type: none"> - Reduced restoration time - Reduced incident volume - Actions assigned to right teams - Simplify approval for requestors - Define maintenance windows - Reduce new project MI's - Closer linkage to Change - Full SC/DR strategy and implementation, aligned across both regions - Full integration within all SM functions - Availability in SNOW <p>A full list of objectives and measures can be found in the appendix</p>	<p>Mike McGarry</p>	<p>Measures include:</p> <ul style="list-style-type: none"> - 1hour MTTR - Improved communications - < =1% changes cause MI - 98% of changes executed successfully - No unauthorised changes - 100% visibility of all IT Service Transitions - 100% Review and approval of Service Transition documentation - 100% of SC & DR plans in place tested and restored with clear invocation for all critical services - Establish a globally consistent process for determining availability - Reduce the number of services not meeting agreed availability by 50%



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<p>Supporting UK and US Customer Support Objectives</p> <ul style="list-style-type: none"> - Improvements to end user knowledge - Improvements to incident auto-routing - Pro-active auto escalation of task at risk of breaching SLA - Reactive customer escalation for tasks breaching SLA - SRM manager approval within the tool - Implementing SMS CSAT - Implementing email CSAT removing the need for Qualtrix - Automating and tooling the CIO Dashboard - Further reduction in Service Desk contact volumes and improved user self-service - An improvement to the bundling, workflow and automation of associated IS catalogue items 	<p>James Mcpherson, Ali Fakhouri</p>	<p>Measures include:</p> <ul style="list-style-type: none"> - 20% reduction in Service Desk contacts & corresponding 20% increase in end user self-service - 15% reduction in customer tasks breaching SLA (SRM & Incident) - Improve Field Force & Techbar CSAT response rate by 25% - Increase CSAT response rate by 25% - Improved customer team efficiency - 50% reduction in the time taken to complete the IS elements of employee on-boarding
<p>Strategic Roadmap – Azure Cloud Orchestration Proof of Concept (POC)</p>	<p>Dave Westwood</p>	<ul style="list-style-type: none"> - Allowing instant (>10minutes) Azure infrastructure provisioning - Improved governance, cost transparency and improve infrastructure utilisation
<p>Strategic Roadmap – SMS 'Notify' plugin</p> <p>Enabling SMS capability within ServiceNow has the potential to improve:</p> <ul style="list-style-type: none"> - FFHD and Enterprise Service Desk customer satisfaction surveys. - Pro-active alerting to support teams. - Re-active incident response times. 	<p>Mike McGarry</p>	<p>For Major Incident Management this will:</p> <ul style="list-style-type: none"> - Reduce the time required for communicating a major incident by 50%. - Increase communication accuracy. - Improve the quality of communications by reducing manual errors inherent in the current solution.

3.5 Business and Customer Issues

None identified at this stage



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3.6 Alternatives

Alternative 1: Do Nothing

This approach does not align with the business demand for process improvement and efficiency gains.

Alternative 2: Establish Delivery Capability and recruit contractor developers

The ability to flex this model quick and with ease if demand increases will be a challenge and finding and retaining good development resources is a challenge.

Alternative 3: Establish Delivery Capability, excluding ServiceNow specialist consultancy

Significantly limits ability to exploit capabilities of ServiceNow to deliver business value and the benefits associated with the strategic roadmap including; auto discovery, Azure Cloud management, AI and Bots to radically improve efficiency and service could not be achieved.

3.7 Safety, Environmental and Project Planning Issues

None at this stage

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	Additional internal CoE resource effort required to support development activities.	3	3	2	9	6	Mitigate	Secure additional resource time and effort.	None foreseen	Review delivery capacity and ensure release scope is scaled appropriately

3.9 Permitting

N/A

3.10 Investment Recovery

N/A

3.10.1 Investment Recovery and Regulatory Implications

N/A

3.10.2 Customer Impact

N/A



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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 4261	Service Now 17/18 Maintain and Improve	Est Lvl (e.g. +/- 10%)	CapEx	0.000	0.277	0.000	0.000	0.000	0.000	0.000	0.000	0.277
			OpEx	0.000	0.195	0.000	0.000	0.000	0.000	0.000	0.000	0.195
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	0.472	0.000	0.000	0.000	0.000	0.000	0.000	0.472
Total Project Sanction			CapEx	0.000	0.277	0.000	0.000	0.000	0.000	0.000	0.000	0.277
			OpEx	0.000	0.195	0.000	0.000	0.000	0.000	0.000	0.000	0.195
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	0.472	0.000	0.000	0.000	0.000	0.000	0.000	0.472

This project will be implemented in the UK and the US and will be managed as a single project to drive maximum efficiency. Costs have been allocated between the UK and US based on headcount as this is the most appropriate, reflecting the number of users in each region.

3.11.2 Project Budget Summary Table

Project Costs Per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
CapEx	0.000	0.400	0.000	0.000	0.000	0.000	0.000	0.400
OpEx	0.000	0.600	0.000	0.000	0.000	0.000	0.000	0.600
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	1.000	0.000	0.000	0.000	0.000	0.000	1.000

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
CapEx	0.000	0.123	0.000	0.000	0.000	0.000	0.000	0.123
OpEx	0.000	0.405	0.000	0.000	0.000	0.000	0.000	0.405
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.528	0.000	0.000	0.000	0.000	0.000	0.528

US Sanction Paper

3.11.3 Cost Assumptions

- The total project costs are split between the US (66.4%) and the UK (33.6%) according to headcount
- The build and development work will be by a combination of Wipro, contractors and an internal team which will be managed by National Grid
- An approximate 10% risk has been included in the total cost

3.11.4 Net Present Value / Cost Benefit Analysis

3.11.4.1 NPV Summary Table

N/A

3.11.4.2 NPV Assumptions and Calculations

N/A

3.11.5 Additional Impacts

None

3.12 Statements of Support

3.12.1 Supporters

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

Role	Individual's Name
Business Representative	Mike McGarry, James McPherson, Ali Fakhouri
Head of PDM	Bill Kearns
Relationship Manager	Bill Kearns
Program Delivery Director	Dave McCune (IS4IS)
IS Finance Management	Chip Benson
IS Regulatory	Tom Gill
DR&S	Elaine Wilson
Service Delivery	Brian Detota
Enterprise Architecture	Joe Clinchot

3.12.2 Reviewers

N/A

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4 Appendices

4.1 Sanction Request Breakdown by Project

N/A

4.2 Other Appendices

Project Complexity

SMC Objectives

TCO log

4.3 NPV Summary

N/A

4.4 Customer Outreach Plan

N/A



US Sanction Paper

Title:	VSTIG Hardware Refresh	Sanction Paper #:	
Project #:	INVP 4274	Sanction Type:	Full Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	December 23, 2016
Author:	Melanie Jackson	Sponsor:	Doug Page
Utility Service:	IS	Project Manager:	Oliver Nwachukwu

1 Executive Summary

1.1 Sanctioning Summary

This paper requests sanction of **INVP 4274** in the amount \$0.747m with a tolerance of +/- 10% for the purposes of Full Implementation – procurement, installation and transition.

This sanction amount is \$0.747m broken down into:

- \$0.728m Capex*
- \$0.019m Opex*
- \$0.000m Removal*

1.2 Project Summary

Within the VSTIG (Verizon Secure Telecommunications Gateway) solution, the Reverse Proxy (Bluecoat) servers have reached end of life and will no longer be supported by Verizon as of 28 February 2017. From that point, any support provided would be on a best endeavors basis only meaning contractual service level agreements (SLAs) cannot be guaranteed. This project will procure, install and transition the replacement BlueCoat reverse proxy servers which will be fully supported for five years and provide an increase in bandwidth to the existing servers.

1.3 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
4274	IS4IS	VSTIG hardware Refresh	0.747
Total			0.747

1.4 Associated Projects

N/A



US Sanction Paper

1.5 **Prior Sanctioning History**

N/A

1.6 **Next Planned Sanction Review**

N/A

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	Policy Driven This is an Asset Health project as it relates to the current hardware moving beyond the support period available from the equipment manufacturers. The hardware enables all external web based traffic to access National Grid and is a key component of the strategic internet gateway (VSTIG). Customer systems unavailability could have a Safety, Financial and Reputational impact on National Grid.

1.8 **Asset Management Risk Score**

Asset Management Risk Score: 20

Primary Risk Score Driver: (Policy Driven Projects Only)

- Reliability
 Environment
 Health & Safety
 Not Policy Driven

1.9 **Complexity Level**

- High Complexity
 Medium Complexity
 Low Complexity
 N/A

Complexity Score: 17



US Sanction Paper

1.10 Process Hazard Assessment

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

Yes No

1.11 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
IS Investment Plan Yr. 16/17	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Over <input type="radio"/> Under <input type="radio"/> NA	\$0.438m

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

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

1.13 Current Planning Horizon

\$M	Prior Yrs	Current Planning Horizon						Total
		Yr. 1 2016/17	Yr. 2 2017/18	Yr. 3 2018/19	Yr. 4 2019/20	Yr. 5 2020/21	Yr. 6+ 2021/22	
CapEx	0.000	0.631	0.097	0.000	0.000	0.000	0.000	0.728
OpEx	0.000	0.019	0.000	0.000	0.000	0.000	0.000	0.019
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	0.650	0.097	0.000	0.000	0.000	0.000	0.747

1.14 Key Milestones

Milestone	Target Date: (Month/Year)
Start Up	November 2016
Partial Sanction	November 2016
Begin Requirements and Design	November 2016
Full Sanction	November 2016



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Milestone	Target Date: (Month/Year)
Begin Development and Implementation	December 2016
Move to Production / Last Go Live	June 2016
Project Complete	July 2016
Project Closure Sanction	August 2016

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**

1	Hardware is currently operating after end of life
2	Extension of current software support can only be purchased to end Feb 2017
3	

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
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Impact on adaptability of network for future climate change:	<input checked="" type="radio"/> Neutral	<input type="radio"/> Positive	<input type="radio"/> Negative
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1.18 **List References**

1	TCO Log
2	USSC Spreadsheet
3	1 Page Summary



US Sanction Paper

2 Decisions

The US IS Sanctioning Committee (ISSC) and Key External Stakeholders reviewed and approved the content of the investment including:

- (a) APPROVED this paper and the investment of \$0.747M and a tolerance of +/-10%.
- (b) APPROVED the RTB impact of \$0.060M (per annum) for 1 year.
- (c) NOTED that Lee Denny has the approved financial delegation.

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

Anuraag Bhargava
US CIO

US Sanction Paper

3 Sanction Paper Detail

Title:	VSTIG Hardware Refresh	Sanction Paper #:	
Project #:	INVP 4274	Sanction Type:	Full Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	December 23, 2016
Author:	Melanie Jackson	Sponsor:	Doug Page
Utility Service:	IS	Project Manager:	Oliver Nwachukwu

3.1 *Background*

Within the VSTIG (Verizon Secure Telecommunications Gateway) solution, the Reverse Proxy (Bluecoat) servers reached end of life and will no longer be supported by Verizon as of February 28th, 2017. These reverse proxies perform a number of vital security functions including acting as an application firewall protecting against DoS (Denial of Service) or DDoS (Distributed Denial of Service) attacks, which mitigates against attacks and removes malware. National Grid also employs reverse proxies to perform a load balancing function to distribute the incoming load from incoming requests across different servers.

Due to the critical functions performed by these servers, it is important that they be replaced and that appropriate support agreements are in place; thus ensuring service levels are met.

3.2 *Drivers*

The driver for this project is to mitigate any risk to the reverse proxies after the end of life period

3.3 *Project Description*

This is a full project to manage the installation of the hardware and establish a new support agreement.

The Deployment date and time will be managed with consideration of the VSTIG phase 2 project and agreed with the business. The cut over plan for web based services will occur during off hours to minimize business disruption. Included in the scope is

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additional design time to architect other hardware elements of the VSTIG which are due for replacement in the near future.

3.4 Benefits Summary

The the replacement of the Bluecoat Reverse proxies servers will ensure the reliable and secure operation of the solution for the next five years.

3.5 Business and Customer Issues

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

3.6 Alternatives

Alternative 1: Carry out procurement tendering process RFQ / RFP – This will require increased time to deliver due to the estimated 4 weeks plus to complete tender. End of life issue will need to be managed during this time period with only a limited extension period available. This option was ruled out given that Verizon is a preferred partner for telecommunications and network services and the pre-work performed by the Service Strategy team to ensure appropriate pricing.

3.7 Safety, Environmental and Project Planning Issues

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

3.8 Execution Risk Appraisal

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Number	Detailed Description of Risk / Opportunity	Probability	Impact		Score		Strategy	Pre-Trigger Mitigation Plan	Residual Risk	Post Trigger Mitigation Plan
			Cost	Schedule	Cost	Schedule				
1	There is a risk that Verizon will not provide support for the end of life Bluecoat servers.	5	1	1	5	5	Accept	Accept risk and re-prioritise all work planned work on VSTIG and legacy STIG replacement to manage risk	NG could be vulnerable for the duration of when the new hardware is not installed/implemented.	Service Delivery have been made aware of issue via the project and have agreed to manage this.
2	Change freezes or other scheduling restrictions from Business could impact on deployment schedule	2	2	2	4	4	Accept	Pro-actively liaise with the business before and during implementation to understand any potential change freeze/restrictions that could impact the deployment schedule	Accept any unforeseen restrictions and adjust plan accordingly	Project to factor in contingency to allow for extension of cutover period if required by the business due to change freeze or other scheduling restrictions
3	The recommendation for the selected option has been provided from a previous Service Strategy and DR&S engagement and the current project assumes the validity of the previous analysis is correct	3	2	3			Accept	Project to do due diligence by getting consent of key subject matter experts i.e. Strategy and DR&S	None	The option provided from this evaluation is a best value option and provides a like for like capability as well as an increase in bandwidth provision for National Grid – Vendor recommendation.

3.9 Permitting

Permit Name	Probability Required (Certain/ Likely/ Unlikely)	Duration To Acquire Permit	Status (Complete/ In Progress Not Applied For)	Estimated Completion Date

3.10 Investment Recovery

3.10.1 Investment Recovery and Regulatory Implications



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

3.10.2 Customer Impact

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 +	
					2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	
4274	VSTIG hardware Refresh	Est Lvl (e.g. +/- 10%)	CapEx	0.000	0.631	0.097	0.000	0.000	0.000	0.000	0.728
			OpEx	0.000	0.019	0.000	0.000	0.000	0.000	0.019	
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
			Total	0.000	0.650	0.097	0.000	0.000	0.000	0.000	0.747
Total Project Sanction			CapEx	0.000	0.631	0.097	0.000	0.000	0.000	0.728	
			OpEx	0.000	0.019	0.000	0.000	0.000	0.000	0.019	
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
			Total	0.000	0.650	0.097	0.000	0.000	0.000	0.000	0.747

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 +	
		2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	
CapEx	0.000	0.300	0.000	0.000	0.000	0.000	0.300	
OpEx	0.000	0.009	0.000	0.000	0.000	0.000	0.009	
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Total Cost in Bus. Plan	0.000	0.309	0.000	0.000	0.000	0.000	0.309	

Variance (Business Plan-Project Estimate)



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Variance (Business Plan-Project Estimate)

	Prior Yrs (Actual)	Current Planning Horizon						Total
		Yr. 1 2016/17	Yr. 2 2017/18	Yr. 3 2018/19	Yr. 4 2019/20	Yr. 5 2020/21	Yr. 6 + 2021/22	
\$M								
CapEx	0.000	(0.331)	(0.097)	0.000	0.000	0.000	0.000	(0.428)
OpEx	0.000	(0.010)	0.000	0.000	0.000	0.000	0.000	(0.010)
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	(0.341)	(0.097)	0.000	0.000	0.000	0.000	(0.438)

3.11.3 Cost Assumptions

This estimate was developed in 2016 using standard IS estimating methodology. The accuracy level of the 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.

3.11.4.2 NPV Assumptions and Calculations

3.11.5 Additional Impacts

N/A

3.12 Statements of Support

3.12.1 Supporters

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

Role	Individual's Name
Business Executive Sponsor	Doug Page
Head of BRM/Strategy	Graham Pool
Head of PDM	Tom Cunningham



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Relationship Manager	Graham Pool
Program Delivery Manager	Dave McCune
IS Finance Management	Chip Benson
IS Regulatory	Tom Gill
DR&S	Muks Ravipatty
Service Delivery	Brian Detota
Enterprise Architecture	Joe Clinchot

3.12.2 Reviewers

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

Function	Individual	Area
Finance	Benson, Chip	All
Regulatory	Zschokke, Peter	All
Jurisdictional Delegate(s)	Harbaugh, Mark	Electric - NY
	Patterson, James	Electric - NE
	Hill, Terron	FERC
	Brown, Laurie	Gas - NY
	Iseler, David G.	Gas - NE
Procurement	Curran, Art	All



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4 Appendices

4.1 Sanction Request Breakdown by Project

N/A

4.2 Other Appendices

4.2.1 Project Cost Breakdown

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.054	
	SDC Time & Materials	0.048	
	SDC Fixed-Price	-	
	All other personnel	0.042	
	TOTAL Personnel Costs	0.143	
Hardware	Purchase	0.495	
	Lease	-	
Software		-	
Risk Margin		0.069	
Other		0.040	
TOTAL Costs		0.747	



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4.2.2 Benefiting Operating Companies

The following companies will benefit from this project as defined in section 3.3. The allocation of these benefits will be based upon the number of customers:

Benefiting Operating Companies Table:

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



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4.2.3 IS Ongoing Operational Costs (RTB):

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

Summary Analysis of RTB Costs							
All figures in \$ millions	Yr. 1 16/17	Yr. 2 17/18	Yr. 3 18/19	Yr. 4 19/20	Yr. 5 20/21	Yr. 6+	Total
Forecast of RTB Impact							
RTB if Status Quo Continues	0.083	-	-	-	-	-	0.083
RTB if Project is Implemented	0.023	-	-	-	-	-	0.023
Net change in RTB	(0.060)	-	-	-	-	-	(0.060)
RTB Variance Analysis (if Project is Implemented)							
Net Δ RTB funded by Plan(s)	-	-	-	-	-	-	-
Variance to Plan	(0.060)	-	-	-	-	-	(0.060)
Total RTB Costs - by Cost Type (if Project is Implemented)							
App.Sup. - SDC 1	-	-	-	-	-	-	-
App.Sup. - SDC 2	-	-	-	-	-	-	-
App.Sup. - other	-	-	-	-	-	-	-
SW maintenance	0.023	-	-	-	-	-	0.023
SaaS	-	-	-	-	-	-	-
HW support	-	-	-	-	-	-	-
Other: IS	-	-	-	-	-	-	-
All IS-related RTB (sub-Total)	0.023	-	-	-	-	-	0.023
Business Support (sub-Total)	-	-	-	-	-	-	-
Total RTB Costs	0.023	-	-	-	-	-	0.023

4.3 **NPV Summary**

N/A

4.4 **Customer Outreach Plan**

N/A

Investment Proposal Summary Sheet
Refresh of EoL network Equipment – Project No. INVP 4645

Region:	US	Category:	Policy	Legal Entity:	Shared						
Risk Score:	41	Primary Driver:	Reliability	Project Classification:	M						
Project Description:											
<p>This paper requests sanction of INVP 4645 in the amount \$ 0.494M with a tolerance of +/- 10% for the purposes of Full Implementation.</p> <p>This sanction amount is \$0.494M broken down into:</p> <table border="0"> <tr> <td>\$ 0.493M</td> <td>Capex</td> </tr> <tr> <td>\$ 0.001M</td> <td>Opex</td> </tr> <tr> <td>\$ 0.000M</td> <td>Removal</td> </tr> </table>						\$ 0.493M	Capex	\$ 0.001M	Opex	\$ 0.000M	Removal
\$ 0.493M	Capex										
\$ 0.001M	Opex										
\$ 0.000M	Removal										
<u>Brief Description</u>											
<p>This project is part of the Technology Improvement Program (TIP) under INVP 4664 Reinforce Core Infrastructure. Replacement of aged unsupported network infrastructure across Verizon Supported sites (Non Res-Woods sites ONLY). The infrastructure will be purchased in FY17 and implemented FY18</p>											
<u>Background</u>											
<p>The network infrastructure that underpins all of National Grid’s systems to enable communication is critical to the running of all services. Therefore it is vital that this network and communication infrastructure is reliable, with low outage and high availability.</p> <p>Conditions driving this investment include:</p> <ul style="list-style-type: none"> • Contractually we are not able to hold Verizon to service levels once they have notified National Grid that hardware is no longer within current standards. • Many of these Services are considered core services and it is a business requirement for these to have 24/7 availability. • To ensure that these service levels can be maintained that are no longer within current standards, hardware and software need to be upgraded or replaced. • In addition, reviews of current contractual arrangements have identified opportunity to reduce ongoing service charges (RTB) through up-front purchases. <p>This paper includes a proposed program of work to upgrade components of the network infrastructure that are no longer within current standards and identified as a priority to upgrade as follows;</p> <ul style="list-style-type: none"> • Verizon supported Networks <ul style="list-style-type: none"> ○ Proposed to replace network infrastructure identified as no longer within current standards across Verizon supported sites. 											

Project Costs [\$]M	Prior Year 16/17	Yr 1 17/18	Yr 2 18/19	Yr 3 19/20	Yr 4 20/21	Yr 5 21/22	Total
Start-Up - OPEX	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Start-Up - CAPEX	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Start-Up - risk margin	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Start-Up SUBTOTAL	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Requirements & Design - OPEX							
Requirements & Design - OPEX	\$0.001	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.001
Requirements & Design - CAPEX	\$0.175	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.175
Requirements & Design - risk margin	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Requirements & Design SUBTOTAL	\$0.176	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.176
Development & Implementation - OPEX							
People	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Software	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Hardware	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Telecommunications	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Service Contracts	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Risk Margin	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Requirements & Design SUBTOTAL	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Development & Implementation - CAPEX							
People	\$0.000	\$0.032	\$0.000	\$0.000	\$0.000	\$0.000	\$0.032
Software	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Hardware	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Telecommunications	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Service Contracts	\$0.000	\$0.286	\$0.000	\$0.000	\$0.000	\$0.000	\$0.286
Risk Margin	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
D & I SUBTOTAL	\$0.000	\$0.318	\$0.000	\$0.000	\$0.000	\$0.000	\$0.318
TOTAL PROJECT COSTS	\$0.176	\$0.318	\$0.000	\$0.000	\$0.000	\$0.000	\$0.494
Non-regulated project - UPLIFT							
Non-regulated project - UPLIFT	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Non-regulated project - TOTAL							
Non-regulated project - TOTAL	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Investment Plan No: INVP.....	Budget OPEX	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
	Budget CAPEX	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Impact on RTB costs	\$0.000	\$0.032	\$0.043	\$0.043	\$0.043	\$0.043	\$0.204

Benefiting Operating Company	Business Area	State
National Grid USA Parent	Parent	N/A
KeySpan Energy Corp.	Service Company	N/A
Niagara Mohawk Power Corp.- Electric Distr.	Electric Distribution	NY
Niagara Mohawk Power Corp. - Gas	Gas Distribution	NY
Niagara Mohawk Power Corp. - Transmission	Transmission	NY
KeySpan Energy Delivery New York	Gas Distribution	NY
KeySpan Energy Delivery Long Island	Gas Distribution	NY
Massachusetts Electric Company	Electric Distribution	MA
Massachusetts Electric Company – Transmission	Transmission	MA
Nantucket Electric Company	Electric Distribution	MA
Boston Gas Company	Gas Distribution	MA
Colonial Gas Company	Gas Distribution	MA
Narragansett Electric Company	Electric Distribution	RI
Narragansett Gas Company	Gas Distribution	RI
Narragansett Electric Company - Transmission	Transmission	RI
New England Power Company - Transmission	Transmission	MA
NE Hydro - Trans Electric Co.	FERC Interconnect	N/A
New England Hydro - Trans Electric Co.	FERC Interconnect	N/A
New England Electric Trans Electric Co.	FERC Interconnect	N/A
NG LNG LP Regulated Entity	FERC Gas Ops	N/A
KeySpan Generation LLC (PSA)	Generation	NY
KeySpan Glenwood Energy Center	Generation	NY
KeySpan Port Jefferson Energy Center	Generation	NY
KeySpan Energy Trading Services	Parents	N/A
Transgas, Inc.	Other Non-Regulated	MA
KeySpan Energy Development Corporation	Non-Regulated	NY
KeySpan Services Inc.	Other Non-Regulated	NY

TOTAL BENEFITS \$M						
Key Business Benefits: Buyout the Verizon Cisco leases will eliminate RTB charges.						

<p>Key risks:</p> <ul style="list-style-type: none"> CPE quote for two switches needed for Res Wood site is delayed since the BoM needs to be revisited. This delay increases the risk of pricing increases. 	<p>Key Dates (Month/ Year):</p> <table> <tr><td>Start Up</td><td>Jan 2017</td></tr> <tr><td>Partial Sanction</td><td>Feb 2017</td></tr> <tr><td>Begin Requirements/Design</td><td>Feb 2017</td></tr> <tr><td>CPE Completion</td><td>Mar 2017</td></tr> <tr><td>Full Sanction</td><td>Jun 2017</td></tr> <tr><td>Begin Dev & Implement</td><td>Apr 2017</td></tr> <tr><td>Begin User Accept Testing</td><td>Jun 2017</td></tr> <tr><td>Move to Production / Last Go Live</td><td>Jul 2017</td></tr> <tr><td>Project Complete</td><td>Jul 2017</td></tr> <tr><td>Project Closure Sanction</td><td>Jul 2017</td></tr> </table>	Start Up	Jan 2017	Partial Sanction	Feb 2017	Begin Requirements/Design	Feb 2017	CPE Completion	Mar 2017	Full Sanction	Jun 2017	Begin Dev & Implement	Apr 2017	Begin User Accept Testing	Jun 2017	Move to Production / Last Go Live	Jul 2017	Project Complete	Jul 2017	Project Closure Sanction	Jul 2017
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Full Sanction	Jun 2017																				
Begin Dev & Implement	Apr 2017																				
Begin User Accept Testing	Jun 2017																				
Move to Production / Last Go Live	Jul 2017																				
Project Complete	Jul 2017																				
Project Closure Sanction	Jul 2017																				

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

Role	Individual's Name
Business Executive Sponsor	John Gilbert
Head of PDM	Bill Kearns
Relationship Manager	Bill Kearns
Program Delivery Director	Dave McCune
IS Finance Management	Chip Benson
IS Regulatory	Dan DeMauro
DR&S	Elaine Wilson
Service Delivery	Brian Detota
Enterprise Architecture	Joe Clinchot

RECOMMENDATIONS

The Sanctioning Authority is invited to:

- a) APPROVE the investment of \$0.494M including risk margin of \$0.000M by May, 31, 2017
- b) NOTE that John Gilbert, Global Head IS Service Delivery, is the Project Sponsor
- c) NOTE that Pratap Routray, is the Project Manager and has the approved financial delegation to deliver the project

Decision of the Sanctioning Authority

I hereby approve the recommendations made in this paper.

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

John Gilbert, Global Head IS Service Delivery

1/22/2018

FY19 - Investment Request Summaries - IRSs - Network Transformation Continuation-Substations...



Planning & Performance Management > FY19 - Investment Request Summaries - IRSs:
Network Transformation Continuation-Substations



nationalgrid		Investment Request Summary - IS US				FISCAL YEAR 2019				
INV ID:	4834	Project Name:	Network Transformation Continuation-Substations							
Program:	Enterprise Services	IRS Status:	ACTIVE							
Sponsor:	Gilbert, John	Title:	Global Head IS Service Delivery, Global IS							
Relationship Manager:	Brian Detota	Title:	IS Relationship Manager, Global IS							
Progr Delivery Director:	Helen Smith	Title:	Head of Programme Delivery							
Paper Author:		Title:								
		Business Area:	IS - Infrastructure	Portfolio:	IS for IS					
<input type="checkbox"/> In-Flight Project?	Invest Classification: Medium	Category:	Policy Driven	Primary Policy Driver:	Reliability	Region:	US			
Strategic Program:	End to End Process (Primary):	Business Priority:	High	IS Focus Area:	Fix the Foundation	Application Strategy:	Replace			
Tech Modernization	End to End Process (Secondary):									
<p>Project Description: The context for the project with background information National Grid's Transformation project with Verizon included only the office locations and did not include the Substations and other locations that require card key access and therefore these sites were left on the legacy network. This project is to refresh the network equipment and migrate these sites over to the standard network environment to ensure operational reliability and management under the standard support model.</p> <p>This project will replace EOL equipment or migrate to new transformed equipment, services that were not modernized as part of transformation. This also includes PBXs.</p> <p>Project Rationale: Highlight business challenge, capability or process the project addresses Networks at the substation deliver key information to our engineers and also used to support site security. This work ensures that engineers can continue to receive data and Security teams can monitor and provide access to these locations.</p> <p>Project Scope: Explain what is in scope and what is not in scope for the project Approximately 80 substations in scope.</p> <p>Project Dependencies: Identify any core program or project dependencies, please include INVP numbers if known None</p> <p>Basic Project Assumptions: Assumes 20 sites are done per year over the course of 4 years.</p>										
Indicative Project Costs by Fiscal Year										
(\$M)	Prior Years	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total
CapEx		0.150	0.100	0.200	0.000	0.000	0.000	0.000	0.000	0.450
OpEx		0.020	0.020	0.020	0.000	0.000	0.000	0.000	0.000	0.060
Impact on RTB		0.010	0.020	0.020	0.020	0.000	0.000	0.000	0.000	0.070
Indicative Project Costs by Delivery Phase										
(\$M)	Start-up	R & D			D & I			Closure	Total	

1/22/2018

FY19 - Investment Request Summaries - IRSs - Network Transformation Continuation-Substations...

CapEx		0.100	0.350		0.450
OpEx	0.010	0.010	0.035	0.005	0.060

Project Benefits - Type I only

(\$M)	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total
Type I - CapEx									0.000
Type I - OpEx									0.000
Revenue Generation									0.000

Key Business Benefits:

Describe benefits, both financial and non-financial, and when those benefits will be delivered. Provide a clear & concise business case stating the investment drivers – why do we need to do something and why now? Explain any Regulatory considerations and how this initiative aligns with the US Business Strategy.

Investment Prioritization

Benefits	Impact	Weight	Score	Cost	Impact	Weight	Score	
OpEx Annual Savings			10.3%	0	OpEx Cost	0.060	-24.4%	-244
CapEx Annual Savings			5.1%	0	CapEx Cost	0.450	-11.2%	0
Revenue Generation (annual)			6.2%	0	RTB Efficiency	31.111	% -22.5%	-2.025
Financial Control	Low		6.2%	0.062	Union/Labor Relations	Low	-9.8%	0
Soft Financial Benefits	Low		3.8%	0.038	Dependencies	Low	-10.6%	-0.106
Regulatory Impact	Medium		11.2%	0.336	EIapse Time Duration	Medium	-6.6%	-0.198
Process & Personal Safety	Low		19.4%	0.194	Change Management Effort	Medium	-14.9%	-0.447
Reliability	Medium		10.9%	0.327				
Customer & Community Responsiveness	Medium		5.3%	0.159				
Employee Satisfaction	Medium		4.6%	0.138				
Mitigates a Corporate Risk / Risk of not Doing	High= 40 or more		8.9%	0.801				
Jurisdictional Engagement	High		8.2%	1				
Benefit Score: 2.79				Cost Score: -3.23				
Overall Priority Score: -0.437								

Investment Risk and Complexity

Project Risk Score:	41	Risk Score Description: Risk impact = 5 and Risk likelihood = 5
Project Complexity Score::	16	Project Complexity Score Description:

Key Risks Description: Provide detail on project risks & mitigation strategy:

Networks at the substation deliver key information to our engineers and also used to support site security. This work ensures that engineers can continue to receive data and Security teams can monitor and provide access to these locations

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FY19 - Investment Request Summaries - IRSs - Network Transformation Continuation-Substations...

