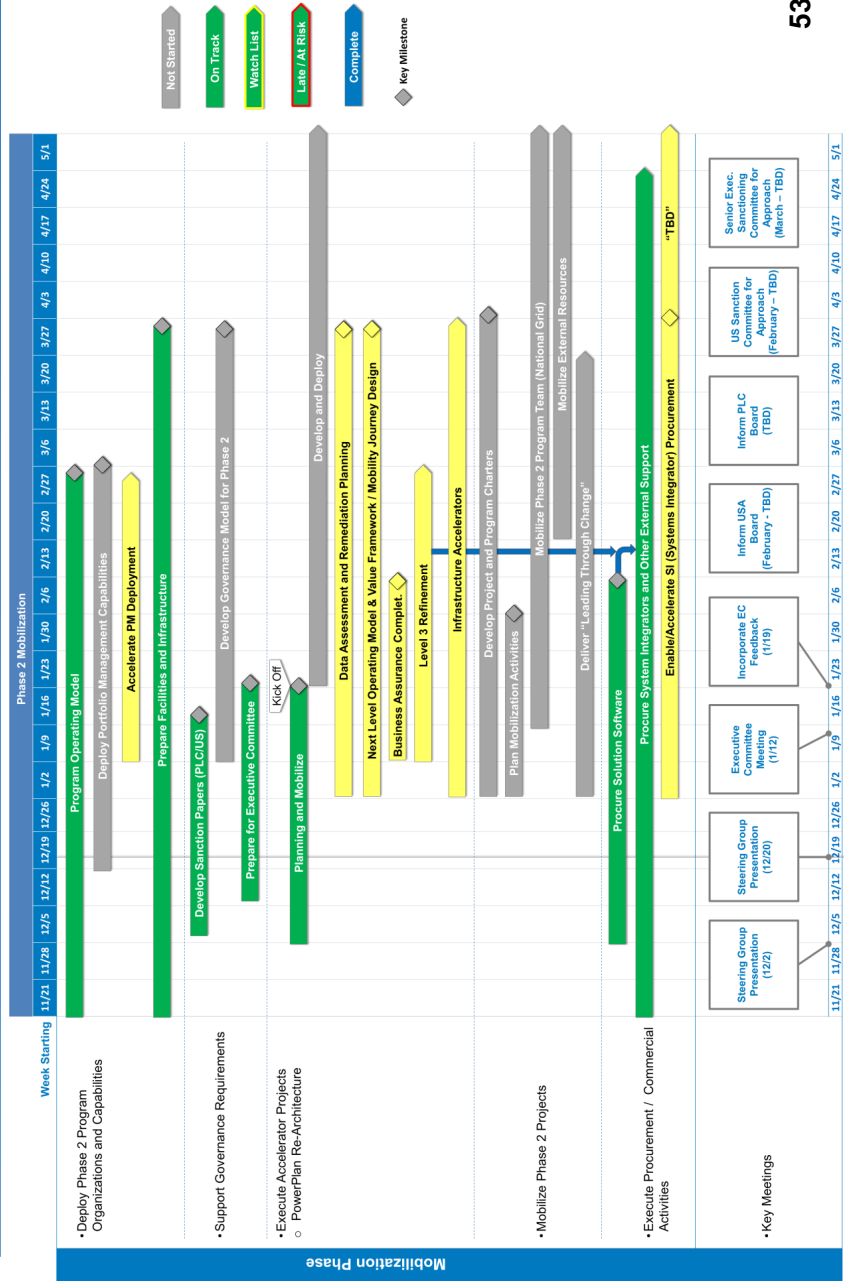


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... and can be supported without risk within the Program

Phase 2 mobilization plan (FY17 4Q)



For details on activities see Appendix E



May we have your

- Endorsement of the recommended mobilization plan
- Approval of the release of contingency funds to support Mobilization Phase accelerator projects



Meeting close

- AOB
- New Action Item Summary
- Leadership Pulse Check and Closing Remarks

Appendix

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A – Steering Group Action Item List
B – 12 / 2 Assurance Partner Feedback
C – NG Response to PwC Feedback
D – Risk Registry

Appendix - A



Steering Group Action Item List (complete)

	Action	Owner	Assigned	Due	Comment	Complete?
1	Ensure that Enablement is added to the QPR agenda	PS	10 Mar 16	1 Apr 16		Yes
2	To provide visibility of the expect impact of Gas Business enablement on the ability to run the business due to a potential talent drain.	JJ	10 Mar 16	1 May 16	Phase 1 key roles have been filled with Business Leadership engagement and support. Subsequent staffing requirements will be reviewed regularly with the Design Authority	Aug 16
3	To identify the appropriate approach to ensure that the SG has visibility to the level of customization being undertaken by the project.	JJ	10 Mar 16	1 Oct 16	Phase 1: <ul style="list-style-type: none">Formalize the design principle to minimize, customizationsProvide a view of where customizations might be required in Phase 2 based on what we know. Phase 2: <ul style="list-style-type: none">All customizations will be approved by Chris Murphy and Johnny Johnston and formally reported to the Steering Group.	Oct 24
4	To share the rate case strategy and ensure that any appropriate costs are included in the MA Gas rate case.	JJ	10 Mar 16	1 Jul 16	Action Plan: <ul style="list-style-type: none">1) Engaging with NY rate case team2) Coordinating with MA to include GE costs in the MA Gas case3) Will work with Finance to deploy effective tools and processes to capture and report rate case data4) Insure GE business case is rate case enabling	Aug 16



Action Items - continued

	Action	Owner	Assigned	Due	Comment	Complete?
5	Advise SG on PowerPlan solution options impacting the Program	JJ	5 May 16	Nov 16	GE, in partnership with Finance, to sponsor study to identify plan, timings and costs to re-architect the integration of SAP / PowerPlan / Front Office	Oct 24
6	Review GBE Scope with Finance Remediation	KH	5 May 16	June 16	Rescheduled by Fin – working with RQ for new date	Sept 14
7	Add controls development to design phase success criteria	KH	5 May 16	June 16		Yes
8	Update the SG on proposal detail and procurement process status and selection criteria	JJ	5 May 16	June 16		Yes
9	Align CWIP and GE programs and incorporate into GE program risk matrix as appropriate	KC	24 June 16	Aug 16	Pending completion of CWIP Analysis	Aug 16
10	Invite Internal Assurance to participate in vendor oral presentations and proposal review	KC	24 June 16	July 16	Complete – Input received	Yes
11	Provide a follow-up on staffing progress and plans	JJ	1 Aug 16	23 Aug 16	Complete	Aug 23
12	Provide a summary of actions taken / planned to address Business Assurance Partner observations	JJ	2 Dec	20 Dec	Plan to be reviewed during 12/20 Steering Group meeting	Pending

Appendix - B



Key Observations

- Deliverables reviewed
 - High Level Business Requirements
 - Key Business and Technical Decisions Inventory
 - Processes and Key Use Cases for Connected and Disconnected Mobility
 - Future-state information, application, and integration architecture (draft)
 - Change Impact Analysis
 - Application and technology roadmap including enabling capabilities (draft)

Observations	Recommendations
Detailed Observations on Design and Roadmap on following slides	

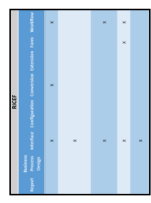
Design

Key Findings

Through the BA reviews, gaps in the quality and completeness of the Design deliverables were identified and not fully addressed:

The **Pain Point and Opportunity Analysis** did not:

- 1. Bridge the gap from current to desired state
- 2. Identify industry best practices and tools
- 3. Cross reference pain points to provide a pivot to the future state

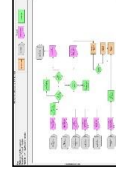


The **High Level Business Requirements** had extensive gaps including:

- 1. An incomplete inventory missing many important capabilities to support various work types
- 2. Missing industry best practice requirements
- 3. The majority of RICEFW categorizations were incorrectly assigned, which will impact cost calculation

The **Level 3 Business Process Flows** have gaps including:

- 1. No clear inventory or decomposition of level 1, level 2 and level 3 flows
- 2. No variations illustrated across different work types
- 3. No link between process steps and related business requirements that support them
- 4. No swim lanes / roles or visual representation of system interaction
- 5. Asset Management capabilities do not have detail flows
- 6. Capital Projects and Portfolio Management capabilities and process flows are not defined



The **Key Business Decision Inventory** has gaps including:

- 1. Several KBDs require more supporting documentation than is available in the inventory itself
- 2. Several KBDs were identified where it appeared that further analysis (is) required before determining the approach/consensus
- 3. Over 20 additional KBDs identified for addition



Implications

The outstanding gaps and shortcomings identified in the design deliverables **do not** prevent development of the roadmap and business case (apart from fuzziness on initiative scope)

The main impact will be on National Grid's ability to issue clearly defined RFP's for software selection and system integration services – a solid set of future state design specifications are required for precise scoping

Recommended Actions

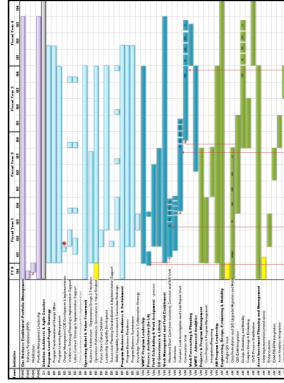
Use Q1 2017 to perform a more detailed and thorough development of Level 3 process flows and develop appropriate linkages to requirements and pain points – **focusing on Core Scope first**

Roadmap

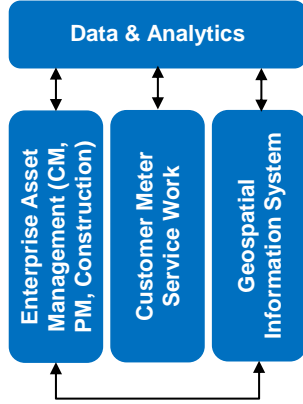
Key Findings

While not fully completed, the initial draft Roadmap has been reviewed and the following conclusions have been drawn to date:

1. The roadmap is comprehensive and provides a large number of initiatives and activities to perform over a four year period.
2. An excess of work and scope is included in the first 3-4 years of the program. This distracts from the main priority of **implementing core scope across the jurisdictions (3+5 model)**. Loses focus on driving the value from getting the core capabilities "right" – and then adding more advanced capabilities from there.
3. Cost/effort estimate of Years 1-4 is bloated by high ratio of non-core scope



GBE Foundational/Core Scope



Recommended Actions

Use the remaining time in Q4 2016 to develop a robust plan to implement the core scope across all jurisdictions in ~3 years.

Appendix - C

National Grid response to PwC feedback



PWC Feedback	NG Response
<p>The Pain Point and Opportunity Analysis did not:</p> <ol style="list-style-type: none">1. Bridge the gap from current to desired state2. Identify industry best practices and tools3. Cross reference pain points to provide a pivot to the future state	<ol style="list-style-type: none">1. NG worked with Accenture to ensure Pain Points link to Themes/Opportunity Areas which link to Requirements which link to Initiatives which link to Resource Plans which link to Costs. Requirements link directly to Benefits. However working with PWC, NG believe there is further value here and have identified an interim workpack item to address. NG Business Team is currently validating the traceability from pain points to requirements2. We have completed a number of best practice visits as well as receiving input from Accenture & PWC. We are comfortable we have received good industry insight. We will continue to complete best practice visits to continue to learn from others.3. See point 1
<p>The High Level Business Requirements had extensive gaps including:</p> <ol style="list-style-type: none">1. An incomplete inventory missing many important capabilities to support various work types2. Missing industry best practice requirements3. The majority of RICEFW categorizations were incorrectly assigned, which will impact cost calculation	<ol style="list-style-type: none">1. Using PWC feedback, additional requirements were added by Accenture. Many of the 'missing requirements' were standard requirements not differentiating requirements that would drive scope or cost into the program. PWC have provided the additional level of detail as part of their support for the program.2. NG comfortable that with additional support from PWC we now have captured the requirements needed to inform the initiatives that support the business case.3. RAWICE is the inventory Accenture uses for Maximo and RICEFW is used for SAP – following the initial PWC observations, the RICEFW objects were corrected and these have been reviewed by internal solution architects and signed off



National Grid response to PwC feedback

PwC Feedback	NG Response
<p>The Level 3 Business Process Flows have gaps including:</p> <ol style="list-style-type: none">1. No clear inventory or decomposition of level 1, level 2 and level 3 flows2. No variations illustrated across different work types3. No link between process steps and related business requirements that support them4. No swim lanes / roles or visual representation of system interaction5. Asset Management capabilities do not have detail flows6. Capital Projects and Portfolio Management capabilities and process flows are not defined	<ol style="list-style-type: none">1. PwC follows a different methodology for Strategic Assessments which is not aligned with Accenture's approach.<ul style="list-style-type: none">• Accenture's High Performance Utility Model for gas distribution provides the full hierarchy of Level 1 – 5 processes and was the basis for the engagement work effort.2. We developed fully integrated L3 process flows with distinct differences by work type for a number of priority work types as incremental work agreed with Accenture3. Requirements are linked to the Processes through Capabilities in the Requirements Tracking Matrix.4. In the Accenture process, the processes have swim lanes that will need to be added during Level 4 Process Architecture to reflect operating model design.5. PwC may not have seen, but Asset Management process flows were provided and approved by National Grid leadership.6. In the Accenture approach, process flows and detailed analysis of Capital Projects including a stage gate process that is traditionally a detailed design deliverable. <p>NG believes that additional L3 process detail will help with better defining Phase 2 work packages. An accelerator project has been proposed for the Phase 2 mobilization phase</p>



National Grid response to PwC feedback

The **Key Business Decision Inventory** has gaps including:

1. Several KBDs require more supporting documentation than is available in the inventory itself
2. Several KBDs were identified where it appeared that further analysis (is) required before determining the approach/consensus
3. Over 20 additional KBDs identified for addition

- Accenture provided our KBD Inventory of 35 key business decisions with initial recommendations. For this effort we documented and vetted over 180 KBD's which refined the list to 116. Of those, 30 were presented to the Design Authority and the balance were deemed too detailed and deferred to the next phase for consideration at the project team level.



National Grid response to PwC feedback

PwC Feedback	NG Response
<div>1. The roadmap is comprehensive and provides a large number of initiatives and activities to perform over a four year period.</div> <div>2. An excess of work and scope is included in the first 3-4 years of the program. This distracts from the main priority of implementing core scope across the jurisdictions (3+5 model). Loses focus on driving the value from getting the core capabilities "right" – and then adding more advanced capabilities from there.</div> <div>3. Cost/effort estimate of Years 1-4 is bloated by high ratio of non-core scope</div> <div>4. No clear linkage from the design elements into the roadmap i.e. mapping of capability/process inventory to initiatives. Unable to see which pain points/opportunities, requirements, and processes are enabled within each initiative on the roadmap.</div> <div>5. The focus should be on foundational GBE scope to enable enterprise end-to-end work and asset management process through a highly integrated architecture (move the business onto a modern, integrated platform).</div>	<div>1. Agreed</div> <div>2. We have focused on a value focused roadmap that has a mix of core and value adding initiatives to drive a business transformation (with a strong initial focus on risk) rather than a pure technology replacement program – we believe this is the right balance.</div> <div>3. We have reviewed the scope and costs with Accenture and PwC and significantly reduced costs since this observation and believe these are appropriate estimates for this point in the program lifecycle.</div> <div>4. See Page 1 this has been addressed</div> <div>5. Agreed – see steering group deck</div>

Appendix - D



Risk Registry (complete)

ID	Risk	Description & Potential Impact	Probability	Impact	Impacted Item	Category	Assigned to	Status	Next Update	Mitigation Date
4	P1 Single solutions to each software category may not be possible	The desired end state is one software solution for each software category. If this is not possible, it will raise the level of complexity of our future state design and increase costs and lengthen timelines in both Phase 1 and Phase 2	M	H	HLD	Program	Houchins, Granville	Monitoring	11/18/16	11/18/16
	P2 Failure to account for significant ongoing external initiatives	Not accounting for the impacts/integration points/scope overlaps between GE and other programs could create scope overlaps and/or conflicts. This could result in increased costs or delays in schedules	M	H	HLD	Program	Watkins, Wayne S.	Monitoring	12/22/16	
6	Data Quality Data Analysis	Gaps in our understanding of current state data quality and completeness, as well as over-reliance on anecdotal evidence could have negative impacts on our roadmap and business case. - Bad assumptions, unanticipated risks etc	H	H	HLD	Program	Raad, Nicolas	Solution Proposed	12/2/16	12/2/16
7	Program staffing resiliency	Does the program have the sufficient team depth to overcome the effects of unplanned departures	M	M	HLD	Program	DeRamos, JWynn	Monitoring	12/22/16	
14	Failure to meet our staffing targets will impact our ability to initiate Phase 2 in a timely manner	If we don't complete our staffing process by our target date will mean that we have insufficient resources to effectively plan and charter Phase 2 projects. This could result in delays, increased costs.	M	H	PM	Staffing	DeRamos, JWynn	Monitoring	12/22/16	



Risk Registry (continued)

ID	Risk	Description & Potential Impact	Probability	Impact	Impacted Item	Category	Assigned to	Status	Next Update	Mitigation Date
15	Mis-alignment / lack of integration and coordination between programs	Potentially a risk around enablement keeping joined up with other initiatives - eg Supervisor Enablement and strategic workforce planning	M	M	HLD	Workforce Planning	Irani-Famili, Reihaneh; DeRamos, J'Wynn	Monitoring	12/22/16	
16	Missing Expectations on progress due to SL start or late Phase 1 Completion	Delays in starting the program in a timely manner will impact long term timelines. Failure to complete Phase 1 deliverables in a timely manner could delay the sanctioning process and further delay kick off of deployment work.	M	VH	HLD	Delivery	Healy III, Kenneth	Solution Proposed	12/22/16	
17	Unsuccessful delivery due to scope creep	Unplanned/unapproved changes to scope can drive program costs, impact timely delivery or compromise the quality of program outcomes	M	VH	HLD	Delivery	Healy III, Kenneth	Solution Proposed	12/22/16	
18	Risk to Delivery Due to IS and Business capacity limitations	The program is dependent on multiple services and SMEs provided by the Functions, Business. Support delays and SME unavailability could impact timelines	H	H	HLD	Delivery	Connolly, Christopher; Murphy, Chris-US IT; Irani-Famili, Reihaneh; Healy III, Kenneth	Solution Proposed	12/22/16	
19	Delays in Labor Union Engagement Could Impact workshop participation	Failure to engage represented employees in the as is/to be design process could mean that critical information, observations and expert inputs are missing from the HLD process	M	M	HLD	Quality	Connolly, Christopher	Closed	10/21/16	



Risk Registry (continued)

ID	Risk	Description & Potential Impact	Probability	Impact	Impacted Item	Category	Assigned to	Status	Next Update	Mitigation Date
20	Short term required compliance mitigation activities could negatively impact long term deployment activities	A disproportionate emphasis on short compliance fixes could consume the time, resources and expertise required to launch and sustain longer term fixes	M	H	Comp.	Delivery	McNamara, Daniel F.	Closed	12/22/16	10/20/16
21	Impact Analysis Deliverable Timeline	Impact Analysis milestone date misalignment may impact the downstream delivery of other CM deliverables.	L	L	BDR	BR/CM	Poyant, Ellen L.	Closed	10/3/16	10/7/16
22	Unplanned outages during Implementation	Implementation and subsequent RTB (Run the Business) activities for U.S. Gas Enablement core platforms and products will be impacted by unplanned outages . Program Increments, or releases may be delayed due to resource availability or lack of testing.	H	M	SDD	Schedule	Krantz, Ronald D.	In Progress	2/1/17	
23	Powerplan Disintegration	Implementation Roadmap and removing Powerplan integration from work order creation and work execution processes may impact business/implementation roadmap and cost of program.	H	H	SDD	Budget and Schedule Risk	Geer, William J.	Monitoring	12/22/16	
24	Inappropriate use of Agile Delivery Methods	Applying Agile delivery methods against current application platforms and reporting & analytics environments may be inappropriate. Causing project delays.	H	M	SDD	Scope	Krantz, Ronald D.	In Progress	12/22/16	



Risk Registry (continued)

ID	Risk	Description & Potential Impact	Probability	Impact	Impacted Item	Category	Assigned to	Status	Next Update	Mitigation Date
25	Constrained Benefits by lack of SCM Implementation	ERP Supply Chain and Materials Management capabilities are not fully deployed. Assumed benefits may be at risk of being attainable.	M	H	PM	Benefits	Connolly, Christopher; Healy III, Kenneth	In Progress	12/2/16	
27	Network Bandwidth	Pain point indicated that wifi availability was not present in barns. Mobile/Disconnected mobility may require increased network bandwidth.	M	M	SDD	IS Solution Architecture	Krantz, Ronald	Solution Proposed	12/22/16	5/1/17
28	ECM and HPUM remaining capabilities not mapped	The remaining capabilities (back office, customer, etc) that are not mapped between NG Enterprise Capability Model and the Accenture Utility Model need to be mapped to ensure process/capability connectivity and in support of future impact analysis.	M	L	HLD	Enterprise Business Architecture/ Solution	Lyba, Svetlana	Solution Proposed	1/12/17	3/31/17
29	Data Accessibility	Data is often not accessible, and when it is the spreadsheets are often too large to work with. Data summary documents provided by data managers are often more useful than the data itself.	H	H	PM	Program	Del Santo, Edward	New	11/30/16	
30	Auto dialing or texting wrong customer number	There is a TPCA compliance change that puts us at risk when we auto dial or text customers and their phone number is not correct. Need data cleansed and controlled to ensure we are not being fined.	H	M	Comp.	Quality	Raad, Nick; Piccarreto, Megan	New	5/1/2017	



Risk Registry (continued)

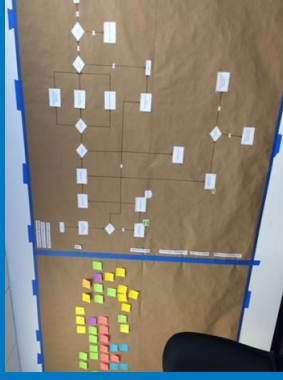
ID	Risk	Description & Potential Impact	Probability	Impact	Impacted Item	Category	Assigned to	Status	Next Update	Mitigation Date
31	Benefits Identification	Benefits may not be as high / significant for a program / organization of this size and with respect to the starting point (e.g., 4th quartile in O&M/customer, Capital Unit Cost)	H	VH		PM	Del Santo, Edward; Connolly, Christopher	New	12/2/2016	
32	Benefits Buy In	Gas business leadership may not buy into / take ownership of identified benefits	H	VH		Delivery	Del Santo, Edward; Jones, Sandra; Johnston, Johnny	New	12/16/2016	
33	Risk of insufficient alignment between GBE and SOF	Risk that Supply Chain and overall GBE teams are not fully aligned with Shaping Our Future teams. There may be potential scope overlap/gap, critical dependencies, or even valuable inputs between GBE and SOF.	M	H	PM	SCM	Lynch, Joel	New	1/31/2017	
34	Customer Lens Impact during design and roll out	What mitigation/controls can we put in place to ensure that the customer focus is included in anything involving customer facing	M	M	BDR	Customer	Piccarreto, Megan; Connolly, Christopher	New	1/31/2017	
35	Support organizations (Call Center, AMO. Collections) will be required to use CIS and CRM	Full information is not being converted/visible into CRM for undetermined amount of time. This means the support groups will have to use 2 systems to get additional information/take action any time the field is involved. (ex. Make an appointment)	H	M	BDR	Customer	Piccarreto, Megan; Connolly, Christopher	New	1/31/2017	

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Gas Business Enablement

Steering Group Pack – External Distribution - Confidential



Johnny Johnston

19 January 2017 @ 1200 EST, Res Woods Board Room



Agenda

<u>Topic</u>	<u>Time</u>	<u>Presenter</u>
Opening Remarks Meeting Objectives Action Item Follow Up	5 min	JJ/KC
Executive Committee Materials	15 min	JJ
Regulatory Strategy Update	10 min	PV
Program Cost Reduction Options	10 min	JJ
Phase 2 Procurement Plan	10 min	NR
Program Update	5 min	KC
Meeting Close & Feedback	5 min	JJ
		2



Meeting Objectives

1. Obtain feedback on the draft deck and questions for the February Group Executive Committee
2. Update on regulatory strategy and discuss options to enhance recovery
3. Discuss options available to reduce program costs
4. Gain endorsement of our approach on procurement activities for the next phase



Action Item Follow Up

	Action	Owner	Assigned	Due	Comment	Complete?
12	Provide a summary of actions taken / planned to address Business Assurance Partner observations	JJ	2 Dec	20 Dec	<ul style="list-style-type: none">Plan to be reviewed during 12/20 Steering Group meeting	Complete

For complete list see Appendix A



Agenda

<u>Topic</u>	<u>Time</u>	<u>Presenter</u>
Opening Remarks Meeting Objectives Action Item Follow Up	5 min	JJ/KC
Executive Committee Materials	15 min	JJ
Regulatory Strategy Update	10 min	PV
Program Cost Reduction Options	10 min	JJ
Phase 2 Procurement Plan	10 min	NR
Program Update	5 min	KC
Meeting Close & Feedback	5 min	JJ

Executive Committee Materials

- GBE has been asked to present at the February 16, Group Executive Committee
- Slides 7 – 30 in this pack are the draft story slides taking the feedback from the December Steering Group (Not planning on going through at Steering Group)
- We are currently drafting the Group Exec paper to answer the following questions:
 1. What is Gas Enablement and why is it needed now?
 2. What is your approach to the solution and are we doing anything unique?
 3. What is the investment, are there opportunities to reduce or defer it?
 4. What are the anticipated benefits and business case for this investment?
 5. What visibility/controls do we have to ensure the program does not go off track?
 6. What are the key risks to the program and how are you mitigating them?

Steering Group Discussion/Questions

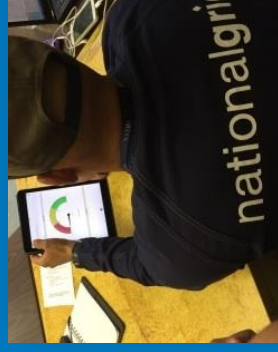
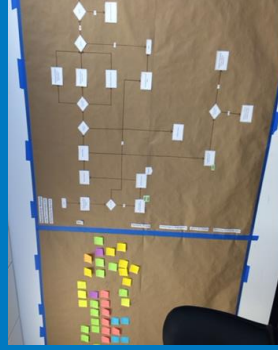
- Any further feedback on the slide story, articulation and ask for Gas Business Enablement
- Do the questions above cover the key points or are there any other points that need to be answered?

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Gas Business Enablement Program

Draft Presentation to the Group Executive Committee



February 16, 2017

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The US Gas Business is facing significant challenges that are putting our future growth at risk

We hold an unsustainable level of operational risk

- 90% of our 'front office' **systems will have reached end of life within 2 years**, making it increasingly more challenging to maintain reliability of critical operational systems.
- **Aging, disparate, and duplicative systems** impede a 'single version of the truth' making it difficult to demonstrate compliance, manage performance, and lack the flexibility to address a changing regulatory & customer environment.
- **\$40M in gas safety compliance penalties** received or in negotiation over the last 3 years, the majority of which could have been avoided with modern systems.
- **Gas safety compliance challenges** stem from not only systems gaps but also insufficient technical training and complicated work methods and procedures.

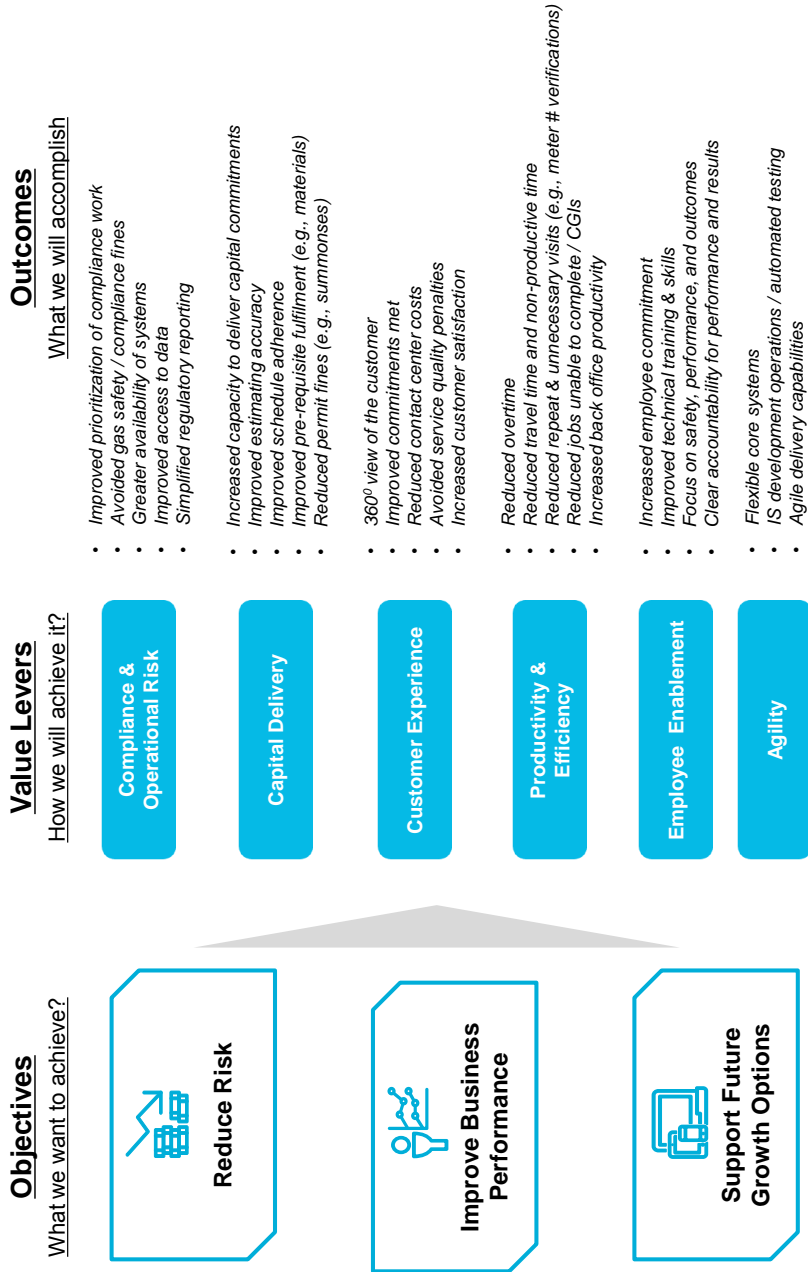
We need a step change in operational performance

- Our capital plan has tripled over recent years to \$2B a year and our **systems and Op Model need to be updated** to secure delivery.
- We **lack standard processes, performance metrics, and tools** to clearly understand current performance, report consistently to our regulators and support future regulatory frameworks.
- Our **customer are expecting more** (e.g., proactiveness) and **~%50 prefer web & mobile interactions** which we currently can't deliver.
- We **lack the resource capacity** to deliver the growth in capital spend as well as a **standard platform** to drive inorganic growth.
- A **culture of "make due"** and **diffuse accountability** for operating performance is the norm.

Our market framework is changing dramatically

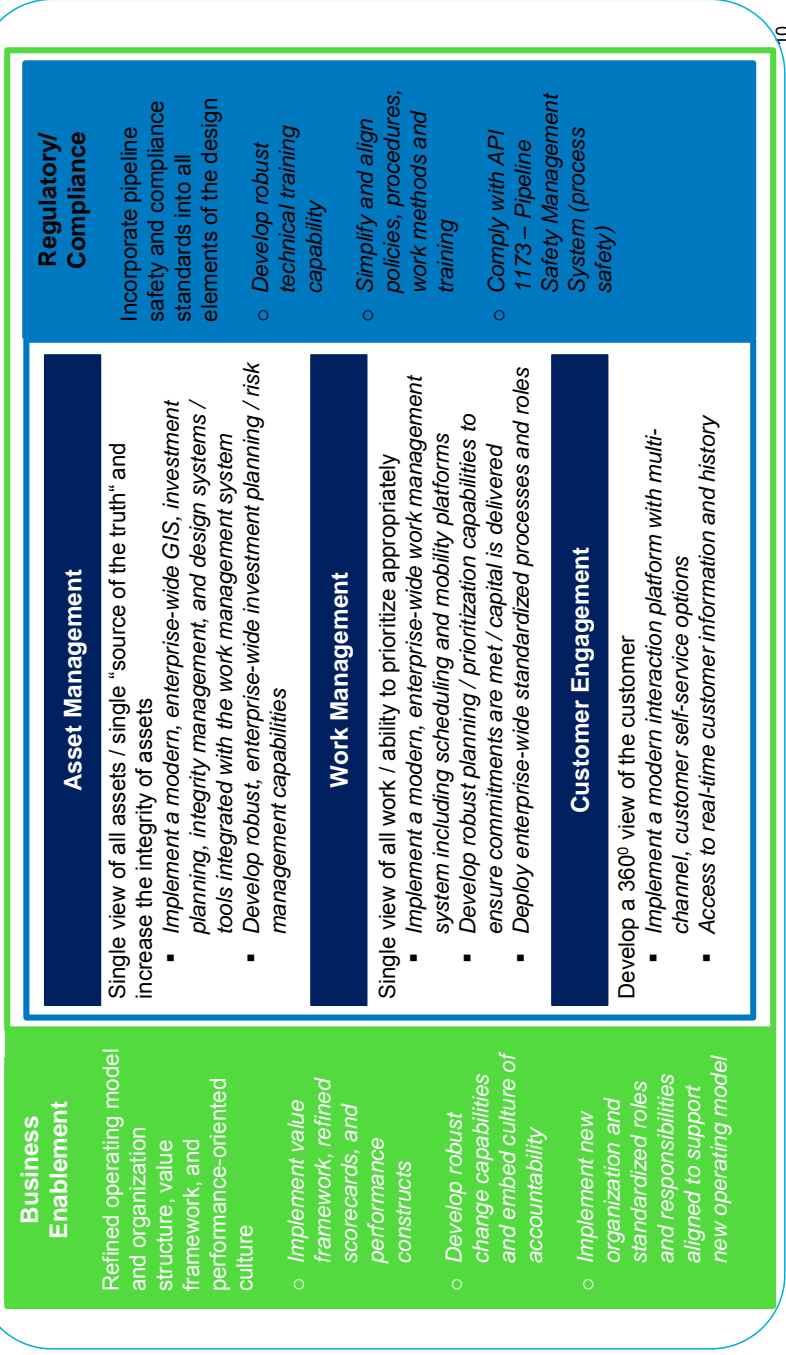
- Incidents resulting in significant cost to gas utilities are **increasing regulator scrutiny and requirements** (e.g., API1173).
- **Public sentiment** on gas is changing (e.g., environmental).
- **Competition and opportunities** from alternative energy sources continue to evolve and become economically viable.
- The **impact of digital on energy system** is transforming how utilities go to market and operate.

The program is designed to deliver on three primary objectives to address these challenges



To meet these objectives, a holistic transformation program is required to modernize systems, standardize & align processes, and build the capabilities of our people

Gas Enablement Program Areas of Focus



To ensure the success of the program, we will leverage innovative approaches, modern delivery methods, and robust governance



Innovative release approaches that segment the program into manageable scope elements.

- Standardize processes and roles ahead of systems to reduce complexity
- Segment implementation by work type (e.g., Corrosion, I&R) to reduce risk & impact to the business & our customers
- Regionalize implementation leveraging RI as a “test bed concept” to demonstrate successful implementation and bundle proven capabilities for scale rollout to other jurisdictions to avoid regressing of capabilities



Modern delivery methods to improve the likelihood of success and avoid stranding assets.

- Agile development where appropriate, starting with and building out minimally viable products to reduce complexity and increase speed to value
- Cloud and software as a service (SaaS) solutions where possible to minimize the need to stand up and maintain expensive and complex infrastructure



Robust governance mechanisms to ensure the program remains on track.

