

The Narragansett Electric Company
d/b/a National Grid
RIPUC Docket No. 4770
Responses to Division's Twenty-Second Set of Data Requests
Issued February 8, 2018

Division 22-1

Request:

Please refer to Workpaper 6a-6c Service Company Rents, tabs IS Existing Projects RY1, RY2, and RY3, which of these projects were required to comply with existing Rhode Island regulation?

Response:

The projects shown in the table below were required to remain in compliance with federal or state regulations. Each investment supports multiple jurisdictions including Rhode Island; therefore, each company is allocated its share of the overall costs.

Line	Investment Name	INVP #	Work Order	Allocator
18	INVP3615 Success Enterprise Reporting	3615	90000134377	G186
36	INVP 2951 - Legal Hold Automation	2951	90000131880	G012
117	INVP 3915 - Annual HR & Payroll SP	USFP	90000178452	G012
138	INVP2892B Security Access Panels	2892B	90000142290	G432
162	INVP 3237 Street Light Outage Improvements	3237	90000120335	G198
196	IN 2172-IDS Reporting & Analysis	2172	90000106487	G198
201	INVP 4244 - US Control EBB Gas	4244	90000171826	G210

Prepared by or under the supervision of: John Gilbert, Daniel DeMauro, and Mukund Ravipaty

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Division 22-2

Request:

Please refer to Workpaper 6a-6c Service Company Rents, tabs IS New Projects RY1, RY2, and RY3, which of these projects are required to comply with existing Rhode Island regulation?

Response:

The projects shown in the table below were required to remain in compliance with Federal or State Regulations. National Grid has commenced the project, INVP 4421 – New Arrearage Forgiveness Plan, to comply with Rhode Island regulation. All other investments in the table below support multiple jurisdictions; therefore, costs are allocated to each Company, as appropriate. The Company's response to Division 3-39, a copy of which is provided as Attachment DIV 22-2 for ease of reference, includes the allocation percentages and rationale used for each mandated project.

Line	Investment Name	Description	INVP #	Work Order	Bill Pool
294	INVP 4400 Annual HR & Payroll Mandatory Service Pack Upgrade (HRSP) - FY18	Mandate	4400	90000182311	G020
298	INVP 4421 - New Arrearage Forgiveness Plan	Mandate	4421	90000185451	G316
301	INVP 4411AB Distributed Generation Portal	Mandate	4411A+B	90000179919	C198
302	INVP 4124 Auto Remote Net Meter	Mandate	4124	90000167406	C198
339	Regulatory Mandates - FY18	Other Mandates			G020
353	INVP 4411C New Electric Connections	Mandate	4411C	90000189703	C198
355	INVP 4479 US Control-Gas Electronic Bulletin Board (EBB) Upgrade	Mandates	4479		G210
365	INVP 4411D New Gas Connections	Mandate	4411D		C210
390	Regulatory Mandates - FY19	Other Mandates			G020
423	Regulatory Mandates - FY20	Other Mandates			G020
447	Regulatory Mandates - FY21	Other Mandates			G020

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Responses to Division's Third Set of Data Requests

Issued December 21, 2017

Division 3-39

Request:

Referring to Schedule ISP-1, and the project identified as "Regulatory Mandates" on page 2 of 23, the description states: "This investment is for the identified regulatory mandated projects that scheduled to be completed during the Rate year. The following have been identified as mandated projects of:

- INVP 4400 Annual HR & Payroll Mandatory Service Pack Upgrade (HRSP) - FY18
- INVP 4421 - New Arrearage Forgiveness Plan
- INVP 4411AB Distributed Generation Portal
- INVP 4411C New Electric Connections
- INVP 4411D New Gas Connections
- INVP 4124 Auto Remote Net Meter
- INVP 4479 US Control-Gas Electronic Bulletin Board (EBB) Upgrade"

For each of these "mandated projects," please explain how each relates to regulatory mandates or other requirements in each of the National Grid jurisdictions across New York and each of the New England states, in addition to Rhode Island. Please identify the method and reasoning for the allocation of the total cost of this project to Rhode Island.

Response:

Please see Attachment DIV 3-39 for the FERC-approved allocation method and benefiting companies for each investment. Projects descriptions and jurisdictional requirements for each project identified as a regulatory mandate are provided below.

INVP 4400 Annual HR & Payroll Mandatory Service Pack Upgrade (HRSP) – FY2018

This project implements mandatory annual changes requested by federal and state agencies, such as the Internal Revenue Service (IRS) and various state departments of finance, as well as different municipalities that must be applied to the SAP core solution to properly reflect employee wages, employee and company withholdings, and legal requirements and to comply with federal and state regulatory reporting. To address these mandatory annual changes, SAP releases an annual support pack to update the following:

- Tax changes;
- Payroll modifications;
- Legal and regulatory reporting changes;
- Considerations required to produce year-end employee wage statements (W2s);

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- 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.

INVP 4421 - New Arrearage Forgiveness Plan

On June 24, 2016, amendments to R.I. Gen. Laws § 39-2-1 were signed into law, which amended the Henry Shelton Act and put into effect a revised debt forgiveness program for Rhode Island electric and gas low income customers who are eligible for the Low Income Home Energy Assistance Program (LIHEAP). The amended law replaced the Arrearage Forgiveness Program (AFP) that was put in place when the Henry Shelton Act was originally passed in 2011. The new program, the Arrearage Management Program (AMP), commenced on September 1, 2016 and amended the eligibility guidelines for customers enrolling into the AMP. The new program also detailed the requirements for remaining in the AMP once enrolled.

To comply with Rhode Island state law, this project will implement an automation process for the eligible residential Rhode Island electric and gas low income customers.

INVP 4411AB – Distributed Generation Portal

Distributed generation (DG) customer integration into the National Grid electric network is a fast growing area of National Grid's business that is regulated and mandated across all National Grid electric service territories. Each state has its own interconnection tariff, which outlines the process, forms, cost, timelines, penalties, and tracking and reporting requirements for administering the end-to-end DG interconnection process. In New York, the New York Public Service Commission requires that all electric distribution companies create and manage an online portal for DG application submissions.¹ The Massachusetts Department of Public Utilities has implemented a penalty-based enforcement mechanism with penalties up to \$1.5 million per year, which requires verifiable tracking of application process time dependencies for DG applications.

This project will deliver on providing the self-service portal and system of record for DG in New York. The project will also provide a base workflow engine that can be further enhanced to provide functionality necessary for DG in New England, new electric connection in all National Grid electric service territories, and new gas connections in all National Grid gas service territories.

INVP 4411C New Electric Connections

¹ See New York State Standardized Interconnection Requirements and Application Process For New Distributed Generators 5 MW or Less Connected in Parallel with Utility Distribution Systems, Section I(D), Page 16 (August 2017).

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This project will build upon INVP 4411AB described above, which will deliver an online portal and workflow management for DG in New York and New England. This system will provide real-time information to trade allies and customers regarding the status of their new electric connections in Rhode Island, Massachusetts, and New York in much the same way so they can see the progress of DG. It will include additional back-end system integration to streamline manual processes.

INVP 4411D New Gas Connections

This project will build upon INVP 4411AB, which will deliver an online portal and workflow management for DG in New York and New England. This project will enhance the New Service workflow and integration to include:

- New Gas Connections for Rhode Island, Massachusetts, and New York to include Simple, Complex, Upgrades, and Disconnect/Reconnect; and
- Integration to the gas customer and work management systems for automation of current manual processes.

INVP 4124 Auto Remote Net Meter

National Grid will move to fully automate the remote net metering billing process. The billing function is currently performed manually by Accounts Processing. As the volume of remote net metering customers increases, this effort will eliminate the risk of human error in performing complex and repetitive calculations, assignments, tracking, rebilling activities, and reduce Sarbanes Oxley (SOX) compliance risks. Please see the following regulatory requirements:

Rhode Island

R.I. Gen. Laws Chapter 39-26.4.

Massachusetts

220 CMR 18.00: M.G.L. c. 164, §§ 138 through 140; St. 2014, c. 251, §§ 5 and 6.

New York

New York Public Service Commission: Case 02E – 1622, Case 11E – 0321, Case 14E – 0151, Case 14E – 0422, Case 15E – 0082.

INVP 4479 US Control-Gas Electronic Bulletin Board (EBB) Upgrade

The current legacy gas Electronic Bulletin Board (EBB) relies on outdated hardware and aged reporting software (MicroStrategy). The software messaging function has bandwidth issues during heavy trading periods, which exposes National Grid to operational and potential financial risks. The legacy EBB software that was designed internally more than 15 years ago is limited in function and neither supports the continually evolving gas trading environments nor changing

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regulatory demands. Therefore, this project is needed to support National Grid's gas transmission and distribution systems in New England and New York.

Listed Mandated Projects per Division 3-39

INVID	Project Name	Allocator	In Service Date	Project total
4124	INVP4124-Automate Remote Net Metering	C-198	11/30/2017	2,041,744
4400	INVP 4400 HR & Payroll Mand Svc Pck	G-020	8/14/2017	1,265,000
4411AB	INVP 4411AB Distributed Generation Portal	C-198	11/30/2017	4,128,486
4411C	INVP 4411C New Electric Connections	C-198	4/30/2018	343,000
4411D	INVP 4411D New Gas Connections	C-210	10/31/2018	860,000
4421	INVP4421 - New Arrearage Forgiveness Plan	G-316	2/1/2018	447,000
4479	INVP 4479 US Control-Gas Electronic Bulletin Board (EBB) Upgrade	G-210	5/1/2018	3,000,000
				12,085,230

Allocators utilized for Mandated Projects

G-020 (Allocation to all KS and NG Companies based on 3-Point Allocator)

SAP Alloc. Code	Company Description	SAP Co. Code	Co. Code w/Segment	3 Pt. Allocation %	Net Margin	Net Plant	Net O&M
G-020	National Grid USA Parent	5020	5020R	0.09%	\$ -	\$ -	\$ 10,678,534
G-020	KeySpan Energy Corp.	5040	5040R	0.01%	\$ -	\$ -	\$ 669,841
G-020	Niagara Mohawk Power Corp. - Electric Distr.	5210	5210E	15.72%	\$ 1,198,921,609	\$ 4,264,491,304	\$ 619,066,340
G-020	Niagara Mohawk Power Corp. - Gas	5210	5210G	4.75%	\$ 346,680,591	\$ 1,491,438,437	\$ 165,095,195
G-020	Niagara Mohawk Power Corp. - Transmission	5210	5210T	5.59%	\$ 385,690,791	\$ 2,415,788,723	\$ 106,731,443
G-020	KeySpan Energy Delivery New York	5220	5220G	12.38%	\$ 993,070,386	\$ 3,676,541,909	\$ 416,418,656
G-020	KeySpan Energy Delivery Long Island	5230	5230G	8.51%	\$ 668,892,495	\$ 2,981,821,126	\$ 225,375,331
G-020	Massachusetts Electric Company	5310	5310E	20.02%	\$ 1,598,840,493	\$ 2,680,685,854	\$ 1,159,865,088
G-020	Massachusetts Electric Company - Transmission	5310	5310T	0.17%	\$ 17,339,390	\$ 52,007,344	\$ 4,203,096
G-020	Nantucket Electric Company	5320	5320E	0.27%	\$ 22,878,224	\$ 68,758,022	\$ 10,060,149
G-020	Boston Gas Company	5330	5330G	9.03%	\$ 716,665,901	\$ 2,406,613,994	\$ 347,617,727
G-020	Colonial Gas Company	5340	5340G	2.04%	\$ 161,327,519	\$ 581,444,275	\$ 73,390,098
G-020	Narragansett Electric Company	5360	5360E	6.60%	\$ 574,052,546	\$ 926,658,890	\$ 353,600,201
G-020	Narragansett Gas Company	5360	5360G	2.85%	\$ 231,782,063	\$ 761,289,647	\$ 106,868,890
G-020	Narragansett Electric Company - Transmission	5360	5360T	1.77%	\$ 133,930,510	\$ 862,645,421	\$ 13,013,773
G-020	New England Power Company - Transmission	5410	5410T	5.00%	\$ 378,086,156	\$ 2,221,166,435	\$ 69,879,050
G-020	NE Hydro - Trans Electric Co.	5411	5411F	0.17%	\$ 16,753,717	\$ 31,800,443	\$ 7,178,838
G-020	New England Hydro - Trans Corp.	5412	5412F	0.11%	\$ 11,910,006	\$ 4,272,818	\$ 6,000,534
G-020	New England Electric Trans Corp	5413	5413F	0.01%	\$ 1,374,412	\$ 0	\$ 204,770
G-020	NG LNG LP Regulated Entity	5420	5420G	0.17%	\$ 8,230,443	\$ 82,150,480	\$ 3,828,666
G-020	KeySpan Generation LLC (PSA)	5430	5430P	4.04%	\$ 464,650,405	\$ 594,113,557	\$ 156,428,992
G-020	KeySpan Glenwood Energy Center	5431	5431P	0.13%	\$ 11,845,255	\$ 38,062,111	\$ 4,152,842
G-020	KeySpan Port Jefferson Energy Center	5432	5432P	0.15%	\$ 13,342,875	\$ 45,737,978	\$ 4,298,071
G-020	Keyspan Energy Trading Services	5820	5820R	0.00%	\$ -	\$ 308,494	\$ 158,770
G-020	Transgas Inc	5825	5825N	0.08%	\$ 3,982,586	\$ 7,837,743	\$ 6,208,446
G-020	KeySpan Energy Development Corporation	5840	5840N	0.18%	\$ -	\$ 74,017,254	\$ 10,567,625
G-020	KeySpan Services Inc.	5850	5850N	0.16%	\$ 14,478,322	\$ 6,613,711	\$ 11,009,061
Total				100.00%	\$ 7,974,726,692	\$ 26,276,265,968	\$ 3,892,570,026

G-210 (All Gas Retail companies based on 3-Point Allocator)

SAP Alloc. Code	Company Description	SAP Co. Code	SAP Co./Seg	3 Pt. Allocation %	Net Margin	Net Plant	Net O&M
G-210	Niagara Mohawk Power Corp. - Gas	5210	5210G	12.01%	\$ 346,680,591	\$ 1,491,438,437	\$ 165,095,195
G-210	KeySpan Energy Delivery New York	5220	5220G	31.31%	\$ 993,070,386	\$ 3,676,541,909	\$ 416,418,656
G-210	KeySpan Energy Delivery Long Island	5230	5230G	21.13%	\$ 668,892,495	\$ 2,981,821,126	\$ 225,375,331
G-210	Boston Gas Company	5330	5330G	23.08%	\$ 716,665,901	\$ 2,406,613,994	\$ 347,617,727
G-210	Colonial Gas Company	5340	5340G	5.19%	\$ 161,327,519	\$ 581,444,275	\$ 73,390,098
G-210	Narragansett Gas Company	5360	5360G	7.28%	\$ 231,782,063	\$ 761,289,647	\$ 106,868,890
Total				100.00%	\$ 3,118,418,954	\$ 11,899,149,387	\$ 1,334,765,896

G-316 (Narragansett Electric and Narragansett Gas based on 3-Point Allocator)

SAP Alloc. Code	Company Description	SAP Co. Code	Co. Code w/Segment	3 Pt. Allocation %	Net Margin	Net Plant	Net O&M
G-316	Narragansett Electric Company	5360	5360E	67.64%	\$ 574,052,546	\$ 926,658,890	\$ 353,600,201
G-316	Narragansett Gas Company	5360	5360G	32.36%	\$ 231,782,063	\$ 761,289,647	\$ 106,868,890
Total				100.00%	\$ 805,834,609	\$ 1,687,948,537	\$ 460,469,091

C-198 (Allocation to all Electric Distribution companies based on number of customers)

SAP Alloc. Code	Company Description	SAP Co. Code	Co. Code w/Segment	%	Number of Customers
C-198	Niagara Mohawk Power Corp. - Electric Distr.	5210	5210E	47.68%	1,718,053
C-198	Massachusetts Electric Company	5310	5310E	37.72%	1,358,869
C-198	Nantucket Electric Company	5320	5320E	0.38%	13,704
C-198	Narragansett Electric Company	5360	5360E	14.22%	512,318
Totals				100.00%	3,602,944

C-210 (Allocation to all Gas Retail companies based on number of customers)

SAP Alloc. Code	Company Description	SAP Co. Code	Co. Code w/Segment	%	Number of Customers
C-210	Niagara Mohawk Power Corp. - Gas	5210	5210G	16.93%	639,493
C-210	KeySpan Energy Delivery New York	5220	5220G	34.83%	1,315,562
C-210	KeySpan Energy Delivery Long Island	5230	5230G	16.13%	609,071
C-210	Boston Gas Company	5330	5330G	19.15%	723,122
C-210	Colonial Gas Company	5340	5340G	5.59%	211,077
C-210	Narragansett Gas Company	5360	5360G	7.37%	278,403
Totals				100%	3,776,728

Division 22-3

Request:

Please refer to Workpaper 6a-6c Service Company Rents, and respond to the following regarding projects that are not fully amortized and allocate costs to Rhode Island:

- a. For all projects in tabs IS Existing Projects RY1, RY2, and RY3, provide an itemized project cost breakdown, like the one shown in Section 4.2.1 of the Company's "Sanction" form, that compares the original budget line item costs to the actual line item costs (i.e. the "HTY Total Spend" of the project).
- b. For all projects in tabs IS New Projects RY1, RY2, and RY3, provide an itemized project cost breakdown, like the one shown in Section 4.2.1 of the Company's "Sanction" form, that shows the original budget line item costs (i.e. the "Total Spend" of the project).
- c. Provide the documentation report (i.e. a closing report) coincident with the "In Service Date", as shown in Excel column K, of each project in all six tabs.
- d. Does the "In Service Date" mean that the project is closed to plant and is used and useful?

Response:

- a. Please see Attachment DIV 22-3-1 for actual line item details and a cross-reference to the budget details for the projects on the IS Existing Projects tabs. The budget line item documentation is included in Attachment DIV 22-3-2 and Attachment DIV 22-3-3. Please note that the Company excluded the pre-SAP projects (pre-2013) from the list as the data was produced using a number of legacy systems and Information Services (IS) processes that stored the data in varying formats; therefore, the data did not lend itself to providing a meaningful comparison of budget to actuals by line item.
- b. Please see Attachment DIV 22-3-4 and Attachment DIV 22-3-5 for the cross-reference and budget line item details for projects on the IS New Projects tabs. Many of the project cost breakdowns were previously provided within the sanction papers and other similar documentation in the Company's response to Division 9-5. The Company has re-included a cross reference to the documentation in the columns labeled "DIV 9-5 Reference" and "DIV 9-5 Page number" within Attachment DIV 22-3-4.

In addition, please note that there is no project budget detail for projects that have not started. These projects are identified as "IRS" in the column labeled "DIV 22-3 Reference". The project budget line item detail will be created once the project is brought forward for sanction. Additional information on the Investment Request

Summary (IRS) document is included in the response to part a. of the Company's response to Division 22-4. Also, there is no budget detail for many of the projects within the Cyber 2 Program. The overall program was recently sanctioned, and, as individual projects are brought forward for approval, the project cost breakdowns will be created for each project.

- c./d. The process for closing IS projects is e-mail-based; therefore, there is no formal closing document or report that is coincident with the in-service date. The IS Project Delivery team will notify IS Finance of the date that the project is complete and is used and useful. In turn, IS Finance will email the in-service date to the Plant Accounting team, and that team will move the project into service within the Plant Accounting System. Once the monthly close process runs within the system, the project amortization will begin as of the posted in-service date. From that point, IS Finance will continue to monitor the project for late and lagging charges and, once all invoices are paid, notify Plant Accounting to close the capital work order effectively moving the project to final close. The IS Project Delivery team also records the in-service date within the project closure paper, which is part of the overall IS Sanction process. The Company interpreted this question to be focused on the Plant Accounting closing process rather the IS closure papers that are produced several months after the project is in-service; therefore, an explanation of the process was provided. However, the IS closure papers are available if required.