<p>IS Project Dependencies <small>if you don't see a project in the drop-down please contact the Planning & Performance team.</small></p> <p>IS Projects: 4834 - Network Transformation Continuation-Substations</p> <ol style="list-style-type: none"> 1. Has a dependency on IS Project; 2. Has a dependency on IS Project; 3. Has a dependency on IS Project; 4. Has a dependency on IS Project; 5. Has a dependency on IS Project; 6. Has a dependency on IS Project; <p>Business Initiative Dependencies</p> <p>IS Projects: 4834 - Network Transformation Continuation-Substations</p> <ol style="list-style-type: none"> 1. Has a dependency on Biz Initiative, 2. Has a dependency on Biz Initiative, 3. Has a dependency on Biz Initiative, 4. Has a dependency on Biz Initiative, <p>Project Relationships</p> <p><input type="checkbox"/> Minor Works Project Relationship:</p> <p>Related Projects:</p>	<p>Benefiting Operating Companies: <small>Check all that apply</small></p> <p><input type="checkbox"/> Select All Companies <input type="checkbox"/> Clear All Companies <input type="checkbox"/> Select All Gas <input type="checkbox"/> Select All Electric <input type="checkbox"/> Select All Gen</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> National Grid USA Parent <input checked="" type="checkbox"/> KeySpan Energy Development Corporation <input checked="" type="checkbox"/> KeySpan Services Inc. <input checked="" type="checkbox"/> KeySpan Energy Corp <input checked="" type="checkbox"/> KeySpan Energy Delivery New York <input checked="" type="checkbox"/> KeySpan Energy Delivery Long Island <input checked="" type="checkbox"/> KeySpan Generation LLC (PSA) <input checked="" type="checkbox"/> KeySpan Glenwood Energy Center <input checked="" type="checkbox"/> KeySpan Port Jefferson Energy Center <input checked="" type="checkbox"/> KeySpan Energy Trading Svc LLC <input checked="" type="checkbox"/> Niagara Mohawk Power Corp- Electric Distribution <input checked="" type="checkbox"/> Niagara Mohawk Power Corp - Gas <input checked="" type="checkbox"/> Niagara Mohawk Power Corp - Transmission <input checked="" type="checkbox"/> Massachusetts Electric Company <input checked="" type="checkbox"/> Massachusetts Electric Company - Transmission <input checked="" type="checkbox"/> Nantucket Electric Company <input checked="" type="checkbox"/> Boston Gas Company <input checked="" type="checkbox"/> Colonial Gas Company <input checked="" type="checkbox"/> Narragansett Gas Company <input checked="" type="checkbox"/> Narragansett Electric Company <input checked="" type="checkbox"/> Narragansett Electric Company - Transmission <input checked="" type="checkbox"/> New England Power Company - Transmission <input checked="" type="checkbox"/> New England Hydro - Trans Corp <input checked="" type="checkbox"/> New England Electric Trans Corp <input type="checkbox"/> NE Hydro Trans Electric Co <input checked="" type="checkbox"/> NG LNG LP Regulated Entity 														
<p>Enabling IS Capabilities <small>check all that apply</small></p> <table style="width:100%;"> <tr> <td><input type="checkbox"/> Enterprise Content Management (ECM)</td> <td><input type="checkbox"/> Enterprise Mobility</td> </tr> <tr> <td><input type="checkbox"/> Comprehensive Integration Services (CIS)</td> <td><input type="checkbox"/> Reporting and Analytics</td> </tr> <tr> <td><input type="checkbox"/> Hybrid Cloud</td> <td><input type="checkbox"/> Networks</td> </tr> <tr> <td><input type="checkbox"/> Next Gen Workplace</td> <td></td> </tr> </table>		<input type="checkbox"/> Enterprise Content Management (ECM)	<input type="checkbox"/> Enterprise Mobility	<input type="checkbox"/> Comprehensive Integration Services (CIS)	<input type="checkbox"/> Reporting and Analytics	<input type="checkbox"/> Hybrid Cloud	<input type="checkbox"/> Networks	<input type="checkbox"/> Next Gen Workplace							
<input type="checkbox"/> Enterprise Content Management (ECM)	<input type="checkbox"/> Enterprise Mobility														
<input type="checkbox"/> Comprehensive Integration Services (CIS)	<input type="checkbox"/> Reporting and Analytics														
<input type="checkbox"/> Hybrid Cloud	<input type="checkbox"/> Networks														
<input type="checkbox"/> Next Gen Workplace															
<p>Key Milestone Dates: <small>Select the 1st, 15th or last day of the month</small></p> <table style="width:100%; text-align: center;"> <thead> <tr> <th style="width:15%;">Begin Start-up</th> <th style="width:15%;">Begin Requirements & Deign</th> <th style="width:15%;">Begin Development & Implementation</th> <th style="width:15%;">Begin User Acceptance Testing</th> <th style="width:15%;">Go Live</th> <th style="width:15%;">Project Completion</th> <th style="width:15%;">Project Closure</th> </tr> </thead> <tbody> <tr> <td>April, 2018</td> <td></td> <td></td> <td></td> <td>December, 2021</td> <td>December, 2021</td> <td></td> </tr> </tbody> </table> <p style="text-align: right;">Indicative Estimated Duration (Months):</p>		Begin Start-up	Begin Requirements & Deign	Begin Development & Implementation	Begin User Acceptance Testing	Go Live	Project Completion	Project Closure	April, 2018				December, 2021	December, 2021	
Begin Start-up	Begin Requirements & Deign	Begin Development & Implementation	Begin User Acceptance Testing	Go Live	Project Completion	Project Closure									
April, 2018				December, 2021	December, 2021										
<p>Business Resource Estimates: <small># of Full Time Equivalents</small></p> <table style="width:100%; text-align: center;"> <thead> <tr> <th style="width:15%;">Start-up</th> <th style="width:15%;">Requirements & Deign</th> <th style="width:15%;">Develop & Implement</th> <th style="width:15%;">Business Resources UAT</th> <th style="width:15%;">Go Live Readiness</th> <th style="width:15%;">Post Go Live Support</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> </tbody> </table>		Start-up	Requirements & Deign	Develop & Implement	Business Resources UAT	Go Live Readiness	Post Go Live Support	0	0	0	0	0	0		
Start-up	Requirements & Deign	Develop & Implement	Business Resources UAT	Go Live Readiness	Post Go Live Support										
0	0	0	0	0	0										
<p>Resourcing Strategy:</p>															
<p>Attached Supporting Documents</p>															

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FY19 - Investment Request Summaries - IRSs - Network Transformation Continuation-Substations...

Recommendation Sign-off			
<i>Role</i>	<i>Name</i>	<i>Title</i>	<i>Date</i>
<i>Business Project Sponsor</i>	<i>Gilbert, John</i>	<i>Global Head IS Service Delivery, Global IS</i>	
<i>Business Relationship Manager</i>	<i>Brian Detota</i>	<i>IS Business Relationship Manager</i>	
<i>IS Program Delivery Manager</i>	<i>Helen Smith</i>	<i>IS Program Delivery Manager</i>	





US Sanction Paper

Title:	MTC and Syracuse Boardrooms & Auditoriums	Sanction Paper #:	
Project #:	INVP 4759	Sanction Type:	Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	July 28, 2017
Author:	Susan Stallard / Nicola Pennington	Sponsor:	John Gilbert, Global Head IS Service Delivery, Global IS
Utility Service:	IS	Project Manager:	John Braziel / Dave McCune

1 Executive Summary

1.1 Sanctioning Summary

This paper requests sanction of INVP 4759 in the amount \$0.417M with a tolerance of +/- 10% for the purposes Full implementation.

This sanction amount is \$0.417M broken down into:

- \$0.352M Capex
- \$0.065M Opex
- \$0.000M Removal

1.2 Project Summary

Upgraded Video Conferencing (VC) equipment will be procured, installed and configured for selected National Grid Boardrooms and conference rooms. Ongoing VC services support will be provided, which will allow for reliable and supported VC environment between the National Grid locations.

1.3 Summary of Projects

Project Number	Project Title	Estimate Amount (\$M)
INVP 4759	MTC and Syracuse Boardrooms & Auditoriums	0.417
Total		0.417



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
Mar 2018	Closure

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 investment impacts on the Customer are (a) Improves reliability and productivity; (b) Better support for Jurisdictional and business function initiatives; and (c) Improved end user experience.

1.8 Asset Management Risk Score

Asset Management Risk Score: 31

Primary Risk Score Driver: (Policy Driven Projects Only)

- Reliability
 Environment
 Health & Safety
 Not Policy Driven



US Sanction Paper

1.9 Complexity Level

High Complexity Medium Complexity Low Complexity N/A

Complexity Score: 11

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 FY18 - 22	<input type="radio"/> Yes <input checked="" type="radio"/> No	<input checked="" type="radio"/> Over <input type="radio"/> Under <input type="radio"/> NA	\$0.417M

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

Re-allocation of funds within the US business has been managed to meet jurisdictional budgetary, statutory and regulatory requirements. Future fiscal year forecasts will be addressed in future year business plans.

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	0.352	0.000	0.000	0.000	0.000	0.000	0.352
OpEx	0.000	0.065	0.000	0.000	0.000	0.000	0.000	0.065
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	0.417	0.000	0.000	0.000	0.000	0.000	0.417

US Sanction Paper

1.14 Key Milestones

Milestone	Target Date: (Month/Year)
Start Up	Jun 2017
Full Sanction	Jul 2017
Begin Requirements and Design	Jul 2017
Begin Development and Implementation	Aug 2017
Move to Production / Last Go Live	Nov 2017
Project Complete	Dec 2017
Closure Sanction	Mar 2018

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



US Sanction Paper

1.17 Climate Change

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

1.18 List References

N/A

US Sanction Paper

2 Decisions

The US IS Sanctioning Committee (ISSC) and Key External Stakeholders, reviewed and approved the content of the investment including:

- (a) APPROVE this paper and the investment of \$0.417M and a tolerance of +/-10%.
- (b) APPROVE the RTB Impact of \$0.015M for FY18 and \$0.032M (per annum) for 4 years.
- (c) NOTE that Dave McCune is the Project Manager and has the approved financial delegation.

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

Anuraag Bhargava
US CIO

US Sanction Paper

3 Sanction Paper Detail

Title:	MTC and Syracuse Boardrooms & Auditoriums	Sanction Paper #:	
Project #:	INVP 4759	Sanction Type:	Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	July 28, 2017
Author:	Susan Stallard / Nicola Pennington	Sponsor:	John Gilbert, Global Head IS Service Delivery, Global IS
Utility Service:	IS	Project Manager:	John Braziel / Dave McCune

3.1 Background

Currently the Video Conference (VC) facilities are not sufficient for the National Grid Syracuse, Metrotech and Washington D.C. locations. The VC units are experiencing inconsistent performance issues, and the users are unable to get support when needed.

The US Video Conference Programme Consists of the following locations:

- Metrotech (MTC) Boardroom - Outdated/unsupported VC
- Syracuse Boardroom - No existing VC
- Syracuse C139 - No existing VC
- Washington DC - Outdated/unsupported VC. Single Display, Cisco SX20 Videoconference System

3.2 Drivers

The drivers of this project is to provide VC services for National Grid locations; which will increase productivity by allowing meeting attendance from multiple locations and result in a reduction of employee travel.

3.3 Project Description

Video Conferencing (VC) equipment and services to be procured, installed and configured at the National Grid locations:

- Metrotech (MTC) Boardroom;

US Sanction Paper

- Syracuse Boardroom;
- Syracuse C139; and
- Washington DC.

VC equipment and services for each location will include:

- Video display units;
- Camera systems;
- Speakers;
- Microphones;
- Wired and wireless connectivity to the system from laptops, tablets, or other portable media devices: and
- End User Training.

Verion will provide ongoing VC services after the installation of the equipment.

3.4 Benefits Summary

This project will provide improved facilities, enabling improved productivity by enabling users to have meetings while they are in different sites. The impacts of this program on the Customer are:

- Improves reliability and productivity;
- Better support for Jurisdictional and business function initiatives; and
- Improved end user experience.

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

This option is not selected as National Grid would not realize the benefits of Video Conferencing between the different locations.

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	Availability of the individual conference rooms	3	2	2	6	6	Mitigate	Project Manager will verify the availability and schedule the installation VC for each of the conferences rooms with facilities services.	None	None
2	Verify direction of proposed MTC boardroom renovation	3	2	3	6	9	Mitigate	Project Manager will verify the direction of the renovation.	Timing of MTC boardroom renovation work may delay the VC installation.	Installation of VC services for MTC may need to be scheduled after the renovation is completed.
3	Ability to issue a Purchase Order to Verizon by mid July for equipment purchase	3	1	2	3	6	Mitigate	Project team will monitor the sanction process to ensure the PO can be issued in a timely manner.	None	None

3.9 Permitting

N/A

3.10 Investment Recovery

3.10.1 Investment Recovery and Regulatory Implications

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

3.10.2 Customer Impact

N/A

3.10.3 CIAC / Reimbursement

N/A



US Sanction Paper

3.11 Financial Impact to National Grid

3.11.1 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend (\$M)	Prior Yrs	Current Planning Horizon						Total	
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
INVP 4759	MTC and Syracuse Boardrooms & Auditoriums	Est Lvl +/- 10%	CapEx	0.000	0.352	0.000	0.000	0.000	0.000	0.000	0.000	0.352
			OpEx	0.000	0.065	0.000	0.000	0.000	0.000	0.000	0.000	0.065
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	0.417	0.000	0.000	0.000	0.000	0.000	0.000	0.417
Total Project Sanction			CapEx	0.000	0.352	0.000	0.000	0.000	0.000	0.000	0.000	0.352
			OpEx	0.000	0.065	0.000	0.000	0.000	0.000	0.000	0.000	0.065
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	0.417	0.000	0.000	0.000	0.000	0.000	0.000	0.417

3.11.2 Project Budget Summary Table

Project Costs per Business Plan

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

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
CapEx	0.000	(0.352)	0.000	0.000	0.000	0.000	0.000	(0.352)
OpEx	0.000	(0.065)	0.000	0.000	0.000	0.000	0.000	(0.065)
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	(0.417)	0.000	0.000	0.000	0.000	0.000	(0.417)

3.11.3 Cost Assumptions

This estimate was developed in 2017 using the standard IS estimating methodology. The accuracy level of estimate for each project is identified in table 3.11.1.

US Sanction Paper

3.11.4 Net Present Value / Cost Benefit Analysis

3.11.4.1 NPV Summary Table

This is not an NPV project.

3.11.4.2 NPV Assumptions and Calculations

3.11.5 Additional Impacts

3.12 Statements of Support

N/A

3.12.1 Supporters

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

Role	Individual
Business Representative	Doug Page
Head of PDM	Bill Kearns
Relationship Manager	Bill Kearns
Program Delivery Director	David McCune
IS Finance Management	Chip Benson
IS Regulatory	Tom Gill
DR&S	Elaine Wilson
Service Delivery	Brian Detota
Enterprise Architecture	Joe Clinchot

3.12.2 Reviewers

N/A



US Sanction Paper

4 Appendices

4.1 Other Appendices

4.1.1 Project Cost Breakdown

4.1.2 Benefitting Operating Companies

Benefitting Operating Companies Table: Benefitting Operating Company	Business Area	State
National Grid USA Parent	Parent	N/A
KeySpan Energy Corp.	Service Company	N/A
Niagara Mohawk Power Corp. - Electric Distr.	Electric Distribution	NY
Niagara Mohawk Power Corp. - Gas	Gas Distribution	NY
Niagara Mohawk Power Corp. - Transmission	Transmission	NY
KeySpan Energy Delivery New York	Gas Distribution	NY
KeySpan Energy Delivery Long Island	Gas Distribution	NY
Massachusetts Electric Company	Electric Distribution	MA
Massachusetts Electric Company – Transmission	Transmission	MA
Nantucket Electric Company	Electric Distribution	MA
Boston Gas Company	Gas Distribution	MA
Colonial Gas Company	Gas Distribution	MA
Narragansett Electric Company	Electric Distribution	RI
Narragansett Gas Company	Gas Distribution	RI
Narragansett Electric Company - Transmission	Transmission	RI
New England Power Company - Transmission	Transmission	MA
NE Hydro - Trans Electric Co.	FERC Interconnect	N/A
New England Hydro - Trans Electric Co.	FERC Interconnect	N/A
New England Electric Trans Electric Co.	FERC Interconnect	N/A
NG LNG LP Regulated Entity	FERC Gas Ops	N/A
KeySpan Generation LLC (PSA)	Generation	NY
KeySpan Glenwood Energy Center	Generation	NY
KeySpan Port Jefferson Energy Center	Generation	NY
KeySpan Energy Trading Services	Parents	N/A

US Sanction Paper

Transgas, Inc.	Other Non-Regulated	MA
KeySpan Energy Development Corporation	Non-Regulated	NY
KeySpan Services Inc.	Other Non-Regulated	NY

4.1.3 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.

Summary Analysis of RTB Costs							
All figures in \$ millions	Yr. 1 17/18	Yr. 2 18/19	Yr. 3 19/20	Yr. 4 20/21	Yr. 5 21/22	Yr. 6+	Total
Forecast of RTB Impact							
RTB if Status Quo Continues	-	-	-	-	-	-	-
RTB if Project is Implemented	0.015	0.032	0.032	0.032	0.032	0.022	0.166
Net change in RTB	0.015	0.032	0.032	0.032	0.032	0.022	0.166
RTB Variance Analysis (if Project is Implemented)							
Net Δ RTB funded by Plan(s)	-	-	-	-	-	-	-
Variance to Plan	0.015	0.032	0.032	0.032	0.032	0.022	0.166
Total RTB Costs - by Cost Type (if Project is Implemented)							
App.Sup. - SDC 1	-	-	-	-	-	-	-
App.Sup. - SDC 2	-	-	-	-	-	-	-
App.Sup. - other	0.010	0.025	0.025	0.025	0.025	0.017	0.128
SW maintenance	0.004	0.007	0.007	0.007	0.007	0.005	0.038
SaaS	-	-	-	-	-	-	-
HW support	-	-	-	-	-	-	-
Other: IS	-	-	-	-	-	0.000	0.000
All IS-related RTB (sub-Total)	0.015	0.032	0.032	0.032	0.032	0.022	0.166
Business Support (sub-Total)	-	-	-	-	-	-	-
Total RTB Costs	0.015	0.032	0.032	0.032	0.032	0.022	0.166

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FY19 - Investment Request Summaries - IRSs - Network Transformation Continuation-Substations...



Planning & Performance Management > FY19 - Investment Request Summaries - IRSs:
Network Transformation Continuation-Substations and Security Sites



nationalgrid		Investment Request Summary - IS US				FISCAL YEAR 2019				
INV ID:	4835	Project Name:	Network Transformation Continuation-Substations and Security Sites							
Program:	Enterprise Services	IRS Status:	ACTIVE							
Sponsor:	Gilbert, John	Title:	Global Head IS Service Delivery, Global IS							
Relationship Manager:	Brian Detota	Title:	IS Relationship Manager, Global IS							
Progr Delivery Director:	Helen Smith	Title:	Head of Programme Delivery							
Paper Author:		Title:								
		Business Area:	IS - Infrastructure	Portfolio:	IS for IS					
<input type="checkbox"/> In-Flight Project?	Invest Classification: Medium	Category:	Policy Driven	Primary Policy Driver:	Reliability	Region:	US			
Strategic Program:	End to End Process (Primary):	Business Priority:	High	IS Focus Area:	Fix the Foundation	Application Strategy:	Replace			
Tech Modernization	End to End Process (Secondary):									
<p>Project Description: The context for the project with background information National Grid's Transformation project with Verizon included only the office locations and did not include the Substations and other locations that require card key access and therefore these sites were left on the legacy network. This project is to refresh the network equipment and migrate these sites over to the standard network environment to ensure operational reliability and management under the standard support model.</p> <p>Project Rationale: Highlight business challenge, capability or process the project addresses</p> <p>Project Scope: Explain what is in scope and what is not in scope for the project Sites in scope: Leominster, Cumberland, Riverhead, Westford, and Amherst, NH</p> <p>Project Dependencies: Identify any core program or project dependencies, please include INVP numbers if known</p> <p>Basic Project Assumptions:</p>										
Indicative Project Costs by Fiscal Year										
(\$M)	Prior Years	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total
CapEx		0.400	0.100	0.200	0.000	0.000	0.000	0.000	0.000	0.700
OpEx		0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020
Impact on RTB		0.030	0.060	0.060	0.000	0.000	0.000	0.000	0.000	0.150
Indicative Project Costs by Delivery Phase										
(\$M)	Start-up	R & D			D & I			Closure	Total	
CapEx										

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FY19 - Investment Request Summaries - IRSSs - Network Transformation Continuation-Substations...

		0.100	0.600		0.700				
OpEx	0.005	0.002	0.008	.005	0.020				
Project Benefits - Type I only									
(\$M)	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total
Type I - CapEx									0.000
Type I - OpEx									0.000
Revenue Generation									0.000

Key Business Benefits:

Describe benefits, both financial and non-financial, and when those benefits will be delivered. Provide a clear & concise business case stating the investment drivers – why do we need to do something and why now? Explain any Regulatory considerations and how this initiative aligns with the US Business Strategy.

Investment Prioritization

Benefits	Impact	Weight	Score	Cost	Impact	Weight	Score
OpEx Annual Savings		10.3%	0	OpEx Cost	0.020	-24.4%	-244
CapEx Annual Savings		5.1%	0	CapEx Cost	0.700	-11.2%	0
Revenue Generation (annual)		6.2%	0	RTB Efficiency	60.000 %	-22.5%	-2.025
Financial Control	Low	6.2%	0.062	Union/Labor Relations	Low	-9.8%	0
Soft Financial Benefits	Low	3.8%	0.038	Dependencies	Medium	-10.6%	-0.318
Regulatory Impact	Medium	11.2%	0.336	Elapse Time Duration	Medium	-6.6%	-0.198
Process & Personal Safety	Low	19.4%	0.194	Change Management Effort	Medium	-14.9%	-0.447
Reliability	Medium	10.9%	0.327				
Customer & Community Responsiveness	Low	5.3%	0.053				
Employee Satisfaction	Medium	4.6%	0.138				
Mitigates a Corporate Risk / Risk of not Doing	High= 40 or more	8.9%	0.801				
Jurisdictional Engagement	High	8.2%	1				
		Benefit Score:	2.69			Cost Score:	-3.67
				Overall Priority Score:	-0.979		

Investment Risk and Complexity

Project Risk Score:	41	Risk Score Description: Risk impact = 5 and Risk likelihood = 5
Project Complexity Score::	18	Project Complexity Score Description:
<p>Key Risks Description: Provide detail on project risks & mitigation strategy: Networks at the substation deliver key information to our engineers and also used to support site security. This work ensures that engineers can continue to receive data and Security teams can monitor and provide access to these locations. This will also ensure operational reliability and management under the standard support model.</p>		

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FY19 - Investment Request Summaries - IRSs - Network Transformation Continuation-Substations...

IS Project Dependencies if you don't see a project in the drop-down please contact the Planning & Performance team.

IS Projects: 4835 - Network Transformation Continuation-Substations and Security Sites

1. Has a dependency on IS Project;
2. Has a dependency on IS Project;
3. Has a dependency on IS Project;
4. Has a dependency on IS Project;
5. Has a dependency on IS Project;
6. Has a dependency on IS Project;

Business Initiative Dependencies

IS Projects: 4835 - Network Transformation Continuation-Substations and Security Sites

1. Has a dependency on Biz Initiative,
2. Has a dependency on Biz Initiative,
3. Has a dependency on Biz Initiative,
4. Has a dependency on Biz Initiative,

Project Relationships

Minor Works Project Relationship:

Related Projects:

Benefiting Operating Companies: Check all that apply

Select All Companies Clear All Companies

Select All Gas Select All Electric Select All Gen

- National Grid USA Parent
- KeySpan Energy Development Corporation
- KeySpan Services Inc.
- KeySpan Energy Corp
- KeySpan Energy Delivery New York
- KeySpan Energy Delivery Long Island
- KeySpan Generation LLC (PSA)
- KeySpan Glenwood Energy Center
- KeySpan Port Jefferson Energy Center
- KeySpan Energy Trading Svc LLC
- Niagara Mohawk Power Corp- Electric Distribution
- Niagara Mohawk Power Corp - Gas
- Niagara Mohawk Power Corp - Transmission
- Massachusetts Electric Company
- Massachusetts Electric Company - Transmission
- Nantucket Electric Company
- Boston Gas Company
- Colonial Gas Company
- Narragansett Gas Company
- Narragansett Electric Company
- Narragansett Electric Company - Transmission
- New England Power Company - Transmission
- New England Hydro - Trans Corp
- New England Electric Trans Corp
- NE Hydro Trans Electric Co
- NG LNG LP Regulated Entity

Enabling IS Capabilities check all that apply

- Enterprise Content Management (ECM)
- Comprehensive Integration Services (CIS)
- Hybrid Cloud
- Next Gen Workplace

- Enterprise Mobility
- Reporting and Analytics
- Networks

Key Milestone Dates: Select the 1st, 15th or last day of the month

<small>Begin</small> Start-up	<small>Begin</small> Requirements & Deign	<small>Begin</small> Development & Implementation	<small>Begin</small> User Acceptance Testing	<small>Go Live</small>	<small>Project Completion</small>	<small>Project Closure</small>
July, 2018				December, 2020	December, 2020	

Business Resource Estimates: # of Full Time Equivalents

Start-up	Requirements & Deign	Develop & Implement	Business Resources UAT	Go Live Readiness	Post Go Live Support
0	0	0	0	0	0

Resourcing Strategy:

Attached Supporting Documents

<https://teams.nationalgrid.com/sites/USIS/directory/PPM/Lists/FY19%20Investment%20Request%20Summaries%20%20IRSs/Item/displayifs.aspx...> 3/4

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FY19 - Investment Request Summaries - IRSs - Network Transformation Continuation-Substations...

Recommendation Sign-off			
<i>Role</i>	<i>Name</i>	<i>Title</i>	<i>Date</i>
<i>Business Project Sponsor</i>	<i>Gilbert, John</i>	<i>Global Head IS Service Delivery, Global IS</i>	
<i>Business Relationship Manager</i>	<i>Brian Detota</i>	<i>IS Business Relationship Manager</i>	
<i>IS Program Delivery Manager</i>	<i>Helen Smith</i>	<i>IS Program Delivery Manager</i>	





US Sanction Paper

Title:	US Citrix Rationalization	Sanction Paper #:	
Project #:	INVP 4279	Sanction Type:	Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	September 19, 2017
Author:	Neha Verma / Andrew Yee	Sponsor:	John Gilbert, Global Head of Service Delivery
Utility Service:	IS	Project Manager:	Heather Cortes / Chris Granata

1 Executive Summary

1.1 Sanctioning Summary

This paper requests full sanction of INVP 4279 in the amount \$0.140M with a tolerance of +/- 10% for the purpose of Feasibility and Assessment study for the US Citrix Rationalization project.

This sanction amount is \$0.140M broken down into:

- \$0.000M Capex*
- \$0.140M Opex*
- \$0.000M Removal*

1.2 Project Summary

This project will conduct a Feasibility and Assessment study to make recommendations for the upgrade/rationalization of the Citrix infrastructure.

Citrix is a product in the National Grid environment that is used to virtualize various business applications, such as ArcGis, Casade, Small World GIS, Maximo, etc. The Citrix environment is operating on unsupported operating systems (Windows 2000 and 2003) and unsupported Citrix versions (Metaframe XP 1.0 and Presentation Server 4.0). Operating in unsupported environments can introduce instability and expose National Grid to vulnerabilities.

1.3 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
INVP 4279		US Citrix Rationalisation	0.140
Total			0.140



US Sanction Paper

1.4 Associated Projects

N/A

1.5 Prior Sanctioning History

N/A

1.6 Next Planned Sanction Review

N/A

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 policy driven project is to conduct a feasibility and assessment study to make recommendations for the upgrade/rationalization of the Citrix infrastructure

1.8 Asset Management Risk Score

Asset Management Risk Score: 37

Primary Risk Score Driver: (Policy Driven Projects Only)

- Reliability
 Environment
 Health & Safety
 Not Policy Driven

1.9 Complexity Level

- High Complexity
 Medium Complexity
 Low Complexity
 N/A

Complexity Score: 14



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 FY 18 - 22	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input checked="" type="radio"/> Under <input type="radio"/> NA	\$0.610M

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 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	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.140	0.000	0.000	0.000	0.000	0.000	0.140
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	0.140	0.000	0.000	0.000	0.000	0.000	0.140

1.14 Key Milestones

Milestone	Target Date: (Month/Year)
Start Up	Jul 2017
Pre ISSC Review	Aug 2017
Project Sanction	Sept 2017
Begin Requirements and Design	Sept 2017
Begin Development and Implementation	Oct 2017
Move to Production / Last Go Live	Oct 2017
Project Complete	Oct 2017
Closure Sanction	Jan 2018

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)

1	Delays from DXC Systems in providing a list of the committed deliverables to National Grid for the F&A analysis
2	Continued delays in availability and timely responses from DXC can have a negative impact on the project timeline and agreed to deliverables

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 Key External Stakeholders reviewed and approved the content of the investment including:

- (a) APPROVE this paper and the investment of \$0.140M and a tolerance of +/-10%.
- (b) NOTE that Heather Cortes / Chris Granata is the Project Manager and has the approved financial delegation.

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

Anuraag Bhargava
US CIO



US Sanction Paper

3 Sanction Paper Detail

Title:	US Citrix Rationalization	Sanction Paper #:	
Project #:	INVP 4279	Sanction Type:	Sanction
Operating Company:	National Grid Electric Svc.	Date of Request:	September 19, 2017
Author:	Neha Verma / Andrew Yee	Sponsor:	John Gilbert Global Head of Service Delivery
Utility Service:	IS	Project Manager:	Heather Cortes / Chris Granata

3.1 Background

Citrix is a product that National Grid uses to virtualize a number of key business applications such as ArcGis, Casade, Small World GIS, Maximo, etc. Citrix is also a key method of remote access for National Grid users, eco-system partners and other outside contractors via our secure gateway solutions. A significant portion of our current Citrix environment is running on unsupported operating systems (Windows 2000 and 2003) and unsupported Citrix versions (Metaframe XP 1.0 and Presentation Server 4.0). Unsupported environments can introduce instability and expose National Grid to vulnerabilities. National Grid’s current version of Citrix XenApp 6.0 is running on Windows 2008 r2 which is out of support as of August 2016.

There is a proposal to resolve these issues through rationalization of the current Citrix environment and upgrade of the remaining servers. High level project scope is as follows:

- Current US footprint is approximately 300 servers with a goal to reduce to 150 servers
- New clusters and ESX/Hyperview version upgrades are within scope for this project
- Servers will be migrated to Windows 2016
- Citrix version will be upgraded

3.2 Drivers

National Grid’s current Citrix environment is running on unsupported operating systems (Windows 2000 and 2003) and unsupported Citrix versions (Metaframe XP 1.0 and Presentation Server 4.0). This not only introduces instability but exposes National Grid to vulnerabilities. National Grid’s most current version of Citrix is XenApp 6.0, running on Windows 2008 which is out of support as of August 2016

US Sanction Paper

3.3 Project Description

The Scope of the Feasibility and Assessment is to review the Citrix estate and propose a solution to rationalize and upgrade the current environment.

DXC is the vendor for performing the feasibility and assessment analysis. DXC will require IBM and Wipro application support teams to assist with certain application specific questions. There are certain Win7 non-compatible or older applications that are at high risk of not functioning if Citrix is upgraded. DXC needs to be able to consult with WIPRO and IBM on these high risk applications. If Citrix is upgraded there is a high probability that those applications may stop functioning. DXC needs to be able to consult with WIPRO and IBM on these high risk applications.