- Critical success factors to measure and monitor progress
- Annual sanction process to provide optionality throughout program
- Formal stage gates to manage deployment risk to jurisdictions
- Focus on realizing value

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Four options were assessed, the value-oriented program that optimizes scope, value and risk is recommended

Option	Characteristics	Disposition
1 Tech Stabilization Only	<ul style="list-style-type: none">• Focus on stabilizing current systems to reduce risk profile• Postpones required core work and asset platform replacement• No foundation for the future	<ul style="list-style-type: none">• Not sufficient to deliver strategic ambition• Not further detailed analysis required
2 Backbone Only FY18 Spend: \$100M	<ul style="list-style-type: none">• Scope limited to what is required to mitigate key risks• Focused on replacing core work and asset platforms• Simplifies, reduces implementation and risk• Limited foundation for the future	<ul style="list-style-type: none">• Focused on operational risk only• Not sufficient to deliver our broader strategic ambition• Represents a “fall back” option to option #3, with reduced value/benefits
3 Value Oriented FY18 Spend: \$134M	<ul style="list-style-type: none">• Backbone plus enhanced capabilities to meet objectives• Prioritized investment over 5 years to deliver value• Initial focus on risk reduction• Annual decisions points to create optionality• Addresses risk and desired business performance	<ul style="list-style-type: none">• Addresses operational risk• Sufficient to deliver strategic ambition• Optimized scope, value, and risk• Recommended for approval
4 “Big Bang” Approach	<ul style="list-style-type: none">• Comprehensive platform & capability scope in 3 years• Minimized deployment time creates delivery risk• Risk that desired performance improvements aren’t achieved• Challenges our capability to deliver	<ul style="list-style-type: none">• Although sufficient to deliver strategic ambition, approach not aligned with future direction (e.g., agile, reduce delivery risk, etc.)• Not further detailed analysis required

Options deemed not viable

The value-oriented approach includes the required 'backbone' investment supplemented by enhanced and supporting capabilities

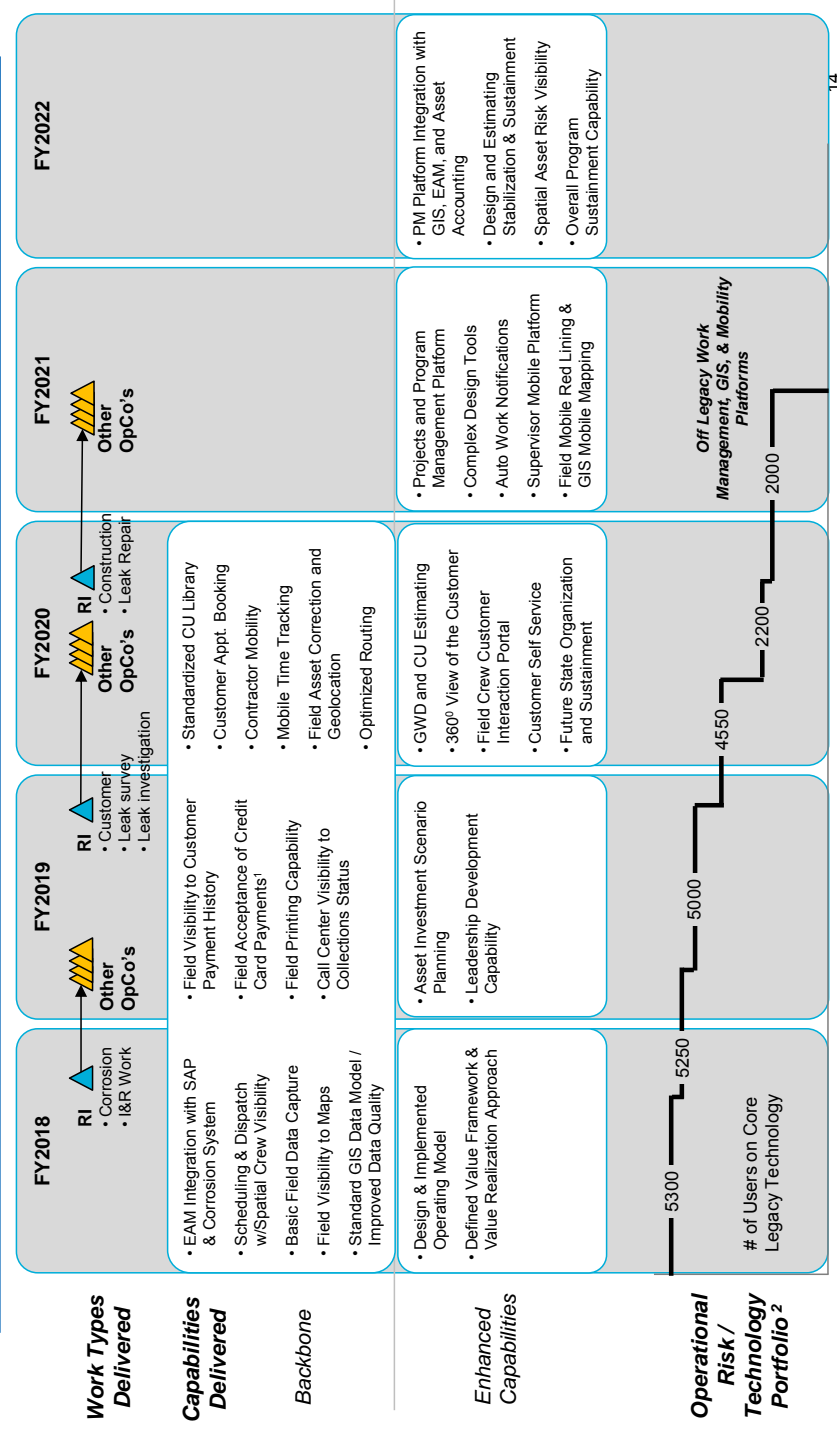


○ Size indicates relative cost of initiatives / initiative groupings

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This program will deliver the backbone over three years, prioritized to reduce operational risk and deliver enhanced capabilities over five years




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


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This program delivers a broad range of benefits to address the challenges of today while positioning the Gas Business for the future

	Stabilize the Core	Step Change in Core	Grow our Core	Future Proof our Business
<i>Program Investment Scope</i>			 	 
<i>Benefits</i>	<ul style="list-style-type: none">• Reduced technical & operational risk• Improved pipeline safety & compliance• Greater availability / reliability of systems• Improved access to information• Simplified regulatory reporting	<ul style="list-style-type: none">• Enhanced safety performance• Enhanced pipeline safety & compliance (e.g. eliminating fines)• Improved regulatory relationships• Enhanced efficiency• Improved customer experience and satisfaction• Improved employee technical training & skills• Performance-oriented culture	<ul style="list-style-type: none">• Deliver future capital growth• Support new customer acquisitions and conversions• Merger and acquisition platform	<ul style="list-style-type: none">• Flexible core systems• IS development operations• Automated testing• Agile development capabilities• Data management capabilities• Advanced work and asset analytics capabilities• Customer engagement platform• Platform for electric

 Backbone Investments

 Performance Investments

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The investment in enhanced capabilities necessary to enable a step change in the core will create significant benefit opportunities

Enhanced Capabilities	Value Drivers	Example Metrics ¹	Aspirational Ann. Benefit (Ms)
Strategic Change, Talent, & Operating Model	<ul style="list-style-type: none">Process efficiencyImproved performance mgmt.Performance culture	<ul style="list-style-type: none">Supervisor time in the fieldQuality of coaching conversations	N/A ²
Customer Experience & Interactions	<ul style="list-style-type: none">Self-serviceNew service growthIncreased customer satisfaction	<ul style="list-style-type: none">Services initiated via self-serviceMove requests completed via self-serviceStatus updates received via self-serviceService quality penaltiesContact center call volumeAverage time per contact center call	\$2.4
Asset Management	<ul style="list-style-type: none">Reduced material spendReduced opex spend reductionCapex effectiveness	<ul style="list-style-type: none">Estimating accuracyMapping cycle timeOpex spendRisk reduced / \$ spent	\$4.1
EAM / Work Management Platform	<ul style="list-style-type: none">Appointments met / keptIncrease Supervisor time in fieldRoute optimizationReduced overtimeReduced contractor spendBack office productivityImproved operational data	<ul style="list-style-type: none">Unable to complete rateSchedule adherenceJobs scheduled / dispatched automatically# / rate of jobs bundledTravel timeAvailable / idle timePre-requisite fulfillment rateSummonses / other penalties	\$16.7
Supply Chain	<ul style="list-style-type: none">Reduced capex project delaysReduced material spendReduced inventory carrying costs	<ul style="list-style-type: none">Material stock-outsRate of jobs requiring expediteInventory turnoverInventory carrying cost	N/A
Field Technical Training	<ul style="list-style-type: none">Reduced compliance violationsReduced compliance penalties	<ul style="list-style-type: none"># / type compliance violationsPenalties incurred	\$13.5
			\$36.7

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

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INTERNAL DRAFT ONLY – ANALYSIS ON-GOING



Regulatory recovery is the core funding mechanism; strategy being developed to minimize regulatory lag

The investments identified in GBE are investments to support core delivery for our customers and so would be traditionally funded by customers through rate agreements. There are a number of issues that make 100% funding a challenge for GBE:

- GBE is currently not in any rate cases so 2017 Opex would not be recoverable
- The next KEDNY/LI rate year is 2020 and so any Opex or depreciation expense before then will be a challenge to recover
- Massachusetts only has backward looking rate cases which will make Opex recovery beyond the test year challenging to recover

4 options main options are being assessed identify optimal recovery strategy:

- | | | | |
|--|---|---|---|
| 1. Traditional Recovery | 2. Program Delay/Slow Down – better aligns costs with future rate cases | 3. Enhanced Regulatory Recovery (secure forward looking MA rate case & incremental recovery for KEDNY/LI) | 4. Bankers Lease financing – fund program costs through a bankers lease arrangement – allowing better alignment of lease repayments to rate cases |
| ■ High probability of delivery | ■ High probability of delivery | ■ Low probability of delivery | ■ High probability of delivery |
| ■ Anticipated recovery: ~75% total costs | ■ Business impact due to being on failing legacy systems for longer | ■ Anticipated recovery: ~90+% total costs | ■ Anticipated recovery: ~90+% total costs |
| | ■ Anticipated recovery: ~80+% total costs | | ■ Any under recovery better aligns to when broader benefits are being delivered |

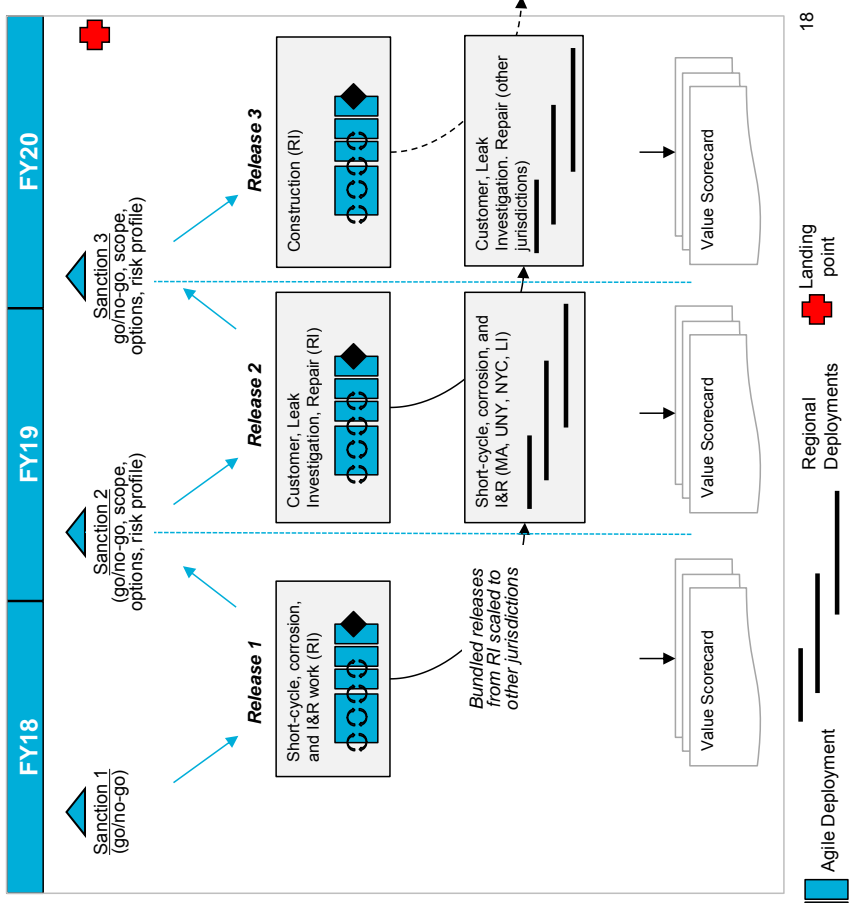
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Governance mechanisms and deployment approaches provide optionality to adjust scope and funding over time

Governance Mechanisms

- Annual sanctioning with scope decisions provides options to course correct
- Formal stage gates manage deployment risk to jurisdictions
 - Using Rhode Island as test bed allows for validation of performance as input into stage gate decisions
 - Agile deployment delivering minimal viable products allows for proof of concept as input into stage gate decisions
- Performance framework defines measurable results of releases and waves
 - Using value scorecards allows for value to be achieved as input into stage gate / sanctioning decisions

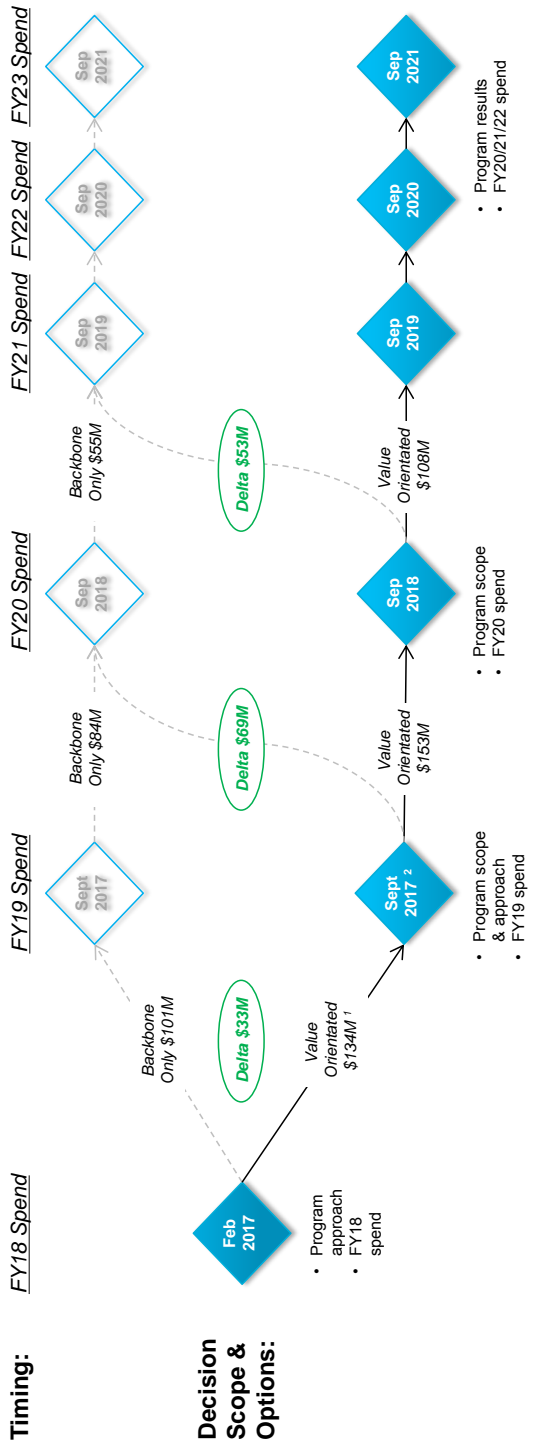


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Annual sanctions give clear visibility to incremental investment decisions beyond the backbone

The key decision now involves an incremental \$33M to support the value-oriented option, pending further clarification of initial results and commercial approach.



Decision Inputs:	<ul style="list-style-type: none">Strategic AssessmentRegulatory StrategyConfidence in team	<ul style="list-style-type: none">Positive NiMo, MA Gas, & RI rate case feedbackSuccessful commercial contracting & program mobilization	<ul style="list-style-type: none">Successful rate casesEnterprise rollout of Corrosion, I&R, and CollectionsImplementation of CMS in RI	<ul style="list-style-type: none">Enterprise rollout of CMSImplementation of Construction in RIEnterprise rollout of Construction
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¹ See appendix for first year breakdown
² Due to program start up timing, opportunity for further checkpoint March 2018 with further inputs on rate case and updates on program delivery

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Program risks will be actively monitored and mitigation plans developed and executed

Risk	Definition	Mitigations
Business disruption	The program causes performance of the business to be reduced because of disruptions to operations	<ul style="list-style-type: none">▪ Disciplined release planning anticipates complications▪ Change Office reinforces disciplined role and change planning
Market context	Capabilities delivered lose relevance because of dramatic changes in market and or regulatory environment	<ul style="list-style-type: none">▪ Waves revisits context of each investment▪ Agile approaches improve relevance of solution approach
Change in strategic priorities	Business priorities change over time and reduce priority for further program investments	<ul style="list-style-type: none">▪ Sanction schedule provides for regular investments▪ Input from US leadership and Group Executive▪ Ongoing input from GBE steering group
Sustainment of performance and value	Program fails to realize sustainable improvement in the performance of the business	<ul style="list-style-type: none">▪ Value framework identifies specific performance parameters for every initiative▪ Operating Model strengthens accountability framework for the business
Capacity for change	Organizational inertia and culture prevents program from achieving required pace of change	<ul style="list-style-type: none">▪ Change office and ongoing organizational health metrics to diagnose organizational state▪ GBE manages change portfolio for gas business
Scope creep	Scope and cost of program increases because of failure to stay focused on objectives	<ul style="list-style-type: none">▪ Value framework helps manage scope/value tradeoffs▪ Agile approaches help identify most relevant solutions▪ Sanctioning waves allow total costs to be reevaluated
Data quality	Cost and complexity of data conversion and cleansing is much greater than anticipated	<ul style="list-style-type: none">▪ Data discovery allows bottom up profiling of data and data quality
Resources / Capabilities	Business is unable to provide adequate resources and delivery capabilities to successfully manage the program	<ul style="list-style-type: none">▪ Resource plan has manageable rampup▪ Robust commercial process to find partners with desired capability at the right price

The Group Executive Committee are asked to:

1. Approval

- Approve a budget of \$134M (+\$16M contingency) for FY18 to start the Value Oriented Roadmap and proposed regulatory recovery strategy
- Note that the program will be asking for approval for FY19 in September 2018 and that there will be a three-year funding commitment to complete the backbone

2. Gas Business Enablement Roadmap

- Endorse the proposed Value Orientated Gas Business Enablement roadmap and business case. Noting that this is a risk-prioritized asset replacement program costing \$466M (\$527M including contingency) over 5 years made up of \$277M to replace the backbone systems and \$189M for enhanced capabilities. Note the aspirational annual benefits of \$36M a year.

3. Sanctioning Approach

- Endorse the proposed sanctioning approach of annual requests for funding to ensure the program is being appropriately delivered and prioritized to continue to meet business, regulatory, and customer requirements

4. Governance

- Delegate Authority to the GBE Steering Group (Dean Seavers, Rich Adduci, Peggy Smyth, Vivienne Bracken, John Bruckner, Keith Hutchinson & Lorraine Lynch) to continue oversight of the GBE program

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Appendix

Key initiatives

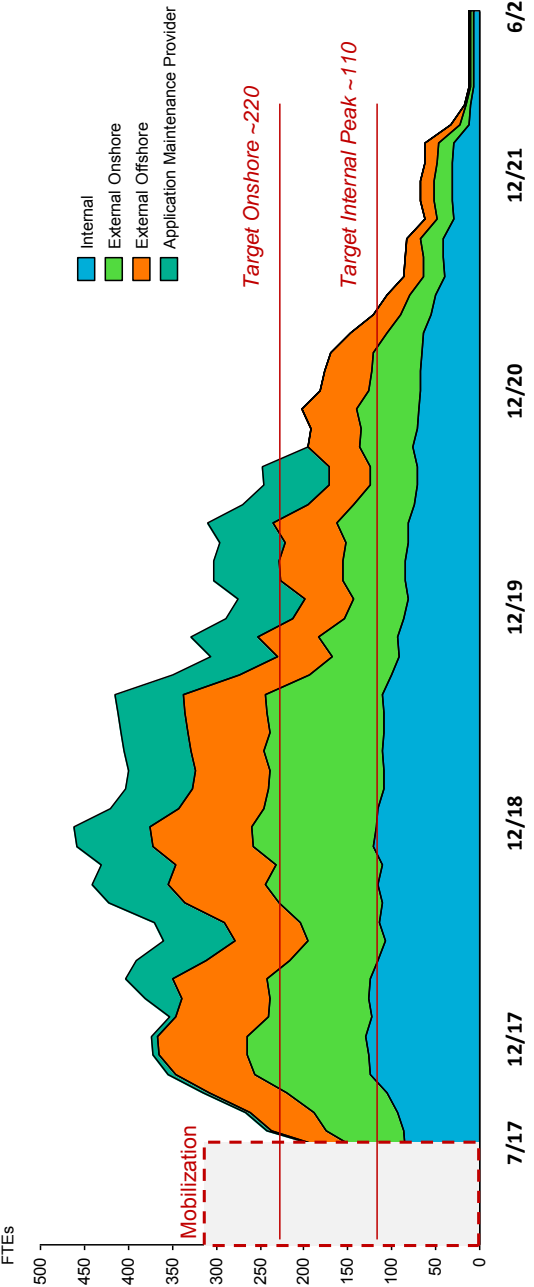
Workstreams		Initiatives		
GBE Portfolio Office				
Business Enablement	Program Level People Strategy	Operating Model & Value Framework	Program Business Readiness & Sustainment	Leadership Capability
Work Management	Process Architecture	Work Management and Field Enablement	Work Management Analytics	Projects & Program Management
Asset Management	Engineering, Design, Estimating & Mobility	Asset Investment Planning and Management	Integrity Management	Asset - Advanced Analytics
Regulatory/ Compliance	Standards Operating Procedure Documentation	Document Management	Technical Training	
Customer Engagement	Customer Interaction	Customer Employee Journey	CRM / Contact Center	Channel Analytics
Data Management	Data Management	Data Quality & Cleansing	Remediation & Integration	
Supply Chain	SC Process Architecture	Integrated Supply & Demand Planning	SC Master Data Improvements	Inventory Optimization
		Capability Building		Warehouse & Network Optimization
Information Systems Enabling				

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Resource plan

Resource Map by Month¹



Internal Resource Requirements

	% of Total	Target on 9/2017	Current on 12/2016
Business	45%	50	24
IS	36%	40	9
PM	19%	20	7
Total	100%	110	40

¹Source: GBE Master
Resource Plan V17
12/14/16

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Total investment breakdown: \$446M (Capex \$251M, Opex \$215M), \$527M including contingency

Initiative Category	Backbone \$Ms	Performance \$Ms	Supporting Investments \$Ms	Total Cost \$Ms ^{1, 2}	% of Total Investment
Advanced Asset Management		\$27		\$27	6%
Advanced EAM Platform		\$16		\$16	3%
Core EAM Platform	\$123			\$123	26%
Customer Experience & Interactions		\$55		\$55	12%
Data Management			\$37	\$37	8%
Field Technical Training			\$26	\$26	6%
GIS	\$41			\$41	9%
IS Enabling			\$21	\$21	5%
Legacy Integration	\$23	\$11		\$34	7%
Program Management	\$28	\$15		\$43	9%
Strategic Change, Talent, & Operating Model		\$33		\$33	7%
Supply Chain		\$11		\$11	2%
Total before Contingency	\$215	\$167	\$84	\$466	
% of Total	46%	36%	18%		
Contingency				\$61	
Total				\$527	

¹ Costs include expenses (17% external, onshore labor cost; 10% internal labor costs); cost includes HW/SW)
² Average Daily Rates: NG - \$845; External - \$1,001 (External Onshore - \$1,711; External Offshore - \$326)
³ Contingency equals 20% applied to labor cost only; not applied to support (RTB) costs

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Year one investment breakdown: \$134M (Capex \$77M, Opex \$57M),
\$149M including contingency

Initiative Category	Backbone \$Ms	Performance \$Ms	Supporting Investments \$Ms	First Year Cost \$Ms ^{1, 2}
Advanced Asset Management		\$2.6		\$2.6
Advanced EAM Platform		\$0.2		\$0.2
Core EAM Platform	\$44.5			\$44.5
Customer Experience & Interactions		\$2.1		\$2.1
Data Management			\$13.2	\$13.2
Field Technical Training			\$3.2	\$3.2
GIS	\$15.6			\$15.6
IS Enabling			\$7.5	\$7.5
Legacy Integration	\$11.7	\$6.6		\$18.3
Program Management	\$7.9	\$4.2		\$12.1
Strategic Change, Talent, & Operating Model		\$11.3		\$11.3
Supply Chain		\$3.1		\$3.1
Total before Contingency	\$79.7	\$30.1	\$23.9	\$133.7
% of First Year Cost	60%	23%	18%	
Contingency				\$15.7
Total				\$149.4

¹ Costs include expenses (17% external, onshore labor cost; 10% internal labor costs); cost includes HW/SW)

² Average Daily Rates: NG - \$845; External - \$1,001 (External Onshore - \$1,711; External Offshore - \$326)

³ Contingency equals 20% applied to labor cost only; not applied to support (RTB) costs

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Investment by OpCo by FY by CapEx and Opex

CapEx Allocated to OpCo's by FY

OpCo	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	Total
Boston Gas	(\$17,800)	(\$18,216)	(\$14,750)	(\$6,343)	(\$1,411)	(\$54)	(\$58,574)
Brooklyn Union Gas (KEDNY)	(\$23,005)	(\$23,542)	(\$19,063)	(\$8,198)	(\$1,823)	(\$70)	(\$75,701)
Colonial Gas	(\$3,982)	(\$4,075)	(\$3,300)	(\$1,419)	(\$316)	(\$12)	(\$13,103)
Keyspan Gas East (KEDLI)	(\$16,470)	(\$16,855)	(\$13,648)	(\$5,869)	(\$1,305)	(\$50)	(\$54,198)
Narragansett Gas	(\$5,663)	(\$5,796)	(\$4,693)	(\$2,018)	(\$449)	(\$17)	(\$18,636)
NiagaraMohawk Gas	(\$9,508)	(\$9,730)	(\$7,879)	(\$3,388)	(\$754)	(\$29)	(\$31,286)
Total CapEx	(\$76,427)	(\$78,212)	(\$63,334)	(\$27,235)	(\$6,058)	(\$234)	(\$251,499)

Opex Allocated to OpCo's by FY

OpCo	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	Total
Boston Gas	(\$13,336)	(\$17,471)	(\$10,334)	(\$6,241)	(\$2,417)	(\$189)	(\$49,989)
Brooklyn Union Gas (KEDNY)	(\$17,236)	(\$22,580)	(\$13,356)	(\$8,065)	(\$3,124)	(\$245)	(\$64,606)
Colonial Gas	(\$2,983)	(\$3,908)	(\$2,312)	(\$1,396)	(\$541)	(\$42)	(\$11,183)
Keyspan Gas East (KEDLI)	(\$12,340)	(\$15,166)	(\$9,562)	(\$5,774)	(\$2,237)	(\$175)	(\$46,254)
Narragansett Gas	(\$4,243)	(\$5,559)	(\$3,288)	(\$1,985)	(\$769)	(\$60)	(\$15,905)
NiagaraMohawk Gas	(\$7,123)	(\$9,332)	(\$5,520)	(\$3,333)	(\$1,291)	(\$101)	(\$26,701)
Total Opex	(\$57,262)	(\$75,015)	(\$44,373)	(\$26,795)	(\$10,380)	(\$813)	(\$214,637)

Total CapEx and Opex Allocated to OpCo's by FY

OpCo	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	Total
Boston Gas	(\$31,136)	(\$35,687)	(\$25,085)	(\$12,584)	(\$3,828)	(\$244)	(\$108,563)
Brooklyn Union Gas (KEDNY)	(\$40,240)	(\$46,121)	(\$32,420)	(\$16,263)	(\$4,948)	(\$315)	(\$140,307)
Colonial Gas	(\$6,965)	(\$7,983)	(\$5,612)	(\$2,815)	(\$856)	(\$55)	(\$24,286)
Keyspan Gas East (KEDLI)	(\$28,810)	(\$33,020)	(\$23,211)	(\$11,643)	(\$3,542)	(\$226)	(\$100,452)
Narragansett Gas	(\$9,906)	(\$11,354)	(\$7,981)	(\$4,004)	(\$1,218)	(\$78)	(\$34,541)
NiagaraMohawk Gas	(\$16,631)	(\$19,061)	(\$13,399)	(\$6,721)	(\$2,045)	(\$130)	(\$57,987)
Total	(\$133,689)	(\$153,227)	(\$107,706)	(\$54,030)	(\$16,437)	(\$1,047)	(\$466,136)

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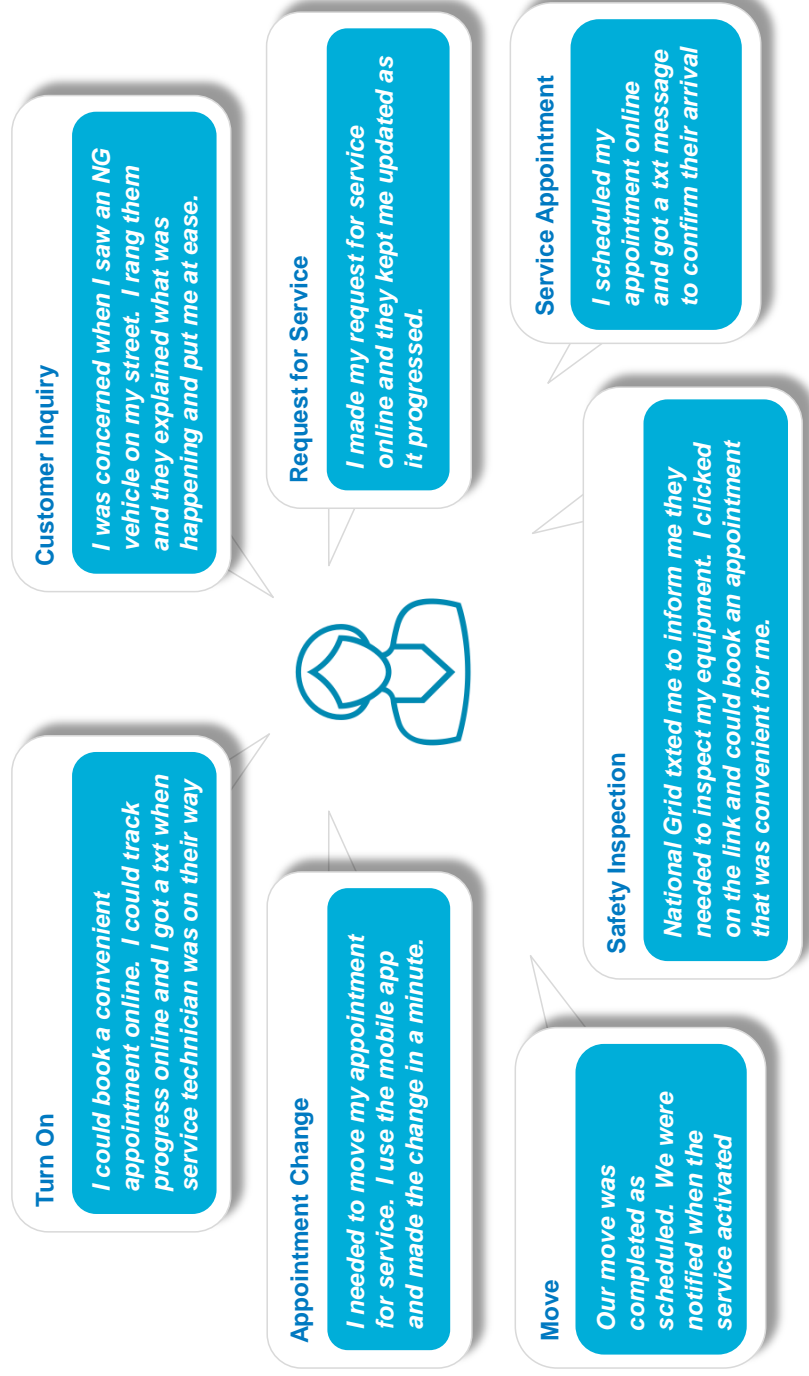


Aspirational Annual Benefits by Category by Capex / Opex and by Type¹

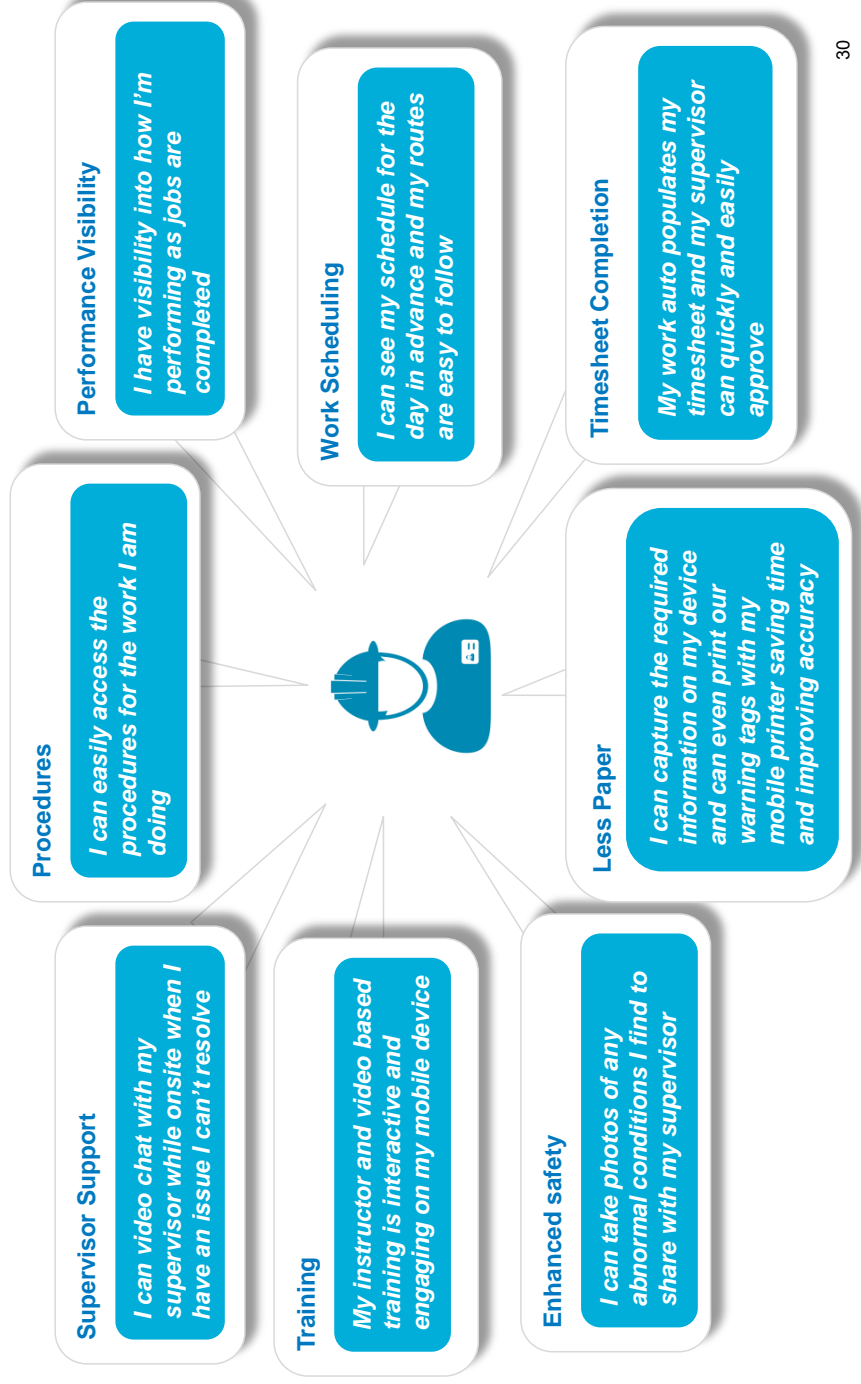
Area	Threshold Benefit	Target Benefit	Stretch Benefit
Customer Experience & Interactions	Total	\$2.4	\$3.0
	CapEx:	\$0.0	\$0.0
	Opex:	\$2.4	\$3.0
	Type 1:	\$0.9	\$0.9
	Type 2:	\$1.5	\$2.1
Asset Management	Total	\$4.1	\$8.6
	CapEx:	\$0.9	\$5.0
	Opex:	\$3.2	\$3.6
	Type 1:	\$2.0	\$4.4
	Type 2:	\$2.1	\$4.2
EAM / Work Management Platform	Total	\$16.7	\$31.7
	CapEx:	\$7.3	\$14.0
	Opex:	\$9.4	\$17.7
	Type 1:	\$2.0	\$2.0
	Type 2:	\$14.7	\$29.7
Supply Chain	Total	\$0.0	\$16.0
	CapEx:	\$0.0	\$13.1
	Opex:	\$0.0	\$3.0
	Type 1:	\$0.0	\$0.0
	Type 2:	\$0.0	\$16.0
Field Technical Training	Total	\$13.5	\$13.5
	CapEx:	\$0.0	\$0.0
	Opex:	\$13.5	\$13.5
	Type 1:	\$0.0	\$0.0
	Type 2:	\$13.5	\$13.5
Totals	Total	\$36.7	\$72.8
	CapEx:	\$8.2	\$32.1
	Opex:	\$28.5	\$40.8
	Type 1:	\$4.9	\$7.3
	Type 2:	\$31.8	\$65.5

¹Type 1 benefits have a direct and certain impact on the bottom line and a clear cause and effect relationship between the project and benefit; direct P&L impact
Type 2 benefits do not have a direct and immediate bottom line impact; they consist of expenses re-assigned, resources freed up, or future cost avoidance

Example customer experience benefits



Example employee experience benefits

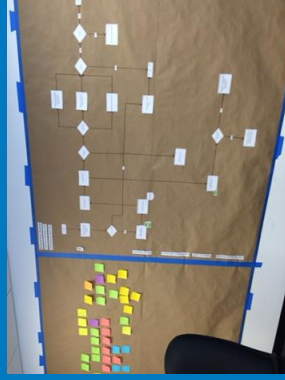


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Gas Business Enablement

Steering Group Pack



Johnny Johnston

6 February 2017

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Note to File...

The objective of this special session of the Steering Group was to gather feedback on a draft of the paper to be presented on 16 Feb 2017 to the Group Executive for executive level sanction of the GBE Program. There was no presentation deck for this SG meeting.

6/14/2017

FY18 - Investment Request Summaries - IRSs - Customer Experience Transformation - Communications...



Planning & Performance Management ▶ FY18 - Investment Request Summaries - IRSs:
Customer Experience Transformation - Communications Preference Management



nationalgrid		Investment Request Summary - IS US		FISCAL YEAR 2018																							
INV ID:	4426	Project Name: Customer Experience Transformation - Communications Preference Management																									
Program:	Customer Experience Transformation																										
Sponsor:	Terence Sobolewski	Title: Chief Customer Officer																									
Relationship Manager:	Aman Aneja	Title: IS Business Relationship Manager																									
Prog Delivery Manager:	Deborah Rollins	Title: IS Program Delivery Manager (Customer)																									
Paper Author:	Michael Olesker	Title: IS BRM Business Consultant (Customer)																									
IS Roadmap Category:	Customer Interaction / Channels	Business Area:	Customer & Digital	Portfolio:	Customer & Digital																						
<input type="checkbox"/> In-Flight Project?	Invest Classification: High	Category:	Policy Driven	Primary Policy Driver:	Reliability																						
					Region: US																						
<input checked="" 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 This project is an element of Customer Experience Transformation (CXT) program to fundamentally change how we interact, serve and communicate with customers. Customer Experience Transformation program consists of series of customer driven process and technology projects whose goal is to enable new capabilities for delivering on an improved experience including replacing end of life digital platforms and delivering new levels of customer self-service and communication across multiple channels. This Communications Preference Management project will deliver customer authentication, authorization and communication preference management capability that is critical for implementation of a Business to Consumer portal servicing the customer from move in, billing/customer care through move out.</p> <p>Project Rationale: Highlight business challenge, capability or process the project addresses National Grid has embarked on a comprehensive Customer Experience Transformation program to fundamentally change how we interact, serve and communicate with customers. Implementation of Communications Preference Management platform is a first critical building bloc enabling this transformation.</p> <p>Project Scope: Explain what is in scope and what is not in scope for the project Build customer access and communication preference management solution that includes following capabilities:</p> <ul style="list-style-type: none"> - Customer authentication platform based on strategic enterprise Identification and Authorization Management (IAM) infrastructure that unifies customer experience. Customer identity will be managed as a single entity across multiple communication channel (Web, Mobile, IVR, messaging) in a single user profile - Implement self-service capability allowing customers to define and manage access profile, and to choose communication channel preferences based on messaging type (billing issues, connect/disconnect, outage notifications, service messages...) - Communications Preference Management solution should serve both CSS and CRIS customers, available 24/7 and has to be de-coupled from legacy customer information system (CSS, CRIS, Siebel) availability - The solution needs to be designed with built in flexibility to add/remove/modify communication channels choice in the future and to configure communication types available to customer - Preference choices selected by customer have to be available to all existing and future customer facing channels including, but not limited to Web, Mobile, text messaging. <p>Project Dependencies: Identify any core program or project dependencies, please include INVP numbers if known Successful implementation of INVP 3932 Customer Contact Center / SDC Technology Upgrade Implement Solution</p> <p>Basic Project Assumptions: This Project will be funded by US Growth Playbook Budget</p> <p>Tuesday , August 23, Discussed the scope with David Boccio. Followed by update of the IRS content</p> <p>Thursday, August 25, Reviewed project description and scope with Dave Boccio at live meeting. Dave approved scope and description.</p> <p>Thursday, August 25, Sent invite to IRS Business Scoring Team. Meeting scheduled for Monday, August 29 at 10:15 AM. Included in distribution: Boccio, David J. <David.Boccio@nationalgrid.com>; Aneja, Aman S. <Aman.Aneja@nationalgrid.com>; Carney, Kelly Kelly.Carney@nationalgrid.com</p> <p>Monday, August 29, Benefits prioritization scoring has been reviewed at 10:30AM meeting with Boccio, David J. <David.Boccio@nationalgrid.com>; Aneja, Aman S. <Aman.Aneja@nationalgrid.com>; Carney, Kelly Kelly.Carney@nationalgrid.com. Results (data collection forms) are distributed to participants. Per agreement with business sponsors, scores have been removed from this SharePoint form and kept for record as this project is prioritized and funded by Growth Playbook initiative.</p>																											
<p>Indicative Project Costs by Fiscal Year</p> <table border="1"> <thead> <tr> <th>(\$M)</th> <th>Prior Years</th> <th>FY 2018</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>Total</th> </tr> </thead> <tbody> <tr> <td>CapEx</td> <td></td> <td>1.200</td> <td>0.800</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>2.000</td> </tr> </tbody> </table>						(\$M)	Prior Years	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	CapEx		1.200	0.800							2.000
(\$M)	Prior Years	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total																	
CapEx		1.200	0.800							2.000																	

6/14/2017

FY18 - Investment Request Summaries - IRSs - Customer Experience Transformation - Communications...