National Grid, USA

Rhode Island NECO Rate Case DIV Set 22

Investment Projects Total Expense Starting from Apr 2013 through Dec 2017

14 February 2018

CY	Order	Order_Description	Actuals							TOTAL	Budget	
			Labor	Hardware	Software	Material	Consultants	Contractors	Other		Page Reference	Notes
2013	90000133045	INVP 2970 Security Info & Event Mgm	24,122.00		115,599.60	3,300.32	133,446.55	1,469,062.80	7,069.30	1,752,600.57	Attachment DIV 22-3-2 pg. 1	
2013	90000122634	INVP 3393 Enhancement of Reservoir W					1,529.51	99,606.00	-	101,135.51	Attachment DIV 22-3-2 pg. 2-3	
2013	90000131880	INVP 2951 - Legal Hold Automation	109,595.44		(55,000.00)		184,856.64	407,821.11	-	647,273.19	Attachment DIV 22-3-2 pg. 4	
2013	90000131946	INVP 3600 - US Web Initiatives	193,185.59				1,077,963.52	101,394.93	7,871.44	1,380,415.48	Attachment DIV 22-3-2 pg. 5	
2013	90000134297	INVP2997B EVM Phase 2	15,425.79				122,822.06			138,247.85	Attachment DIV 22-3-2 pg. 6	
2013	90000134377	INVP3615 Success Enterprise Reporti	96,108.12				527,146.11		-	623,254.23	Attachment DIV 22-3-2 pg. 7	
2013	90000134425	INVP2495H US CNI Frame Relay Replac	1,403,536.62	52,986.43		1,925,371.64	513,693.30	1,868,468.93	771,658.37	6,535,715.29	Attachment DIV 22-3-2 pg. 8	
2013	90000134426	INVP3629 Cascade System for Gas	184,395.31		78,327.96	7,554.87	547,237.40	1,521,375.81	14,316.14	2,353,207.49	Attachment DIV 22-3-2 pg. 9	
2013	90000134385	INVP1485 Computapole Migration W7	15,361.92				77,502.48	752,533.77		845,398.17	Attachment DIV 22-3-2 pg. 10	
2013	90000134389	INVP3492 CI Services Foundation	85,842.46	135.01	514,358.61		1,123,054.51	693,012.34	125,429.14	2,541,832.07	Attachment DIV 22-3-2 pg. 11-12	
2013	90000133798	INVP3294B PowerPlan Phase 2	10,271.07				234,103.23	-	-	244,374.30	Attachment DIV 22-3-2 pg. 13	
2013	90000134705	INVP 3564 Cust Choice ESCO Gas	1,931,822.60	1,336.47	731,492.97		10,192,046.52	383,778.40	1,131,998.12	14,372,475.08	Attachment DIV 22-3-2 pg. 14	This project does not allocate to RI
2014	90000137871	INVP 3378 Rubber Goods Testing	37,851.78		86,259.51		166,892.29	104,799.66	571.43	396,374.67	Attachment DIV 22-3-2 pg. 15	
2014	90000124369	IN 1182 GAS TRANSPORT SYS							1,780,763.17	1,780,763.17	Attachment DIV 22-3-2 pg. 16	This project does not allocate to RI
2014	90000140573	INVP 3375B Challenge the Limits XML	7,828.98				173,378.93	409,652.90	25,415.10	616,275.91	Attachment DIV 22-3-2 pg. 17	
2014	90000140579	INVP 3375D Challenge Limits Letters	36,357.34				127,967.34	221,984.00	23,550.72	409,859.40	Attachment DIV 22-3-2 pg. 18	
2014	90000141799	INVP3839 NY Retail Access	153,970.69				2,104,432.66	3,383.45	68,585.61	2,330,372.41	Attachment DIV 22-3-2 pg. 19	This project does not allocate to RI
2014	90000142197	INVP3600B US Web Initiatives 2	919,991.44	261.94	15,467.91		1,337,557.49	1,610,565.83	269,916.69	4,153,761.30	Attachment DIV 22-3-2 pg. 20	
2014	90000142385	USFP R3 Payroll	244.27				7,264,966.00	130,835.05	(229.70)	7,395,815.62	Attachment DIV 22-3-2 pg. 21	
2014	90000142410	USFP R3 Supply Chain	(673,685.30)				9,800,000.00	308,043.35	1.21	9,434,359.26	Attachment DIV 22-3-3 pg. 1	
2014	90000142411	USFP R3 Finance	4,192.53				8,781,536.00		(3,224.68)	8,782,503.85	Attachment DIV 22-3-3 pg. 1	
2014	90000142290	INVP2892B Security Access Panels	705.89				640,140.63	45,146.00	435.06	686,427.58	Attachment DIV 22-3-2 pg. 21	
2014	90000142344	USFP Release 3 - IT Delivery			330,257.33		3,260,162.43	5,985,415.11	-	9,575,834.87	Attachment DIV 22-3-3 pg. 1	
2014	90000141707	INVP3614A1 IAM Ph2:Identity Adminis	30,091.80		652,281.16		1,787,328.37	27,695.82	238,886.73	2,736,283.88	Attachment DIV 22-3-2 pg. 22-23	
2014	90000144051	INVP2960C GridForce SaaS Phase 2	346,777.42		46,934.27		1,233,824.59	1,619,446.79	7,234.22	3,254,217.29	Attachment DIV 22-3-2 pg. 24	
2014	90000145855	INVP3853 NMPC C-Cure Conv to AMAG	13,558.25					802,127.20	6,992.49	822,677.94	Attachment DIV 22-3-2 pg. 25	
2014	90000148059	EHR1 - Supply Chain	35,075.10				18,470,000.00	-	152,078.69	18,657,153.79	Attachment DIV 22-3-3 pg. 1	
2014	90000148060	EHR1 - Finance	18,838.96				9,823,029.13	-	182,652.56	10,024,520.65	Attachment DIV 22-3-3 pg. 1	
2014	90000148061	EHR1 - IT Delivery			528,940.79		1,817,053.00	-	222,890.21	2,568,884.00	Attachment DIV 22-3-3 pg. 1	
2014	90000148062	EHR1 - Payroll	22,653.39				6,120,000.00	-	97,889.38	6,240,542.77	Attachment DIV 22-3-3 pg. 1	
2014	90000150615	INVP 2927 US Desktop Refresh	42,389.91				446,197.49	5,966,778.01	909,735.30	7,365,100.71	Attachment DIV 22-3-2 pg. 26	
2015	90000141742	INVP3614A2 IAM Ph3 Web Admin	232,421.60		7,713.52		1,354,846.31		50,039.98	1,645,021.41	Attachment DIV 22-3-2 pg. 27	
2015	90000153451	INVP 3883 Mobile Device for PTO, Me	123,363.94		89,969.64		182,739.95	1,308,755.58	38,983.20	1,743,812.31	Attachment DIV 22-3-2 pg. 28	
2015	90000153520	INVP 3896 SMI Conversion Mobilizati	3,805.05	-			1,832,902.87	1,206,039.07	177,386.15	3,220,133.14	Attachment DIV 22-3-2 pg. 29	
2015	90000156429	INVP4024 Soft Off Program	58,740.26				1,165,137.09	10,584.00	51,002.50	1,285,463.85	Attachment DIV 22-3-2 pg. 30	This project does not allocate to RI
2015	90000160455	INVP 4074 - MA Gas 4 Hour Appt	19,105.77				270,482.53	740.38	1,237.50	291,566.18	Attachment DIV 22-3-2 pg. 31	This project does not allocate to RI
2015	90000141754	INVP 3614E3 SIEM 2	4,809.05				441,780.86	1,412,641.91	149,724.17	2,008,955.99	Attachment DIV 22-3-2 pg. 32	
2015	90000148055	EHR1 - PMO					8,290,000.00	-	56,171.80	8,346,171.80	Attachment DIV 22-3-3 pg. 1	
2015	90000148063	EHR1 - BPS					14,880,000.00	-	76,768.17	14,956,768.17	Attachment DIV 22-3-3 pg. 1	
2015	90000158866	INVP 3538 - VSTIG Bandwidth Increas		991,193.77			239,569.50	1,533.34	508,224.60	1,740,521.21	Attachment DIV 22-3-2 pg. 33	
2015	90000163306	INVP 4133 - LI Stabilization	59,700.39				607,150.07		10,241.47	677,091.93	Attachment DIV 22-3-2 pg. 34	This project does not allocate to RI

CY	Order	Order_Description	Actuals							TOTAL	Budget	
			Labor	Hardware	Software	Material	Consultants	Contractors	Other		Page Reference	Notes
2015	90000161831	INVP 3882 - NYS Pipeline Safety CMS	365,779.70		91,389.35		1,169,023.48		42,254.70	1,668,447.23	Attachment DIV 22-3-2 pg. 35	This project does not allocate to RI
2015	90000164925	INVP 4172 - Cross Company Customer	470,073.06		148,172.80		12,330,368.24	260,123.11	685,033.24	13,893,770.45	Attachment DIV 22-3-2 pg. 36	
2015	90000162166	INVP 4102 - Capture Fusion Data	7,249.17	233,367.22			63,857.93		(949.45)	303,524.87	Attachment DIV 22-3-2 pg. 37	This project does not allocate to RI
2016	90000170290	INVP 4263 - US Web Authentication					202,731.68		5,830.70	208,562.38	Attachment DIV 22-3-2 pg. 38	
2016	90000170292	INVP 4266 - End User Device Refresh					13,291.59	244,312.53	496.65	258,100.77	Attachment DIV 22-3-2 pg. 39	
2016	90000170691	INVP 3614C1 - US End User Initiated	19,248.73		52,143.75		46,011.56		3,321.83	120,725.87	Attachment DIV 22-3-2 pg. 40	
2016	90000170693	INVP 3614G1 - US Reference Security	36,737.41				98,222.66		1,410.58	136,370.65	Attachment DIV 22-3-2 pg. 41	
2016	90000171355	INVP 3914 - Bill Print Facility	30,661.72		23,326.85		250,717.15		13,032.37	317,738.09	Attachment DIV 22-3-2 pg. 42	
2016	90000171825	INVP 4323 - Mainframe Upgrade	9,807.22	1,755,147.23	506,741.04		176,328.04		47,384.46	2,495,407.99	Attachment DIV 22-3-2 pg. 43	
2016	90000171826	INVP 4244 - US Control EBB Gas	97,241.29		6,117.12		513,736.52		596.14	617,691.07	Attachment DIV 22-3-2 pg. 44	
2016	90000172054	Finance Remediation FY16 Capital					1,835,120.96	-	23,280.39	1,858,401.35	Attachment DIV 22-3-3 pg. 1	
2016	90000172325	INVP 3955 - EJ Ward Upgrade	74,066.40		166,437.14		254,304.00	59,384.11	65,428.48	619,620.13	Attachment DIV 22-3-2 pg. 45	This project does not allocate to RI
2016	90000172528	INVP 2577C - ArcFM Software Upgrade	262,680.69		111,687.23		1,542,728.79	28,923.97	57,483.12	2,003,503.80	Attachment DIV 22-3-2 pg. 46	This project does not allocate to RI
2016	90000176039	INVP 3922 - Access Violation Mgmt	13,352.82				3,260,417.71	19,545.09	63,519.78	3,356,835.40	Attachment DIV 22-3-2 pg. 47	
2016	90000176040	INVP 4219 - PowerPlan Upgrade	14,091.35		1,258,007.16		788,176.74	19,545.14	40,722.01	2,120,542.40	Attachment DIV 22-3-2 pg. 48	
2016	90000176041	INVP 4223 - US SAP BOE Update	139,102.74				793,503.90	19,545.14	18,242.33	970,394.11	Attachment DIV 22-3-2 pg. 49	
2016	90000176043	INVP 4224 - HANA	136,414.19				941,483.15	19,576.64	15,448.30	1,112,922.28	Attachment DIV 22-3-2 pg. 50	
2016	90000176046	INVP 4225 - Ancillary SAP Apps	76,240.51		6,068.32		1,140,619.37	19,545.14	8,130.41	1,250,603.75	Attachment DIV 22-3-2 pg. 51	
2016	90000176583	INVP 4045 - Double Pole Mgmt DB	116,667.29		23,000.00	70.36	277,230.06	5,907.00	9,580.13	432,454.84	Attachment DIV 22-3-2 pg. 52	
2016	90000178452	INVP 3915 - Annual HR & Payroll SP	128,806.29				938,582.52	19,551.47	12,262.10	1,099,202.38	Attachment DIV 22-3-2 pg. 53	
2016	90000178859	INVP 4218 - Blanket Work Order	11,217.88		965,066.54		2,855,122.97	6,556.64	51,647.06	3,889,611.09	Attachment DIV 22-3-2 pg. 54	
2016	90000180029	INVP 4137 MA Retail Access Mandate	44,005.60		7,560.00		696,125.68		14,734.77	762,426.05	Attachment DIV 22-3-2 pg. 55	This project does not allocate to RI
2016	90000180521	INVP 4373 - Contingent Labor Admin	37,035.97				217,797.17	3,150.00	1,683.98	259,667.12	Attachment DIV 22-3-2 pg. 56	
2016	90000180815	INVP 4420 - CNI FocalPoint Upgrade		228,373.64	364,176.87	24,378.63	3,227.51	63,557.02	21,807.21	705,520.88	Attachment DIV 22-3-2 pg. 57	
2017	90000181659	INVP 4170 - Time Entry and Approval	26,662.21				2,587,444.34	70,983.47	55,052.43	2,740,142.45	Attachment DIV 22-3-2 pg. 58	
2017	90000182164	INVP 4575 - Software Defined Net		1,325.00			60,263.05	188,762.29	11,937.97	262,288.31	Attachment DIV 22-3-2 pg. 59-62	
2017	90000182175	INVP 4683 - RSA Token Purchase					-	516,153.66	20,564.78	536,718.44	Attachment DIV 22-3-2 pg. 63-66	
2017	90000182184	INVP 4677 - App Monitoring	2,346.02		163,772.14		20,462.31	10,104.12	9,012.84	205,697.43	Section 4.2.1 not available	
2017	90000182191	INVP 4649 - HANA Licenses			-	3,814,455.72			11,612.56	3,826,068.28	Attachment DIV 22-3-2 pg. 67	
2017	90000182645	INVP 4214 FERC Cust Sys Rep					261,300.94		1,320.91	262,621.85	Attachment DIV 22-3-2 pg. 68	
2017	90000183124	INVP 4684 - CPE Buyback					-	5,135,450.07	-	5,135,450.07	Attachment DIV 22-3-2 pg. 69	
2017	90000183143	INVP 4642 - MS ELA Renewal			3,197,740.56		-		9,735.06	3,207,475.62	Attachment DIV 22-3-2 pg. 70	
TOTAL SPEND			7,687,943.69	3,264,126.71	10,234,010.14	5,775,131.54	150,692,677.38	35,183,898.15	8,483,884.08	221,321,671.69		



US Sanction Paper

4 Appendices

4.1 *Project Cost Breakdown*

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing resources
Personnel	NG Resources	0.550	
	SDC Time & Materials	0.854	
	SDC Fixed-Price	-	
	All other personnel	0.011	
	TOTAL Personnel Costs	1.415	
Hardware	Purchase	0.482	
	Lease	-	
Software		-	
Risk Margin		0.156	
Other		0.112	
TOTAL Costs		2.164	

4.2 *Other Appendices*

4.2.1 **Bill Pool**

The US costs of this project will be allocated between all US companies (Keyspan and Legacy Grid), in accordance with the **Bill Pool 00382**.

Billing pool 00382 is reflecting the company structure as of February 2012 and is adjusted regularly.

4.2.2 *IS Ongoing Operational Costs (RTB):*

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



US Sanction Paper

Title	Enhancement of Reservoir Woods' Lobby Security	Sanction Paper #	INVP 3393
Project #	INVP 3393	Sanction Type	Sanction (Full)
Operating Co.	National Grid USA Svc. Co.	Date of Request	July 23, 2012
Paper Author	Ethan Zinn / Joe Kruczynicki	Sponsor	Warren Bamford, VP Global Security
Utility Service	Physical Security		

1 **Executive Summary**

1.1 **Sanctioning Summary:**

This paper requests sanction of Project INVP 3393 in the amount of \$142k, with a tolerance of +/- 10%, for the purposes of Full Project.

The sanction amount of \$142k is broken down into:

\$ 137k CapEx
\$ 5k OpEx

1.2 **Brief Description:**

Synopsis: The project addresses a security vulnerability at the main entrance of National Grid's US headquarters in Waltham, Massachusetts. The risk has been identified as a priority issue by the Global Security division and members of executive management. The solution is straightforward.

The Problem: The original design of the turnstiles at the building's main entrance allows free access to the second floor where 'piggybacking' at card access checkpoints occurs more easily. ('Piggybacking' is the practice of entering a secured area by following another individual through a checkpoint and utilizing that individual's security clearance to gain access). Piggybacking allows unauthorized persons to access restricted areas and thus presents a major security risk.

The Proposed Solution: The project will reconfigure the turnstiles in a manner that eliminates easy access to the second floor. The new design will ensure that anyone who wishes to enter through the main lobby will have to either: a) have active security card access; or, b) request an employee escort and enter the building only after an escort arrives, a process that will occur under full view of the lobby security guard.

Preparation and Execution: Facilities Management has completed all of the design scope and cost estimates for this project. Facilities Management will also have responsibility for Project Management and execution of this work.

The Business Rationale: The project will enhance National Grid's ability to protect company personnel and assets at its U.S. headquarters. By doing so, it will create a



US Sanction Paper

4.11 Financial Impact to National Grid

4.11.1 Cost Summary Table

Current Planning Horizon (All figures in \$M)												
Project #	Project Description	Project Estimate Level		Prior YR Spending	YR 1 12/13	YR 2 13/14	YR 3 14/15	YR 4 15/16	YR 5 16/17	YR 6 17/18	YR 7 18/19	Total
TBD	Full Project	+/- 10%										
			Capex		0.137							0.137
			Opex		0.005							0.005
			Removal									0.000
			Total	0.000	0.142	0.000	0.000	0.000	0.000	0.000	0.000	0.142
Total Proposed Sanction												
			Capex		0.137							0.137
			Opex		0.005							0.005
			Removal									0.000
			Total	0.000	0.142	0.000	0.000	0.000	0.000	0.000	0.000	0.142
				0.000	0.142	0.000	0.000	0.000	0.000	0.000	0.000	0.142
Total Project Cost (Current Year and Future Years) =								\$0.142 M				

4.11.2 Project Budget Summary Table

Project Budget Summary Table (All figures in \$M)										
Project Costs per Business Plan		Prior Year Spending*	YR 1 12/13	YR 2 13/14	YR 3 14/15	YR 4 15/16	YR 5 16/17	YR 6 17/18	YR 7 18/19	Total
	Capex		0.142							0.142
	Opex		0.000							0.000
	Removal									0.000
	Total Cost in Business Plan	0.000	0.142	0.000	0.000	0.000	0.000	0.000	0.000	\$0.142
Variance		Prior Year Spending	YR 1 12/13	YR 2 13/14	YR 3 14/15	YR 4 15/16	YR 5 16/17	YR 6 17/18	YR 7 18/19	Total
	Capex		0.005							0.005
	Opex		(0.005)							(0.005)
	Removal									0.000
	Total Variance	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
*Prior Year's Actual Spend										

4.11.3 Cost Assumptions

The cost estimates were developed by Facilities Management team using the standard cost estimation methodology. Cost estimates were informed by the



US Sanction Paper

3.12.1 Supporters

Role	Name	Responsibilities
IS Finance	Chip Benson	Endorses that the project aligns with jurisdictional objectives
IS Business Relationship Mgmt.	Mark Townsend	Endorses that the project aligns with jurisdictional objectives
US Business Supporter	Colin Owyang	Endorses that the project aligns with jurisdictional objectives

3.12.2 Reviewers

Please see the IS Stakeholder Checklist summary contained in the TCO Log file.

4 Appendices

4.1 Project Cost Breakdown

Unit is thousands (\$,000)

Project Cost Breakdown		
Cost Category	Company Name (\$ Amount)	Description of Cost Category
Labor	\$156K	Project Related
Hardware	\$55K	Wintel server/OS/database for 3 environments
Software	\$500K	License fees to purchase SW
Service Contracts	\$178K	Consulting fees for SW install/config and Verizon
Risk Margin	\$100K	CAPEX Risk Margin
Total:	\$989K	



US Sanction Paper

4 Appendices

4.1 *Other Appendices*

4.1.1 *Project Cost Breakdown*

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing resources
Personnel	NG Resources	0.302	
	SDC Time & Materials	0.725	
	SDC Fixed-Price	-	
	All other personnel	(0.000)	
	TOTAL Personnel Costs	1.026	
Hardware	Purchase	-	
	Lease	-	
Software		0.399	
Risk Margin		0.091	
Other		0.126	
TOTAL Costs		1.642	

4.1.2 *Benefiting Operating Companies*

This investment will benefit all of the US Gas and Electric Distribution companies. It will not include any LIPA or Liberty Utilities (NH) changes. The distribution of cost will be based on the number of customers.