Feasibility and Assessment analysis deliverables:-

- Data gathering and analysis on current Citrix environment and applications
- Architectural assessment of the existing Citrix environment and provide a plan to remediate the environment
- Future state proposed solution document with a high level estimate
- Propose a plan to reduce the infrastructure footprint
- Identify high risk/incompatible applications with new propose environment
- Provide financial analysis of proposed environment changes
- Provide a proposed timeline

3.4 Benefits Summary

N/A

3.5 Business and Customer Issues

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

3.6 Alternatives

Alternative 1: Do Nothing

Doing nothing will not address the primary drivers listed in Section 3.2. This option is not viable since good portion of our current Citrix environment is running on unsupported operating systems (Windows 2000 and 2003) and unsupported Citrix versions (Metaframe XP 1.0 and Presentation Server 4.0). This not only introduces instability but exposes National Grid to vulnerabilities. The current unstable environment can cause incidents and failures due to unsupported hardware and software.

Alternative 2: Defer project

Deferring the project will delay the realization of benefits for National Grid of ensuring a stable and supported environment reducing vulnerabilities, major incidents and failures

US Sanction Paper

due to an unsupported environment. Not resolving these issues will cause National Grid to lose the opportunity to rationalize and save money.

3.7 Safety, Environmental and Project Planning Issues

N/A

3.8 Execution Risk Appraisal

Number	Detailed Description of Risk / Opportunity	Probability	Impact		Score		Strategy	Pre-Trigger Mitigation Plan	Residual Risk	Post Trigger Mitigation Plan
			Cost	Schedule	Cost	Schedule				
1	Older applications or applications that were incompatible with Win7 and put on Citrix may encounter issues with a newer version of Citrix	5	5	5	25	25	Mitigate	identify problem applications and try to reconfirm them to fit on OS 2016	Identify number of users and possible replacement for the application	
2	Potential compatability issues with Windows 2016 OS (preferred OS)	4	5	5	20	20	Mitigate	identify problem applications and perform testing to find potential solutions	Identify number of users and possible replacement for the application	
3	F&A may not identify all possible areas that would require a change affected by the Citrix upgrade	4	5	5	20	20	Mitigate	areas requiring changes that were found out during the project will have to be addressed and determine if a quick fix is possible or need to be resolved at a later time		

3.9 Permitting

N/A

3.10 Investment Recovery

N/A

3.10.1 Investment Recovery and Regulatory Implications

N/A

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

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 4279	US Citrix Rationalisation	Est Lvl (e.g. +/- 10%)	CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			OpEx	0.000	0.140	0.000	0.000	0.000	0.000	0.000	0.000	0.140
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	0.140	0.000	0.000	0.000	0.000	0.000	0.000	0.140

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	0.140	0.000	0.000	0.000	0.000	0.000	0.000	0.140
	Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Total	0.000	0.140	0.000	0.000	0.000	0.000	0.000	0.000	0.140

3.11.2 Project Budget Summary Table

Project Costs per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
CapEx	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.500
OpEx	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.250
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.750

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
CapEx	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.500
OpEx	0.000	0.110	0.000	0.000	0.000	0.000	0.000	0.110
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.610	0.000	0.000	0.000	0.000	0.000	0.610

3.11.3 Cost Assumptions

This line item has \$500k capex and \$250k Opex. Feasibility and Assessment analysis will be utilizing part of these funds.

IBM, Wipro and DXC will be vendors/suppliers for performing the feasibility and assessment analysis. High level vendor cost breakdown is provided below:-

IBM = \$ 0.058 M

Wipro = \$ 0.020 M

DXC = \$ 0.054 M

US Sanction Paper

3.11.4 Net Present Value / Cost Benefit Analysis

This is not an NPV project

3.11.4.1 NPV Summary Table

N/A

3.11.4.2 NPV Assumptions and Calculations

N/A

3.11.5 Additional Impacts

N/A

3.12 Statements of Support

3.12.1 Supporters

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

Role	Individual
Business Representative	Elaine Hatzis
Head of PDM	Helen Smith
Relationship Manager	Bill Kearns
Program Delivery Director	David McCune
IS Finance Management	Jess Cheung
IS Regulatory	Dan DeMauro
DR&S	Elaine Wilson
Service Delivery	Shibu George
Enterprise Architecture	Joe Clinchot

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 Benefiting Operating Companies

4.3 NPV Summary

N/A

4.4 Customer Outreach Plan

N/A

US Sanction Paper

4.2.1 – 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
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

FY18 - Investment Request Summaries - IRSs - RSA Re-platform



Planning & Performance Management >
 FY18 - Investment Request Summaries - IRSs: RSA Re-platform



nationalgrid		Investment Request Summary - IS US			FISCAL YEAR 2018					
INV ID:	4270	Project Name:		RSA Re-platform						
Program:	Service Strategy Roadmap									
Sponsor:	John Gilbert	Title:	Global Head IS Service Delivery, Global IS							
Relationship Manager:	Graham Pool	Title:	IS Relationship Manager, Global IS							
Prog Delivery Manager:	Tom Cunningham	Title:	Head of Programme Delivery, Global IS							
Paper Author:	Nicola Pennington / Steve Trezza	Title:	Business Consultant - Corporate IS / Service Strategy							
IS Roadmap Category:	IS Assurance	Business Area:	Corporate IS	Portfolio:	IS for IS					
<input type="checkbox"/> In-Flight Project?	Invest Classification: Medium	Category:	Policy Driven	Primary Policy Driver:	Reliability	Region:	US			
<input type="checkbox"/> Growth Playbook Project?	<input type="checkbox"/> Shaping Our Future Project?	<input type="checkbox"/> Energy Efficiency Project?								
<p>Project Description: The context for the project with background information The existing Managed One Time Password service (MOTP) (RSA Tokens) has been sunsetted by Verizon and NG is one of the last customers on the service. Verizon would like NG to move off the service and will not charge any termination fees of National Grid were to move off the services. National Grid has two primary options to utilize to move to another platform. One option is to move to UIS, Verizon's cloud based managed password system that utilizes hard tokens (not RSA tokens) and can also provide passwords through a smartphone app, txt messaging, and IVR. The other option is to use an RSA service that not only provides one time passwords via RSA token or a smartphone app, but also includes a risk based authentication engine that can increase or decrease the password requirements based on your location, device, and access required. Both options provide the benefit of having a smartphone app which can significantly reduce the overhead of physical token distribution.</p> <p>Project Rationale: Highlight business challenge, capability or process the project addresses RSA token distribution and support is expensive and slow. Verizon's sunsetting of the MOTP converging with an upcoming renewal of the majority of our RSA tokens has created an opportunity for NG to move to a more modern and flexible platform that allows us to eliminate the hard token in favor of other alternatives as well as implement additional capabilities in this area.</p> <p>Project Scope: Explain what is in scope and what is not in scope for the project All US clients that use remote access to perform work at offsite locations.</p> <p>Project Dependencies: Identify any core program or project dependencies, please include INVP numbers if known There are no dependencies required before this project can start.</p> <p>Basic Project Assumptions: There is 80% likelihood of these applications requiring a mobile remote access service that is not currently available on the existing platform.</p>										
Indicative Project Costs by Fiscal Year										
(\$M)	Prior Years	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total
CapEx		0.280	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.280
OpEx		0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020
Impact on RTB		0.050	0.150	0.150	0.150	0.150	0.150	0.150	0.150	1.100
Indicative Project Costs by Delivery Phase										
(\$M)	Start-up	R & D		D & I		Closure		Total		
CapEx		0.050		0.230				0.280		
OpEx	0.010	0.005		0.000		0.005		0.020		

FY18 - Investment Request Summaries - IRSs - RSA Re-platform

Project Benefits - Type I only									
(\$M)	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total
Type I - CapEx									0.000
Type I - OpEx									0.000
Revenue Generation									0.000

Key Business Benefits:
Describe benefits, both financial and non-financial, and when those benefits will be delivered. Provide a clear & concise business case stating the investment drivers – why do we need to do something and why now? Explain any Regulatory considerations and how this initiative aligns with the US Business Strategy.
The impacts of this program on the Customer are based on a number of areas:

- Increase business and enterprise service performance and availability.
- Better way to support for Jurisdictional and business function initiatives.

Other benefits are:

- Use of smartphone app to replace physical hard token
- Minimize hard token distribution costs
- Use other alternatives immediately if token is lost or stolen

Investment Prioritization

Benefits	Impact	Weight	Score	Cost	Impact	Weight	Score
OpEx Annual Savings		10.3%	0	OpEx Cost	0.020	-24.4%	-244
CapEx Annual Savings		5.1%	0	CapEx Cost	0.280	-11.2%	0
Revenue Generation (annual)		6.2%	0	RTB Efficiency	375.000	% -22.5%	-2.025
Financial Control	does not apply	6.2%	0	Union/Labor Relations	does not apply	-9.8%	0
Soft Financial Benefits	does not apply	3.8%	0	Dependencies	Low	-10.6%	-0.106
Regulatory Impact	does not apply	11.2%	0	EIapse Time Duration	Medium	-6.6%	-0.198
Process & Personal Safety	does not apply	19.4%	0	Change Management Effort	Low	-14.9%	-0.149
Reliability	Medium	10.9%	0.327				
Customer & Community Responsiveness	Medium	5.3%	0.159				
Employee Satisfaction	Medium	4.6%	0.138				
Mitigates a Corporate Risk / Risk of not Doing	High= 40 or more	8.9%	0.801				
Jurisdictional Engagement	High	8.2%	1				
Benefit Score: 2.16				Cost Score: -2.83			
Overall Priority Score: -0.671							

Investment Risk and Complexity

Project Risk Score:	42	Risk Score Description: Risk Impact = 5 and Risk Likelihood = 7. If not deployed in the next 12 months, National Grid will need to purchased/renew approximately 12,500 RSA (\$200k/year) tokens that will ultimately be replaced with a smartphone app. Also we will need to retain our existing token disribution staff (\$150k/year), Tokens will start expiring in 2016, 5 years after initial Verizon contract initiation.
Project Complexity Score::	16	Project Complexity Score Description:

Key Risks Description: Provide detail on project risks & mitigation strategy:
Tokens will start expiring in 2016, 5 years after initial Verizon contract initiation.

IS Project Dependencies

if you don't see a project in the drop-down please contact the Planning & Performance team.

IS Projects: **4270 - RSA Re-platform**

1. Has a dependency on IS Project;

Benefiting Operating Companies:

Check all that apply

Select All Companies Clear All Companies
 Select All Gas Select All Electric Select All Gen

FY18 - Investment Request Summaries - IRSs - RSA Re-platform

2. Has a dependency on IS Project;

3. Has a dependency on IS Project;

4. Has a dependency on IS Project;

5. Has a dependency on IS Project;

6. Has a dependency on IS Project;

Business Initiative Dependencies

IS Projects: 4270 - RSA Re-platform

1. Has a dependency on Biz Initiative,

2. Has a dependency on Biz Initiative,

3. Has a dependency on Biz Initiative,

4. Has a dependency on Biz Initiative,

Project Relationships

Minor Works Project Relationship:

Related Projects:

- National Grid USA Parent
- KeySpan Energy Development Corporation
- KeySpan Services Inc.
- KeySpan Energy Corp
- KeySpan Energy Delivery New York
- KeySpan Energy Delivery Long Island
- KeySpan Generation LLC (PSA)
- KeySpan Glenwood Energy Center
- KeySpan Port Jefferson Energy Center
- KeySpan Energy Trading Svc LLC
- Niagara Mohawk Power Corp- Electric Distribution
- Niagara Mohawk Power Corp - Gas
- Niagara Mohawk Power Corp - Transmission
- Massachusetts Electric Company
- Massachusetts Electric Company - Transmission
- Nantucket Electric Company
- Boston Gas Company
- Colonial Gas Company
- Narragansett Gas Company
- Narragansett Electric Company
- Narragansett Electric Company - Transmission
- New England Power Company - Transmission
- New England Hydro - Trans Corp
- New England Electric Trans Corp
- NG LNG LP Regulated Entity

Enabling IS Capabilities check all that apply

Enterprise Content Management (ECM) Enterprise Mobility

Comprehensive Integration Services (CIS) Reporting and Analytics

Hybrid Cloud Networks

Next Gen Workplace

Key Milestone Dates: Select the 1st, 15th or last day of the month

Begin Start-up	Begin Requirements & Deign	Begin Development & Implementation	Begin User Acceptance Testing	Go Live	Project Completion	Project Closure
April, 2017				September, 2018		

Business Resource Estimates: # of Full Time Equivalents

Start-up	Requirements & Deign	Develop & Implement	Business Resources UAT	Go Live Readiness	Post Go Live Support
0	0	0	0	0	0

Resourcing Strategy:
This project will be resourced using Solution Delivery Centre (SDC) partners, Systems integrator and IS resources.

Attached Supporting Documents

Recommendation Sign-off

Role	Name	Title	Date
Business Project Sponsor	John Gilbert	Global Head IS Service Delivery, Global IS	
Business Relationship Manager	Graham Pool	IS Business Relationship Manager	
IS Program Delivery Manager	Tom Cunningham	IS Program Delivery Manager	

FY18 - Investment Request Summaries - IRSs - RSA Re-platform

1/22/2018

FY19 - Investment Request Summaries - IRSs - VC - MetroTech Auditorium VC



Planning & Performance Management ▶ FY19 - Investment Request Summaries - IRSs: VC - MetroTech Auditorium VC



nationalgrid		Investment Request Summary - IS US				FISCAL YEAR 2019																																																
INV ID:	4840	Project Name:	VC - MetroTech Auditorium VC																																																			
Program:	Enterprise Services	IRS Status:	ACTIVE																																																			
Sponsor:	Gilbert, John	Title:	Global Head IS Service Delivery, Global IS																																																			
Relationship Manager:	Brian Detota	Title:	IS Relationship Manager, Global IS																																																			
Progr Delivery Director:	Helen Smith	Title:	Head of Programme Delivery																																																			
Paper Author:		Title:																																																				
		Business Area:	IS - Infrastructure	Portfolio:	IS for IS																																																	
<input type="checkbox"/> In-Flight Project?	Invest Classification:	Medium	Category:	Policy Driven	Primary Policy Driver:	Reliability	Region:	US																																														
Strategic Program:	End to End Process (Primary):		Business Priority:	IS Focus Area:	Application Strategy:																																																	
Tech Modernization			High	Grow the Core	Upgrade																																																	
	End to End Process (Secondary):																																																					
<p>Project Description: The context for the project with background information Currently there are not sufficient VC facilities in the MetroTech Auditorium. This project will upgrade and install new Video Conference units.</p> <p>Project Rationale: Highlight business challenge, capability or process the project addresses The MetroTech Auditorium is a unique facility within National Grid that has the capacity to host large meetings, town halls, and industry speakers. Providing sufficient VC capabilities in the auditorium will support large groups participating with other large groups in town halls as well as the broadcast of presentations and speakers to other locations. This installation will provide video conferencing services at MetroTech on par with other large campus such as Reservoir Woods and Syracuse that have auditoriums capable of hosting large scale video conference meetings.</p> <p>Project Scope: Explain what is in scope and what is not in scope for the project <u>In Scope:</u> The installation of a new video conferencing system and associated adjunct systems (wireless microphones, amplifiers, projection screens, etc) in the MetroTech Auditorium. <u>Out of Scope:</u> Only the video conferencing system in the Metrotech Auditorium is in scope.</p> <p>Project Dependencies: Identify any core program or project dependencies, please include INVP numbers if known None</p> <p>Basic Project Assumptions: This investment helps address IS health and capability challenges while enabling National Grid's strategic business objectives.</p>																																																						
<p>Indicative Project Costs by Fiscal Year</p> <table border="1"> <thead> <tr> <th>(\$M)</th> <th>Prior Years</th> <th>FY 2019</th> <th>FY 2020</th> <th>FY 2021</th> <th>FY 2022</th> <th>FY 2023</th> <th>FY 2024</th> <th>FY 2025</th> <th>FY 2026</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>CapEx</td> <td></td> <td>0.300</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.300</td> </tr> <tr> <td>OpEx</td> <td></td> <td>0.020</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.020</td> </tr> <tr> <td>Impact on RTB</td> <td></td> <td>0.010</td> <td>0.010</td> <td>0.010</td> <td>0.010</td> <td>0.010</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.050</td> </tr> </tbody> </table>											(\$M)	Prior Years	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total	CapEx		0.300	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.300	OpEx		0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020	Impact on RTB		0.010	0.010	0.010	0.010	0.010	0.000	0.000	0.000	0.050
(\$M)	Prior Years	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total																																												
CapEx		0.300	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.300																																												
OpEx		0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020																																												
Impact on RTB		0.010	0.010	0.010	0.010	0.010	0.000	0.000	0.000	0.050																																												

1/22/2018

FY19 - Investment Request Summaries - IRSs - VC - MetroTech Auditorium VC

Indicative Project Costs by Delivery Phase

(\$M)	Start-up	R & D	D & I	Closure	Total
CapEx		0.050	0.250		0.300
OpEx	0.005	0.002	0.008	.005	0.020

Project Benefits - Type I only

(\$M)	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total
Type I - CapEx									0.000
Type I - OpEx									0.000
Revenue Generation									0.000

Key Business Benefits:

Describe benefits, both financial and non-financial, and when those benefits will be delivered. Provide a clear & concise business case stating the investment drivers – why do we need to do something and why now? Explain any Regulatory considerations and how this initiative aligns with the US Business Strategy.

Reduced travel; Improved communications; and Capability to hold large town hall meetings.

Investment Prioritization

Benefits				Cost			
	Impact	Weight	Score		Impact	Weight	Score
OpEx Annual Savings		10.3%	0	OpEx Cost	0.020	-24.4%	-2.244
CapEx Annual Savings		5.1%	0	CapEx Cost	0.300	-11.2%	0
Revenue Generation (annual)		6.2%	0	RTB Efficiency	23.333	% -22.5%	-2.025
Financial Control	Low	6.2%	0.062	Union/Labor Relations	Low	-9.8%	0
Soft Financial Benefits	Low	3.8%	0.038	Dependencies	Low	-10.6%	-0.106
Regulatory Impact	Low	11.2%	0.112	Elapse Time Duration	Low	-6.6%	-0.066
Process & Personal Safety	Medium	19.4%	0.582	Change Management Effort	Low	-14.9%	-0.149
Reliability	Medium	10.9%	0.327				
Customer & Community Responsiveness	Medium	5.3%	0.159				
Employee Satisfaction	Medium	4.6%	0.138				
Mitigates a Corporate Risk / Risk of not Doing	Medium=16 to 39	8.9%	0.267				
Jurisdictional Engagement	Low	8.2%	0				
Benefit Score: 1.77				Cost Score: -2.80			
Overall Priority Score: -1.033							

Investment Risk and Complexity

Project Risk Score:	39	Risk Score Description: Risk impact = 5 and Risk likelihood = 5
Project Complexity Score::	12	Project Complexity Score Description:

Key Risks Description: Provide detail on project risks & mitigation strategy:

IS Project Dependencies if you don't see a project in the drop-down please contact the Planning & Performance team.

IS Projects: 4840 - VC - MetroTech Auditorium VC

- Has a dependency on IS Project;

Benefiting Operating Companies: Check all that apply

Select All Companies Clear All Companies
 Select All Gas Select All Electric Select All Gen

- National Grid USA Parent
- KeySpan Energy Development Corporation
- KeySpan Services Inc.
- KeySpan Energy Corp
- KeySpan Energy Delivery New York
- KeySpan Energy Delivery Long Island
- KeySpan Generation LLC (PSA)
- KeySpan Glenwood Energy Center
- KeySpan Port Jefferson Energy Center
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- New England Hydro - Trans Corp
- New England Electric Trans Corp
- NE Hydro Trans Electric Co
- NG LNG LP Regulated Entity

Business Initiative Dependencies

IS Projects: 4840 - VC - MetroTech Auditorium VC

- Has a dependency on Biz Initiative,

Project Relationships

Minor Works Project Relationship:

Related Projects:

Enabling IS Capabilities check all that apply

- Enterprise Content Management (ECM)
- Comprehensive Integration Services (CIS)
- Hybrid Cloud
- Next Gen Workplace

- Enterprise Mobility
- Reporting and Analytics
- Networks

Key Milestone Dates: Select the 1st, 15th or last day of the month

Begin Start-up	Begin Requirements & Deign	Begin Development & Implementation	Begin User Acceptance Testing	Go Live	Project Completion	Project Closure
June, 2018				March, 2019	March, 2019	

Indicative Estimated Duration (Months):

Business Resource Estimates: # of Full Time Equivalents

Start-up	Requirements & Deign	Develop & Implement	Business Resources UAT	Go Live Readiness	Post Go Live Support
0	0	0	0	0	0

Resourcing Strategy:

Attached Supporting Documents

<https://teams.nationalgrid.com/sites/USIS/directory/PPM/Lists/FY19%20Investment%20Request%20Summaries%20%20IRSs/Item/displayifs.aspx...> 3/4

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FY19 - Investment Request Summaries - IRSs - VC - MetroTech Auditorium VC

Recommendation Sign-off			
<i>Role</i>	<i>Name</i>	<i>Title</i>	<i>Date</i>
<i>Business Project Sponsor</i>	<i>Gilbert, John</i>	<i>Global Head IS Service Delivery, Global IS</i>	
<i>Business Relationship Manager</i>	<i>Brian Detota</i>	<i>IS Business Relationship Manager</i>	
<i>IS Program Delivery Manager</i>	<i>Helen Smith</i>	<i>IS Program Delivery Manager</i>	





US Sanction Paper

Title:	US PPM Improvements	Sanction Paper #:	
Project #:	INVP 4392	Sanction Type:	Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	March 17, 2017
Author:	Nicola Pennington	Sponsor:	Kenric Anderberg, VP Global Head of IS Program Assurance
Utility Service:	IS	Project Manager:	Simon Richards

1 Executive Summary

1.1 Sanctioning Summary

This paper requests sanction of INVP 4392 US Project Portfolio Management Improvements in the amount \$0.883m with a tolerance of +/- 10% for the purposes of Development and Implementation (D&I) of Microsoft Project Online for US IS.

This sanction amount is \$0.883m broken down into:

- \$0.264m Capex*
- \$0.619m Opex*
- \$0.000m Removal*

1.2 Project Summary

This project will improve the IS Project and Portfolio management (PPM) capability in the US with the introduction of the Microsoft Project Online tool to manage Projects, Portfolios, Programs and provide status reporting via a centralized view.

This investment is for a full sanction for the US region. A similar project will run in parallel in the UK region and the project will be delivered under a common program to implement a PPM tool for National Grid globally.

The implementation of an PPM tool will enable National Grid to conduct improved oversight of its project delivery and resource utilization processes. Further, having a centralized tool will provide IS Management with the ability to intervene earlier in the project lifecycle to address emerging issues; thus, reducing project delays and cost overruns.

1.3 Summary of Projects

Project Number	Project Title	Estimate Amount (\$M)
4392	US PPMI	0.883



US Sanction Paper

1.4 Associated Projects

N/A

1.5 Prior Sanctioning History

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Paper Title	Sanction Type	Tolerance
Oct 2017	US ISSC	\$0.199m	\$0.549m	US PPM Improvements	Partial Sanction	10%

1.6 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review
Aug 2017	Closure

1.7 Category

Category	Reference to Mandate, Policy, NPV, or Other
<input type="radio"/> Mandatory <input type="radio"/> Policy- Driven <input type="radio"/> Justified NPV <input checked="" type="radio"/> Other	To get better visibility into our portfolio of projects – giving National Grid Management a complete view of project status, resource utilization and sanction compliance.

1.8 Asset Management Risk Score

Asset Management Risk Score: 15

Primary Risk Score Driver: (Policy Driven Projects Only)

- Reliability
 Environment
 Health & Safety
 Not Policy Driven



US Sanction Paper

1.9 Complexity Level

High Complexity Medium Complexity Low Complexity N/A

Complexity Score: 14

1.10 Process Hazard Assessment

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

Yes No

1.11 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
IS Investment Plan FY18-22	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Over <input type="radio"/> Under <input type="radio"/> NA	\$0.556m

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

Re-allocations of funds within the US business has been managed to meet jurisdictional budgetary, statutory and regulatory requirements. Future fiscal year forecasts will be addressed in future year business plans.

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	0.171	0.093	0.000	0.000	0.000	0.000	0.000	0.264
OpEx	0.385	0.234	0.000	0.000	0.000	0.000	0.000	0.619
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	0.556	0.327	0.000	0.000	0.000	0.000	0.000	0.883

US Sanction Paper

1.14 Key Milestones

Milestone	Target Date: (Month/Year)
Start Up	Aug 2016
Partial Sanction	Oct 2016
Begin Requirements and Design	Oct 2016
Full Sanction	Feb 2017
Begin Development and Implementation	Feb 2017
Move to Production (Release 1)	Mar 2017
Move to Production (Final Release)	Jun 2017
Project Complete	Jul 2017
Project Closure Sanction	Aug 2017

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



US Sanction Paper

1.17 Climate Change

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

1.18 List References

N/A



US Sanction Paper

2 Decisions

The US IS Sanctioning Committee (ISSC) and Key External Stakeholders, reviewed and approved the content of the investment including:

- (a) APPROVED this paper and the investment of \$0.883M and a tolerance of +/-10%.
- (b) APPROVED the RTB Impact of \$0.056M (per annum) for 5 years.
- (c) NOTED that Tom Cunningham has the approved financial delegation.

Signature.....Date.....
Anuraag Bhargava
US CIO

US Sanction Paper

3 Sanction Paper Detail

Title:	US PPM Improvements	Sanction Paper #:	
Project #:	INVP 4392	Sanction Type:	Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	March 17, 2017
Author:	Nicola Pennington	Sponsor:	Kenric Anderberg, VP Global Head of IS Program Assurance
Utility Service:	IS	Project Manager:	Simon Richards

3.1 **Background**

This investment is required to transform the Project and Portfolio Management capability for National Grid Corporate IS globally, with the introduction of Microsoft Enterprise Project Management (EPM) tool in order to manage Portfolio Management capability which is currently not managed through a tool.

In US currently there is no tool to manage the Project Portfolios and Programs centrally. Following are the key challenges with the current system:

1) **Inability to have a centralized view of Projects Portfolio:**

- This does not allow National Grid to get a complete view of portfolio, program and project status, risks and resource utilization in one single tool
- The project portfolio risk and dependencies are not captured centrally leading to manual exercises (undertaken periodically) to understand risk picture at various levels.
- Unable to see trends on missed milestone reporting leading to resources having to manually produce level 0 plans and track plan slippage.
- Difficulty in reporting where information exists in different modules (e.g. milestone and risk on same page) having to do rework causing delays.

2) **Lack of resource demand / supply view**

- This results in inability to forecast resource demand and utilization across projects and portfolios in a centralized view. This will eliminate the time and cost spent on project resource mobilization.

3) **Effort Redundancy**

- Project Managers use multiple tool sets like SharePoint and spreadsheets to manage the milestone dates, plan dates which results in effort redundancy equating to approximately 1.5 hours per week, per project, of updating project status, risk and milestones.

US Sanction Paper

- The SaaS tool will provide a fit for purpose, single-entry tool which will reduce the time and cost of duplicated activities for Project managers

3.2 Drivers

The primary driver for this project is to improve the Portfolio and Programme Management capability to deliver projects in the US more effectively and efficiently.

3.3 Project Description

The scope of this investment is to implement Microsoft Project Online (POL) for National Grid US IS. The project is being delivered with an agile delivery model. The following items are within the scope of the project:

- 1) Implementation of PPM for project, programme and portfolio management. Following features/components will be delivered as a part of PPM implementation:
 - Planning and Scheduling
 - Risks, Issues, Assumptions, Dependencies and Constraint Management
 - Reporting
 - Quality Assurance
 - Documents Management
 - Project Finance Management
 - Benefits Management
 - Change Management
 - Resource Management
- 2) Implementation of “Delivery Hub” a reporting tool provided by PCubed which will provide enhanced reporting capability for projects and programmes
- 3) Provide a template and mechanism for migration of all inflight projects data from RTC to PPM. The actual migration of the data will be done by respective Project Managers
- 4) The plan and approach for training along with end user training across regions will be accomplished. Ongoing training approach would be finalised as part of BAU once the implementation is complete.

3.4 Benefits Summary

This investment is Net Present Cost (NPC – a project incurs a cost). This investment must be made due to non-financial pressures as described in the Qualitative Benefits section below.

Following are the key non-financial benefits of the project:

US Sanction Paper

- i) Improve Portfolio, Program and Project Management capabilities with end to end visibility of projects from conception to delivery which is required given the projected growth in number of projects in National Grid US region. This will result in more timely delivery of projects and programs and will ensure project delays are identified and mitigated earlier avoiding the cost of re-sanctioning projects.
- ii) Enable Portfolio Analysis through centralized view of budget allocations and benefits across projects which will help to prioritize projects based on return and business drivers.
- iii) Improve Management Information reporting capabilities of projects and programs. Implementation of POL will give opportunity to generate reports with quick turnaround time while eliminating the time and costs spent on data gathering and validation.
- iv) More effective management of risks, issues and dependencies with a centralized view across Portfolios and Programs. This will result in cost avoidance of ad-hoc manual Quality Assurance exercises.
- v) Provide single view of consolidated demand and availability of resources across portfolios which in turn will result in productivity improvements and cost savings.
- vi) Improve data integrity with automated data validation, increased role specific access, usability and exception reporting. This will result in increased data consistency and accuracy.

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

Do not implement PPM tool for the US region.

This option does not resolve the existing issues and will not be able to deliver key capabilities needed to improve project and portfolio management. The inefficient approach to manage the Project Portfolios will continue with this option and will not allow any opportunity to bring in cost efficiency around Project Management spending.

Alternative 2: Defer the project

This option is not recommended as, it does not do so within the required timeframe and may cost more if delivered separately and not as a common program with the UK region. Also, the efficiencies and potential cost savings will not be realized in the near term.