OpEx		0.500	0.000							0.500
Impact on RTB		0.060	0.120	0.150	0.150	0.150	0.150	0.150	0.150	1.080

Indicative Project Costs by Delivery Phase

(\$M)	Start-up	R & D	D & I	Closure	Total
CapEx		0.400	1.600		2.000
OpEx		0.400	0.100		0.500

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.

- Increase customer satisfaction because digital will assist their interactions with us and improve their experience
- A stronger more joined up brand presence across digital channels
- Employee satisfaction and advocacy improvements by having access to more relevant content and seeing new innovations being developed
- Time and cost savings across, customer engagement, operations and service provision

Investment Prioritization

Benefits				Cost			
	Impact	Weight	Score		Impact	Weight	Score
OpEx Annual Savings		10.3%	0	OpEx Cost	0.500	-24.4%	-2.196
CapEx Annual Savings		5.1%	0	CapEx Cost	2.000	-11.2%	-1
Revenue Generation (annual)		6.2%	0	RTB Efficiency	52.500 %	-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	does not apply	-10.6%	0
Regulatory Impact	does not apply	11.2%	0	Elastice Time Duration	does not apply	-6.6%	0
Process & Personal Safety	does not apply	19.4%	0	Change Management Effort	does not apply	-14.9%	0
Reliability	does not apply	10.9%	0				
Customer & Community Responsiveness	does not apply	5.3%	0				
Employee Satisfaction	does not apply	4.6%	0				
Mitigates a Corporate Risk / Risk of not Doing	does not apply	8.9%	0				
Jurisdictional Engagement	does not apply	8.2%	0				
Benefit Score: 0.00				Cost Score: -5.23			
				Overall Priority Score: -5.229			

Investment Risk and Complexity

Project Risk Score:	27	Risk Score Description: The Risk Score is 27 based upon an Impact level of 3 and a Likelihood value of 5
Project Complexity Score::	26	Project Complexity Score Description:
Key Risks Description: Provide detail on project risks & mitigation strategy:		

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FY18 - Investment Request Summaries - IRSs - Customer Experience Transformation - Communications...

IS Project Dependencies if you don't see a project in the drop-down please contact the Planning & Performance team.		Benefiting Operating Companies: Check all that apply															
IS Projects: 4426 - Customer Experience Transformation - Communications Preference Management 1. Has a Downstream dependency on IS Project; 3932 - Customer Contact Center Technology Upgrade Im 2. Has a Parallel dependency on IS Project; 4411 - New Customer Connections Program 3. Has a Parallel dependency on IS Project; 4427 - Customer Experience Transformation - My Account 4. Has a Upstream dependency on IS Project; 3683 - DR&S Future Programme 5. Has a dependency on IS Project; 6. Has a dependency on IS Project;		<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 <input type="checkbox"/> National Grid USA Parent <input type="checkbox"/> KeySpan Energy Development Corporation <input type="checkbox"/> KeySpan Services Inc. <input type="checkbox"/> KeySpan Energy Corp <input checked="" type="checkbox"/> KeySpan Energy Delivery New York <input checked="" type="checkbox"/> KeySpan Energy Delivery Long Island <input type="checkbox"/> KeySpan Generation LLC (PSA) <input type="checkbox"/> KeySpan Glenwood Energy Center <input type="checkbox"/> KeySpan Port Jefferson Energy Center <input 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 type="checkbox"/> Niagara Mohawk Power Corp - Transmission <input checked="" type="checkbox"/> Massachusetts Electric Company <input 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 type="checkbox"/> Narragansett Electric Company - Transmission <input type="checkbox"/> New England Power Company - Transmission <input type="checkbox"/> New England Hydro - Trans Corp <input type="checkbox"/> New England Electric Trans Corp <input type="checkbox"/> NG LNG LP Regulated Entity															
Business Initiative Dependencies IS Projects: 4426 - Customer Experience Transformation - Communications Preference Management 1. Has a Parallel dependency on Biz Initiative, Customer Experience Transformation 2. Has a Parallel dependency on Biz Initiative, 3. Has a dependency on Biz Initiative, 4. Has a dependency on Biz Initiative,																	
Project Relationships <input type="checkbox"/> Minor Works Project Relationship: Child Project Related Projects: <input checked="" type="checkbox"/> 4411 - Distributed Generation Application Tracking Phase 1 <input checked="" type="checkbox"/> 4427 - Customer Experience Transformation - My Account portal																	
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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																	

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FY18 - Investment Request Summaries - IRSs - Customer Experience Transformation - Communications...

[IRS_Data_Collection_4426_Communications Preference Management v4.docx](#)

Recommendation Sign-off

Role	Name	Title	Date
Business Project Sponsor	Terence Sobolewski	Chief Customer Officer	
Business Relationship Manager	Aman Aneja	IS Business Relationship Manager	
IS Program Delivery Manager	Deborah Rollins	IS Program Delivery Manager	

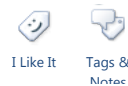


6/14/2017

FY18 - Investment Request Summaries - IRSs - Customer Experience Transformation - My Account...



Planning & Performance Management ▶ FY18 - Investment Request Summaries - IRSs:
Customer Experience Transformation - My Account portal



nationalgrid		Investment Request Summary - IS US		FISCAL YEAR 2018																																													
INV ID:	4427	Project Name: Customer Experience Transformation - My Account portal																																															
Program:	Customer Experience Transformation																																																
Sponsor:	Terence Sobolewski	Title: <i>Chief Customer Officer</i>																																															
Relationship Manager:	Aman Aneja	Title: <i>IS Business Relationship Manager</i>																																															
Prog Delivery Manager:	Deborah Rollins	Title: <i>IS Program Delivery Manager (Customer)</i>																																															
Paper Author:	Michael Olesker	Title: <i>IS BRM Business Consultant (Customer)</i>																																															
IS Roadmap Category:	Customer Interaction / Channels	Business Area:	Customer & Digital	Portfolio:	Customer & Digital																																												
<input type="checkbox"/> In-Flight Project?	Invest Classification: High	Category:	Policy Driven	Primary Policy Driver:	Reliability																																												
					Region: US																																												
<input checked="" 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 This project is an element of Customer Experience Transformation (CXT) program to fundamentally change how we interact, serve and communicate with customers. Customer Experience Transformation program consists of series of customer driven process and technology projects whose goal is to enable new capabilities for delivering on an improved experience including replacing end of life digital platforms and delivering new levels of customer self-service and communication across multiple channels. This project will deliver unified, high availability Business-to-Customer (B2C) Retail Web Portal that will replace the two existing web front ends to our CIS's for Customer Self-serve functions from move in, billing/customer care through move out.</p> <p>Project Rationale: Highlight business challenge, capability or process the project addresses National Grid has embarked on a comprehensive Customer Experience Transformation program to fundamentally change how we interact, serve and communicate with customers. This project is a key element and building block allowing new Customer strategy.</p> <p>Project Scope: Explain what is in scope and what is not in scope for the project Build customer self-service web portal to manage customer interactions currently performed through legacy Siebel Customer Relationship Management (CRM) system for CRIS customers, US Web for CSS customers and through Call Center technologies. - Replace legacy downstate Siebel infrastructure, while preserving the 24x7 customer web experience despite the potential lack of back-end customer business application services availability; - Incorporate and enhance existing CSS Web customer interactions; - Ensure high availability of self-services independent of availability of back end customer information systems (CSS, CRIS) - Provide common, unified customer experience through all National Grid service territories; - These services should be aligned with the Business Application Services Framework and supported by the Enterprise Data Model and Data Dictionary</p> <p>Project Dependencies: Identify any core program or project dependencies, please include INVP numbers if known Successful implementation of INVP 3932 Customer Contact Center / SDC Technology Upgrade Implement Solution Successful implementation of INVP 4426 Customer Experience Transformation - Communications Preference Management</p> <p>Basic Project Assumptions: This Project will be funded by US Growth Playbook Budget</p> <p>Tuesday , August 23, Discussed the scope with David Boccio. Followed by update of the IRS content Thursday, August 25, Reviewed project description and scope with Dave Boccio at live meeting. Dave approved scope and description. Thursday, August 25, Sent invite to IRS Business Scoring Team. Meeting scheduled for Monday, August 29 at 10:15 AM. Included in distribution: Boccio, David J. <David.Boccio@nationalgrid.com>; Aneja, Aman S. <Aman.Aneja@nationalgrid.com>; Carney, Kelly Kelly.Carney@nationalgrid.com Monday, August 29, Benefits prioritization scoring has been reviewed at 10:30AM meeting with Boccio, David J. <David.Boccio@nationalgrid.com>; Aneja, Aman S. <Aman.Aneja@nationalgrid.com>; Carney, Kelly Kelly.Carney@nationalgrid.com. Results (data collection forms) are distributed to participants. Per agreement with business sponsors, scores have been removed from this SharePoint form and kept for record as this project is prioritized and funded by Growth Playbook initiative</p>																																																	
<p>Indicative Project Costs by Fiscal Year</p> <table border="1"> <thead> <tr> <th>(\$M)</th> <th>Prior Years</th> <th>FY 2018</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>Total</th> </tr> </thead> <tbody> <tr> <td>CapEx</td> <td></td> <td>1.000</td> <td>6.000</td> <td>1.500</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>8.500</td> </tr> <tr> <td>OpEx</td> <td></td> <td>1.000</td> <td>0.000</td> <td>0.100</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1.100</td> </tr> <tr> <td>Impact on RTB</td> <td></td> <td>0.000</td> <td>0.200</td> <td>0.300</td> <td>0.300</td> <td>0.300</td> <td>0.300</td> <td>0.300</td> <td>0.300</td> <td>2.000</td> </tr> </tbody> </table>						(\$M)	Prior Years	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	CapEx		1.000	6.000	1.500						8.500	OpEx		1.000	0.000	0.100						1.100	Impact on RTB		0.000	0.200	0.300	0.300	0.300	0.300	0.300	0.300	2.000
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FY18 - Investment Request Summaries - IRSS - Customer Experience Transformation - My Account...

Indicative Project Costs by Delivery Phase

(\$M)	Start-up	R & D	D & I	Closure	Total
CapEx		0.200	8.300		8.500
OpEx	0.100	0.900	0.100		1.100

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			1.300	1.300	1.300	1.300	1.300	1.300	7.800
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.

- Increase customer satisfaction because digital will assist their interactions with us and improve their experience
- Stronger more joined up brand presence across digital channels
- Employee satisfaction and advocacy improvements by having access to more relevant content and seeing new innovations being developed
- Time and cost savings across, customer engagement, operations and service provision

Investment Prioritization

Benefits	Impact	Weight	Score	Cost	Impact	Weight	Score
OpEx Annual Savings	1.3	10.3%	.927	OpEx Cost	1.100	-24.4%	-2.196
CapEx Annual Savings		5.1%	0	CapEx Cost	8.500	-11.2%	-1
Revenue Generation (annual)		6.2%	0	RTB Efficiency	24.706	% -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	does not apply	-10.6%	0
Regulatory Impact	does not apply	11.2%	0	Elapse Time Duration	does not apply	-6.6%	0
Process & Personal Safety	does not apply	19.4%	0	Change Management Effort	does not apply	-14.9%	0
Reliability	does not apply	10.9%	0				
Customer & Community Responsiveness	does not apply	5.3%	0				
Employee Satisfaction	does not apply	4.6%	0				
Mitigates a Corporate Risk / Risk of not Doing	does not apply	8.9%	0				
Jurisdictional Engagement	does not apply	8.2%	0				
Benefit Score: 0.93				Cost Score: -5.23			
Overall Priority Score: -4.302							

Investment Risk and Complexity

Project Risk Score:	48	Risk Score Description: The Risk Score is 48 based upon an Impact level of 7 and a Likelihood value of 6
Project Complexity Score::	32	Project Complexity Score Description:

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


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FY18 - Investment Request Summaries - IRSs - Customer Experience Transformation - My Account...

IS Project Dependencies <small>if you don't see a project in the drop-down please contact the Planning & Performance team.</small>		Benefiting Operating Companies: <small>Check all that apply</small>				
IS Projects: 4427 - Customer Experience Transformation - My Account portal		<input type="checkbox"/> Select All Companies <input type="checkbox"/> Clear All Companies				
1. Has a Downstream dependency on IS Project; 3932 - Customer Contact Center Technology Upgrade Im		<input type="checkbox"/> Select All Gas <input type="checkbox"/> Select All Electric <input type="checkbox"/> Select All Gen				
2. Has a Downstream dependency on IS Project; 4426 - Customer Experience Transformation - Communic						
3. Has a Downstream dependency on IS Project; 3683 - DR&S Future Programme		<input type="checkbox"/> National Grid USA Parent				
4. Has a dependency on IS Project;		<input type="checkbox"/> KeySpan Energy Development Corporation				
5. Has a dependency on IS Project;		<input type="checkbox"/> KeySpan Services Inc.				
6. Has a dependency on IS Project;		<input type="checkbox"/> KeySpan Energy Corp				
		<input checked="" type="checkbox"/> KeySpan Energy Delivery New York				
		<input checked="" type="checkbox"/> KeySpan Energy Delivery Long Island				
		<input type="checkbox"/> KeySpan Generation LLC (PSA)				
		<input type="checkbox"/> KeySpan Glenwood Energy Center				
		<input type="checkbox"/> KeySpan Port Jefferson Energy Center				
		<input 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 type="checkbox"/> Niagara Mohawk Power Corp - Transmission				
		<input checked="" type="checkbox"/> Massachusetts Electric Company				
		<input 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 type="checkbox"/> Narragansett Electric Company - Transmission				
		<input type="checkbox"/> New England Power Company - Transmission				
		<input type="checkbox"/> New England Hydro - Trans Corp				
		<input type="checkbox"/> New England Electric Trans Corp				
		<input type="checkbox"/> NG LNG LP Regulated Entity				
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2. Has a dependency on Biz Initiative,						
3. Has a dependency on Biz Initiative,						
4. Has a dependency on Biz Initiative,						
Project Relationships						
<input type="checkbox"/> Minor Works Project Relationship: Child Project						
Related Projects:						
<input checked="" type="checkbox"/> 4411 - Distributed Generation Application Tracking Phase 1						
<input checked="" type="checkbox"/> 4426 - Customer Experience Transformation - Communications Preference Management						
Enabling IS Capabilities <small>check all that apply</small>						
<input checked="" type="checkbox"/> Enterprise Content Management (ECM)		<input checked="" type="checkbox"/> Enterprise Mobility				
<input checked="" type="checkbox"/> Comprehensive Integration Services (CIS)		<input type="checkbox"/> Reporting and Analytics				
<input type="checkbox"/> Hybrid Cloud		<input checked="" type="checkbox"/> Networks				
<input type="checkbox"/> Next Gen Workplace						
Key Milestone Dates: <small>Select the 1st, 15th or last day of the month</small>						
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March, 2017	April, 2017	February, 2018	April, 2019	June, 2019		
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						

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Recommendation Sign-off			
Role	Name	Title	Date
Business Project Sponsor	Terence Sobolewski	Chief Customer Officer	
Business Relationship Manager	Aman Aneja	IS Business Relationship Manager	
IS Program Delivery Manager	Deborah Rollins	IS Program Delivery Manager	
			

US Sanction Paper

Title:	US SAP: Governance Risk and Compliance (GRC) environment upgrade	Sanction Paper #:	USSC-17-229
Project #:	INVP 4222	Sanction Type:	Partial Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	June 14, 2017
Author / NG Representative:	Diane Beard / Ella Weisbord	Sponsor:	Caroline Hon, VP Finance Excellence
Utility Service:	IS	Project Manager:	Samir Parikh

1 Executive Summary

1.1 Sanctioning Summary

This paper requests partial sanction of INVP 4222 in the amount \$1.196M with a tolerance of +/- 10% for the purposes of a Requirements and Design.

The sanction amount of \$1.196M broken down into:

\$1.067M Capex

\$0.130M Opex

\$0.000M Removal

NOTE the potential investment of \$2.441M with a tolerance of +/- 25%, contingent upon submittal and approval of a Project Sanction paper following completion of Requirements and Design.

1.2 Project Summary

This project updates the Governance, Risk and Compliance (GRC) module of US SAP to the vendor supported version. In addition, the project will update the GRC environments from Service Pack 4 to the latest version, Service Pack 17. These updates will ensure the module, which provides control / roles segregation and Sarbanes-Oxley Act (SOX) guidelines, will be stable and all fixes are applied. It will also integrate the newest features and improvements released by SAP.



US Sanction Paper

1.3 Summary of Projects

Project Number	Project Title	Estimate Amount (\$M)
4222	US SAP: Governance, Risk, and Compliance (GRC) environment upgrade	2.441
Total		2.441

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
Aug 2017	Full Sanction

1.7 Category

Category	Reference to Mandate, Policy, NPV, or Other
<input type="radio"/> Mandatory <input checked="" type="radio"/> Policy- Driven <input type="radio"/> Justified NPV <input type="radio"/> Other	<p>This investment will support the upgrade of the SAP Governance, Risk, and Compliance (GRC) model to ensure National Grid is in compliance with vendor support policies and the program utilizes and supports recently released regulations.</p> <p>This upgrade will address potential audit issues:</p> <ul style="list-style-type: none"> • Provide transport functionality for Separation Of Duty (SOD) rule set to maintain evidence of change control • Correct firefighter logging issues - SAP APD.11 (SAP Firefighter access review)

US Sanction Paper

1.8 Asset Management Risk Score

Asset Management Risk Score: 39

Primary Risk Score Driver: (Policy Driven Projects Only)

☒ Reliability ☐ Environment ☐ Health & Safety ☐ Not Policy Driven

1.9 Complexity Level

☐ High Complexity ☒ Medium Complexity ☐ Low Complexity ☐ N/A

Complexity Score: 15

1.10 Process Hazard Assessment

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

☐ Yes ☒ No

1.11 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
IS Investment Plan FY18-22	<input type="radio"/> Yes <input checked="" type="radio"/> No	<input checked="" type="radio"/> Over <input type="radio"/> Under <input type="radio"/> NA	\$2.441M

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

Re-allocations of funds within the US business have been managed to meet jurisdictional budgetary, statutory and regulatory requirements.

US Sanction Paper

1.13 Current Planning Horizon

\$M	Prior Yrs	Current Planning Horizon						Total
		Yr. 1 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	2.295	0.000	0.000	0.000	0.000	0.000	2.295
OpEx	0.000	0.146	0.000	0.000	0.000	0.000	0.000	0.146
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CIAC/Reimbursement	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	0.000	2.441	0.000	0.000	0.000	0.000	0.000	2.441

1.14 Key Milestones

Milestone:	Target Date: (Month/Year)
Start Up	Apr 2017
Begin Requirements and Design	Jun 2017
Partial Sanction	Jun 2017
Full Sanction	Aug 2017
Begin Development and Implementation	Sep 2017
Begin User Acceptance Testing	Oct 2017
Move to Production / Last Go Live	Nov 2017
Project Complete	Nov 2017
Project Closure Sanction	Feb 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

US Sanction Paper

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 June 14, 2017:

- (a) APPROVED the investment of \$1.196M and a tolerance of +/- 10% for the purposes of requirements and design.
- (b) NOTED the potential investment of \$2.441M and a tolerance of +/-25% contingent upon submittal and approval of a Project Sanction paper following completion of requirements and design.
- (c) NOTED that Samir Parikh has the approved financial delegation to undertake the activities stated in (a).

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

Christopher Kelly
Senior Vice President, Electric Process and Engineering
US Sanctioning Committee Co – Chair Person

US Sanction Paper

3 Sanction Paper Detail

Title:	US SAP: Governance Risk and Compliance (GRC) environment upgrade	Sanction Paper #:	USSC-17-229
Project #:	INVP 4222	Sanction Type:	Partial Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	June 14, 2017
Author / NG Representative:	Diane Beard / Ella Weisbord	Sponsor:	Caroline Hon, VP Finance Excellence
Utility Service:	IS	Project Manager:	Samir Parikh

3.1 Background

The SAP Governance, Risk and Compliance (GRC) module enables National Grid to manage user access and controls compliance, reduce risk in managing its back office operations, improve fraud prevention in business processes, and improve risk and audit management activities. The US SAP GRC module was audited by National Grid's external auditor Deloitte, with advisory that this business critical functionality should not function without vendor support.

The SAP GRC module consists of three main areas: analyze, manage, and monitor.

- SAP GRC Access Control performs risk control as part of compliance and regulation practice and facilitates clearly defined roles, manages role provisioning and super user access to the system.
- SAP GRC Risk Management allows National Grid to perform risk management activities by identifying risk in advance and implementing measures to help prevent situations that can negatively impact our business.

National Grid implemented the GRC Access Control module in November 2014, and its GRC environment is fourteen versions behind the current version. This introduces significant risk for monitoring Separation of Duties (SOD) in user access provisioning and controlling privileged "firefighter" (special elevated role) access.

Firefighter (FF) is elevated access (outside of normal business roles) granted to users to allow them to support the business in case of incidents and/ or emergency requests. At National Grid, after approval, the elevated access is provisioned for a 3-day default period. All actions performed by the user are logged in GRC for review and approval for the related transactional activity. All elevated access (FF activity) is subject to audit on a periodic basis.



US Sanction Paper

Past SOX control reviews (by National Grid's external auditor, Deloitte) have identified improvement opportunities related to the GRC firefighter log review process as well as a GRC upgrade opportunity. The SOX control reference is SAP APD.11 (SAP Firefighter access review).

3.2 Drivers

The project is necessary to keep the US SAP GRC module in compliance with vendor support policy. National Grid's US SAP GRC module is currently on service level pack 4 which will be out of SAP support in December of 2017.

3.3 Project Description

This project updates the GRC environments hosted by the vendor, T-Systems, to the latest (N-1) Service Pack and Patch level (from service pack 4 to service pack 17). These updates ensure improvements for system stability, apply bug fixes, and leverage any improvements and new features released by SAP.

3.4 Benefits Summary

The requests worked under this project are expected to contribute to improved system reliability and business functionality, fulfill the organization's operating requirements, and support compliance with regulatory mandates. In addition, this upgrade project will remediate audit recommendation (SAP APD.11).

In addition, this project will:

- Enable automated User Access Review capabilities of the GRC Access Controls suite to reduce the effort required to extract and send reports for user access reviews.
- Enable rule set transport functionality to eliminate variances in SOD rule set that exist today in the landscape and demonstrate control over rule set design for audit purposes.
- Optimize GRC Rule sets, which will help our GRC administration team with their day-to-day execution of Access Controls and general GRC performance.
- Validate rule set changes from SAP are incorporated into National Grid's SOD rule set to accurately identify risks in the landscape environment.
- Take advantage of performance enhancements made to the GRC suite including improved firefighter maintenance screens and improved firefighter log retrieval performance.

3.5 Business and Customer Issues

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

US Sanction Paper

3.6 Alternatives

Alternative 1: Defer project / Do Nothing

This option is not viable as it will not address the business need for reliability and improvements to core end-user services.

3.7 Safety, Environmental and Project Planning Issues

There are no significant issues beyond what has been described in this 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	Cost	Schedule				
1	Development (DEV) and/or testing (QA) environment may not be available at the required time due to commercial or operational constraints with our hosting provider.	4	4	4	4	16	16	Mitigate	SAP PDM and PM will work with hosting provider to prioritize delivery dates of most critical environments first. We will also escalate to IS Commercial as necessary any risks or issues we foresee. PCRs will also be submitted as far in advance as possible once environment timeline requirements are finalized.	The cost and timeline of the project may be impacted.	Project schedule and timeline would be re-evaluated based upon confirmed delivery dates from hosting provider.

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

					Current Planning Horizon							
Project Number	Project Title	Project Estimate Level (%)	Spend (\$M)	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	Total	
					2017/18	2018/19	2019/20	2020/21	2021/22	2022/23		
4222	US SAP: Governance, Risk, and Compliance (GRC) environment upgrade	+/- 10%	CapEx	0.000	2.295	0.000	0.000	0.000	0.000	0.000	0.000	2.295
			OpEx	0.000	0.146	0.000	0.000	0.000	0.000	0.000	0.146	
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
			Total	0.000	2.441	0.000	0.000	0.000	0.000	0.000	2.441	
Total Project Sanction			CapEx	0.000	2.295	0.000	0.000	0.000	0.000	0.000	2.295	
			OpEx	0.000	0.146	0.000	0.000	0.000	0.000	0.000	0.146	
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
			Total	0.000	2.441	0.000	0.000	0.000	0.000	0.000	2.441	

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	(2.295)	0.000	0.000	0.000	0.000	0.000	(2.295)
OpEx	0.000	(0.146)	0.000	0.000	0.000	0.000	0.000	(0.146)
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	(2.441)	0.000	0.000	0.000	0.000	0.000	(2.441)

3.11.3 Cost Assumptions

This estimate was developed 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

This is not an NPV project.

US Sanction Paper

3.11.4.1 NPV Summary Table

3.11.4.2 NPV Assumptions and Calculations

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	Caroline Hon, VP Finance Excellence
Relationship Manager	Joel Semel
Program Delivery Manager	Samir Parikh
IS Finance Management	Chip Benson
IS Regulatory	Daniel DeMauro
DR&S	Elaine Wilson
Service Delivery	Brian Detota
Enterprise Architecture	Joe Clinchot



US Sanction Paper

3.12.2 Reviewers

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

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

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	0.175	
	SDC Time & Materials	0.009	IBM
	SDC Fixed-Price	0.650	Wipro
	All other personnel	1.140	KPMG, T-Systems, SAP
	TOTAL Personnel Costs	1.974	
Hardware	Purchase	-	
	Lease	0.075	
Software		-	
Risk Margin		0.309	
Other		0.083	
TOTAL Costs		2.441	

4.1.2 Benefiting Operating Companies

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

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FY18 - Investment Request Summaries - IRSs - US SAP: Business Planning Consolidation (BPC)...



Planning & Performance Management ▶ FY18 - Investment Request Summaries - IRSs: US
SAP: Business Planning Consolidation (BPC) - HANA



nationalgrid		Investment Request Summary - IS US				FISCAL YEAR 2018																																															
INV ID:	4217	Project Name: US SAP: Business Planning Consolidation (BPC) - HANA																																																			
Program:	Enhancement Release - EHR-RTR																																																				
Sponsor:	David Campbell	Title: VP Corporate Finance, Fin Plan & Analysis																																																			
Relationship Manager:	Joel Semel	Title: Strategy & Relationship Manager																																																			
Prog Delivery Manager:	Samir Parikh	Title: Director, Portfolio SAP Enterprise																																																			
Paper Author:	Ella Weisbord	Title: Business Consultant																																																			
IS Roadmap Category:	Finance	Business Area: US F,SS&C		Portfolio: Other																																																	
<input type="checkbox"/> In-Flight Project?	Invest Classification: Medium	Category: Policy Driven	Primary Policy Driver: Reliability			Region: US																																															
<input checked="" type="checkbox"/> Growth Playbook Project?	<input checked="" type="checkbox"/> Shaping Our Future Project?	<input type="checkbox"/> Energy Efficiency Project?																																																			
<p>Project Description: The context for the project with background information</p> <p>This investment is focusing on performance enhancements by upgrading the SAP Business Planning Capability (BPC) platform from 7.t to 10.1. The upgrade will support increased accessibility to planning capabilities in the system and improved forecasting capabilities. In addition, it will enable accelerated real time insights to variances for improved decision making. Real time variance analysis will allow for increased decision making and the ability to adjust course in a timely manner</p> <p>Project Rationale: Highlight business challenge, capability or process the project addresses</p> <p>The BPC upgrade will support Finance's goal to Deliver Outstanding Finance Performance, as well as keeping US SAP module in compliance. In addition, the upgrade will provide:</p> <ol style="list-style-type: none"> 1. Simplified Disclosure Compliance. 2. Enhanced Journal Management. 3. Improved Reporting. 4. Improved Variance Analysis. 5. Streamlined, Unified, and Harmonized User Experience. 6. Enhanced Manageability. 7. Improved System Performance, Integrity and Maintenance. 8. Expanded Mobile Delivery Options. 9. Simplified Hierarchy Maintenance. 10. Specific Industry or Line of Business Packaged Solutions. <p>Project Scope: Explain what is in scope and what is not in scope for the project</p> <p>Upgrade the BPC application and replatform to HANA.</p> <p>Project Dependencies: Identify any core program or project dependencies, please include INVP numbers if known</p> <p>This project is related to the Finance Goals within "Shaping our Future" Initiative</p> <p>Basic Project Assumptions:</p> <p>The RTB cost reflects infrastructure changes - moving to HEC</p>																																																					
<p>Indicative Project Costs by Fiscal Year</p> <table border="1"> <thead> <tr> <th>(\$M)</th> <th>Prior Years</th> <th>FY 2018</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>Total</th> </tr> </thead> <tbody> <tr> <td>CapEx</td> <td></td> <td>4.643</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>4.643</td> </tr> <tr> <td>OpEx</td> <td></td> <td>1.589</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1.589</td> </tr> <tr> <td>Impact on RTB</td> <td></td> <td>0.075</td> <td>0.300</td> <td>0.300</td> <td>0.300</td> <td>0.300</td> <td>0.300</td> <td>0.300</td> <td>0.300</td> <td>2.175</td> </tr> </tbody> </table>										(\$M)	Prior Years	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	CapEx		4.643								4.643	OpEx		1.589								1.589	Impact on RTB		0.075	0.300	0.300	0.300	0.300	0.300	0.300	0.300	2.175
(\$M)	Prior Years	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total																																											
CapEx		4.643								4.643																																											
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Indicative Project Costs by Delivery Phase

(\$M)	Start-up	R & D	D & I	Closure	Total
CapEx		1.527	3.116		4.643
OpEx	0.623	0.654	0.000	.312	1.589

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.

Investment Prioritization

Benefits				Cost			
	Impact	Weight	Score		Impact	Weight	Score
OpEx Annual Savings		10.3%	0	OpEx Cost	1.589	-24.4%	-2.196
CapEx Annual Savings		5.1%	0	CapEx Cost	4.643	-11.2%	-1
Revenue Generation (annual)		6.2%	0	RTB Efficiency	45.229	% -22.5%	-2.025
Financial Control	High	6.2%	0.558	Union/Labor Relations	does not apply	-9.8%	0
Soft Financial Benefits	Medium	3.8%	0.114	Dependencies	Low	-10.6%	-0.106
Regulatory Impact	Medium	11.2%	0.336	Elapse 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	High	10.9%	0.981				
Customer & Community Responsiveness	does not apply	5.3%	0				
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: 3.67				Cost Score: -5.68			
				Overall Priority Score: -2.016			

Investment Risk and Complexity

Project Risk Score:	39	Risk Score Description: Risk Score was calculated based on financial impact (5 - failure of critical business application) and probability of failure of the old version and old solution is high (5)
Project Complexity Score::	22	Project Complexity Score Description: Cost: 3, Duration: 2, Delivery Complexity: 3, Business process Impact 6, External Impact 4, Dependencies 2, Innovation 2

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

Risk Score was calculated based on financial impact (5 - failure of critical business application) and probability of failure (2)

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IS Project Dependencies <small>if you don't see a project in the drop-down please contact the Planning & Performance team.</small>		Benefiting Operating Companies: <small>Check all that apply</small>															
IS Projects: 4217 - US SAP: Business Planning Consolidation (BPC) - HANA 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;		<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 <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 checked="" type="checkbox"/> NG LNG LP Regulated Entity															
Business Initiative Dependencies IS Projects: 4217 - US SAP: Business Planning Consolidation (BPC) - HANA 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 <input type="checkbox"/> Minor Works <small>Project Relationship: Standalone Project</small> Related Projects:																	
Enabling IS Capabilities <small>check all that apply</small> <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																	
Key Milestone Dates: <small>Select the 1st, 15th or last day of the month</small> <table><thead><tr><th>Begin Start-up</th><th>Begin Requirements & Deign</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>March, 2017</td><td></td><td></td><td></td><td>April, 2018</td><td></td><td></td></tr></tbody></table>				Begin Start-up	Begin Requirements & Deign	Begin Development & Implementation	Begin User Acceptance Testing	Go Live	Project Completion	Project Closure	March, 2017				April, 2018		
Begin Start-up	Begin Requirements & Deign	Begin Development & Implementation	Begin User Acceptance Testing	Go Live	Project Completion	Project Closure											
March, 2017				April, 2018													
Business Resource Estimates: # of Full Time Equivalents <table><thead><tr><th>Start-up</th><th>Requirements & Deign</th><th>Develop & Implement</th><th>Business Resources UAT</th><th>Go Live Readiness</th><th>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												
Resourcing Strategy: This project will be resourced using both internal resources from IS and the Business as well as Solution Delivery Center partners.																	
Attached Supporting Documents																	

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FY18 - Investment Request Summaries - IRSs - US SAP: Business Planning Consolidation (BPC)...

Recommendation Sign-off

<i>Role</i>	<i>Name</i>	<i>Title</i>	<i>Date</i>
<i>Business Project Sponsor</i>	<i>David Campbell</i>	<i>VP Corporate Finance, Fin Plan & Analysis</i>	
<i>Business Relationship Manager</i>	<i>Joel Semel</i>	<i>IS Business Relationship Manager</i>	
<i>IS Program Delivery Manager</i>	<i>Samir Parikh</i>	<i>IS Program Delivery Manager</i>	



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FY18 - Investment Request Summaries - IRSs - US SAP: FERC on HANA (FOH) Upgrade



Planning & Performance Management ▶ FY18 - Investment Request Summaries - IRSs: US
SAP: FERC on HANA (FOH) Upgrade



nationalgrid		Investment Request Summary - IS US				FISCAL YEAR 2018																																															
INV ID:	4563	Project Name: US SAP: FERC on HANA (FOH) Upgrade																																																			
Program:																																																					
Sponsor:	David Campbell	Title: VP Corporate Finance																																																			
Relationship Manager:	Joel Semel	Title: Relationship Manager																																																			
Prog Delivery Manager:	Samir Parikh	Title: Director, Portfolio SAP Enterprise																																																			
Paper Author:	Ella Weisbord	Title: Business consultant																																																			
IS Roadmap Category:		Enterprise SAP		Business Area: US F,SS&C		Portfolio: Other																																															
<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</p> <p>This project provides funding structure to support FERC on HANA (FOH) upgrade. Electric and gas utilities of all sizes must comply with the Uniform System of Accounts from the Federal Energy Regulatory Commission (FERC) or the National Association of Utility Regulatory Commissioners (NARUC). As government reemphasizes regulatory oversight, National Grid is facing increasingly stringent compliance requirements. To reduce the challenges of FERC compliance, such that filing reports and responding to data requests, National Grid is using the FERC on HANA SAP tool, which, in order to stay in compliance, has to be upgraded as required.</p> <p>Project Rationale: Highlight business challenge, capability or process the project addresses</p> <p>This version upgrade is required to leverage latest SAP corrections and notes that have been released in the past year.</p> <p>Project Scope: Explain what is in scope and what is not in scope for the project</p> <p>Update of Central Finance Service Pack from SP03 to SP04.</p> <p>There will also be a support pack upgrade required in the SLT system(to the latest version to match HANA DB version) and all of it's source systems - ECC, SRM, SFIN. This is necessary to resolve replication issues faced in the Production support landscape and it also bring in enhancements for performance and UI changes. To perform this, we will have to build a separate project environment to test the replication, specifically for SFIN because it has transformations in the replication settings</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 <table border="1"> <thead> <tr> <th>(\$M)</th> <th>Prior Years</th> <th>FY 2018</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>Total</th> </tr> </thead> <tbody> <tr> <td>CapEx</td> <td></td> <td>2.115</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>2.115</td> </tr> <tr> <td>OpEx</td> <td></td> <td>0.724</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0.724</td> </tr> <tr> <td>Impact on RTB</td> <td></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>0.000</td> <td>0.000</td> </tr> </tbody> </table>										(\$M)	Prior Years	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	CapEx		2.115								2.115	OpEx		0.724								0.724	Impact on RTB		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
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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 <table border="1"> <thead> <tr> <th>(\$M)</th> <th>Start-up</th> <th>R & D</th> <th>D & I</th> <th>Closure</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>CapEx</td> <td></td> <td>0.696</td> <td>1.419</td> <td></td> <td>2.115</td> </tr> <tr> <td>OpEx</td> <td>0.284</td> <td>0.298</td> <td></td> <td>.142</td> <td>0.724</td> </tr> </tbody> </table>										(\$M)	Start-up	R & D	D & I	Closure	Total	CapEx		0.696	1.419		2.115	OpEx	0.284	0.298		.142	0.724																										
(\$M)	Start-up	R & D	D & I	Closure	Total																																																
CapEx		0.696	1.419		2.115																																																
OpEx	0.284	0.298		.142	0.724																																																

6/14/2017

FY18 - Investment Request Summaries - IRSs - US SAP: FERC on HANA (FOH) Upgrade

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.
- Compliance with FERC regulatory requirements
- Resolve replication issues

Investment Prioritization			
Benefits	Impact	Weight	Score
OpEx Annual Savings		10.3%	0
CapEx Annual Savings		5.1%	0
Revenue Generation (annual)		6.2%	0
Financial Control	High	6.2%	0.558
Soft Financial Benefits	Low	3.8%	0.038
Regulatory Impact	High	11.2%	1.008
Process & Personal Safety	does not apply	19.4%	0
Reliability	High	10.9%	0.981
Customer & Community Responsiveness	does not apply	5.3%	0
Employee Satisfaction	does not apply	4.6%	0
Mitigates a Corporate Risk / Risk of not Doing	High= 40 or more	8.9%	0.801
Jurisdictional Engagement	High	8.2%	1
		Benefit Score:	4.12

Cost	Impact	Weight	Score
OpEx Cost	0.724	-24.4%	-2.196
CapEx Cost	2.115	-11.2%	-1
RTB Efficiency	0.000 %	-22.5%	
Union/Labor Relations	does not apply	-9.8%	0
Dependencies	does not apply	-10.6%	0
Elapse Time Duration	Medium	-6.6%	-0.198
Change Management Effort	Low	-14.9%	-0.149
		Cost Score:	-3.55

Overall Priority Score: 0.573

Investment Risk and Complexity		
Project Risk Score:	41	Risk Score Description: Risk score was calculated based on Financial Impact (5) and likelihood of failure (6)
Project Complexity Score::	19	Project Complexity Score Description: Please see complexity matrix attached
Key Risks Description: Provide detail on project risks & mitigation strategy:		

IS Project Dependencies	Benefiting Operating Companies:
if you don't see a project in the drop-down please contact the Planning & Performance team. IS Projects: 4563 - US SAP: FERC on HANA (FOH) Upgrade 1. Has a dependency on IS Project;	Check all that apply <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

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2. Has a dependency on IS Project;	<input checked="" type="checkbox"/> National Grid USA Parent
3. Has a dependency on IS Project;	<input checked="" type="checkbox"/> KeySpan Energy Development Corporation
4. Has a dependency on IS Project;	<input checked="" type="checkbox"/> KeySpan Services Inc.
5. Has a dependency on IS Project;	<input checked="" type="checkbox"/> KeySpan Energy Corp
6. Has a dependency on IS Project;	<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 checked="" type="checkbox"/> NG LNG LP Regulated Entity

Business Initiative Dependencies

IS Projects: 4563 - US SAP: FERC on HANA (FOH) Upgrade

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:
Standalone Project

Related Projects:

Enabling IS Capabilities check all that apply

- | | |
|---|---|
| <input type="checkbox"/> Enterprise Content Management (ECM) | <input 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 type="checkbox"/> 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				March, 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 internal National Grid resources, as well as IS Solution Delivery Partners

Attached Supporting Documents

[INVP4563_Complexity_Matrix.xlsx](#)

Recommendation Sign-off

Role	Name	Title	Date
Business Project Sponsor	David Campbell	VP Corporate Finance	
Business Relationship Manager		IS Business Relationship Manager	

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	Joel Semel		
IS Program Delivery Manager	Samir Parikh	IS Program Delivery Manager	
nationalgrid			



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Title:	C&I Demand Response Management System	Sanction Paper #:	TBD
Project #:	MA – 90000167965 8403 RI – 90000167569 8403 NY – X521E015567 NY – X521E015568	Sanction Type:	Sanction
Operating Company:	Allocated	Date of Request:	12/03/2017
Author:	Paul Wassink	Sponsor:	Carlos Nouel, Vice President, New Energy Solutions
Utility Service:	Electricity T&D	Project Manager:	Mona Chandra

1 Executive Summary

1.1 Sanctioning Summary

This paper requests **sanction** in the amount **\$4,545,000** with a tolerance of +/- 10% for the purposes of **purchasing a demand response management system (DRMS)**, ensuring technical compatibility of the software with National Grid's system requirements, and deploying/integrating the DRMS with National Grid's operations. These costs are based on estimates provided by internal National Grid teams and vendors.