Benefiting Operating Companies Table:

Operating Company Name	Business Area	State
Nantucket Electric Company	Electric Distribution	MA
Massachusetts Electric	Electric Distribution	MA
Narragansett Electric Company	Electric Distribution	RI
Niagara Mohawk Power Corp	Electric Distribution	NY
Boston Gas Company	Gas Distribution	MA
Colonial Gas Company	Gas Distribution	MA
Narragansett Gas Company	Gas Distribution	RI
Niagara Mohawk Power Corp	Gas Distribution	NY
Brooklyn Union Gas Co – KEDNY	Gas Distribution	NY
KeySpan Gas East Corp – KEDLI	Gas Distribution	NY



US Sanction Paper

3.12.2 Reviewers

Please see the IS Stakeholder Checklist summary contained in the TCO Log file.

4 Appendices

4.1 Project Funding Breakdown (Partial Sanction only)

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.033	National Grid
	SDC Time & Materials	0.034	IBM
	SDC Fixed-Price	0.109	IBM, Wipro, Zensar
	All other personnel	-	
	TOTAL Personnel Costs	0.176	
Hardware	Purchase	-	
	Lease	-	
Software		-	
Risk Margin		0.011	
Other		0.010	Shared costs
TOTAL Costs		0.197	

4.2 Other Appendices

4.2.1 Benefiting Operating Companies

The following companies will benefit from this project cost allocation:

Operating Company Name	Business Area	State
Nantucket Electric Company	Electric Distribution	MA
Massachusetts Electric	Electric Distribution	MA
Massachusetts Electric	Electric Transmission	MA
New England Power Company	Electric Transmission	MA
Niagara Mohawk Power Corp	Electric Transmission	NY
Niagara Mohawk Power Corp	Electric Distribution	NY
Narragansett Electric Company	Electric Distribution	RI
Narragansett Electric Company	Electric Transmission	RI

4.2.2 IS Ongoing Operational Costs (RTB):

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



US Sanction Paper

Relationship Mgmt		aligns with jurisdictional objectives
US Business Supporter	Darrin Hunt	Endorses the project aligns with jurisdictional objectives

3.12.2 Reviewers

Please see the IS Stakeholder Checklist summary contained in the TCO Log file.

4 Appendices

4.1 Project Funding Breakdown (Partial Sanction only)

4.2 Other Appendices

4.2.1 Project Cost Breakdown

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.061	
	SDC Time & Materials	0.092	Wipro, IBM
	SDC Fixed-Price	0.353	
	All other personnel	0.013	
	TOTAL Personnel Costs	0.519	
Hardware	Purchase	-	
	Lease	-	
Software		0.022	
Risk Margin		0.015	
Other		0.022	
TOTAL Costs		0.579	

4.2.2 Benefiting Operating Companies

This investment will benefit Upstate NY and NE region companies, because Success Enterprise tool is used by National Grid Estimating Center of Excellence (ECoE) to



US Sanction Paper

4.2 Other Appendices

4.2.1 Project Cost Breakdown

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	4.472	
	SDC Time & Materials	0.619	IBM
	SDC Fixed-Price	-	
	All other personnel	0.139	
	TOTAL Personnel Costs	5.230	
Hardware	Purchase	2.316	
	Lease	-	
Software		-	
Risk Margin		0.690	
Other		2.157	
TOTAL Costs		10.393	

4.2.2 Benefiting Operating Companies

This investment will benefit all Gas Distribution companies in Massachusetts, New York and RI by providing capabilities to continue successfully monitoring and control the Gas Distribution systems in these areas.

Benefiting Operating Companies Table:

Operating Company Name	Business Area	State
Boston Gas Company	Gas Distribution	MA
Niagara Mohawk Power	Gas Distribution	NY
Keyspan Energy Delivery LI	Gas Distribution	NY
Keyspan Energy Delivery NY	Gas Distribution	NY
Colonial Lowell Division	Gas Distribution	MA
Narragansett Gas	Gas Distribution	RI
Essex County Gas Company	Gas Distribution	MA



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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 resources
Personnel	NG Resources	0.803	NG (IS), NG Business
	SDC Time & Materials	0.896	IBM
	SDC Fixed-Price	0.010	Zensar
	All other personnel	0.468	KEMA, IBM, CSC, Other Vendors
	TOTAL Personnel Costs	2.177	
Hardware	Purchase	0.500	CSC (Field Devices)
	Lease	0.252	CSC (Servers)
Software		0.962	KEMA, Oracle
Risk Margin		0.285	
Other		0.621	AFDUC/Other Shared Costs
TOTAL Costs		4.797	

4.1.2 Benefiting Operating Companies

The following companies will benefit from this project cost allocation:

Benefiting Operating Companies Table:

The following companies will benefit from this project cost allocation:

Operating Company Name	Business Area	State
Niagara Mohawk Power Corporation - Gas	Gas Distribution	NY
Keyspan Energy Delivery, New York	Gas Distribution	NY
Keyspan Energy Delivery, Long Island	Gas Distribution	NY
Boston Gas Company	Gas Distribution	MA
Colonial Gas Company	Gas Distribution	MA
Narragansett Gas Company	Gas Distribution	RI

4.1.3 IS Ongoing Operational Costs (RTB):

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



US Sanction Paper

3.12 Statements of Support

3.12.1 Supporters

Role	Name	Responsibilities
IS Finance	Chip Benson	Endorses the project aligns with jurisdictional objectives
IS Business Relationship Management	Richard Sheer	Endorses the project aligns with jurisdictional objectives
US Business Supporter	Keith P McAfee	Endorses the project aligns with jurisdictional objectives

3.12.2 Reviewers

Please see the IS Stakeholder Checklist summary contained in the TCO Log file.

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 resources
Personnel	NG Resources	0.024	
	SDC Time &	0.150	IBM & Zensar
	SDC Fixed-Price	-	
	All other personnel	(0.000)	
	TOTAL Personnel Costs	0.174	
Hardware	Purchase	-	
	Lease	-	
Software		0.698	Utilimap Corporation (a.k.a. Computapole)
Risk Margin		0.042	
Other		0.076	
TOTAL Costs		0.990	



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3.11.4 Net Present Value / Cost Benefit Analysis

This is not an NPV project.

3.11.5 Additional Impacts

None

3.12 Statements of Support

3.12.1 Supporters

Role	Name	Responsibilities
IS Finance	Chip Benson	Endorses the project aligns with jurisdictional objectives
IS Business Relationship Mgmt	Graham Pool	Endorses the project aligns with jurisdictional objectives
US Business Supporter	Peter Stanley	Endorses the project aligns with jurisdictional objectives

3.12.2 Reviewers

Function	Area	Individual
Finance	All	Benson, Chip
Regulatory	All	Katsh, Gideon
Jurisdictional Delegate(s)	New England- Electric	Grimsley, Jennifer L.
	New York- Electric	Chieco, Allen C.
	FERC	Hitti, Nabil E.
	Gas – NY	Brown, Laurie
	Gas – NE	Fromm, Walter
Procurement	All	Curran, Art

4 Appendices

4.1 Project Cost Breakdown

Project Cost Breakdown		
Cost Category	Company Name (\$ Amount)	Description of Cost Category
Labor	NG IS - \$0.172M	NG – IS resource costs to deliver the Start-up, R&D, D&I.
Hardware	Oracle / CSC - \$0.552M	Platform costs.
Software	Oracle - \$0.586M	Licences costs.
Service Contracts	IS Partners - \$0.063M	Estimated costs from CSC, HP,



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		Verizon and Wipro Integration Services Team.
Other Costs	IBM - \$0.005M	RTC Licences for PM, BA and extended project members.
Risk Margin	\$0.138M	
Total:	\$1.516M	

4.2 Other Appendices

4.2.1 IS Ongoing Operational Costs (RTB):

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

RTB costs \$'000s	Yr 1 12/13	Yr 2 13/14	Yr 3 14/15	Yr 4 15/16	Yr 5 16/17	Yr 6 17/18	Yr 7 18/19	Yr 8 19/20	Total
Current Annual RTB costs									
New Annual RTB costs			415	415	415	415			1,661
Impact on RTB costs (new minus existing)			415	415	415	415			1,661
Variance to Plan			415	415	415	415			1,661

The cost breakdown for incremental RTB is:

- \$0.088M for software licensing,
- \$0.327M for Hardware (platforms) support.

The above table reflects the ongoing costs for the foundation service, i.e. the costs that will directly be committed as a result of this project. However it is anticipated that these ongoing costs from FY 14/15 will be off-set by projects using the service, and resultant decrease in use of legacy services. Indicative total net RTB (as a result of projects using the new service) can be viewed in the addendum 1.

The on-going cost for FY13/14 is included in the total cost of the project will be re-charged to business via normal infrastructure allocation route. FY14/15 onwards no substitution is provided for on-going RTB costs as it is intended that this project will define a cost recovery scheme to recover the on-going costs as subsequent projects consume these services. The on-going charges from Year 2 (FY 14/15) onwards are dependent on the vendor selected.



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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 resources
Personnel	NG Resources	0.025	NG-IS
	SDC Time & Materials	0.131	IBM & Wipro
	SDC Fixed-Price	0.008	TCS / Zensar
	All other personnel	0.200	PowerPlan Consulting
	TOTAL Personnel Costs	0.364	
Hardware	Purchase	-	
	Lease	-	
Software		-	
Risk Margin		0.036	
Other		0.019	
TOTAL Costs		0.419	

4.1.2 Benefiting Operating Companies

The following companies will benefit from this project cost allocation:



US Sanction Paper

4 Appendices

4.1 Other Appendices

4.1.1 Project Cost Breakdown

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.490	
	SDC Time & Materials	1.289	IBM, NG (IS)
	SDC Fixed-Price	4.449	IBM, TCS, Verizon, CSC, WSI, ESG
	All other personnel	0.186	Other Vendors
	TOTAL Personnel Costs	6.414	
Hardware	Purchase	-	
	Lease	0.035	CSC
Software		0.293	CSC, Other Vendors
Risk Margin		0.600	
Other		0.673	
TOTAL Costs		8.016	

4.1.2 Benefiting Operating Companies

This investment will benefit KeySpan Energy Delivery NY and KeySpan Energy Delivery Long Island (LI).

Benefiting Operating Companies Table:

Operating Company Name	Business Area	State
KeySpan Energy Delivery NY	Gas	NY
KeySpan Energy Delivery LI	Gas	NY

4.1.3 IS Ongoing Operational Costs (RTB):

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



US Sanction Paper

4 Appendices

4.1 Other Appendices

4.1.1 Project Cost Breakdown

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.040	
	SDC Time & Materials	0.155	IBM
	SDC Fixed-Price	0.091	IBM, Zensar
	All other personnel	-	
	TOTAL Personnel Costs	0.285	
Hardware	Purchase	-	
	Lease	0.006	Fluke In-house Deployment Servers
Software		0.128	Fluke, Figmore, Corporate (Microsoft)
Risk Margin		0.017	
Other		0.060	
TOTAL Costs		0.497	



US Sanction Paper

4 Appendices:

4.1 **Project Cost Breakdown:**

Project Cost Breakdown		
Cost Category	Company Name (\$ Amount)	Description of Cost Category
Labor	\$1.677M	IBM, Wipro, National Grid Resources
Hardware	\$0.000M	Project Related
Software	\$0.000M	Project Related
Telecommunications	\$0.000M	Project Related
Other	\$0.126M	Risk Margin, RTC, QA costs
Total:	\$1.803M	

4.2 **Other Appendices:**

4.2.1 **Bill Pool:**

00399	01437	Keyspan Energy Delivery LI	GAS	37.075
00399	01438	Keyspan Energy Delivery NY	GAS	62.925
00399 Total				100.000

4.2.2 **IS Ongoing Operational Costs (RTB)**

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

RTB costs \$'000s	Yr 1 12/13	Yr 2 13/14	Yr 3 14/15	Yr 4 15/16	Yr 5 16/17	Total
Current Annual RTB costs	66	161	174	192	214	807
New Annual RTB costs	66	161	174	192	214	807
Impact on RTB costs (new minus existing)						
Variance to Plan						

The cost breakdown for incremental RTB is:

- \$0.104M for Infrastructure Support
- \$0.305M for Application Support (labor)
- \$0.035M for Software Support
- \$0.000M for Telecommunications
- \$0.363M for Other



US Sanction Paper

4 Appendices

4.1 Other Appendices

4.1.1 Project Cost Breakdown

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.095	
	SDC Time & Materials	0.100	IBM, Wipro
	SDC Fixed-Price	0.093	IBM, Wipro
	All other personnel	0.650	Noise, DOXO, ECI
	TOTAL Personnel Costs	0.938	
Hardware	Purchase	-	
	Lease	-	
Software		-	
Risk Margin		0.051	
Other		0.011	
TOTAL Costs		0.999	

4.1.2 Benefiting Operating Companies

The following companies will benefit from this project cost allocation:

Benefiting Operating Companies Table:

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



US Sanction Paper

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	0.095	
	SDC Time & Materials	0.108	IBM
	SDC Fixed-Price	-	
	All other personnel	0.549	Noise
	TOTAL Personnel Costs	0.751	
Hardware	Purchase	-	
	Lease	-	
Software		-	
Risk Margin		0.033	
Other		0.014	
TOTAL Costs		0.798	

4.1.2 Benefiting Operating Companies

The following companies will benefit from this project cost allocation:

Benefiting Operating Companies Table:

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

4.1.3 IS Ongoing Operational Costs (RTB):

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



Resanction Request

4 Appendices

4.1 Sanction Request Breakdown by Project

4.2 Other Appendices

4.2.1 Project Cost Breakdown

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.193	
	SDC Time & Materials	2.467	IBM, Wipro
	SDC Fixed-Price	0.029	
	All other personnel	0.082	
	TOTAL Personnel Costs	2.773	
Hardware	Purchase	-	
	Lease	-	
Software		-	
Risk Margin		0.311	
Other		0.206	
	TOTAL Costs	3.288	

4.2.2 Benefiting Operating Companies

Benefiting Operating Companies Table:

Operating Company Name	Business Area	State
KeySpan Energy Delivery Long Island	Gas Distribution	NY
KeySpan Energy Delivery NY	Gas Distribution	NY
Niagara Mohawk Power Corp. - Gas	Gas Distribution	NY
Niagara Mohawk Power Corp. - Electric Distr.	Electric Distribution	NY
The Brooklyn Union Gas Company	Gas Distribution	NY

4.2.3 IS Ongoing Operational Costs (RTB):



US Sanction Paper

4 Appendices

4.1 Sanction Request Breakdown by Project

N/A

4.2 Other Appendices

4.2.1 Project Cost Breakdown

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing resources
Personnel	NG Resources	0.730	
	SDC Time & Materials	1.139	
	SDC Fixed-Price	0.222	
	All other personnel	1.746	
	TOTAL Personnel Costs	3.837	
Hardware	Purchase	-	
	Lease	0.078	
Software		0.031	
Risk Margin		0.342	
Other		0.139	
TOTAL Costs		4.427	

4.2.2 Benefiting Operating Companies

This investment will benefit all of the US Gas and Electric Distribution companies. It will not include any LIPA or Liberty Utilities (NH) changes. The distribution of cost will be based on the number of customers.

Benefiting Operating Companies Table:

Operating Company Name	Business Area	State
Nantucket Electric Company	Electric Distribution	MA
Massachusetts Electric	Electric Distribution	MA
Narragansett Electric Company	Electric Distribution	RI
Niagara Mohawk Power Corp	Electric Distribution	NY
Boston Gas Company	Gas Distribution	MA
Colonial Gas Company	Gas Distribution	MA
Narragansett Gas Company	Gas Distribution	RI
Niagara Mohawk Power Corp	Gas Distribution	NY
Brooklyn Union Gas Co – KEDNY	Gas Distribution	NY
KeySpan Gas East Corp – KEDLI	Gas Distribution	NY

PROJECT COSTS

Investment Plan No: **INVP 2892b**
Investment Start Year: **12/13**
Currency used: **US \$**

SUPPLIER

Risk and
Assumption
Ref #s

Security Access Panels – NERC CIP Compliance

Security Access Panels – NERC CIP Compliance

CapEx:

12/13	13/14	14/15	15/16	16/17	17/18	18/19	Total
\$'000s	\$'000s	\$'000s	\$'000s	\$'000s	\$'000s	\$'000s	\$'000s

Investment Plan Funding

Start-Up <Please select>
People (people costs imported from Personnel worksheet)
National Grid IS INTERNAL
National Grid Business INTERNAL
Partners and/or Contractor Firms EXTERNAL
Other (i.e. not entered into Personnel worksheet)
Risk Margin
Start-Up Sub Total

12/13	13/14	14/15	15/16	16/17	17/18	18/19	Total
\$'000s	\$'000s	\$'000s	\$'000s	\$'000s	\$'000s	\$'000s	\$'000s
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Requirements and Design <Please select>
People (people costs imported from Personnel worksheet)
National Grid IS INTERNAL
National Grid Business INTERNAL
Partners and/or Contractor Firms EXTERNAL
Other (i.e. not entered into Personnel worksheet)
Hardware <Please select>
Software <Please select>
Telecomms <Please select>
Services <Please select>
Risk Margin
Requirements and Design Sub Total

12/13	13/14	14/15	15/16	16/17	17/18	18/19	Total
\$'000s	\$'000s	\$'000s	\$'000s	\$'000s	\$'000s	\$'000s	\$'000s
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Development and Implementation <Please select>
People (people costs imported from Personnel worksheet)
National Grid IS INTERNAL
National Grid Business INTERNAL
Partners and/or Contractor Firms EXTERNAL
Other (i.e. not entered into Personnel worksheet)
Software <Please select>
INTERNAL
Hardware <Please select>
Other INTERNAL Firewalls
Telecommunications: <Please select>
Other <Please select> Verizon
Service Contracts <Please select>
BT Counterpane Monitoring <Please select>
iRise, RTC, and Shared Costs Applies to most IS projects
Choose 'yes' or 'no' for iRise. iRise costs (y/n) No
Do NOT Alter iRise or RTC costs on this worksheet. RTC (from RTC Tab)
Fixed Cost Alloc
QA Costs
AFUDC Cost
Shared Costs B
Other <Please select>
R&D Overspent
Risk Margin 10%
Development and Implementation Sub Total

12/13	13/14	14/15	15/16	16/17	17/18	18/19	Total
\$'000s	\$'000s	\$'000s	\$'000s	\$'000s	\$'000s	\$'000s	\$'000s
-	60	-	-	-	-	-	60
-	-	-	-	-	-	-	-
-	82	-	-	-	-	-	82
-	142	-	-	-	-	-	142
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	0
-	-	-	-	-	-	-	-
-	30	-	-	-	-	-	30
-	30	-	-	-	-	-	30
-	449	-	-	-	-	-	449
-	449	-	-	-	-	-	449
-	28	-	-	-	-	-	28
-	28	-	-	-	-	-	28
2	31	-	-	-	-	-	33
4	48	-	-	-	-	-	52
6	79	-	-	-	-	-	85
51	-	-	-	-	-	-	51
51	-	-	-	-	-	-	51
6	72	-	-	-	-	-	78
63	800	-	-	-	-	-	863

Project Total

12/13	13/14	14/15	15/16	16/17	17/18	18/19	Total
\$'000s	\$'000s	\$'000s	\$'000s	\$'000s	\$'000s	\$'000s	\$'000s
63	800	-	-	-	-	-	863

Non-Regulated Project - Uplift

12/13	13/14	14/15	15/16	16/17	17/18	18/19	Total
\$'000s	\$'000s	\$'000s	\$'000s	\$'000s	\$'000s	\$'000s	\$'000s
-	-	-	-	-	-	-	-

Non-Regulated Project - Total

12/13	13/14	14/15	15/16	16/17	17/18	18/19	Total
\$'000s	\$'000s	\$'000s	\$'000s	\$'000s	\$'000s	\$'000s	\$'000s
63	800	-	-	-	-	-	863

National Grid Confidential

Date: 23-Feb-18

capabilities across the enterprise. This project will then configure the core capability for Microsoft Office 365. Another application originally in-scope was unavailable within the project timeline and has been de-scoped from the project.

National Grid requires a more standardized and centralized method to support the automated provisioning and de-provisioning of system accounts for all users. The implementation of an automated, centralized user provisioning (UP) system will support a more streamlined and automated methodology for provisioning and de-provisioning users. The UP system will also reduce the risk associated with current manual processes, as well as improve the end user experience by decreasing or eliminating wait time for changes, and by ensuring accurate access permissions, which will ensure compliance with National Grid Security policies and standards and other legal and regulatory mandates.

In addition, National Grid requires a standards-based, centralized solution to meet several of its web access management requirements, including improving overall web application security with authentication and authorization controls, and simplifying the end user experience by instituting single-sign-on (SSO) for both internal and external cloud-based web applications, thus reducing the need for users to manage and remember multiple passwords. The implementation of a centralized web access management solution will also set the stage for a phased consolidation of existing National Grid web access management (WAM) technologies under one technology platform, so National Grid has an enterprise-wide standard tool moving forward.