US Sanction Paper

3.7 Safety, Environmental and Project Planning Issues

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

3.8 Execution Risk Appraisal

Number	Detailed Description of Risk / Opportunity	Probability	Impact		Score		Strategy	Pre-Trigger Mitigation Plan	Residual Risk	Post Trigger Mitigation Plan
			Cost	Schedule	Cost	Schedule				
1	The design of the reporting solution for hosting is not yet finalised. If National Grid goes for an internal hosting solution, there may be additional costs for internal infrastructure setup.	3	3	4	9	12	Mitigate	Additional estimated costs for CSC and Verizon has been factored in for infrastructure setup for internal hosting solution.	None after the current phase	Work closely with stakeholders to finalise the solution at earliest
2	There is a risk that not all product backlog items will be delivered within budget during the planned releases of this project.	3	3	2	9	6	Mitigate	Additional effort and development has been factored to deliver the product backlog items for minimum viable product.	Delivery of all items in product backlog at risk	Ensure all requirements related to MVP are developed and completed. Undelivered items in the product backlog will be kept for future delivery.
3	There is a risk due to limited availability of business resources during the project duration. Also it is expected that additional business resource time would be required during the User acceptance testing and training period.	4	3	4	12	16	Enhance	Additional efforts have been factored in to ensure the availability of business resources to support the delivery of the project	Project timeline at risk	Work closely with Business resources and involve additional PMO resources and inform the business resources well in advance

3.9 Permitting

N/A

3.10 Investment Recovery

3.10.1 Investment Recovery and Regulatory Implications

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

3.10.2 Customer Impact

N/A

3.10.3 CIAC / Reimbursement

N/A



US Sanction Paper

3.11 Financial Impact to National Grid

3.11.1 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend (\$M)	Prior Yrs	Current Planning Horizon						Total		
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +			
					2017/18	2018/19	2019/20	2020/21	2021/22	2022/23			
4392	US PPMI	Est Lvl (e.g. +/- 10%)	CapEx	0.171	0.093	0.000	0.000	0.000	0.000	0.000	0.000	0.264	
			OpEx	0.385	0.234	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.619
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.556	0.327	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.883
Total Project Sanction			CapEx	0.171	0.093	0.000	0.000	0.000	0.000	0.000	0.000	0.264	
			OpEx	0.385	0.234	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.619
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.556	0.327	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.883

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 +	
		2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	
CapEx	0.000	0.093	0.000	0.000	0.000	0.000	0.000	0.093
OpEx	0.000	0.234	0.000	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
Total Cost in Bus. Plan	0.000	0.327	0.000	0.000	0.000	0.000	0.000	0.327

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 +	
		2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	
CapEx	(0.171)	0.000	0.000	0.000	0.000	0.000	0.000	(0.171)
OpEx	(0.385)	0.000	0.000	0.000	0.000	0.000	0.000	(0.385)
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	(0.556)	0.000	0.000	0.000	0.000	0.000	0.000	(0.556)

3.11.3 Cost Assumptions

This estimate was developed in 2017 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

N/A



US Sanction Paper

3.11.4.2 NPV Assumptions and Calculations

N/A

3.11.5 Additional Impacts

None

3.12 Statements of Support

3.12.1 Supporters

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

Role	Individual's Name
Business Executive Sponsor	Kenric Anderberg
Head of PDM	Tom Cunningham
Relationship Manager	Graham Pool
Program Delivery Manager	Richard Pedley
IS Finance Management	Chris Pearce
IS Regulatory	Dan DeMauro
DR&S	Elaine Wilson
Service Delivery	Brian Detota
Enterprise Architecture	Joe Clinchot

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			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.471	
	SDC Time & Materials	-	
	SDC Fixed-Price	-	
	All other personnel	0.298	
	TOTAL Personnel Costs	0.769	
Hardware	Purchase	-	
	Lease	-	
Software		0.014	
Risk Margin		0.063	
Other		0.037	
TOTAL Costs		0.883	

4.2.2 Benefiting Operating Companies

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

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

4.2.3 IS Ongoing Operational Costs (RTB)

Summary Analysis of RTB Costs							
All figures in \$ millions	Yr. 1 16/17	Yr. 2 17/18	Yr. 3 18/19	Yr. 4 19/20	Yr. 5 20/21	Yr. 6+	Total
Forecast of RTB Impact							
RTB if Status Quo Continues	-	-	-	-	-	-	-
RTB if Project is Implemented	-	0.042	0.056	0.056	0.056	0.072	0.282
Net change in RTB	-	0.042	0.056	0.056	0.056	0.072	0.282
RTB Variance Analysis (if Project is Implemented)							
Net Δ RTB funded by Plan(s)	-	-	-	-	-	-	-
Variance to Plan	-	0.042	0.056	0.056	0.056	0.072	0.282
Total RTB Costs - by Cost Type (if Project is Implemented)							
App.Sup. - SDC 1	-	0.007	0.009	0.009	0.009	0.012	0.046
App.Sup. - SDC 2	-	-	-	-	-	-	-
App.Sup. - other	-	0.005	0.007	0.007	0.007	0.009	0.034
SW maintenance	-	-	-	-	-	-	-
SaaS	-	0.030	0.040	0.040	0.040	0.052	0.202
HW support	-	-	-	-	-	-	-
Other: IS	-	-	-	-	-	0.000	0.000
All IS-related RTB (sub-Total)	-	0.042	0.056	0.056	0.056	0.072	0.282
Business Support (sub-Total)	-	-	-	-	-	-	-
Total RTB Costs	-	0.042	0.056	0.056	0.056	0.072	0.282

US Sanction Paper

4.3 *NPV Summary*

N/A

4.4 *Customer Outreach Plan*

N/A

US Sanction Paper

Title:	VSTIG refresh - IDScard replacement	Sanction Paper #:	
Project #:	INVP 4749	Sanction Type:	Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	July 21, 2017
Author:	Andrew Yee/ Aravind Lochan	Sponsor:	John Gilbert, Global Head of Service Delivery
Utility Service:	IS	Project Manager:	Chris Gatland

1 Executive Summary

1.1 Sanctioning Summary

This paper requests sanction of INVP 4749 in the amount \$ 0.320M with a tolerance of +/- 10% for the purposes of *Full implementation*.

This sanction amount is \$0.320M broken down into:

- \$0.300M Capex*
- \$0.020M Opex*
- \$0.000M Removal*

1.2 Project Summary

The purpose of this project is to upgrade the Intrusion Detection System (IDS) cards and thereby increase the port speed of Multi Protocol Label Switching (MPLS) in Verizon Secure Telecommunications Internet Gateway (VSTIG). These infrastructure upgrades are essential to support Company’s existing network infrastructure and enhancement.

1.3 Summary of Projects

Project Number	Project Title	Estimate Amount (\$M)
INVP 4749	VSTIG refresh - IDScard replacement	\$ 0.320M

1.4 Associated Projects

N/A

1.5 Prior Sanctioning History

N/A



US Sanction Paper

1.6 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review
Oct 2017	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	Policy Driven This is an Asset Health program. Unavailability of key services could have significant business impact with potential for operational impact should these services fail during emergencies or for long periods of time

1.8 Asset Management Risk Score

Asset Management Risk Score: 49

Primary Risk Score Driver: (Policy Driven Projects Only)

- Reliability
 Environment
 Health & Safety
 Not Policy Driven

1.9 Complexity Level

- High Complexity
 Medium Complexity
 Low Complexity
 N/A

Complexity Score: 0

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 (\$M)
IS Investment Plan FY18-22	<input type="radio"/> Yes <input checked="" type="radio"/> No	<input checked="" type="radio"/> Over <input type="radio"/> Under <input type="radio"/> NA	\$ 0.320M

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 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	0.300	0.000	0.000	0.000	0.000	0.000	0.300
OpEx	0.000	0.020	0.000	0.000	0.000	0.000	0.000	0.020
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	0.320	0.000	0.000	0.000	0.000	0.000	0.320

1.14 Key Milestones

Milestone	Target Date: (Month/Year)
Start Up	Jun 2017
Partial Sanction	N/A
Begin Requirements and Design	Jul 2017
Full Sanction	Jul 2017
Begin Development and Implementation	Aug 2017
Move to Production / Last Go Live	Aug 2017
Project Complete	Sep 2017
Closure Sanction	Oct 2017

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 Key External Stakeholders, reviewed and approved the content of the investment including:

- (a) APPROVE this paper and the investment of \$0.320M and a tolerance of +/-10%.
- (b) APPROVE the RTB Impact of \$0.240M (per annum) for 5 years.
- (c) NOTE that Chris Gatland is the Project Manager and has the approved financial delegation.

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

Anuraag Bhargava
US CIO

US Sanction Paper

3 Sanction Paper Detail

Title:	VSTIG refresh - IDScard replacement	Sanction Paper #:	
Project #:	INVP 4749	Sanction Type:	Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	July 21, 2017
Author:	Andrew Yee/ Aravind Lochan	Sponsor:	John Gilbert, Global Head of Service Delivery
Utility Service:	IS	Project Manager:	Chris Gatland

3.1 Background

The IDS cards within the VSTIG support secure connectivity between National Grid, 3rd party partners and the Internet.

The IDS is used by National Grid as part of its network security services and supports both the detection and prevention of 3rd party intrusions into the network by monitoring the network and systems for malicious activity and policy violations. The IDS system is positioned between the corporate network and the VSTIG so that all traffic can be monitored before it passes into the corporate network.

Currently the MPLS link between the corporate network and the VSTIG is operating at 1Gb and the entire capacity of the link is allocated to specific networks or VRFs. While the physical circuit can operate up to 10Gb, it is currently limited to 1Gb because the IDS system interface cards cannot support speeds higher than 1Gb without dropping traffic. Therefore, if the interface cards are not upgraded to support line rates higher than 1Gb, National Grid will be unable to increase its network speed to the VSTIG and support increased use of cloud based services such as Office365, Webex, Azure, Box, and Success factors.

We have recently increased our Internet Capacity from 200Mb to 500Mb (2.5x) over the last year but are unable to increase beyond this capacity until the limitations associated with the IDS interface cards are eliminated.

Verizon’s recommendation is to upgrade the vSTIG stack to 10Gbps connectivity between the Cisco 9300 firewall and the BLAN. This causes the least disruption and provides future proofing for other projects such as Office 365 / secure cloud interconnects etc. This include purchasing 10 Gb cards to replace the current 1Gb cards.

In addition, this project will also include the upgrade of the MPLS circuit port from 1Gb to 1.5Gb and the reallocation of the VRFs to provided additional capacity demands of the VSTIG environment and increase internet bandwidth to 800 MB.

Note; this is a interim solution until the Cisco 9300 provide a stable version of the next gen firewall code at which point the functionality will be moved to the Ciscos Firewall appliance. The timeframe for this is Q2 2018. A new capital investment proposal will be raised at that time.

US Sanction Paper

3.2 Drivers

Demand for increased internet bandwidth for cloud based applications like Office 365, webex, Azure and Box – SaaS (Software as a Service cloud based services)

3.3 Project Description

This project is intended to refresh the IDS (Intrusion Detection System) cards in VSTIG (Verizon StraTegic Internet Gateway) to support connectivity up to 1Gb. In addition this project will increase the MPLS (Multi-Protocol Label Switching) port speed to the VSTIG from 1Gb to 1.5Gb and modify various VSTIG networks VRF (Virtual Routing and Forwarding) to support network bandwidth demand.

3.4 Benefits Summary

- Strategic approach updated for provision of networks that will meet business requirements.
- Provides reliable IDS Cards for more secured services that are supported through upgrade of network equipment and network bandwidth
- Improved performance and security for access to the internet.
- Provision of a consistent and reliable network service for cloud based application services
- Will enable network capacity to be sufficient to support growth in use of saas (software as a service) services.
- Will ensure ongoing performance reliability of the internet connectivity

3.5 Business and Customer Issues

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

3.6 Alternatives

Alternative 1: Wait – we can't wait until mid next year due to the timelines for Office 365 implementation, as Cisco 9300 firewall supports intrusion detection

Alternative 2: Tactical rearrangement of traffic – Separate GridNet1 onto a separate 1Gbps interface on the CE routers / IPS (i.e. the GridNet1 VRF be removed from this shared link and put onto a dedicated 1Gbps link connected back to the CE router. However, GridNet1 currently consumes the majority of the MPLS bandwidth and increasing bandwidth requirements for GridNet1 mean this should be considered short term throwaway solution)

Alternative 3: Defer project / Do Nothing – This option is not viable as it will not address the business need for increased internet bandwidth for cloud based applications

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	There is a risk that the hardware will take more than 1 week to deliver because it is not available ex stock	2	2	2	4	4	Accept			
2	There is a risk that the fibre cables will need to be custom manufactured as the site layout is not known	1	1	1	1	1	Accept			

3.9 Permitting

N/A

3.10 Investment Recovery

3.10.1 Investment Recovery and Regulatory Implications

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

3.10.2 Customer Impact

N/A

3.10.3 CIAC / Reimbursement

N/A



US Sanction Paper

3.11 Financial Impact to National Grid

3.11.1 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend (\$M)	Prior Yrs	Current Planning Horizon						Total	
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
INVP 4749	VSTIG refresh - IDScard replacement	Est Lvl (e.g. +/- 10%)	CapEx	0.000	0.300	0.000	0.000	0.000	0.000	0.000	0.000	0.300
			OpEx	0.000	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.020
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	0.320	0.000	0.000	0.000	0.000	0.000	0.000	0.320

Total Project Sanction	CapEx	0.000	0.300	0.000	0.000	0.000	0.000	0.000	0.000	0.300
	OpEx	0.000	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.020
	Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Total	0.000	0.320	0.000	0.000	0.000	0.000	0.000	0.000	0.320

3.11.2 Project Budget Summary Table

Project Costs Per Business Plan

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

Variance (Business Plan-Project Estimate)

	Prior Yrs (Actual)	Current Planning Horizon						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
\$M		2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	
CapEx	0.000	(0.300)	0.000	0.000	0.000	0.000	0.000	(0.300)
OpEx	0.000	(0.020)	0.000	0.000	0.000	0.000	0.000	(0.020)
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	(0.320)	0.000	0.000	0.000	0.000	0.000	(0.320)

3.11.3 Cost Assumptions

This estimate was developed in 2017 using standard IS estimating methodology.

These costs are indicative project level costs from estimated costs. Detailed costs are developed during the project startup phases and subsequent project phases.

3.11.4 Net Present Value / Cost Benefit Analysis

3.11.4.1 NPV Summary Table

US Sanction Paper

This is not a NPV project.

3.11.4.2 NPV Assumptions and Calculations

N/A

3.11.5 Additional Impacts

N/A

3.12 Statements of Support

3.12.1 Supporters

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

Role	Individual
Head of PDM	Bill Kearns
Relationship Manager	Bill Kearns
Program Delivery Director	Dave McCune
IS Finance Management	Chip Benson
IS Regulatory	Dan DeMauro
DR&S	Elaine Wilson
Service Delivery	Brian Detota
Enterprise Architecture	Joe Clinchot

3.12.2 Reviewers

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

Function	Individual	Area
Regulatory	Harvey, Maria	IS
Jurisdictional Delegate(s)	Anand, Sonny	Electric - NE
	Harbaugh, Mark	Electric - NY
	Hill, Terron	FERC
	Brown, Laurie	Gas - NY
	Currie, John	Gas - NE
Procurement	Curran, Art	All

4 Appendices

4.1 Sanction Request Breakdown by Project

N/A

US Sanction Paper

4.2 Other Appendices

N/A

4.2.1 Project Cost Breakdown

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing resources
Personnel	NG Resources	0.036	
	SDC Time & Materials	0.003	
	SDC Fixed-Price	-	
	All other personnel	0.125	
	TOTAL Personnel Costs	0.163	
Hardware	Purchase	0.119	
	Lease	-	
Software		-	
Risk Margin		0.028	
Other		0.009	
	TOTAL Costs	0.320	

US Sanction Paper

4.2.2 Benefiting Operating Companies

The following companies will benefit from this project as defined in section 3.3. The allocation of these benefits will be based upon the number of customers:

Benefiting Operating Companies Table:

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

US Sanction Paper

4.2.3 IS Ongoing Operational Costs (RTB):

The RTB cost is detailed below :

Summary Analysis of RTB Costs							
All figures in \$ millions	Yr. 1 17/18	Yr. 2 18/19	Yr. 3 19/20	Yr. 4 20/21	Yr. 5 21/22	Yr. 6+	Total
<u>Forecast of RTB Impact</u>							
RTB if Status Quo Continues	-	-	-	-	-	-	-
RTB if Project is Implemented	0.120	0.240	0.240	0.240	0.240	0.123	1.203
Net change in RTB	0.120	0.240	0.240	0.240	0.240	0.123	1.203
<u>RTB Variance Analysis</u> (if Project is Implemented)							
Net Δ RTB funded by Plan(s)	-	-	-	-	-	-	-
Variance to Plan	0.120	0.240	0.240	0.240	0.240	0.123	1.203
<u>Total RTB Costs - by Cost Type</u> (if Project is Implemented)							
App.Sup. - SDC 1	-	-	-	-	-	-	-
App.Sup. - SDC 2	-	-	-	-	-	-	-
App.Sup. - other	-	-	-	-	-	-	-
SW maintenance	-	-	-	-	-	-	-
SaaS	-	-	-	-	-	-	-
HW support	0.066	0.130	0.130	0.130	0.130	0.067	0.653
Other: IS	0.054	0.110	0.110	0.110	0.110	0.056	0.550
All IS-related RTB (sub-Total)	0.120	0.240	0.240	0.240	0.240	0.123	1.203
Business Support (sub-Total)	-	-	-	-	-	-	-
Total RTB Costs	0.120	0.240	0.240	0.240	0.240	0.123	1.203

US Sanction Paper

4.3 *NPV Summary*

N/A

4.4 *Customer Outreach Plan*

N/A



US Sanction Paper

Title:	WAN Bandwidth Upgrades	Sanction Paper #:	
Project #:	INVP 4267	Sanction Type:	Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	December 19, 2017
Author:	Andrew Yee / Aravind Lochan	Sponsor:	John Gilbert Global Head IS Service Delivery
Utility Service:	IS	Project Manager:	Joe George / Deb Gears

1 Executive Summary

1.1 Sanctioning Summary

This paper requests sanction of INVP 4267 in the amount \$0.386 M with a tolerance of +/- 10% for the purposes of full implementation.

This sanction amount is \$0.326M broken down into:

- \$0.000 Capex
- \$0.386 Opex
- \$0.000 Removal

1.2 Project Summary

The network infrastructure that underpins all of National Grid’s systems to enable communication is critical to the running of all services. Therefore it is vital that this network and communication infrastructure is highly available and reliable. To ensure that this is the case the infrastructure needs to be upgraded.

This paper requests sanction of work to upgrade WAN (Wide Area Network) infrastructure at National Grid’s 21 sites (refer section 4.4), these sites are no longer within current standards and therefore deliver a poor end user experience (long wait times and failing connections to applications), and are no longer able to offer the performance required by the business.



US Sanction Paper

1.3 Summary of Projects

Project Number	Project Title	Estimate Amount (\$M)
INVP 4267	WAN Bandwidth Upgrades	0.386
Total		0.386

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
July 2018	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	Policy Driven This is an Asset Health program. Unavailability of key services could have significant business impact with potential for operational impact should these services fail during emergencies or for long periods of time. The business productivity of the end users on these sites is being impacted by poor application response times and connection failures to their key applications as part of their day to day activities.

1.8 Asset Management Risk Score

Asset Management Risk Score: 37



US Sanction Paper

Primary Risk Score Driver: (Policy Driven Projects Only)

- Reliability
 Environment
 Health & Safety
 Not Policy Driven

1.9 Complexity Level

- High Complexity
 Medium Complexity
 Low Complexity
 N/A

Complexity Score: 14

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 (\$M)
IS Investment Plan FY18 - 22	<input type="radio"/> Yes <input checked="" type="radio"/> No	<input checked="" type="radio"/> Over <input type="radio"/> Under <input type="radio"/> NA	\$ 0.386 M

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

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

1.13 Current Planning Horizon



US Sanction Paper

	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	
\$M								
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.185	0.201	0.000	0.000	0.000	0.000	0.386
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	0.185	0.201	0.000	0.000	0.000	0.000	0.386

1.14 Key Milestones

Milestone	Target Date: (Month/Year)
Start Up	Nov 2017
Partial Sanction	N/A
Begin Requirements and Design	Dec 2017
Project Sanction	Dec 2018
Begin Development and Implementation	Jan 2018
Move to Production / Last Go Live	Jun 2018
Project Complete	Jun 2018
Sanction Closure	Jul 2018

1.15 Resources, Operations and Procurement

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

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

N/A



US Sanction Paper

1.17 Climate Change

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

1.18 List References

N/A



US Sanction Paper

2 Decisions

The US IS Sanctioning Committee (ISSC) and Key External Stakeholders, reviewed and approved the content of the investment including:

- (a) APPROVE this paper and the investment of \$ 0.386M and a tolerance of +/-10%.
- (b) APPROVE the run-the-business (RTB) impact of \$ 0.360M (per annum) for 5 years.
- (c) NOTE that Joe Gorge / Deb Gears is the Project Manager and has the approved financial delegation.

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

John Gilbert
Global Head IS Service Delivery



US Sanction Paper

3 Sanction Paper Detail

Title:	WAN Bandwidth Upgrades	Sanction Paper #:	
Project #:	INVP 4267	Sanction Type:	Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	December 19, 2017
Author:	Andrew Yee / Aravind Lochan	Sponsor:	John Gilbert, Global Head IS Service Delivery
Utility Service:	IS	Project Manager:	Joe George / Deb Gears

3.1 Background

The WAN (Wide Area Network) network infrastructure that underpins all of National Grid’s systems to enable communication is critical to the running of all services and the productivity of all of the end users located at that site.

Therefore it is vital that this network infrastructure is reliable, with low outage and high availability and the bandwidth it provides is sufficient to ensure the required performance to enable the end users to undertake their day to day duties.

This paper is seeking funds to upgrade WAN (Wide Area Network) at National Grid sites (refer section 4.4) are no longer within current standards and identified as a priority to upgrade.

3.2 Drivers

The Key drivers of this project include the following:

- Network bandwidth no longer meets the needs of users at the site leading to customer complaints
- This impacts the productivity of end users as they are unable to perform basic functions and respond to messages in a timely manner
- Upgrading WAN (Wide Area Network) bandwidth infrastructure provides improved end user productivity and therefore provides the business with enhanced capability to utilize advanced technology (e.g. Cloud based applications, enhanced network security, future wireless capabilities, and enhanced network management and control)
- Internet applications, Outlook, WebEx, internet services, file shares etc., will perform better in terms of latency and throughput with upgraded bandwidth



US Sanction Paper

3.3 Project Description

This Project addresses the physical installation and integration effort for implementation of the wide area network (WAN) solutions at National Grid corporate sites identified in Section 4.4.

Circuit Upgrade

- National Grid site where the circuit is 1.54mbps Verizon will upgrade to a 6mbps Ethernet circuit
- National Grid site where the circuit is greater than 1.54mbps but less than 10mbps, Verizon will upgrade to a 10mbps Ethernet circuit
- National Grid site where the circuit is 10mbps, Verizon will upgrade to a 20mbps Ethernet circuit
- National Grid site where the circuit is 20mbps, Verizon will upgrade to a 30mbps Ethernet circuit
- At the locations listed in Section 4.4 – Places of Performance, a New Ethernet circuit to the National Grid Corporate network will be installed
- Upon completion of the new Ethernet WAN circuit to the MPLS network, the current WAN circuit connectivity will be disconnected

3.4 Benefits Summary

Type	Benefit	Description
Intangible (Indirect benefits)	Increased productivity	Increased productivity of end users and of any applications that are local to the site.
Intangible (Indirect benefits)	Ability to add new services	Ability to add new services to end users in particular - new cloud-based services, guest services, additional wireless access points, etc.
Intangible (Indirect benefits)	Maximum utilization	The sites that are chosen have already been flagged as being at maximum utilization and also have been selected in consultation with Customer Service Managers.

3.5 Business and Customer Issues

No impact is anticipated for our external customers.



US Sanction Paper

3.6 Alternatives

Alternative 1: Do Nothing – This option is not viable as it will not address the project objective to upgrade WAN bandwidth. Runs the additional risk that end users will try and bypass the corporate WAN and utilize untrusted networks, such as their own mobile broadband connections, which will only interfere with the onsite networks and make matters worse.

Alternative 2: Defer investment – Not selected. This alternative would not mitigate the risk from running applications on older, non-reliable network. Many of these sites have not had an upgrade for many years and are running on the minimum capacity available.

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	Each site is unique and so the upgrade projected may not be sufficient to meet the network demand over the next 60 months	4	3	2	12	8	Mitigate	The Upgrades change the underlying network access technology to ethernet. This means future upgrades can be undertaken much more quickly (soft change), rather than the provision of new hardware or civil digs	BaU Capacity Management after upgrade	The NG / Verizon Capacity Management Process will catch sites which have reach the new upper thresholds
2	Until Verizon have placed the orders for the local access and undertaking their "survey" process they cannot be 100% sure their quote for the access is valid	3	3	3	9	9	Accept	Verizon already provide service to each of these sites and so have done due diligence on the cost of upgrade. However, they cannot guarantee cost increments will not occur	None	Plan on a contingency into the budget to cover such eventualities
3	The timescales are subject to Verizon and NG Change processes and freezes which may extend timescales	4	2	4	8	16	Mitigate	Sequence the sites to ensure those which require the most "activity" are prioritised first (these are the larger sites)	None	Elongating the time does increase the PM mantime costs and these need to be factored into the contingency
4	There is a real possibilty that other sites are prioritised over the existing sites as new requirements are known	4	3	4	12	16	Mitigate	Ensure that only the PMB process can "change" the scope. Use the PMB process to ensure that any stranded cost is properly identified before changes are made	Use the CSM community to manage and communicate any plan changes	Maintain a list of sites to be upgraded during fiscal 18/19.
5	Testing resources will be needed from each site. Selection of each and their availability may not be known until needed.	2	3	3	6	6	Mitigate	Reach out to each site early in the process, identify primary and back-up candidates, ensure they have the skills and have reviewed the test plan.	None	Fill any gaps using other NG resources or outsource testing if required.



US Sanction Paper

3.9 Permitting

N/A

3.10 Investment Recovery

N/A

3.10.1 Investment Recovery and Regulatory Implications

N/A

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 +		
					2017/18	2018/19	2019/20	2020/21	2021/22	2022/23		
INVP 4267	WAN Bandwidth Upgrades	0	CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			OpEx	0.000	0.185	0.201	0.000	0.000	0.000	0.000	0.000	0.386
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	0.185	0.201	0.000	0.000	0.000	0.000	0.000	0.386
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	0.185	0.201	0.000	0.000	0.000	0.000	0.000	0.386
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	0.185	0.201	0.000	0.000	0.000	0.000	0.000	0.386

3.11.2 Project Budget Summary Table

Project Costs Per Business Plan



US Sanction Paper

	Prior Yrs (Actual)	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	
\$M								
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Variance (Business Plan-Project Estimate)

	Prior Yrs (Actual)	Current Planning Horizon						Total
		Yr. 1 2017/18	Yr. 2 2018/19	Yr. 3 2019/20	Yr. 4 2020/21	Yr. 5 2021/22	Yr. 6 + 2022/23	
\$M								
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	(0.185)	(0.201)	0.000	0.000	0.000	0.000	(0.386)
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	(0.185)	(0.201)	0.000	0.000	0.000	0.000	(0.386)

3.11.3 Cost Assumptions

- This estimate was developed in 2017 using the standard IS estimating methodology. The accuracy level of estimate for this project is identified in table 3.11.1
- This investment will be managed by National Grid Project Manager.
- The RTB cost will increase during the project execution as some of the sites (refer section 4.4) will be implemented before project completion.

3.11.4 Net Present Value / Cost Benefit Analysis

N/A

3.11.4.1 NPV Summary Table

N/A

3.11.4.2 NPV Assumptions and Calculations

N/A

3.11.5 Additional Impacts

N/A

3.12 Statements of Support

3.12.1 Supporters

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

US Sanction Paper

Role	Individual
Business Representative	John Gilbert
Head of PDM	Helen Smith
Relationship Manager	Brian Detota
Program Delivery Director	Deb Gears
IS Finance Management	Michelle Harris
IS Regulatory	Dan DeMauro
DR&S	Elaine Wilson
Service Delivery	Mark Mirizio
Enterprise Architecture	Joe Clinchot

3.12.2 Reviewers

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

Function	Individual	Area
Regulatory	Harvey, Maria	IS
Jurisdictional Delegate(s)	Anand, Sonny	Electric - NE
	Harbaugh, Mark	Electric - NY
	Hill, Terron	FERC
	Currie, John	Gas - NE
	Wolf, Don	Gas - NY
Procurement	DeRosa, Steve	All

4 Appendices

4.1 Project Cost Breakdown

N/A

US Sanction Paper

4.2 Project RTB Breakdown

Summary Analysis of RTB Costs							
All figures in \$ millions	Yr. 1 17/18	Yr. 2 18/19	Yr. 3 19/20	Yr. 4 20/21	Yr. 5 21/22	Yr. 6+	Total
Forecast of RTB Impact							
RTB if Status Quo Continues	0.044	0.264	0.264	0.264	0.264	0.340	1.440
RTB if Project is Implemented	0.091	0.624	0.624	0.624	0.624	0.803	3.390
Net change in RTB	0.047	0.360	0.360	0.360	0.360	0.464	1.951
RTB Variance Analysis (if Project is Implemented)							
Net Δ RTB funded by Plan(s)	-	-	-	-	-	-	-
Variance to Plan	0.047	0.360	0.360	0.360	0.360	0.464	1.951
Total RTB Costs - by Cost Type (if Project is Implemented)							
App.Sup. - SDC 1	-	-	-	-	-	-	-
App.Sup. - SDC 2	-	-	-	-	-	-	-
App.Sup. - other	-	-	-	-	-	-	-
SW maintenance	-	-	-	-	-	-	-
SaaS	-	-	-	-	-	-	-
HW support	0.091	0.624	0.624	0.624	0.624	0.803	3.390
Other: IS	-	-	-	-	-	-	-
All IS-related RTB (sub-Total)	0.091	0.624	0.624	0.624	0.624	0.803	3.390
Business Support (sub-Total)	-	-	-	-	-	-	-
Total RTB Costs	0.091	0.624	0.624	0.624	0.624	0.803	3.390

4.3 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
Narragansett Gas Company	Gas Distribution	RI
Colonial Gas Company	Gas Distribution	MA
Narragansett Electric Company – Transmission	Transmission	RI
National Grid USA Parent	Parent Company	



US Sanction Paper

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

4.4 Other Appendencies – National Grid Site Details

NG Site ID	Site Name	Address	City	State	Postal Code
NGUS002	Algonquin	121 Terminal Road	Providence	RI	02905
NGUS016	Commercial Point	Victory Road	Dorchester	MA	02122
NGUS033	Haverhill	373 North Ave	Haverhill	MA	01830
NGUS034	Hewlett	455 Mill Road	Hewlett	NY	11557
NGUS036	Holtsville	605 Union Ave	Holtsville	NY	11742
NGUS043	Lynn LNG	255 Blossom Street	Lynn	MA	01901
NGUS050	Norwood	127 Dean Street	Norwood	MA	02062
NGUS060	Salem LNG	20 Pierce Ave	Salem	MA	01970
NGUS067	Staten Island (Forest)	2031 Forest Avenue	Staten Island	NY	10303
NGUS069	Tewksbury	50 Chapman Road	Tewksbury	MA	01876
NGUS078	Yarmouth	127 White's Path	South Yarmouth	MA	02664
NGUS087	Athol	20 Harrison Ave.	Athol	MA	01331
NGUS097	Exeter	53 South Country Trail	Exeter	RI	02822
NGUS101	Gr Barrington	927 South Main St	Great Barrington	MA	01230



US Sanction Paper

NGUS103	Haverhill	155 Water Street	Haverhill	MA	01830
NGUS107	Lincoln	642 George Washington Hwy	Lincoln	RI	02865
NGUS118	Monson	134 Palmer Rd	Monson	MA	01057
NGUS121	North Adams	74 Brown St.	North Adams	MA	01247
NGUS132	Scott Rd	96 Scott Road	Cumberland	RI	02864
NGUS134	Somerset	1250 Brayton Point Road	Somerset	MA	02725
NGUS175	Gloversville Service Center	20 Hill Street	Gloversville	NY	12078

**Investment Proposal Summary Sheet
Network Tx-NB/MTC– Project No. INVP 4687**

Region:	US	Category:	Policy	Legal Entity:	Shared						
Risk Score:	41	Primary Driver:	Reliability	Project Classification:	M						
Project Description:											
<p>This paper requests sanction of INVP 4687 in the amount \$0.888M with a tolerance of +/- 10% for the purposes of Full Implementation.</p> <p>This sanction amount is \$0.888M broken down into:</p> <table border="0"> <tr> <td>\$0.888M</td> <td>CapEx</td> </tr> <tr> <td>\$0.000M</td> <td>OpEx</td> </tr> <tr> <td>\$0.000M</td> <td>Removal</td> </tr> </table>						\$0.888M	CapEx	\$0.000M	OpEx	\$0.000M	Removal
\$0.888M	CapEx										
\$0.000M	OpEx										
\$0.000M	Removal										
<u>Brief Description</u>											
<p>This project is part of the Technology Improvement Program (TIP) under INVP 4665 System Communications and Upgrade and includes the replacement of our aged infrastructure on networks, MetroTech and Northborough. This project will be implemented in two phases. Phase 1 will be covering major work in terms of project discovery while phase 2 will do the actual implementation. Due to complications, this legacy network equipment supporting Metrotech and Northboro was not transformed into Verizon contract. When this project is completed, this will make it part of the transformed network; bringing the new equipment into support of Verizon Contract.</p>											
<u>Background</u>											
<p>The network infrastructure that underpins all of National Grid’s systems to enable communication is critical to the running of all services. Therefore it is vital that this network and communication infrastructure is reliable, with low outage and high availability. Conditions driving this investment include:</p> <ul style="list-style-type: none"> Contractually we are not able to hold Verizon to service levels once they have notified National Grid that hardware is no longer within current standards. Many of these Services are considered core services and it is a business requirement for these to have 24/7 availability. To ensure that these service levels can be maintained that are no longer within current standards, hardware and software need to be upgraded or replaced. In addition, reviews of current contractual arrangements have identified opportunity to reduce ongoing service charges (RTB) through up-front purchases. 											