*This sanction amount is **\$4,545,000** broken down into:*

- \$3,572,665 Capex
- \$972,335 Opex
- \$0 Removal

With a CIAC/Reimbursement of \$0

Project Funding Number	Cost Breakdown	Tolerance
NY - CSRP - X521E015568	\$2,500,865	+/- 10%
NY - DLRP - X521E015567	\$1,071,799	+/- 10%
MA - 90000167965	\$795,987	+/- 10%
RI - 90000167569	\$176,348	+/- 10%

Total \$4,545,000



Short Form Sanction Paper

1.2 Project Summary

The success in developing demand response programs in all three jurisdictions has caused the management of these assets to outpace our ability to manage them using simple spreadsheets. A DRMS will be purchased to streamline the registration, use, and evaluation of demand response assets. This will give our vendors and customers a better experience and position us well for increased DER integration.

2 Project Detail

2.1 Background

The idea of procuring a DRMS is not new within National Grid. The initial Massachusetts Grid Modernization Plan (GridMod) filed in the summer of 2015 included a DRMS focused on residential applications. In January of 2016, the 2016–2018 Energy Efficiency Order for Massachusetts awarded funds to run demand response programs for commercial and residential customers. National Grid’s Initial Distributed Implementation Plan for New York’s REV process includes aspects of a DRMS. The Proposed 2017 Energy Efficiency plan for Rhode Island includes funds for a DRMS.

- MA GridMod. – Submitted Summer 2015 – Under review
- MA 2016 – 2018 Energy Efficiency Order – Approved February 2016
- Initial NY DSIP – Submitted June 2016 – Under review
- RI 2017 Energy Efficiency Plan – Submitted Fall of 2016 – Expecting approval December 2016
- NY Report on Direct Load Management Programs – Submitted December 1, 2016

In January 2017, National Grid will have retail demand response incentive programs for commercial and industrial customers in all three states. National Grid already has more than 150 MW of demand response under management in New York, and we are projected to grow our demand response over the next three years and beyond. Please see the table below for the projected demand response growth over the next three years.

Year	NY Required to offer C&I DR by PSC	MA Demonstration project in current 3-year plan	RI Demonstration project included in 2017 EE plan
2016 (actual)	150 MW	0 MW	0 MW
2017 (projected)	200 MW	20 MW	5 MW
2018 (projected)	250 MW	40 MW	10 MW
2019 (projected)	300 MW	100 MW	15 MW

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2.2 Drivers

Each demand response asset requires National Grid to complete many repeated actions which the DRMS will automate. In rough chronological order, these actions are:

1. Demand Response Asset Registration
2. Demand Response Available Asset Scheduling
3. Predictive Analytics to Anticipate the Need for a Demand Response Events
4. DR Events Simulation and Preview
5. Calling Demand Response Events
6. Monitoring DR Performance
7. DR Event Performance Reporting to Customers and Vendor
8. DR Event Performance Reporting to National Grid
9. Feedback of DR Asset Performance for Estimated DR Availability

All of these activities have to be completed while maintaining cyber security and scalability. Due to the onerous nature of running demand response programs, a whole industry has developed to provide DRMSs.

Starting on May 1, 2017, National Grid must be prepared to manage all the registered demand response assets in New York, while the Massachusetts and Rhode Island programs will begin one month later on June 1. This requires that all the demand response assets be registered in the DRMS. We need sanctioning approval now to complete the work necessary to get a final scope of work and contract in place to be signed in late January or early February 2017. This will give us just enough time us to launch the registration web portal managed by the DRMS vendor for customers and vendors to register demand response assets into the system before May 1.

In New York, performance payments for demand response assets are paid monthly. The DRMS must be able to calculate the amount of customer curtailment and possible interaction with the NYISO demand response programs by June 1, 2017. If we do not meet these deadlines, we risk noncompliance with the New York Order Adopting Dynamic Load Management Filing with Modifications in Case 15-E-0189 issued June 18, 2015.

In Massachusetts and Rhode Island the purchase of a DRMS will allow us to fulfil obligations to run demonstration projects for demand response for commercial and industrial customers. By proving that National Grid can cost-effectively run demand response programs in summer 2017, National Grid will be well positioned to include these programs in the next three-year energy efficiency filings.



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2.3 Project Description

The scope of the project is to purchase a DRMS and integrate it into certain National Grid systems to allow us to provide streamlined demand response systems to commercial and industrial customers. The DRMS would perform all of the functions listed in section 2.2.

The DRMS will allow our customers and curtailment service providers (CSPs) to register demand response assets on a user-friendly web portal. This portal will allow each customer to select how often they are willing to respond to demand response events and set blackout dates. The customers' enrollment in demand response programs will be uploaded to the InDemand and Salesforce programs so that account representatives are aware of the customers' involvement in the demand response program. Customer and vendors will also be able to opt out of demand response events the day before an event to prevent affecting their performance incentives. This will provide a flexible and enjoyable user experience for our customers.

The DRMS will be connected to near-real-time electric interval meter data so that demand response events can be monitored as they occur. This will prepare National Grid for controlling discretionary loads to balance out intermittent resources such as wind turbines and solar PV systems.

The DRMS will calculate the performance of each customer who participates in a demand response event and will send this performance data to the InDemand system so that incentive checks can be sent out timely. In New York, we are required to send incentive checks once per month between May and September.

DRMSs can also be used for other types of distributed energy resources, such as battery storage, EV charge management, and control of advanced solar inverters. By purchasing and integrating a DRMS, National Grid will be well positioned to offer programs for these other resources in the future. This is in alignment with the Connect21 vision of, "The new and improved 21st century backbone needs to be nimble enough to accommodate the growing demand for both solar and wind-powered energy sources."

2.4 Benefits

Demand response reduces the load on the transmission and distribution system when the system needs relief the most. Over time, a reliable demand response program can defer the costs of infrastructure upgrades and allow lower-cost infrastructure to be installed when replacements are necessary. This is especially true in areas where the distribution system is constrained or load growth has increased at a higher rate than expected. Nantucket, MA; Tiverton, RI; and Kenmore, NY are examples of such areas. In Massachusetts and Rhode Island, the value of reducing a kW of peak demand is valued at 10.74 per kW per year for transmission and 84.30 per kW per year for distribution, according to the 2016 TCR report on Avoided Energy Supply Costs. Together, these benefits of \$95.04 per kW per year outweigh the customer incentive of \$35 per kW per year and the cost of DRMS of \$5 per kW per year. In fact, the first year of our demand response



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programs in Massachusetts and Rhode Island are projected to have a benefit-to-cost ratio of 1.5, even when the upfront costs of the DRMS are absorbed by the first year.

In New York, the National Grid Benefit-Cost Analysis Handbook submitted with the DSIP filing gives the average marginal cost of service of \$155 per kW per year. This outweighs the customer incentive of about \$33 per kW per year, and the cost of the DRMS of \$5 per kW per year.

These benefits will lower the cost to run and maintain our transmission and distribution systems, providing all customers with a dispersed benefit. For customers who participate in the programs, the benefits are even greater. These customers will not only receive incentives from National Grid for their participation, but will also decrease their electricity use when electricity is most expensive. For customers who purchase electrical supply from a third-party provider, lowering their energy use during the peak hours of the year could lower their supply costs. Bringing these benefits to our customers will further establish our relationship with our customers as a trusted energy advisor and could lead to increased participation in other energy efficiency programs.

2.5 Business & Customer Issues

Possible Contentious Issues

Regulatory Confusion with Multiple Filings

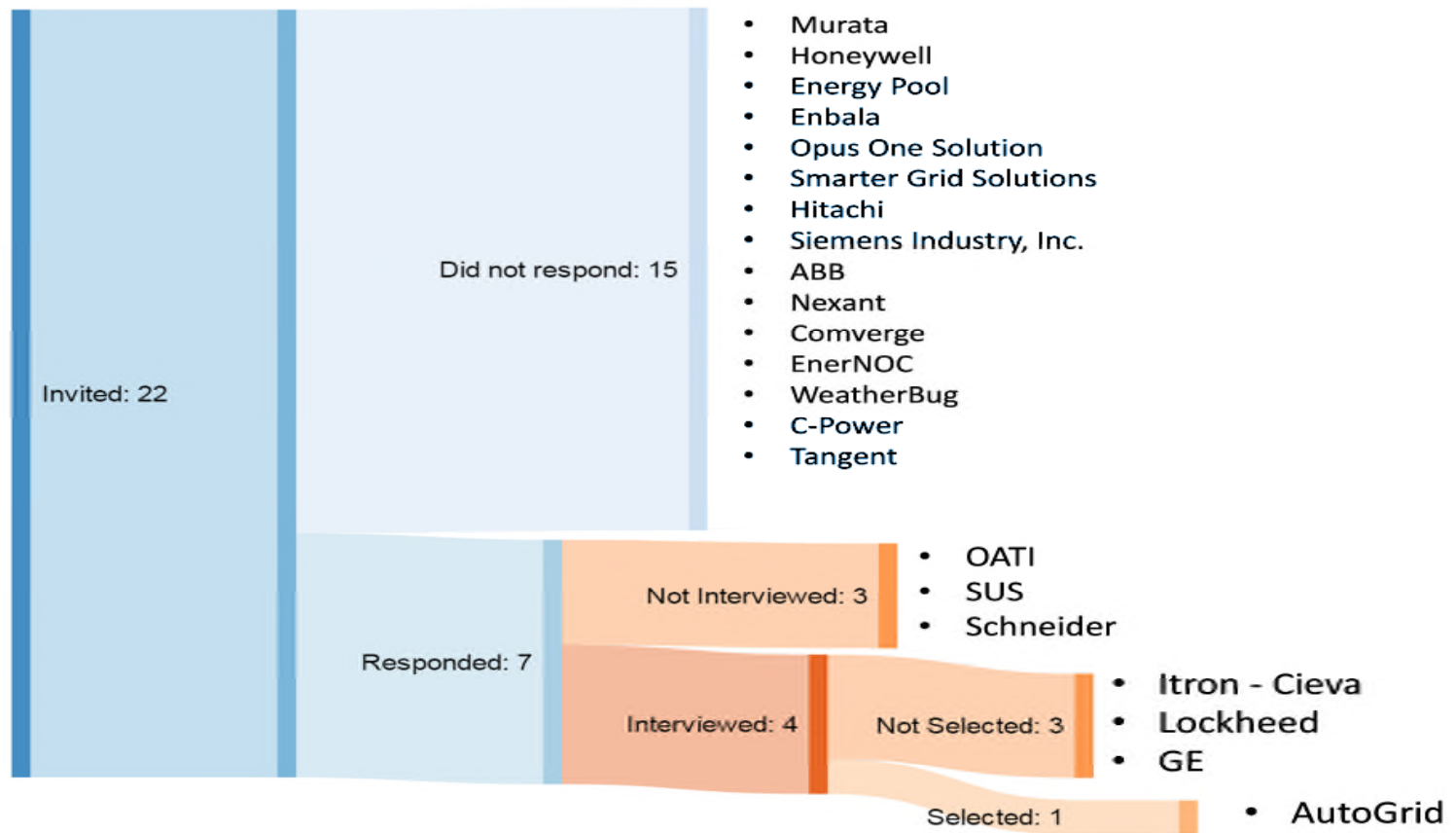
As discussed in Section 2.1 Background, the idea of procuring a DRMS is not new in National Grid. DR programs and a DRMS specifically have been included in the five recent filings listed in Section 2.1. The purchase of a DRMS would be in agreement with all the filings above except the GridMod filing. The GridMod filing may need to be updated to reflect that a DRMS has already been purchased. The update could potentially cause confusion as to why we would purchase a DRMS when GridMod was still under review.

This situation is not unique. Since GridMod was submitted, National Grid has moved forward to modernize our infrastructure, even if some of these improvements were part of the GridMod filing.

EPI Investment in AutoGrid

In order to select a DRMS, National Grid conducted an extensive procurement process. National Grid worked with Navigant to find viable vendors; together, we found 22. These vendors were invited to respond to a request for proposal (RFP). Seven vendors submitted responses. National Grid worked with Navigant to review and rate each of these responses. National Grid then interviewed the top four vendors. An interview committee of seven individuals then rated the vendors based on all the information received during the RFP process and the interview. From this process, National Grid has selected AutoGrid as the top vendor. This process is summarized in the graphic below.

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For the scoring matrixes used in each step of the selection process, please see Section 8: Appendices.

Although National Grid followed a stringent RFP procedure, the selection of AutoGrid may cause controversy. National Grid along with several other companies has invested in AutoGrid through Energy Impact Partners. This investment did not influence the selection of the DRMS vendor.

Itron/Cieva Selected for GridMod

Building upon the MA Smart Grid Pilot, in the initial GridMod filing National Grid selected Itron and Cieva to partner together to create a DRMS. Since that time, several companies have developed DRMSs and have deployed DRMSs for a number of utilities. It is no longer necessary to invest in the creation of a DRMS from ground up. Itron and Cieva may object to not being selected as a result of this RFP process.

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The Cost Share

The DRMS will be used to support demand response programs in New York, Massachusetts, and Rhode Island. As such, the cost of the DRMS must be split among the three states in fair and transparent portions. This is beneficial to each state because the DRMS setup costs do not have to be borne by any one state. However, the cost split may cause controversy. The cost split is explained fully in Section 2.7.1 below.

Cyber Security

As with any software solution, cyber security is the top priority. We worked with the Digital Risk and Security Assessment Group to assess the cyber security of all vendors who responded to the RFP. We are now working on an in-depth analysis of the AutoGrid systems. The DRMS will receive customers' electric interval data. This data is very sensitive and will be transmitted from the Itron IEE system through a secure National Grid/Verizon MPLS system to AutoGrid with approved firewalls on each side.

Links to Other Strategic Initiatives

Although we have selected AutoGrid based on its capabilities as a DRMS provider for our C&I demand response programs, the AutoGrid system can do more than just C&I demand response.

Battery Storage Dispatch

AutoGrid has a DERMS module which supports the monitoring and control of battery storage systems. AutoGrid is working with Tesla, sonnenBatterie, and other battery manufacturers to develop the control strategies and algorithms to best manage these energy storage devices. As National Grid explores the advantages of offering incentives for behind-the-meter batteries based on the services they can provide (e.g., demand response, frequency and voltage regulation, and resiliency), having a system in place that can control these batteries could be crucial. This will allow National Grid to test out various options without having to invest in a new platform.

Electric Vehicles Charge Time Management

The AutoGrid DERMS module can also be used to support various electric vehicle programs. Southern California Edison (SCE) selected AutoGrid for its electric vehicle Smart Charging Pilot. In this project, AutoGrid connected with more than 35 EVSE (EV Supply Equipment) vendors to implement various demand response and charge time management strategies so that SCE could evaluate different options and design a program that best meets its needs. As National Grid prepares a filing for an EV demonstration pilot in Massachusetts to be submitted in January 2017, having a platform and a vendor with in-depth knowledge of integrating EVs will be very beneficial.

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Solar PV Smart Inverter Control

AutoGrid has the capability to manage PV smart inverters at the station, feeder, and transformer levels to regulate both active and reactive power. We could coordinate these capabilities with our efforts in developing the IEEE 1547 standard for interconnecting DERS to more fully utilize the benefits of PV.

Residential Demand Response

The AutoGrid system can be used for residential demand response as well as C&I demand response. AutoGrid could take the place of the services Connected Savings (formerly WeatherBug Home) is offering. This could be done to increase the number of Wi-Fi thermostats and other devices we can connect to, to streamline the residential and C&I programs into a single interface, and to lower the cost of our residential demand response programs.

Miscellaneous

The AutoGrid system offers other solutions that we could leverage, including the following:

- Virtual Power Plant
- Distributed Flexibility
- Residential Behavior Pricing Programs
- Residential BYOT Programs
- Common Platform for NWA Management
- Community-based DR Programs
- PTA/School-based DR Programs

Key External Stakeholders

Massachusetts

- EEAC – The Energy Efficiency Advisory Council has taken a keen interest in demand response. Last year, it devoted 4 of 12 executive meetings and two full EEAC meetings to demand response, in addition to forming a demand reduction subcommittee that meets quarterly. The EEAC approved our inclusion of demand response in the 2016-2018 Energy Efficiency Plan. The EEAC recently recommended \$21.7M in demonstration projects by Eversource and Unitil on demand response.
- DPU – The Department of Public Utilities is interested in cost-effective programs that benefit ratepayers. The DPU has approved a \$15.9M/two-year demonstration project for National Grid to determine if we can cost-effectively run a demand response incentive program for C&I customers. Using a DRMS is considered a best practice for running cost-effective and scalable demand response programs.
- DOER – The Department of Energy Resources is interested in all forms of electrical demand reduction. While traditional energy efficiency plans deliver ~200MW of cost-effective passive demand reduction annually, the DOER is looking for additional



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programs that will reduce the share of the ICR (Installed Capacity Requirement) payment allocation to Massachusetts.

New York

- DPS – The Department of Public Service has required all joint utilities to implement C&I demand response programs.

Rhode Island

- PUC – Demand response for C&I customers has been included in the 2017 Rhode Island EE Plan. The Public Utilities Commission has not asked any questions about this particular program and is expected to approve it on December 20, 2016.
- EERMC - The Energy Efficiency Resource Management Council has reviewed our proposed demand response demonstration project and has not opposed it.
- NRIC – The Northern Rhode Island Collaborative has reviewed our proposed demand response demonstration project and has not opposed it.

Number of Customers Impacted

In 2016 in New York, we had 114 C&I customers participating in our demand response programs for a total of 150 MW. Keeping the proportion of 114 customers per 150 MW and our program goals in Section 2.1, the estimated numbers of customers participating are as follows:

Year	Number of C&I Customers in DR Programs		
	NY	MA	RI
2016 (actual)	114	0	0
2017 (projected)	152	15	4
2018 (projected)	190	30	8
2019 (projected)	228	76	11

As programs go on, we will have fewer customers with a large discretionary load who are not already participating in our programs. This may cause the number of customers/MW to increase. The table above is only a rough estimate.

National Grid Financial Incentives

Massachusetts

In Massachusetts, the cost for our demand response demonstration projects, including the DRMS, are included in our 2016-2018 Energy Efficiency Plan, and are recovered through those existing mechanisms. The C&I demand response portion of the plan accounts for \$15.9M in funding. These funds can be used to pay for the DRMS, as well as the consulting services, labor costs for National Grid, etc. However, these funds do not pay more than the cost of the demonstration project. National Grid does not make a profit from running these demonstration projects. However, if we can prove that National Grid can

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cost effectively run demand response programs, we can include these programs in the next three-year plan as a standard offering. If this is approved, National Grid will be paid shareholder incentives to meet our energy efficiency targets. These incentives allow National Grid to earn 6.8% of the program costs. We estimate that after all upfront cost of setting up the C&I demand response programs are complete, the ongoing cost of the program will be about \$7M per year. Over 70% of these costs would go back to customers in the form of incentives. This would give National Grid a profit of about \$475,000 per year starting in 2019.

Rhode Island

Similar to Massachusetts, Rhode Island does not allow National Grid to make a profit from demonstration projects. However, if we can use the demonstration project to prove that National Grid can cost effectively run demand response programs, National Grid could include these programs in the 2018-2020 Energy Efficiency Plan. Rhode Island provides a shareholder incentive of 4.4% of programs costs. We estimate that the ongoing costs of running our C&I demand response programs in Rhode Island will be \$1.3M. This would give National Grid a profit of about \$57,000 per year starting in 2018.

New York

New York requires all the joint utilities to run C&I demand response programs. The costs to run these programs are included in the base rate for all customers. National Grid earns our standard return of 6.85% on these costs. The total costs to operate these programs are estimated to be \$16.2M per year. This gives National Grid a profit of \$1.1M per year.

As stated in CASE 14-M-010: Adopting a Ratemaking and Utility Revenue Model Policy Framework Order, leasing software such as AutoGrid's DRMS can be included in the rate base and earn a return if the lease is prepaid for the life of the lease, which in this case is three years.

2.6 Alternatives

Alternative 1: Operate Demand Response Programs without a DRMS

National Grid could run its C&I demand response programs without a DRMS. Four of the nine functions of a DRMS listed in Section 2.2 could be completed without specially designed software. These four functions are shown in the list below.

1. Demand Response Asset Registration – Could be done by emailing enrollment forms
5. Calling Demand Response Events – Could be done by email
7. DR Event Performance Reporting to Customers and Vendor – Could be done with spreadsheets
8. DR Event Performance Reporting to National Grid – Could be done with spreadsheets



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Narrowing our demand response programs to these four functions would not allow us to measure the performance of demand response efforts in real time. Without this information, National Grid would not be able to use demand response to balance our transmission and distribution systems. It is doubtful we could claim differed transmission and distribution system benefits if the demand response assets cannot be relied on by the transmission and distribution system operators.

The customer and vendor experience would also be impacted. Instead of registering assets and receiving reports on their performance from an online portal, customers and vendors would be emailed spreadsheets. This manually intensive process would go against the streamlined and efficient customer experience we are trying to create for all National Grid customers.

Functions 7&8 are manually time intensive. In our programs' first year in New York, we were nearly overwhelmed with the amount of time it took to complete the building-level performance measurements with spreadsheets. In 2017, we will have DR programs in two more states. This would require us to bring on and train temporary labor for the summer months each year. We estimate it would take four full-time temporary employees each year between the middle of April to the middle of October to process demand response asset registrations and calculate demand response asset performance for all three states. Since our demand response programs only operate during the summer, these temporary employees would have to be re-hired each year.

Alternative 2: National Grid Could Create its Own DRMS

Instead of procuring a DRMS, National Grid could create its own DRMS. According to the vendor, the AutoGrid system has taken six years and \$40M to develop. In addition to the time and cost, the system has required a diverse set of expertise—such as big data, cloud development, machine learning, artificial intelligence, IoT, site control, security, and optimization—which is not easy to re-create as a cohesive unit. By designing and creating a system limited to National Grid's needs, this cost could be lower, but would likely still be substantial. The time and expense it would take to create our own DRMS would exceed the allowed durations and costs of our demonstration projects, meaning this software would have to be developed at risk.

2.7 Investment Recovery

Cost Sharing

The DRMS will be used by all three states. The cost for the DRMS has been split among the three states to prevent cross-subsidization. The table below shows how the costs are split.

State	Setup Cost	2017	2018	2019	Total
New York	\$291,724	\$1,011,111	\$1,104,167	\$1,165,663	\$3,572,665
Massachusetts	\$129,655	\$101,111	\$176,667	\$388,554	\$795,987
Rhode Island	\$48,621	\$25,278	\$44,167	\$58,283	\$176,348
	\$470,000				\$4,545,000



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For the full spreadsheet where these costs are allocated, please see section 8.0.

The setup costs include \$120k that will be paid to AutoGrid and an estimated \$250k for our IS department to connect the DRMS into the National Grid systems. This cost is allocated based on the market potential for each state.

The annual costs include:

- AutoGrid base annual cost of \$200k
- AutoGrid per MW cost
 - \$5000/MW for the first 150 MW
 - \$2,500/MW after the first 150 MW
- National Grid IS operating cost of \$10k for 2018
- National Grid IS operating cost of \$15k for 2019

These costs are allocated based on the program size in each state shown in table below.

State	2017	2018	2019
New York	200 MW	250 MW	300 MW
Massachusetts	20 MW	40 MW	100 MW
Rhode Island	5 MW	10 MW	15 MW

The annual costs for Massachusetts and Rhode Island will be paid annually. The cost for three years of AutoGrid service for New York will be paid up front in accordance with CASE 14-M-010: Adopting a Ratemaking and Utility Revenue Model Policy Framework Order. Since the upfront costs for NY are calculated using the projected demand response growth estimates, an additional filing may have to be made if demand response in New York grows faster than expected, and a refund would be necessary if demand response in New York grows slower than expected.

Cost After the 3-Year AutoGrid Contract

The AutoGrid contract will have a life of 3 year. Before the contract expires, National Grid will need to decide if the contract should be extended, or if another RFP should be released. To estimate costs after the 3 year contract we have simply divided the total cost for all 3 years by 3. Historically, cost for software has decreased with time, so this represents a conservative estimate.

State	3 Year Total	Ongoing Annual Cost
New York	\$3,572,665	\$1,190,888
Massachusetts	\$795,987	\$265,329
Rhode Island	\$176,348	\$58,783
	\$4,545,000	\$1,515,000



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2.7.1 Customer Impact

This project results in an indicative first full-year revenue requirement when the asset is placed in service equal to approximately \$657,728. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.

This value was found using an estimated carrying charge for NY of 18.41% time the three-year costs for NY of \$3,572,665. No carrying charge was used for MA and RI, because funds for the DRMS from these states will come from EE demonstration project funds.

3 Related Projects, Scoring, Budgets

3.1 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
X521E015568	IS	REV-Dem RESP Comm CSRP	2.501
X521E015567	IS	REV-Dem RESP Comm DLRP	1.072
90000167965	IS	MA-E: C&I Demand Response	0.796
90000167569	IS	RI-E: C&I Demand Response	0.176
Total			4.545

3.2 Associated Projects

No other projects are dependent upon this project.

3.3 Prior Sanctioning History

There have been no other sanctions for projects included in the scope of this paper.



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3.4 Category

Category	Reference to Mandate, Policy, NPV, or Other
<input type="radio"/> Mandatory <input checked="" type="radio"/> Policy- Driven <input type="radio"/> Justified NPV <input type="radio"/> Other	<p>New York We are mandated to run demand response programs for C&I customers per Case 15-E-0189 – Petition by Niagara Mohawk Power Corporation d/b/a National Grid to Effectuate Dynamic Load Management Programs. Although this order allows us to recover the cost of a DRMS, it does not require us to purchase a DRMS.</p> <p>Massachusetts Demand response demonstrations for C&I customers are included in the 2016-2018 Energy Efficiency Plan. Although this plan allows us to recover the cost of a DRMS, it does not require us to purchase a DRMS.</p> <p>Rhode Island Demand response demonstrations for C&I customers are included in the 2017 Energy Efficiency Plan. Although this plan allows us to recover the cost of a DRMS, it does not require us to purchase a DRMS.</p>

3.5 Asset Management Risk Score

Asset Management Risk Score: 49

Primary Risk Score Driver: (Policy-Driven Projects Only)

☐ Reliability
☒ Environment
☐ Health & Safety
☐ Not Policy Driven

3.6 Complexity Level

Complexity Score: N/A

☐ High Complexity
☐ Medium Complexity
☐ Low Complexity
☒ N/A



Short Form Sanction Paper

3.7 Next Planned Sanction Review

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

4 Financial

4.1 Business Plan

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

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

4.2 CIAC / Reimbursement

N/A



Short Form Sanction Paper

4.3 Cost Summary Table

					Current Planning Horizon (\$M)			
Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Total
					2016/17	2017/18	2018/19	
X521E015568	REV-Dem RESP Comm CSRP	+/- 10%	CapEx	-	2.501	-	-	2.501
			OpEx	-	-	-	-	
			Removal	-	-	-	-	
			Total	-	2.501	-	-	2.501
X521E015567	REV-Dem RESP Comm DLRP	+/- 10%	CapEx	-	1.072	-	-	1.072
			OpEx	-	-	-	-	
			Removal	-	-	-	-	
			Total	-	1.072	-	-	1.072
90000167965	MA-E: C&I Demand Response	+/- 10%	CapEx	-	-	-	-	-
			OpEx	-	0.231	0.177	0.389	0.796
			Removal	-	-	-	-	-
			Total	-	0.231	0.177	0.389	0.796
90000167569	RI-E: C&I Demand Response	+/- 10%	CapEx	-	-	-	-	-
			OpEx	-	0.074	0.044	0.058	0.176
			Removal	-	-	-	-	-
			Total	-	0.074	0.044	0.058	0.176
Total Project Sanction			CapEx	-	3.573	-	-	3.573
			OpEx	-	0.305	0.221	0.447	0.972
			Removal	-	-	-	-	-
			Total	-	3.877	0.221	0.447	4.545

4.4 Project Budget Summary Table

Project Costs per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)			
		Yr. 1	Yr. 2	Yr. 3	Total
CapEx	0.000	3.573	0.000	0.000	3.573
OpEx	0.000	0.305	0.221	0.447	0.972
Removal	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	3.877	0.221	0.447	4.545



Short Form Sanction Paper

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)			
		Yr. 1 2016/17	Yr. 2 2017/18	Yr. 3 2018/19	Total
CapEx	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000
Removal	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

5 Key Milestones

Milestone	Target Date: (Month/Year)
Launch customer and vendor portals for demand response asset registration.	March / 2017
Use DRMS to call demand response events for the first time.	May / 2017
Use DRMS to calculate the performance of demand response events for the first time.	June / 2017

6 Statements of Support

6.1.1 Supporters

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

Role	Individual	Responsibilities
Investment Planning	Lars Heimann	Endorses relative to 5-year business plan or emergent work
Asset Management / Planning	Kevin Stablewski	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Project Management	Jennifer Grimsley	Endorses resources, cost estimate, schedule
New Energy Solutions	Robert Sheridan	Endorses Reforming the Energy Vision (REV) projects
Finance	Brian McNeill Patricia Easterly	
IS	Jeff Dailey	
IS	Aman Aneja	



Short Form Sanction Paper

6.1.2 Reviewers

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

Function	Individual
Regulatory	Peter Zschokke
Jurisdictional Delegate	Mark A. Harbaugh
Procurement	Art Curran

6.1.3 List References

N/A

Short Form Sanction Paper

7 Decisions

I:

- (a) APPROVE this paper and the investment of \$4.545M and a tolerance of +/-Y 10%
- (b) NOTE that Mona Chandra is the Project Manager and has the approved financial delegation.

Signature.....Date.....
Executive Sponsor – Name and Title

8 Other Appendices

Spreadsheet with Cost Allocation Calculations



Cost Share of
AutoGrid DRMS (4).xl

Scoring Matrix for the Review of the RFP Responses.



DRMS Scoring Matrix
of RFP Responses.xls

Scoring Matrix for the Review of Vendors Interviewed.



Interview scores for
DRMS Vendors.xlsx

8.1 **Sanction Request Breakdown by Project**

N/A



Short Form Sanction Paper

Title:	Acquisition of Remote Sensing NY Areal Data	Sanction Paper #:	USSC-17-138
Project #:	INVP 4729	Sanction Type:	Sanction
Operating Company:	National Grid Service Co.	Date of Request:	March 27, 2017
Author:	Dale Kruchten, Jorge Calzada	Sponsor:	Kenneth Daly – President NY Jurisdiction
Utility Service:	Gas	Project Manager:	Michael De Matteo

1 Executive Summary

1.1 Sanctioning Summary

This paper requests sanction of project INVP 4729 in the amount \$8.632M with a tolerance of +/- 10% for the purposes of full implementation.

This sanction amount is \$8.632M broken down into:

\$8.632M Capex

\$0.000M Opex

\$0.000M Removal

1.2 Project Summary

The project will build an inventory of high resolution, and Light Detection and Ranging (LIDAR) data with respect to the building stock of our customers. The building of this inventory will be conducted by performing flyovers of our territory to capture a current vintage of all data.

High Resolution images provide greater detail than any current image available to National Grid, and are necessary to aid in the determination of building characteristics that are relevant to servicing our customers.

LIDAR data will measure the height of various above ground structures, and will be used to help characterize current building stock on the territory for the purposes of understanding energy consumption and roof characteristics.

All of this data will be maintained by Advanced Data & Analytics in its cloud environment. There are no other commercial options for this data as noted in section 2.6 Alternative 2. Advanced Data & Analytics is developing mechanisms to determine currency of the data.

Short Form Sanction Paper



1.3 Background

Detailed data on building stock provides an opportunity to enable a better understanding of Distributed Energy Resources and how they will be used by our customers, improving existing data on our customers, and overall improving the operation and management of the business through enhancing the business insight that advanced analytics can bring to the operation. Specifically, building characteristics like square footage and roof pitch and azimuth can be determined, which can enable the opportunity for analyses to understand configuration of solar panels. Analyses like these offer the opportunity to improve our operations and enhance our ability to manage the distribution grid.

1.4 Drivers

The key drivers for this project are:

- To enable the opportunity to conduct more accurate and complete advanced analytics that benefit Operations and Energy Efficiency, such as:
 - To support the data correction activities within the Gas Business Enablement program.
 - To assess the operational condition of above ground assets.
 - To design and site customer gas services quicker and more efficiently.
 - To improve comprehensive understanding of the relationship between energy usage, square footage of buildings, and construction characteristics of buildings, etc.
 - To support the transformation of Load and DER Forecasting
 - Specifically enabling a superior modeling paradigm to understand distributed energy resources and how they will impact the electric distribution system.

1.5 Project Description

The project will fund the building of an image data library on the building stock within the Niagara Mohawk Territory. Contractors will conduct the flyovers necessary to capture the data. This data is of a more current and detailed nature than what is publicly available, and is currently accessible to National Grid. No existing image inventory was able to be identified that contains this detail currently. The only way to acquire it is to build it, as is being proposed in this paper. Without the level of detail being acquired, the analytics work planned is not possible.

Following initial acquisition of the data, the vendor will provide refreshes of the imagery during the Fiscal Year (FY) 2018 per contract.

Short Form Sanction Paper

1.6 Benefits

The data enables the opportunity to conduct analyses that can provide the following benefits:

- Safety and reliability of our electric networks through providing better insight as to what distributed energy resource potential is and how it will impact the electric grid.
- Safety and reliability of our gas networks through management of the maintenance of above ground assets.
- Improve customer satisfaction by enabling the opportunity to site gas services more quickly and more efficiently.
- Improve customer satisfaction by enabling the opportunity to automate distributed energy resource interconnection applications.
- Improve business operation by enabling the opportunity for advanced analyses to be conducted on more complete and accurate data as noted above in drivers.
- Opportunities to better understand the Energy Efficiency needs of our customers.
- Opportunity to enable transformative changes to our Load and Distributed Energy Resource Forecasting methods to more accurately account for the explosive growth in distributed energy resources that the company has encountered and will continue to encounter in the future.

1.7 Business & Customer Issues

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

1.8 Alternatives

Alternative 1: Undertake no action/Leave as is

This alternative is not desirable, as without the data we cannot provide the opportunity to enable analyses that can provide the benefits described above. Without the data, the analyses cannot be conducted.

Alternative 2: Use other commercial options

No other commercial options are available for this engagement. A market assessment was conducted by Procurement, and no other vendors are capable of providing the data at the level of granularity and completeness as Pictometry/Eagleview.

Additional to this, the National Grid New England Survey Team was engaged by Procurement to understand if they knew of any vendors in the space; however, no vendors could be identified by the team.



Short Form Sanction Paper

1.9 Investment Recovery

Investment recovery will be through standard rate recovery mechanisms.

1.9.1 Customer Impact

N/A

2 Related Projects, Scoring, Budgets

2.1 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
4729	Project Type	Acquisition of Remote Sensing NY Areal Data	8.632
Total			8.632

2.2 Associated Projects

N/A

2.3 Prior Sanctioning History

N/A

2.4 Category

Category	Reference to Mandate, Policy, NPV, or Other
<input type="radio"/> Mandatory	The project improves the business and benefits customers by enabling the opportunity for advanced analytics to provide deeper insight into how the business can be managed better.
<input checked="" type="radio"/> Policy- Driven	
<input type="radio"/> Justified NPV	
<input type="radio"/> Other	



Short Form Sanction Paper

2.5 Asset Management Risk Score

Asset Management Risk Score: 6

Primary Risk Score Driver: (Policy Driven Projects Only)

☒ Reliability ☐ Environment ☐ Health & Safety ☐ Not Policy Driven

2.6 Complexity Level

☐ High Complexity ☐ Medium Complexity ☒ Low Complexity ☐ N/A

Complexity Score: 15

2.7 Next Planned Sanction Review

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

3 Financial

3.1 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY17-21 Capital Plan - Gas	<input type="radio"/> Yes <input checked="" type="radio"/> No	<input checked="" type="radio"/> Over <input type="radio"/> Under <input type="radio"/> NA	\$8.632M

3.1.1 If cost > 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.



Short Form Sanction Paper

3.2 CIAC / Reimbursement

N/A

3.3 Cost Summary Table

					Current Planning Horizon						
Project Number	Project Title	Project Estimate Level (%)	Spend (\$M)	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	Total
					2018/17	2017/16	2018/19	2019/20	2020/21	2021/22	
4729	Acquisition of Remote Sensing NY Areal Data	+/- 10%	CapEx	0.000	8.632	0.000	0.000	0.000	0.000	0.000	8.632
			OpEx	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	
			Total	0.000	8.632	0.000	0.000	0.000	0.000	0.000	8.632
Total Project Sanction			CapEx	0.000	8.632	0.000	0.000	0.000	0.000	0.000	8.632
			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	0.000	8.632	0.000	0.000	0.000	0.000	0.000	8.632

3.4 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	(8.632)	0.000	0.000	0.000	0.000	0.000	(8.632)
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	(8.632)	0.000	0.000	0.000	0.000	0.000	(8.632)

4 Key Milestones

Milestone	Target Date: (Month/Year)
Project sanction	Mar 2017
Initial visual image data received	Mar 2017

Short Form Sanction Paper

Milestone	Target Date: (Month/Year)
Full set of High Resolution and LIDAR data to be received throughout FY 2018.	Mar 2018
Project closure	Dec 2017

5 Statements of Support

5.1.1 Supporters

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

Role	Individual's Name
Business Executive Sponsor	Ken Daly
Head of PDM	Deb Rollins
Relationship Manager	Aman Aneja
Program Delivery Manager	N/A
IS Finance Management	Chip Benson
IS Regulatory	Dan DeMauro
DR&S	Elaine Wilson
Service Delivery	Brian Detota
Enterprise Architecture	Joe Clinchot

5.1.2 Reviewers

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

Function	Individual	Area
Finance	Benson, Chip	All
Regulatory	Zschokke, Peter	All
Regulatory	Caldwell, Steve	All
Jurisdictional	Harbaugh, Mark	Electric – NY
Delegate	Brown, Laurie	Gas - NY
Procurement	Curran, Art	All

5.1.3 List References

N/A



Short Form Sanction Paper

6 Decisions

The SE Sanctioning Committee (SESC) at a meeting held on March 27, 2017

(a) APPROVED the investment of \$8.632M and a tolerance of +/-10% for the purposes of full implementation.

(c) NOTED that Michael De Matteo has the approved financial delegation.