This is a global investment and includes the following scope:

- a) Data Quality Assessment– review known and relevant data quality issues that may impede the implementation of the project goals.
- b) Requirements – document the core UP & SSO requirements for one web-based application.
- c) Solution Design – Document the design of the Core UP & SSO solution
- d) Implementation–This will include :-
 - a. integration of the UP & SSO solutions within the existing Identity Access Management solution (INVP 2982b - IAM Phase 1) as necessary.
 - b. configuration of the solution to securely interface to one web based application – identified as MS Office 365 during the R&D phase.
- e) Improve existing business processes to support the implementation.

The primary driver for this project is enabling the capability for National Grid to securely operate cloud based services.

Options Analysis:

Options Analysis:

	Recommendation			Rationale		
Do Nothing:	Rejected			This would cause National Grid to be non-complaint with regulatory standards and subject National Grid systems to be vulnerable to cyber attack.		
Defer project:	Rejected			Delaying the project will increase the risk of regulatory violations and threats to National Grid Systems		
[Option 3]: To enhance the existing IAM Phase designs / solutions	Recommended			To leverage the existing centralised platform implemented as part of IAM Phase1		
Project Costs [\$]k	Yr 1 14/15	Yr 2 15/16	Yr 3 16/17	Yr 4 17/18	Yr 5 18/19	Total
Start-Up - OPEX	24					24
Start-Up – CAPEX	-12					-12
Start-Up – risk margin						
Start-Up SUBTOTAL	12					12

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Requirements & Design - OPEX	39					39
Requirements & Design – CAPEX	888					888
Requirements & Design – risk margin						
R&D SUBTOTAL	927					927

Development & Implementation – OPEX						
People						
Software						
Hardware						
Telecommunications						
Service Contracts						
Risk Margin						
Development & Implementation – CAPEX						
People		154				154
Software						
Hardware						
Telecommunications						
Service Contracts						
Other		592				592
Risk Margin		178				178
D&I SUBTOTAL		923				923
TOTAL PROJECT COSTS	927	923				1862

Impact on RTB costs		+155	+232	+232	+232	851
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RTB Impacts:

It is currently anticipated that there will be an increase in RTB costs of \$232k per year.

The costs of this project will be allocated as follows:



US Sanction Paper

4 Appendices

4.1 Other Appendices

4.1.1 Project Cost Breakdown

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing resources
Personnel	NG Resources	0.132	
	SDC Time & Materials	0.694	IBM & WiPro
	SDC Fixed-Price	-	
	All other personnel	0.616	Cloud Sherpas Solutions
	TOTAL Personnel Costs	1.442	
Hardware	Purchase	0.014	
	Lease	-	
Software		-	
Risk Margin		0.185	
Other		0.084	
TOTAL Costs		1.725	

4.1.2 Benefiting Operating Companies

This investment will only benefit all National Grid Retail Gas Distribution companies.

Benefiting Operating Companies Table:

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



US Sanction Paper

4 Appendices

4.1 Other Appendices

4.1.1 Project Cost Breakdown

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.008	
	SDC Time & Materials	0.008	IBM
	SDC Fixed-Price	-	
	All other personnel	-	
	TOTAL Personnel Costs	0.016	
Hardware	Purchase	-	
	Lease	-	
Software		-	
Risk Margin		0.002	
Other		1.150	Service Contracts, Shared/AFDUC
TOTAL Costs		1.168	

4.1.2 Benefiting Operating Companies

The following companies will benefit from this project cost allocation:

Benefiting Operating Companies Table:

The following companies will benefit from this project cost allocation:

Operating Company Name	Business Area	State
Niagara Mohawk Power Corp	Gas	NY
Niagara Mohawk Power Corp	Electric	NY



US Sanction Paper

4 Appendices

4.1 Other Appendices

4.1.1 Project Cost Breakdown

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	1.572	
	SDC Time & Materials	0.022	IBM
	SDC Fixed-Price	-	
	All other personnel	3.934	CSC
	TOTAL Personnel Costs	5.528	
Hardware	Purchase	3.272	CSC
	Lease	-	
Software		-	
Risk Margin		0.658	
Other		0.501	Shared/AFDUC
TOTAL Costs		9.959	

Investment Paper - § Project Cost Breakdown: The table below presents a high-level analysis of project costs. In most cases, it will provide the complete analysis that is necessary to answer the question, except for the right column which must be completed manually. In other cases, the table will provide a good start, but you must add an additional footnote (explained below). In all cases, you should 'Copy' the table below and 'Paste' it as a picture into the Investment Paper.

- When is an additional footnote required? An explanatory footnote is required if the category 'Other' is greater than \$200,000. In such an instance, you must provide a more detailed breakdown of the costs classified as 'Other' until the value of 'Other' falls below the \$200,000 threshold.

- If you must breakdown 'Other' costs, how can you find information about the costs included in 'Other'? The vast majority of the time, you can find all such information in one place: in the table entitled 'Other' located at the bottom of worksheet '3b. New Costs (non-personnel)'. In rare instances, it may be necessary to do further cost analysis, but this will only occur for projects with very high cost estimates.

INVP 3614A2

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.491	
	SDC Time & Materials	0.112	
	SDC Fixed-Price	-	
	All other personnel	-	
	TOTAL Personnel Costs	0.603	
Hardware	Purchase	-	
	Lease	-	
Software		-	
Risk Margin		0.925	
Other		0.918	
TOTAL Costs		2.446	

Vendor/Supplier Breakdown for 1-slide PowerPoint Summary: In order to complete the 1-slide Summary that accompanies each Investment Paper, it is necessary to identify key vendors and the spending amounts associated with each. The table below provides the information necessary to address this portion of the 1-Slide Summary.

Vendor	\$ millions
SDC.1 - IBM	0.056
SDC.2 - Wipro	0.056
SDC.3 - tbd	-
IBM, non-SDC	-
Wipro, non-SDC	-
n/a	-
n/a	-
n/a	-
n/a	-
n/a	-
Other	0.851

Investment Paper - § Project Cost Breakdown: The table below presents a high-level analysis of project costs. In most cases, it will provide the complete analysis that is necessary to answer the question, except for the right column which must be completed manually. In other cases, the table will provide a good start, but you must add an additional footnote (explained below). In all cases, you should 'Copy' the table below and 'Paste' it as a picture into the Investment Paper.

- When is an additional footnote required? An explanatory footnote is required if the category 'Other' is greater than \$200,000. In such an instance, you must provide a more detailed breakdown of the costs classified as 'Other' until the value of 'Other' falls below the \$200,000 threshold.

- If you must breakdown 'Other' costs, how can you find information about the costs included in 'Other'? The vast majority of the time, you can find all such information in one place: in the table entitled 'Other' located at the bottom of worksheet '3b. New Costs (non-personnel)'. In rare instances, it may be necessary to do further cost analysis, but this will only occur for projects with very high cost estimates.

INVP 3883

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.135	
	SDC Time & Materials	0.130	
	SDC Fixed-Price	0.064	
	All other personnel	0.035	
	TOTAL Personnel Costs	0.363	
Hardware	Purchase	1.475	
	Lease	-	
Software		-	
Risk Margin		0.180	
Other		0.266	
TOTAL Costs		2.284	

Vendor/Supplier Breakdown for 1-slide PowerPoint Summary: In order to complete the 1-slide Summary that accompanies each Investment Paper, it is necessary to identify key vendors and the spending amounts associated with each. The table below provides the information necessary to address this portion of the 1-Slide Summary.

Vendor	\$ millions
SDC.1 - IBM	0.194
SDC.2 - Wipro	-
SDC.3 - tbd	-
IBM, non-SDC	-
Wipro, non-SDC	-
CSC	1.510
Verizon	-
n/a	-
n/a	-
n/a	-
Other	0.120



US Sanction Paper

4 Appendices

4.1 Other Appendices

4.1.1 Project Cost Breakdown

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	1.352	
	SDC Time & Materials	-	
	SDC Fixed-Price	-	
	All other personnel	-	
	TOTAL Personnel Costs	1.352	
Hardware	Purchase	-	
	Lease	-	
Software		2.300	HP, NG, Others
Risk Margin		0.505	
Other		1.608	Shared, Misc.
TOTAL Costs		5.764	



US Sanction Paper

4 Appendices

4.1 Sanction Request Breakdown by Project

4.2 Other Appendices

4.2.1 Project Cost Breakdown

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.045	
	SDC Time & Materials	1.009	
	SDC Fixed-Price	0.174	
	All other personnel	(0.000)	
	TOTAL Personnel Costs	1.228	
Hardware	Purchase	-	
	Lease	-	
Software		-	
Risk Margin		0.043	
Other		0.070	Wipro, AFUDC, Shared Services
TOTAL Costs		1.341	

4.2.2 Benefiting Operating Companies

Benefiting Operating Companies Table:

Operating Company Name	Business Area	State
KeySpan Energy Delivery New York	Gas Distribution	NY
KeySpan Energy Delivery Long Island	Gas Distribution	NY
Niagara Mohawk Power Corp. - Gas	Gas Distribution	NY



US Sanction Paper

3.12.2 Reviewers

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

Please see the IS Stakeholder Checklist summary contained in the TCO Log file.

4 Appendices

4.1 Sanction Request Breakdown by Project

4.2 Other Appendices

4.2.1 Project Cost Breakdown

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.032	
	SDC Time & Materials	0.303	
	SDC Fixed-Price	0.070	
	All other personnel	(0.000)	
	TOTAL Personnel Costs	0.405	
Hardware	Purchase	-	
	Lease	-	
Software		-	
Risk Margin		0.038	
Other		0.022	
TOTAL Costs		0.466	

4.2.2 Benefiting Operating Companies

Benefiting Operating Companies Table:

Operating Company Name	Business Area	State
Boston Gas Company	Gas Distribution	MA
Colonial Gas Company	Gas Distribution	MA

Investment Paper - § Project Cost Breakdown: The table below presents a high-level analysis of project costs. In most cases, it will provide the complete analysis that is necessary to answer the question, except for the right column which must be completed manually. In other cases, the table will provide a good start, but you must add an additional footnote (explained below). In all cases, you should 'Copy' the table below and 'Paste' it as a picture into the Investment Paper.

- When is an additional footnote required? An explanatory footnote is required if the category 'Other' is greater than \$200,000. In such an instance, you must provide a more detailed breakdown of the costs classified as 'Other' until the value of 'Other' falls below the \$200,000 threshold.

- If you must breakdown 'Other' costs, how can you find information about the costs included in 'Other'? The vast majority of the time, you can find all such information in one place: in the table entitled 'Other' located at the bottom of worksheet '3b. New Costs (non-personnel)'. In rare instances, it may be necessary to do further cost analysis, but this will only occur for projects with very high cost estimates.

INVP 3614E3

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.544	
	SDC Time & Materials	-	
	SDC Fixed-Price	-	
	All other personnel	0.385	
	TOTAL Personnel Costs	0.928	
Hardware	Purchase	0.171	
	Lease	-	
Software		0.646	
Risk Margin		0.302	
Other		0.084	
TOTAL Costs		2.131	

Vendor/Supplier Breakdown for 1-slide PowerPoint Summary: In order to complete the 1-slide Summary that accompanies each Investment Paper, it is necessary to identify key vendors and the spending amounts associated with each. The table below provides the information necessary to address this portion of the 1-Slide Summary.

Vendor	\$ millions
SDC.1 - IBM	-
SDC.2 - Wipro	-
SDC.3 - tbd	-
IBM, non-SDC	-
Wipro, non-SDC	-
Verizon	0.038
CSC	0.080
HP	1.083
n/a	-
n/a	-
Other	0.048



US Sanction Paper - IS Specific Instructions

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	0.282	
	Verizon Time & Material	0.396	
	Verizon - Fixed-Price	-	
	All other personnel	-	
	TOTAL Personnel Costs	0.678	
Hardware	Purchase	0.851	
	Lease	-	
Software		-	
Risk Margin		0.167	
Other		0.064	
TOTAL Costs		1.760	



US Sanction Paper

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.026	
	SDC Time & Materials	0.700	
	SDC Fixed-Price	-	
	All other personnel	0.064	
	TOTAL Personnel Costs	0.790	
Hardware	Purchase	-	
	Lease	-	
Software		-	
Risk Margin		0.152	
Other		0.044	
TOTAL Costs		0.986	

4.3 Benefiting Operating Companies

The following are the benefiting operating companies:

Operating Company Name	Business Area	State
KeySpan Energy Delivery LI	Gas Operations	NY



US Sanction Paper

Appendices

3.12.3 Project Cost Breakdown

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.205	National Grid
	SDC Time & Materials	-	
	SDC Fixed-Price	0.750	Wipro, IBM
	All other personnel	0.104	CSC, ABB
	TOTAL Personnel Costs	1.059	
Hardware	Purchase	-	
	Lease	-	
Software		0.216	
Risk Margin		0.184	
Other		0.490	Includes R&D Actuals
TOTAL Costs		1.949	

3.12.4 Benefiting Operating Companies

This investment will benefit New York (NY) companies.

Benefiting Operating Companies Table:

Operating Company Name	Business Area	State
KeySpan Energy Delivery New York	Gas Distribution	NY
KeySpan Energy Delivery Long Island	Gas Distribution	NY
Niagara Mohawk Power Corporation - Gas	Gas Distribution	NY



US Sanction Paper

4 Appendices

4.1 Sanction Request Breakdown by Project

N/A

4.2 Other Appendices

4.2.1 Project Cost Breakdown

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.109	
	SDC Time & Materials	9.474	IBM, Wipro
	SDC Fixed-Price	-	
	All other personnel	2.085	
	TOTAL Personnel Costs	11.667	
Hardware	Purchase	-	
	Lease	0.062	
Software		0.313	
Risk Margin		0.460	
Other		1.007	
TOTAL Costs		13.510	

4.2.2 Benefiting Operating Companies

The following companies will benefit from this project as defined in section 3.3. The allocation of these benefits will be based upon the number of customers and the changes needed for each customer system.

Benefiting Operating Companies Table:

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



US Sanction Paper

4 Appendices

4.1 Other Appendices

4.1.1 Project Cost Breakdown

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.288	
	SDC Time & Materials	-	
	SDC Fixed-Price	-	
	All other personnel	0.420	
	TOTAL Personnel Costs	0.708	
Hardware	Purchase	0.330	
	Lease	-	
Software		0.015	
Risk Margin		0.105	
Other		0.046	
TOTAL Costs		1.203	

4.1.2 Benefiting Operating Companies

Operating Company Name	Business Area	State
Brooklyn Union Gas-KEDNY	Gas Distribution	NY
KS Gas East Corp-KEDLI	Gas Distribution	NY
Niagara Mohawk Power Corp	Gas Distribution	NY

Investment Paper - § Project Cost Breakdown: The table below presents a high-level analysis of project costs. In most cases, it will provide the complete analysis that is necessary to answer the question, except for the right column which must be completed manually. In other cases, the table will provide a good start, but you must add an additional footnote (explained below). In all cases, you should 'Copy' the table below and 'Paste' it as a picture into the Investment Paper.

- When is an additional footnote required? An explanatory footnote is required if the category 'Other' is greater than \$200,000. In such an instance, you must provide a more detailed breakdown of the costs classified as 'Other' until the value of 'Other' falls below the \$200,000 threshold.

- If you must breakdown 'Other' costs, how can you find information about the costs included in 'Other'? The vast majority of the time, you can find all such information in one place: in the table entitled 'Other' located at the bottom of worksheet '3b. New Costs (non-personnel)'. In rare instances, it may be necessary to do further cost analysis, but this will only occur for projects with very high cost estimates.

INVP 4263

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.115	
	SDC Time & Materials	0.121	
	SDC Fixed-Price	-	
	All other personnel	0.201	
	TOTAL Personnel Costs	0.437	
Hardware	Purchase	-	
	Lease	-	
Software		-	
Risk Margin		0.022	
Other		0.013	
TOTAL Costs		0.471	

Vendor/Supplier Breakdown for 1-slide PowerPoint Summary: In order to complete the 1-slide Summary that accompanies each Investment Paper, it is necessary to identify key vendors and the spending amounts associated with each. The table below provides the information necessary to address this portion of the 1-Slide Summary.

Vendor	\$ millions
SDC.1 - IBM	0.046
SDC.2 - Wipro	0.075
SDC.3 - tbd	-
IBM, non-SDC	-
Wipro, non-SDC	-
n/a	-
n/a	-
n/a	-
n/a	-
n/a	-
Other	0.201



US Sanction Paper

IS4IS	
Program Lead – Client Service	Peter Baker
IS Finance Management	Chris Pearce
IS Regulatory	Thomas Gill
DR&S	Paul Bamford
Service Transition	Diane Glass
Enterprise Architecture	Jamie Allison

3.12.2 Reviewers

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

Function	Individual	Area
Finance	Benson, Chip	All
Regulatory	Tom Gill	All
	Camal Robinson	New England
	Carlos Gavilondo	New York
	Patterson, James	New England - Electric
Jurisdictional Delegate(s)	Harbaugh, Mark	New York - Electric
	Sedewitz, Carol	FERC
	Brown, Laurie	Gas - NY
	Iseler, David G.	Gas - NE
	Art Curran	All
Procurement	Art Curran	All

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	0.283	
	SDC Time & Materials	-	
	SDC Fixed-Price	-	
	All other personnel	0.050	
	TOTAL Personnel Costs	0.333	
Hardware	Purchase	0.215	
	Lease	-	
Software		-	
Risk Margin		-	
Other		0.013	
TOTAL Costs		0.560	

This project will not have additional impact on the current RTB cost.

Investment Paper - § Project Cost Breakdown: The table below presents a high-level analysis of project costs. In most cases, it will provide the complete analysis that is necessary to answer the question, except for the right column which must be completed manually. In other cases, the table will provide a good start, but you must add an additional footnote (explained below). In all cases, you should 'Copy' the table below and 'Paste' it as a picture into the Investment Paper.

- When is an additional footnote required? An explanatory footnote is required if the category 'Other' is greater than \$200,000. In such an instance, you must provide a more detailed breakdown of the costs classified as 'Other' until the value of 'Other' falls below the \$200,000 threshold.

- If you must breakdown 'Other' costs, how can you find information about the costs included in 'Other'? The vast majority of the time, you can find all such information in one place: in the table entitled 'Other' located at the bottom of worksheet '3b. New Costs (non-personnel)'. In rare instances, it may be necessary to do further cost analysis, but this will only occur for projects with very high cost estimates.

INVP 3614C1

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.131	
	SDC Time & Materials	0.018	
	SDC Fixed-Price	-	
	All other personnel	0.041	
	TOTAL Personnel Costs	0.190	
Hardware	Purchase	-	
	Lease	0.017	
Software		0.030	
Risk Margin		0.024	
Other		0.012	
TOTAL Costs		0.272	

Vendor/Supplier Breakdown for 1-slide PowerPoint Summary: In order to complete the 1-slide Summary that accompanies each Investment Paper, it is necessary to identify key vendors and the spending amounts associated with each. The table below provides the information necessary to address this portion of the 1-Slide Summary.

Vendor	\$ millions
SDC.1 - IBM	0.018
SDC.2 - Wipro	-
SDC.3 - tbd	-
IBM, non-SDC	-
Wipro, non-SDC	-
CSC	0.018
eGress	0.075
Verizon	-
HP	-
n/a	-
Other	-

Investment Paper - § Project Cost Breakdown: The table below presents a high-level analysis of project costs. In most cases, it will provide the complete analysis that is necessary to answer the question, except for the right column which must be completed manually. In other cases, the table will provide a good start, but you must add an additional footnote (explained below). In all cases, you should 'Copy' the table below and 'Paste' it as a picture into the Investment Paper.

- When is an additional footnote required? An explanatory footnote is required if the category 'Other' is greater than \$200,000. In such an instance, you must provide a more detailed breakdown of the costs classified as 'Other' until the value of 'Other' falls below the \$200,000 threshold.

- If you must breakdown 'Other' costs, how can you find information about the costs included in 'Other'? The vast majority of the time, you can find all such information in one place: in the table entitled 'Other' located at the bottom of worksheet '3b. New Costs (non-personnel)'. In rare instances, it may be necessary to do further cost analysis, but this will only occur for projects with very high cost estimates.