Project Costs [\$]M	Prior Year 16/17	Yr 1 17/18	Yr 2 18/19	Yr 3 19/20	Yr 4 20/21	Yr 5 21/22	Total
Start-Up - OPEX	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Start-Up - CAPEX	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Start-Up - risk margin	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Start-Up SUBTOTAL	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Requirements & Design - OPEX	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Requirements & Design - CAPEX	\$0.205	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.205
Requirements & Design - risk margin	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Requirements & Design SUBTOTAL	\$0.205	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.205
Development & Implementation - OPEX							
People	\$0.000	\$0.115	\$0.000	\$0.000	\$0.000	\$0.000	\$0.115
Software	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Hardware	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Telecommunications	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Service Contracts	\$0.000	\$0.568	\$0.000	\$0.000	\$0.000	\$0.000	\$0.568
Risk Margin	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Requirements & Design SUBTOTAL	\$0.000	\$0.683	\$0.000	\$0.000	\$0.000	\$0.000	\$0.683
Development & Implementation - CAPEX							
People	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Software	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Hardware	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Telecommunications	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Service Contracts	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Risk Margin	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
D& I SUBTOTAL	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
TOTAL PROJECT COSTS	\$0.205	\$0.683	\$0.000	\$0.000	\$0.000	\$0.000	\$0.888
Non-regulated project - UPLIFT							
Non-regulated project - UPLIFT	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Non-regulated project - TOTAL	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Non-regulated project - UPLIFT							
Non-regulated project - UPLIFT	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Non-regulated project - TOTAL	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Investment Plan No: INVP.....	Budget OPEX	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
	Budget CAPEX	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Impact on RTB costs	\$0.000	\$0.003	\$0.013	\$0.013	\$0.013	\$0.013	\$0.055

Benefiting Operating Company	Business Area	State
National Grid USA Parent	Parent	N/A
KeySpan Energy Corp.	Service Company	N/A
Niagara Mohawk Power Corp. - Electric Distr.	Electric Distribution	NY
Niagara Mohawk Power Corp. - Gas	Gas Distribution	NY
Niagara Mohawk Power Corp. - Transmission	Transmission	NY
KeySpan Energy Delivery New York	Gas Distribution	NY
KeySpan Energy Delivery Long Island	Gas Distribution	NY
Massachusetts Electric Company	Electric Distribution	MA
Massachusetts Electric Company – Transmission	Transmission	MA
Nantucket Electric Company	Electric Distribution	MA
Boston Gas Company	Gas Distribution	MA
Colonial Gas Company	Gas Distribution	MA
Narragansett Electric Company	Electric Distribution	RI
Narragansett Gas Company	Gas Distribution	RI
Narragansett Electric Company - Transmission	Transmission	RI
New England Power Company - Transmission	Transmission	MA
NE Hydro - Trans Electric Co.	FERC Interconnect	N/A
New England Hydro - Trans Electric Co.	FERC Interconnect	N/A
New England Electric Trans Electric Co.	FERC Interconnect	N/A
NG LNG LP Regulated Entity	FERC Gas Ops	N/A
KeySpan Generation LLC (PSA)	Generation	NY
KeySpan Glenwood Energy Center	Generation	NY
KeySpan Port Jefferson Energy Center	Generation	NY
KeySpan Energy Trading Services	Parents	N/A
Transgas, Inc.	Other Non-Regulated	MA
KeySpan Energy Development Corporation	Non-Regulated	NY
KeySpan Services Inc.	Other Non-Regulated	NY
TOTAL BENEFITS \$M		
Key Business Benefits:		
Provision of a reliable and fully supported networks for MetroTech and Northborough.		

Key risks:	Key Dates (Month/ Year):
	Start Up Jan 2017
	Partial Sanction Feb 2017
	Begin Requirements/Design Feb 2017
	CPE Completion Mar 2017
	Full Sanction Jun 2017
	Begin Dev & Implement – Ph1 Apr 2017
	Begin Dev & Implement - Ph2 Aug 2017
	Begin User Accept Testing Oct 2017
	Move to Production / Last Go Live Nov 2017
	Project Complete Nov 2017
	Project Closure Sanction Nov 2017

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

Role	Individual's Name
Business Executive Sponsor	John Gilbert
Head of PDM	Bill Kearns
Relationship Manager	Bill Kearns
Program Delivery Director	Dave McCune
IS Finance Management	Chip Benson
IS Regulatory	Dan DeMauro
DR&S	Elaine Wilson
Service Delivery	Brian Detota
Enterprise Architecture	Joe Clinchot

RECOMMENDATIONS

The Sanctioning Authority is invited to:

- a) APPROVE the investment of \$0.888M including risk margin of \$0.000M by May 31, 2017
- b) NOTE that John Gilbert, Global Head IS Service Delivery, is the Project Sponsor
- c) NOTE that Pratap Routray is the Project Manager and has the approved financial delegation to deliver the project

Decision of the Sanctioning Authority

I hereby approve the recommendations made in this paper.

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

John Gilbert, Global Head IS Service Delivery

1/22/2018

FY19 - Investment Request Summaries - IRSs - VC - Syracuse



Planning & Performance Management ▶ FY19 - Investment Request Summaries - IRSs: VC - Syracuse



nationalgrid		Investment Request Summary - IS US				FISCAL YEAR 2019					
INV ID:	4841	Project Name:	VC - Syracuse								
Program:	Enterprise Services					IRS Status:	ACTIVE				
Sponsor:	Gilbert, John			Title:	Global Head IS Service Delivery, Global IS						
Relationship Manager:	Brian Detota			Title:	IS Relationship Manager, Global IS						
Progr Delivery Director:	Helen Smith			Title:	Head of Programme Delivery						
Paper Author:	Title:										
		Business Area:	IS - Infrastructure		Portfolio:	IS for IS					
<input type="checkbox"/> In-Flight Project?	Invest Classification:	Medium	Category:	Policy Driven		Primary Policy Driver:	Reliability		Region:	US	
Strategic Program:	End to End Process (Primary):			Business Priority:	IS Focus Area:		Application Strategy:				
Tech Modernization	End to End Process (Secondary):			High	Grow the Core		Upgrade				
<p>Project Description: The context for the project with background information Install new video conferencing equipment in various rooms throughout the Syracuse Office Complex. Focus on deployment at standard conference rooms given recent deployments of video conferencing at large rooms in Syracuse (auditorium and boardroom).</p> <p>Project Rationale: Highlight business challenge, capability or process the project addresses National Grid has a geographically dispersed work force that relies on quality collaboration and communications facilities to remain an efficient organization. Syracuse has fewer video conferencing systems that other large facilities. Improved video conferencing facilities will improve the effectiveness by which National Grid teams can collaborate and reduces travel costs.</p> <p>Project Scope: Explain what is in scope and what is not in scope for the project <u>In Scope:</u> The installation of new video conferencing services in standard meeting rooms the Syracuse Office Complex <u>Out of Scope:</u> Non-standard room installations such as auditoriums and board rooms</p> <p>Project Dependencies: Identify any core program or project dependencies, please include INVP numbers if known None</p> <p>Basic Project Assumptions: This investment helps address IS health and capability challenges while enabling National Grid's strategic business objectives.</p>											
Indicative Project Costs by Fiscal Year											
(\$M)	Prior Years	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total	
CapEx		0.100	0.100	0.000	0.000	0.000				0.200	
OpEx		0.010	0.010	0.000	0.000	0.000				0.020	
Impact on RTB		0.010	0.020	0.020	0.020	0.000				0.070	

1/22/2018

FY19 - Investment Request Summaries - IRSSs - VC - Syracuse

Indicative Project Costs by Delivery Phase

(\$M)	Start-up	R & D	D & I	Closure	Total
CapEx		0.050	0.150		0.200
OpEx	0.005	0.002	0.008	.005	0.020

Project Benefits - Type I only

(\$M)	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total
Type I - CapEx									0.000
Type I - OpEx									0.000
Revenue Generation									0.000

Key Business Benefits:

Describe benefits, both financial and non-financial, and when those benefits will be delivered. Provide a clear & concise business case stating the investment drivers – why do we need to do something and why now? Explain any Regulatory considerations and how this initiative aligns with the US Business Strategy.
Reduced travel; Improved communications; and Capability to hold large town hall meetings.

Investment Prioritization

Benefits	Impact	Weight	Score	Cost	Impact	Weight	Score	
OpEx Annual Savings			10.3%	0	OpEx Cost	0.020	-24.4%	-244
CapEx Annual Savings			5.1%	0	CapEx Cost	0.200	-11.2%	0
Revenue Generation (annual)			6.2%	0	RTB Efficiency	70.000	% -22.5%	-2.025
Financial Control	Low		6.2%	0.062	Union/Labor Relations	Low	-9.8%	0
Soft Financial Benefits	Low		3.8%	0.038	Dependencies	Low	-10.6%	-0.106
Regulatory Impact	Low		11.2%	0.112	Elapse Time Duration	Medium	-6.6%	-0.198
Process & Personal Safety	Medium		19.4%	0.582	Change Management Effort	Low	-14.9%	-0.149
Reliability	Medium		10.9%	0.327				
Customer & Community Responsiveness	Medium		5.3%	0.159				
Employee Satisfaction	Medium		4.6%	0.138				
Mitigates a Corporate Risk / Risk of not Doing	Medium=16 to 39		8.9%	0.267				
Jurisdictional Engagement	Low		8.2%	0				
Benefit Score: 1.77				Cost Score: -2.93				
Overall Priority Score: -1.165								

Investment Risk and Complexity

Project Risk Score:	39	Risk Score Description: Risk impact = 5 and Risk likelihood = 5
Project Complexity Score::	14	Project Complexity Score Description:

Key Risks Description: Provide detail on project risks & mitigation strategy:

IS Project Dependencies if you don't see a project in the drop-down please contact the Planning & Performance team.

IS Projects: 4841 - VC - Syracuse

1. Has a dependency on IS Project;
2. Has a dependency on IS Project;
3. Has a dependency on IS Project;
4. Has a dependency on IS Project;
5. Has a dependency on IS Project;
6. Has a dependency on IS Project;

Business Initiative Dependencies

IS Projects: 4841 - VC - Syracuse

1. Has a dependency on Biz Initiative,
2. Has a dependency on Biz Initiative,
3. Has a dependency on Biz Initiative,
4. Has a dependency on Biz Initiative,

Project Relationships

Minor Works Project Relationship:

Related Projects:

Benefiting Operating Companies: Check all that apply

Select All Companies Clear All Companies
 Select All Gas Select All Electric Select All Gen

- National Grid USA Parent
- KeySpan Energy Development Corporation
- KeySpan Services Inc.
- KeySpan Energy Corp
- KeySpan Energy Delivery New York
- KeySpan Energy Delivery Long Island
- KeySpan Generation LLC (PSA)
- KeySpan Glenwood Energy Center
- KeySpan Port Jefferson Energy Center
- KeySpan Energy Trading Svc LLC
- Niagara Mohawk Power Corp- Electric Distribution
- Niagara Mohawk Power Corp - Gas
- Niagara Mohawk Power Corp - Transmission
- Massachusetts Electric Company
- Massachusetts Electric Company - Transmission
- Nantucket Electric Company
- Boston Gas Company
- Colonial Gas Company
- Narragansett Gas Company
- Narragansett Electric Company
- Narragansett Electric Company - Transmission
- New England Power Company - Transmission
- New England Hydro - Trans Corp
- New England Electric Trans Corp
- NE Hydro Trans Electric Co
- NG LNG LP Regulated Entity

Enabling IS Capabilities check all that apply

- Enterprise Content Management (ECM)
- Comprehensive Integration Services (CIS)
- Hybrid Cloud
- Next Gen Workplace

- Enterprise Mobility
- Reporting and Analytics
- Networks

Key Milestone Dates: Select the 1st, 15th or last day of the month

	<i>Begin</i>	<i>Begin</i>	<i>Begin</i>	<i>Begin</i>	<i>Go Live</i>	<i>Project Completion</i>	<i>Project Closure</i>
<i>Start-up</i>	<i>Requirements & Deign</i>	<i>Development & Implementation</i>	<i>User Acceptance Testing</i>	<i>Go Live</i>	<i>Project Completion</i>	<i>Project Closure</i>	
September, 2018					May, 2019	June, 2019	

Indicative Estimated Duration (Months): 6

Business Resource Estimates: # of Full Time Equivalents

<i>Start-up</i>	<i>Requirements & Deign</i>	<i>Develop & Implement</i>	<i>Business Resources UAT</i>	<i>Go Live Readiness</i>	<i>Post Go Live Support</i>
0	0	0	0	0	0

Resourcing Strategy:

Attached Supporting Documents

<https://teams.nationalgrid.com/sites/USIS/directory/PPM/Lists/FY19%20Investment%20Request%20Summaries%20%20IRSs/Item/displayifs.aspx...> 3/4

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FY19 - Investment Request Summaries - IRSs - VC - Syracuse

Recommendation Sign-off			
<i>Role</i>	<i>Name</i>	<i>Title</i>	<i>Date</i>
<i>Business Project Sponsor</i>	<i>Gilbert, John</i>	<i>Global Head IS Service Delivery, Global IS</i>	
<i>Business Relationship Manager</i>	<i>Brian Detota</i>	<i>IS Business Relationship Manager</i>	
<i>IS Program Delivery Manager</i>	<i>Helen Smith</i>	<i>IS Program Delivery Manager</i>	





Planning & Performance Management >
FY19 - Investment Request Summaries - IRSs: Mobility - Mobile
Application Development Platform (MADP) (US only)



nationalgrid		Investment Request Summary - IS US		FISCAL YEAR 2019	
INV ID:	3996	Project Name:	Mobility - Mobile Application Development Platform (MADP) (US only)		
Program:	Enterprise Architecture Roadmap - Mobility			IRS Status:	ACTIVE
Sponsor:	Gilbert, John	Title:	Global Head of IS Service Delivery		
Relationship Manager:	Brian Detota	Title:	IS Relationship Manager, Global IS		
Progr Delivery Director:	Helen Smith	Title:	Head of Programme Delivery		
Paper Author:	Nicola Pennington / Joe Clinchat		Title:	Business Consultant - Corporate IS / Service Strategy	
		Business Area:	IS - Infrastructure	Portfolio:	IS for IS
<input type="checkbox"/> In-Flight Project?	Invest Classification:	Medium	Category:	Policy Driven	Primary Policy Driver: Reliability
				Region:	US
Strategic Program:	End to End Process (Primary):		Business Priority:	IS Focus Area:	Application Strategy:
Tech Modernization			Low	Future Proof Our Business	New
		End to End Process (Secondary):			
Project Description: The context for the project with background information					
This investment will be used to provision the Enterprise Mobile Application Development Platform (MADP) in the US. This platform will contain the frameworks and tools needed for the development and deployment of custom mobile applications. In some cases, the platform may host specific pre-packaged applications. The platform must be capable of connecting to various backend systems and abstracting these systems using common protocols, such as REST. The platform must also be capable of producing mobile web, hybrid and native styles of application development.					
Based on the current Mobility Strategy, the desired approach is to buy vs build, then to use vendor based packaged development tools (e.g. SAP, Click Mobile, Salesforce Mobile, etc), lastly, we will follow open standards for Hybrid app development tools. If the US Front Office proposal is approved by the board, we will develop a PoC of these tools as part of the US Front Office. This investment will follow on from that PoC to establish these tools as the enterprise standards for hybrid mobile application development.					
Project Rationale: Highlight business challenge, capability or process the project addresses					
In the United States, no system as described is available. In the UK, the SAP SMP system is available as the mobile application development platform, and is used to enhance the Syclo Work Manager mobile application used in that region.					
Project Scope: Explain what is in scope and what is not in scope for the project					
In Scope: Requirements Definition, selection, design and implementation of the Mobile Application Development Platform (MADP)					
Out of Scope: Mobile VPN required for the Mobile communications stack Mobile Device Management System (MDM)					
Project Dependencies: Identify any core program or project dependencies, please include INVP numbers if known					
Identity and access management systems are used mainly to facilitate single sign-on scenarios for web based system. The IAM system mitigates the need for user to continually enter user IDs and passwords for disparate systems as the user transverses the multiple system					
Basic Project Assumptions:					
- The mobile MADP will be provisioned as a managed service.					
- This is for delivery of foundation services which will be of benefit to all business units - any business unit specific requirements (eg for field workers) will be funded through business portfolios					
- MADP platform should work with chosen EMM platform.					
- MADP platform should be available as multi-tenanted cloud offering.					
- MADP and should be available as Pay As You Go service.					
- MADP should integrate with NG IAM or AD platform					
- Costs include the selection and initial setup that includes Integration with NG IAM/AD, SSO enablement using Certificates, Network connectivity with NG data centres, test connectivity with SAP/database/Maximo backend etc.					
Indicative Project Costs by Fiscal Year					

(\$M)	Prior Years	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total
CapEx		0.200	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.200
OpEx		0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020
Impact on RTB		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Indicative Project Costs by Delivery Phase

(\$M)	Start-up	R & D	D & I	Closure	Total
CapEx		0.050	0.150		0.200
OpEx	0.005	0.001	0.004	.01	0.020

Project Benefits - Type I only

(\$M)	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total
Type I - CapEx									0.000
Type I - OpEx									0.000
Revenue Generation									0.000

Key Business Benefits:
Describe benefits, both financial and non-financial, and when those benefits will be delivered. Provide a clear & concise business case stating the investment drivers – why do we need to do something and why now? Explain any Regulatory considerations and how this initiative aligns with the US Business Strategy.
This investment is required to enable core capabilities that are foundational to the Mobile Strategy and will be required to support the mobility requirements for business initiatives that require mobile applications such as Mobility for Field Force Worker under the US Gas and Electric Operations Roadmap

Investment Prioritization

Benefits	Impact	Weight	Score	Cost	Impact	Weight	Score	
OpEx Annual Savings		10.3%	0	OpEx Cost	0.020	-24.4%	-0.244	
CapEx Annual Savings		5.1%	0	CapEx Cost	0.200	-11.2%	0	
Revenue Generation (annual)		6.2%	0	RTB Efficiency	0.000	% -22.5%	0	
Financial Control	Low	6.2%	0.062	Union/Labor Relations	Low	-9.8%	0	
Soft Financial Benefits	Low	3.8%	0.038	Dependencies	Low	-10.6%	-0.106	
Regulatory Impact	Low	11.2%	0.112	EIapse Time Duration	Medium	-6.6%	-0.198	
Process & Personal Safety	does not apply	19.4%	0	Change Management Effort	Low	-14.9%	-0.149	
Reliability	Low	10.9%	0.109					
Customer & Community Responsiveness	Low	5.3%	0.053					
Employee Satisfaction	Low	4.6%	0.046					
Mitigates a Corporate Risk / Risk of not Doing	Medium=16 to 39	8.9%	0.267					
Jurisdictional Engagement	Medium	8.2%	0					
			Benefit Score: 0.93				Cost Score: -0.91	
				Overall Priority Score: 0.026				

Investment Risk and Complexity

Project Risk Score:	34	Risk Score Description: Risk Impact = 4 and Risk Likelihood = 5
Project Complexity Score::	17	Project Complexity Score Description:
Key Risks Description: Provide detail on project risks & mitigation strategy:		

<p>IS Project Dependencies if you don't see a project in the drop-down please contact the Planning & Performance team.</p> <p>IS Projects: 3996 - Mobility - Mobile Application Development Platform (MADP) (US only)</p> <p>1. Has a Upstream dependency on IS Project; 3430-Core Mobility Infrastructure</p> <p>2. Has a dependency on IS Project;</p> <p>3. Has a dependency on IS Project;</p> <p>4. Has a dependency on IS Project;</p> <p>5. Has a dependency on IS Project;</p> <p>6. Has a dependency on IS Project;</p>		<p>Benefiting Operating Companies: Check all that apply</p> <p><input type="checkbox"/> Select All Companies <input type="checkbox"/> Clear All Companies</p> <p><input type="checkbox"/> Select All Gas <input type="checkbox"/> Select All Electric <input type="checkbox"/> Select All Gen</p> <p><input checked="" type="checkbox"/> National Grid USA Parent</p> <p><input checked="" type="checkbox"/> KeySpan Energy Development Corporation</p> <p><input checked="" type="checkbox"/> KeySpan Services Inc.</p> <p><input checked="" type="checkbox"/> KeySpan Energy Corp</p> <p><input checked="" type="checkbox"/> KeySpan Energy Delivery New York</p> <p><input checked="" type="checkbox"/> KeySpan Energy Delivery Long Island</p> <p><input checked="" type="checkbox"/> KeySpan Generation LLC (PSA)</p> <p><input checked="" type="checkbox"/> KeySpan Glenwood Energy Center</p> <p><input checked="" type="checkbox"/> KeySpan Port Jefferson Energy Center</p> <p><input checked="" type="checkbox"/> KeySpan Energy Trading Svc LLC</p> <p><input checked="" type="checkbox"/> Niagara Mohawk Power Corp- Electric Distribution</p> <p><input checked="" type="checkbox"/> Niagara Mohawk Power Corp - Gas</p> <p><input checked="" type="checkbox"/> Niagara Mohawk Power Corp - Transmission</p> <p><input checked="" type="checkbox"/> Massachusetts Electric Company</p> <p><input checked="" type="checkbox"/> Massachusetts Electric Company - Transmission</p> <p><input checked="" type="checkbox"/> Nantucket Electric Company</p> <p><input checked="" type="checkbox"/> Boston Gas Company</p> <p><input checked="" type="checkbox"/> Colonial Gas Company</p> <p><input checked="" type="checkbox"/> Narragansett Gas Company</p> <p><input checked="" type="checkbox"/> Narragansett Electric Company</p> <p><input checked="" type="checkbox"/> Narragansett Electric Company - Transmission</p> <p><input checked="" type="checkbox"/> New England Power Company - Transmission</p> <p><input checked="" type="checkbox"/> New England Hydro - Trans Corp</p> <p><input checked="" type="checkbox"/> New England Electric Trans Corp</p> <p><input type="checkbox"/> NE Hydro Trans Electric Co</p> <p><input checked="" type="checkbox"/> NG LNG LP Regulated Entity</p>	
<p>Business Initiative Dependencies</p> <p>IS Projects: 3996 - Mobility - Mobile Application Development Platform (MADP) (US only)</p> <p>1. Has a dependency on Biz Initiative,</p> <p>2. Has a dependency on Biz Initiative,</p> <p>3. Has a dependency on Biz Initiative,</p> <p>4. Has a dependency on Biz Initiative,</p>			
<p>Project Relationships</p> <p><input type="checkbox"/> Minor Works Project Relationship:</p> <p>Related Projects:</p> <p><input checked="" type="checkbox"/> 2935 - US Mobile Device Refresh</p> <p><input checked="" type="checkbox"/> 2982b - IAM Phase 1</p> <p><input checked="" type="checkbox"/> 3883 - Mobile Devices for PTO, Meter Operations, GMS, and I&R</p> <p><input checked="" type="checkbox"/> 4044 - US Control-Wires Down Regulatory Compliance</p>			
<p>Enabling IS Capabilities check all that apply</p> <p><input type="checkbox"/> Enterprise Content Management (ECM) <input type="checkbox"/> Enterprise Mobility</p> <p><input type="checkbox"/> Comprehensive Integration Services (CIS) <input type="checkbox"/> Reporting and Analytics</p> <p><input checked="" type="checkbox"/> Hybrid Cloud <input type="checkbox"/> Networks</p> <p><input type="checkbox"/> Next Gen Workplace</p>			
<p>Key Milestone Dates: Select the 1st, 15th or last day of the month</p> <p>Begin Start-up: January, 2019</p> <p>Begin Requirements & Deign: </p> <p>Begin Development & Implementation: </p> <p>Begin User Acceptance Testing: </p> <p>Go Live: </p> <p>Project Completion: March, 2019</p> <p>Project Closure: </p>		<p>Indicative Estimated Duration (Months):</p>	
<p>Business Resource Estimates: # of Full Time Equivalents</p> <p>Start-up: 0 Requirements & Deign: 0 Develop & Implement: 0 Business Resources UAT: 0 Go Live Readiness: 0 Post Go Live Support: 0</p>			
<p>Resourcing Strategy: This project will be resourced using Solution Delivery Centre (SDC) partners, Systems integrator and IS resources.</p>			
<p>Attached Supporting Documents</p>			

Recommendation Sign-off			
<i>Role</i>	<i>Name</i>	<i>Title</i>	<i>Date</i>
<i>Business Project Sponsor</i>	<i>Gilbert, John</i>	<i>Global Head of IS Service Delivery</i>	
<i>Business Relationship Manager</i>	<i>Brian Detota</i>	<i>IS Business Relationship Manager</i>	
<i>IS Program Delivery Manager</i>	<i>Helen Smith</i>	<i>IS Program Delivery Manager</i>	



FY19 - Investment Request Summaries - IRSs - US Wireless LAN Management Tools



Planning & Performance Management >
FY19 - Investment Request Summaries - IRSs: US Wireless LAN
Management Tools



nationalgrid		Investment Request Summary - IS US				FISCAL YEAR 2019				
INV ID:	4284	Project Name:	US Wireless LAN Management Tools							
Program:	US IS	IRS Status:	ACTIVE							
Sponsor:	Gilbert, John	Title:	Global Head of IS Service Delivery							
Relationship Manager:	Brian Detota	Title:	IS Relationship Manager, Global IS							
Progr Delivery Director:	Helen Smith	Title:	Head of Programme Delivery							
Paper Author:	Nicola Pennington / Steve Trezza	Title:	Business Consultant - Corporate IS / Service Strategy							
		Business Area:	IS - Infrastructure	Portfolio:	US IS					
<input type="checkbox"/> In-Flight Project?	Invest Classification: Low	Category:	Policy Driven	Primary Policy Driver:	Reliability	Region:	US			
Strategic Program:	End to End Process (Primary):	Business Priority:	Medium	IS Focus Area:	Grow the Core	Application Strategy:	Enhance			
Tech Modernization	End to End Process (Secondary):									
<p>Project Description: The context for the project with background information When the Verizon contract was signed, WLAN was thought of as an "add-on" to the LAN service. However as mobile devices have proliferated and users need a work anywhere capability, WLAN has taken on an increased importance. As WLAN services have become more critical, our capability to measure the quality and use of the services, as well as troubleshoot the service has not improved.</p> <p>This project is to develop a service level for WLAN and implement the tools required to measure the use, understand capacity / utilization, support connectivity issues and troubleshooting, and help plan for additional growth and changes of the service.</p> <p>Project Rationale: Highlight business challenge, capability or process the project addresses WLAN is now a critical service and needs a formal SLA and tools to measure the service and support it.</p> <p>Project Scope: Explain what is in scope and what is not in scope for the project</p> <p>Project Dependencies: Identify any core program or project dependencies, please include INVP numbers if known INVP3882 - NYS Pipeline Safety CMS Compliance CIAP Re-design Customer Interation Layer Share Services and HR Strategy INVP2575 - US Front Office Programme Grid Moderization NY Rev</p> <p>Basic Project Assumptions:</p>										
Indicative Project Costs by Fiscal Year										
(\$M)	Prior Years	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total
CapEx		0.150	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.150
OpEx		0.050	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.050
Impact on RTB		0.050	0.050	0.050	0.050	0.050	0.000	0.000	0.000	0.250
Indicative Project Costs by Delivery Phase										
(\$M)	Start-up	R & D			D & I		Closure	Total		

FY19 - Investment Request Summaries - IRSs - US Wireless LAN Management Tools

CapEx		0.050	0.100		0.150
OpEx	0.005	0.010	0.025	.01	0.050

Project Benefits - Type I only

(\$M)	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total
Type I - CapEx									0.000
Type I - OpEx									0.000
Revenue Generation									0.000

Key Business Benefits:

Describe benefits, both financial and non-financial, and when those benefits will be delivered. Provide a clear & concise business case stating the investment drivers – why do we need to do something and why now? Explain any Regulatory considerations and how this initiative aligns with the US Business Strategy.

- Measure AP use and capacity
- Determine radio frequency utilization
- Determine locations of users and usage patterns
- Troubleshoot incidents
- Improve security

Investment Prioritization

Benefits	Impact	Weight	Score	Cost	Impact	Weight	Score
OpEx Annual Savings		10.3%	0	OpEx Cost	0.050	-24.4%	-244
CapEx Annual Savings		5.1%	0	CapEx Cost	0.150	-11.2%	0
Revenue Generation (annual)		6.2%	0	RTB Efficiency	233.333	% -22.5%	-2.025
Financial Control	Low	6.2%	0.062	Union/Labor Relations	Low	-9.8%	0
Soft Financial Benefits	Low	3.8%	0.038	Dependencies	Low	-10.6%	-0.106
Regulatory Impact	Low	11.2%	0.112	EIapse Time Duration	Low	-6.6%	-0.066
Process & Personal Safety	Low	19.4%	0.194	Change Management Effort	Low	-14.9%	-0.149
Reliability	Low	10.9%	0.109				
Customer & Community Responsiveness	Low	5.3%	0.053				
Employee Satisfaction	Low	4.6%	0.046				
Mitigates a Corporate Risk / Risk of not Doing	Medium=16 to 39	8.9%	0.267				
Jurisdictional Engagement	Medium	8.2%	0				
Benefit Score: 1.13				Cost Score: -2.80			
Overall Priority Score: -1.673							

Investment Risk and Complexity

Project Risk Score:	36	Risk Score Description: Risk Impact = 4 and Risk Likelihood = 6
Project Complexity Score::	11	Project Complexity Score Description:

Key Risks Description: Provide detail on project risks & mitigation strategy:

WLAN use continues to grow. With that growth comes additional use and incidents. However, as the WLAN has become mission critical our ability to detect and eliminate issues has not improved. A set of WLAN tools are required to measure, managed, tune and diagnose the services.

Minor incidents will continue until the WLAN is better managed. Cost will be seen in the areas of:

1. additional service desk calls
2. non-optimal user performance
3. Unnecessary WLAN site surveys

IS Project Dependencies if you don't see a project in the drop-down please contact the Planning & Performance team.