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

Margaret Smyth
US Chief Financial Officer
Chair, US Sanctioning Committee

Short Form Sanction Paper

7.1 Sanction Request Breakdown by Project

N/A

6/14/2017

FY19 - Investment Request Summaries - IRSs - NY REV PI Enterprise License and Platform...



Planning & Performance Management » FY19 - Investment Request Summaries - IRSs: NY
REV PI Enterprise License and Platform Deployment



nationalgrid		Investment Request Summary - IS US		FISCAL YEAR 2019																							
INV ID:	4704K	Project Name: NY REV PI Enterprise License and Platform Deployment																									
Program:	NY REV																										
Sponsor:	John Spink	Title: VP Control Center Operations																									
Relationship Manager:	Aman Aneja	Title: Director IT Business Relations																									
Prog Delivery Manager:	Deborah Rollins	Title: Director IT Customer Relations																									
Paper Author:	Douglas McCarthy / Phyllis Agin	Title: Business Consultant / Program Delivery Consultant																									
IS Roadmap Category: SCADA / Network Upgrades		Business Area: Customer & Digital		Portfolio: Customer & Digital																							
<input type="checkbox"/> In-Flight Project?	Invest Classification: Medium	Category: Mandatory	Primary Policy Driver:		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</p> <p>Plant Information (PI) is a real-time data historian application with a highly efficient time-series database. This application can efficiently record data from process control systems (ex. Distributed Control System - DCS, Programmable PLC) into a compressed time series database. The distribution system parameters are currently monitored by a T&D SCADA (Transmission and Distribution Supervisory Control and Data Acquisition) system which feeds into a Historian.</p> <p>This project will expand upon the current deployment to facilitate requirements of more robust and frequent modelling of our electrical network. Specifically, this project will deploy a reporting environment that can be queried on demand without impacting performance of our current operational focused deployment. This supports requirements for the Distributed Generation (DG) Planning Portal, DG IOAP Phase 2 screening as well as other modelling needs such as hosting capacity analysis. In addition this project will provide planning engineers and analysts with additional software tools to better serve our customers and stakeholders.</p> <p>Project Rationale: Highlight business challenge, capability or process the project addresses</p> <p>In addition to the needs associated with expediting access to required information to support increased DG workload and analysis – the proposed project will support the deployment of a new DSCADA; created in part by splitting the existing SCADA/EMS (Energy Management System) into a TSCADA and DSCADA.</p> <p>Project Scope: Explain what is in scope and what is not in scope for the project</p> <p>In Scope:</p> <ul style="list-style-type: none"> License for unlimited use of PI software for Electric Transmission & Distribution and Gas Annual PI Support & Services Program including Tech Support, PI software installation & upgrades, Training and CoE (Center of Excellence) Advisory Services Installation of servers and setup of PI Historian in Development, QA and Production environments in the CSC datacenter and PI Client applications <p>Project Dependencies: Identify any core program or project dependencies, please include INVP numbers if known</p> <p>INVP 4704N – NY REV Cyber Security Initiatives</p> <p>Basic Project Assumptions:</p> <p>The project was estimated through engagement with Accenture and determined to have these cost elements. Project estimates for Accenture resources were calculated at March 17, 2017 rates plus 10% contingency added where applicable.</p> <ul style="list-style-type: none"> One-time license fee for PI software ESRP (Enterprise Service Reliance Program) which covers an Annual PI Support and Services Program Physical servers to set up PI Historian in Development, QA and Production environments Vendor CSC (Computer Science Corporation) to install and make ready the physical servers CSC per server support required to provide Gold maintenance support for the PI Historian servers Storage backups provided by CSC (Gold Support) for the PI Historian production servers Setup real time PI environment in Production, QA and Development and PI Client applications \$2.340M in FY21 for OSIsoft license costs per contractual agreement 																											
<p>Indicative Project Costs by Fiscal Year</p> <table border="1"> <thead> <tr> <th>(\$M)</th> <th>Prior Years</th> <th>FY 2018</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>Total</th> </tr> </thead> <tbody> <tr> <td>CapEx</td> <td></td> <td></td> <td>11.430</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>11.430</td> </tr> </tbody> </table>						(\$M)	Prior Years	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	CapEx			11.430							11.430
(\$M)	Prior Years	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total																	
CapEx			11.430							11.430																	

6/14/2017

FY19 - Investment Request Summaries - IRSs - NY REV PI Enterprise License and Platform...

OpEx					2.340					2.340	
Impact on RTB			0.470	0.470	0.480	0.490	1.730	1.760	1.800	7.200	
Indicative Project Costs by Delivery Phase											
(\$M)	Start-up		R & D		D & I			Closure		Total	
CapEx			5.143		6.287					11.430	
OpEx	0.117		0.931		1.282			.010		2.340	
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.											
<div><div></div><div>Support more frequent modelling and ready access to information</div><div></div><div>Access to readings from RTU installed on our network</div><div></div><div>Meet the emerging reporting and data needs without negatively impacting the operational system</div><div></div><div>A more resilient platform</div><div></div><div>Move from independent PI platforms to an Enterprise License and platform</div><div></div><div>Easily obtained historic data on electrical state and system configuration easily accessed by planners, engineering and design, and operations</div></div>											
Investment Prioritization											
Benefits			Impact	Weight	Score	Cost			Impact	Weight	Score
OpEx Annual Savings				10.3%	0	OpEx Cost			2.340	-24.4%	-2.196
CapEx Annual Savings				5.1%	0	CapEx Cost			11.430	-11.2%	-1
Revenue Generation (annual)				6.2%	0	RTB Efficiency			110.236 %	-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			does not apply	-10.6%	0
Regulatory Impact			does not apply	11.2%	0	Elapse Time Duration			does not apply	-6.6%	0
Process & Personal Safety			does not apply	19.4%	0	Change Management Effort			does not apply	-14.9%	0
Reliability			does not apply	10.9%	0						
Customer & Community Responsiveness			does not apply	5.3%	0						
Employee Satisfaction			does not apply	4.6%	0						
Mitigates a Corporate Risk / Risk of not Doing			does not apply	8.9%	0						
Jurisdictional Engagement			does not apply	8.2%	0						
					Benefit Score:	0.00					
					Overall Priority Score:			-5.229			
Investment Risk and Complexity											
Project Risk Score:		49	Risk Score Description: Mandated by NY REV								
Project Complexity Score::		0	Project Complexity Score Description:								
Key Risks Description: Provide detail on project risks & mitigation strategy:											

6/14/2017


FY19 - Investment Request Summaries - IRSs - NY REV PI Enterprise License and Platform...

IS Project Dependencies if you don't see a project in the drop-down please contact the Planning & Performance team.		Benefiting Operating Companies: Check all that apply				
IS Projects: 4704K - NY REV PI Enterprise License and Platform Deployment		<input type="checkbox"/> Select All Companies <input type="checkbox"/> Clear All Companies				
1. Has a dependency on IS Project;		<input type="checkbox"/> Select All Gas <input type="checkbox"/> Select All Electric <input type="checkbox"/> Select All Gen				
2. Has a dependency on IS Project;		<input type="checkbox"/> National Grid USA Parent				
3. Has a dependency on IS Project;		<input type="checkbox"/> KeySpan Energy Development Corporation				
4. Has a dependency on IS Project;		<input type="checkbox"/> KeySpan Services Inc.				
5. Has a dependency on IS Project;		<input type="checkbox"/> KeySpan Energy Corp				
6. Has a dependency on IS Project;		<input type="checkbox"/> KeySpan Energy Delivery New York				
		<input type="checkbox"/> KeySpan Energy Delivery Long Island				
		<input type="checkbox"/> KeySpan Generation LLC (PSA)				
		<input type="checkbox"/> KeySpan Glenwood Energy Center				
		<input type="checkbox"/> KeySpan Port Jefferson Energy Center				
		<input type="checkbox"/> KeySpan Energy Trading Svc LLC				
		<input checked="" type="checkbox"/> Niagara Mohawk Power Corp- Electric Distribution				
		<input type="checkbox"/> Niagara Mohawk Power Corp - Gas				
		<input type="checkbox"/> Niagara Mohawk Power Corp - Transmission				
		<input type="checkbox"/> Massachusetts Electric Company				
		<input type="checkbox"/> Massachusetts Electric Company - Transmission				
		<input type="checkbox"/> Nantucket Electric Company				
		<input type="checkbox"/> Boston Gas Company				
		<input type="checkbox"/> Colonial Gas Company				
		<input type="checkbox"/> Narragansett Gas Company				
		<input type="checkbox"/> Narragansett Electric Company				
		<input type="checkbox"/> Narragansett Electric Company - Transmission				
		<input type="checkbox"/> New England Power Company - Transmission				
		<input type="checkbox"/> New England Hydro - Trans Corp				
		<input type="checkbox"/> New England Electric Trans Corp				
		<input type="checkbox"/> NG LNG LP Regulated Entity				
Business Initiative Dependencies						
IS Projects: 4704K - NY REV PI Enterprise License and Platform Deployment						
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						
<input type="checkbox"/> Minor Works Project Relationship:						
Related Projects:						
<input checked="" type="checkbox"/> 0823B - Data Loss Prevention (DLP) Gateway						
Enabling IS Capabilities check all that apply						
<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 checked="" type="checkbox"/> Hybrid Cloud		<input checked="" type="checkbox"/> Networks				
<input type="checkbox"/> 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, 2018	May, 2018	June, 2018	September, 2018	September, 2018	September, 2018	December, 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:						
Attached Supporting Documents						

6/14/2017

FY19 - Investment Request Summaries - IRSs - NY REV PI Enterprise License and Platform...

Recommendation Sign-off

Role	Name	Title	Date
Business Project Sponsor	John Spink	VP Control Center Operations	
Business Relationship Manager	Aman Aneja	IS Business Relationship Manager	
IS Program Delivery Manager	Deborah Rollins	IS Program Delivery Manager	
			

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FY19 - Investment Request Summaries - IRSs - NY Customer E-Commerce Marketplace



Planning & Performance Management ▸ FY19 - Investment Request Summaries - IRSs: NY Customer E-Commerce Marketplace



I Like It



Tags & Notes

nationalgrid		Investment Request Summary - IS US		FISCAL YEAR 2019																							
INV ID:	4704D	Project Name: NY Customer E-Commerce Marketplace																									
Program:	NY REV																										
Sponsor:	John Isberg	Title: VP Market Development																									
Relationship Manager:	Aman Aneja	Title: Director IT Business Relations																									
Prog Delivery Manager:	Deborah Rollins	Title: Director IT Customer Relations																									
Paper Author:	Douglas McCarthy / Phyllis Agin	Title: Business Consultant / Program Delivery Consultant																									
IS Roadmap Category: Customer Interaction / Channels		Business Area: Customer & Digital		Portfolio: Customer & Digital																							
<input type="checkbox"/> In-Flight Project?	Invest Classification: Medium	Category: Mandatory	Primary Policy Driver:		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</p> <p>E-Commerce Marketplace is a platform that supports consumers by offering energy-saving household products and services with instant rebates. Its goal is to empower customers to reduce energy consumption and make informed purchasing decisions by delivering individualized energy-saving tips and recommendations.</p> <p>National Grid will integrate and maintain a marketplace on the Company website that offers customers choices and instant rebates for energy efficient and smart products. In addition, it will provide personalized and relevant connections to other products and services of customer interest (solar, EV, etc.). This Marketplace will build off of the established customer energy management platform.</p> <p>Project Rationale: Highlight business challenge, capability or process the project addresses</p> <p>An intuitive, visual, and interactive online assessment will be implemented which will target residential and small and medium business customers. Customers complete the online assessment which provides a detailed personalized report on potential savings and streamlining business operations from an energy perspective. Customers are directed from the online report to take action on these recommendations via an e-commerce website.</p> <p>The online assessment is a cost-effective way to reach residential and small & medium business customers which leads to increased customer satisfaction. The online assessment will provide leads to this program, which can provide customers with prescriptive measure and custom measures, including direct install for deeper energy savings.</p> <p>Project Scope: Explain what is in scope and what is not in scope for the project</p> <p>In Scope:</p> <ul style="list-style-type: none"> · Hosted website · Algorithms and functionality · Product procurement and shipping capabilities · Upgrade to new functionality · Enable new integration points · Ongoing IS support for the Platform-as-a-Service solution · \$0.150M in FY21 for Platform Refresh <p>Project Dependencies: Identify any core program or project dependencies, please include INVP numbers if known</p> <p>INVP 4704N – NY REV Cyber Security Initiatives</p> <p>Basic Project Assumptions:</p> <p>The project was estimated through engagement with Accenture and determined to have these cost elements.</p> <ul style="list-style-type: none"> · Platform-as-a-service license · E-Commerce Marketplace Platform refresh in FY21 · Ongoing RTB IS support 																											
<p>Indicative Project Costs by Fiscal Year</p> <table border="1"> <thead> <tr> <th>(\$M)</th> <th>Prior Years</th> <th>FY 2018</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>Total</th> </tr> </thead> <tbody> <tr> <td>CapEx</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>						(\$M)	Prior Years	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	CapEx										
(\$M)	Prior Years	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total																	
CapEx																											

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FY19 - Investment Request Summaries - IRSs - NY Customer E-Commerce Marketplace

			0.920							0.920
OpEx					0.150					0.150
Impact on RTB			0.040	0.040	0.040	0.040	0.040	0.050	0.050	0.300

Indicative Project Costs by Delivery Phase

(\$M)	Start-up	R & D	D & I	Closure	Total
CapEx		0.414	0.506		0.920
OpEx	0.007	0.056	0.077	.010	0.150

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 online assessment is a cost-effective way to reach residential and small & medium business customers which leads to increased customer satisfaction. It will provide customers with prescriptive and custom measures, including direct install for deeper energy savings.
- Customers can purchase measures such as LED lighting, smart Wi-Fi thermostats, aerators (to reduce hot water consumption for electric hot water heaters) and power strips (to curtail losses due to “vampire” electronic connectivity). They can redeem rebates for these energy efficiency measures instantly.
- Product offers/promotions are targeted to individual customers based on their energy use, profile, and results from the assessment.

Investment Prioritization

Benefits				Cost			
	Impact	Weight	Score		Impact	Weight	Score
OpEx Annual Savings		10.3%	0	OpEx Cost	0.150	-24.4%	-0.732
CapEx Annual Savings		5.1%	0	CapEx Cost	0.920	-11.2%	0
Revenue Generation (annual)		6.2%	0	RTB Efficiency	38.043 %	-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	does not apply	-10.6%	0
Regulatory Impact	does not apply	11.2%	0	Elastice Time Duration	does not apply	-6.6%	0
Process & Personal Safety	does not apply	19.4%	0	Change Management Effort	does not apply	-14.9%	0
Reliability	does not apply	10.9%	0				
Customer & Community Responsiveness	does not apply	5.3%	0				
Employee Satisfaction	does not apply	4.6%	0				
Mitigates a Corporate Risk / Risk of not Doing	does not apply	8.9%	0				
Jurisdictional Engagement	does not apply	8.2%	0				
Benefit Score: 0.00				Cost Score: -3.09			
				Overall Priority Score: -3.093			

Investment Risk and Complexity

Project Risk Score:	49	Risk Score Description: Mandated by NY REV
Project Complexity Score:	0	Project Complexity Score Description:

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

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FY19 - Investment Request Summaries - IRSs - NY Customer E-Commerce Marketplace

IS Project Dependencies if you don't see a project in the drop-down please contact the Planning & Performance team.		Benefiting Operating Companies: Check all that apply				
IS Projects: 4704D - NY Customer E-Commerce Marketplace 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;		<div><input type="checkbox"/> Select All Companies <input type="checkbox"/> Clear All Companies</div> <div><input type="checkbox"/> Select All Gas <input type="checkbox"/> Select All Electric <input type="checkbox"/> Select All Gen</div> <div><input type="checkbox"/> National Grid USA Parent</div> <div><input type="checkbox"/> KeySpan Energy Development Corporation</div> <div><input type="checkbox"/> KeySpan Services Inc.</div> <div><input type="checkbox"/> KeySpan Energy Corp</div> <div><input type="checkbox"/> KeySpan Energy Delivery New York</div> <div><input type="checkbox"/> KeySpan Energy Delivery Long Island</div> <div><input type="checkbox"/> KeySpan Generation LLC (PSA)</div> <div><input type="checkbox"/> KeySpan Glenwood Energy Center</div> <div><input type="checkbox"/> KeySpan Port Jefferson Energy Center</div> <div><input type="checkbox"/> KeySpan Energy Trading Svc LLC</div> <div><input checked="" type="checkbox"/> Niagara Mohawk Power Corp- Electric Distribution</div> <div><input type="checkbox"/> Niagara Mohawk Power Corp - Gas</div> <div><input type="checkbox"/> Niagara Mohawk Power Corp - Transmission</div> <div><input type="checkbox"/> Massachusetts Electric Company</div> <div><input type="checkbox"/> Massachusetts Electric Company - Transmission</div> <div><input type="checkbox"/> Nantucket Electric Company</div> <div><input type="checkbox"/> Boston Gas Company</div> <div><input type="checkbox"/> Colonial Gas Company</div> <div><input type="checkbox"/> Narragansett Gas Company</div> <div><input type="checkbox"/> Narragansett Electric Company</div> <div><input type="checkbox"/> Narragansett Electric Company - Transmission</div> <div><input type="checkbox"/> New England Power Company - Transmission</div> <div><input type="checkbox"/> New England Hydro - Trans Corp</div> <div><input type="checkbox"/> New England Electric Trans Corp</div> <div><input type="checkbox"/> NG LNG LP Regulated Entity</div>				
Business Initiative Dependencies IS Projects: 4704D - NY Customer E-Commerce Marketplace 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 <div><input type="checkbox"/> Minor Works</div> <div>Project Relationship:</div> <div>Related Projects:</div> <div><input checked="" type="checkbox"/> 0823B - Data Loss Prevention (DLP) Gateway</div>						
Enabling IS Capabilities check all that apply						
<div><input type="checkbox"/> Enterprise Content Management (ECM)</div> <div><input type="checkbox"/> Comprehensive Integration Services (CIS)</div> <div><input checked="" type="checkbox"/> Hybrid Cloud</div> <div><input type="checkbox"/> Next Gen Workplace</div> <div><input type="checkbox"/> Enterprise Mobility</div> <div><input type="checkbox"/> Reporting and Analytics</div> <div><input type="checkbox"/> Networks</div>						
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	May, 2017	December, 2017	October, 2018	December, 2018	December, 2018	March, 2019
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:						

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FY19 - Investment Request Summaries - IRSs - NY Customer E-Commerce Marketplace

Attached Supporting Documents			
Recommendation Sign-off			
Role	Name	Title	Date
Business Project Sponsor	John Isberg	VP Market Development	
Business Relationship Manager	Aman Aneja	IS Business Relationship Manager	
IS Program Delivery Manager	Deborah Rollins	IS Program Delivery Manager	
			nationalgrid

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FY19 - Investment Request Summaries - IRSs - NY Substation Network Improvements



Planning & Performance Management ▸ FY19 - Investment Request Summaries - IRSs: NY Substation Network Improvements



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Tags & Notes

nationalgrid		Investment Request Summary - IS US		FISCAL YEAR 2019
INV ID:	4704I	Project Name: NY Substation Network Improvements		
Program:	NY REV			
Sponsor:	Chris Kelly	Title: SVP Electric Process and Engineering		
Relationship Manager:	Aman Aneja	Title: Director IS Business Relations		
Prog Delivery Manager:	Deborah Rollins	Title: Director IS Customer Relations		
Paper Author:	Douglas McCarthy / Phyllis Agin	Title: Business Consultant / Program Delivery Consultant		
IS Roadmap Category: SCADA / Network Upgrades		Business Area: Network Strategy	Portfolio: Customer & Digital	
<input type="checkbox"/> In-Flight Project?	Invest Classification: Medium	Category: Mandatory	Primary Policy Driver:	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</p> <p>In preparation to align with REV objectives, the National Grid is enhancing several of its capabilities e.g. Advanced Metering Functionality, Advanced Distribution Management System, and substation automation among others. All of these enhancements will require National Grid's network to install new backhaul and enhance its existing bandwidth to support transfer of the new data.</p> <p>Project Rationale: Highlight business challenge, capability or process the project addresses</p> <p>There are four sub-projects within the Telecom project that address the backhaul and bandwidth needs:</p> <ol style="list-style-type: none"> 1. Substation Remote Terminal Unit (RTU) Expansion – Install backhaul from the public carrier network to RTU substations to bring back substation/field information to the back office for additional analysis 2. Corporate Backbone Expansion – Increase backhaul bandwidth of the corporate data center to support data lake and analytics engine 3. Information Technology/Operational Technology (IT/OT) Backbone Expansion – Increase the backhaul bandwidth and install a wireless gateway to bring back meter data to the data center 4. RTU upgrade for Distribution Supervisory Control and Data Acquisition (D-SCADA) – Reconfigure RTUs at the substations to send information to D-SCADA <p>Project Scope: Explain what is in scope and what is not in scope for the project</p> <p>In scope:</p> <ul style="list-style-type: none"> Substation Remote Terminal Unit (RTU) Expansion <ul style="list-style-type: none"> · Installation of RTUs, cabling, service transition and installation of public networking services · Operate and maintain RTUs, circuits to RTUs, and public network circuit Corporate Backbone Expansion <ul style="list-style-type: none"> · Installation and configuration of upgraded network equipment, installation of network circuits, service transition · Network equipment and network circuit maintenance Information Technology/Operational Technology (IT/OT) Backbone Expansion <ul style="list-style-type: none"> · Installation and configuration of wireless gateway, network equipment, installation of network circuits, service transition · Operations and maintenance of the cellular equipment RTU upgrade for Distribution Supervisory Control and Data Acquisition (D-SCADA) <ul style="list-style-type: none"> · Reconfigure RTUs at the substations to send information to D-SCADA · Additional software license <p>Project Dependencies: Identify any core program or project dependencies, please include INVP numbers if known</p> <p>INVP 4704N – NY REV Cyber Security Initiatives</p> <p>Basic Project Assumptions:</p>				

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FY19 - Investment Request Summaries - IRSs - NY Substation Network Improvements

The project was estimated through engagement with Accenture and determined to have these cost elements.

- New Multiprotocol Label Switching (MPL) networks
- Implementation of points of presence (POP) bandwidth
- POP bandwidth and incremental costs for all CSC data center connections with increased bandwidth
- Primary and redundant wireless access gateways, and bandwidth increase costs for the data center links
- 100Mb wireless gateways and incremental annual costs for all CSC data center links with increased bandwidth
- Support monitoring and break/fix activities
- Support Component of RTU Upgrade for D-SCADA

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			1.580	1.410	1.960					4.950
OpEx			0.300	0.310	0.530					1.140
Impact on RTB				2.400	3.690	5.050	5.190	5.300	5.410	27.040

Indicative Project Costs by Delivery Phase

(\$M)	Start-up	R & D	D & I	Closure	Total
CapEx		2.228	2.723		4.951
OpEx	0.057	0.451	0.622	.010	1.140

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.

- Provides greater flexibility and capacity for increasing data requirements as monitoring and controlling additional devices continues to grow in the future.
- An integrated telecommunications system will enable collection of interval customer data, voltage, real-time consumption, and real-time power state.
- Provide a means for receiving near real-time customer consumption data and delivering utility Demand Response communications to the customer.
- There will be reduced call volume resulting from ADA/substation automation and the improved identification of outages.
- It is possible that Advanced Distribution Automation (ADA) and substation automation will improve fault detection, and allow quicker repair of faults. In addition, with AMI meters, the Company expects that, for some functions, physical access by meter readers to meters will lessen.

Investment Prioritization

Benefits				Cost			
	Impact	Weight	Score		Impact	Weight	Score
OpEx Annual Savings		10.3%	0	OpEx Cost	1.140	-24.4%	-2.196
CapEx Annual Savings		5.1%	0	CapEx Cost	4.950	-11.2%	-1
Revenue Generation (annual)		6.2%	0	RTB Efficiency	765.051 %	-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	does not apply	-10.6%	0
Regulatory Impact	does not apply	11.2%	0	Elapse Time Duration	does not apply	-6.6%	0
Process & Personal Safety	does not apply	19.4%	0	Change Management Effort	does not apply	-14.9%	0
Reliability	does not apply	10.9%	0				
Customer & Community Responsiveness	does not apply	5.3%	0				
Employee Satisfaction	does not apply	4.6%	0				

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FY19 - Investment Request Summaries - IRSs - NY Substation Network Improvements

Mitigates a Corporate Risk / Risk of not Doing	does not apply	8.9%	0
Jurisdictional Engagement	does not apply	8.2%	0
Benefit Score:			0.00
Cost Score:			-5.23
Overall Priority Score:			-5.229

Investment Risk and Complexity

Project Risk Score:	49	Risk Score Description: Mandated by NY REV
Project Complexity Score::	0	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: 4704I - NY Substation Network Improvements

- Has a dependency on IS Project;
- Has a dependency on IS Project;
- Has a dependency on IS Project;
- Has a dependency on IS Project;
- Has a dependency on IS Project;
- Has a dependency on IS Project;

Business Initiative Dependencies

IS Projects: 4704I - NY Substation Network Improvements

- Has a dependency on Biz Initiative,
- Has a dependency on Biz Initiative,
- Has a dependency on Biz Initiative,
- Has a dependency on Biz Initiative,

Project Relationships

☐ Minor Works

Project Relationship:

Related Projects:

- ☒ 0823B - Data Loss Prevention (DLP) Gateway

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
 - ☐ 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

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FY19 - Investment Request Summaries - IRSs - NY Substation Network Improvements

<i>Begin Start-up</i>	<i>Begin Requirements & Deign</i>	<i>Begin Development & Implementation</i>	<i>Begin User Acceptance Testing</i>	<i>Go Live</i>	<i>Project Completion</i>	<i>Project Closure</i>
<i>April, 2018</i>	<i>May, 2018</i>	<i>June, 2019</i>	<i>November, 2020</i>	<i>March, 2021</i>	<i>March, 2021</i>	<i>June, 2021</i>
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	
<i>Resourcing Strategy:</i>						
Attached Supporting Documents						
Recommendation Sign-off						
<i>Role</i>	<i>Name</i>		<i>Title</i>		<i>Date</i>	
<i>Business Project Sponsor</i>	<i>Chris Kelly</i>		<i>SVP Electric Process and Engineering</i>			
<i>Business Relationship Manager</i>	<i>Aman Aneja</i>		<i>IS Business Relationship Manager</i>			
<i>IS Program Delivery Manager</i>	<i>Deborah Rollins</i>		<i>IS Program Delivery Manager</i>			

nationalgrid

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FY19 - Investment Request Summaries - IRSs - Distributed Generation Integrated Planning...



Planning & Performance Management » FY19 - Investment Request Summaries - IRSs:
Distributed Generation Integrated Planning & Forecasting – Tactical



nationalgrid		Investment Request Summary - IS US		FISCAL YEAR 2019	
INV ID:	4704P	Project Name: Distributed Generation Integrated Planning & Forecasting – Tactical			
Program:	NY REV				
Sponsor:	Sean Mongan	Title: VP Process and Performance			
Relationship Manager:	Aman Aneja	Title: Director IT Business Relations			
Prog Delivery Manager:	Deborah Rollins	Title: Director IT Customer Relations			
Paper Author:	Douglas McCarthy / Phyllis Agin	Title: Business Consultant / Program Delivery Consultant			
IS Roadmap Category: Customer Interaction / Channels		Business Area: Customer & Digital		Portfolio: Customer & Digital	
<input type="checkbox"/> In-Flight Project?	Invest Classification: Medium	Category: Mandatory	Primary Policy Driver:		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</p> <p>Reforming the Energy Vision's (REV's) Phase 1 objectives reflect an increasing need to adapt to a changing energy landscape. Distributed Generation (DG) grid interconnections in New York are, for example, growing at an accelerated rate. REV aims to address development of a utility-customer engagement Web platform for interconnections called the Interconnection Online Application Portal (IOAP) for all New York utilities.</p> <p>REV Phase 1 proposes that the IOAP be rolled out in phases – application management (Phase 1), automate Standardized Interconnection Requirements (SIR) technical screenings (Phase 2), and fully automation all processes (Phase 3).</p> <p>This project covers REV Phase 2, automation of SIR technical screenings, tactical implementation.</p> <p>Project Rationale: Highlight business challenge, capability or process the project addresses</p> <p>The technical screenings provide interconnection viability feedback to customers and trade allies. Automation of the technical screenings will streamline the DG application process for customers and National Grid engineering groups. Proper feedback of technical screening information is expected to be integrated into the IOAP as well as foster transparency to customers.</p> <p>Project Scope: Explain what is in scope and what is not in scope for the project</p> <p>In Scope:</p> <ul style="list-style-type: none"> Plan, design and test necessary applications and/or tools to deploy automation of SIR technical screenings in IOAP Integrate internal (i.e. share drive data, hosting capacity tables) and complex (Geospatial Information System) data systems to IOAP Salesforce platform and/or Analysis Engine application Design, document and manage the implementation of new processes Develop business requirements for a Request for Proposal, process flows, and/or vendor selection for the SIR technical screenings of the IOAP Hardware (servers and rack) and license for proprietary, custom developed capabilities, and/or third party software Labor and licenses incurred during the project, covering development and implementation for the Analysis Engine application – services each respective Vendor will provide <p>Project Dependencies: Identify any core program or project dependencies, please include INVP numbers if known</p> <p>INVP 4704N – NY REV Cyber Security Initiatives</p> <p>Basic Project Assumptions:</p>					

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FY19 - Investment Request Summaries - IRSs - Distributed Generation Integrated Planning...

The project was estimated based on a preliminary scope that focuses on application and Salesforce development to meet the business needs. It is expected to include the following cost elements.

- . Project Managers
- . Solution Architects
- . IS Delivery Leads
- . Business Relationship Management
- . IIS Support Analysts
- . Subject Matter Experts
- . Testers
- . Analysts

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			1.760							1.760
OpEx			0.440							0.440
Impact on RTB				0.010	0.010	0.010	0.010	0.010	0.010	0.060

Indicative Project Costs by Delivery Phase

(\$M)	Start-up	R & D	D & I	Closure	Total
CapEx		0.792	0.968		1.760
OpEx	0.022	0.171	0.237	.010	0.440

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 tactical investment into the IOAP supports National Grid's commitment to the NY PSC's REV Phase 2 initiative.
- . Meeting the objective set forth by the NY PSC will improve National Grid's reputation and position as a leader in the utility space.Meeting the objective set forth by the NY PSC will improve National Grid's reputation and position as a leader in the utility space.
- . Automation of SIR technical screenings will result in increased customer satisfaction by providing accelerated utility feedback on applications, and refocused engineering resources to complex projects and studies.

Investment Prioritization

Benefits				Cost			
	Impact	Weight	Score		Impact	Weight	Score
OpEx Annual Savings		10.3%	0	OpEx Cost	0.440	-24.4%	-2.196
CapEx Annual Savings		5.1%	0	CapEx Cost	1.760	-11.2%	-1
Revenue Generation (annual)		6.2%	0	RTB Efficiency	3.977 %	-22.5%	-2.225
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	does not apply	-10.6%	0
Regulatory Impact	does not apply	11.2%	0	Elapse Time Duration	does not apply	-6.6%	0
Process & Personal Safety	does not apply	19.4%	0	Change Management Effort	does not apply	-14.9%	0
Reliability	does not apply	10.9%	0				
Customer & Community Responsiveness	does not apply	5.3%	0				

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FY19 - Investment Request Summaries - IRSs - Distributed Generation Integrated Planning...

Employee Satisfaction	does not apply	4.6%	0
Mitigates a Corporate Risk / Risk of not Doing	does not apply	8.9%	0
Jurisdictional Engagement	does not apply	8.2%	0
Benefit Score: 0.00			Cost Score: -3.43
Overall Priority Score: -3.429			

Investment Risk and Complexity

Project Risk Score:	49	Risk Score Description: Mandated by NY REV
Project Complexity Score::	0	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: 4704P - Distributed Generation Integrated Planning & Forecasting – Tactical

- Has a dependency on IS Project;
- Has a dependency on IS Project;
- Has a dependency on IS Project;
- Has a dependency on IS Project;
- Has a dependency on IS Project;
- Has a dependency on IS Project;

Business Initiative Dependencies

IS Projects: 4704P - Distributed Generation Integrated Planning & Forecasting – Tactical

- Has a dependency on Biz Initiative,
- Has a dependency on Biz Initiative,
- Has a dependency on Biz Initiative,
- Has a dependency on Biz Initiative,

Project Relationships

☐ Minor Works

Project Relationship:

Related Projects:

☒ 0823B - Data Loss Prevention (DLP) Gateway

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
 - ☐ 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

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FY19 - Investment Request Summaries - IRSs - Distributed Generation Integrated Planning...

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

<i>Begin Start-up</i>	<i>Begin Requirements & Deign</i>	<i>Begin Development & Implementation</i>	<i>Begin User Acceptance Testing</i>	<i>Go Live</i>	<i>Project Completion</i>	<i>Project Closure</i>
<i>September, 2017</i>	<i>October, 2017</i>	<i>April, 2018</i>	<i>January, 2019</i>	<i>March, 2019</i>	<i>March, 2019</i>	<i>June, 2019</i>

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>
<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>

Resourcing Strategy:

Attached Supporting Documents

Recommendation Sign-off

<i>Role</i>	<i>Name</i>	<i>Title</i>	<i>Date</i>
<i>Business Project Sponsor</i>	<i>Sean Mangan</i>	<i>VP Process and Performance</i>	
<i>Business Relationship Manager</i>	<i>Aman Aneja</i>	<i>IS Business Relationship Manager</i>	
<i>IS Program Delivery Manager</i>	<i>Deborah Rollins</i>	<i>IS Program Delivery Manager</i>	



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FY19 - Investment Request Summaries - IRSs - CSS DSIP Changes for Distributed Generation...



Planning & Performance Management » FY19 - Investment Request Summaries - IRSs: CSS
DSIP Changes for Distributed Generation



nationalgrid		Investment Request Summary - IS US		FISCAL YEAR 2019	
INV ID:	4704A	Project Name: CSS DSIP Changes for Distributed Generation			
Program:	NY REV				
Sponsor:	Jody Allison	Title: VP Billing Collections Strategy and Operations			
Relationship Manager:	Aman Aneja	Title: Director IT Business Relations			
Prog Delivery Manager:	Deborah Rollins	Title: Director IT Customer Relations			
Paper Author:	Douglas McCarthy / Phyllis Agin	Title: Business Consultant / Program Delivery Consultant			
IS Roadmap Category: Customer Billing System		Business Area: Customer & Digital		Portfolio: Customer & Digital	
<input type="checkbox"/> In-Flight Project?	Invest Classification: Medium	Category: Mandatory	Primary Policy Driver:		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</p> <p>The Customer Service System (CSS) is a set of applications used to manage customer-facing activities. CSS pulls meter data to administer orders, billing and payment processing, collections, and rates and usage programs. Having such a prominent role in customer interaction with National Grid, an effective CSS with appropriate capabilities is critical to maintaining customer satisfaction. Moreover as Distributed Energy Resources (DER) penetration increases throughout Upstate New York, CSS must be adaptable to changing with the dynamic energy environment.</p> <p>Project Rationale: Highlight business challenge, capability or process the project addresses</p> <p>CSS will be modified and configured to accept data formatted for more frequent intervals to make the most of usage programs such as Time-of-Use (TOU) and Critical Peak Pricing (CPP). CSS also includes capabilities intended to foster a relationship with customers and assist in customer retention through personalized service. The system pulls from various back office IT/IS sources to create personal profiles on customers to facilitate customer engagement. For instance, CSS can be linked with Interactive Voice Response (IVR) to send an automated notification to customers when the system receives a power-off notification from smart meters.</p> <p>Project Scope: Explain what is in scope and what is not in scope for the project</p> <p>In Scope:</p> <ul style="list-style-type: none"> Creation of Architectural designs Completion of Requirements and Design documents Programming of CSS Billing – Prebill, Billing, Bill Print (including new rates) Creation of CSS Service Orders – Change Meter Order (CMO), Change Meter Extended (CME), Connects/Disconnects, New Meter Point Type Static table changes Utilization of the Field Device Manager (FDM) interface Development of CSS Interfaces – Mwork (Service Orders), MITS (Meter Inventory), GIS (Interface between GIS and Itron), Web Services, Itron/MDMS, Verizon's MPLS Enablement of CIS Fusion – Middleware used to format and transfer data between National Grid and Itron, Opower, ADA, Verizon and other vendors that may be involved Testing of changes Database setup Schedule and monitor batch processing <p>Out of Scope:</p> <ul style="list-style-type: none"> Web Services Changes to the VRU or the Retail Web <p>Project Dependencies: Identify any core program or project dependencies, please include INVP numbers if known</p> <p>INVP 4704J – NY Customer AMI Data Visibility Enhancements (aka Enterprise Service Bus & API Integration - AMF Functions) INVP 4704N – NY REV Cyber Security Initiatives</p> <p>Basic Project Assumptions:</p>					

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FY19 - Investment Request Summaries - IRSs - CSS DSIP Changes for Distributed Generation...

Project timeline of 24 months is for CSS enhancements. The ITron deployment included in the estimates has its own timeline.

The project was estimated through engagement with Accenture and determined to have these cost elements. Project estimates were calculated at March 17, 2017 rates plus 10% contingency added where applicable.

- IS Project Manager
- IS Project Delivery Manager
- IS & CSS Billing Subject Matter Experts (SMEs)
- IS & CSS Order SMEs
- CSS Electronic Data Interface SME
- Business Consultants
- IS Business Analyst
- Solution Architects
- Data Reporting & System SME
- Testers
- System Integration SMEs
- Web Services SMEs
- ITron costs in FY21
- Run the Business (RTB) Resources
- Itron SaaS costs included in 3-year view, \$1.36M in FY21 after CSS go-live

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			5.320	2.760						8.080
OpEx			0.230	5.920	1.360					7.510
Impact on RTB					2.380	4.880	7.520	10.330	13.290	38.400

Indicative Project Costs by Delivery Phase

(\$M)	Start-up	R & D	D & I	Closure	Total
CapEx		3.636	4.444		8.080
OpEx	0.375	3.000	4.125	0.010	7.510

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.

- There will be fewer labor and vehicle costs associated with disconnect and reconnects of service on/service off, as these will be handled remotely.
- Call center operators will have customer history and real-time meter status when customers call in, giving National Grid employees greater insights when assisting customers.
- Service representatives will have a new suite of tools to perform diagnostic services.
- The company expects a reduction in meter re-reading expenses.

Investment Prioritization

Benefits				Cost			
	Impact	Weight	Score		Impact	Weight	Score
OpEx Annual Savings		10.3%	0	OpEx Cost	7.510	-24.4%	-2.196
CapEx Annual Savings		5.1%	0	CapEx Cost	8.080	-11.2%	-1
Revenue Generation (annual)		6.2%	0	RTB Efficiency	1,151.361 %	-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	does not apply	-10.6%	0
Regulatory Impact	does not apply	11.2%	0	Elapse Time Duration	does not apply	-6.6%	0
Process & Personal Safety	does not apply	19.4%	0	Change Management Effort	does not apply	-14.9%	0
Reliability		10.9%					

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FY19 - Investment Request Summaries - IRSs - CSS DSIP Changes for Distributed Generation...