INVP 3614G1

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.185	
	SDC Time & Materials	-	
	SDC Fixed-Price	-	
	All other personnel	-	
	TOTAL Personnel Costs	0.185	
Hardware	Purchase	-	
	Lease	-	
Software		-	
Risk Margin		0.018	
Other		0.006	
TOTAL Costs		0.209	

Vendor/Supplier Breakdown for 1-slide PowerPoint Summary: In order to complete the 1-slide Summary that accompanies each Investment Paper, it is necessary to identify key vendors and the spending amounts associated with each. The table below provides the information necessary to address this portion of the 1-Slide Summary.

Vendor	\$ millions
SDC.1 - IBM	-
SDC.2 - Wipro	-
SDC.3 - tbd	-
IBM, non-SDC	-
Wipro, non-SDC	-
n/a	-
n/a	-
n/a	-
n/a	-
n/a	-
Other	-



US Sanction Paper

4 Appendices

4.1 Sanction Request Breakdown by Project

N/A

4.2 Other Appendices

4.2.1 Project Cost Breakdown

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing resources
Personnel	NG Resources	0.050	
	SDC Time & Materials	0.084	IBM, Wipro
	SDC Fixed-Price	0.174	
	All other personnel	0.084	CSC, Verizon
	TOTAL Personnel Costs	0.392	
Hardware	Purchase	-	
	Lease	-	
Software		-	
Risk Margin		0.010	
Other		0.010	
TOTAL Costs		0.412	

4.2.2 Benefiting Operating Companies

Operating Company Name	Business Area	State
Massachusetts Electric Company	Electric Distribution	MA
Nantucket Electric Company	Electric Distribution	MA
Boston Gas Company	Gas Distribution	MA
Colonial Gas Company	Gas Distribution	MA
Niagara Mohawk Power Corp.- Electric Distr.	Electric Distribution	NY
Niagara Mohawk Power Corp. - Gas	Gas Distribution	NY
KeySpan Energy Delivery New York	Gas Distribution	NY



US Sanction Paper

4 Appendices

4.1.1 Sanction Request Breakdown by Project

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.234	
	SDC Time & Materials	0.120	Wipro + IBM
	SDC Fixed-Price	-	
	All other personnel	0.086	CSC
	TOTAL Personnel Costs	0.440	
Hardware	Purchase	1.895	
	Lease	-	
Software		0.788	
Risk Margin		-	
Other		0.166	
TOTAL Costs		3.288	

4.1.2 Benefiting Operating Companies

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



US Sanction Paper

4.2 Other Appendices

4.2.1 Project Cost Breakdown

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.273	
	SDC Time & Materials	0.308	IBM
	SDC Fixed-Price	0.395	Wipro
	All other personnel	0.004	CSC
	TOTAL Personnel Costs	0.980	
Hardware	Purchase	-	
	Lease	0.002	CSC
Software		0.016	
Risk Margin		0.377	
Other		0.090	
TOTAL Costs		1.465	

4.2.2 Benefiting Operating Companies

This investment will benefit all of the US Gas Distribution companies.

Benefiting Operating Companies Table:

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

4.2.3 IS Ongoing Operational Costs (RTB):

This project will increase IS ongoing operations support costs as per the following table. These are also known as Run the Business (RTB) costs. The increase is the result of support and maintenance charges for new licenses and partner application support charges.



US Sanction Paper

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.073	
	SDC Time & Materials	0.272	
	SDC Fixed-Price	-	
	All other personnel	0.017	
	TOTAL Personnel Costs	0.362	
Hardware	Purchase	0.290	
	Lease	0.004	
Software		0.001	
Risk Margin		0.062	
Other		0.196	
TOTAL Costs		0.914	

4.2.2 Benefiting Operating Companies

Operating Company Name	Business Area	State
KeySpan Energy Delivery NY	Gas Distribution	NY
KeySpan Energy Delivery LI	Gas Distribution	NY
KeySpan Generation LLC	Generation	NY

Separate accounting will be setup to capture the costs for the Legacy system work.

4.2.3 IS Ongoing Operational Costs (RTB):



US Sanction Paper

4 Appendices

4.1 Sanction Request Breakdown by Project

N/A

4.2 Other Appendices

4.2.1 Project Cost Breakdown:

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.365	
	SDC Time & Materials	0.015	IBM
	SDC Fixed-Price	-	
	All other personnel	1.631	Wipro, Esri, Schneider, CSC and Verison
	TOTAL Personnel Costs	2.013	
Hardware	Purchase	-	
	Lease	-	
Software		0.223	
Risk Margin		0.183	
Other		0.133	AFUDC, Shared Costs and Other
TOTAL Costs		2.552	

4.2.2 Benefiting Operating Companies:

Operating Company Name	Business Area	State
Boston Gas Company	Gas Distribution	MA
Colonial Gas Company	Gas Distribution	MA



US Sanction Paper

4 Appendices

4.1 Sanction Request Breakdown by Project

N/A

4.2 Other Appendices

4.2.1 Project Cost Breakdown:

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.140	
	SDC Time & Materials	0.009	IBM
	SDC Fixed-Price	0.624	Wipro,
	All other personnel	1.123	KPMG, Greenlight
	TOTAL Personnel Costs	1.896	
Hardware	Purchase	-	
	Lease	0.414	T-Systems
Software		1.280	
Risk Margin		0.583	
Other		0.126	
TOTAL Costs		4.299	

4.2.2 Benefiting Operating Companies:

This investment will benefit the following companies:

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



US Sanction Paper

3.12.2 Reviewers

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

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

4 Appendices

4.1 Sanction Request Breakdown by Project

N/A

4.2 Other Appendices

4.2.1 Project Cost Breakdown:

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.100	
	SDC Time & Materials	0.006	
	SDC Fixed-Price	0.623	IBM, Wipro
	All other personnel	1.723	PowerPlan
	TOTAL Personnel Costs	2.452	
Hardware	Purchase	-	
	Lease	0.440	T-Systems
Software		-	
Risk Margin		0.539	
Other		0.121	
TOTAL Costs		3.551	



US Sanction Paper

4.2 Other Appendices

4.2.1 Project Cost Breakdown:

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.209	
	SDC Time & Materials	0.009	IBM
	SDC Fixed-Price	0.511	Wipro
	All other personnel	0.011	HEC
	TOTAL Personnel Costs	0.740	
Hardware	Purchase	-	
	Lease	0.631	T-Systems, SAP - HEC
Software		-	
Risk Margin		0.140	
Other		0.032	
TOTAL Costs		1.543	

4.2.2 Benefiting Operating Companies:

This investment will benefit the following 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	
Nantucket Electric Company	Electric Distribution	MA



US Sanction Paper

4 Appendices

4.1 Sanction Request Breakdown by Project

N/A

4.2 Other Appendices

4.2.1 Project Cost Breakdown:

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.209	
	SDC Time & Materials	0.009	IBM
	SDC Fixed-Price	0.444	Wipro
	All other personnel	0.011	
	TOTAL Personnel Costs	0.673	
Hardware	Purchase	-	
	Lease	0.511	T-Systems, SAP HEC
Software		-	
Risk Margin		0.121	
Other		0.029	
TOTAL Costs		1.335	

696

4.2.2 Benefiting Operating Companies:

This investment will benefit the following 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



US Sanction Paper

4 Appendices

4.1 Sanction Request Breakdown by Project

N/A

4.2 Other Appendices

4.2.1 Project Cost Breakdown:

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.255	
	SDC Time & Materials	0.009	
	SDC Fixed-Price	0.850	Wipro
	All other personnel	0.100	Thomson Reuters
	TOTAL Personnel Costs	1.214	
Hardware	Purchase	-	
	Lease	0.422	T-Systems
Software		-	
Risk Margin		0.360	
Other		0.051	
TOTAL Costs		2.047	



US Sanction Paper

3.12.2 Reviewers

N/A

4 Appendices

4.1 Sanction Request Breakdown by Project

N/A

4.2 Other Appendices

4.2.1 Project Cost Breakdown

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.300	
	SDC Time & Materials	0.461	
	SDC Fixed-Price	0.059	
	All other personnel	0.021	
	TOTAL Personnel Costs	0.841	
Hardware	Purchase	-	
	Lease	-	
Software		0.010	
Risk Margin		0.056	
Other		0.042	
TOTAL Costs		0.949	

4.2.2 Benefiting Operating Companies

This investment will benefit all electric distribution companies.

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



US Sanction Paper

4 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	-	
	Lease	-	
Software		-	
Risk Margin		-	
Other		0.987	
TOTAL Costs		0.987	

4.2 Other Appendice

4.2.1 Operating Companies

The requested budget will be allocated to all companies.

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



US Sanction Paper

4 Appendices

4.1 Sanction Request Breakdown by Project

N/A

4.2 Other Appendices

4.2.1 Project Cost Breakdown:

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.149	
	SDC Time & Materials	-	
	SDC Fixed-Price	-	
	All other personnel	4.755	Wipro, Deloitte, PowerPlan
	TOTAL Personnel Costs	4.904	
Hardware	Purchase	-	
	Lease	0.416	T-Systems
Software		-	
Risk Margin		1.297	
Other		0.274	
TOTAL Costs		6.891	



US Sanction Paper

4 Appendices

4.1 Sanction Request Breakdown by Project

N/A

4.2 Other Appendices

4.2.1 Project Cost Breakdown

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.050	
	SDC Time & Materials	-	
	SDC Fixed-Price	0.825	IBM, Wipro
	All other personnel	-	
	TOTAL Personnel Costs	0.875	
Hardware	Purchase	-	
	Lease	-	
Software		-	
Risk Margin		0.043	
Other		0.053	FDUC, Shared and Other costs
TOTAL Costs		0.971	

4.2.2 Benefiting Operating Companies

This investment will only benefit following companies in CSS.

Benefiting Operating Companies Table:

Operating Company Name	Business Area	State
Massachusetts Electric Company	Electric Distribution	MA
Nantucket Electric Company	Electric Distribution	MA



US Sanction Paper

4 Appendices

4.1 Sanction Request Breakdown by Project

N/A

4.2 Other Appendices

4.2.1 Project Cost Breakdown:

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.070	
	SDC Time & Materials	0.002	IBM
	SDC Fixed-Price	0.183	Wipro
	All other personnel	0.000	
	TOTAL Personnel Costs	0.254	
Hardware	Purchase	-	
	Lease	-	
Software		-	
Risk Margin		0.035	
Other		0.008	
TOTAL Costs		0.297	



US Sanction Paper

4.2 Other Appendices

4.2.1 Project Cost Breakdown

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.004	
	SDC Time & Materials	-	
	SDC Fixed-Price	-	
	All other personnel	0.075	
	TOTAL Personnel Costs	0.079	
Hardware	Purchase	0.230	
	Lease	-	
Software		0.464	
Risk Margin		0.063	
Other		0.059	
TOTAL Costs		0.896	

4.2.2 Benefitting Operating Companies

This investment will benefit New York and New England Electric and Distribution Companies

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

4.2.3 IS Ongoing Operational Costs (RTB)

This project will increase the IS on-going operations support costs as part of the Requirements & Design phase. These are known as Run the Business (RTB) costs.



US Sanction Paper

4 Appendices

4.1 Sanction Request Breakdown by Project

N/A

4.2 Other Appendices

4.2.1 Project Cost Breakdown:

Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.676	
	SDC Time & Materials	2.704	IBM, Wipro
	SDC Fixed-Price	-	
	All other personnel	0.400	Accenture
	TOTAL Personnel Costs	3.780	
Hardware	Purchase	-	
	Lease	0.338	T-Systems
Software		-	
Risk Margin		0.442	
Other		0.215	
TOTAL Costs		4.775	

National Grid Confidential

Date: 31/05/17

Investment Proposal Summary Sheet
Software Defined Network Enablement – Project No. INVP 4575

Region:	US	Category:	Policy	Legal Entity:	Shared
Risk Score:	36	Primary Driver:	Reliability	Project Classification:	M

Project Description:

This paper requests sanction of INVP 4575 in the amount \$ 0.487M with a tolerance of +/- 10% for the purposes of Feasibility and Analysis.

This sanction amount is \$0.487M broken down into:

\$ 0.486M	Capex
\$ 0.001M	Opex
\$ 0.000M	Removal

Brief Description

This project is part of the Technology Improvement Program (TIP) under INVP 4665 System Communications and Upgrade. Software-Defined Networking (SDN) and more specifically Software Defined Wide Area Networks (SD-WAN) is an emerging technology that offers several benefits compared with traditional, router-based networks. SDN is a new approach to computer networking that enables a network control to be centrally managed and directly programmable, supporting the implementation of application aware, enterprise wide policies and security rules that provided a far greater level of agility and network traffic control. This project will cover off the delivery of our SD-WAN strategy and design, the initial hardware purchase for four (4) Proof of Concept locations, as well as the implementation and completion of the POC at four (4) US locations.

Background

The network infrastructure that underpins all of National Grid's systems to enable communication is critical to the running of all services. Therefore it is vital that this network and communication infrastructure is reliable, with low outage and high availability. The current conditions that are driving this investment are:

- Contractually we are not able to hold Verizon to service levels once they have notified National Grid that hardware is no longer within current standards.
- Many of these Services are considered core services and it is a business requirement for these to have 24/7 availability.
- To ensure that these service levels can be maintained that are no longer within current standards, hardware and software need to be upgraded or replaced.
- In addition, reviews of current contractual arrangements have identified opportunity to reduce ongoing service charges (RTB) through up-front purchases.

In addition the program includes funds to reduce the operational costs of the following services:

- Verizon supported networks
 - Software Defined networking proof of concept. Software defined networking (SDN) is an emerging technology that enables greater control of network traffic and as a result has the ability to reduce operational costs by being able to identify and route less critical services through less expensive and less reliable network services while keeping mission critical and confidential network traffic on the highly resilient (but more expensive) core network. This project is proposed to run a proof of concept of these services to ensure they are fit for purpose and will deliver on the expected benefits.

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Date: 31/05/17

Project Costs [\$]M	Prior Year 16/17	Yr 1 17/18	Yr 2 18/19	Yr 3 19/20	Yr 4 20/21	Yr 5 21/22	Total
Start-Up - OPEX	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Start-Up - CAPEX	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Start-Up - risk margin	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Start-Up SUBTOTAL	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Requirements & Design - OPEX	\$0.001	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.001
Requirements & Design - CAPEX	\$0.146	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.146
Requirements & Design - risk margin	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Requirements & Design SUBTOTAL	\$0.147	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.147
Development & Implementation - OPEX							
People	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Software	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Hardware	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Telecommunications	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Service Contracts	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Risk Margin	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Requirements & Design SUBTOTAL	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Development & Implementation - CAPEX							
People	\$0.000	\$0.086	\$0.000	\$0.000	\$0.000	\$0.000	\$0.086
Software	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Hardware	\$0.000	\$0.001	\$0.000	\$0.000	\$0.000	\$0.000	\$0.001
Telecommunications	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Service Contracts	\$0.000	\$0.223	\$0.000	\$0.000	\$0.000	\$0.000	\$0.223
Risk Margin	\$0.000	\$0.030	\$0.000	\$0.000	\$0.000	\$0.000	\$0.030
D&I SUBTOTAL	\$0.000	\$0.340	\$0.000	\$0.000	\$0.000	\$0.000	\$0.340
TOTAL PROJECT COSTS	\$0.147	\$0.340	\$0.000	\$0.000	\$0.000	\$0.000	\$0.487
Non-regulated project - UPLIFT	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Non-regulated project - TOTAL	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Non-regulated project - UPLIFT	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Non-regulated project - TOTAL	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Non-regulated project - UPLIFT	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Non-regulated project - TOTAL	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Investment Plan No: INVP.....	Budget OPEX	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
	Budget CAPEX	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Impact on RTB costs	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000

National Grid Confidential

Date: 31/05/17

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

TOTAL BENEFITS \$M

Key Business Benefits:

It is estimated that software defined networking will reduce additional spend on bandwidth by at least 50% per annum. This project will provide confirmation of that benefit that will start as we virtualize branches beginning in FY20.

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Date: 31/05/17

Key risks: <ul style="list-style-type: none"> Hardware availability from Cisco for prompt shipment and delivery by March 31, 2017 Verizon Resource Availability 	Key Dates (Month/ Year): <table> <tr> <td>Start Up</td><td>Jan 2017</td></tr> <tr> <td>Partial Sanction</td><td>Feb 2017</td></tr> <tr> <td>Begin Strategy & Design</td><td>Mar 2017</td></tr> <tr> <td>Full Sanction</td><td>Jun 2017</td></tr> <tr> <td>Complete Strategy & Design</td><td>Jun 2017</td></tr> <tr> <td>Begin POC Implementation</td><td>Jul 2017</td></tr> <tr> <td>Complete POC</td><td>Sep 2017</td></tr> <tr> <td>National Grid Decision on Production Deployment</td><td>Sep 2017</td></tr> <tr> <td>Project Complete</td><td>Oct 2017</td></tr> <tr> <td>Project Closure Sanction</td><td>Nov 2017</td></tr> </table>	Start Up	Jan 2017	Partial Sanction	Feb 2017	Begin Strategy & Design	Mar 2017	Full Sanction	Jun 2017	Complete Strategy & Design	Jun 2017	Begin POC Implementation	Jul 2017	Complete POC	Sep 2017	National Grid Decision on Production Deployment	Sep 2017	Project Complete	Oct 2017	Project Closure Sanction	Nov 2017
Start Up	Jan 2017																				
Partial Sanction	Feb 2017																				
Begin Strategy & Design	Mar 2017																				
Full Sanction	Jun 2017																				
Complete Strategy & Design	Jun 2017																				
Begin POC Implementation	Jul 2017																				
Complete POC	Sep 2017																				
National Grid Decision on Production Deployment	Sep 2017																				
Project Complete	Oct 2017																				
Project Closure Sanction	Nov 2017																				

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

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

RECOMMENDATIONS

The Sanctioning Authority is invited to:

- APPROVE the investment of \$0.457M including risk margin of \$0.030M by May 31, 2017
- NOTE that John Gilbert, Global Head IS Service Delivery, is the Project Sponsor
- NOTE that Ginelle Davidson, is the Project Manager and has the approved financial delegation to deliver the project

Decision of the Sanctioning Authority

I hereby approve the recommendations made in this paper.

Signature 
John Gilbert, Global Head IS Service Delivery

Date 12/5/17

National Grid Confidential

Date: 03/05/17

**Investment Proposal Summary Sheet
RSA Token Purchase – Project No. INVP 4683**

Region:	US	Category:	Policy	Legal Entity:							
Risk Score:	34	Primary Driver:	Reliability	Project Classification:	M						
<p>Project Description:</p> <p>This paper requests sanction of INVP 4683 in the amount \$ 0.555M with a tolerance of +/- 10% for the purposes of Full Implementation.</p> <p>This sanction amount is \$0.555M broken down into:</p> <table> <tr> <td>\$ 0.555M</td> <td>Capex</td> </tr> <tr> <td>\$ 0.000M</td> <td>Opex</td> </tr> <tr> <td>\$ 0.000M</td> <td>Removal</td> </tr> </table> <p>Brief Description This project is part of the Technology Improvement program (TIP) under INVP 4665 System Communications and Upgrades. The purchase of tokens for RSA service. Purchase of tokens that will expire in FY19 and beyond.</p> <p>Background National Grid utilizes RSA Authentication Services and Authentication Tokens for two factor authentication services utilized for remote access services to our corporate network. The original number of tokens required to support National Grid was provisioned as part of the Verizon contract, but over time as users have been added and removed, and lost tokens replaced, the management of tokens and licenses has become very inefficient given the number of lost tokens, multiple lease schedules, and token lifespans.</p> <p>In order to improve National Grid's ability to manage this resource and better manage the costs and asset life, it is proposed that National Grid purchase the RSA tokens that are currently leased from Verizon. In addition to the asset management benefit this purchase will eliminate the RTB costs associated with the leases.</p>						\$ 0.555M	Capex	\$ 0.000M	Opex	\$ 0.000M	Removal
\$ 0.555M	Capex										
\$ 0.000M	Opex										
\$ 0.000M	Removal										

National Grid Confidential

Date: 03/05/17

Project Costs (\$M)	Prior Year 16/17	Yr 1 17/18	Yr 2 18/19	Yr 3 19/20	Yr 4 20/21	Yr 5 21/22	Total
Start-Up - OPEX	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Start-Up - CAPEX	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Start-Up - risk margin	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Start-Up SUBTOTAL	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000

Requirements & Design - OPEX	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Requirements & Design - CAPEX	\$0.555	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Requirements & Design - risk margin	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Requirements & Design SUBTOTAL	\$0.555	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.555

Development & Implementation - OPEX							
People	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Software	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Hardware	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Telecommunications	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Service Contracts	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Risk Margin	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Requirements & Design SUBTOTAL	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000

Development & Implementation - CAPEX							
People	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Software	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Hardware	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Telecommunications	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Service Contracts	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Risk Margin	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
D & I SUBTOTAL	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
TOTAL PROJECT COSTS	\$0.555	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.555

Non-regulated project - UPLIFT		\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Non-regulated project - TOTAL		\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Investment Plan No: INVP	Budget OPEX	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
	Budget CAPEX	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
Impact on RTB costs		\$0.000	-\$0.161	-\$0.161	-\$0.161	-\$0.161	-\$0.805

National Grid Confidential

Date: 03/05/17

Benefiting Operating Company	Business Area	State
National Grid USA Parent	Parent	N/A
KeySpan Energy Corp.	Service Company	N/A
Niagara Mohawk Power Corp.- Electric Distr.	Electric Distribution	NY
Niagara Mohawk Power Corp. - Gas	Gas Distribution	NY
Niagara Mohawk Power Corp. - Transmission	Transmission	NY
KeySpan Energy Delivery New York	Gas Distribution	NY
KeySpan Energy Delivery Long Island	Gas Distribution	NY
Massachusetts Electric Company	Electric Distribution	MA
Massachusetts Electric Company – Transmission	Transmission	MA
Nantucket Electric Company	Electric Distribution	MA
Boston Gas Company	Gas Distribution	MA
Colonial Gas Company	Gas Distribution	MA
Narragansett Electric Company	Electric Distribution	RI
Narragansett Gas Company	Gas Distribution	RI
Narragansett Electric Company - Transmission	Transmission	RI
New England Power Company - Transmission	Transmission	MA
NE Hydro - Trans Electric Co.	FERC Interconnect	N/A
New England Hydro - Trans Electric Co.	FERC Interconnect	N/A
New England Electric Trans Electric Co.	FERC Interconnect	N/A
NG LNG LP Regulated Entity	FERC Gas Ops	N/A
KeySpan Generation LLC (PSA)	Generation	NY
KeySpan Glenwood Energy Center	Generation	NY
KeySpan Port Jefferson Energy Center	Generation	NY
KeySpan Energy Trading Services	Parents	N/A
Transgas, Inc.	Other Non-Regulated	MA
KeySpan Energy Development Corporation	Non-Regulated	NY
KeySpan Services Inc.	Other Non-Regulated	NY
TOTAL BENEFITS \$M		
Key Business Benefits:		
The potential reduction in ongoing costs (RTB) through changing of commercial model, along with having the ability to manage these resources better.		