IS Projects: 4284 - US Wireless LAN Management Tools

Benefiting Operating Companies: Check all that apply

Select All Companies Clear All Companies

FY19 - Investment Request Summaries - IRSs - US Wireless LAN Management Tools

<p>1. Has a dependency on IS Project;</p> <p>2. Has a dependency on IS Project;</p> <p>3. Has a dependency on IS Project;</p> <p>4. Has a dependency on IS Project;</p> <p>5. Has a dependency on IS Project;</p> <p>6. Has a dependency on IS Project;</p>	<p><input type="checkbox"/> Select All Gas <input type="checkbox"/> Select All Electric <input type="checkbox"/> Select All Gen</p> <p><input checked="" type="checkbox"/> National Grid USA Parent</p> <p><input checked="" type="checkbox"/> KeySpan Energy Development Corporation</p> <p><input checked="" type="checkbox"/> KeySpan Services Inc.</p> <p><input checked="" type="checkbox"/> KeySpan Energy Corp</p> <p><input checked="" type="checkbox"/> KeySpan Energy Delivery New York</p> <p><input checked="" type="checkbox"/> KeySpan Energy Delivery Long Island</p> <p><input checked="" type="checkbox"/> KeySpan Generation LLC (PSA)</p> <p><input checked="" type="checkbox"/> KeySpan Glenwood Energy Center</p> <p><input checked="" type="checkbox"/> KeySpan Port Jefferson Energy Center</p> <p><input checked="" type="checkbox"/> KeySpan Energy Trading Svc LLC</p> <p><input checked="" type="checkbox"/> Niagara Mohawk Power Corp- Electric Distribution</p> <p><input checked="" type="checkbox"/> Niagara Mohawk Power Corp - Gas</p> <p><input checked="" type="checkbox"/> Niagara Mohawk Power Corp - Transmission</p> <p><input checked="" type="checkbox"/> Massachusetts Electric Company</p> <p><input checked="" type="checkbox"/> Massachusetts Electric Company - Transmission</p> <p><input checked="" type="checkbox"/> Nantucket Electric Company</p> <p><input checked="" type="checkbox"/> Boston Gas Company</p> <p><input checked="" type="checkbox"/> Colonial Gas Company</p> <p><input checked="" type="checkbox"/> Narragansett Gas Company</p> <p><input checked="" type="checkbox"/> Narragansett Electric Company</p> <p><input checked="" type="checkbox"/> Narragansett Electric Company - Transmission</p> <p><input checked="" type="checkbox"/> New England Power Company - Transmission</p> <p><input checked="" type="checkbox"/> New England Hydro - Trans Corp</p> <p><input checked="" type="checkbox"/> New England Electric Trans Corp</p> <p><input type="checkbox"/> NE Hydro Trans Electric Co</p> <p><input checked="" type="checkbox"/> NG LNG LP Regulated Entity</p>																
<p>Business Initiative Dependencies</p> <p>IS Projects: 4284 - US Wireless LAN Management Tools</p> <p>1. Has a dependency on Biz Initiative,</p> <p>2. Has a dependency on Biz Initiative,</p> <p>3. Has a dependency on Biz Initiative,</p> <p>4. Has a dependency on Biz Initiative,</p>																	
<p>Project Relationships</p> <p><input type="checkbox"/> Minor Works Project Relationship:</p> <p>Related Projects:</p>																	
<p>Enabling IS Capabilities check all that apply</p> <p><input type="checkbox"/> Enterprise Content Management (ECM) <input type="checkbox"/> Enterprise Mobility</p> <p><input type="checkbox"/> Comprehensive Integration Services (CIS) <input type="checkbox"/> Reporting and Analytics</p> <p><input type="checkbox"/> Hybrid Cloud <input type="checkbox"/> Networks</p> <p><input type="checkbox"/> Next Gen Workplace</p>																	
<p>Key Milestone Dates: Select the 1st, 15th or last day of the month Indicative Estimated Duration (Months):</p> <table border="1"> <thead> <tr> <th>Begin Start-up</th> <th>Begin Requirements & Design</th> <th>Begin Development & Implementation</th> <th>Begin User Acceptance Testing</th> <th>Go Live</th> <th>Project Completion</th> <th>Project Closure</th> </tr> </thead> <tbody> <tr> <td>October, 2018</td> <td></td> <td></td> <td></td> <td></td> <td>March, 2019</td> <td></td> </tr> </tbody> </table>		Begin Start-up	Begin Requirements & Design	Begin Development & Implementation	Begin User Acceptance Testing	Go Live	Project Completion	Project Closure	October, 2018					March, 2019			
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0	0	0	0	0	0												
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<p>Attached Supporting Documents</p>																	
<p>Recommendation Sign-off</p> <table border="1"> <thead> <tr> <th>Role</th> <th>Name</th> <th>Title</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td>Business Project Sponsor</td> <td>Gilbert, John</td> <td>Global Head of IS Service Delivery</td> <td></td> </tr> <tr> <td>Business Relationship Manager</td> <td>Brian Detota</td> <td>IS Business Relationship Manager</td> <td></td> </tr> <tr> <td></td> <td></td> <td>IS Program Delivery Manager</td> <td></td> </tr> </tbody> </table>		Role	Name	Title	Date	Business Project Sponsor	Gilbert, John	Global Head of IS Service Delivery		Business Relationship Manager	Brian Detota	IS Business Relationship Manager				IS Program Delivery Manager	
Role	Name	Title	Date														
Business Project Sponsor	Gilbert, John	Global Head of IS Service Delivery															
Business Relationship Manager	Brian Detota	IS Business Relationship Manager															
		IS Program Delivery Manager															

FY19 - Investment Request Summaries - IRSs - US Wireless LAN Management Tools

<i>IS Program Delivery Manager</i>	<i>Helen Smith</i>	
		



US Sanction Paper

Title:	Legacy DMZ Migration to vSTIG	Sanction Paper #:	USSC-17-055 V2
Project #:	INVP 4362	Sanction Type:	Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	October 11, 2017
Author:	Andrew Yee / Aravind Lochan	Sponsor:	John Gilbert, Global Head of Service Delivery
Utility Service:	IS	Project Manager:	Chris Gatland

1 Executive Summary

1.1 Sanctioning Summary

This paper requests full sanction of INVP 4362 for the amount \$2.546M with a tolerance of +/- 10% for the purposes of full implementation for migrating/decommissioning the legacy DMZ (Demilitarized Zone – the secure boundary between the public and the private network) out of Metrotech and Henry Clay Boulevard (HCB) datacenters into the Verizon Secure Telecommunications Internet Gateway (vSTIG) environment.

This sanction amount is \$2.546M broken down into:

<i>\$0.000M</i>	<i>Capex</i>
<i>\$2.546M</i>	<i>Opex</i>
<i>\$0.000M</i>	<i>Removal</i>

1.2 Project Summary

Our internet gateway services are currently comprised of the new strategic service vSTIG and a legacy DMZ service. The internet gateway connects National Grid securely to the internet and other external business partners. The legacy services are currently supporting a significant number of business critical systems and network traffic flows.

The hardware and software that make up the legacy network services are experiencing operational and business risk of hardware, service failure and performance deterioration, which can lead to financial and reputational impact on National Grid. This legacy hardware no longer meets the required specification, cannot be easily restored in the event of a failure, and National Grid does not have a contracted repair Service Level Agreement (SLA) for this equipment from our Network Service Provider.

To resolve these issues, this project will migrate all legacy service to the new vStig service.



US Sanction Paper

To determine the initial scope of Legacy DMZ Migration work an independent feasibility and analysis (F&A) discovery activity was completed under INVP 4368 Legacy DMZ F&A project.

This investment will take the findings from that INVP 4368 Legacy DMZ F&A project and:

1. Identify all services impacted and the owners of those services
2. Identify application owners (internal and external) and determine the engagement and commercial arrangements to initiate follow-on activity and assess dependencies, and constraints, both business and regulatory
3. Prioritize, design, and plan the migration activities
4. Determine which services can be decommissioned
5. Begin migration of services based on, and constrained by activities, referenced in point 2, above

This work has been completed and the full sanction will request funding for engaging with 3rd party application owners where required and remaining migration of services based on executing the approved detailed plan and approach.

The intended approach to deliver this project will deliver benefits incrementally for each internet application workflow or internet services impacted.

1.3 Summary of Projects

Project Number	Project Title	Estimate Amount (\$M)
4362	INVP 4362 Legacy DMZ Migration to VSTIG	2.546
Total		2.546

1.4 Associated Projects

INVP 4368 Legacy DMZ Migration to vStig F&A.

1.5 Prior Sanctioning History

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Paper Title	Sanction Type	Tolerance
Mar 9, 2017	USSC	\$1.760M	\$2.910M	Legacy DMZ Migration to vSTIG	Partial	+/- 25%



US Sanction Paper

1.6 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review
Jun 2018	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	This is an Asset Health project as it relates to the reliability of systems & services within legacy DMZs, which still support some business critical systems and network traffic flows. These services are required to be migrated to the new strategic internet gateway (VSTIG). Customer Systems unavailability could have financial and reputational impact on National Grid.

1.8 Asset Management Risk Score

Asset Management Risk Score: 45

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: 20

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 (\$)
IS Investment Plan FY18 - 22	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Over <input type="radio"/> Under <input type="radio"/> NA	\$2.481M

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

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

1.13 Current Planning Horizon

\$M	Prior Yrs	Current Planning Horizon						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.065	1.765	0.716	0.000	0.000	0.000	0.000	2.546
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	0.065	1.765	0.716	0.000	0.000	0.000	0.000	2.546

1.14 Key Milestones

Milestone	Target Date: (Month/Year)
Start Up	Dec 2016
Partial Sanction	Mar 2017
Begin Requirements and Design	Mar 2017
Execute Phase Mid Checkpoint	Jul 2017
Project Sanction	Oct 2017
Move to Production / Last Go Live	Jun 2018
Project Complete	Jun 2018
Project Closure Sanction	Jun 2018

1.15 Resources, Operations and Procurement

US Sanction Paper

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 Sanctioning Committee (USSC) at a meeting held on October 11, 2017:

- (a) APPROVED this paper and the investment of \$2.546M and a tolerance of +/- 10%.
- (b) APPROVED the RTB impact of \$(0.052)M for FY18 and \$(0.141)M for 5 years
- (c) NOTED that Chris Gatland has the approved financial delegation.

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

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



US Sanction Paper

3 Sanction Paper Detail

Title:	Legacy DMZ Migration to vSTIG	Sanction Paper #:	USSC-17-055 V2
Project #:	INVP 4362	Sanction Type:	Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	October 11, 2017
Author:	Andrew Yee / Aravind Lochan	Sponsor:	John Gilbert, Global Head of Service Delivery
Utility Service:	IS	Project Manager:	Chris Gatland

3.1 Background

Our internet gateway services are currently comprised of the new strategic service vSTIG and a legacy DMZ service. The internet gateway connects National Grid securely to the internet and other external business partners. The legacy services are currently supporting a significant number of business critical systems and network traffic flows.

The hardware and software that make up the legacy network services are experiencing asset health issues. This creates operational and business risk of hardware/service failure and performance deterioration, and can lead to financial and reputational impact on National Grid. The hardware no longer meets the required specification, cannot be easily restored in the event of a failure, and National Grid does not have a contracted repair SLA for this equipment from our Network Service Provider. Additionally the Legacy DMZ environment is no longer National Grid’s strategic platform. Maintaining two infrastructures (VSTIG and Legacy DMZ) is not optimal from an economical, operational, and security standpoint. To resolve these issues this project will migrate all legacy service to the new vStig service.

To determine the initial scope of Legacy DMZ Migration work, a high level independent F&A discovery activity was completed under INVP 4368 Legacy DMZ F&A Project.

This project was partially sanctioned to allow for further discovery and correlation to determine the total number of applications and interfaces, and associated complexity for migration. The detailed discovery work has identified the requirements for, and impact to, National Grid’s partners and dependent external parties.

US Sanction Paper

3.2 Drivers

The primary driver of this project is service reliability.

- Legacy environment does not have sufficient security systems such as intrusion detection systems / intrusion prevention systems (IDS/IPS) to identify and prevent security risks
- Multiple connection points results in additional exposures and additional costs and resources to maintain and support
- The default gateway route for the network can only be located in one environment. Having two environments (VSTIG and Legacy DMZ) causes operational complexity to manage traffic routing from growing number of cloud services
- Prevention of Distributed Denial of Service (DDOS) attacks which impacts hardware failure, along with performance deterioration and services timing out.

3.3 Project Description

This project will migrate/decommission the services with the DMZ from the Metrotech and HCB data centers to the vSTIG environment. The scope of the work is limited to the migration of DMZ applications that currently traverse the legacy Metrotech and HCB data centers.

To determine the initial scope of Legacy DMZ Migration work an independent F&A discovery activity was completed under INVP 4368 Legacy DMZ F&A Project. This investment will take the finding from that INVP 4368 F&A and:

1. Identify all services impacted and the owners of those services
2. Identify application owners (internal and external) and determine the engagement and commercial arrangements to initiate follow-on activity and assess dependencies, and constraints, both business and regulatory
3. Prioritize, design, and plan the migration activities
4. Determine which services can be decommissioned
5. Begin migration of services based on, and constrained by activities, referenced in point 2, above

The intended approach to deliver this project is by delivering benefits in increments and the workflows one by one.

US Sanction Paper

3.4 Benefits Summary

The main benefits of this project are:

- Services will be provided via a stable, supported and secured environment, therefore mitigating the asset health, service and security risks related to the current legacy environments
- Mitigation of reputational risk for externally facing services unavailability
- Internet application workflow or internet services will be stable to end users.
- Fully documented services to support utilization and repair
- More secure environment aligned with National Grid's current security standards

3.5 Business and Customer Issues

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

3.6 Alternatives

Alternative 1: Upgrade Legacy DMZ environments – this will require significant investment and time to deliver. Full benefits realization of the already implemented VSTIG will also not be achieved. Service is not compliant with all current National Grid security standards.

Alternative 2: Implement a new internet gateway - this will require significant investment and time to deliver. Full benefits realization of the already implemented VSTIG will also not be achieved. A new gateway will still require migration of the legacy services.

Alternative 3: Ad hoc piece meal, migrate as and when required – migration will take longer, and therefore prolonging the risks associated to the services within the legacy DMZ.

Alternative 4: Defer the project/Do nothing – this is not a viable option because of the reasons provided within the business case and driver.

3.7 Safety, Environmental and Project Planning Issues

N/A

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	There is a risk that aspects of the discovery or design process would stall due to the lack of clarity, known criticality and / or ownership of - services infrastructure or interfaces - and the treatment or approach to mitigate.	4	5	5	20	20	Mitigate	Assign a fulltime NG Architect to the project team to validate the proposed solution and initiate NG internal discovery activities to limit potential delays in seeking a strategy or approach to deliver an specific outcome.	The Solution Architect and internal assigned NG resources may not necessarily have the knowledge or authority to pursue the requirement	Escalate to project sponsor and engage SA group to agree next steps. EA group to potentially own the problem and inform the project when evaluation completed
2	There is a risk that the external 3rd party links and interfaces may not be possible to mitigate due to either commercial constraints or limited by 3rd party imposed timescales that may not meet the NG project delivery scope	3	5	5	15	15	Accept	PM to continually assess the impact of identified requirements and the impact to time, scope and cost to utilize the reporting and escalation routes via the PBM to confirmation any deviation to project thresholds.	Project could occur significant additional cost or extensions of time which are currently not factored into the request sanctioned value	initiate additional or new investment proposal against a new or the existing sanctions
3	There is a risk that the project will extend beyond the currently sanctioned timescale and funding may be insufficient to complete due to factors that will only become apparent once the discovery work is in flight	5	5	5	25	25	Mitigate	Invest to include a notional provision for potential H/W partner and 3rd party participation	There is risk that timescales and funding may be insufficient to complete all the mitigation activities	Escalate to project sponsor and engage SA group to agree next steps.
4	There is a high risk of significant budget over spend	4	5	4	20	16	Mitigate	All suppliers are engaged on T&M, resource for hire basis which is a commercial risk that is difficult to manage.	Budget overrun	The project manager should monitor hours billed and burn rate of each Eco partner ; this risk amount has been include in the TCO forecast

3.9 Permitting

N/A



US Sanction Paper

3.10 Investment Recovery

3.10.1 Investment Recovery and Regulatory Implications

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

3.10.2 Customer Impact

N/A

3.10.3 CIAC / Reimbursement

N/A

3.11 Financial Impact to National Grid

3.11.1 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend (\$M)	Prior Yrs	Current Planning Horizon						Total
					Yr. 1 2017/18	Yr. 2 2018/19	Yr. 3 2019/20	Yr. 4 2020/21	Yr. 5 2021/22	Yr. 6 + 2022/23	
4362	INVP 4362 Legacy DMZ Migration to VSTIG	Est Lvl (e.g. +/- 10%)	CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			OpEx	0.065	1.765	0.716	0.000	0.000	0.000	0.000	2.546
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.065	1.765	0.716	0.000	0.000	0.000	0.000	2.546
Total Project Sanction			CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			OpEx	0.065	1.765	0.716	0.000	0.000	0.000	0.000	2.546
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.065	1.765	0.716	0.000	0.000	0.000	0.000	2.546



US Sanction Paper

3.11.2 Project Budget Summary Table

Project Costs per Business Plan

\$M	Current Planning Horizon							Total
	Prior	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
	Yrs	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.065	0.000	0.000	0.000	0.000	0.000	0.000	0.065
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.065	0.000	0.000	0.000	0.000	0.000	0.000	0.065

Variance (Business Plan-Project Estimate)

\$M	Current Planning Horizon							Total
	Prior	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
	Yrs	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	(1.765)	(0.716)	0.000	0.000	0.000	0.000	(2.481)
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	(1.765)	(0.716)	0.000	0.000	0.000	0.000	(2.481)

3.11.3 Cost Assumptions

Additional discovery work will identify the requirements for, and impact to, National Grid’s partners and dependent external parties, as well as any additional hardware requirements. A financial provision has been included within the investment request to meet these potential requirements; however, as the specific needs are not yet established, the project may be limited to the extent to which all migrations can be executed within the proposed funding level.

- This project will be managed by National Grid Project Manager
- Verizon and DXC are the main suppliers, in addition IBM and Wipro Consulting Services will be engaged

3.11.4 Net Present Value / Cost Benefit Analysis

N/A

3.11.4.1 NPV Summary Table

N/A

3.11.4.2 NPV Assumptions and Calculations

N/A

3.11.5 Additional Impacts

N/A

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.

Role	Individual's Name
Business Executive Sponsor	John Gilbert
Head of PDM	Helen Smith
Relationship Manager	Bill Kearns
Program Delivery Director	Dave McCune
IS Finance Management	Chip Benson
IS Regulatory	Dan DeMauro
DR&S	Elaine Wilson
Service Delivery	Brian Detota
Enterprise Architecture	Joe Clinchot

3.12.2 Reviewers

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

Function	Individual	Area
Regulatory	Harvey, Maria	IS
Jurisdictional Delegate(s)	Anand, Sonny	Electric - NE
	Harbaugh, Mark	Electric - NY
	Hill, Terron	FERC
	Currie, John	Gas - NE
	Wolf, Don	Gas - NY
Procurement	Curran, Art	All



US Sanction Paper

4 Appendices

4.1 Other Appendices

4.1.1 Project Cost Breakdown

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.327	N/A
	SDC Time & Materials	0.454	IBM, Wipro
	SDC Fixed-Price	-	N/A
	All other personnel	1.276	Verizon, DXC, IBM & Wipro
	TOTAL Personnel Costs	2.057	
Hardware	Purchase	0.050	Verizon
	Lease	-	
Software		-	
Risk Margin		0.365	
Other		0.074	
TOTAL Costs		2.546	

4.1.2 Benefiting Operating Companies

The following companies will benefit from this project as defined in section 3.3. The allocation of these benefits will be based upon the number of customers:

Operating Company Name	Business Area	State
National Grid USA Parent	Parent	N/A
KeySpan Energy Corp.	Service Company	N/A
Niagara Mohawk Power Corp. - Electric Distr.	Electric Distribution	NY
Niagara Mohawk Power Corp. - Gas	Gas Distribution	NY
Niagara Mohawk Power Corp. - Transmission	Transmission	NY
KeySpan Energy Delivery New York	Gas Distribution	NY
KeySpan Energy Delivery Long Island	Gas Distribution	NY
Massachusetts Electric Company	Electric Distribution	MA
Massachusetts Electric Company – Transmission	Transmission	MA
Nantucket Electric Company	Electric Distribution	MA
Boston Gas Company	Gas Distribution	MA
Colonial Gas Company	Gas Distribution	MA
Narragansett Electric Company	Electric Distribution	RI



US Sanction Paper

Operating Company Name	Business Area	State
Narragansett Gas Company	Gas Distribution	RI
Narragansett Electric Company - Transmission	Transmission	RI
New England Power Company - Transmission	Transmission	MA
NE Hydro - Trans Electric Co.	FERC Interconnect	N/A
New England Hydro - Trans Electric Co.	FERC Interconnect	N/A
New England Electric Trans Electric Co.	FERC Interconnect	N/A
New England Hydro Finance Company Inc.	Inter Connector	MA, NH
NG LNG LP Regulated Entity	FERC Gas Ops	N/A
KeySpan Generation LLC (PSA)	Generation	NY
KeySpan Glenwood Energy Center	Generation	NY
KeySpan Port Jefferson Energy Center	Generation	NY
KeySpan Energy Trading Services	Parents	N/A
Transgas, Inc.	Other Non-Regulated	MA
KeySpan Energy Development Corporation	Non-Regulated	NY
KeySpan Services Inc.	Other Non-Regulated	NY

4.2 NPV Summary

N/A

4.3 Customer Outreach Plan

N/A

**Investment Proposal Summary Sheet
NG Labs – Project No. [INVP 4705]**

Region:	US	Category:	Policy	Legal Entity:	[see guidelines for list]							
Risk Score:		Primary Driver:		Project Classification:	L							
Project Description:												
<p>This project is intended to outfit ngLabs in the US with necessary hardware and software. ngLabs is the technology innovation and POC group for Global IS. The mission is to bring current and emergent tech in house, execute technology scouting, and partner with the business to create products and solutions to address their needs.</p> <p>This paper requests sanction of INVP 4705 in the amount \$ 0.230M with a tolerance of +/- 10% for the purposes of procuring appropriate hardware, software, and services to operate the lab.</p> <p>This sanction amount is \$0.230M broken down into:</p> <table border="0"> <tr> <td>\$0.130M</td> <td>CapEx</td> </tr> <tr> <td>\$0.100M</td> <td>OpEx</td> </tr> <tr> <td>\$0.0M</td> <td>Removal</td> </tr> </table>							\$0.130M	CapEx	\$0.100M	OpEx	\$0.0M	Removal
\$0.130M	CapEx											
\$0.100M	OpEx											
\$0.0M	Removal											
Brief Description												
This policy-driven project is necessary for the funding of ngLabs innovation and development work.												
Background												
The goal of ngLabs is to provide IS and the business with the capability to rapidly innovate with emergent technology through scouting, software engineering, and direct end-user engagement.												
Based on the success of NGLabs within the UK, it has been decided to make a US team. By moving to a global scale we will be able to better leverage scarce skills across National Grid, take better advantage of partnerships that exist in the UK and are being developed with US universities and startups. Existing relationships with corporate strategy and UK operations will be further extended to the business within the US.												
Project Costs [\$]k	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Total						
	16/17	17/18	18/19	19/20	20/21							
Start-Up – OPEX												
Start-Up – CAPEX												
Start-Up – risk margin												
Start-Up SUBTOTAL												
Requirements & Design - OPEX	100					100						
Requirements & Design – CAPEX	130					130						
Requirements & Design – risk margin												
R&D SUBTOTAL												
Development & Implementation – OPEX												
People												
Software												
Hardware												
Telecommunications												
Service Contracts												
Risk Margin												
Development & Implementation – CAPEX												
People												

National Grid Confidential

Date: 24/02/17

Software						
Hardware						
Telecommunications						
Service Contracts						
Risk Margin	10%					
D&I SUBTOTAL						
TOTAL PROJECT COSTS	\$0.230M					230
Non-regulated project – UPLIFT						
Non-regulated project – TOTAL						

Investment Plan No: INVP4705	Budget OPEX					
	Budget CAPEX					

Impact on RTB costs						
----------------------------	--	--	--	--	--	--

Benefiting Operating Companies	Business Area	State
Boston Gas Company	Gas Distribution	MA
Niagara Mohawk Power	Electric Distribution	NY
Keyspan Energy Delivery LI	Transmission	LIPA
Keyspan Generation Services, LLC	Generation	NY
Etc . . .		

TOTAL BENEFITS [\$]k						
Key Business Benefits:						

Key risks:	Key Dates (Month/ Year): Start Up [03/2017] Full Sanction [03/2017] Project Complete [03/2017] Project Closure Sanction [03/2017]
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The supporters listed have aligned their part of the business to support the project.

Role	Individual's Name
Business Executive Sponsor	Anuraag Bhargava
Head of PDM	Tom Cunningham
Relationship Manager	Graham Pool
Program Delivery Manager	Dave McCune
IS Finance Management	Chip Benson
IS Regulatory	Tom Gill

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Date: 24/02/17

DR&S	Elaine Wilson
Service Delivery	Brian Delota
Enterprise Architecture	Joe Clinchot

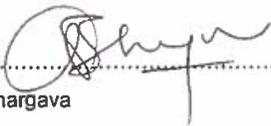
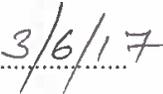
RECOMMENDATIONS

The Sanctioning Authority is invited to:

- a) APPROVE the investment of \$0.230M by Mar 31, 2017
- b) NOTE that Anuraag Bhargava, is the Project Sponsor
- c) NOTE that Brendan Hanna, is the Project Manager and has the approved financial delegation to deliver the project

Decision of the Sanctioning Authority

I hereby approve the recommendations made in this paper.

Signature.......... Date..........
Anuraag Bhargava

National Grid Confidential

Date: 24/02/17

Line Of Sight	How the investment supports the line of sight for this line of business, inc any measures	[Refer to the line of sight strategy, objectives and measures of success for the line of business this investment relates to.]
Business Capabilities	Describe the business capabilities impacted by this investment	[Refer to business capabilities on the Enterprise Capability Model (ECM) maintained by the enterprise architecture team http://spcustapps/sites/EA/EA%20Document%20Library/Forms/Summary.aspx then select "Producer: Lead BA", "Work Products: BA Enterprise Capabilities" and then the "Enterprise Capability Model"]
Impact Assessment	Describe the anticipated change impact assessment (people/process/system/data)	[Refer to the capability maturity assessment and scale of changes in people/process/systems and data required.]
Application & Architecture Roadmap	Describe the alignment to application roadmaps & architecture	[Refer to solution architects based on application roadmaps & architecture overview]

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Strategic Alignment



US Sanction Paper

Title:	US Cyber Security Program 2	Sanction Paper #:	
Project #:	INVP 3683	Sanction Type:	Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	December 27, 2017
Author:	Ajay Kumar/ Jacquie Morrison	Sponsor:	Chris Murphy, Interim Chief Information Security Officer
Utility Service:	IS	Program Manager:	Tammy Cooper

1 Executive Summary

1.1 Sanctioning Summary

This paper requests sanction of INVP 3683 US Cyber Security Program 2 in the amount \$60.202M with a tolerance of +/- 10% for the purposes of full implementation.

This sanction amount is \$60.202M broken down into:

- \$49.798M Capex*
- \$10.405M Opex*
- \$0.000M Removal*

1.2 Project Summary

National Grid refreshed its Cyber security strategy to respond to the ever changing threat landscape. The board of directors provided their approval for that strategy in March of 2017. This investment is requested to move forward with the implementation of the agreed approach and strategic plan.

The key driver for this investment is to reduce risk and security exposures to National Grid and to protect all of the National Grid’s assets, users and the communities that we serve. This investment paper includes adequate mitigations that will help to avoid system outages that might be able to cause loss of control, management of the electric system and/or the gas system. In addition, this investment is to help protect National Grid’s new ventures business. This program will help to mitigate against the potential loss of data, legal and regulatory non-compliance, reputational harm and/or financial loss to partners and/or customers.

This is a global investment that will build on the foundational elements already in place for the Cyber Security Program. This investment proposal requests a sanction of funds for US costs only. It will consist of a series of projects, which will be reviewed on an annual basis; this in turn will allow National Grid to continue to improve its response to Cyber threats as the security threat landscape changes and evolves.



US Sanction Paper

This program leverages the outputs of previous cyber security projects and other IS initiatives undertaken by National Grid in recent years. It will implement multiple projects grouped under the themes such as Culture & Awareness, Enhance the Foundation, Operational Technology (OT) Cyber Security, Robust Identity and Controls, Secure Endpoints Security Operations & Monitoring and Threat Resistant Networks. Please refer section 3.1 for further details.

1.3 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
3683		Culture & Awareness	7.024
3683		Enhance the Foundation	2.842
3683		OT Cyber Security	7.093
3683		Robust Identity and Controls	7.589
3683		Secure Endpoints	7.052
3683		Security Operations & Monitoring	14.072
3683		Threat Resistant Networks	14.530
Total			60.202

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
Jun 2022	Program Closure

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 deliver solutions for the Cyber Security strategy that was approved in March, 2017.

1.8 Asset Management Risk Score

Asset Management Risk Score: 47

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: 27

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 (\$)
IS Investment plan FY18-22	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Over <input type="radio"/> Under <input type="radio"/> NA	\$53.850M

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

N/A

1.13 Current Planning Horizon

		Current Planning Horizon							Total
		Prior Yrs	Yr. 1 2017/18	Yr. 2 2018/19	Yr. 3 2019/20	Yr. 4 2020/21	Yr. 5 2021/22	Yr. 6 + 2022/23	
\$M									
CapEx	0.000	0.130	11.945	18.881	17.495	1.322	0.024	49.798	
OpEx	0.000	0.552	3.500	3.999	2.270	0.084	0.000	10.405	
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	0.682	15.445	22.880	19.765	1.407	0.024	60.202	

1.14 Key Milestones

Milestone	Target Date: (Month/Year)
Full Program Sanction	Feb 2018
Project Start Up	Feb 2018
Begin Requirements and Design	Mar 2018
Begin Development and Implementation	July 2018
Move to Production / Last Go Live	Mar 2022
Post Implementation support End Date	Apr 2022
Full Program Complete	May 2022
Sanction Closure	Jun 2022

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

None



US Sanction Paper

2 Decisions

The Senior Executive Sanctioning Committee (SESC) at a meeting held on November 27, 2017:

- (a) APPROVE this paper and the investment of \$60.202M and a tolerance of +/-10%.
- (b) APPROVE the Run-the-Business (RTB) impact of \$4.473M per annum.
- (c) NOTE that Tammy Cooper is the Program Manager and has the approved financial delegation.

- (d) NOTE: In the event that any Blanket projects are not approved prior to the start of the FY2018 fiscal year, the FY2017 approval limits will remain in effect until such time as the FY2017 blanket projects are approved by USSC and/or other appropriate authority for approval

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

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

US Sanction Paper

3 Sanction Paper Detail

Title:	US Cyber Security Program 2	Sanction Paper #:	
Project #:	INVP 3683	Sanction Type:	Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	December 27, 2017
Author:	Ajay Kumar / Jacquie Morrison	Sponsor:	Chris Murphy, Interim Chief Information Security Officer
Utility Service:	IS	Program Manager:	Tammy Cooper

3.1 Background

National Grid's board approved cyber strategy presents a clear approach to understanding and satisfying National Grid's risk appetite as required for our businesses to strategically manage cyber threats across the company.

National Grid's cyber strategy defines five (5) goals with supporting objectives. These goals and objectives focus on enabling National Grid to bring energy to life by providing measurable, deliverable and scalable cybersecurity solutions. Achieving our goals requires close partnership and alignment with our company-wide jurisdictions, business lines, and corporate functions.

The cyber strategy can best be summarized by the five strategic goals; each goal is summarized as follows:

1. **Enable the Business:** Expand the partnership between the Digital Risk and Security team and National Grid's business units. Develop a flexible approach to cyber security that meets the needs of National Grid's diverse businesses. This will ultimately enable our businesses to operate at speed and build customer trust, while also protecting National Grid.
2. **Safeguard the Business:** Further strengthen our cybersecurity capabilities to ensure improved resilience and proactive measures that protect the enterprise and critical infrastructure assets against an evolving cyber threat landscape.
3. **Compete for Cyber Talent:** Our people are our most important cyber defence asset, and therefore our Cybersecurity Strategy includes an increased focus on bolstering National Grid's cyber workforce. To win the competition, we must implement a long-term cyber workforce strategy that strengthens relevant cyber talent, capability, and capacity.

US Sanction Paper

4. **Cyber Risk Management:** Introduce a standardized approach to managing risk across the organization to support cyber risk decisions on policies, investments, capabilities, and operations, using a common language.
5. **Mature and Strengthen our Cyber Posture through Transformation:** Position National Grid as an energy-sector leader in cyber, and mature and strengthen our cyber posture through organizational transformation, preparedness, and agility.

This program aligns with the cyber strategy and aims to deliver new and enhanced cyber security capabilities (Identify, Protect, Detect, Respond and Recover) to counter known and existing security threats; further expenditure will continue to be required going forward to ensure National Grid continues to mitigate the ever changing threat landscape.