Customer & Community Responsiveness	does not apply	5.3%	0
Employee Satisfaction	does not apply	4.6%	0
Mitigates a Corporate Risk / Risk of not Doing	does not apply	8.9%	0
Jurisdictional Engagement	does not apply	8.2%	0
Benefit Score:			0.00
Overall Priority Score:			-5.229
Cost Score: -5.23			

Investment Risk and Complexity

Project Risk Score:	49	Risk Score Description: Mandated by NY REV
Project Complexity Score::	0	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: 4704A - CSS DSIP Changes for Distributed Generation

- Has a dependency on IS Project;
- Has a dependency on IS Project;
- Has a dependency on IS Project;
- Has a dependency on IS Project;
- Has a dependency on IS Project;
- 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☐ 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

Business Initiative Dependencies

IS Projects: 4704A - CSS DSIP Changes for Distributed Generation

- Has a dependency on Biz Initiative,
- Has a dependency on Biz Initiative,
- Has a dependency on Biz Initiative,
- Has a dependency on Biz Initiative,

Project Relationships

☐ Minor WorksProject Relationship:

Related Projects:

☒ 0823B - Data Loss Prevention (DLP) Gateway

Enabling IS Capabilities

check all that apply

☐ Enterprise Content Management (ECM)☐ Enterprise Mobility☐ Comprehensive Integration Services (CIS)☐ Reporting and Analytics

6/14/2017

FY19 - Investment Request Summaries - IRSs - CSS DSIP Changes for Distributed Generation...

☐ Hybrid Cloud
☒ Networks
☐ Next Gen Workplace

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

<i>Begin Start-up</i>	<i>Begin Requirements & Deign</i>	<i>Begin Development & Implementation</i>	<i>Begin User Acceptance Testing</i>	<i>Go Live</i>	<i>Project Completion</i>	<i>Project Closure</i>
<i>April, 2018</i>	<i>May, 2018</i>	<i>January, 2019</i>	<i>January, 2020</i>	<i>March, 2020</i>	<i>March, 2020</i>	<i>June, 2020</i>

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>
<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>

Resourcing Strategy:

Attached Supporting Documents

Recommendation Sign-off

<i>Role</i>	<i>Name</i>	<i>Title</i>	<i>Date</i>
<i>Business Project Sponsor</i>	<i>Jody Allison</i>	<i>VP Billing Collections Strategy and Operations</i>	
<i>Business Relationship Manager</i>	<i>Aman Aneja</i>	<i>IS Business Relationship Manager</i>	
<i>IS Program Delivery Manager</i>	<i>Deborah Rollins</i>	<i>IS Program Delivery Manager</i>	



6/14/2017

FY19 - Investment Request Summaries - IRSs - NY Green Button Connect



Planning & Performance Management ▶ FY19 - Investment Request Summaries - IRSs: NY
Green Button Connect



nationalgrid		Investment Request Summary - IS US		FISCAL YEAR 2019	
INV ID:	4704C	Project Name: NY Green Button Connect			
Program:	NY REV				
Sponsor:	Jody Allison	Title: VP Billing Collections Strategy and Operations			
Relationship Manager:	Aman Aneja	Title: Director IT Business Relations			
Prog Delivery Manager:	Deborah Rollins	Title: Director IT Customer Relations			
Paper Author:	Douglas McCarthy / Phyllis Agin	Title: Business Consultant / Program Delivery Consultant			
IS Roadmap Category: Customer Interaction / Channels		Business Area: Customer & Digital		Portfolio: Customer & Digital	
<input type="checkbox"/> In-Flight Project?	Invest Classification: Medium	Category: Mandatory	Primary Policy Driver:		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</p> <p>The Green Button initiative will provide utility customers with easy and secure access to their energy usage information. Key guiding principles dictate a consumer-friendly and computer-friendly format for customers to access their electricity and natural gas usage details. National Grid is looking to implement Green Button Connect My Data as part of the AMF deployment program.</p> <p>Project Rationale: Highlight business challenge, capability or process the project addresses</p> <p>In addition to National Grid's existing Green Button Download My Data functionality, new capabilities associated with Green Button Connect My Data further enables the customer experience by allowing utility customers to authorize third party providers access to their usage details. Green Button Connect My Data customers can securely authorize both National Grid and designated third parties to send and receive data on the customer's behalf. Upon authorization, energy usage data can be transferred as required as it only occurs if a customer has granted explicit permission. Providing customers access to their data through Green Button Connect is expected to result in increased Energy Efficiency and higher participation in Demand Response (DR) and Distributed Generation (DG) programs offered by National Grid as well as third party providers.</p> <p>Project Scope: Explain what is in scope and what is not in scope for the project</p> <p>In Scope:</p> <ul style="list-style-type: none"> Software integration and API development of 20 complex and 20 simple APIs Ongoing IS support for the Platform-as-a-Service solution <p>Project Dependencies: Identify any core program or project dependencies, please include INVP numbers if known</p> <p>INVP 4704J – NY Customer AMI Data Visibility Enhancements (aka Enterprise Service Bus & API Integration - AMF Functions) INVP 4704M – Cloud Computing for Data Management Optimization (aka Cloud Computing and Data Lake) INVP 4704N – NY REV Cyber Security Initiatives</p> <p>Basic Project Assumptions:</p>					

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FY19 - Investment Request Summaries - IRSs - NY Green Button Connect

The project was estimated through engagement with Accenture and determined to have these cost elements. Project estimates were calculated at March 17, 2017 rates plus 10% contingency added where applicable.

- Program Director
- Program Managers
- Technical Consultant
- Technical Architect
- Technical Leads
- Subject Matter Experts
- Business Analysts
- Testers
- Technical Developers
- Change Enablement Consultant
- Change Management Analyst
- Quality Assurance Director
- \$0.26M in FY21 for .NET Developer for On boarding support (Onshore)

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				3.070						3.070
OpEx			0.180	0.650	0.260					1.090
Impact on RTB					0.510	0.520	0.530	0.540	0.560	2.660

Indicative Project Costs by Delivery Phase

(\$M)	Start-up	R & D	D & I	Closure	Total
CapEx		1.381	1.689		3.070
OpEx	0.054	0.432	0.594	.010	1.090

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.

- Enables every utility customer to download their personal energy consumption data directly to their computer in a secure manner.
- Providing customers access to their data is expected to result in increased Energy Efficiency and higher participation in Demand Response and Distributed Generation programs offered by National Grid as well as third party providers.

Investment Prioritization

Benefits				Cost			
	Impact	Weight	Score		Impact	Weight	Score
OpEx Annual Savings		10.3%	0	OpEx Cost	1.090	-24.4%	-2.196
CapEx Annual Savings		5.1%	0	CapEx Cost	3.070	-11.2%	-1
Revenue Generation (annual)		6.2%	0	RTB Efficiency	127.687 %	-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	does not apply	-10.6%	0
Regulatory Impact		11.2%		EIapse Time Duration		-6.6%	

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FY19 - Investment Request Summaries - IRSs - NY Green Button Connect

	does not apply		0		does not apply		0
Process & Personal Safety	does not apply	19.4%	0	Change Management Effort	does not apply	-14.9%	0
Reliability	does not apply	10.9%	0				
Customer & Community Responsiveness	does not apply	5.3%	0				
Employee Satisfaction	does not apply	4.6%	0				
Mitigates a Corporate Risk / Risk of not Doing	does not apply	8.9%	0				
Jurisdictional Engagement	does not apply	8.2%	0				
Benefit Score:			0.00		Cost Score:		-5.23
Overall Priority Score:				-5.229			

Investment Risk and Complexity

Project Risk Score:	49	Risk Score Description: Mandated by NY REV
Project Complexity Score::	0	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.

Benefiting Operating Companies: Check all that apply

IS Projects: 4704C - NY Green Button Connect

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: 4704C - NY Green Button Connect

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:

☒ 0823B - Data Loss Prevention (DLP) Gateway

- ☐ 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
☐ NG LNG LP Regulated Entity

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FY19 - Investment Request Summaries - IRSs - NY Green Button Connect

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

<i>Begin</i> Start-up	<i>Begin</i> Requirements & Design	<i>Begin</i> Development & Implementation	<i>Begin</i> User Acceptance Testing	<i>Go Live</i>	<i>Project Completion</i>	<i>Project Closure</i>
April, 2019	May, 2019	August, 2019	February, 2020	March, 2020	March, 2020	June, 2020

Business Resource Estimates: # of Full Time Equivalents

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

Resourcing Strategy:

Attached Supporting Documents

Recommendation Sign-off

Role	Name	Title	Date
Business Project Sponsor	Jody Allison	VP Billing Collections Strategy and Operations	
Business Relationship Manager	Aman Aneja	IS Business Relationship Manager	
IS Program Delivery Manager	Deborah Rollins	IS Program Delivery Manager	

6/14/2017

FY19 - Investment Request Summaries - IRSs - Street Lighting



Planning & Performance Management ▶ FY19 - Investment Request Summaries - IRSs: Street Lighting



I Like It



Tags & Notes

nationalgrid		Investment Request Summary - IS US		FISCAL YEAR 2019	
INV ID:	47040	Project Name: Street Lighting			
Program:	NY REV				
Sponsor:	Melanie Littlejohn	Title: VP Community and Customer Management			
Relationship Manager:	Aman Aneja	Title: Director IT Business Relations			
Prog Delivery Manager:	Deborah Rollins	Title: Director IT Customer Relations			
Paper Author:	Douglas McCarthy / Phyllis Agin	Title: Business Consultant / Program Delivery Consultant			
IS Roadmap Category: Integration Services		Business Area: Customer & Digital		Portfolio: Customer & Digital	
<input type="checkbox"/> In-Flight Project?	Invest Classification: Medium	Category: Mandatory	Primary Policy Driver:		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</p> <p>The NYS DPS staff has expressed negative perceptions conveyed by our municipal street light customers over levels of service and the accuracy of our street light asset information which corresponds with billing. Most recently the PSC recommended a complete street lighting field audit for the purpose of assuring facility inventory billing accuracy. The Company's performance of this audit and the associated billing reconciliation costs are to be paid for through shareholder value. However, the potential of enhancing and/or confirming facility data accuracy provides a significant opportunity to promote the refreshed data to the customer in a manner which functionally allocates more oversight responsibility to them while eliminating certain tariff mandated reporting requirements. All actions to produce customer acknowledgement and traceable reporting will positively support the annual NY regulatory compliance audit recommendations.</p> <p>The long-standing occurrence and ongoing street light billing claims represent an approximately annual lose in revenue of \$1M due to the 6 year statute of limitations and the associated 18% compounded annual interest. In addition to the revenue loss, the Company experiences a significant loss of productive labor in support of reconciling these billing claims. The actions of these system enhancements to assure billing accuracy and create affirmative disclosure of customer information on an established time schedule will greatly minimize the term and scope of billing claims thereby realizing greater revenue value and positive labor productivity.</p> <p>The Customer Service System (CSS) does not promote easy remote or ancillary accessibility to retained information for the purpose of query, reporting or supplemental usage. Present interfacing between CSS and STORMS for the purpose of work order management and subsequent data quality assurance is constrained by distinct limitations in system architecture or interface constraints. The current uses of Crystal and Page Center for specific reporting function are no longer supported by the Company and present a significant exposure risk to mandated requirements</p> <p>The NY DPS staff is encouraging the Company to pursue innovative approaches to provide customers with greater accessibility to their street light inventory and billing information, in addition to an improved ability to identify and respond to outage/maintenance concerns and new installation requests.</p>					
<p>Project Rationale: Highlight business challenge, capability or process the project addresses</p> <p>National Grid is proposing to enhance its existing outdoor lighting information system (CSS-OL) which manages its asset/billing repository.</p> <p>The first proposed application change is a user accessible, secure portal to monitor outdoor light inventory and operational status. This portal will provide both map-based imagery of existing lighting locations and interactive retrieval of location specific asset descriptive and billing information. Additionally, a modification will provide a means to query and report current street lighting operational issues or submit requests for certain transactional business functions which include, but are not limited to installations, removals, relocations, conversions or various discontinuance applications. This functionality will also include a level of positive, recordable communication with the customer to establish confirmation of requests and/or field completion work for tariff compliance.</p> <p>The second enhancement will provide greater administrative capabilities to track ongoing inventory changes, define exception conditions and perform other general business reporting functions. This administrative reporting functionality is best supported by a data warehouse in which all customer, account, billing, inventory, work orders and actionable history information can be simultaneously queried to support business requirements.</p> <p>The Company's recent inquiries of other investor-owned and municipal utilities' use of advanced technologies and leading edge business practices identifies this proposed initiative as a cost effective approach to enhance billing accuracy and significantly increase customer satisfaction through an integrated customer interaction approach, especially when employing the use of a web-based mapping application.</p>					
<p>Project Scope: Explain what is in scope and what is not in scope for the project</p>					

6/14/2017

FY19 - Investment Request Summaries - IRSs - Street Lighting

In Scope:

- Development of a secure web-based portal for customer access and interaction
- The use of i-Factor or similar software in support of the web-based mapping presentation of Company outdoor lighting.
- Accessibility of CSS customer and facility inventory information through a map-based application for specific identified elements or through fixed presentation reporting both visually and downloadable as a PDF
- Development of an Outdoor Lighting data warehouse to support varied reporting and ad-hoc query functions in support of the business
- Development of an appropriate interface for customer submission and receipt of actionable business functions and reporting to include maintenance (outage), construction (installs/removals) and fee-based services (connections, ancillary devices)
- Development of scheduled based reporting to customers through electronic means in addition to confirmation reporting of certain customer requested business actions.

Out of Scope:

- Billing error reconciliation calculator

Project Dependencies: Identify any core program or project dependencies, please include INVP numbers if known

INVP 4704N – NY REV Cyber Security Initiatives

Basic Project Assumptions:

A high-level estimate was developed utilizing National Grid Subject Matter Expert in Street Lighting.

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			0.500	1.100						1.600
OpEx			0.300	0.100						0.400
Impact on RTB					0.100					0.100

Indicative Project Costs by Delivery Phase

(\$M)	Start-up	R & D	D & I	Closure	Total
CapEx		0.720	0.880		1.600
OpEx	0.020	0.155	0.215	.010	0.400

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.

Benefits to National Grid and the customer:

- Building on similar technology used in the current OMS application, the ability to visually monitor the operational status of the respective locational-based street light inventory
- The introduction of a quick and easy method for customers to identify and report outage/maintenance issues while making requests for new or other related lighting services
- The direct and automatic creation of outage investigation orders, improving responsiveness without a need to incur additional labor cost
- Enhancing the customer's ability to obtain, monitor and review billing inventory information in a timely and on-demand basis, eliminating the need to maintain tariff-mandated, paper-based schedules and other manually generated reports

Investment Prioritization

Benefits	Impact	Weight	Score	Cost	Impact	Weight	Score
OpEx Annual Savings		10.3%	0	OpEx Cost	0.400	-24.4%	-2.196
CapEx Annual Savings		5.1%	0	CapEx Cost	1.600	-11.2%	-1

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FY19 - Investment Request Summaries - IRSs - Street Lighting

Revenue Generation (annual)	6.2%	0	RTB Efficiency	43.750	%	-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	does not apply	-10.6%	0
Regulatory Impact	does not apply	11.2%	0	Elapse Time Duration	does not apply	-6.6%	0
Process & Personal Safety	does not apply	19.4%	0	Change Management Effort	does not apply	-14.9%	0
Reliability	does not apply	10.9%	0				
Customer & Community Responsiveness	does not apply	5.3%	0				
Employee Satisfaction	does not apply	4.6%	0				
Mitigates a Corporate Risk / Risk of not Doing	does not apply	8.9%	0				
Jurisdictional Engagement	does not apply	8.2%	0				
Benefit Score: 0.00			Cost Score: -5.23				
			Overall Priority Score: -5.229				

Investment Risk and Complexity

Project Risk Score:	49	Risk Score Description: Mandated by NY REV
Project Complexity Score::	0	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.

Benefiting Operating Companies: Check all that apply

IS Projects: 47040 - Street Lighting

- Has a dependency on IS Project;
- Has a dependency on IS Project;
- Has a dependency on IS Project;
- Has a dependency on IS Project;
- Has a dependency on IS Project;
- Has a dependency on IS Project;

Business Initiative Dependencies

IS Projects: 47040 - Street Lighting

- Has a dependency on Biz Initiative,
- Has a dependency on Biz Initiative,
- Has a dependency on Biz Initiative,
- Has a dependency on Biz Initiative,

Project Relationships

☐ Minor Works

Project Relationship:

- ☐ 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

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FY19 - Investment Request Summaries - IRSs - Street Lighting

Related Projects:

☒ 0823B - Data Loss Prevention (DLP) Gateway

☐ New England Electric Trans Corp
☐ NG LNG LP Regulated Entity

Enabling IS Capabilities check all that apply

- | | |
|---|--|
| <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 checked="" type="checkbox"/> Networks |
| <input type="checkbox"/> Next Gen Workplace | |

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

<i>Begin Start-up</i>	<i>Begin Requirements & Design</i>	<i>Begin Development & Implementation</i>	<i>Begin User Acceptance Testing</i>	<i>Go Live</i>	<i>Project Completion</i>	<i>Project Closure</i>
<i>April, 2018</i>	<i>May, 2018</i>	<i>January, 2019</i>	<i>January, 2020</i>	<i>April, 2020</i>	<i>April, 2020</i>	<i>June, 2020</i>

Business Resource Estimates: # of Full Time Equivalents

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

Resourcing Strategy:

Attached Supporting Documents

Recommendation Sign-off

Role	Name	Title	Date
Business Project Sponsor	Melanie Littlejohn	VP Community and Customer Management	
Business Relationship Manager	Aman Aneja	IS Business Relationship Manager	
IS Program Delivery Manager	Deborah Rollins	IS Program Delivery Manager	



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FY19 - Investment Request Summaries - IRSs - Distributed Generation Integrated Planning...



Planning & Performance Management ▶ FY19 - Investment Request Summaries - IRSs:
Distributed Generation Integrated Planning & Forecasting



nationalgrid		Investment Request Summary - IS US		FISCAL YEAR 2019																							
INV ID:	4704F	Project Name: Distributed Generation Integrated Planning & Forecasting																									
Program:	NY REV																										
Sponsor:	Sean Mongan	Title: VP Process and Performance																									
Relationship Manager:	Aman Aneja	Title: IS Relationship Network Strategy																									
Prog Delivery Manager:	Deborah Rollins	Title: Director IT Customer Relations																									
Paper Author:	Douglas McCarthy / Phyllis Agin	Title: Business Consultant / Program Delivery Consultant																									
IS Roadmap Category: Customer Interaction / Channels		Business Area: Customer & Digital		Portfolio: Customer & Digital																							
<input type="checkbox"/> In-Flight Project?	Invest Classification: Medium	Category: Mandatory	Primary Policy Driver:		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</p> <p>Reforming the Energy Vision's (REV's) Phase 1 objectives reflect an increasing need to adapt to a changing energy landscape. Distributed Generation (DG) grid interconnections in New York are, for example, growing at an accelerated rate. REV aims to address development of a utility-customer engagement Web platform for interconnections called the Interconnection Online Application Portal (IOAP) for all New York utilities.</p> <p>Project Rationale: Highlight business challenge, capability or process the project addresses</p> <p>National Grid is required to implement an IOAP that allows for online application submittal along with automated management and screening. This includes any necessary impact studies – such as load flow or fault level – based on DG penetration levels, requiring GIS and SCADA data exchange. Moreover, the online portal and its integrated processes are expected to furnish customers with greater transparency about the overarching interconnection process as well as accelerate National Grid's feedback on their applications. New capabilities for customer self-service will provide a streamlined and intuitive customer experience. This online system will enable customers and third parties to apply for interconnection and track their inquiries.</p> <p>Project Scope: Explain what is in scope and what is not in scope for the project</p> <p>In Scope:</p> <ul style="list-style-type: none"> Plan, design and test a full lifecycle of software deployment Design, document and manage the implementation of new processes Develop training to support the DG IOAP Develop business requirements for a Request for Proposal, process flows and vendor selection for the DG IOAP core applications Hardware (servers and rack) and license for proprietary, custom developed capabilities, and third party software Labor and licenses incurred during the project, covering development and implementation for the Forecasting and Analysis Engine application – services each respective Vendor will provide <p>Project Dependencies: Identify any core program or project dependencies, please include INVP numbers if known</p> <p>INVP 4704N – NY REV Cyber Security Initiatives</p> <p>Basic Project Assumptions:</p> <p>The project was estimated through engagement with Accenture and determined to have these cost elements. Project estimates for external resources were calculated at March 17, 2017 rates plus 20% contingency added where applicable.</p> <ul style="list-style-type: none"> Project Managers Solution Architects IS Delivery Leads Business Relationship Management IS Support Analysts Subject Matter Experts Testers Analysts 																											
<p>Indicative Project Costs by Fiscal Year</p> <table border="1"> <thead> <tr> <th>(\$M)</th> <th>Prior Years</th> <th>FY 2018</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>Total</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>						(\$M)	Prior Years	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total											
(\$M)	Prior Years	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total																	

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FY19 - Investment Request Summaries - IRSs - Distributed Generation Integrated Planning...

CapEx			9.120	5.710						14.830
OpEx			1.980	1.210						3.190
Impact on RTB				0.370	0.750	0.760	0.780	0.790	0.810	4.260

Indicative Project Costs by Delivery Phase

(\$M)	Start-up	R & D	D & I	Closure	Total
CapEx		6.673	8.157		14.830
OpEx	0.159	1.272	1.749	0.010	3.190

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 online portal and its integrated processes are expected to furnish customers with greater transparency about the overarching interconnection process as well as accelerate utility feedback on their applications.
- Robust validation to applications are complete and correct before being submitted to the National Grid DG team.
- Connection process tracking throughout the project life cycle.
- A streamlined process will result in increased customer satisfaction, greater accuracy along the project life cycle, and a reduction in redundant work and handoffs.
- Proactive notifications for both the developer/contractor and the customer as the process progresses from application and study through construction and commissioning.
- A central repository for all documentation including engineering drawings for each DG project.

Investment Prioritization

Benefits	Impact	Weight	Score	Cost	Impact	Weight	Score
OpEx Annual Savings		10.3%	0	OpEx Cost	3.190	-24.4%	-2.196
CapEx Annual Savings		5.1%	0	CapEx Cost	14.830	-11.2%	-1
Revenue Generation (annual)		6.2%	0	RTB Efficiency	38.233 %	-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	does not apply	-10.6%	0
Regulatory Impact	does not apply	11.2%	0	Elapse Time Duration	does not apply	-6.6%	0
Process & Personal Safety	does not apply	19.4%	0	Change Management Effort	does not apply	-14.9%	0
Reliability	does not apply	10.9%	0				
Customer & Community Responsiveness	does not apply	5.3%	0				
Employee Satisfaction	does not apply	4.6%	0				
Mitigates a Corporate Risk / Risk of not Doing	does not apply	8.9%	0				
Jurisdictional Engagement	does not apply	8.2%	0				
Benefit Score: 0.00				Cost Score: -5.23			
Overall Priority Score: -5.229							

Investment Risk and Complexity

Project Risk Score:	49	Risk Score Description: Mandated by NY REV
Project Complexity Score:	0	Project Complexity Score Description:

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FY19 - Investment Request Summaries - IRSs - Distributed Generation Integrated Planning...

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: **4704F - Distributed Generation Integrated Planning & Forecasting**

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: **4704F - Distributed Generation Integrated Planning & Forecasting**

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:

- ☒ 0823B - Data Loss Prevention (DLP) Gateway

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
☐ 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, 2018	May, 2018	November, 2018	July, 2019	September, 2019	September, 2019	December, 2019

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:

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FY19 - Investment Request Summaries - IRSs - Distributed Generation Integrated Planning...

Attached Supporting Documents			
Recommendation Sign-off			
<i>Role</i>	<i>Name</i>	<i>Title</i>	<i>Date</i>
<i>Business Project Sponsor</i>	<i>Sean Mongan</i>	<i>VP Process and Performance</i>	
<i>Business Relationship Manager</i>	<i>Aman Aneja</i>	<i>IS Business Relationship Manager</i>	
<i>IS Program Delivery Manager</i>	<i>Deborah Rollins</i>	<i>IS Program Delivery Manager</i>	



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FY19 - Investment Request Summaries - IRSs - Distribution Management, Automation and Optimization...



Planning & Performance Management ▶ FY19 - Investment Request Summaries - IRSs:
Distribution Management, Automation and Optimization



nationalgrid		Investment Request Summary - IS US		FISCAL YEAR 2019	
INV ID:	4704G	Project Name: Distribution Management, Automation and Optimization			
Program:	NY REV				
Sponsor:	John Spink	Title: VP Control Center Operations			
Relationship Manager:	Aman Aneja	Title: IS Relationship Network Strategy			
Prog Delivery Manager:	Deborah Rollins	Title: Director IT Customer Relations			
Paper Author:	Douglas McCarthy / Phyllis Agin	Title: Business Consultant / Program Delivery Consultant			
IS Roadmap Category: SCADA / Network Upgrades		Business Area: Customer & Digital		Portfolio: Customer & Digital	
<input type="checkbox"/> In-Flight Project?	Invest Classification: Medium	Category: Mandatory	Primary Policy Driver:		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</p> <p>This investment is to develop requirements for the hardware and software refresh of the current ABB Outage Management System (OMS) and the deployment of a Distribution Management System ((DMS), Distribution Supervisory Control and Data Acquisition (D-SCADA) and DMS applications).</p> <p>The DMS software is an extension of the existing OMS software & hardware architecture and applications. The OMS hardware will be 9 years old when replaced if NG follows the current plan and roadmap. The estimated industry average for refresh is 6 years.</p> <p>The Distribution Management System (DMS) applications are a foundational platform that will aid Control Center Operations in managing Distributed Energy Resources (DERs) and advanced Distribution Automation (DA) as discussed in the NY Distributed System Implementation Plan (DSIP). Specifically, as these programs evolve and mature, the Operators ability to monitor and control the system will become more challenging. The DMS system will help provide visibility to operate the system in a more safe and reliable manner and will maintain or improve efficiencies.</p> <p>The DMS is also foundational to the Distributed Energy Resource Management System (DERMS) which will be fundamental in dispatching DERs at the distribution level to facilitate wholesale and retail markets.</p> <p>Project Rationale: Highlight business challenge, capability or process the project addresses</p> <ul style="list-style-type: none"> · Maintain OMS reliability in support of Control Center Operations and storm users, preserving reputation by maintaining system availability and reliability. · Develop an intelligent network platform that provide safe, reliable and efficient electric services by integrating diverse resources into Operations and markets in accordance with the NY REV & DSIP initiative. · Foundational investments for transition to Distributed System Platform concept <p>Project Scope: Explain what is in scope and what is not in scope for the project</p> <p>In Scope:</p> <ul style="list-style-type: none"> · Develop and document requirements for the DMS (Advanced DMS/D-SCADA) applications to satisfy the requirements of National Grid and the NY DSIP. · Design and implement DMS Project <ul style="list-style-type: none"> - Refresh OMS hardware which is normal lifecycle replacement. - Refresh OMS software to provide a platform for DMS and to avoid departure from baseline code reducing risk of future refreshes. - Install DMS hardware and software - Integrate SCADA and third party applications Integrate SCADA and third party applications to the ADMS/D-SCADA application - Test OMS and DMS and associated interfacesTest OMS and DMS and associated interfaces · ADMS/DSCADA application user training <p>Project Dependencies: Identify any core program or project dependencies, please include INVP numbers if known</p> <p>INVP 4704K – NY REV Enterprise License and Platform Deployment (PI Historian) INVP 4704H – GIS Data Enhancements INVP 4704I – NY Substation Network Improvements (aka Telecoms) INVP 4704J – AMF Data Integration Platform (aka Enterprise Service Bus – API)</p> <p>Basic Project Assumptions:</p>					

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FY19 - Investment Request Summaries - IRSS - Distribution Management, Automation and Optimization...

The project was estimated through engagement with Accenture and determined to have these cost elements. Project estimates for external resources were calculated at March 17, 2017 rates plus 10% contingency added where applicable.

- Project Managers
- Solution Architects
- PMO functions (IS Delivery Leads, Business Relationship Management Support, Business Analysts)
- CNI Support
- Subject Matter Expert
- Testers
- Analysts

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			9.350	12.970	6.920					29.240
OpEx			1.630	0.340	0.520					2.490
Impact on RTB						1.660	1.690	1.720	1.760	6.830

Indicative Project Costs by Delivery Phase

(\$M)	Start-up	R & D	D & I	Closure	Total
CapEx		13.158	16.082		29.240
OpEx	0.124	0.992	1.364	.010	2.490

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.

- When well integrated with the OMS, DMS provides Control Center Operations the ability to automate monitoring and control to assist in operating the system in real time and contingent conditions. This will enable the interconnection of DER's and advances in distribution automation.
- Assists in creating efficient system operations, possibly deferring capital investments.
- Enables the company to maintain or improve reliability under the growing system complexities associated with integrating DER into existing wholesale and retail markets.

Investment Prioritization

Benefits	Impact	Weight	Score	Cost	Impact	Weight	Score
OpEx Annual Savings		10.3%	0	OpEx Cost	2.490	-24.4%	-2.196
CapEx Annual Savings		5.1%	0	CapEx Cost	29.240	-11.2%	-1
Revenue Generation (annual)		6.2%	0	RTB Efficiency	42.134 %	-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	does not apply	-10.6%	0
Regulatory Impact	does not apply	11.2%	0	Elapse Time Duration	does not apply	-6.6%	0
Process & Personal Safety	does not apply	19.4%	0	Change Management Effort	does not apply	-14.9%	0
Reliability	does not apply	10.9%	0				
Customer & Community Responsiveness	does not apply	5.3%	0				
Employee Satisfaction	does not apply	4.6%	0				
Mitigates a Corporate Risk / Risk of not Doing	does not apply	8.9%	0				
Jurisdictional Engagement	does not apply	8.2%	0				

6/14/2017

FY19 - Investment Request Summaries - IRSs - Distribution Management, Automation and Optimization...

Benefit Score: 0.00		Cost Score: -5.23
Overall Priority Score: -5.229		
Investment Risk and Complexity		
Project Risk Score:	49	Risk Score Description: Mandated by NY REV
Project Complexity Score::	0	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.		
Benefiting Operating Companies: Check all that apply		
IS Projects: 4704G - Distribution Management, Automation and Optimization		<input type="checkbox"/> Select All Companies <input type="checkbox"/> Clear All Companies
1. Has a dependency on IS Project;		<input type="checkbox"/> Select All Gas <input type="checkbox"/> Select All Electric <input type="checkbox"/> Select All Gen
2. Has a dependency on IS Project;		
3. Has a dependency on IS Project;		<input type="checkbox"/> National Grid USA Parent
4. Has a dependency on IS Project;		<input type="checkbox"/> KeySpan Energy Development Corporation
5. Has a dependency on IS Project;		<input type="checkbox"/> KeySpan Services Inc.
6. Has a dependency on IS Project;		<input type="checkbox"/> KeySpan Energy Corp
		<input type="checkbox"/> KeySpan Energy Delivery New York
		<input type="checkbox"/> KeySpan Energy Delivery Long Island
		<input type="checkbox"/> KeySpan Generation LLC (PSA)
		<input type="checkbox"/> KeySpan Glenwood Energy Center
		<input type="checkbox"/> KeySpan Port Jefferson Energy Center
		<input type="checkbox"/> KeySpan Energy Trading Svc LLC
Business Initiative Dependencies		<input checked="" type="checkbox"/> Niagara Mohawk Power Corp- Electric Distribution
IS Projects: 4704G - Distribution Management, Automation and Optimization		<input type="checkbox"/> Niagara Mohawk Power Corp - Gas
1. Has a dependency on Biz Initiative,		<input type="checkbox"/> Niagara Mohawk Power Corp - Transmission
2. Has a dependency on Biz Initiative,		<input type="checkbox"/> Massachusetts Electric Company
3. Has a dependency on Biz Initiative,		<input type="checkbox"/> Massachusetts Electric Company - Transmission
4. Has a dependency on Biz Initiative,		<input type="checkbox"/> Nantucket Electric Company
		<input type="checkbox"/> Boston Gas Company
		<input type="checkbox"/> Colonial Gas Company
		<input type="checkbox"/> Narragansett Gas Company
		<input type="checkbox"/> Narragansett Electric Company
		<input type="checkbox"/> Narragansett Electric Company - Transmission
		<input type="checkbox"/> New England Power Company - Transmission
		<input type="checkbox"/> New England Hydro - Trans Corp
		<input type="checkbox"/> New England Electric Trans Corp
		<input type="checkbox"/> NG LNG LP Regulated Entity
Project Relationships		
<input type="checkbox"/> Minor Works		Project Relationship:
Related Projects:		
<input checked="" type="checkbox"/> 0823B - Data Loss Prevention (DLP) Gateway		
Enabling IS Capabilities check all that apply		
<input type="checkbox"/> Enterprise Content Management (ECM)		<input type="checkbox"/> Enterprise Mobility
<input checked="" 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		
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

6/14/2017

FY19 - Investment Request Summaries - IRSs - Distribution Management, Automation and Optimization...

<i>April, 2018</i>	<i>May, 2018</i>	<i>June, 2019</i>	<i>November, 2020</i>	<i>March, 2021</i>	<i>March, 2021</i>	<i>June, 2021</i>
Business Resource Estimates: # of Full Time Equivalents						
<i>Start-up</i> 0	<i>Requirements & Deign</i> 0	<i>Develop & Implement</i> 0	<i>Business Resources UAT</i> 0	<i>Go Live Readiness</i> 0	<i>Post Go Live Support</i> 0	
Resourcing Strategy:						
Attached Supporting Documents						
Recommendation Sign-off						
<i>Role</i>	<i>Name</i>		<i>Title</i>		<i>Date</i>	
<i>Business Project Sponsor</i>	<i>John Spink</i>		<i>VP Control Center Operations</i>			
<i>Business Relationship Manager</i>	<i>Aman Aneja</i>		<i>IS Business Relationship Manager</i>			
<i>IS Program Delivery Manager</i>	<i>Deborah Rollins</i>		<i>IS Program Delivery Manager</i>			



6/14/2017

FY19 - Investment Request Summaries - IRSs - AMF Data Integration Platform



Planning & Performance Management ▶ FY19 - Investment Request Summaries - IRSs: **AMF Data Integration Platform**



I Like It



Tags & Notes

nationalgrid		Investment Request Summary - IS US		FISCAL YEAR 2019																																													
INV ID:	4704J	Project Name: AMF Data Integration Platform																																															
Program:	NY REV																																																
Sponsor:	Anuraag Bhargava	Title: SVP Chief Information Officer																																															
Relationship Manager:	Aman Aneja	Title: Director IT Business Relations																																															
Prog Delivery Manager:	Deborah Rollins	Title: Director IT Customer Relations																																															
Paper Author:	Douglas McCarthy / Phyllis Agin	Title: Business Consultant / Program Delivery Consultant																																															
IS Roadmap Category: Networks / Mobility		Business Area: Customer & Digital		Portfolio: Customer & Digital																																													
<input type="checkbox"/> In-Flight Project?	Invest Classification: Medium	Category: Mandatory	Primary Policy Driver:		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</p> <p>As part of the efforts to advance the objectives of NY REV, there are numerous systems that are being deployed or enhanced. To encourage greater synergies, data is exchanged between these systems for enhanced insight. For these data exchanges to occur, two main enabling components need to be implemented: a new Distribution Enterprise Service Bus (ESB) and configuration of various integrations.</p> <p>Project Rationale: Highlight business challenge, capability or process the project addresses</p> <p>National Grid will implement a dedicated Distribution Enterprise Service Bus (ESB) required to move data between distribution systems, automate and manage business processes, transfer files between entities and enable real-time and batch integration. ESB delivers a standards-based integration where performance, scalability and reliability are critical requirements. Additionally, to implement several of the Advanced Metering Functionality (AMF) and Advanced Distribution Management System (ADMS) use cases, systems in the new distribution ESB will need to communicate with legacy systems that currently use a corporate ESB.</p> <p>Project Scope: Explain what is in scope and what is not in scope for the project</p> <p>In Scope:</p> <ul style="list-style-type: none"> • Distribution ESB Database and Real Application Cluster (RAC) • Distribution ESB Middleware • Distribution ESB initial software (SE) and Middleware (MW) Installation • Comprehensive Integration Services (CIS) <p>Project Dependencies: Identify any core program or project dependencies, please include INVP numbers if known</p> <p>INVP 4704N – NY REV Cyber Security Initiatives</p> <p>Basic Project Assumptions:</p> <p>The project was estimated through engagement with Accenture and determined to have these cost elements.</p> <ul style="list-style-type: none"> • Standalone database and real application software needed to support the distribution ESB • Middleware package for the distribution ESB • Labor associated with the initial installation and configuration of distribution ESB • Implementation of the data flows and integrations for systems within corporate ESB, within distribution ESB, and inter-domain integrations 																																																	
<p>Indicative Project Costs by Fiscal Year</p> <table border="1"> <thead> <tr> <th>(\$M)</th> <th>Prior Years</th> <th>FY 2018</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>Total</th> </tr> </thead> <tbody> <tr> <td>CapEx</td> <td></td> <td></td> <td>5.450</td> <td>8.920</td> <td>1.580</td> <td></td> <td></td> <td></td> <td></td> <td>15.950</td> </tr> <tr> <td>OpEx</td> <td></td> <td></td> <td>0.650</td> <td>0.920</td> <td>0.260</td> <td></td> <td></td> <td></td> <td></td> <td>1.830</td> </tr> <tr> <td>Impact on RTB</td> <td></td> <td></td> <td>0.340</td> <td>1.460</td> <td>2.640</td> <td>2.870</td> <td>2.930</td> <td>2.990</td> <td>3.050</td> <td>16.280</td> </tr> </tbody> </table>						(\$M)	Prior Years	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	CapEx			5.450	8.920	1.580					15.950	OpEx			0.650	0.920	0.260					1.830	Impact on RTB			0.340	1.460	2.640	2.870	2.930	2.990	3.050	16.280
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<p>Indicative Project Costs by Delivery Phase</p> <table border="1"> <thead> <tr> <th>(\$M)</th> <th>Start-up</th> <th>R & D</th> <th>D & I</th> <th>Closure</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>CapEx</td> <td></td> <td>7.177</td> <td>8.773</td> <td></td> <td>15.950</td> </tr> </tbody> </table>						(\$M)	Start-up	R & D	D & I	Closure	Total	CapEx		7.177	8.773		15.950																																
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[illegible]

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.

- Help facilitate the exchange of standardized data elements between all impacted systems.
- Improved system response time and performance.
- Lower labor costs and increased operational efficiency.
- Compatibility across system devices and software.

Investment Prioritization

Benefits				Cost			
	Impact	Weight	Score		Impact	Weight	Score
OpEx Annual Savings		10.3%	0	OpEx Cost	1.830	-24.4%	-2.196
CapEx Annual Savings		5.1%	0	CapEx Cost	15.950	-11.2%	-1
Revenue Generation (annual)		6.2%	0	RTB Efficiency	133.856 %	-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	does not apply	-10.6%	0
Regulatory Impact	does not apply	11.2%	0	Elapse Time Duration	does not apply	-6.6%	0
Process & Personal Safety	does not apply	19.4%	0	Change Management Effort	does not apply	-14.9%	0
Reliability	does not apply	10.9%	0				
Customer & Community Responsiveness	does not apply	5.3%	0				
Employee Satisfaction	does not apply	4.6%	0				
Mitigates a Corporate Risk / Risk of not Doing	does not apply	8.9%	0				
Jurisdictional Engagement	does not apply	8.2%	0				
Benefit Score: 0.00				Cost Score: -5.23			
Overall Priority Score: -5.229							

Investment Risk and Complexity

Project Risk Score:	49	Risk Score Description: Mandated by NY REV
Project Complexity Score::	0	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.