National Grid Confidential

Date: 03/05/17

Key risks:	Key Dates (Month/ Year):
	Start Up Complete
	Partial Sanction Complete
	Begin Requirements/Design Complete
	Full Sanction Complete
	Begin Dev & Implement Complete
	Begin User Accept Testing Complete
	Move to Production / Last Go Live Complete
	Project Complete Complete
	Project Closure Sanction Jun 2017

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

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

RECOMMENDATIONS

The Sanctioning Authority is invited to:

- APPROVE the investment of \$0.555M including risk margin of \$0.000M by May 31, 2017
- NOTE that John Gilbert, Global Head IS Service Delivery, is the Project Sponsor
- NOTE that Chris Granata, is the Project Manager and has the approved financial delegation to deliver the project

Decision of the Sanctioning Authority

I hereby approve the recommendations made in this paper.

Signature



Date

12/5/17

John Gilbert, Global Head IS Service Delivery



US Sanction Paper

4 Appendices

4.1 Sanction Request Breakdown by Project

N/A

4.2 Other Appendices

4.2.1 Project Cost Breakdown:

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing resources
Personnel	NG Resources	0.003	
	SDC Time & Materials	0.002	IBM
	SDC Fixed-Price	-	
	All other personnel	-	
	TOTAL Personnel Costs	0.005	
Hardware	Purchase	-	
	Lease	-	
Software		3.685	
Risk Margin		-	
Other		-	
TOTAL Costs		3.690	



US Sanction Paper

4.2 Other Appendices

4.2.1 Project Cost Breakdown

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.148	
	SDC Time & Materials	0.045	
	SDC Fixed-Price	-	
	All other personnel	0.344	
	TOTAL Personnel Costs	0.537	
Hardware	Purchase	-	
	Lease	-	
Software		0.006	
Risk Margin		0.056	
Other		0.063	
TOTAL Costs		0.662	

4.2.2 Benefiting Operating Companies

Operating Company Name	Business Area	State
Niagara Mohawk Power Corp.	Transmission	NY
Massachusetts Electric Company	Transmission	MA
Narragansett Electric Company	Transmission	RI
New England Power Company	Transmission	MA
NE Hydro - Trans Electric Co.	Transmission Hydro	MA
New England Hydro - Trans Corp.	Transmission Hydro	MA
New England Electric Trans Corp	Transmission Hydro	MA
NG LNG LP Regulated Entity	LNG	N/A



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

Investment Paper - \$ Project Cost Breakdown: The table below presents a high-level analysis of project costs. In most cases, it will provide the complete analysis that is necessary to answer the question, except for the right column which must be completed manually. In other cases, the table will provide a good start, but you must add an additional footnote (explained below). In all cases, you should 'Copy' the table below and 'Paste' it as a picture into the Investment Paper.

- When is an additional footnote required? An explanatory footnote is required if the category 'Other' is greater than \$200,000. In such an instance, you must provide a more detailed breakdown of the costs classified as 'Other' until the value of 'Other' falls below the \$200,000 threshold.

- If you must breakdown 'Other' costs, how can you find information about the costs included in 'Other'? The vast majority of the time, you can find all such information in one place: in the table entitled 'Other' located at the bottom of worksheet '3b. New Costs (non-personnel)'. In rare instances, it may be necessary to do further cost analysis, but this will only occur for projects with very high cost estimates.

INVP 4642

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	

Vendor/Supplier Breakdown for 1-slide PowerPoint Summary: In order to complete the 1-slide Summary that accompanies each Investment Paper, it is necessary to identify key vendors and the spending amounts associated with each. The table below provides the information necessary to address this portion of the 1-Slide Summary.

Vendor	\$ millions
SDC.1 - IBM	-
SDC.2 - Wipro	-
SDC.3 - tbd	-
IBM, non-SDC	-
Wipro, non-SDC	-
Microsoft	-
n/a	-
n/a	-
n/a	-
n/a	-
Other	4.230

National Grid, USA

**Rhode Island NECO Rate Case DIV 22-3
USFP-R3 and EHR1 Release Budgets**

START MONTH											
CY	strMonth	Order	Order_Description	Project	Sub Release	Total Cost	Capex %	Opex %	Note	CAPEX Budget	Comments
2013		Multiple	USFP -Release 3 (R3)	USFP-R3-Payroll USFP-R3-Supply Chain USFP-R3-Finance USFP-R3-IT Delivery						51,400,000	There were multiple workstreams (Payroll, Supply Chain, Finance, IT Delivery) included in the overall USFP Release 3 (R3) project budget. A post project assessment was performed to ensure appropriate accounting (i.e. CAPEX, OPEX) of all actual costs.
			Total USFP-R3 Budget							51,400,000	
2014	DEC	90000148059	EHR1 - Supply Chain	SC-03A	Dec-14	985,000	0.52	0.48		512,200	
				SC-04F	Dec-14	709,000	0.39	0.61		276,510	
				SC-04J	Dec-14	2,709,000	0.64	0.36		1,733,760	
				SC-04K	Mar-16	9,257,000	0.95	0.05		8,794,150	
				SC-06A	Nov-15	3,647,000	0.72	0.28		2,625,840	
				SC-07	Nov-15	1,001,000	0.74	0.26		740,740	
				SC-07 HANA	Nov-15	329,000	0.8	0.2		263,200	
2014	DEC	90000148060	EHR1 - Finance	RTR-04D	Dec-14	1,738,000	0.76	0.24		1,320,880	
				RTR-05C	Dec-14	1,115,000	0.2	0.8		223,000	
				RTR-17	Nov-15	2,911,000	0.65	0.35		1,892,150	
				RTR-12	Jun-15	918,000	0.42	0.58		385,560	
				RTR-14G	Jun-15	3,671,000	0.89	0.11		3,267,190	
				RTR-17 HANA	Nov-15	693,000	0.82	0.18		568,260	
2014	DEC	90000148061	EHR1 - IT Delivery	EHP-7	Nov-15	740,000	0.14	0.86		103,600	
				Wipro Consulting Support	Nov-15	22,362,000	0.59	0.41	All Projects	13,193,580	This Wipro work, which supported multiple EHR1 workstreams, was budgeted within a single line but the actuals were charged out to the appropriate workstream (i.e. Payroll) This work was budgeted within a single line; however, actuals were charged out to the appropriate workstream.
				Infrastructure T-Systems	Nov-15	5,125,000	1	0	All Projects	5,125,000	
				SAP License	Nov-15	529,000	1	0		529,000	
2014	DEC	90000148062	EHR1 - Payroll	Payroll 10	Dec-14	1,945,000	0.73	0.27		1,419,850	
				Payroll-03	Nov-15	2,713,000	0.71	0.29		1,926,230	
				Payroll-05	Nov-15	2,489,000	0.69	0.31		1,717,410	
				Payroll-07	Nov-15	491,000	0.74	0.26		363,340	
2015	SEP	90000148055	EHR1 - PMO	PMO-01	Nov-15	7,949,000	0.21	0.79		1,669,290	
				PMO-02	Nov-15	2,251,000	1	0		2,251,000	
				NG Labor	Nov-15	2,082,000	0.38	0.62	All Projects	791,160	
				RPT-01	Nov-15	3,378,000	0.91	0.09		3,073,980	
				UI-01	Mar-16	2,385,000	0.95	0.05		2,265,750	
2015	SEP	90000148063	EHR1 - BPS	BPS-07	Nov-15	5,269,000	0.53	0.47		2,792,570	
				BPS-08	Jan-16	124,000	0.81	0.19		100,440	
				SOL-01	Dec-14	37,000	0.5	0.5		18,500	
2016	MAR	90000172054	Finance Remediation FY16 Capital	RTR-23 HANA	Mar-16	4,000,000	0.85	0.15		3,400,000	
				RTR-24 HANA	Jan-16	2,000,000	0.66	0.34		1,320,000	
TOTAL EHR1 Budget						\$95,552,000				\$64,664,140	

Narragansett Electric
Post Test Year Information System Investments

Project	Individual project components	Individual In-Service Date	Amount	DIV 9-5 Reference	DIV 9-5 Page number	DIV 22-3 Reference	Total Investment
Regulatory Mandates Placeholder	Regulatory Mandates - FY21	3/31/2021	20,000,000.00	Attachment DIV 9-5-2	1-4	IRS	\$61,869,000
	Regulatory Mandates - FY20	3/31/2020	20,000,000.00	Attachment DIV 9-5-2	1-4	IRS	
	Regulatory Mandates - FY19	3/31/2019	19,140,000.00	Attachment DIV 9-5-2	1-4	IRS	
	Regulatory Mandates - FY18	3/31/2018	2,729,000.00	Attachment DIV 9-5-2	5-15	IRS	
INVP 3932 Call Center Customer Contact Center/SDC Technology Upgrade Implement Solution		9/1/18		Attachment DIV 9-5-2	16-33		\$27,725,000
INVP 3737 US CNI GMS SCADA Upgrade & Consolidation		12/31/19		Attachment DIV 9-5-2	34-49		\$21,474,909
	INVP 4825 DR Priority 3 Apps Remediation	12/31/2020	1,000,000.00	Attachment DIV 9-5-2	50-53	IRS	
	INVP 4377 Data Centre Migration & Capacity Increase	3/31/2019	856,480.00	Attachment DIV 9-5-2	54-69		
	INVP 4676 Hix D/C Improvement Server Refresh	3/31/2018	849,682.01	Attachment DIV 9-5-2	70-74		
	INVP 4824 DR Priority 2 Apps Remediation	12/31/2019	750,000.00	Attachment DIV 9-5-2	75-78	IRS	
	INVP 4981 Cloud Orchestration, Self service and Broker	3/31/2019	750,000.00	Attachment DIV 9-5-2	79-82	IRS	
	INVP 4713 EMM Licenses	12/31/2018	660,000.00	Attachment DIV 9-5-2	83-86	IRS	
	INVP 4760 Mainframe DR Machine	3/31/2018	650,000.00	Attachment DIV 9-5-2	87-100		
	INVP 4714-EMM Phase2	3/31/2018	616,677.00	Attachment DIV 9-5-2	101-115		
	INVP 4836 Network Transformation Continuation-Substations and Security Sites	12/31/2020	600,000.00	Attachment DIV 9-5-2	116-119	IRS	
	INVP 4828 Hicksville Fiber	3/31/2019	600,000.00	Attachment DIV 9-5-2	120-123	IRS	
	INVP 4826 EMM Single Sign on	12/31/2018	600,000.00	Attachment DIV 9-5-2	124-127	IRS	
	INVP 4269 RAS/VPN Re-Platform/Mobile	3/31/2018	600,000.00	Attachment DIV 9-5-2	128-139		
	INVP 4577 Call Manager Upgrade	12/31/2017	588,997.64	Attachment DIV 9-5-2	140-143		
	INVP 4710 Data Security	3/31/2021	500,000.00	Attachment DIV 9-5-2	144-147	IRS	
	INVP 4493 Monitoring and Alerting	3/31/2020	500,000.00	Attachment DIV 9-5-2	148-151	IRS	
	INVP 4710 Data Security	3/31/2020	500,000.00	Attachment DIV 9-5-2	144-147	IRS	
	INVP 4493 Monitoring and Alerting	3/31/2019	500,000.00	Attachment DIV 9-5-2	148-151	IRS	
	INVP 4710 Data Security	3/31/2019	500,000.00	Attachment DIV 9-5-2	144-147	IRS	
	INVP 4725 MWORK and Netmotion Risk Avoidance	12/31/2018	500,000.00	Attachment DIV 9-5-2	152-154	IRS	
	INVP 4688 Legacy DMZ Firewalls	3/31/2018	489,170.13	Attachment DIV 9-5-2	155-158		
	INVP 4727 Virtual Desktop - DaaS	12/31/2019	481,250.00	Attachment DIV 9-5-2	159-173		

Narragansett Electric
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Project	Individual project components	Individual In-Service Date	Amount	DIV 9-5 Reference	DIV 9-5 Page number	DIV 22-3 Reference	Total Investment
Technology Modernization Program	INVP 4778 - Dev Test to Cloud	9/30/2018	464,285.71	Attachment DIV 9-5-2	174-177	IRS	\$20,736,317
	INVP 4674 Log Logic	3/31/2018	435,550.07	Attachment DIV 9-5-2	178-181		
	INVP 4490 Application Performance Management (APM)	12/31/2020	400,000.00	Attachment DIV 9-5-2	182-185	IRS	
	INVP 4984 Lincoln Control Room Telephony Replacement	3/31/2020	400,000.00	Attachment DIV 9-5-2	186-189	IRS	
	INVP 3667 SharePoint 2007 Decommission	12/31/2019	400,000.00	Attachment DIV 9-5-3	1-4	IRS	
	INVP 4261 Service Now - Release 3	3/31/2018	383,000.00	Attachment DIV 9-5-3	5-19	See Attachment DIV 22-3-5 pg. 1	
	INVP 4274 VSTIG Hardware Refresh	3/31/2018	380,762.61	Attachment DIV 9-5-3	20-34		
	INVP 4645 Refresh of network equipment at Verizon supported Sites (transformed sites-core infrastructure sites)	12/31/2017	364,743.66	Attachment DIV 9-5-3	35-38		
	INVP 4834 Network Transformation Continuation-Risk Avoidance	3/31/2020	360,000.00	Attachment DIV 9-5-3	39-42	IRS	
	INVP 4759 MTC and Syracuse Boardrooms & Auditoriums	3/31/2018	352,000.00	Attachment DIV 9-5-3	43-55	See Attachment DIV 22-3-5 pg. 2	
	INVP 4835 Network Transformation Continuation-Substations	12/31/2020	350,000.00	Attachment DIV 9-5-3	56-59	IRS	
	INVP 4279 Citrix Infrastructure Upgrade (Xenapp and NetScaler)	3/31/2018	333,333.33	Attachment DIV 9-5-3	60-71	See Attachment DIV 22-3-5 pg. 3	
	INVP 4270 RSA Re-platform	3/31/2018	311,111.11	Attachment DIV 9-5-3	72-75	IRS	
	INVP 4840 VC - MetroTech Auditorium VC	9/30/2018	300,000.00	Attachment DIV 9-5-3	76-79	IRS	
	INVP 4493 Monitoring and Alerting	3/31/2018	300,000.00	Attachment DIV 9-5-2	148-151	IRS	
	INVP 4392 PPMI	12/31/2017	264,355.00	Attachment DIV 9-5-3	80-94		
	INVP 4490 Application Performance Management (APM)	12/31/2018	250,000.00	Attachment DIV 9-5-2	182-185	IRS	
	INVP 4749 VSTIG Hardware Refresh - IDS Card Replacement	3/31/2018	244,648.76	Attachment DIV 9-5-3	95-108		
	INVP 4267 - WAN Bandwidth Upgrades	3/31/2018	239,583.33	Attachment DIV 9-5-3	109-123	See Attachment DIV 22-3-5 pg. 4	
	INVP 4687 Network Tx-NB/MTC	12/31/2017	210,910.49	Attachment DIV 9-5-3	124-127		
	INVP 4841 VC - Syracuse A39/40	6/30/2019	200,000.00	Attachment DIV 9-5-3	128-131	IRS	
	INVP 3996 Mobile Application Development Platform (MADP)	3/31/2019	200,000.00	Attachment DIV 9-5-3	132-135	IRS	
	INVP 4284 Wireless LAN Management Tools	3/31/2019	150,000.00	Attachment DIV 9-5-3	136-139	IRS	
	INVP 4362 Legacy DMZ migration to vSTIG	12/31/2018	150,000.00	Attachment DIV 9-5-3	140-154		
	INVP 4493 Monitoring and Alerting	3/31/2021	100,000.00	Attachment DIV 9-5-2	148-151	IRS	
	INVP 4705 - NG Labs	3/31/2018	99,775.92	Attachment DIV 9-5-3	155-158		
	Endpoint Scanning (Tanium)	3/31/2019	2,300,000.00				
	Identity & Access Management: Role Based Access Management	3/1/2020	1,650,000.00				
	Identity & Access Management: Fine Grain Access Management (Unified Platform)	3/1/2019	1,650,000.00				
	US CNI Security Enhancements Phase 1	3/1/2019	1,650,000.00				
	Cloud Security (Cloud Access Security Broker)	12/1/2017	1,460,000.00				
	Identity & Access Management: Privileged Access Management	3/1/2019	1,379,800.00				
	Data Visualization	3/1/2020	1,000,000.00				