The program's definition phase has completed a number of deliverables, including:

- Security Reference Architecture for 5 National Grid IT environments. This included Business Local Area Network (BLAN), Verizon Secure Telecommunications Internet Gateway (vSTIG), US CNI (Critical Network Infrastructure) environments, plus UK CNI Gas, and UK CNI Electricity environments
- Cyber roadmap of prioritized investments for Cyber Security Program 2 (CSP2)
- Program governance
- Program definition
- Program delivery estimation

3.2 Drivers

This program is required due to the following key drivers:

- Reduce cyber risk and security exposures to National Grid and protect National Grid's assets, users and the communities that we serve.
 - Safeguard the business by increasing resilience and protecting customer and corporate data.
 - Increase the protection of our Critical Network Infrastructures, thereby protecting our customers.
- Align with National Grid's Cyber Strategy goals and build confidence with the business to safeguard future investments including National Grid Ventures.
- These investments will also help to mitigate against the potential loss of data, legal and regulatory non-compliance, reputational harm and/or financial loss to partners and/or customers.
- Enable the ability within the business to respond more quickly to the changing threat landscape.

3.3 Project Description

This program will implement the new and enhanced cyber capabilities by following an iterative and agile approach to deliver the outputs prioritized to mitigate security risks. It will coordinate plans across the business teams including Global IS in an effort to mitigate dependencies and risks. The Cyber Security program 2 will deliver:

US Sanction Paper

- The listed prioritized investments for 2017/18 sanctioned under INVP 4975 (see Appendix 4.6.4, benefits in Appendix 4.6.1)
- The remaining planned and proposed investments for 2017-21 (please refer to Appendix 4.6.3)
- Clear sanction routes for individual investments through the lifecycle of the program, through the Cyber Security Program Board
- An annual review in Q1 each year of planned investment activities, which will be reported to all required stakeholders, up to and including each regional executive board, through the Cyber Security Program Board

3.4 Benefits Summary

This investment must be made to deliver the following non-financial benefits:

- The major business benefits of the program are to improve reliability, enhance our ability to respond to cyber threats and protect against any possible reputational damage
- Delivery Efficiency - This sanction will deliver greater overall value for the investment. It will establish streamlined, company-wide governance to drive agile cyber decision-making, visibility, and accountability. It will create lean (“high speed, low drag”) mechanism to expedite cyber program response and delivery. Further specific investment benefits are listed in Section 4.6 Appendix 1

3.5 Business and Customer Issues

Delivering an integrated implementation of the required cyber security solutions for National Grid is complex and will require substantial coordination from multiple partners and business stakeholders. This will require representation from all US business areas.

3.6 Alternatives

Alternative 1: Defer the program – Not Recommended: This option does not deliver the business benefits to the most critical areas including Enterprise and Critical National Infrastructure (CNI) environments in the planned timescales and therefore makes the delivery ineffective. A cyber-attack could potentially cause a failure of the operational systems and other damages.

Alternative 2: Create Regional Strategic Realignment Program – Not Recommended: This option does not fit with the company’s objectives of delivering investments efficiently. It will cost more due to duplication of efforts.

Alternative 3: Sanction individual Cyber Security investments – Not Recommended: This option does not fit with the National Grid’s objectives of delivering investments efficiently. This option does not provide the required agility to respond to cyber threats.

US Sanction Paper

3.7 Safety, Environmental and Project Planning Issues

N/A

3.8 Execution Risk Appraisal

Number	Detailed Description of Risk / Opportunity	Probability	Impact		Score		Strategy	Pre-Trigger Mitigation Plan	Residual Risk	Post Trigger Mitigation Plan
			Cost	Schedule	Cost	Schedule				
1	There is the potential of additional projects being prioritised and added to the already agreed programme scope, due to the ever changing threat landscape.	4	4	3	16	12	Mitigate	The evaluation of the threat landscape will be an on-going effort and something which is built into the future programmes governance.	Another prioritised project / scope change might impact the projects cost and timescales.	Decision will be sought through the governance and control established through program governance.
2	There is a risk that the implementation may take more time due to non-availability of key stakeholders to make key decisions.	2	2	3	4	6	Mitigate	Ensure "Delegation of Authority" is in place for any period greater than 5 days.	Few key stakeholders may not have delegates or might have similar availability to their delegates like common holiday and/or leave periods.	Any such decision which might impact time, cost or scope for project will need to be highlighted to PMB and decision sought from the members.
3	Personnel Resource Constraints – There is a risk that due to the on-going projects, the required technical resources, plus vendors may not be available to meet the project milestones, which may result in additional funds & time being required to deliver.	3	3	3	9	9	Mitigate	Early identification of required resource, and aggressive recruitment where necessary	Potential Delay: 3 - 6 months due to build, testing and implementation activities being reliant on the authorized resources on network/environments.	Any single points of contact should be identified and additional resources sought in advance.

3.9 Permitting

N/A

3.10 Investment Recovery

3.10.1 Investment Recovery and Regulatory Implications

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



US Sanction Paper

3.10.2 Customer Impact

None

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 +	
					2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	
3683	Culture & Awareness	10%	CapEx	0.000	0.000	2.957	0.477	2.686	0.000	0.000	6.120
			OpEx	0.000	0.080	0.445	0.226	0.153	0.000	0.000	0.905
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	0.080	3.402	0.703	2.839	0.000	0.000	7.024
3683	Enhance the Foundation	10%	CapEx	0.000	0.087	1.750	0.350	0.000	0.000	0.000	2.187
			OpEx	0.000	0.277	0.378	0.000	0.000	0.000	0.000	0.655
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	0.365	2.128	0.350	0.000	0.000	0.000	2.842
3683	OT Cyber Security	10%	CapEx	0.000	0.000	2.999	1.724	0.294	0.170	0.000	5.187
			OpEx	0.000	0.052	0.683	0.826	0.261	0.084	0.000	1.905
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	0.052	3.682	2.550	0.555	0.255	0.000	7.093
3683	Robust Identity and Controls	10%	CapEx	0.000	0.000	1.195	2.075	3.100	0.032	0.000	6.402
			OpEx	0.000	0.000	0.413	0.058	0.715	0.000	0.000	1.187
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	0.000	1.608	2.133	3.816	0.032	0.000	7.589
3683	Secure Endpoints	10%	CapEx	0.000	0.043	1.180	0.350	3.493	0.816	0.024	5.905
			OpEx	0.000	0.011	0.573	0.329	0.234	0.000	0.000	1.147
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	0.054	1.753	0.679	3.726	0.816	0.024	7.052
3683	Security Operations & Monitoring	10%	CapEx	0.000	0.000	0.878	6.725	5.338	0.273	0.000	13.213
			OpEx	0.000	0.015	0.289	0.365	0.190	0.000	0.000	0.859
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	0.015	1.167	7.090	5.528	0.273	0.000	14.072
3683	Threat Resistant Networks	10%	CapEx	0.000	0.000	0.987	7.180	2.584	0.032	0.000	10.783
			OpEx	0.000	0.117	0.719	2.194	0.718	0.000	0.000	3.747
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	0.117	1.705	9.375	3.301	0.032	0.000	14.530
Total Project Sanction			CapEx	0.000	0.130	11.945	18.881	17.495	1.322	0.024	49.798
			OpEx	0.000	0.552	3.500	3.999	2.270	0.084	0.000	10.405
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	0.682	15.445	22.880	19.765	1.407	0.024	60.202



US Sanction Paper

3.11.2 Project Budget Summary Table

Project Costs per Business Plan

\$M	Prior Yrs	Current Planning Horizon							Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
		2017/18	2018/19	2019/20	2020/21	2021/22	2022/23		
CapEx	0.000	5.670	0.000	0.000	0.000	0.000	0.000	0.000	5.670
OpEx	0.000	0.682	0.000	0.000	0.000	0.000	0.000	0.000	0.682
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	6.352	0.000	0.000	0.000	0.000	0.000	0.000	6.352

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs	Current Planning Horizon							Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
		2017/18	2018/19	2019/20	2020/21	2021/22	2022/23		
CapEx	0.000	5.540	(11.945)	(18.881)	(17.495)	(1.322)	(0.024)	(44.128)	
OpEx	0.000	0.130	(3.500)	(3.999)	(2.270)	(0.084)	0.000	(9.723)	
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Total Cost in Bus. Plan	0.000	5.670	(15.445)	(22.880)	(19.765)	(1.407)	(0.024)	(53.850)	

3.11.3 Cost Assumptions

- Sourcing Strategy: National Grid's existing supplier framework(s) will be used to establish firm costs with engagement from commercial and procurement teams within the US. Project team will work with the procurement team to negotiate a fixed price contract with suppliers. Each initiative will be driven by the milestones of the overall project plan
- The financial allocations rationale for each investment paper can vary depending on the deliverable/investment
- RTB Treatment for individual projects will be agreed with Finance, Digital Risk and Security and IS Service Delivery
- The Cyber Security Program closure is planned to be in June 2021. A 3 month tolerance is assumed for closure activities due to any unforeseen changes

3.11.4 Net Present Value / Cost Benefit Analysis

N/A

3.11.4.1 NPV Summary Table

N/A

US Sanction Paper

3.11.4.2 NPV Assumptions and Calculations

N/A

3.11.5 Additional Impacts

None identified

3.12 Statements of Support

3.12.1 Supporters

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

Role	Individual
Business Representative/ Relationship Manager	Mukund Ravipaty
Dir. IT Business Relations, US Corp IS Shared Services	Jeff Dailey
Program Delivery Director	Tammy Cooper
IS Finance Management	James P. Reynolds
IS Regulatory	Dan DeMauro
DR&S	Elaine Wilson
IS Service Delivery	Mark Mirizio
IS Enterprise Architecture	Joe Clinchot

3.12.2 Reviewers

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

Function	Individual	Area
Regulatory	Harvey, Maria	IS
Jurisdictional Delegate(s)	Anand, Sonny	Electric - NE
	Harbaugh, Mark	Electric - NY
	Hill, Terron	FERC
	Wolf, Don	Gas - NY
	Currie, John	Gas - NE
Procurement	DeRosa, Steve	All

US Sanction Paper

4 Appendices

4.1 Sanction Request Breakdown by Project

The following attached document contains the cost overview of the Investments aligned as per approved National Grid cyber strategy and grouped per Themes for Year 1, 2 and 3.



US Appendix
v1.0.xlsx

US Sanction Paper

4.2 Benefitting Operating Companies

This project will benefit all the companies listed below

Operating Company Name	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
Key Span 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
Key Span 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
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

4.3 IS Ongoing Operational Costs (Run the Business (RTB) cost)

This project will increase IS ongoing operations support costs. These are also known as Run the Business (RTB) costs. Estimated RTB Impact for the Cyber Security Program 2 is summarized in the following table.

RTB Impact will be firmed through the contract sign off between National Grid and selected cyber suppliers during the Start-Up phase, as project will need to follow the governance and control mandated by National Grid IS Commercial Operations.

Summary Analysis of RTB Costs							
All figures in \$ millions	Yr. 1 17/18	Yr. 2 18/19	Yr. 3 19/20	Yr. 4 20/21	Yr. 5 21/22	Yr. 6+	Total
Forecast of RTB Impact							
RTB if Status Quo Continues	-	-	-	-	-	-	-
RTB if Project is Implemented	-	0.917	2.918	5.049	6.640	6.841	22.365
Net change in RTB	-	0.917	2.918	5.049	6.640	6.841	22.365
RTB Variance Analysis (if Project is Implemented)							
Net Δ RTB funded by Plan(s)	-	-	-	-	-	-	-
Variance to Plan	-	0.917	2.918	5.049	6.640	6.841	22.365
Total RTB Costs - by Cost Type (if Project is Implemented)							
App.Sup. - SDC 1	-	-	-	-	-	-	-
App.Sup. - SDC 2	-	-	-	-	-	-	-
App.Sup. - other	-	-	-	-	-	-	-
SW maintenance	-	-	-	-	-	-	-
SaaS	-	-	-	-	-	-	-
HW support	-	-	-	-	-	-	-
Other: IS	-	0.917	2.918	5.049	6.640	6.841	22.365
All IS-related RTB (sub-Total)	-	0.917	2.918	5.049	6.640	6.841	22.365
Business Support (sub-Total)	-	-	-	-	-	-	-
Total RTB Costs	-	0.917	2.918	5.049	6.640	6.841	22.365

4.4 NPV Summary

N/A

4.5 Customer Outreach Plan

N/A

US Sanction Paper

Appendix 4.6.4 – The following table lists the 7 prioritized projects, which were sanctioned under INVP 4975 – US Cyber Security 2 Foundations – Priority 7, ahead of sanction of this program paper. The costs of these projects have not been included in this program paper.

Initiative Name	Deliverable Summary
Perimeter enhancements	Implement preventative technologies to prevent and/or protect with cyber-attacks at the perimeter.
Website Security Protection	Implement an appropriate web application protection mechanism and mandate that all National Grid websites are protected by that service, integrate with CSO tooling and processes such as logging and analysis systems, thereby limiting exposure of insecure web applications, and protect against attack.
Internal Public Key Infrastructure (PKI)	Implement and deploy an internal certificate authority. It will establish an internal, scalable, and cost effective PKI solution, allowing more control over certificates being issued, making it more difficult for malicious actors to impersonate genuine personas.
Multi factor Authentication (MFA)	This initiative will deliver a secure, cloud-based, authentication solution to verify user identity via a variety of mechanisms, including push mobile, SMS, security tokens, U2F, etc.
Gateway Upgrades	Implement improvement measures across endpoint, network and gateway to provide additional capability and visibility to enable visualization of the endpoint, network and application traffic, application control and filtering, allowing for more granular security policies at the user and group levels to identify malicious application layer traffic, identify an attacker / attack type and enable the implementation of appropriate response.
Identity and Access Management (IAM) Unified Platform	Implement a unified IAM platform that provides centralized access management (no single authoritative identity repository for employees/non employees) in a complex environment.
CNI Intrusion Detection System (IDS) Refresh	This initiative will deliver the Intrusion Detection System (IDS) refresh for UK CNI networks and enable CSO to monitor and detect malicious activity and attempted intrusions, enabling timely and appropriate response.

In addition, INVP 3683B Cloud Access Security Broker_US was sanctioned earlier in June 2017 and it's project costs have not been included in this program paper.



Resanction Request

Title:	US Enterprise Network Security	Sanction Paper #:	
Project #:	INVP 3614D1	Sanction Type:	Resanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	November 11, 2017
Author / NG Representative:	Ajay Kumar / Jacquie Morrison	Sponsor:	Chris Murphy, Interim Chief Information Security Officer
Utility Service:	IS	Project Manager:	Vicky Morgan

1 Executive Summary

This paper requests the resanction of INVP 3614D1 US Enterprise Network Security project in the amount \$12.629M with a tolerance of +/- 10% for the purposes of *Full implementation*.

This sanction amount is \$12.629M broken down into:
\$10.495M Capex
\$2.135M Opex
\$0.000M Removal

Note the originally requested sanction amount of \$6.806M

2 Resanction Details

2.1 Project Summary

The US Enterprise Network Security (ENS) project will deliver Cyber Security improvements to protect National Grid’s enterprise Information Technology (IT) Network which supports its business applications. It will deliver the capability to identify and detect security threats and determine the nature of incidents as, or potentially before, they occur, allowing improvement in response to detected threats and the production of internal intelligence.

The project’s scope has increased during the Development and Implementation (D&I) phase. A number of change requests accepted by the project led to rework of the deliverables and therefore increased the cost and time of the project. During Development phase, DR&S team identified new security risks to the National Grid’s IT network. As a result of this, a decision was made to increase the objective and scope of the ongoing Enterprise Network Security (ENS) project to include additional services/solutions.



Resanction Request

2.2 Summary of Projects

Project Number	Project Type (Elect only)	Project Title	Estimate Amount (\$M)
3614D1	-	US Enterprise Network Security	12.629
Total			12.629

2.3 Prior Sanctioning History

Previously approved sanctions are attached and listed below (Newest to Oldest).

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Paper Title	Sanction Type	Paper Reference Number	Tolerance
April 2015	Cyber Security Portfolio Board	\$6.806M	Actual Cost	US Enterprise Network Security	D&I (ENS)	3614D1	+/-10%
October 2014	Cyber Security Portfolio Board	\$0.619M	Actual Cost	US Enterprise Network Security	R&D (ENS)	3614D1	+/- 10%
March 2014	Cyber Security Portfolio Board	\$0.077M	Actual Cost	US Enterprise Network Security	Start Up (NAC & NRC)	3614D1, 3614D2	+/- 10%

Over / Under Expenditure Analysis

Summary Analysis (\$M)	Capex	Opex	Removal	Total
Resanction Amount	10.495	2.135	0.000	12.629
Latest Approval	6.766	0.040	0.000	6.806
Change*	3.729	2.095	0.000	5.616

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



Resanction Request

2.4 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 +	
3614D1	US Enterprise Network Security	Est Lvl (e.g. +/- 10%)	CapEx	7.899	2.346	0.250	0.000	0.000	0.000	0.000	10.495
			OpEx	1.110	0.963	0.062	0.000	0.000	0.000	0.000	2.135
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	9.008	3.309	0.312	0.000	0.000	0.000	0.000	12.629
Total Project Sanction			CapEx	7.899	2.346	0.250	0.000	0.000	0.000	0.000	10.495
			OpEx	1.110	0.963	0.062	0.000	0.000	0.000	0.000	2.135
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	9.008	3.309	0.312	0.000	0.000	0.000	0.000	12.629

2.5 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 FY18 - 23	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> N/A	N/A

2.6 Drivers

This enabling initiative will help business units to mitigate various security risks. The US Enterprise Network Security project will deliver the new Security Services Network (SSN) to provide a “single pane of glass” view thereby providing effective inputs to identify the most pertinent security risks for the whole National Grid’s estate.

The key driver is contribution towards the mitigation of high priority security risk which states that there is a risk of malicious attack and malware spreading on the network by an internal or external threat actor who may be able to conduct a denial of service attack, may cause system to malfunction or may be able to cause system outage leading to a loss of control of the electricity systems and a potential blackout. Additional impacts may include unavailability of data causing legal concerns, reputational harm and/or financial loss to partner and/or to customer.

The project will deliver new cyber security capabilities to prevent, detect and react to existing security threats. It will also enable National Grid to more accurately determine its active risk levels.



Resanction Request

This investment is a step within the wider proposed cyber security program which is aimed to deliver a prioritised set of foundational, tactical and strategic actions that National Grid should take to address Cyber Security.

It should be noted that additional investments will continue to be required going forward to ensure cyber security risks match business risk appetites and effectively mitigates the evolving security threat landscape based on the strategic direction from National Grid’s Digital Risk and Security team.

2.6.1 Detailed Analysis Table

The following table indicates the major key variations that account for the difference between the original sanction amount and the requested resanction amount.

Detail Analysis	Over/Under Expenditure?	Amount (\$M)
Additional/changed scope from Business	<input checked="" type="checkbox"/> Over <input type="checkbox"/> Under	\$3.729M
Dependent on other activities/ projects	<input checked="" type="checkbox"/> Over <input type="checkbox"/> Under	\$2.095M

2.6.2 Explanation of Key Variations

This Resanction is requesting a change in cost, scope and time. The project undertook a redesign of Secure Services Networks (SSN) in order to completely secure the communication between National Grid enterprise network & eco-system partner networks. The SSN scope was increased to include delivery of SSN IT services and interfaces to collate data from eco-system partner’s data center.

Increasing the project scope allowed Digital Risk and Security to manage the spending in a coordinated and strategic way and give greater overall value for the investment.

The following table summarizes the changes in scope within the project:

Capability / Work stream	Scope Changes
Network Access Control (NAC)	<p>Additional/changed scope from Business</p> <ul style="list-style-type: none"> • 5 version changes for solution i.e. CISCO ISE (1.1, 1.2, 1.3, 2.0, 2.1), AnyConnect (to match ISE version. Now 4.3) led to multiple iterations of packaging for AnyConnect software with repeated test cases • Confirmation of 6 sites (Warwick, Solihull, Wokingham, Res Woods, West Roxbury, North Andover) for the roll-out

Resanction Request

	<p>Dependent on other activities/ projects</p> <ul style="list-style-type: none"> • 32 switches in the US required iOS upgrades in order to support NAC on the wired IT network (to support new versions of solution)
Malware Protection System (MPS) and Secure Sockets Layer (SSL) Visibility Appliance (SVA)	<p>Additional/changed scope from Business</p> <ul style="list-style-type: none"> • New Scope - Central Authentication Service (CAS) as current proxy service came to end of life • Addition of Bluecoat inline requirement • New scope of Malware Analysis Appliance (MAA) <p>Dependent on other activities/ projects</p> <ul style="list-style-type: none"> • Redesign due to VSTIG bandwidth upgrades i.e. Bluecoat Forensic Data Capture solution component of project had to increase the capacity required for overall solution • Additional support by Verizon was included to support the revised scope
Network Risk and Compliance (NRC)	<p>Additional/changed scope from Business</p> <ul style="list-style-type: none"> • Configuration of data feeds moved from Business As Usual (BAU) to project activity • Additional end user training was included <p>Dependent on other activities/ projects</p> <ul style="list-style-type: none"> • Number of devices that NRC solution i.e. Skybox is collecting from changes on a month by month basis due to changes in the National Grid's Information Technology (IT) environments leading to extra configuration work within the project.
Net flow Security	<p>Additional/changed scope from Business</p> <ul style="list-style-type: none"> • Configuration of data feeds moved from Business As Usual (BAU) to project activity • Feasibility & Analysis study to get DXC Technology to assess options for inclusions of additional component i.e. CISCO Stealth-watch in to the DXC Technology (previously CSC) data centres <p>Dependent on other activities/ projects</p> <ul style="list-style-type: none"> • Data flow rates increased due to network changes since scope baseline e.g. Verizon Secure Telecommunications Internet Gateway (vSTIG) upgrades. This led to increased licenses and additional storage components required for the project.
SSN + IT Services + migration of other security tools	<p>Additional/changed scope from Business</p> <ul style="list-style-type: none"> • New Scope – creation of the network and IT services within it. Plus the changes below since originally scoped • De-scoped 4 DXC Technology (previously CSC) and 4 legacy data centres from the designs leading to rework for the design deliverables • Out of band management to be done in-house



Resanction Request

	<ul style="list-style-type: none"> • Inclusion of Northport CNI including bandwidth upgrade • New scope - Northborough bandwidth upgrade • New scope - Melville bandwidth upgrade <p>Dependent on other activities/ projects</p> <ul style="list-style-type: none"> • Alignment to CNI solutions which were outside the project's control and were evolving because of other major CNI program(s) • Downstate Gas CNI moved from Metrotech to Melville
<p>Cyber Security Support Model</p>	<p>Additional/changed scope from Business</p> <ul style="list-style-type: none"> • New Scope- Brand new support model for all Cyber Security tools/solutions, in addition to the changes above since originally baseline scope • Enduring Service Integration function was to reside with solution delivery partner i.e. Wipro Technologies but now Wipro will facilitate this support for the short term while project is working with National Grid's CNI team(s) for the enduring support as an in-source function. <p>Dependent on other activities/ projects</p> <ul style="list-style-type: none"> • Support model was originally meant for ENS/CNI Network Security (CNS) tools but revised project scope now includes all legacy cyber applications • When the SSN & Associated IT Services were brought in-scope the complexity and scale of the support model was increased further

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

N/A

2.8 Key Milestones

Milestone	Target Date: (Month/Year)
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Resanction Request

Milestone	Target Date: (Month/Year)
Start Up	Mar 2014
Original Requirements and Design (R&D) Sanction	Apr 2014
Stage Gate C – Requirements to Design (R&D)	Jul 2014
Multiple Projects Merger to INVP 3614D1 and R&D sanction 3614D1 - Network Access Control 3614D2 – Network Risk and Compliance Other 3614D* investments merged into 3614D1.	Aug 2014
Requirements and Design Complete	Mar 2015
Development & Implementation (D&I) sanction	Apr 2015
Begin Development and Implementation	May 2015
Full Resanction	Jul 2017
Network Access Control - Go Live	Jul 2017
Security Information and Event Management – Migration to SSN	Aug 2017
Security Services Network IT Services – Go Live	Sep 2017
Penetration Testing Complete	Oct 2017
Forensic Packet Capture (FPC), Secure Sockets Layer (SSL) Visibility Appliance (SVA) and Malware Protection System (MPS) - Go Live	Oct 2017
Support Model Go Live	Dec 2017
Move to Production / Last Go Live	Feb 2018
Post Implementation Support End	Mar 2018
Project Complete	Mar 2018
Closure Sanction	Jun 2018

2.9 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review
June 2018	Closure



Resanction Request

3 Statements of Support

3.1 Supporters

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

Role	Individual
Business Representative/ Relationship Manager	Mukund Ravipaty
Head of PDM	Jeff Dailey
Program Delivery Director	Chris Hunt
IS Finance Management	Jean Reynolds
IS Regulatory	Daniel J. DeMauro, Jr.
Digital Risk and Security	Elaine Wilson
Service Delivery	Mark Mirizio
Enterprise Architecture	Joe Clinchot

3.2 Reviewers

Function	Individual	Area
Regulatory	Harvey, Maria	IS
Jurisdictional Delegate(s)	Anand, Sonny	Electric - NE
	Harbaugh, Mark	Electric - NY
	Hill, Terron	FERC
	Currie, John	Gas - NE
	Wolf, Don	Gas - NY
Procurement	DeRosa, Steve	All

4 Decisions



Resanction Request

The US Sanctioning Committee (USSC) at a meeting held on November 11, 2017:

- (a) APPROVE this paper and the investment of \$12.629M and a tolerance of +/-10%.
- (b) APPROVE the run-the-business (RTB) impact of \$2.284M (per annum) for 5 years.
- (c) NOTE that Vicky Morgan is the Project Manager and has the approved financial delegation.

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

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

5 Appendices

5.1.1 Benefiting Operating Companies

Allocations listed below are indicative. Actual allocations will be determined for each individual sub-project. In general, projects associated with the **Unauthorized Access Malware, System Availability and Regulatory/Compliance** areas will benefit all National Grid Companies and be allocated using the “General” allocator.



Resanction Request

Benefiting Operating Companies Table using the General Allocator:

Operating Company Name	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
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

5.1.2 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. The US business has agreed to fund the projects due to their importance

Resanction Request

Summary Analysis of RTB Costs							
All figures in \$ millions	Yr. 1 15/16	Yr. 2 16/17	Yr. 3 17/18	Yr. 4 18/19	Yr. 5 19/20	Yr. 6+	Total
Forecast of RTB Impact							
RTB if Status Quo Continues	-	-	-	-	-	-	-
RTB if Project is Implemented	-	-	0.351	1.972	2.223	6.872	11.419
Net change in RTB	-	-	0.351	1.972	2.223	6.872	11.419
RTB Variance Analysis (if Project is Implemented)							
Net Δ RTB funded by Plan(s)	-	-	-	-	-	-	-
Variance to Plan	-	-	0.351	1.972	2.223	6.872	11.419
Total RTB Costs - by Cost Type (if Project is Implemented)							
App.Sup. - SDC 1	-	-	-	-	-	-	-
App.Sup. - SDC 2	-	-	-	-	-	-	-
App.Sup. - other	-	-	0.050	0.300	0.300	0.924	1.574
SW maintenance	-	-	0.103	0.351	1.118	3.466	5.037
SaaS	-	-	-	-	-	-	-
HW support	-	-	0.111	0.793	0.276	0.850	2.030
Other: IS	-	-	0.088	0.529	0.529	1.631	2.777
All IS-related RTB (sub-Total)	-	-	0.351	1.972	2.223	6.872	11.419
Business Support (sub-Total)	-	-	-	-	-	-	-
Total RTB Costs	-	-	0.351	1.972	2.223	6.872	11.419

5.1.3 Project Description:

The previous sanctioned scoped of ENS project was to complete the Development & Implementation (D&I) activities for implementing the following capabilities within National Grid:

- **Network Risk and Compliance (NRC)** to provide end to end visibility of the network, allowing National Grid to derive actionable intelligence of malicious activity and understand the potential impact of change across a distributed and complex environment, ensuring we can respond to threats and enabling the continued provision of reliable and secure network services.
- **Network Access Control (NAC)** Solution to govern the secure provisioning and management of access to network resources. In essence, whether a device/user is allowed to connect to the network, which area of the network, and what services the device/user can access.
- **Net flow Security (NFS)** to provide National Grid authorised employees' access to a managed platform where various security reports can be specified, generated and accessed for security intelligence and pattern analysis.

Resanction Request

- **Forensic Packet Capture (FPC)** to provide access to National Grid authorized users to a managed platform where packets (formatted unit of data) crossing a pre-defined network boundary are captured and stored for future analysis.
- **Malware Protection System (MPS)** to stop advanced targeted attacks across the Web and email threat vectors and malware resident on file shares. Additionally, **Secure Sockets Layer (SSL) Visibility Appliance** will deliver the following requirements:
 - Provide a decryption of SSL data streams to enable other security appliances to have visibility of the unencrypted SSL traffic traversing the network.
 - Provide a policy control point to determine what types of SSL traffic are allowed across the network, which sessions are decrypted and which are passed through untouched.
- **Secure Connection** solution to provide National Grid an ability to permit on-demand, authentication restricted, and IP (Internet Protocol) address specific communications between FLAN (Forensic Local Area Network) and BLAN (Business Local Area Network) end points.
- **Security Services Network (SSN)** to enable a dedicated network to support Critical National Infrastructure (CNI) information.

The project's scope of SSN capability has increased from delivering the simple network segmentation, to delivering a complex security network with multiple secure network zones. During the design reviews the scope further increased to deliver SSN IT services. These increased scope items were not accounted in the original investment sanction request for D&I phase.

The investment will successfully deliver the scoped capabilities. This will be completed by the project team comprising Verizon, Wipro Technologies, DXC Technology, and National Grid resources.

Project has completed the Development phase which included the procurement of hardware, software and licenses required to start the implementation phase.

Implementation phase for all the ENS security solutions viz. Network Risk and Compliance (NRC), Network Access Control(NAC), Net flow Security (NFS), Forensic Packet Capture (FPC), Malware Protection System (MPS) and Malware Analysis Appliance (MAA), Secure Visibility Appliance (SVA) and Security Services Network (SSN) is being pursued with the network partner i.e. Verizon and other eco-system partners.

Whist D&I for SSN is being undertaken, the following activities are being progressed by the project:

- Configuration of the various security toolsets to automate the data collection from various assets including network devices

Resanction Request

- Implementation of the interfaces with applications such as Foundstone to augment the data
- Model validation which leads on to tuning the solution components and providing future reference artefacts such as Data dictionaries, data management etc.
- Implementation of Net flow solution i.e. CISCO Lancope and Network Risk and Compliance (NRC) solution i.e. Skybox in a temporary location in VSTIG (Verizon Telecommunications Secure Internet Gateway)
- Various technology solution components are being physically assembled at the National Grid US Data Centre(s)



US Sanction Paper

Title:	US CNI - Network Security and Security Information & Event Management	Sanction Paper #:	
Project #:	3614B7	Sanction Type:	Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	November 11, 2017
Author:	Ajay Kumar / Jacquie Morrison	Sponsor:	Chris Murphy, Interim Chief Information Security Officer
Utility Service:	IS	Project Manager:	Vicky Morgan

1 Executive Summary

1.1 Sanctioning Summary

This paper requests sanction of INVP 3614B7 US Critical National infrastructure (CNI) Network Security and Security Information & Event Management (SIEM) project in the amount \$7.878M with a tolerance of +/- 10% for the purposes of completing Development and Implementation phase.

This sanction amount is \$7.842M broken down into:

- \$6.379M Capex*
- \$1.463M Opex*
- \$0.000M Removal*

Note: This paper requests funds for the US portion of the projects only.