Benefiting Operating Companies: Check all that apply

6/14/2017

FY19 - Investment Request Summaries - IRSs - AMF Data Integration Platform

IS Projects: 4704J - AMF Data Integration Platform

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: 4704J - AMF Data Integration 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:

☒ 0823B - Data Loss Prevention (DLP) Gateway

- ☐ 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
☐ 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, 2018	May, 2018	June, 2019	November, 2020	March, 2021	March, 2021	June, 2021

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

Recommendation Sign-off

6/14/2017

FY19 - Investment Request Summaries - IRs - AMF Data Integration Platform

Role	Name	Title	Date
Business Project Sponsor	Anuraag Bhargava	SVP Chief Information Officer	
Business Relationship Manager	Aman Aneja	IS Business Relationship Manager	
IS Program Delivery Manager	Deborah Rollins	IS Program Delivery Manager	
nationalgrid			

6/14/2017

FY19 - Investment Request Summaries - IRSs - Data Management Standardization for Transmission,...



Planning & Performance Management » FY19 - Investment Request Summaries - IRSs: Data Management Standardization for Transmission, Consumption & Storage



nationalgrid		Investment Request Summary - IS US		FISCAL YEAR 2019	
INV ID:	4704L	Project Name: Data Management Standardization for Transmission, Consumption & Storage			
Program:	NY REV				
Sponsor:	Terence Sobolewski	Title: SVP Chief Customer Officer			
Relationship Manager:	Aman Aneja	Title: Director IT Business Relations			
Prog Delivery Manager:	Deborah Rollins	Title: Director IT Customer Relations			
Paper Author:	Douglas McCarthy / Phyllis Agin	Title: Business Consultant / Program Delivery Consultant			
IS Roadmap Category: Computing		Business Area: Customer & Digital		Portfolio: Customer & Digital	
<input type="checkbox"/> In-Flight Project?	Invest Classification: Medium	Category: Mandatory	Primary Policy Driver:		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</p> <p>Significant data from multiple sources is required to effectively plan a Transmission and Distribution (T & D) system. System planners have been responsible to get the data needed, scrub the data to insure quality inputs to various models, and research the context in which the data was recorded to ensure its appropriateness for use in the scenarios being modeled in the planning process. These manual data management processes have been acceptable when the users of the data are intimately familiar with the Company's systems and processes and only had to plan the system for peak-hour capabilities. A shift towards more integrated system planning with high levels of Distributed Energy Resources (DER) penetration will require enhancements in both the data available and the tools and processes for its use.</p> <p>Project Rationale: Highlight business challenge, capability or process the project addresses</p> <p>The Distributed System Platform (DSP) will introduce new data as well as enable the sharing of data and insights with market participants, customers and stakeholders. There is a need for advanced data processing and analytics to support integrated planning, DER and load forecasting, hosting capacity analysis, and the integration of DER into real-time operations.</p> <p>The DSP will have the capability to process available data to identify trends and other insights which could indicate potential areas where actions can be taken to create value for both the customers and National Grid. This value is flexible and can take the form of customer satisfaction, expense reduction, etc. In some cases, algorithms to process this data may come in pre-packed software suites. In other cases, proprietary National Grid-specific approaches can be pursued. Costs in this category allow data ingestion, data quality and analytic capabilities to be configured and deployed.</p> <p>Project Scope: Explain what is in scope and what is not in scope for the project</p> <p>In Scope:</p> <ul style="list-style-type: none"> Implement <ul style="list-style-type: none"> a Utility Data Model and Infosphere Big Insights Hadoop Platform an ETL (Extract, Transform and Load) tool (includes Data Quality, Change Data Capture and Discovery). a Data Governance tool that can create and enforce the proper data governance standards visualization licenses for the Business users Dashboard Development for the Data Visualization tool <p>Project Dependencies: Identify any core program or project dependencies, please include INVP numbers if known</p> <p>INVP 4704M – Cloud Computing for Data Management Optimization (aka Cloud Computing and Data Lake) INVP 4704N – NY REV Cyber Security Initiatives</p> <p>Basic Project Assumptions:</p>					

6/14/2017

FY19 - Investment Request Summaries - IRSSs - Data Management Standardization for Transmission,...

The project was estimated through engagement with Accenture and determined to have these cost elements. Project estimates for resources were calculated at March 17, 2017 rates plus 10% contingency added where applicable.

- Design and architect the information management platform
- Utility Data Model and Infosphere Big Insights Hadoop Platform Licenses
- Software support, maintenance, and vendor helpdesk for both the Utility Data Model and the Infosphere Big Insights Hadoop Platform
- An ETL (Extract, Transform and Load) tool license (includes Data Quality, Change Data Capture and Discovery). The cost element also covers a license for a tool for test data management and automation.
- Software support, maintenance, vendor helpdesk, bug fixes for the ETL tool
- Licenses to acquire a data governance tool and cover the maintenance and support needed on an on-going basis.
- Data Quality Development
- The Data Ingestion (ETL – Extract Transform and Load) Development
- License, maintenance and upgrade support for the Data Visualization tool (Development, Production and QA environments)
- Data Visualization Dashboard Development
- IS resources providing Architecture, Design, and oversight for the Information Management system covering the installation support for the tools
- Procure and implement the visualization licenses for the Business users and first-year maintenance of the licenses

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			10.120	5.940	3.820					19.880
OpEx			0.330	0.530	0.530					1.390
Impact on RTB				1.230	1.510	1.930	1.970	2.010	2.050	10.700

Indicative Project Costs by Delivery Phase

(\$M)	Start-up	R & D	D & I	Closure	Total
CapEx		8.946	10.934		19.880
OpEx	0.069	0.552	0.759	.010	1.390

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.

- Allow for the analysis of the data gathered from existing and third-party data sources to provide valuable output reflecting current state as well as predictive and prescriptive outcomes.
- Deliver comprehensive energy and utilities analytics and business insights required to transform, innovate, and improve the cost, quality, and experience of Energy and Utility companies.
- Simplify and standardize efforts for data transmission, consumption, and storage.
- Enable DER Markets, improve reliability, safety, and resiliency and by providing the necessary tools to manage a distributed energy network.
- Improve customer satisfaction by enabling customers to realize monetization of their DER Assets on the grid.

Investment Prioritization

Benefits				Cost			
	Impact	Weight	Score		Impact	Weight	Score
OpEx Annual Savings		10.3%	0	OpEx Cost	1.390	-24.4%	-2.196
CapEx Annual Savings		5.1%	0	CapEx Cost	19.880	-11.2%	-1
Revenue Generation (annual)		6.2%	0	RTB Efficiency	72.183	% -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	does not apply	-10.6%	0
Regulatory Impact	does not apply	11.2%	0	Elapse Time Duration	does not apply	-6.6%	0
Process & Personal Safety	does not apply	19.4%	0	Change Management Effort	does not apply	-14.9%	0
Reliability	does not apply	10.9%	0				
Customer & Community Responsiveness		5.3%					

6/14/2017

FY19 - Investment Request Summaries - IRSs - Data Management Standardization for Transmission,...

Employee Satisfaction	does not apply	0
	does not apply	4.6% 0
Mitigates a Corporate Risk / Risk of not Doing	does not apply	8.9% 0
Jurisdictional Engagement	does not apply	8.2% 0
Benefit Score:		0.00
Overall Priority Score:		-5.229
Cost Score: -5.23		

Investment Risk and Complexity

Project Risk Score:	49	Risk Score Description: Mandated by NY REV
Project Complexity Score::	0	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.

Benefiting Operating Companies: Check all that apply

IS Projects: 4704L - Data Management Standardization for Transmission, Consumption & Storage

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;

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Business Initiative Dependencies

IS Projects: 4704L - Data Management Standardization for Transmission, Consumption & Storage

1. Has a dependency on Biz Initiative,

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3. Has a dependency on Biz Initiative,

4. Has a dependency on Biz Initiative,

Project Relationships

Minor Works

Project Relationship:

Related Projects:

0823B - Data Loss Prevention (DLP) Gateway

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

NG LNG LP Regulated Entity

Enabling IS Capabilities check all that apply

Enterprise Content Management (ECM)

Comprehensive Integration Services (CIS)

Hybrid Cloud

Enterprise Mobility

Reporting and Analytics

Networks

https://teams.nationalgrid.com/sites/USIS/directory/PPM/Lists/FY19%20%20Investment%20Request%20Summaries%20%20IRSs/Item/displayifs.aspx?List=5... 3/4

6/14/2017

FY19 - Investment Request Summaries - IRSs - Data Management Standardization for Transmission,...

☐ Next Gen Workplace

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

<i>Begin Start-up</i>	<i>Begin Requirements & Deign</i>	<i>Begin Development & Implementation</i>	<i>Begin User Acceptance Testing</i>	<i>Go Live</i>	<i>Project Completion</i>	<i>Project Closure</i>
<i>April, 2018</i>	<i>May, 2018</i>	<i>June, 2019</i>	<i>November, 2020</i>	<i>March, 2021</i>	<i>March, 2021</i>	<i>June, 2021</i>

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>
<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>

Resourcing Strategy:

Attached Supporting Documents

Recommendation Sign-off

<i>Role</i>	<i>Name</i>	<i>Title</i>	<i>Date</i>
<i>Business Project Sponsor</i>	<i>Terence Sobolewski</i>	<i>SVP Chief Customer Officer</i>	
<i>Business Relationship Manager</i>	<i>Aman Aneja</i>	<i>IS Business Relationship Manager</i>	
<i>IS Program Delivery Manager</i>	<i>Deborah Rollins</i>	<i>IS Program Delivery Manager</i>	

nationalgrid

6/14/2017

FY19 - Investment Request Summaries - IRSs - Cloud Computing for Data Management Optimization...



Planning & Performance Management ▶ FY19 - Investment Request Summaries - IRSs: Cloud Computing for Data Management Optimization



nationalgrid		Investment Request Summary - IS US		FISCAL YEAR 2019																							
INV ID:	4704M	Project Name: Cloud Computing for Data Management Optimization																									
Program:	NY REV																										
Sponsor:	Anuraag Bhargava	Title: SVP Chief Information Officer																									
Relationship Manager:	Aman Aneja	Title: Director IT Business Relations																									
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Paper Author:	Douglas McCarthy / Phyllis Agin	Title: Business Consultant / Program Delivery Consultant																									
IS Roadmap Category: Computing		Business Area: Customer & Digital		Portfolio: Customer & Digital																							
<input type="checkbox"/> In-Flight Project?	Invest Classification: Medium	Category: Mandatory	Primary Policy Driver:		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</p> <p>Advancements in load and Distributed Energy Resources (DER) forecasting are necessary in order to enhance load and DER forecasting both temporally and geographically. System load forecasting in the future will be a very detailed and data-intensive integration of economic modeling, weather normalization, modeling of customer response to numerous market offerings, and Transmission and Distribution (T&D) system computing capabilities. An analytics platform and a number of new tools, models and intensive cloud computing capabilities will need to be utilized in the development of new forecasting processes.</p> <p>Project Rationale: Highlight business challenge, capability or process the project addresses</p> <p>Various data management capabilities will be leveraged by the overall grid modernization program. A data lake repository will be established with a scalable enterprise data warehouse of all National Grid data. This will include not only internal data such as necessary asset and meter data, but external data including Remote Sensing, Land Development, Weather, and Real Estate data. The data lake will empower employees with capabilities to analyze data, create a 360 customer view, and enable customers and external parties to access the data.</p> <p>Project Scope: Explain what is in scope and what is not in scope for the project</p> <p>In Scope:</p> <ul style="list-style-type: none"> Establish a development data lake in the cloud to design, build and test the ETL (Extract, Transform, Load) routines and the analytic, data management and business intelligence processes before implemented in the QA/Production environments Establish a QA data lake in the cloud to test the ETL (Extract, Transform, Load) routines and the analytic, data management and business intelligence processes before being implemented in the Production environment Establish a Development dashboard environment in the cloud to build and unit test out the dashboard workflows before they are pushed to the QA/Production Environment Establish a QA dashboard environment in the cloud to test the data blending, data preparation and cleansing workflows Establish a Production dashboard environment in the cloud with a redundancy environment for Disaster Recovery All the environments will consist of Alteryx Servers, Tableau Servers, Open R nodes, SQL Server Node along with a 2X redundancy in the production environment <p>Project Dependencies: Identify any core program or project dependencies, please include INVP numbers if known</p> <p>INVP 4704K – NY REV Enterprise License and Platform Deployment (aka Plant Information Historian) INVP 4704N – NY REV Cyber Security Initiatives</p> <p>Basic Project Assumptions:</p> <p>The project was estimated through engagement with Accenture and determined to have these cost elements. Project estimates for Accenture resources were calculated at March 17, 2017 rates plus 10% contingency added where applicable.</p> <ul style="list-style-type: none"> Set up development and QA data lakes in the cloud Set up development, QA, and Production dashboard environments in the cloud IS internal labor cost to maintain the cloud data lake, data warehouse, and business intelligence environments after the platform is up and running Labor to set up both the Dashboard and the Data Lake environments for Production, Development and QA Labor to design the cloud data lake and dashboard environments 																											
<p>Indicative Project Costs by Fiscal Year</p> <table border="1"> <thead> <tr> <th>(\$M)</th> <th>Prior Years</th> <th>FY 2018</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>Total</th> </tr> </thead> <tbody> <tr> <td>CapEx</td> <td></td> <td></td> <td>2.540</td> <td>1.840</td> <td>2.550</td> <td></td> <td></td> <td></td> <td></td> <td>6.930</td> </tr> </tbody> </table>						(\$M)	Prior Years	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	CapEx			2.540	1.840	2.550					6.930
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CapEx			2.540	1.840	2.550					6.930																	

6/14/2017

FY19 - Investment Request Summaries - IRSs - Cloud Computing for Data Management Optimization...

IS Project Dependencies <small>if you don't see a project in the drop-down please contact the Planning & Performance team.</small>		Benefiting Operating Companies: <small>Check all that apply</small>				
IS Projects: 4704M - Cloud Computing for Data Management Optimization 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;		<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 <input type="checkbox"/> National Grid USA Parent <input type="checkbox"/> KeySpan Energy Development Corporation <input type="checkbox"/> KeySpan Services Inc. <input type="checkbox"/> KeySpan Energy Corp <input type="checkbox"/> KeySpan Energy Delivery New York <input type="checkbox"/> KeySpan Energy Delivery Long Island <input type="checkbox"/> KeySpan Generation LLC (PSA) <input type="checkbox"/> KeySpan Glenwood Energy Center <input type="checkbox"/> KeySpan Port Jefferson Energy Center <input type="checkbox"/> KeySpan Energy Trading Svc LLC <input checked="" type="checkbox"/> Niagara Mohawk Power Corp- Electric Distribution <input type="checkbox"/> Niagara Mohawk Power Corp - Gas <input type="checkbox"/> Niagara Mohawk Power Corp - Transmission <input type="checkbox"/> Massachusetts Electric Company <input type="checkbox"/> Massachusetts Electric Company - Transmission <input type="checkbox"/> Nantucket Electric Company <input type="checkbox"/> Boston Gas Company <input type="checkbox"/> Colonial Gas Company <input type="checkbox"/> Narragansett Gas Company <input type="checkbox"/> Narragansett Electric Company <input type="checkbox"/> Narragansett Electric Company - Transmission <input type="checkbox"/> New England Power Company - Transmission <input type="checkbox"/> New England Hydro - Trans Corp <input type="checkbox"/> New England Electric Trans Corp <input type="checkbox"/> NG LNG LP Regulated Entity				
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Project Relationships <input type="checkbox"/> Minor Works <small>Project Relationship:</small> Related Projects: <input checked="" type="checkbox"/> 0823B - Data Loss Prevention (DLP) Gateway						
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Key Milestone Dates: <small>Select the 1st, 15th or last day of the month</small>						
<small>Begin</small> Start-up	<small>Begin</small> Requirements & Deign	<small>Begin</small> Development & Implementation	<small>Begin</small> User Acceptance Testing	Go Live	Project Completion	Project Closure
April, 2018	May, 2018	June, 2019	November, 2020	March, 2021	March, 2021	June, 2021
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:						

6/14/2017

FY19 - Investment Request Summaries - IRSs - Cloud Computing for Data Management Optimization...

Attached Supporting Documents			
Recommendation Sign-off			
Role	Name	Title	Date
Business Project Sponsor	Anuraag Bhargava	SVP Chief Information Officer	
Business Relationship Manager	Aman Aneja	IS Business Relationship Manager	
IS Program Delivery Manager	Deborah Rollins	IS Program Delivery Manager	
			nationalgrid

6/14/2017

FY19 - Investment Request Summaries - IRSs - NY REV Cyber Security Initiatives



Planning & Performance Management ▶ FY19 - Investment Request Summaries - IRSs: NY
REV Cyber Security Initiatives



I Like It



Tags &
Notes

nationalgrid		Investment Request Summary - IS US		FISCAL YEAR 2019	
INV ID:	4704N	Project Name: NY REV Cyber Security Initiatives			
Program:	NY REV				
Sponsor:	Rich Adduci	Title: Chief Information Officer			
Relationship Manager:	Aman Aneja	Title: Director IT Business Relations			
Prog Delivery Manager:	Deborah Rollins	Title: Director IT Customer Relations			
Paper Author:	Douglas McCarthy / Phyllis Agin	Title: Business Consultant / Program Delivery Consultant			
IS Roadmap Category: Cyber Security		Business Area: Customer & Digital		Portfolio: Customer & Digital	
<input type="checkbox"/> In-Flight Project?	Invest Classification: Medium	Category: Mandatory	Primary Policy Driver:		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</p> <p>National Grid is committed to providing safe, reliable and affordable service to customers. At the same time, the Company needs to continuously evolve in the way it invests for growth, operates its electric delivery systems, and services its customers by addressing cybersecurity and customer privacy. The integration of utility and third-party systems will increase the vulnerability for cybersecurity threats and the improper access to private information. A strong framework for cyber protections is imperative and the company has developed a plan to provide the necessary security and privacy services.</p> <p>Project Rationale: Highlight business challenge, capability or process the project addresses</p> <p>A risk-based cybersecurity framework is proposed across people, process and technology that recognizes the electric grid is changing from a relatively closed system to a complex, highly interconnected environment.</p> <p>As part of the framework, cybersecurity and privacy provisions in the form of multiple security services to support each functional area will be implemented. These security services will be the cornerstone for any cybersecurity or privacy related component of the overall solution. This will include a program to provide regular privacy training and ongoing awareness communications and activities to all workers and third parties who have access to customer information within the distributed system platform.</p> <p>Formal reviews will occur periodically to ensure the proposed cybersecurity and privacy services evolve along with the ever changing threats that are monitored continuously to ensure National Grid systems, people, and information remain protected and secured.</p> <p>Project Scope: Explain what is in scope and what is not in scope for the project</p> <p>In Scope:</p> <p>Add hardware, software and the associated maintenance, services, and labor (consulting and FTE) to enable the following capabilities.</p> <ul style="list-style-type: none"> Advanced log management to add event-reduction, alerting and real-time analysis functionality Agentless technology to interrogate network infrastructure, detect suspicious devices, programmatically limit access, and remediate at-risk endpoints In real time, assess link states of connected devices and monitor network traffic (including non-standard network traffic and network packets that do not conform to established protocol standards) using out-of-band NW taps Scan-less vulnerability assessment using intelligence repositories and advanced analytics to detect exposures on distribution system devices and zones that were traditionally not able to be scanned Monitor network and user activity, secure roaming users and mobile devices, and management of these services globally from a single management console Scalable agent-based Data Loss Prevention using a hybrid premise/cloud-based solution to proactively tag/classify Personally Identifiable Information (PII), Payment Card Information (PCI) and Protected Health Information (PHI) data Directory server supporting scalable deployments in heterogeneous environments and front-ended by a web administration console Policy-based authentication and single sign-on for web-based applications Use of cloud-based Identity and Access Management authentication and federation for customers and partners Protection of critical files and registry keys from tampering, and enforces policies and reports on violation sources Enforcement of least-privilege access, and monitoring and analysis of all privileged activity Privileged identity management capability for both physical and virtual environments by control oversight of privileged user access Multi-faceted approach for security scanner/vulnerability assessment functionality and customized audits/checks written for specific applications including associated components such as OS, web/application servers, and DBMS Conduct deep packet inspection (DPI) and behavioral analysis to identify applications/protocols in use across the network "Big Data" SIEM logging of "non-security" data and application of real-time analytics Behavioral analysis based on advanced machine learning to subtle, anomalous actions and events missed by other security tools Provide holistic and user centric approach to manage and secure any endpoint from single platform Diversified data-at-rest security functionality with centralized key management <p>Project Dependencies: Identify any core program or project dependencies, please include INVP numbers if known</p>					

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FY19 - Investment Request Summaries - IRSS - NY REV Cyber Security Initiatives

Not Applicable

Basic Project Assumptions:

The project was estimated through engagement with Accenture and determined to have these cost elements. Project estimates for Accenture resources were calculated at March 17, 2017 rates plus 10% contingency added where applicable.

- Project Manager
- Hardware costs
- Software costs
- Installation Labor
- Software Maintenance Run the Business (RTB) Annual Maintenance Fee

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			16.286	7.988	4.579					28.853
OpEx			6.811	3.221	1.248					11.280
Impact on RTB			2.748	2.091	1.827	3.600	1.593	1.654	3.831	17.344

Indicative Project Costs by Delivery Phase

(\$M)	Start-up	R & D	D & I	Closure	Total
CapEx		12.984	15.869		28.853
OpEx	0.564	4.508	6.198	.010	11.280

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.

Cybersecurity services delivered through this investment will:

- Set forth a set of policies and standards to ensure National Grid is working to a common set of security objectives.
- Provide architecturally secure cybersecurity and privacy services for an efficient, easy to use and agile way to deliver the required capabilities to manage cyber risks.
- Look to build and enhance capability – reuse existing security capabilities where possible and, where capability is absent, invest.
- Deliver the necessary capability to protect and ensure the resiliency of critical National Grid systems and infrastructure.
- Address privacy throughout the lifecycle for sensitive customer and system data, as well as information sharing practices.

Investment Prioritization

Benefits				Cost			
	Impact	Weight	Score		Impact	Weight	Score
OpEx Annual Savings		10.3%	0	OpEx Cost	11.280	-24.4%	-2.196
CapEx Annual Savings		5.1%	0	CapEx Cost	28.853	-11.2%	-1
Revenue Generation (annual)		6.2%	0	RTB Efficiency	92.944 %	-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	does not apply	-10.6%	0
Regulatory Impact	does not apply	11.2%	0	Elapse Time Duration	does not apply	-6.6%	0
Process & Personal Safety	does not apply	19.4%	0	Change Management Effort	does not apply	-14.9%	0
Reliability	does not apply	10.9%	0				
Customer & Community Responsiveness	does not apply	5.3%	0				
Employee Satisfaction		4.6%					

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FY19 - Investment Request Summaries - IRSS - NY REV Cyber Security Initiatives

	does not apply		0	
Mitigates a Corporate Risk / Risk of not Doing	does not apply	8.9%	0	
Jurisdictional Engagement	does not apply	8.2%	0	
	Benefit Score:	0.00		Cost Score: -5.23
	Overall Priority Score:	-5.229		

Investment Risk and Complexity

Project Risk Score:	49	Risk Score Description: Mandated by NY REV
Project Complexity Score::	0	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.

Benefiting Operating Companies: Check all that apply

IS Projects: 4704N - NY REV Cyber Security Initiatives

- Has a dependency on IS Project;
- Has a dependency on IS Project;
- Has a dependency on IS Project;
- Has a dependency on IS Project;
- Has a dependency on IS Project;
- Has a dependency on IS Project;

- ☐ 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
☐ NG LNG LP Regulated Entity

Business Initiative Dependencies

IS Projects: 4704N - NY REV Cyber Security Initiatives

- Has a dependency on Biz Initiative,
- Has a dependency on Biz Initiative,
- Has a dependency on Biz Initiative,
- Has a dependency on Biz Initiative,

Project Relationships

☐ Minor Works

Project Relationship:

Related Projects:

- ☒ 0823B - Data Loss Prevention (DLP) Gateway

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

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FY19 - Investment Request Summaries - IRSS - NY REV Cyber Security Initiatives

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

<i>Begin Start-up</i>	<i>Begin Requirements & Deign</i>	<i>Begin Development & Implementation</i>	<i>Begin User Acceptance Testing</i>	<i>Go Live</i>	<i>Project Completion</i>	<i>Project Closure</i>
<i>April, 2018</i>	<i>May, 2018</i>	<i>June, 2019</i>	<i>November, 2020</i>	<i>March, 2021</i>	<i>March, 2021</i>	<i>June, 2021</i>

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>
<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>

Resourcing Strategy:

Attached Supporting Documents

Recommendation Sign-off

<i>Role</i>	<i>Name</i>	<i>Title</i>	<i>Date</i>
<i>Business Project Sponsor</i>	<i>Rich Adduci</i>	<i>Chief Information Officer</i>	
<i>Business Relationship Manager</i>	<i>Aman Aneja</i>	<i>IS Business Relationship Manager</i>	
<i>IS Program Delivery Manager</i>	<i>Deborah Rollins</i>	<i>IS Program Delivery Manager</i>	



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FY18 - Investment Request Summaries - IRSs - Annual HR & Payroll Mandatory Service Pack...



Planning & Performance Management ▶ FY18 - Investment Request Summaries - IRSs:
Annual HR & Payroll Mandatory Service Pack Upgrade (HRSP) - FY18



nationalgrid		Investment Request Summary - IS US		FISCAL YEAR 2018																																													
INV ID:	4400	Project Name: Annual HR & Payroll Mandatory Service Pack Upgrade (HRSP) - FY18																																															
Program:																																																	
Sponsor:	Doneen Hobbs	Title: VP US Shared Services																																															
Relationship Manager:	Joel Semel	Title: Strategy & Relationship Manager																																															
Prog Delivery Manager:	Samir Parikh	Title: Portfolio SAP Enterprise																																															
Paper Author:	Ella Weisbord	Title: Business Consultant																																															
IS Roadmap Category: Enterprise SAP		Business Area: US F,SS&C		Portfolio: Other																																													
<input type="checkbox"/> In-Flight Project?	Invest Classification: Medium	Category: Mandatory	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 This project provides a funding base and governance structure that allows the IS organization to effectively deliver needed updates to the BackOffice - US SAP application portfolio to remain compliant with federal, state and local government requirements.</p> <p>Annual HR Support Packs The annual HR support packs are the SAP annual upgrade components for the HR modules which include the required tax, payroll, legal and regulatory reporting changes and considerations required to produce year end employee wage statements (W2's), tax table changes for correctly processing payroll and required earnings withholdings, revised tax withholding tables, new annual maximum withholding requirements and all associated legal and regulatory compliance or reporting considerations for employee and company labor governmental reporting. The annual HR support packs contain updates for the close out of the current calendar year reporting cycle and for staging the requisite changes for the subsequent calendar year reporting cycle. These are mandatory annual changes (Federal and State) which must be applied to the SAP core solution in order to properly reflect employee wages, employee and company withholdings, legal requirements and to comply with Federal and State regulatory reporting.</p> <p>Project Rationale: Highlight business challenge, capability or process the project addresses The primary driver is to comply with mandatory Federal and State Quarterly and Annual changes in order to properly reflect employee wages, employee and company tax withholdings, legal requirements and to comply with regulatory reporting</p> <p>Project Scope: Explain what is in scope and what is not in scope for the project The annual HR SAP Support packs increase system reliability by applying upgrade service packs provided by SAP on a regular basis following the vendor recommended schedule. The project will ensure the upgrades are applied to National Grid US SAP environment following IS delivery process and best practices, and overseeing necessary testing (modular and integration) as well as providing overall governance for the upgrades</p> <p>Project Dependencies: Identify any core program or project dependencies, please include INVP numbers if known Global HR Simplification Program</p> <p>Basic Project Assumptions: The annual cost estimate for this investment has been based upon the current FY17 HR Support pack implementation project estimate (INVP3915). No inflation factors have been applied for out years and would need to be factored in.</p>																																																	
Indicative Project Costs by Fiscal Year <table border="1"> <thead> <tr> <th>(\$M)</th> <th>Prior Years</th> <th>FY 2018</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>Total</th> </tr> </thead> <tbody> <tr> <td>CapEx</td> <td></td> <td>1.126</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1.126</td> </tr> <tr> <td>OpEx</td> <td></td> <td>0.386</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0.386</td> </tr> <tr> <td>Impact on RTB</td> <td></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>0.000</td> <td>0.000</td> </tr> </tbody> </table>						(\$M)	Prior Years	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	CapEx		1.126								1.126	OpEx		0.386								0.386	Impact on RTB		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
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Indicative Project Costs by Delivery Phase																																																	

6/14/2017

FY18 - Investment Request Summaries - IRSs - Annual HR & Payroll Mandatory Service Pack...

(\$M)	Start-up	R & D	D & I	Closure	Total
CapEx		0.370	0.756		1.126
OpEx	0.151	0.159	0.000	.076	0.386

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.

Investment Prioritization

Benefits	Impact	Weight	Score	Cost	Impact	Weight	Score
OpEx Annual Savings		10.3%	0	OpEx Cost	0.386	-24.4%	-2.196
CapEx Annual Savings		5.1%	0	CapEx Cost	1.126	-11.2%	-1
Revenue Generation (annual)		6.2%	0	RTB Efficiency	0.000 %	-22.5%	
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	does not apply	-10.6%	0
Regulatory Impact	High	11.2%	1.008	Elapse Time Duration	Low	-6.6%	-0.066
Process & Personal Safety	does not apply	19.4%	0	Change Management Effort	Low	-14.9%	-0.149
Reliability	High	10.9%	0.981				
Customer & Community Responsiveness	does not apply	5.3%	0				
Employee Satisfaction	does not apply	4.6%	0				
Mitigates a Corporate Risk / Risk of not Doing	High= 40 or more	8.9%	0.801				
Jurisdictional Engagement	High	8.2%	1				
Benefit Score: 3.53				Cost Score: -3.42			
Overall Priority Score: 0.109							

Investment Risk and Complexity

Project Risk Score:	42	Risk Score Description: Mandatory Investment; based on financial impact (5) and likelihood of failure (7)
Project Complexity Score::	16	Project Complexity Score Description: Please see matrix attached

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

- 1) Late availability and release of annual SA HR Support pack from SAP
- 2) Complexity of labor contracts, time reporting and wage type configuration in the US
- 3) Reliance on external benefit and payroll support providers for test certification completion
- 4) Availability of business resources to support a full integration testing and regression testing of payroll, HR and Supply Chain functions

6/14/2017

FY18 - Investment Request Summaries - IRSs - Annual HR & Payroll Mandatory Service Pack...

IS Project Dependencies <small>if you don't see a project in the drop-down please contact the Planning & Performance team.</small>		Benefiting Operating Companies: <small>Check all that apply</small>															
IS Projects: 4400 - Annual HR & Payroll Mandatory Service Pack Upgrade (HRSP) - FY18 1. Has a Parallel dependency on IS Project; 4144 - HRIS Strategy - Transformation Programme 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;		<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 <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 checked="" type="checkbox"/> NG LNG LP Regulated Entity															
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January, 2017				December, 2017	March, 2018												
Business Resource Estimates: # of Full Time Equivalents <table><thead><tr><th>Start-up</th><th>Requirements & Deign</th><th>Develop & Implement</th><th>Business Resources UAT</th><th>Go Live Readiness</th><th>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												
<small>Resourcing Strategy:</small>																	
Attached Supporting Documents INVP4400_Complexity_Matrix.xlsx																	

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FY18 - Investment Request Summaries - IRSs - Annual HR & Payroll Mandatory Service Pack...

Recommendation Sign-off			
Role	Name	Title	Date
Business Project Sponsor	Doneen Hobbs	VP US Shared Services	
Business Relationship Manager	Joel Semel	IS Business Relationship Manager	
IS Program Delivery Manager	Samir Parikh	IS Program Delivery Manager	
nationalgrid			

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FY18 - Investment Request Summaries - IRSs - Mandated IS Projects FY18



Planning & Performance Management ▶ FY18 - Investment Request Summaries - IRSs:
Mandated IS Projects FY18



nationalgrid		Investment Request Summary - IS US		FISCAL YEAR 2018	
INV ID:	4470	Project Name: Mandated IS Projects FY18			
Program:					
Sponsor:	Anuraag Bhargava	Title: SVP Chief Information Officer			
Relationship Manager:	Aman Aneja	Title: Director, IS BRM Network Strategy			
Prog Delivery Manager:	Aman Aneja	Title: Director, IS BRM Network Strategy			
Paper Author:	Michael Olesker	Title: Lead Business Consultant			
IS Roadmap Category: Regulatory Mandates		Business Area: Customer & Digital		Portfolio: Customer & Digital	
<input type="checkbox"/> In-Flight Project?	Invest Classification: Medium	Category: Mandatory	Primary Policy Driver: Not Policy Driven		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</p> <p>The funding level requested in this investment is based on historical trends to support projects that are mandated by the Regulators.</p> <p>This investment is for Regulatory Mandates of a project size that may not be known at the beginning of the fiscal year. The funding will be used to comply with walk-in Mandates and will be used for substitution based on a priority assessment with the business. It encompasses all areas of US and related applications. Examples of the type of projects that would be funded from this are:</p> <ul style="list-style-type: none"> A) New York Rate Cases B) Massachusetts Rate Cases C) PSC Order in Case 12-M-0476 <ul style="list-style-type: none"> 1) Electronic Data Interchange ("EDI") protocols changes 2) Accelerated Switching - Gas and Off-Cycle 3) Third Party Verification D) NY PSC Order Case 14-M-0565 - Low Income Affordability Tax Jurisdiction Validation E) NY PSC Case 14-M-0101 - REV Proceeding <ul style="list-style-type: none"> 1) Consolidated ESCO billing 2) Utility Bill Content F) NY PSC Case 15-M-0180 - Distributed Energy Resource Providers G) MA DPU Change Request No. 018 - Net Meter Indicator H) NY PSC Case 14-M-0224 Community Choice Aggregation <p>Project Rationale: Highlight business challenge, capability or process the project addresses</p> <p>MA, RI and NY regulators issue a number of orders that must be addressed by National Grid in a timely manner. Complying with regulatory mandates require changing National Grid business processes, communication with partners and energy marketers which cannot be implemented without key systems enhancements and re-design. Several orders are in process of identifying specific requirements through state collaboratives in coordination with regulatory staff.</p> <p>Project Scope: Explain what is in scope and what is not in scope for the project</p> <p>The work to be initiated out of this investment is in support of programs dictated by the Regulators (PSC, PUC, etc.), existing regulatory orders in MA, NY and RI, and upcoming (expected) regulatory mandates in 2017. This project scope includes changes to following systems for complying with Customer Systems regulatory requirements: CSS, CRIS, EDI interfaces, GTIS, TSA, TSA RI, EBB Gas, and other applications</p> <p>Project Dependencies: Identify any core program or project dependencies, please include INVP numbers if known</p> <p>TBD</p> <p>Basic Project Assumptions:</p> <p>Projected RTB is estimated at 5% of investment value.</p> <p>Total cost estimate for FY18 Customer Mandated Projects is based on combined value of FY17 similar investments (INVP 4207 and 4186) for Customer related mandated projects</p> <p>4/25/2017 Cost updated from \$8M Opexapex and \$2M Opex and 0.250M RTB in FY18 to \$6.911M Capex, \$1.563Opex and \$0 RTB</p> <p>Removef \$0.5M RTB form following years.</p> <p>Sponsor changed from Terry Sobolowski to Anuraag Bhargava. PDM changed from Deb Rollins to Aman Aneja</p>					

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FY18 - Investment Request Summaries - IRSs - Mandated IS Projects FY18

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		6.911								6.911
OpEx		1.563								1.563
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		1.000	5.911		6.911
OpEx	0.100	1.000	0.300	0.063	1.463

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.

Compliance with regularoty orders and Mandates

Investment Prioritization

Benefits				Cost			
	Impact	Weight	Score		Impact	Weight	Score
OpEx Annual Savings		10.3%	0	OpEx Cost	1.563	-24.4%	-2.196
CapEx Annual Savings		5.1%	0	CapEx Cost	6.911	-11.2%	-1
Revenue Generation (annual)		6.2%	0	RTB Efficiency	0.000	% -22.5%	0
Financial Control	Medium	6.2%	0.186	Union/Labor Relations	does not apply	-9.8%	0
Soft Financial Benefits	High	3.8%	0.342	Dependencies	Medium	-10.6%	-0.318
Regulatory Impact	High	11.2%	1.008	Elapse 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	High	5.3%	0.477				
Employee Satisfaction	Low	4.6%	0.046				
Mitigates a Corporate Risk / Risk of not Doing	High= 40 or more	8.9%	0.801				
Jurisdictional Engagement	High	8.2%	1				
Benefit Score: 3.93				Cost Score: -3.87			
Overall Priority Score: 0.055999...							

Investment Risk and Complexity

Project Risk Score:	49	Risk Score Description: Regulatory Mandates
Project Complexity		Project Complexity Score Description:

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FY18 - Investment Request Summaries - IRSs - Mandated IS Projects FY18

Score::	23
---------	----

Key Risks Description: Provide detail on project risks & mitigation strategy:
Most of the requirements are subject of colaborative effort with ather utilities, regulators and energy market parties.

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

Benefiting Operating Companies: Check all that apply

IS Projects: 4470 - Mandated IS Projects FY18

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: 4470 - Mandated IS Projects FY18

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:

☐ 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
☐ 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	May, 2017	June, 2017	February, 2018	March, 2018	March, 2018	June, 2018

Business Resource Estimates: # of Full Time Equivalents

Start-up	Requirements & Deign	Develop & Implement	Business Resources UAT	Go Live Readiness	Post Go Live Support
3	3	3	3	3	3

Resourcing Strategy:

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FY18 - Investment Request Summaries - IRSs - Mandated IS Projects FY18

Project will be sourced using Solution Delivery Center (SDC) and National Grid IS resources.

Attached Supporting Documents

Recommendation Sign-off

Role	Name	Title	Date
Business Project Sponsor	Anuraag Bhargava	SVP Chief Information Officer	
Business Relationship Manager	Aman Aneja	IS Business Relationship Manager	
IS Program Delivery Manager	Aman Aneja	IS Program Delivery Manager	



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FY18 - Investment Request Summaries - IRSs - US Control-Gas Electronic Bulletin Board...



Planning & Performance Management ▶ FY18 - Investment Request Summaries - IRSs: US
Control-Gas Electronic Bulletin Board (EBB) Upgrade



I Like It



Tags &
Notes

nationalgrid		Investment Request Summary - IS US		FISCAL YEAR 2018	
INV ID:	4479	Project Name: US Control-Gas Electronic Bulletin Board (EBB) Upgrade			
Program:					
Sponsor:	John Spink	Title: VP, Control Center Operations			
Relationship Manager:	Aman Aneja	Title: Director, IS BRM			
Prog Delivery Manager:	Michelle McNaught	Title: Director, IS PDM			
Paper Author:	Mike Gerolamo	Title: Lead Consultant, IS BRM			
IS Roadmap Category: Schedule/Dispatch, Work Management Reporting Business Area: Control Centre Portfolio: Other					
<input type="checkbox"/> In-Flight Project?	Invest Classification:	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?				
Project Description: The context for the project with background information The current legacy Gas Electronic Bulletin Board (EBB) sits on outdated hardware, and relies on aged reporting software (MicroStrategy). The software messaging function has bandwidth issues during heavy trading periods, which exposes the company to operational and potential financial impacts. The legacy EBB software designed internally 16 years ago is limited in function, and does not support the continually evolving gas trading environments, nor changing regulatory demands. Project is needed to support National Grid Gas Transmission and Distribution systems in New England and New York. The objective of this project is to update the existing EBB to a new vendor system, that will be housed in a National Grid datacenter.					
Project Rationale: Highlight business challenge, capability or process the project addresses The legacy system resides on outdated hardware, and the EBB software designed internally 16 years ago is limited in function to support the continually evolving gas trading environments, and changing regulatory demands.					
Project Scope: Explain what is in scope and what is not in scope for the project Analysis of interfacing applications and processes. R&D and D&I Implementation of a vendor solution (including but not limited to data migration, user and system testing, training, and Service Transition activities).					
Project Dependencies: Identify any core program or project dependencies, please include INVP numbers if known INVP 3737-US CNI GMS-SCADA Upgrade INVP 4480-Gas System Operating Procedure (SOP) Upgrade					
Basic Project Assumptions:					

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FY18 - Investment Request Summaries - IRSs - US Control-Gas Electronic Bulletin Board...