Narragansett Electric
Post Test Year Information System Investments

Project	Individual project components	Individual In-Service Date	Amount	DIV 9-5 Reference	DIV 9-5 Page number	DIV 22-3 Reference	Total Investment
Cyber 2 Program	Removable Media Control - Full Roll out	10/1/2019	1,000,000.00	Attachment DIV 9-5-3	159-176		\$18,609,680
	Vstig Scaling Upgrades	3/1/2019	1,000,000.00				
	Threat Behavior Modeling	3/1/2020	800,000.00				
	Domain Based Security Phase 1	3/1/2019	800,000.00				
	Risk Based Authentication - 2FA token alternative (Multi Factor Authentication)	3/1/2018	637,880.00				
	US CNI Intrusion Detection/Prevention Phase 1 (CNI IDS Refresh)	12/1/2018	550,000.00				
	Enterprise Centralized Patch Management	12/1/2018	500,000.00				
	Fundamentals Package	12/1/2018	500,000.00				
	Security Research Lab	3/1/2020	325,000.00				
	Develop Robust Incident Response	12/31/2017	280,000.00				
	Continuous review of Reference Security Architecture	8/1/2019	277,000.00				
	Virtualized Browser	12/1/2018	250,000.00				
	GPS Project	3/31/2021	250,000.00				
	Perimeter Enhancements	10/1/2018	125,000.00				
	Network Access Control	10/1/2018	125,000.00				
	Internal PKI (Public Key) Infrastructure	10/1/2018	100,000.00				
Cyber 1 Program	INVP 3614D1 Ent Network Security	1/31/2018	10,283,270.81	Attachment DIV 9-5-3	177-189	See Attachment DIV 22-3-5 pg. 5	\$15,826,916
	INVP 3614B7 CNI Network Security	3/31/2018	4,168,586.67	Attachment DIV 9-5-3	190-206	See Attachment DIV 22-3-5 pg. 6	
	INVP 3614E4 US CNI Security I&E	3/31/2018	1,375,058.76	Attachment DIV 9-5-3	207-213	See Attachment DIV 22-3-5 pg. 7	
INVP 4914 US CNI-EMS Lifecycle Hardware and Software Upgrade		8/1/19		Attachment DIV 9-5-4 REDACTED	1-14	See Attachment DIV 22-3-5 pg. 8	\$14,897,000
INVP 4307 US Win 7 Refresh Ph3		12/31/17		Attachment DIV 9-5-4 REDACTED	15-30		\$13,617,457
Regulatory Mandates	INVP 4411AB Distributed Generation Portal	11/30/2017	4,128,486.14	Attachment DIV 9-5-4 REDACTED	31-49		\$12,085,230
	INVP 4479 US Control-Gas Electronic Bulletin Board (EBB) Upgrade	5/1/2018	3,000,000.00	Attachment DIV 9-5-4 REDACTED	50-54	See Attachment DIV 22-3-5 pg. 9	
	INVP 4124 Auto Remote Net Meter	11/30/2017	2,041,744.07	Attachment DIV 9-5-4 REDACTED	55-68		
	INVP 4400 Annual HR & Payroll Mandatory Service Pack Upgrade (HRSP) - FY18	8/14/2017	1,265,000.00	Attachment DIV 9-5-4 REDACTED	69-82	See Attachment DIV 22-3-5 pg. 10	
	INVP 4411D New Gas Connections	10/31/2018	860,000.00	Attachment DIV 9-5-4 REDACTED	31-49		
	INVP 4421 - New Arrearage Forgiveness Plan	2/1/2018	447,000.00	Attachment DIV 9-5-4 REDACTED	83-90	See Attachment DIV 22-3-5 pg. 11	
	INVP 4411C New Electric Connections	4/30/2018	343,000.00	Attachment DIV 9-5-4 REDACTED	31-49		
INVP 4708 Business Innovation Projects 2	INVP 4708 Business Innovation Projects 2	3/31/2019	3,368,613.00	See the Response to DIV 3-43			\$11,833,333
	INVP 4708 Business Innovation Projects 2	3/31/2020	3,973,236.00				
	INVP 4708 Business Innovation Projects 2	3/31/2021	4,491,484.00				
INVP 4728 Business Innovation Projects 3	INVP 4728 Business Innovation Projects 3	3/31/2019	3,368,613.00	See the Response to DIV 3-43			\$11,833,333
	INVP 4728 Business Innovation Projects 3	3/31/2020	3,973,236.00				
	INVP 4728 Business Innovation Projects 3	3/31/2021	4,491,484.00				
INVP 4750 Customer Experience Transformation Tech Program		3/31/19		Attachment DIV 9-5-4 REDACTED	91-106		\$10,496,000
INVP 4398 Storms/ISched Upgrade		4/23/18		Attachment DIV 9-5-4 REDACTED	107-120		\$9,503,263
INVP 4570 US CNI Tech Services-Network Equipment Lifecycle Replacements		8/1/19		Attachment DIV 9-5-4 REDACTED	121-132		\$9,169,203
S005242 M112 Systemic Improvement		7/10/17		Attachment DIV 9-5-6	63-65	See Attachment DIV 22-3-5 pg. 12	\$8,354,545
INVP 3683X7 Big Data Security Analytics Phase 1 & Phase 2	Big Data Security Analytics Phase 1	3/1/2021	4,621,552.00	Attachment DIV 9-5-3	159-176		\$8,087,716
	Big Data Security Analytics Phase 2	3/1/2021	3,466,164.00				

Narragansett Electric
Post Test Year Information System Investments

Project	Individual project components	Individual In-Service Date	Amount	DIV 9-5 Reference	DIV 9-5 Page number	DIV 22-3 Reference	Total Investment
INVP 4464 Data Visualization		9/30/17		Attachment DIV 9-5-4 REDACTED	133-147		\$8,068,089
Physical Security Replacements	All Companies Physical Security Replacements - FY18	3/31/2018	3,216,653.00	Attachment DIV 9-5-6	66		\$6,955,500
	All Companies Physical Security Replacements - FY19	3/31/2019	825,000.00				
	All Companies Physical Security Replacements - FY20	3/31/2020	835,000.00				
	All Companies Physical Security Replacements - FY21	3/31/2021	860,000.00				
	New England Companies Physical Security Replacements - FY18	3/31/2018	486,847.00				
	New England Companies Physical Security Replacements - FY19	3/31/2019	234,000.00				
	New England Companies Physical Security Replacements - FY20	3/31/2020	240,000.00				
	New England Companies Physical Security Replacements - FY21	3/31/2021	258,000.00				
INVP 4408 Doc Mgmt Systems Replacement Delivery		6/22/18		Attachment DIV 9-5-4 REDACTED	148-164		\$6,049,256
INVP 3683X13 Domain Based Security Phase 2 (Network Segregation)		3/1/21		Attachment DIV 9-5-3	159-176		\$6,000,000
Other fiscal plan initiatives	INVP 3956 WIFI for Fleet Services Diagnostic Laptops	11/1/2017	844,765.28	Attachment DIV 9-5-4 REDACTED	165-178		\$5,618,031
	INVP 4467 STORMS Capital Cost Estimates	3/1/2019	776,000.00	Attachment DIV 9-5-4 REDACTED	179-182	IRS	
	INVP 3982 Substation Monitoring-DobleARMS	1/1/2018	624,000.00	Attachment DIV 9-5-4 REDACTED	183-195		
	INVP 4466 Gas Capital Investment Planning Tool	1/17/2018	572,000.00	Attachment DIV 9-5-4 REDACTED	196-199	IRS	
	INVP 4480 US Control-Gas System Operating Procedure (SOP) Upgrade	10/2/2017	542,000.00	Attachment DIV 9-5-4 REDACTED	200-213		
	INVP 4390 Plastic Fusion II	3/31/2018	456,000.00	Attachment DIV 9-5-4 REDACTED	214-226		
	INPV 4462 Computapole Enhancements to Support Inspection Types	3/1/2018	450,000.00	Attachment DIV 9-5-4 REDACTED	227-239		
	INVP 4487 Changes to ACIS for PMCC Civil Vendor Billing	7/31/2018	382,000.00	Attachment DIV 9-5-4 REDACTED	240-253		
	INVP 3986 Cascade Electric Application Upgrade Project	10/31/2017	375,000.00	Attachment DIV 9-5-4 REDACTED	254-267		
	INVP 4588 US SAP: Solution Manager Upgrade	3/31/2018	303,611.74	Attachment DIV 9-5-4 REDACTED	268-271		
	INVP 3718 New Medical System	3/31/2018	292,654.32	Attachment DIV 9-5-4 REDACTED	272-286		
INVP 4564 US SAP: Enhancement Pack 9 Upgrade		3/31/20		Attachment DIV 9-5-5	1-4	IRS	\$5,328,000
INVP 4395 US Mobile Device Refresh		3/31/18		Attachment DIV 9-5-5	5-18		\$4,492,944
INVP 4843 Virtualized Branches		3/31/20		Attachment DIV 9-5-5	19-22	IRS	\$3,700,000
INVP 4489 Active Directory Improvements		12/31/18		Attachment DIV 9-5-5	23-38		\$3,555,000
INVP 4491 ICE Replacement		12/31/18		Attachment DIV 9-5-5	39-55		\$3,447,722
INVP 4606 Data Visualization Expansion		6/30/19		Attachment DIV 9-5-5	56-71		\$3,435,000
INVP 4707 Business Innovation Projects 1		3/31/18		See the Response to DIV 3-43			\$3,368,613
INVP 4568 US CNI-EMS Lifecycle Hardware and Software Upgrade		8/1/19		Attachment DIV 9-5-5	72-82		\$3,144,063
INVP 4706 1327 Interfaces - 523 FTS, 340 RDX, 245 MQSI, 253 JCAPS, 44 PM4D, 7 VB		6/30/19		Attachment DIV 9-5-5	83-86	IRS	\$3,083,333
NVP 4348 US SAP: Infrastructure Landscape		3/31/18		Attachment DIV 9-5-5	87-99		\$2,999,067
INVP 4217 US SAP: Business Planning		3/31/19		Attachment DIV 9-5-5	100-113		\$2,645,000
INVP 4680 WAP Density deployment		3/31/18		Attachment DIV 9-5-5	114-117		\$2,546,133
INVP 3683X11 IT/OT Discovery and Implementation Phase 1		10/1/20		Attachment DIV 9-5-3	159-176		\$2,540,160

Narragansett Electric
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Project	Individual project components	Individual In-Service Date	Amount	DIV 9-5 Reference	DIV 9-5 Page number	DIV 22-3 Reference	Total Investment
INVP 4222 Governance Risk & Compliance (GRC) Optimization/Upgrade		3/1/19		Attachment DIV 9-5-5	118-130		\$2,522,000
INVP 4562 US SAP: Business Warehouse (BW) Consolidation to HANA Enterprise Cloud (HEC)		3/31/19		Attachment DIV 9-5-5	131-134	IRS	\$2,366,000
INVP 3683X8 Enhanced DLP Gateway and Endpoint		3/1/21		Attachment DIV 9-5-3	159-176		\$2,238,480
INVP 4364 Wireless Network		3/31/18		Attachment DIV 9-5-5	135-141	See Attachment DIV 22-3-5 pg. 13	\$2,221,820
INVP 4481 US MDS-Energy Accounting System (EAS) migration to Wholesale Settlement Application (WSA)		10/1/18		Attachment DIV 9-5-5	142-154		\$2,160,000
INVP 4563 US SAP: FERC on Hana (FOH)		3/31/19		Attachment DIV 9-5-5	155-157	IRS	\$2,115,000
INVP 4704Q Customer Bill Redesign		3/31/19		Attachment DIV 9-5-5	158-161	IRS	\$2,108,147
INVP 4280 US VSTIG Bandwidth Ph2		3/31/18		Attachment DIV 9-5-5	162-177		\$2,089,174
INVP 4709 Data Centre Consolidation efforts		3/31/19		Attachment DIV 9-5-5	178-181	IRS	\$2,000,000
INVP 3683X4 Security Incident Event Management Phase 4 and Phase 5	Security Incident Event Management Phase 4 Security Incident Event Management Phase 5	3/1/2021 12/1/2020	1,266,300.00 733,150.00	Attachment DIV 9-5-3	159-176		\$1,999,450
INVP 3683X5 Identity & Access Management: Shared Area Access Management		3/1/21		Attachment DIV 9-5-3	159-176		\$1,740,000
INVP 4761 US Foundation Hosting Renewal		3/31/18		Attachment DIV 9-5-5	182-196		\$1,636,250
INVP 4632 US Video Conferencing upgrade for RW		12/31/17		Attachment DIV 9-5-5	197-200		\$1,588,097
INVP 4830 Migration of Oracle to Linux		8/1/21		Attachment DIV 9-5-5	201-204	IRS	\$1,500,000
INVP 4397 Ariba TLS and CI Update		8/28/17		Attachment DIV 9-5-5	205-211	See Attachment DIV 22-3-5 pg. 14	\$1,462,275
INVP 4188 Aging System Stabilize		3/31/18		Attachment DIV 9-5-5	212-225		\$1,459,505
INVP 4461 Unix51 Interface Migration		9/30/18		Attachment DIV 9-5-5	226-240		\$1,308,051
INVP 4693 Enterprise Labs		12/31/17		Attachment DIV 9-5-6	1-15		\$1,247,083
INVP 4662 - Concur Licenses		1/31/18		Attachment DIV 9-5-6	16-30		\$1,232,000
INVP 4289 US Network Improvement		3/31/18		Attachment DIV 9-5-6	31-37	See Attachment DIV 22-3-5 pg. 15	\$1,215,547
INVP 4837 SD-WAN Core, automation, orchestration tools and pilot sites		3/31/19		Attachment DIV 9-5-6	38-41	IRS	\$1,200,000
INVP 3486 US MDS-Itron Enterprise Edition (IEE)		3/31/18		Attachment DIV 9-5-6	42-56		\$1,193,859
INVP 3430 Mobility - (MDM) Mobile Device		12/31/17		Attachment DIV 9-5-6	57-62	See Attachment DIV 22-3-5 pg. 16	\$1,017,693

Total Capital Investment
Rent Expense allocation to Narragansett Electric

\$392,715,244
\$17,859,814

Investment Paper - § Project Cost Breakdown: The table below presents a high-level analysis of project costs. In most cases, it will provide the complete analysis that is necessary to answer the question, except for the right column which must be completed manually. In other cases, the table will provide a good start, but you must add an additional footnote (explained below). In all cases, you should 'Copy' the table below and 'Paste' it as a picture into the Investment Paper.

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- If you must breakdown 'Other' costs, how can you find information about the costs included in 'Other'? The vast majority of the time, you can find all such information in one place: in the table entitled 'Other' located at the bottom of worksheet '3b. New Costs (non-personnel)'. In rare instances, it may be necessary to do further cost analysis, but this will only occur for projects with very high cost estimates.

INVP 4261

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.137	
	SDC Time & Materials	-	
	SDC Fixed-Price	0.144	
	All other personnel	0.132	
	TOTAL Personnel Costs	0.413	
Hardware	Purchase	-	
	Lease	-	
Software		-	
Risk Margin		0.038	
Other		0.020	
TOTAL Costs		0.471	

Vendor/Supplier Breakdown for 1-slide PowerPoint Summary: In order to complete the 1-slide Summary that accompanies each Investment Paper, it is necessary to identify key vendors and the spending amounts associated with each. The table below provides the information necessary to address this portion of the 1-Slide Summary.

Vendor	\$ millions
SDC.1 - IBM	-
SDC.2 - Wipro	0.144
SDC.3 - tbd	-
IBM, non-SDC	-
Wipro, non-SDC	-
n/a	-
n/a	-
n/a	-
n/a	-

Investment Paper - § Project Cost Breakdown: The table below presents a high-level analysis of project costs. In most cases, it will provide the complete analysis that is necessary to answer the question, except for the right column which must be completed manually. In other cases, the table will provide a good start, but you must add an additional footnote (explained below). In all cases, you should 'Copy' the table below and 'Paste' it as a picture into the Investment Paper.

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INVP 4759

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	-	
	SDC Time & Materials	0.054	
	SDC Fixed-Price	-	
	All other personnel	0.053	
	TOTAL Personnel Costs	0.108	
Hardware	Purchase	0.098	
	Lease	-	
Software		-	
Risk Margin		-	
Other		0.211	
TOTAL Costs		0.416	

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Vendor	\$ millions
SDC.1 - IBM	0.054
SDC.2 - Wipro	-
SDC.3 - tbd	-
IBM, non-SDC	-
Wipro, non-SDC	-
Verizon	0.342
n/a	-
n/a	-
n/a	-
n/a	-
Other	-

Investment Paper - § Project Cost Breakdown: The table below presents a high-level analysis of project costs. In most cases, it will provide the complete analysis that is necessary to answer the question, except for the right column which must be completed manually. In other cases, the table will provide a good start, but you must add an additional footnote (explained below). In all cases, you should 'Copy' the table below and 'Paste' it as a picture into the Investment Paper.

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INVP 4279

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.006	
	SDC Time & Materials	0.073	
	SDC Fixed-Price	-	
	All other personnel	0.057	
	TOTAL Personnel Costs	0.136	
Hardware	Purchase	-	
	Lease	-	
Software		-	
Risk Margin		-	
Other		0.005	
TOTAL Costs		0.140	

Vendor/Supplier Breakdown for 1-slide PowerPoint Summary: In order to complete the 1-slide Summary that accompanies each Investment Paper, it is necessary to identify key vendors and the spending amounts associated with each. The table below provides the information necessary to address this portion of the 1-Slide Summary.

Vendor	\$ millions
SDC.1 - IBM	0.055
SDC.2 - Wipro	0.018
SDC.3 - tbd	-
IBM, non-SDC	-
Wipro, non-SDC	-
DXC Systems	0.054
n/a	-
n/a	-
n/a	-
n/a	-
Other	0.003

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INVP 4267

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.139	N/A
	SDC Time & Materials	-	
	SDC Fixed-Price	-	
	All other personnel	0.204	Verizon Resources
	TOTAL Personnel Costs	0.343	
Hardware	Purchase	0.001	Verizon
	Lease	-	
Software		-	
Risk Margin		0.034	
Other		0.008	Overhead / Shared Cost
TOTAL Costs		0.386	

Vendor/Supplier Breakdown for 1-slide PowerPoint Summary: In order to complete the 1-slide Summary that accompanies each Investment Paper, it is necessary to identify key vendors and the spending amounts associated with each. The table below provides the information necessary to address this portion of the 1-Slide Summary.

Vendor	\$ millions
SDC.1 - IBM	-
SDC.2 - Wipro	-
SDC.3 - tbd	-
IBM, non-SDC	-
Wipro, non-SDC	0.008
Verizon	0.197
n/a	-
n/a	-
n/a	-
n/a	-
Other	-

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INVP 3614D1

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.359	
	SDC Time & Materials	0.040	
	SDC Fixed-Price	0.068	
	All other personnel	4.509	
	TOTAL Personnel Costs	4.976	
Hardware	Purchase	2.635	
	Lease	-	
Software		0.165	
Risk Margin		0.494	
Other		5.031	
TOTAL Costs		13.301	

Vendor/Supplier Breakdown for 1-slide PowerPoint Summary: In order to complete the 1-slide Summary that accompanies each Investment Paper, it is necessary to identify key vendors and the spending amounts associated with each. The table below provides the information necessary to address this portion of the 1-Slide Summary.

Vendor	\$ millions
SDC.1 - IBM	-
SDC.2 - Wipro	0.189
SDC.3 - tbd	-
IBM, non-SDC	-
Wipro, non-SDC	-
Verizon	7.254
DXC	-
DR&S	0.038
HP	-
NG(IS)-CNI	-
Other	0.738

Investment Paper - § Project Cost Breakdown: The table below presents a high-level analysis of project costs. In most cases, it will provide the complete analysis that is necessary to answer the question, except for the right column which must be completed manually. In other cases, the table will provide a good start, but you must add an additional footnote (explained below). In all cases, you should 'Copy' the table below and 'Paste' it as a picture into the Investment Paper.

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INVP 3614B7

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.523	
	SDC Time & Materials	-	
	SDC Fixed-Price	-	
	All other personnel	0.366	
	TOTAL Personnel Costs	0.889	
Hardware	Purchase	2.313	
	Lease	-	
Software		-	
Risk Margin		0.402	
Other		4.407	
TOTAL Costs		8.011	

Vendor/Supplier Breakdown for 1-slide PowerPoint Summary: In order to complete the 1-slide Summary that accompanies each Investment Paper, it is necessary to identify key vendors and the spending amounts associated with each. The table below provides the information necessary to address this portion of the 1-Slide Summary.

Vendor	\$ millions
SDC.1 - IBM	-
SDC.2 - Wipro	-
SDC.3 - tbd	-
IBM, non-SDC	-
Wipro, non-SDC	-
HP	-
Verizon	3.164
CISCO	-
NG (DR&S)	-
n/a	-
Other	2.150

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INVP 3614E4

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.218	
	SDC Time & Materials	-	
	SDC Fixed-Price	-	
	All other personnel	0.080	
	TOTAL Personnel Costs	0.298	
Hardware	Purchase	0.924	
	Lease	-	
Software		0.598	
Risk Margin		0.065	
Other		0.082	
TOTAL Costs		1.966	

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Vendor	\$ millions
SDC.1 - IBM	-
SDC.2 - Wipro	-
SDC.3 - tbd	-
IBM, non-SDC	-
Wipro, non-SDC	-
Verizon	-
Vodafone	-
HP	0.080
CSC	-

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INVP 4914

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing resources
Personnel	NG Resources	1.567	
	SDC Time & Materials	1.158	
	SDC Fixed-Price	-	
	All other personnel	6.402	
	TOTAL Personnel Costs	9.127	
Hardware	Purchase	2.111	
	Lease	-	
Software		0.252	
Risk Margin		1.657	
Other		2.853	
TOTAL Costs		16.001	

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Vendor	\$ millions
SDC.1 - IBM	1.413
SDC.2 - Wipro	-
SDC.3 - tbd	-
IBM, non-SDC	-
Wipro, non-SDC	-
Verizon	1.832
ABB	3.890
Light Speed	0.524
Dell	0.111
n/a	-
Other	2.934

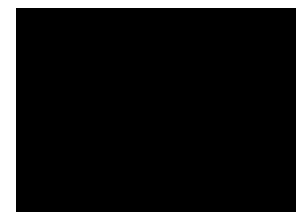
Investment Paper - § Project Cost Breakdown: The table below presents a high-level analysis of project costs. In most cases, it will provide the complete analysis that is necessary to answer the question, except for the right column which must be completed manually. In other cases, the table will provide a good start, but you must add an additional footnote (explained below). In all cases, you should 'Copy' the table below and 'Paste' it as a picture into the Investment Paper.