1.2 Project Summary

This investment is required to enhance National Grid’s Cyber Security resilience to help maintain safe and reliable operations of the US CNI gas and electricity networks associated with cyber assets

This project is a part of the Cyber Security improvement program that is focused on improvement of the wider network security architecture, designed to mitigate the identified network security risks. This project is within the Resilience Category under the US CNI Security theme within the sanctioned investment of INVP3614 US Cyber Security Program.

This investment will complete the Development and Implementation phase and deliver Security Information and Event Management capabilities to US CNI environments that will enhance the detection, investigation and remediation of Cyber Security threats impacting US CNI environments. It will also deliver additional network security



US Sanction Paper

capabilities to ‘Protect’ US CNI environments from various security risks and help to ‘Identify’ and ‘Detect’ any potential threats in the current environments.

This investment enhances existing cyber security systems by providing the capability for holistic analysis of the National Grid US CNI networks and infrastructure for the US Cyber Security Operations Center and associated teams, supporting direction of resources to tackle the most pertinent areas of risk.

1.3 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
3614B7	-	CNS and CNI SIEM	7.842
Total			7.842

1.4 Associated Projects

Project Number	Project Title	Estimate Amount (\$M)
3614D1	US Enterprise Network Security	12.629
Total		12.629

1.5 Prior Sanctioning History

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Paper Title	Sanction Type	Tolerance
June 2016	Cyber Security Portfolio Board	\$1.966M	\$2.576M	INVP3614E4 IP-D_US CNI Security Information and Event Management v2.0	Partial	+10%
May 2014	Cyber Security Portfolio Board	\$0.239M	\$0.721M	INVP_3614B7_US_CNI_Network_Security-IPR-v0.1_27_May_2014_R-D_Sanction_v1	Partial	+25%



US Sanction Paper

1.6 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review
June 2018	Investment Closure

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 ensure compliance to: - National Grid IS security policies and standards. - National Grid’s cyber security strategy.

1.8 Asset Management Risk Score

Asset Management Risk Score: 47

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: 28

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 (\$)
IS Optimized Investment Plan FY18-21	<input type="radio"/> Yes <input checked="" type="radio"/> No	<input checked="" type="radio"/> Over <input type="radio"/> Under <input type="radio"/> NA	\$2.867M

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

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

1.13 Current Planning Horizon

\$M	Prior Yrs	Current Planning Horizon						Total
		Yr. 1 2017/18	Yr. 2 2018/19	Yr. 3 2019/20	Yr. 4 2020/21	Yr. 5 2021/22	Yr. 6 + 2022/23	
CapEx	4.073	1.938	0.368	0.000	0.000	0.000	0.000	6.379
OpEx	0.902	0.446	0.115	0.000	0.000	0.000	0.000	1.463
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	4.975	2.384	0.483	0.000	0.000	0.000	0.000	7.842

1.14 Key Milestones

Milestone	Target Date: (Month/Year)
Start Up	Jan 2014
Partial Sanction – Requirements and Design	May 2014
Begin Requirements and Design	Jun 2014
Requirements Complete	Jul 2014
CNI Network Security Design Complete	Jun 2015
CNI SIEM Design Complete	Feb 2016
INVP 3614 US Cyber Security Program Re-sanction	Nov 2016
CNI Network Security and CNI SIEM - Full Sanction	Jul 2017
Melville Rack and Stack	Mar 2017
Northborough Rack and Stack – Phase 1	May 2017
Henry Clay Boulevard (HCB) Rack and Stack Phase 1	May 2017
Henry Clay Boulevard Rack and Stack – Phase 2	Jun 2017

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Milestone	Target Date: (Month/Year)
Northborough Rack and Stack – Phase 2	Jun 2017
Long Island Generation Rack and Stack	Jun 2017
HCB/Northborough OMS Complete	Oct 2017
HCB/Northborough EMS Complete	Nov 2017
Long Island Generation Complete	Dec 2017
HCB/Melville/Northborough Complete	Jan 2018
Move to Production / Last Go Live	Mar 2018
Project Complete	Mar 2018
Closure Sanction	June 2018

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)

1	N/A
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US Sanction Paper

1.17 Climate Change

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

1.18 List References

1	INVP 3614 – US Cyber Security Program Resanction v8.0
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US Sanction Paper

2 Decisions

The US Sanctioning Committee (USSC) at a meeting held on November 11, 2017:

- (a) APPROVE this paper and the investment of \$7.842M and a tolerance of +/-10%.
- (b) APPROVE the RTB impact of \$0.649M (per annum) for 5 years.
- (c) NOTE that Vicky Morgan is the Project Manager and has the approved financial delegation

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

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

US Sanction Paper

3 Sanction Paper Detail

Title:	US CNI Network Security and Security Information and Event Management (SIEM)	Sanction Paper #:	
Project #:	INVP 3614B7	Sanction Type:	Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	November 11, 2017
Author:	Ajay Kumar/Jacquie Morrison	Sponsor:	Chris Murphy, Interim Chief Information Security Officer
Utility Service:	IS	Project Manager:	Vicky Morgan

3.1 *Background*

Currently in National Grid, security operations are performed from various locations using multiple devices and toolsets. This approach is fragmented and tactical in nature. There is a need for a secure centralized tool to monitor the US Critical National Infrastructure (CNI) networks and their security services.

US Critical National Infrastructure (CNI) Network Security and Security Information and Event Management (SIEM) solution is required for the consumption, analysis, interpretation, and management of security information and event data.

The merged US CNI project will deliver the new “CNI style” Security Services Network for individual US CNI environments and integrate various implementations of the CNI Network Security and CNI SIEM capabilities to provide a “single pane of glass” view thereby providing effective inputs to identify the most pertinent security risks for the whole National Grid’s estate.

The project will deliver new cyber security capabilities to prevent, detect and react to existing security threats. It will also enable National Grid to more accurately determine its active risk levels.

This investment is a step within the wider proposed cyber security program which is aimed to deliver a prioritised set of foundational, tactical and strategic actions that National Grid should take to address Cyber Security.

It should be noted that additional investments will continue to be required going forward to ensure cyber security risks match business risk appetites and effectively mitigates the evolving security threat landscape based on the strategic direction from National Grid’s Digital Risk and Security team.

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3.2 Drivers

The key driver is contribution towards the mitigation of high priority security risk which includes a risk of malicious attack and malware spreading on the network by an internal or external threat actor who may be able to conduct a denial of service attack, may cause system to malfunction or may be able to cause system outage leading to a loss of control of the electricity systems. Additional impacts may include unavailability of data causing legal concerns, reputational harm and/or financial loss to partner and/or to customer.

3.3 Project Description

The revised scope of INVP 3614B7 – US CNI Network Security project is to deliver the following capabilities:

- CNI Network Audit Toolset –Delivery of a real time visualisation capability of the CNI Network (i.e. ability to create Network Map) includes all clients, servers and network devices. It should include the network flow as well. A process will be set up to do this activity periodically. It will provide an end to end visibility of the CNI network.
- CNI Net flow Analysis – It will deliver the capability for logging and monitoring of the network flow traffic. The ability to analyse flow traffic will be provided by the net flow tool and will include the end points traffic.
- Vulnerability Scan and Assessment – It will deliver the capability to conduct Active or Passive Vulnerability Assessment for CNI Networks.

The following activities will be performed by the project team in the D&I Phase:

- Engage and work with consultants, from relevant suppliers, to build, test and implement the solution as per the approved design.
- Ensure that the solution meets the technical & operational readiness requirements.
- Ensure that the suppliers perform the solution implementation as per plan & schedule.
- Prepare the Investment Closure Report and present it to the Cyber Security Portfolio Board.

3.4 Benefits Summary

The project will deliver the following non-financial benefits:

- **Security Risk mitigation:** A CNI Network Security project will deliver the capabilities to mitigate the security risk of unauthorised access to CNI systems. It will also mitigate the security risk of asset failure arising because of various

US Sanction Paper

reasons. The major business benefits of the projects are Reliability (High) and Responsiveness (Immediate) and Reputational (Protected).

- **Enhanced Capabilities:**
 - An automated network audit capability will assist the CNI teams to keep the CNI estate evergreen by providing the capability of automated network audits. This will lead to proactive management of network devices through the replacement or enhancement of the weak spots of the network.
 - The capability for logging and monitoring of the network flow traffic will provide the ability to analyse flow traffic. The net flow tool will also include the end points traffic information.
 - A capability to conduct active or passive vulnerability assessment to ensure alignment with desired architecture and identify necessary changes required to prevent a security attack, allowing improved detection and reaction to threat and compromise.

A summary of the key benefits of CNI SIEM solution are listed as follows:

- **Early detection of security incidents** – The SIEM technology provides National Grid with a greater likelihood of intercepting, tracing the spread of threats and addressing security events in near real time, before they can significantly impact the enterprise. The SIEM solution ensures consistent and comprehensive event-log management across National Grid network.
- **Reduced risk of non-compliance** – The SIEM technology provide detailed reports that can demonstrate compliance or due diligence which assist National Grid during an audit or investigation.
- **Broader organizational support for information security** - An effective SIEM system will involve a broad base of the National Grid stakeholders to evaluate events and take actions to address incidents flagged by the SIEM system.
- **Watch the Watchers** - Provides National Grid with an effective mechanism to ensure partners and responsible people are managing respective security events.
- **Enhanced Capabilities** - Enhanced capability to log, analyze and detect a wide variety of potential impacting events and determine risk helps in protection of the assets which support the CNI operations thereby enhancing resilience and recovery capabilities.

3.5 Business and Customer Issues

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

3.6 Alternatives

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Alternative 1: Defer Sanction - Defer CNI SIEM and CNI Network Security investments – Not Recommended The delivered outputs do not align to the ‘Protection’ capability for Critical National Infrastructure (CNI) environments as the CNI network security toolsets will not be delivered.

This option also provides limited mitigation of new security risks. It would result in a higher overall cost in the long term as new projects would have to be implemented to respond to the US CNI security risks.

3.7 Safety, Environmental and Project Planning Issues

N/A.



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				
R-01	There is a risk around UK & US CNI resources availability to deliver the project as per the plan	1	3	3	3	3	Mitigate	a) PM to share resource plan and b) implementation plans with Shakeel Bashir - UK CNI Mgr Steve Chantry - UK Service Transition and US CNI Network Manager Jim Novak	There is a lack of understanding on implementation detail and support required. This would need more engagement time with CNI teams.	Include a risk margin for additional resource time and project cost impact.
R-02	There is a risk that the sizing of the SIEM tool and impact to the network bandwidth may be calculated incorrectly due to being based on best estimates	1	3	3	3	3	Mitigate	PM escalated to senior supplier & sponsor 04/12/15 a) Asset List confirmed, however the log attributes including the events per second and frequency of log generation will help assess the N/W impact.	Continuous monitoring of the bandwidth utilisation is required.	Include a risk margin for upgrade the network resulting increased costs and project delays, or a redesign of the solution
R-03	Insufficient preparation undertaken to address the complexity of UAT.	2	3	3	6	6	Mitigate	a) UAT scheduling needs to include set up time and time for testers to familiarise. b) Cover the whole range of data flows and use automated feeds where possible. Test and check stubs feeds before using in test environment	Testing scenarios are pending leading to additional time and effort.	Include a risk margin for collaborative testing with CNI teams, DR&S teams and project team.
R-04	Changes in Design might delay Implementation	1	3	2	3	2	Mitigate	Liase with CNI Network partner to ensure timely delivery.	Further time and effort might be required to revise the implementation plan.	Include a risk margin for additional resource time and project cost impact.
R-05	Bandwidth requirements in Melville and Northport on Corporate network may be impacted by CNS	3	2	3	6	9	Mitigate	Carry out Impact assessment with Verizon to determine the actual bandwidth impact.	Further time and effort might be required to upgrade the bandwidth.	Include the risk margin and complete any bandwidth update, if necessary.
R-06	The CNI Bandwidth is not sufficient to support the solution design.	3	2	3	6	9	Mitigate	Ensure additional tuning and optimisation activities are carried out by engaging the right supplier(s). EX: May engage CISCO to optimize the CISCO products and reduce network traffic. Similar engagement with Verizon to perform tuning activities for other security solutions may also be reviewed.	Further time and effort might be required to upgrade the bandwidth.	Include the risk margin and complete any bandwidth update, if necessary.
R-07	The CNI Change Management process in the US has a long lead time.	3	2	3	6	9	Mitigate	Engage stakeholders/approvers early and often. Present all required documentation as soon as available.	Further time extension might be required in order to agree the change.	Include a risk margin for additional resource time and project cost impact.
R-08	A prioritized change/existing CNI project and/or a high priority production incident may impact the CNI Support team resource availability and dictate the timescales of implementation.	1	3	2	3	2	Mitigate	Ensure early sign-offs from the relevant CNI managers to secure resources by sharing the implementation plan in advance with relevant CNI areas. Engage Change Teams in US to stay within planned timelines.	Further time extension might be required in order to agree the change window.	Include a risk margin for additional resource time and project cost impact.
R-09	Differing granularity levels of log sources may give rise to variable data volumes that exceed the capacity of the monitoring platform or are too low leading to correlation degradation.	3	2	3	6	9	Mitigate	Ensure individual devices and data network are threshold monitored with the mean to enact remedial adjustment of log sources and data volumes.	Additional storage might be required for effective working of the solution.	Include a risk margin for additional resource time and project cost impact.
R-10	Data network devices do not have the functional capability required by upstream monitoring or correlation platforms. Standard event logs are deficient.	3	2	3	6	9	Transfer	Ensure an intermediate platform can offer normalization, custom or proxy connection to the data network device. EX: M2M or API	The old network devices which have not yet reached their end of life might not be replaced.	Ensure that IS infrastructure is aware of the update required for the network devices.



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R-11	Implementation may take more time than planned due to risk aversion regarding control of energy supply. EX: periods of high energy demand (winter storms, summer), maintenance of energy asset (OHL, Gas, "PIG run"), NRO	1	3	2	3	2	Mitigate	Engage with Operational Teams including Control Rooms to forward plan to avoid scheduled work, predicted periods of high demand and HSOA instances.	Contingency Implementation window might be required to be agreed further.	Include a risk margin for additional resource time and project cost impact.
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3.9 Permitting

N/A.

3.10 Investment Recovery

3.10.1 Investment Recovery and Regulatory Implications

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

3.10.2 Customer Impact

N/A.

3.10.3 CIAC / Reimbursement

N/A.



US Sanction Paper

3.11 Financial Impact to National Grid

3.11.1 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend (\$M)	Prior Yrs	Current Planning Horizon						Total
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
3614B7	CNS and CNI SIEM	0.1	CapEx	4.073	1.938	0.368	0.000	0.000	0.000	0.000	6.379
			OpEx	0.902	0.446	0.115	0.000	0.000	0.000	0.000	1.463
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	4.975	2.384	0.483	0.000	0.000	0.000	0.000	7.842
Total Project Sanction			CapEx	4.073	1.938	0.368	0.000	0.000	0.000	0.000	6.379
			OpEx	0.902	0.446	0.115	0.000	0.000	0.000	0.000	1.463
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	4.975	2.384	0.483	0.000	0.000	0.000	0.000	7.842

3.11.2 Project Budget Summary Table

Project Costs Per Business Plan

	Prior Yrs (Actual)	Current Planning Horizon						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
\$M		2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	
CapEx	4.073	0.000	0.000	0.000	0.000	0.000	0.000	4.073
OpEx	0.902	0.000	0.000	0.000	0.000	0.000	0.000	0.902
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	4.975	0.000	0.000	0.000	0.000	0.000	0.000	4.975

Variance (Business Plan-Project Estimate)

	Prior Yrs (Actual)	Current Planning Horizon						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
\$M		2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	
CapEx	0.000	(1.938)	(0.368)	0.000	0.000	0.000	0.000	(2.306)
OpEx	0.000	(0.446)	(0.115)	0.000	0.000	0.000	0.000	(0.561)
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	(2.384)	(0.483)	0.000	0.000	0.000	0.000	(2.867)

3.11.3 Cost Assumptions

- The Project costs are being funded by the INVP 3614 US Cyber Security Program approved funds.
- All resources and contracts will be competitively sourced as per National Grid's contracts framework.

US Sanction Paper

3.11.4 Net Present Value / Cost Benefit Analysis

There are no tangible benefits in this investment. All benefits support the mitigation of security risk in the business and ensure compliance as per the DR&S security policies.

3.11.4.1 NPV Summary Table

N/A.

3.11.4.2 NPV Assumptions and Calculations

N/A.

3.11.5 Additional Impacts

N/A.

3.12 Statements of Support

3.12.1 Supporters

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

Role	Individual
Business Representative/ Relationship Manager	Mukund Ravipaty
Head of PDM	Jeff Dailey
Program Delivery Director	Chris Hunt
IS Finance Management	Jean Reynolds
IS Regulatory	Daniel J. DeMauro, Jr.
Digital Risk and Security	Elaine Wilson
Service Delivery	Mark Mirizio
Enterprise Architecture	Joe Clinchot

3.12.2 Reviewers

N/A.

4 Appendices

4.1 Sanction Request Breakdown by Project

N/A.



US Sanction Paper

4.2 Other Appendices

4.2.1 Benefiting Operating Companies

This project will benefit all National Grid Companies and be allocated using the “General” allocator.

Benefiting Operating Companies Table using the General Allocator:

Operating Company Name	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
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

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4.2.2 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. The US business has agreed to fund the projects due to their importance.

Summary Analysis of RTB Costs							
All figures in \$ millions	Yr. 1 14/15	Yr. 2 15/16	Yr. 3 16/17	Yr. 4 17/18	Yr. 5 18/19	Yr. 6+	Total
Forecast of RTB Impact							
RTB if Status Quo Continues	-	-	-	-	-	-	-
RTB if Project is Implemented	-	-	-	0.089	0.459	2.698	3.246
Net change in RTB	-	-	-	0.089	0.459	2.698	3.246
RTB Variance Analysis (if Project is Implemented)							
Net Δ RTB funded by Plan(s)	-	-	-	-	-	-	-
Variance to Plan	-	-	-	0.089	0.459	2.698	3.246
Total RTB Costs - by Cost Type (if Project is Implemented)							
App.Sup. - SDC 1	-	-	-	-	-	-	-
App.Sup. - SDC 2	-	-	-	-	-	-	-
App.Sup. - other	-	-	-	-	-	-	-
SW maintenance	-	-	-	-	-	0.756	0.756
SaaS	-	-	-	-	-	-	-
HW support	-	-	-	0.089	0.459	1.942	2.490
Other: IS	-	-	-	-	-	-	-
All IS-related RTB (sub-Total)	-	-	-	0.089	0.459	2.698	3.246
Business Support (sub-Total)	-	-	-	-	-	-	-
Total RTB Costs	-	-	-	0.089	0.459	2.698	3.246

4.3 NPV Summary

N/A.

4.4 Customer Outreach Plan

N/A.

Investment Summary for a Project within an approved Program
US Cyber Security Program – INVP3614
US Critical National Infrastructure (CNI) - Security Information & Event
Management (SIEM) – INVP3614E4

An Investment Summary by Ajay Kumar for Chris Keay, Head of Strategy, Architecture, Policy & Project Management Office, Digital Risk & Security (DR&S)

June 2016

Region: US	Category: Policy	Legal Entity: Shared – Digital Risk and Security (DR&S)
Risk Score: 47	Primary Driver: Safety and Reliability	Project Classification: H

Executive Summary

This paper request **sanction** of INVP3614E4 to the amount of **\$1.966M**, including a risk margin of **\$0.065M**, for completing the **Development (D)** phase of the US Critical National Infrastructure (CNI) Security Information and Event Management (SIEM) project.
The planned completion date for Development phase is **September 2016**.

This sanction amount is \$1.966M broken down into:

\$1.905M	CapEx
\$0.061M	OpEx
Not Applicable	Asset Lease

Program Alignment

This project is a part of the Cyber Security improvement program that is focused on improvement of the wider network security architecture, designed to mitigate the identified network security risks. This project is within the Resilience Category under the US CNI Security theme within the sanctioned investment of INVP3614 US Cyber Security Program. The project is prioritized and will be funded completely from the program.

This investment will deliver improved business capabilities in the areas of **Corporate Governance Risk & Compliance** by ensuring compliance to legal & regulatory standards in accordance with company/industry policy.

The investment supports direct line of business activities by providing tools to carry out the US Cyber Security Operations in a safe & secure manner and in compliance with the US Security Policies.

Project Background

Currently in National Grid, security operations are performed from various locations using multiple devices and toolsets. This approach is fragmented and tactical in nature. There is a need for a secure centralized tool to monitor the US Critical National Infrastructure (CNI) networks and their security services.

US Critical National Infrastructure (CNI) Security Information and Event Management (SIEM) solution is required for the consumption, analysis, interpretation, and management of security information and event data.

This investment will complete the Development phase for Security Information and Event Management capabilities to support the detection, investigation and remediation of Cyber Security threats impacting US CNI environments. This investment enhances existing cyber security systems by providing the capability for holistic analysis of the National Grid US CNI networks and infrastructure for the US Cyber Security Operations Center and associated teams, supporting direction of resources to tackle the most pertinent areas of risk.

The scope of this sanction paper is :
Development for a US CNI SIEM solution.

Project Description:

The project has completed the following phases and activities:

- Requirements - This included definition of data & log sources for US CNI systems and definition of the Business use cases with the Cyber Security Operations centers.
- Design - Delivered the solution design to ensure integration with existing Security Systems Architecture therefore delivering towards overall Cyber Security Program goals and enabling a

holistic view of security data from National Grid’s CNI environments.

The Development phase will procure the hardware, software and licenses required to start the implementation phase.

The following activities will be performed by the project team in the Development Phase:

- Engage and work with consultants, from relevant suppliers, to build the solution components required to enable the implementation of the solution.
- Ensure that the procured solution components meet the technical and operational readiness requirements.
- Ensure that the suppliers perform the solution development as per plan and schedule.
- Prepare the Investment Closure Report and present it to the Cyber Security Portfolio Board.

The total value of project investment, being requested through this sanction paper, has increased from the full project investment value as estimated in the R&D investment paper. This increase in the total project investment is due to the following factors:

- The R&D investment paper included D&I phase estimates, which were based on early discussions. The supplier costs have increased during the design phase after the decision that the entire US CNI SIEM infrastructure will be implemented under a Secured Services Network to ensure effective security controls.

Project Approach

The project outputs will be verified against the overall network security architecture and associated tooling and processes determined by the wider strategic Cyber Security Program and CNI investments, to ensure the best development in capabilities.

The cumulative cost of the project will be tracked against the overall program sanction amount and reporting to the Project Management Board and Cyber Security Portfolio Board on a regular basis.

The Development phase of this project will produce the standard deliverables, as per National Grid’s IS Solution Delivery Framework (SDF), for a High classification project.

Options Analysis: Following table summarizes the considered options and rationale for recommendation.

Options	Recommendation	Rationale
Defer project	Rejected	This option is rejected for the following reasons: <ul style="list-style-type: none"> • Deferring the project will impact the mitigation plan for the existing security risks. • The CNI SIEM solution is essential for the functioning of US Cyber Security Operations Center. It is key to the identification and detection of security events and provides a centralized view to take appropriate action for the security events.
Sanction Development and Implimentation (D&I) phase	Rejected	This option is rejected for the following reasons: <ul style="list-style-type: none"> • The timeline required to complete the implementation for all US CNI Networks exceeds the current approved timeline of the sanctioned program. • Also, there is a dependency on provisioning of Security Services Network (SSN) as the CNI SIEM solution components is required to be hosted in SSN. The implementation of SSN is not planned to be completed by September 2016.
Sanction Development (D) Phase Only	Recommended	The Development phase will confirm the following: <ul style="list-style-type: none"> • The aligned US CNI SIEM solution design for US CNI environments is built and tested as per the

		business requirements and use cases to deliver the benefits to business areas including Digital Risk & Security (DR&S) Cyber Security Operations Center (CSOC) and US CNI.
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Project Costs [\$\$]M	Yr 1 15/16	Yr 2 16/17	Yr 3 17/18	Yr 4 18/19	Yr 5 19/20	Total
Start-Up - OPEX	0.009					0.009
Start-Up – CAPEX						
Start-Up – risk margin						
Start-Up SUBTOTAL	0.009					0.009

Requirements & Design - OPEX	0.052					0.052
Requirements & Design – CAPEX	0.099	0.034				0.133
Requirements & Design – risk margin - OPEX						
Requirements & Design – risk margin - CAPEX						
R&D SUBTOTAL	0.151	0.034				0.184

Development & Implementation – OPEX						
People						
Software						
Hardware						
Telecommunications						
Service Contracts						
Other-Training						
Risk Margin - OPEX						
Development & Implementation – CAPEX						
People		0.093				0.093
Software		0.598				0.598
Hardware		0.924				0.924
Telecommunications						
Service Contracts						
Other		0.092				0.092
Risk Margin - CAPEX		0.065				0.065
D&I SUBTOTAL		1.773				1.773
TOTAL PROJECT COSTS	0.160	1.806				1.966

Impact on RTB costs	0.00	0.00	0.329	0.329	0.329	1.470
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RTB Impacts: The estimated RTB impact in the US will be **\$1.470M** for 5 years (**\$0.329M** per annum), starting from April 2017, which is an increase over existing costs.

Total Program Cost: This investment is funded from INVP3614 Cyber Security Program 2013-16.	OPEX					
	CAPEX					
	RTB Impacts					

The project will benefit all National Grid Companies.

SAP Co. Code	SAP Segment	Company Description
5020	PARENT	National Grid USA Parent
5040	PARENT	KeySpan Energy Corp.
5210	NYELEC	Niagara Mohawk Power Corp.- Electric Distr.
5210	NYGASD	Niagara Mohawk Power Corp. - Gas
5210	NYTRAN	Niagara Mohawk Power Corp. - Transmission
5220	NYGASD	KeySpan Energy Delivery New York
5230	NYGASD	KeySpan Energy Delivery Long Island
5310	MAELEC	Massachusetts Electric Company
5310	FRTRAN	Massachusetts Electric Company - Transmission
5320	MAELEC	Nantucket Electric Company
5330	MAGASD	Boston Gas Company
5340	MAGASD	Colonial Gas Company
5360	RIELEC	Narragansett Electric Company
5360	RIGASD	Narragansett Gas Company
5360	FRTRAN	Narragansett Electric Company - Transmission
5410	FRTRAN	New England Power Company - Transmission
5411	FRELEC	NE Hydro - Trans Electric Co.
5412	FRELEC	New England Hydro - Trans Corp.
5413	FRELEC	New England Electric Trans Corp
5420	FRGASO	NG LNG LP Regulated Entity
5430	FRPGEN	KeySpan Generation LLC (PSA)
5431	FRPGEN	KeySpan Glenwood Energy Center
5432	FRPGEN	KeySpan Port Jefferson Energy Center
5820	PARENT	Keyspan Energy Trading Services
5825	NONREG	Transgas Inc
5840	NONREG	KeySpan Energy Development Corporation
5850	NONREG	KeySpan Services Inc.
		Total

TOTAL BENEFITS [\$]M	Zero					
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Key Business Benefits:

- **Risk mitigation:** The major business benefits of the projects are Reliability (High), Responsiveness (Immediate) and Reputational (Protected). A CNI SIEM solution will contribute towards the mitigation of National Grid IS risk references RSK-648, RSK-750, RSK-897, and RSK-715.

A summary of the key risk mitigation benefits are:

- **Early detection of security incidents** – The SIEM technology provides National Grid with a greater likelihood of intercepting, tracing the spread of threats and addressing security events in near real time, before they can significantly impact the enterprise. The SIEM solution ensures consistent and comprehensive event-log management across National Grid network
- **Reduced risk of non-compliance** – The SIEM technology provide detailed reports that can

- demonstrate compliance or due diligence which assist National Grid during an audit or investigation
- **Broader organizational support for information security** - An effective SIEM system will involve a broad base of the National Grid stakeholders to evaluate events and take actions to address incidents flagged by the SIEM system
 - **Watch the Watchers** - Provides National Grid with an effective mechanism to ensure partners and responsible people are managing respective security events
 - **Enhanced Capabilities** - Enhanced capability to log, analyze and detect a wide variety of potential impacting events and determine risk. Protection of the assets which support the CNI operations enhancing resilience and recovery. The solution will provide a big data analytics engine which will correlate the various security events to improve the threat detection through trends, intelligence gathering and research, to help architect resilience towards newer forms of cyber-attacks.
 - **Compliance to Security policies:** Ensuring compliance with US Security guidelines and other security regulatory policies such as NERC-CIP-005-3a, CIP-007-3a and CIP-008-3 and internal National Grid Security Policies and Standards.
 - **Collaboration:** The CNI SIEM solution will deliver improvements to communication and knowledge sharing environment for Intelligence data to and from external National Grid Stakeholders e.g. CISP (Cyber-Security Information Sharing Partnership), CERT (Computer Emergency Response team) and NERC (National Energy Regulatory Commission).

Key risks:	Key Dates:
<p>R1. There is a risk that partners might require additional time and cost to finish the scoped items for their deliverables.</p> <ul style="list-style-type: none"> • SIEM solution vendor (HP) might require additional time and effort for completing the activities like building and testing the CNI SIEM components. <p>Countermeasure or Action: Ensure early and effective engagement with the suppliers to baseline the development plan. Potential Delay: 1- 2 months Estimated Risk Range: \$0.029M</p> <p>R2. There is a risk that additional hardware/software component might be required to be delivered by the project because of a late change request which may increase the overall cost and time.</p> <p>Countermeasure or Action: Close monitoring and management of project's scope. Potential Delay: 3 weeks Estimated Risk Range:\$0.036M</p>	<p>Start Up : July 2015 Requirements start : September 2015 Requirements end : December 2015 Design start : January 2016 Design end : April 2016 Begin Development : May 2016 Development End : September 2016 Project Closure : October 2016</p>

Sourcing Strategy:
This project will be delivered by National Grid IS (Information Services). The project will engage the ecosystem partners like Verizon (networks partner for US CNI), CSC (infrastructure partners) and internal CNI teams. National Grid IS resources will provide assurance of all design deliveries.

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

Role	Individual's Name
Business Executive Sponsor	Graham Wright
Head of BRM/Strategy	Graham Pool
Head of PDM	Tom Cunningham
Relationship Manager	Graham Pool
Program Delivery Manager	Chris Hunt
IS Finance Management	Chip Benson
IS Regulatory	Wayne Watkins
IS Digital Risk & Security	Peter Shattuck
Service Transition	Brian Detota
Enterprise Architecture	Joseph J. Clinchot

RECOMMENDATIONS

The Sanctioning Authority is invited to:

- a) APPROVE the investment of **\$1.966M** including risk margin of **\$0.065M** by **September 2016**
- b) APPROVE the RTB Impact of **\$1.470M** for 5 years (**\$0.329M** per annum)
- c) NOTE that Chris Keay, Head of Strategy, Architecture, Policy & Project Management Office is the Project Sponsor
- d) NOTE that Vicky Young is the Project Manager and has the approved financial delegation to deliver the project

Signature..... Date.....
Graham Wright, CISO Global IS and Chair of Cyber Security Portfolio Board

Signature..... Date.....
Chris Keay, Head of Strategy, Architecture, Policy & Project Management Office, DR&S

Signature..... Date.....
Chris Hunt, Corporate IS Portfolio Delivery Manager (DR&S)

Program Delivery Manager

I hereby support the recommendations outlined in this paper.

Signature..... Date.....
Chris Hunt, Corporate IS Portfolio Delivery Manager (DR&S)

IS Finance

I hereby confirm that the financial data supports the business case outlined in this paper.

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

Arthur (Chip) Benson
Director

IS Regulatory

I hereby support the recommendations outlined in this paper.

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

Wayne Watkins
Director

IS Digital Risk & Security

I hereby support the recommendations outlined in this paper.

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

Chris Keay, Head of Strategy, Architecture, Policy & Project Management Office

IS Service Delivery

I hereby support the recommendations outlined in this paper.

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

William Kearns
Director