EBB may not be used for Downstate NY nor LI gas territories. In these areas, GTIS would be used. (MG Notes-23 Aug 2016-Tom Amerige confirms likely that EBB would/could be used in Downstate for Nominations, and Scheduling. Also, Broker Management System (BMS) could also be retired along with current legacy EBB, TSA and TSA RI. This is all TBD during review of GTIS system capabilities at time of this project sanctioning.)

MG 10/21/2016-There is a chance that RTB costs will be altered at time of full (D&I) sanction, as project may eliminate need for certain legacy system licenses. Current RTB for EBB is \$121k annually. Project will implement a vendor solution hosted internally within Grid's data center(s). This will not be a SaaS solution.

Program Delivery Assumptions:

- Assumes the decommissioning of EBB, TSA, and TSA RI.
- Assumes some functionality in legacy systems would move to this new system
- There will need to be some interface work
- Assuming an internally hosted solution -as of 10/21/2016
- Assuming an RFP will be completed.
- Assuming Decommissioning EBB at the end of the project.
- Assuming scope includes Upstate NY, MA, and RI. Not Downstate NY.
- Assuming the rollout will be done by region.
- Assumes a project start in April 2017
- There are interfaces involved (CSS, CRIS, GEMS, etc)

Estimates created by John Kastler, Dave Natale, Brian Detota, Mark Mirizio, Mike Gerolamo

Estimate accuracy is -50% to +100%

Key Milestone dates along with cost in tables entered by PDM. Financial treatment rules could change this to at least partial Capex depending on evolving jurisdictional rules. MG-18 Oct 2016-Reviewed SaaS revised estimate with John Kastler. Business resource costs were removed. Vendor Quorum quote (attached in IRS) for Scenario 2 was used for PDM estimate. MG-21 Oct 2016-New estimate based on internally hosted solution changing from all opex for project. Financial treatment rules are evolving for SaaS, and uncertainties remain. This will be an internally hosted solution at this time.

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		2.455	0.545	0.000	0.000	0.000	0.000	0.000	0.000	3.000
OpEx		1.093	0.193							1.286
Impact on RTB			0.779	0.779	0.779	0.779	0.779	0.779	0.779	5.453

Indicative Project Costs by Delivery Phase

(\$M)	Start-up	R & D	D & I	Closure	Total
CapEx		0.750	2.250		3.000
OpEx	0.106	0.987	0.181	0.012	1.286

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.

Driver is improved Reliability. Unmaintained software residing on outdated hardware requires the system to be updated in order to prevent loss of service, as well as allow National Grid to offer additional functionality, and improve efficiency for internal and external users.

Investment Prioritization

Benefits	Impact	Weight	Score	Cost	Impact	Weight	Score
OpEx Annual Savings		10.3%	0	OpEx Cost	1.286	-24.4%	-2.196
CapEx Annual Savings		5.1%	0	CapEx Cost	3.000	-11.2%	-1
Revenue Generation (annual)		6.2%	0	RTB Efficiency	181.767	% -22.5%	-2.025
Financial Control	Medium	6.2%	0.186	Union/Labor Relations	does not apply	-9.8%	0

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FY18 - Investment Request Summaries - IRSs - US Control-Gas Electronic Bulletin Board...

Soft Financial Benefits	Medium	3.8%	0.114	Dependencies	Low	-10.6%	-0.106
Regulatory Impact	Low	11.2%	0.112	Elapse Time Duration	High	-6.6%	-0.594
Process & Personal Safety	does not apply	19.4%	0	Change Management Effort	High	-14.9%	-1.341
Reliability	Medium	10.9%	0.327				
Customer & Community Responsiveness	High	5.3%	0.477				
Employee Satisfaction	High	4.6%	0.414				
Mitigates a Corporate Risk / Risk of not Doing	Medium=16 to 39	8.9%	0.267				
Jurisdictional Engagement	High	8.2%	1				
	Benefit Score:		2.64			Cost Score:	-7.27
Overall Priority Score:				-4.635			

Investment Risk and Complexity

Project Risk Score:	39	Risk Score Description: The project carries a Risk score of "39", factored on the likelihood (5) and financial impact (5) calculation.
Project Complexity Score::	24	Project Complexity Score Description: Project Cost 2 3 6 Project Duration 1 2 2 Delivery Complexity 2 2 4 Business Process Impact 2 2 4 External Impact 2 3 6 Dependencies 1 1 1 Innovation 1 1 1 TOTAL 24
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.

Benefiting Operating Companies: Check all that apply

IS Projects: 4479 - US Control-Gas Electronic Bulletin Board (EBB) Upgrade 1. Has a Parallel dependency on IS Project; INVP4480-US Control-Gas SOP Upgrade 2. Has a Parallel dependency on IS Project; 3737 - US CNI GMS SCADA Upgrade and Consolidation 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;	<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 <input type="checkbox"/> National Grid USA Parent <input type="checkbox"/> KeySpan Energy Development Corporation <input type="checkbox"/> KeySpan Services Inc. <input type="checkbox"/> KeySpan Energy Corp <input checked="" type="checkbox"/> KeySpan Energy Delivery New York <input checked="" type="checkbox"/> KeySpan Energy Delivery Long Island <input type="checkbox"/> KeySpan Generation LLC (PSA) <input type="checkbox"/> KeySpan Glenwood Energy Center <input type="checkbox"/> KeySpan Port Jefferson Energy Center <input type="checkbox"/> KeySpan Energy Trading Svc LLC <input type="checkbox"/> Niagara Mohawk Power Corp- Electric Distribution <input checked="" type="checkbox"/> Niagara Mohawk Power Corp - Gas <input type="checkbox"/> Niagara Mohawk Power Corp - Transmission <input type="checkbox"/> Massachusetts Electric Company <input type="checkbox"/> Massachusetts Electric Company - Transmission <input 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 type="checkbox"/> Narragansett Electric Company <input type="checkbox"/> Narragansett Electric Company - Transmission <input type="checkbox"/> New England Power Company - Transmission <input type="checkbox"/> New England Hydro - Trans Corp
Business Initiative Dependencies IS Projects: 4479 - US Control-Gas Electronic Bulletin Board (EBB) Upgrade 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 <input type="checkbox"/> Minor Works Project Relationship:	

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FY18 - Investment Request Summaries - IRSs - US Control-Gas Electronic Bulletin Board...

Related Projects:				<input type="checkbox"/> New England Electric Trans Corp <input type="checkbox"/> NG LNG LP Regulated Entity		
Enabling IS Capabilities check all that apply						
<div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input type="checkbox"/> Enterprise Content Management (ECM) <input type="checkbox"/> Comprehensive Integration Services (CIS) <input type="checkbox"/> Hybrid Cloud <input type="checkbox"/> Next Gen Workplace </div> <div style="width: 50%;"> <input type="checkbox"/> Enterprise Mobility <input checked="" type="checkbox"/> Reporting and Analytics <input type="checkbox"/> Networks </div> </div>						
Key Milestone Dates: Select the 1st, 15th or last day of the month						
<i>Begin Start-up</i>	<i>Begin Requirements & Deign</i>	<i>Begin Development & Implementation</i>	<i>Begin User Acceptance Testing</i>	<i>Go Live</i>	<i>Project Completion</i>	<i>Project Closure</i>
April, 2017	September, 2017	January, 2018	March, 2018	May, 2018	June, 2018	September, 2018
Business Resource Estimates: # of Full Time Equivalents						
<i>Start-up</i> 4	<i>Requirements & Deign</i> 4	<i>Develop & Implement</i> 4	<i>Business Resources UAT</i> 4	<i>Go Live Readiness</i> 4	<i>Post Go Live Support</i> 4	
Resourcing Strategy: Project will be resourced for delivery by Gas Control, in conjunction with IS PDM, SA, and DR&S resources. Verizon is expected as a network resource. Other partner vendors including CSC, IBM and Wipro are expected to be utilized in some capacity. Procurement will be needed to negotiate with chosen vendor and partner resources.						
Attached Supporting Documents						
Risk Scores_MDS and Gas Control projects.xlsx INVP 4479 EBB Upgrade FY18 Estimate.zip National Grid LDC Management Proposal vf.zip INVP 4479 EBB - On Prem Upgrade FY18 Estimate.zip						
Recommendation Sign-off						
<i>Role</i>	<i>Name</i>	<i>Title</i>	<i>Date</i>			
<i>Business Project Sponsor</i>	<i>John Spink</i>	<i>VP, Control Center Operations</i>				
<i>Business Relationship Manager</i>	<i>Aman Aneja</i>	<i>IS Business Relationship Manager</i>				
<i>IS Program Delivery Manager</i>	<i>Michelle McNaught</i>	<i>IS Program Delivery Manager</i>				

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FY18 - Investment Request Summaries - IRSs - Mandated IS Projects FY19-21



Planning & Performance Management ▶ FY18 - Investment Request Summaries - IRSs:
Mandated IS Projects FY19-21



nationalgrid		Investment Request Summary - IS US		FISCAL YEAR 2018																																													
INV ID:	4766	Project Name: Mandated IS Projects FY19-21																																															
Program:	Customer & Digital																																																
Sponsor:	Anuraag Bhargava	Title: <i>SVP Chief Information Officer</i>																																															
Relationship Manager:	Aman Aneja	Title: <i>Director, IS BRM Network Strategy</i>																																															
Prog Delivery Manager:	Aman Aneja	Title: <i>Director, IS BRM Network Strategy</i>																																															
Paper Author:	Michael Olesker	Title: <i>Lead Business Consultant</i>																																															
IS Roadmap Category:	Regulatory Mandates	Business Area:	Customer & Digital	Portfolio:	Customer & Digital																																												
<input type="checkbox"/> In-Flight Project?	Invest Classification: Medium	Category:	Mandatory	Primary Policy Driver:	Not Policy Driven																																												
					Region: US																																												
<input type="checkbox"/> Growth Playbook Project?	<input type="checkbox"/> Shaping Our Future Project?	<input type="checkbox"/> Energy Efficiency Project?																																															
<p>Project Description: <i>The context for the project with background information</i></p> <p>This blanket project provides a funding base and governance structure needed to respond to any regulatory mandate, regulatory audits, or compliance reporting that will occur during the course of the year in FY2019-21</p> <p>Information Systems requests funded by this project will support any regulatory mandate received across all National Grid US service territories</p> <p>Project Rationale: <i>Highlight business challenge, capability or process the project addresses</i></p> <p>Over the course of any year, Massachusetts (MA), Rhode Island (RI), New York (NY) and Federal regulators issue a number of orders that must be addressed by National Grid in a timely manner. Complying with regulatory mandates require changing National Grid business processes which cannot be implemented without key systems enhancements and re-design.</p> <p>Several orders are in process of identifying specific requirements through state collaboratives in coordination with regulatory staff.</p> <p>This blanket project provides a funding base and governance structure that allows the organization to respond effectively to demands and change requests which typically arise when there is an urgent, mandatory imperative, to meet a new requirement/order by our regulators (PSC, DPU, PUC, FERC)</p> <p>Project Scope: <i>Explain what is in scope and what is not in scope for the project</i></p> <p>The requests approved under this project represent mandatory initiatives.</p> <p>An Approval Committee, composed of leaders from IS and the Business, will oversee project prioritization for approval, based on assessment of priority and available funding. The Committee will approve or deny requests based on their assessment.</p> <p>The Approval Committee will assess requests based on their quality, urgency, regulatory attributes, and value to the company and its stakeholders.</p> <p>Project Dependencies: <i>Identify any core program or project dependencies, please include INVP numbers if known</i></p> <p>TBD</p> <p>Basic Project Assumptions:</p> <p>Projected RTB is estimated at 5% of investment value.</p>																																																	
<p>Indicative Project Costs by Fiscal Year</p> <table border="1"> <thead> <tr> <th>(\$M)</th> <th>Prior Years</th> <th>FY 2018</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>Total</th> </tr> </thead> <tbody> <tr> <td>CapEx</td> <td></td> <td></td> <td>18.595</td> <td>20.000</td> <td>20.000</td> <td></td> <td></td> <td></td> <td></td> <td>58.595</td> </tr> <tr> <td>OpEx</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0.000</td> </tr> <tr> <td>Impact on RTB</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0.000</td> </tr> </tbody> </table>						(\$M)	Prior Years	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	CapEx			18.595	20.000	20.000					58.595	OpEx										0.000	Impact on RTB										0.000
(\$M)	Prior Years	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total																																							
CapEx			18.595	20.000	20.000					58.595																																							
OpEx										0.000																																							
Impact on RTB										0.000																																							
<p>Indicative Project Costs by Delivery Phase</p>																																																	

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FY18 - Investment Request Summaries - IRSs - Mandated IS Projects FY19-21

(\$M)	Start-up	R & D	D & I	Closure	Total
CapEx		6.000	52.595		58.595
OpEx					0.000

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.

Compliance with regulatory orders and Mandates

Investment Prioritization

Benefits	Impact	Weight	Score	Cost	Impact	Weight	Score
OpEx Annual Savings		10.3%	0	OpEx Cost	0.000	-24.4%	0
CapEx Annual Savings		5.1%	0	CapEx Cost	58.595	-11.2%	-1
Revenue Generation (annual)		6.2%	0	RTB Efficiency	0.000	% -22.5%	0
Financial Control	Medium	6.2%	0.186	Union/Labor Relations	Low	-9.8%	0
Soft Financial Benefits	High	3.8%	0.342	Dependencies	Medium	-10.6%	-0.318
Regulatory Impact	High	11.2%	1.008	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	High	5.3%	0.477				
Employee Satisfaction	Low	4.6%	0.046				
Mitigates a Corporate Risk / Risk of not Doing	High= 40 or more	8.9%	0.801				
Jurisdictional Engagement	High	8.2%	1				
Benefit Score: 4.12				Cost Score: -2.07			
				Overall Priority Score: 2.05			

Investment Risk and Complexity

Project Risk Score:	49	Risk Score Description: Regulatory Mandates
Project Complexity Score::	23	Project Complexity Score Description:

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

Most of the requirements are subject of collaborative effort with ather utilities, regulators and energy market parties.

6/14/2017

FY18 - Investment Request Summaries - IRSs - Mandated IS Projects FY19-21

IS Project Dependencies <small>if you don't see a project in the drop-down please contact the Planning & Performance team.</small>		Benefiting Operating Companies: <small>Check all that apply</small>				
IS Projects: 4766 - Mandated IS Projects FY19-21 1. <i>Has a dependency on IS Project;</i> 2. <i>Has a dependency on IS Project;</i> 3. <i>Has a dependency on IS Project;</i> 4. <i>Has a dependency on IS Project;</i> 5. <i>Has a dependency on IS Project;</i> 6. <i>Has a dependency on IS Project;</i>		<input type="checkbox"/> <i>Select All Companies</i> <input type="checkbox"/> <i>Clear All Companies</i> <input type="checkbox"/> <i>Select All Gas</i> <input type="checkbox"/> <i>Select All Electric</i> <input type="checkbox"/> <i>Select All Gen</i> <input type="checkbox"/> National Grid USA Parent <input type="checkbox"/> KeySpan Energy Development Corporation <input type="checkbox"/> KeySpan Services Inc. <input 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 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 type="checkbox"/> Narragansett Electric Company - Transmission <input checked="" type="checkbox"/> New England Power Company - Transmission <input type="checkbox"/> New England Hydro - Trans Corp <input type="checkbox"/> New England Electric Trans Corp <input type="checkbox"/> NG LNG LP Regulated Entity				
Business Initiative Dependencies IS Projects: 4766 - Mandated IS Projects FY19-21 1. <i>Has a dependency on Biz Initiative,</i> 2. <i>Has a dependency on Biz Initiative,</i> 3. <i>Has a dependency on Biz Initiative,</i> 4. <i>Has a dependency on Biz Initiative,</i>						
Project Relationships <input type="checkbox"/> <i>Minor Works</i> <i>Project Relationship:</i> <i>Related Projects:</i>						
Enabling IS Capabilities <small>check all that apply</small>						
<input type="checkbox"/> <i>Enterprise Content Management (ECM)</i> <input type="checkbox"/> <i>Enterprise Mobility</i> <input type="checkbox"/> <i>Comprehensive Integration Services (CIS)</i> <input type="checkbox"/> <i>Reporting and Analytics</i> <input type="checkbox"/> <i>Hybrid Cloud</i> <input type="checkbox"/> <i>Networks</i> <input type="checkbox"/> <i>Next Gen Workplace</i>						
Key Milestone Dates: <small>Select the 1st, 15th or last day of the month</small>						
<i>Begin Start-up</i>	<i>Begin Requirements & Deign</i>	<i>Begin Development & Implementation</i>	<i>Begin User Acceptance Testing</i>	<i>Go Live</i>	<i>Project Completion</i>	<i>Project Closure</i>
<i>March, 2018</i>	<i>April, 2018</i>	<i>July, 2018</i>	<i>October, 2020</i>	<i>March, 2021</i>	<i>March, 2021</i>	<i>July, 2021</i>
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>	
<i>5</i>	<i>5</i>	<i>5</i>	<i>5</i>	<i>5</i>	<i>5</i>	
Resourcing Strategy: Project will be sourced using Solution Delivery Center (SDC) and National Grid IS resources.						
Attached Supporting Documents						

6/14/2017

FY18 - Investment Request Summaries - IRSs - Mandated IS Projects FY19-21

Recommendation Sign-off			
Role	Name	Title	Date
Business Project Sponsor	Anuraag Bhargava	SVP Chief Information Officer	
Business Relationship Manager	Aman Aneja	IS Business Relationship Manager	
IS Program Delivery Manager	Aman Aneja	IS Program Delivery Manager	
nationalgrid			



US Sanction Paper

Title:	CPE Buy Back	Sanction Paper #:	USSC 17-162
Project #:	INVP 4684	Sanction Type:	Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	March 27, 2107
Author:	Steven Trezza/Chris Clawson	Sponsor:	John Gilbert, Global Head IS Service Delivery
Utility Service:	IS	Project Manager:	Doug Page

1 Executive Summary

1.1 **Sanctioning Summary**

This paper requests sanction of INVP 4684 in the amount \$5.140M with a tolerance of +/- 10% for the purposes of full implementation.

This sanction amount is \$5.140M broken down into:

*\$5.140M Capex
\$0.000M Opex
\$0.000M Removal*

1.2 **Project Summary**

The project will purchase the Cisco assets that are currently leased from Verizon under the Global Telecommunications and Network Managed Services agreement.

1.3 **Summary of Projects**

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
INVP 4684	Project Type	CPE Buy Back	5.140

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
May 2017	Closure Sanction

1.7 Category

Category	Reference to Mandate, Policy, NPV, or Other
<input type="radio"/> Mandatory	National Grid currently leases Cisco equipment that is used by Verizon to deliver the managed telecom services. Purchasing this equipment will allow the company to negotiate better pricing, have better visibility to the deployed equipment and improve long term asset management and planning.
<input checked="" type="radio"/> Policy- Driven	
<input type="radio"/> Justified NPV	
<input type="radio"/> Other	

1.8 Asset Management Risk Score

Asset Management Risk Score: 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: N/A

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 FY18-22	<input type="radio"/> Yes <input checked="" type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	\$0

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	5.140	0.000	0.000	0.000	0.000	0.000	0.000	5.140
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
CIAC/Reimbursement	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	5.140	0.000	0.000	0.000	0.000	0.000	0.000	5.140



US Sanction Paper

1.14 Key Milestones

Milestone	Target Date: (Month/Year)
Start Up	Jan 2017
Partial Sanction	N/A
Begin Requirements and Design	Feb 2017
Full Sanction	Mar 2017
Begin Development and Implementation	Mar 2017
Move to Production / Last Go Live	Mar 2017
Project Complete	Mar 2017
Closure Sanction	May 2017

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

- (a) APPROVED this paper and the investment of \$5.140M and a tolerance of +/-10%.
- (b) NOTED that Tom Cunningham has the approved financial delegation.

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

Margaret Smyth
US Chief Financial Officer
Chair, US Sanctioning Committee

US Sanction Paper

3 Sanction Paper Detail

Title:	CPE Buy Back	Sanction Paper #:	USSC 17-162
Project #:	INVP 4684	Sanction Type:	Sanction
Operating Company:	National Grid USA Svc. Co.	Date of Request:	March 27, 2017
Author:	Steven Trezza/Chris Clawson	Sponsor:	John Gilbert, Global Head IS Service Delivery
Utility Service:	IS	Project Manager:	Doug Page

3.1 *Background*

National Grid currently leases Cisco equipment that is used by Verizon to deliver the managed telecom services. Within recent years, we have purchased network equipment used as part of project delivery.

3.2 *Drivers*

Purchasing this equipment will allow the company to negotiate better pricing, have better visibility to the deployed equipment and improve long term asset management and planning.

3.3 *Project Description*

The project will purchase the Cisco assets that are currently leased from Verizon.

3.4 *Benefits Summary*

Purchasing (rather than continuing to lease) Cisco assets provides a number of benefits to National Grid:

- Improved visibility, control and knowledge of asset health
- Potentially support a closer working relationship between National Grid and Cisco to support future services and innovation.
- Simplified potential separation from Verizon as part of contract negotiations/renewal.

3.5 *Business and Customer Issues*

N/A



US Sanction Paper

3.6 Alternatives

Alternative 1: Purchase and install replacement equipment and return leased equipment.

- This approach would require a work effort to replace the existing equipment that will result in resource charges, impact end users, and create risks that would be avoided with a lease buyout.

Alternative 2: Do nothing. – Does not provide desired benefits.

3.7 Safety, Environmental and Project Planning Issues

N/A

3.8 Execution Risk Appraisal

N/A

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 4684	CPE Buy Back	Est Lvl (e.g. +/- 10%)	CapEx	5.140	0.000	0.000	0.000	0.000	0.000	0.000	5.140
			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	5.140	0.000	0.000	0.000	0.000	0.000	0.000	5.140

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	5.140	0.000	0.000	0.000	0.000	0.000	0.000	5.140
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	5.140	0.000	0.000	0.000	0.000	0.000	0.000	5.140

Variance (Business Plan-Project Estimate)

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

3.11.3 Cost Assumptions

N/A

3.11.4 Net Present Value / Cost Benefit Analysis

This is not a Net Present Value project

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

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	John Gilbert
Head of PDM	Tom Cunningham
Relationship Manager	Graham Pool
Program Delivery Manager	Chris Granata
IS Finance Management	Chip Benson
IS Regulatory	Dan DeMauro
DR&S	Elaine Wilson
Service Delivery	Brian Detota
Enterprise Architecture	Joe Clinchot
Commercial Operations	John Horne

3.12.2 Reviewers

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

Function	Individual	Area
Regulatory	Zschokke, Peter	All
Jurisdictional Delegate(s)	Harbaugh, Mark	Electric - NY
	Patterson, James	Electric - NE
	Hill, Terron	FERC
	Brown, Laurie	Gas - NY
	Currie, John	Gas - NE
Procurement	Curran, Art	All

US Sanction Paper

4 Appendices

4.1 Sanction Request Breakdown by Project

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	-	
	SDC Time & Materials	-	
	SDC Fixed-Price	-	
	All other personnel	-	
	TOTAL Personnel Costs	-	
Hardware	Purchase	4.230	
	Lease	-	
Software		-	
Risk Margin		-	
Other		-	
TOTAL Costs		4.230	

4.2 Other Appendices

4.2.1 Benefiting Operating Companies

This project will benefit all of the listed companies 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
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



US Sanction Paper

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
New England Hydro Finance Co. Inc.	Inter Connector	MA, NH

4.3 NPV Summary

N/A

4.4 Customer Outreach Plan

N/A

6/14/2017

FY18 - Investment Request Summaries - IRSs - Active Directory Improvements



Planning & Performance Management ▶ FY18 - Investment Request Summaries - IRSs: Active Directory Improvements



I Like It



Tags & Notes

nationalgrid		Investment Request Summary - IS US		FISCAL YEAR 2018						
INV ID:	4489	Project Name: Active Directory Improvements								
Program:	Service Strategy Roadmap									
Sponsor:	John Gilbert	Title: <i>Global Head IS Service Delivery, Global IS</i>								
Relationship Manager:	Graham Pool	Title: <i>IS Relationship Manager, Global IS</i>								
Prog Delivery Manager:	Tom Cunningham	Title: <i>Head of Programme Delivery, Global IS</i>								
Paper Author:	Nicola Pennington / Steve Trezza	Title: <i>Business Consltant - Corporate IS</i>								
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					
<input checked="" type="checkbox"/> Growth Playbook Project?	<input type="checkbox"/> Shaping Our Future Project?	<input type="checkbox"/> Energy Efficiency Project?	Region: Global							
<p>Project Description: The context for the project with background information Further improvements to Active Directory following on from work in FY17</p> <p>Project Rationale: Highlight business challenge, capability or process the project addresses Further work is expected on Active Directory in FY18 - however scope is not known until INVP 4286 F&A phase is complete - this is in progress and due to complete end of October 2016</p> <p>Project Scope: Explain what is in scope and what is not in scope for the project Scope is not known until INVP 4286 F&A phase is complete - this is in progress and due to complete end of October 2016</p> <p>Project Dependencies: Identify any core program or project dependencies, please include INVP numbers if known INVP 4286 Active Directory F&A</p> <p>Basic Project Assumptions: Improvements are expected to be upgrades/configuration and therefore no RTB increase anticipated. Assumed that D&I only as continuation of work in FY17</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		0.275	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.275
OpEx		0.275	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.275
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		0.000		0.275				0.275		
OpEx	0.010	0.000		0.260		0.005		0.275		

6/14/2017

FY18 - Investment Request Summaries - IRSs - Active Directory Improvements

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.

Active Directory is a key service which supports core authentication from all computer and servers onto the corporate network and therefore provides access to all IS systems. Ensuring the service is reliable and supports changing requirements for security and internet based services is critical.

The impacts of this project on the Customer are based on a number of areas:

- Improves reliability and productivity
- Helps support Jurisdictional and business function initiatives
- Enables a better Customer Experience

In addition there are an increasing number of Software as a Service (SAAS) Services which are driving the need for more capability within AD. Our current AD structure is not able to support integration with these services resulting in each project having to manually correct data and provide integration. This is inefficient and costly. The blueprinting exercise will identify how best to meet these new requirements and structure data to common industry standards this investment will continue with the improvements identified by this study.

Investment Prioritization

Benefits				Cost			
	Impact	Weight	Score		Impact	Weight	Score
OpEx Annual Savings		10.3%	0	OpEx Cost	0.275	-24.4%	-2.196
CapEx Annual Savings		5.1%	0	CapEx Cost	0.275	-11.2%	0
Revenue Generation (annual)		6.2%	0	RTB Efficiency	0.000	% -22.5%	
Financial Control	Low	6.2%	0.062	Union/Labor Relations	does not apply	-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	Low	19.4%	0.194	Change Management Effort	Low	-14.9%	-0.149
Reliability	Medium	10.9%	0.327				
Customer & Community Responsiveness	Medium	5.3%	0.159				
Employee Satisfaction	High	4.6%	0.414				
Mitigates a Corporate Risk / Risk of not Doing	High= 40 or more	8.9%	0.801				
Jurisdictional Engagement	High	8.2%	1				
Benefit Score: 2.85				Cost Score: -2.76			
Overall Priority Score: 0.084000...							

Investment Risk and Complexity

Project Risk Score:	46	Risk Score Description: Risk Impact = 6 and Risk Likelihood = 7
Project Complexity Score::	16	Project Complexity Score Description:

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

Now that customers are demanding new services, without this investment in our underlying technology infrastructure, we cannot deliver these new strategic programs.

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

Benefiting Operating Companies: Check all that apply

6/14/2017

FY18 - Investment Request Summaries - IRSs - Active Directory Improvements

IS Projects: **4489 - Active Directory Improvements**

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: **4489 - Active Directory Improvements**

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:

- ☐ 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
 - ☒ NG LNG LP Regulated Entity

Enabling IS Capabilities check all that apply

- | | |
|---|--|
| <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 | |

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				November, 2017		

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

6/14/2017

FY18 - Investment Request Summaries - IRSs - Active Directory Improvements

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

6/14/2017

FY18 - Investment Request Summaries - IRSs - Application Performance Management (APM)



Planning & Performance Management ▶ FY18 - Investment Request Summaries - IRSs:
Application Performance Management (APM)



nationalgrid		Investment Request Summary - IS US				FISCAL YEAR 2018				
INV ID:	4490	Project Name: Application Performance Management (APM)								
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 Consltant - Corporate IS								
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: Global			
<input checked="" 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 APM (Application Performance Management) tool and expertise - Select, procure, integrate, and support a dedicated APM tool with a provision for expert level support.</p> <p>Project Rationale: Highlight business challenge, capability or process the project addresses 1. Project Athena has identified the requirement for reporting on application performance from an end user perspective. This will enable IS Service Owners to leverage empirical data instead of replying on anecdotal evidence. 2. The diagnosis of performance issues requires a level of instrumentation not currently available. APM tools will provide end to end (full stack) analysis to quickly diagnose these issues. 3. Development and testing can be accelerated through the use of APM tools.</p> <p>Project Scope: Explain what is in scope and what is not in scope for the project IN: Select, procure software and infrastructure, integrate, train. Limited to 1 or 2 pilot IS services. OUT: Ongoing licensing/support (RTB), expansion across other IS services</p> <p>Project Dependencies: Identify any core program or project dependencies, please include INVP numbers if known May require servers, storage and internet bandwidth Eco-partners willing to accept tight integration of expertise into their delivery model</p> <p>Basic Project Assumptions: Pilot services have sources of workload data that can be tapped.</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		0.375	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.375
OpEx		0.125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.125
Impact on RTB		0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.600
Indicative Project Costs by Delivery Phase										
(\$M)	Start-up	R & D		D & I		Closure		Total		
CapEx		0.075		0.300				0.375		
OpEx	0.010	0.030		0.080		0.005		0.125		

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FY18 - Investment Request Summaries - IRSs - Application Performance Management (APM)

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 project on the Customer are based on a number of areas:

- Improves reliability and productivity
- Better support for Jurisdictional and business function initiatives
- Enables a better Customer Experience

In addition, enables proactive APM, which itself:

Provides empirical reporting of performance against regulated activities
Provides empirical reporting of end user experience to business customers, reducing reliance on unreliable anecdotal evidence
Provides empirical reporting of end user experience to IS Service Owners, enabling them to more tightly manage delivery
Reduces the time taken for support teams and incident managers to diagnose incidents
Reduces the time taken for developers to identify and fix performance issues during development and testing
Enables identification of over-provision and potential cost savings

Investment Prioritization

Benefits				Cost			
	Impact	Weight	Score		Impact	Weight	Score
OpEx Annual Savings		10.3%	0	OpEx Cost	0.125	-24.4%	-0.732
CapEx Annual Savings		5.1%	0	CapEx Cost	0.375	-11.2%	0
Revenue Generation (annual)		6.2%	0	RTB Efficiency	140.000 %	-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	Elapse Time Duration	Low	-6.6%	-0.066
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	Low	5.3%	0.053				
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	High	8.2%	1				
Benefit Score: 1.52				Cost Score: -3.19			
				Overall Priority Score: -1.667			

Investment Risk and Complexity

Project Risk Score:	39	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:

Internet bandwidth is a limited commodity at National Grid. In order to prevent the tool becoming shelfware, use of the tool will need to be dovetailed into effective APM practices. Now that customers are demanding new services, without this investment in our underlying technology infrastructure, we cannot deliver these new strategic programs.


6/14/2017

FY18 - Investment Request Summaries - IRSs - Application Performance Management (APM)

IS Project Dependencies <small>if you don't see a project in the drop-down please contact the Planning & Performance team.</small>		Benefiting Operating Companies: <small>Check all that apply</small>															
IS Projects: 4490 - Application Performance Management (APM) 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;		<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 <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 checked="" type="checkbox"/> NG LNG LP Regulated Entity															
Business Initiative Dependencies IS Projects: 4490 - Application Performance Management (APM) 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 <input type="checkbox"/> Minor Works <small>Project Relationship:</small> Related Projects:																	
Enabling IS Capabilities <small>check all that apply</small> <div><input type="checkbox"/> Enterprise Content Management (ECM) <input type="checkbox"/> Comprehensive Integration Services (CIS) <input type="checkbox"/> Hybrid Cloud <input type="checkbox"/> Next Gen Workplace</div> <div><input type="checkbox"/> Enterprise Mobility <input type="checkbox"/> Reporting and Analytics <input type="checkbox"/> Networks</div>																	
Key Milestone Dates: <small>Select the 1st, 15th or last day of the month</small> <table><thead><tr><th>Begin Start-up</th><th>Begin Requirements & Deign</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>April, 2017</td><td></td><td></td><td></td><td>January, 2018</td><td></td><td></td></tr></tbody></table>				Begin Start-up	Begin Requirements & Deign	Begin Development & Implementation	Begin User Acceptance Testing	Go Live	Project Completion	Project Closure	April, 2017				January, 2018		
Begin Start-up	Begin Requirements & Deign	Begin Development & Implementation	Begin User Acceptance Testing	Go Live	Project Completion	Project Closure											
April, 2017				January, 2018													
Business Resource Estimates: # of Full Time Equivalents <table><thead><tr><th>Start-up</th><th>Requirements & Deign</th><th>Develop & Implement</th><th>Business Resources UAT</th><th>Go Live Readiness</th><th>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												
Resourcing Strategy: This project will be resourced using Solution Delivery Centre (SDC) partners, Systems integrator and IS resources.																	
Attached Supporting Documents																	

6/14/2017

FY18 - Investment Request Summaries - IRSs - Application Performance Management (APM)

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	
			

6/14/2017

FY18 - Investment Request Summaries - IRSs - RAS/VPN Re-Platform/Mobile



Planning & Performance Management ▶ FY18 - Investment Request Summaries - IRSs:
RAS/VPN Re-Platform/Mobile



nationalgrid		Investment Request Summary - IS US		FISCAL YEAR 2018	
INV ID:	4269	Project Name: RAS/VPN Re-Platform/Mobile			
Program:	Service Strategy Roadmap				
Sponsor:	John Gilbert	Title: <i>Global Head IS Service Delivery, Global IS</i>			
Relationship Manager:	Bill Kearns	Title: <i>IS Relationship Manager, Global IS</i>			
Prog Delivery Manager:	Dave McCune	Title: <i>Programme Delivery, Global IS</i>			
Paper Author:	Nicola Pennington / Steve Trezza	Title: <i>Business Consultant - Corporate IS / Service Strategy</i>			
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: Global
<input checked="" type="checkbox"/> Growth Playbook Project?	<input type="checkbox"/> Shaping Our Future Project?	<input type="checkbox"/> Energy Efficiency Project?			
<p>Project Description: <i>The context for the project with background information</i></p> <p>Replace the existing RAS VPN solution with a more modern platform that has improved mobile VPN capability and improved integration with National Grid technologies.</p> <p>The original Juniper Remote Access SSL VPN (RAS) deployed by Verizon is now 5 years old and doesn't support the latest mobile capabilities or integrate easily with other technologies that have been implemented (Cisco ICE). Vendor support of the current solution end September 2018.</p>					
<p>Project Rationale: <i>Highlight business challenge, capability or process the project addresses</i></p> <p>The current product will be at end of support life in September 2018 so a replacement is needed to be implemented before that time. Nation Grid needs Mobile VPN capability to support deployment and use of mobile applications, improved user experience (transparent Any Connect access) with additional VPN connection modes and integration with the other desktop and infrastructure element of the estate.</p>					
<p>Project Scope: <i>Explain what is in scope and what is not in scope for the project</i></p> <p>The project is limited to existing US VPN users and new mobile users. It will include replacing equipment, re-configuring existing firewall, minor vSTIG configurations, integrated testing with AirWatch and extensive User Acceptance Testing.</p> <p>Excluded: UK VPN Users</p>					
<p>Project Dependencies: <i>Identify any core program or project dependencies, please include INVP numbers if known</i></p> <p>Dependent on the NAC portion of the current DR&S project (INVP 3614 D1) which will have final versions of ISE and Any Connect identified.</p> <p>Dependent on EMM project (INVP 3430) to push out Any Connect client for mobile users.</p>					
<p>Basic Project Assumptions:</p> <p>There are over a dozen use cases for mobile applications in the US.</p> <p>There is an 80% likelihood of these applications requiring a mobile remote access service that is not currently available on the existing platform.</p> <p>There is a requirement for mobile devices to access the corporate network through the new service.</p> <p>This has an impact on all users of VPN services.</p> <p>Adding mobile users will increase business change impact.</p> <p>This is a 6-8 month project.</p>					
<p>Indicative Project Costs by Fiscal Year</p>					

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FY18 - Investment Request Summaries - IRSs - RAS/VPN Re-Platform/Mobile

(\$M)	Prior Years	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total
CapEx		0.600	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.600
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		0.200	0.400		0.600
OpEx	0.015	0.000		0.005	0.020

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.

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

Other potential benefits of deploying a unified mobile VPN versus each project deploying a separate solution are:

- Better mobile support
- Improved user experience

Investment Prioritization

Benefits				Cost			
	Impact	Weight	Score		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	0.600	-11.2%	0
Revenue Generation (annual)		6.2%	0	RTB Efficiency	0.000	% -22.5%	
Financial Control	does not apply	6.2%	0	Union/Labor Relations	Low	-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	Elapse Time Duration	Medium	-6.6%	-0.198
Process & Personal Safety	does not apply	19.4%	0	Change Management Effort	Medium	-14.9%	-0.447
Reliability	High	10.9%	0.981				
Customer & Community Responsiveness	Low	5.3%	0.053				
Employee Satisfaction	Low	4.6%	0.046				
Mitigates a Corporate Risk / Risk of not Doing	High= 40 or more	8.9%	0.801				
Jurisdictional Engagement	High	8.2%	1				
Benefit Score: 2.62				Cost Score: -1.43			
				Overall Priority Score: 1.19			

Investment Risk and Complexity

Project Risk Score:	41	Risk Score Description: Risk Impact = 5 and Risk Likelihood = 6
Project Complexity Score::	14	Project Complexity Score Description:

6/14/2017

FY18 - Investment Request Summaries - IRSs - RAS/VPN Re-Platform/Mobile

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

If the project is deferred mobile devices will have limited options for remote access and may need to fund required technology on a project basis. Potential increased development and operational costs to work with existing technologies or project cancellation resulting in lost benefits. This could impact the support for our customers.

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

IS Projects: 4269 - RAS/VPN Re-Platform/Mobile

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: 4269 - RAS/VPN Re-Platform/Mobile

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
 - ☒ 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

Begin Start-up	Begin Requirements & Deign	Begin Development & Implementation	Begin User Acceptance Testing	Go Live	Project Completion	Project Closure
June, 2017				March, 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	2.5	1.5	1

Resourcing Strategy:

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

This project has impact on all users of VPN services so there is a significant business change element - which could require use of business change team.

6/14/2017

FY18 - Investment Request Summaries - IRSs - RAS/VPN Re-Platform/Mobile

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	Bill Kearns	IS Business Relationship Manager	
IS Program Delivery Manager	Dave McCune	IS Program Delivery Manager	