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INVP 4479 (INVP 4809)

Project Cost Breakdown \$ (millions)					
Cost Category	sub-category	VOWD	FTC	FAC=VOWD+FTC	Name of Firm(s) providing
Personnel	NG Resources	0	1.268	1.268	
	SDC Time & Materials	0	-	-	IBM
		0	-	-	WiPro
		0	-	-	DXC
		0	-	-	Verizon
	SDC Fixed-Price	0	-	-	IBM
		0	-	-	WiPro
		0	-	-	DXC
		0	-	-	Verizon
	All other personnel	0	0.052	0.052	
	TOTAL Personnel Costs	0	1.320	1.320	
Hardware	Purchase	0	0.060	0.060	
	Lease	0	-	-	
Software		0	0.750	0.750	
Risk Margin			1.544	1.544	
AFUDC		0	0.520	0.520	
Other		0	5.395	5.395	
TOTAL Costs		-	9.588	9.588	



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INVP 4400

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.321	
	SDC Time & Materials	0.010	IBM
	SDC Fixed-Price	1.040	Wipro
	All other personnel	0.112	
	TOTAL Personnel Costs	1.483	
Hardware	Purchase	-	
	Lease	-	
Software		-	
Risk Margin		0.110	
Other		0.069	
TOTAL Costs		1.662	

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Vendor	\$ millions
SDC.1 - IBM	0.010
SDC.2 - Wipro	1.040
SDC.3 - tbd	-
IBM, non-SDC	-
Wipro, non-SDC	-
T-Systems	-
n/a	-
n/a	-
n/a	-
n/a	-
Other	0.112

Investment Paper - § Project Cost Breakdown: The table below presents a high-level analysis of project costs. In most cases, it will provide the complete analysis that is necessary to answer the question, except for the right column which must be completed manually. In other cases, the table will provide a good start, but you must add an additional footnote (explained below). In all cases, you should 'Copy' the table below and 'Paste' it as a picture into the Investment Paper.

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INVP 4421

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.071	
	SDC Time & Materials	0.325	
	SDC Fixed-Price	-	
	All other personnel	0.215	
	TOTAL Personnel Costs	0.610	
Hardware	Purchase	-	
	Lease	-	
Software		-	
Risk Margin		0.030	
Other		0.030	
TOTAL Costs		0.671	

Vendor/Supplier Breakdown for 1-slide PowerPoint Summary: In order to complete the 1-slide Summary that accompanies each Investment Paper, it is necessary to identify key vendors and the spending amounts associated with each. The table below provides the information necessary to address this portion of the 1-Slide Summary.

Vendor	\$ millions
SDC.1 - IBM	0.325
SDC.2 - Wipro	-
SDC.3 - tbd	-
IBM, non-SDC	-
Wipro, non-SDC	-
n/a	-
n/a	-
n/a	-
n/a	-
n/a	-
Other	0.215

Costs Of Central Journal for FERC
Assumes Start of May 2015 - Capitalized until Sep 2015

Capex	\$ (000s)	Year 2+ RTB - Opex	\$ (000s)
Licences	780.0		
Max Attention (SAP) Services Estimate (646 days)	1,702.2	HANA Enterprise Cloud (Year 2)	327.0
Master Data Governance	699.8	Support and Maintenance	101.8
HANA Enterprise Cloud (Project)	112.5	Application Management (Year 1)	187.5
		Application Management (Year 2)	270.0
Total Capital	3,294.5	Total	886.3
Opex			
Costs for Project Mgmt Office (PMO) and Training	650.0		
HANA Enterprise Cloud (6 Months)	135.0		
Total Opex	785.0		

Note: Excludes any risk margin

Investment Paper - § Project Cost Breakdown: The table below presents a high-level analysis of project costs. In most cases, it will provide the complete analysis that is necessary to answer the question, except for the right column which must be completed manually. In other cases, the table will provide a good start, but you must add an additional footnote (explained below). In all cases, you should 'Copy' the table below and 'Paste' it as a picture into the Investment Paper.

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INVP 4364

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing resources
Personnel	NG Resources	0.125	
	SDC Time & Materials	-	
	SDC Fixed-Price	-	
	All other personnel	0.294	
	TOTAL Personnel Costs	0.419	
Hardware	Purchase	2.186	
	Lease	-	
Software		-	
Risk Margin		-	
Other		0.285	
TOTAL Costs		2.891	

Vendor/Supplier Breakdown for 1-slide PowerPoint Summary: In order to complete the 1-slide Summary that accompanies each Investment Paper, it is necessary to identify key vendors and the spending amounts associated with each. The table below provides the information necessary to address this portion of the 1-Slide Summary.

Vendor	\$ millions
SDC.1 - IBM	-
SDC.2 - Wipro	-
SDC.3 - tbd	-
IBM, non-SDC	-
Wipro, non-SDC	-
Verizon	2.481
CSC	-
n/a	-
n/a	-
n/a	-
Other	-

Investment Paper - § Project Cost Breakdown: The table below presents a high-level analysis of project costs. In most cases, it will provide the complete analysis that is necessary to answer the question, except for the right column which must be completed manually. In other cases, the table will provide a good start, but you must add an additional footnote (explained below). In all cases, you should 'Copy' the table below and 'Paste' it as a picture into the Investment Paper.

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INVP 4397

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.207	
	SDC Time & Materials	-	
	SDC Fixed-Price	0.201	Wipro
	All other personnel	0.685	SAP
	TOTAL Personnel Costs	1.093	
Hardware	Purchase	-	
	Lease	0.136	SAP Ariba Cloud
Software		-	
Risk Margin		0.463	
Other		0.037	
TOTAL Costs		1.729	

Vendor/Supplier Breakdown for 1-slide PowerPoint Summary: In order to complete the 1-slide Summary that accompanies each Investment Paper, it is necessary to identify key vendors and the spending amounts associated with each. The table below provides the information necessary to address this portion of the 1-Slide Summary.

Vendor	\$ millions
SDC.1 - IBM	-
SDC.2 - Wipro	0.201
SDC.3 - tbd	-
IBM, non-SDC	-
Wipro, non-SDC	-
SAP	0.821
T-Systems	-
n/a	-
n/a	-
n/a	-
Other	-

Investment Paper - § Project Cost Breakdown: The table below presents a high-level analysis of project costs. In most cases, it will provide the complete analysis that is necessary to answer the question, except for the right column which must be completed manually. In other cases, the table will provide a good start, but you must add an additional footnote (explained below). In all cases, you should 'Copy' the table below and 'Paste' it as a picture into the Investment Paper.

- When is an additional footnote required? An explanatory footnote is required if the category 'Other' is greater than \$200,000. In such an instance, you must provide a more detailed breakdown of the costs classified as 'Other' until the value of 'Other' falls below the \$200,000 threshold.

- If you must breakdown 'Other' costs, how can you find information about the costs included in 'Other'? The vast majority of the time, you can find all such information in one place: in the table entitled 'Other' located at the bottom of worksheet '3b. New Costs (non-personnel)'. In rare instances, it may be necessary to do further cost analysis, but this will only occur for projects with very high cost estimates.

INVP 4289

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.182	
	SDC Time & Materials	-	
	SDC Fixed-Price	-	
	All other personnel	0.668	
	TOTAL Personnel Costs	0.850	
Hardware	Purchase	0.665	
	Lease	-	
Software		-	
Risk Margin		(0.009)	
Other		0.003	
TOTAL Costs		1.508	

Vendor/Supplier Breakdown for 1-slide PowerPoint Summary: In order to complete the 1-slide Summary that accompanies each Investment Paper, it is necessary to identify key vendors and the spending amounts associated with each. The table below provides the information necessary to address this portion of the 1-Slide Summary.

Vendor	\$ millions
SDC.1 - IBM	-
SDC.2 - Wipro	-
SDC.3 - tbd	-
IBM, non-SDC	-
Wipro, non-SDC	-
SDC Verizon	1.332
n/a	-
n/a	-
n/a	-
n/a	-
Other	-

Investment Paper - § Project Cost Breakdown: The table below presents a high-level analysis of project costs. In most cases, it will provide the complete analysis that is necessary to answer the question, except for the right column which must be completed manually. In other cases, the table will provide a good start, but you must add an additional footnote (explained below). In all cases, you should 'Copy' the table below and 'Paste' it as a picture into the Investment Paper.

- When is an additional footnote required? An explanatory footnote is required if the category 'Other' is greater than \$200,000. In such an instance, you must provide a more detailed breakdown of the costs classified as 'Other' until the value of 'Other' falls below the \$200,000 threshold.

- If you must breakdown 'Other' costs, how can you find information about the costs included in 'Other'? The vast majority of the time, you can find all such information in one place: in the table entitled 'Other' located at the bottom of worksheet '3b. New Costs (non-personnel)'. In rare instances, it may be necessary to do further cost analysis, but this will only occur for projects with very high cost estimates.

INVP 3430

Project Cost Breakdown			
Cost Category	sub-category	\$ (millions)	Name of Firm(s) providing
Personnel	NG Resources	0.150	
	SDC Time & Materials	-	
	SDC Fixed-Price	0.030	
	All other personnel	0.141	
	TOTAL Personnel Costs	0.321	
Hardware	Purchase	-	
	Lease	-	
Software		-	
Risk Margin		0.053	
Other		0.851	
TOTAL Costs		1.225	

Vendor/Supplier Breakdown for 1-slide PowerPoint Summary: In order to complete the 1-slide Summary that accompanies each Investment Paper, it is necessary to identify key vendors and the spending amounts associated with each. The table below provides the information necessary to address this portion of the 1-Slide Summary.

Vendor	\$ millions
SDC.1 - IBM	0.015
SDC.2 - Wipro	0.015
SDC.3 - tbd	-
IBM, non-SDC	-
Wipro, non-SDC	-
Verizon	0.050
CSC	0.050
VMware	0.832
n/a	-
n/a	-
Other	-

Division 22-4

Request:

Please refer to the Company's responses to DIV 9-2, DIV 9-3 and DIV 9-5, and please respond to the following regarding projects that are not fully amortized and allocate costs to Rhode Island:

- a. Explain if the "Sanction" is the original contemporaneous budget documentation for each project. If not, please provide the original contemporaneous budget documentation for each project.
- b. Provide the analysis that was undertaken to demonstrate that the selected solution was the most cost-efficient approach for each project.
- c. Provide any quantitative benefit analysis inclusive of O&M savings that was performed for each project that supplements Section 3.4 Benefits Summary of each project's "Sanction" or the Objectives and Benefits section for EHRI projects.
- d. To the extent that the quantitative benefits include O&M savings, identify where these O&M savings are included in the revenue requirements for Rate Year and Data Years 1 and 2.

Response:

- a. Yes, the "Sanction" amount is considered the original budget for each project; however, there are several steps and preliminary documentation that take place before a project reaches full sanction. In the Company's responses to Division 9-3 and Division 9-5, the Company references several Investment Request Summary (IRS) documents regarding projects that have not yet started. These documents contain a high level scope and conceptual grade cost estimate for the project and are used for planning and financial budgeting purposes. Once an Information Services (IS) project commences, it will follow the IS Governance process, which is generally a two-step process under which the project is sanctioned for Requirements and Design (R&D) work (also referred to as "Partial" Sanction") and then will return for Development and Implementation (D&I) sanction (also referred to as "Sanction"). The D&I or "Sanction" is the point at which the requirements are fully understood, technical design of the solution is finalized, and any competitive bid events have been completed. There are exceptions to this rule, and a project can proceed directly to "Sanction" if the project scope and costs are well known but the majority of projects will follow the two-step process. In the event that the IS Project Manager forecasts that a project will exceed its sanction amount or project schedule, the project must be returned to the appropriate Governance Committee for

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“Re-Sanction” consideration. The type of sanction (i.e. Partial, Sanction, or Re-Sanction) is denoted in the “Sanction Type” field on page one of each sanction paper. Notably, the sanction documentation provided in the Company’s responses to Division 9-2, Division 9-3, and Division 9-5 is the most recent sanction paper and reflects where the project is in its project lifecycle.

Finally, there are a few projects on Division 9-2 that followed alternate Governance processes, such as the US Foundations (USFP), EHR1, Systemic Improvement, and Finance Remediation Programs. With regard to USFP, the project followed an iterative sanction process whereby the costs were approved on a phase by phase basis because of the overall size and complexity of the program. The post-USFP investments (EHR1, Systemic Improvement, and Finance Remediation) were managed under the oversight of the Business Improvement Steering Committee, which monitored the scope and costs of the individual projects.

- b. The sanction papers provided in the Company’s responses to Division 9-2, Division 9-3, and Division 9-5 encapsulate the analysis that was performed in selecting the most cost efficient solution.

A majority of the IS projects relate to the replacement of aged infrastructure or modifications to an existing application, both of which are delivered under one of the IS Framework Partner agreements. A “Framework Partner” is a supplier who was selected as a result of a competitive bidding process and was awarded a “Framework” agreement with agreed rates and terms under which projects could be direct assigned (single sourced) or competitively tendered among other Framework Partners. For projects that will be implementing a new application or service, IS follows the National Grid Procurement process for competitive bidding, thereby ensuring the most optimal solution from a cost-benefit standpoint is selected. The SAP projects followed a similar process in that there were Master Service Agreements (MSAs) in place with a number of key partners and the project work was awarded under these agreements. The key partners were assigned the project work based on their unique qualifications, subject matter expertise and previous experience in SAP implementations.

- c. Savings to On-going Operational Costs (i.e. Run-the-Business (RTB) costs) are captured in section 4.2.3 of the final sanction paper (Sanction’). A number of the IS investments are replacing or refreshing an unsupported, at risk platform; therefore, migrating to a supported platform will result in an increase in vendor RTB costs. With regard to EHR1, the projects were primarily undertaken to improve: the user SAP experience, accuracy of data, compliance, and reporting; therefore, any RTB savings were minimal and would have been included in the historic test year numbers.

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- d. The projects shown in the table below are forecasting \$22.9 million of RTB savings across the three years of the rate proceeding; however, the savings were used to offset operations and maintenance (O&M) increases on other projects in the portfolio. A complete list of the operating expense increases and savings were provided in the Company's response to Division 3-28, which is provided as Attachment DIV 22-4 for ease of reference. As noted in the Company's response to Division 3-28, IS is not forecasting any increases in overall O&M costs in the Rate Year, Data Year 1, or Data Year 2.

Investment Name	Rate Year		Data Year 1		Data Year 2	
	OpEx	RTB	OpEx	RTB	OpEx	RTB
INVP 4568 US CNI-EMS Lifecycle Hardware and Software Upgrade	58,333.33	(2,000)	-	(1,167)	-	-
INVP 4144 HRIS Simplification Programme (Customer Benefits)	-	(1,164,360)	-	(1,164,360)	-	(1,164,360)
INVP 4761 US Foundation Hosting Renewal	-	(2,385,167)	-	(2,559,000)	-	(2,559,000)
INVP 4491 ICE Replacement	233,333.33	(1,388,250)	-	(1,516,000)	-	(1,516,000)
INVP 4497US Video Conference Programme	87,500.00	(300,000)	-	(300,000)	-	(175,000)
Virtualized Branches	58,333.33	(458,333)	-	(1,079,167)	-	(1,540,000)
INVP 4577 Call Manager Upgrade	-	(1,100,000)	-	(1,100,000)	-	(1,100,000)
Log Logic (from VSTIG Programme) (INVP 4664)	-	(100,000)	-	(100,000)	-	(100,000)
O&M Savings		(6,898,110)		(7,819,693)		(8,154,360)

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Issued December 21, 2017

Division 3-28

Request:

Referring to the testimony of Bhargava, DeMauro, and Rapiaty, p. 7, lines 14-15:

- a. Please identify each of the "external partners" utilized in the delivery model.
- b. Describe the role of each such partner during the test year.
- c. State how much was paid to each of the partners during the test year.
- d. Please provide an estimate of how much will be paid to each external partner during the Rate Year.
- e. Please provide an estimate of how much will be paid to each external partner during the Rate Year solely in connection with implementation of the Technology Modernization Program.

Response:

- a. Please see below for a list of the primary external partners utilized in the information services delivery model and the role each partner played during the test year.

External Partner	Services Provided During Test Year
IBM Corp.	Application Maintenance - day to day support of existing applications
WIPRO Ltd.	Application Maintenance - day to day support of existing applications
IBM Corp. / WIPRO Ltd.	Internet, Collaboration, and Email - function provides email, web conferencing, instant messaging and collaboration tools, such as SharePoint, operated on vendor-owned and hosted infrastructure.
Verizon	Networks and Communication- manage the company's networks and telecommunication services.
DXC (Computer Sciences Corp.)	Data Centers - provides data center services (e.g., servers, data storage); management of hardware, software and storage and provides security, back-up capability, and disaster recovery services.
DXC (Computer Sciences Corp.)	End User Devices - provide and support end user devices (e.g., laptops) and deployment and maintenance of the operating systems and applications that run on those devices.
Xerox	Managed Print - manage the support services for a refreshed and standardized fleet of print devices, enabling increased security for printing, copying, faxing, and scanning.

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- b. Please see the Company's response to part a. above.
- c. Below is a list of payments to the external partners during the rate year.

External Partner	Service	Test Year Actual (\$M's)
IBM Corp.	Application Maintenance	\$ 7.4
WIPRO Ltd.	Application Maintenance	\$ 8.4
IBM Corp. / WIPRO Ltd.	Internet, Collaboration and Email	\$ 4.2
Verizon	Networks & Telecom	\$ 32.9
DXC (Computer Sciences Corp.)	Data Centers	\$ 13.1
DXC (Computer Sciences Corp.)	End User Devices	\$ 7.6
Xerox	Managed Print	\$ 3.1

- d. Please see Attachment DIV 3-28-1 for a breakdown of the operating expenses for Information Services (IS) in the historic Test Year and Rate Year. National Grid IS is forecasting no incremental operating expenses in the Rate Year, and no operating expenses have been included in this rate case proceeding.

Please note that IS forecasts its operating expenses by functional group (*i.e.* Commercial Management), not by external partner. The expenses for each of the external partners are embedded in the functional groups because they are responsible for managing these costs. In addition, there are operating expenses related to the investment plan. These operating expenses represent expenses that cannot be capitalized according to accounting standards. The maintenance and support expenses will be absorbed into the functional groups once the investment goes into service. Please see Attachment DIV 3-28-2 for the operating expense details related to each IS capital investment. If an investment generates savings, the savings are included on the list and used to offset other expenses.

- e. As noted in part d. of this response, IS does not prepare its project estimates on an external partner basis because the level of partner involvement is often not known until the project begins in earnest; therefore, the cost estimates are done at the project level. Regarding the rate case proceeding, the operating expenses estimates for Technology

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Modernization are included in the Investment Plan line on Attachment DIV 3-28-1, and the projects details are included on Attachment DIV 3-28-2. The capital cost estimates are included in Schedule ISP-1. As noted above, IS' overall operating expenses are in line with historic Test Year levels, so no incremental funding for operating expense were included in the rate proceeding for the Technology Modernization program.

Narragansett Electric & Gas d/b/a National Grid
Total Information Services
Incremental Operating Expenses Excluding Labor & Burdens(\$Millions)

	HTY Ending June 30, 2017	Rate Year Ending Aug. 31, 2019	Comments
Operational Cost			
Commercial Management	17.7	18.7	The operating costs for Commercial Management are forecasted to be higher in the Rate Year compared to the HTY due primarily to the purchase of additional software licenses (SAP Hanna, Concur and Microsoft Azure).
Cyber Security	5.4	5.6	Increase due to inflation factor of 3%.
Physical Security	6.1	6.8	Incremental costs in the Rate Year compared to the HTY (+0.5M) due to forecasted higher break/fix costs for security equipment plus a 3% inflation factor. A milder than usual winter in the HTY kept break/fix costs lower than usual.
Apps Maintenance	14.9	16.6	Addition of SAP Max Attention at the end of the HTY has increased cost by \$1.2M annually in addition to a 3% inflation factor.
CNI Ops	18.9	19.5	Increase due to inflation factor of 3%.
Data Centers	30.1	31.0	Increase due to inflation factor of 3%.
Networks & Telecom (Excludes CNI network costs that are included in CNI Ops)	32.7	33.2	Rate Year increase driven by network upgrades (+\$1.0M) plus a 3% inflation factor. The circuit assessment initiative will reduce costs from the HTY (-\$1.5M).
Email & Xerox	7.2	7.4	Increase due to 3% inflation factor.
Enterprise Service Delivery	7.8	8.0	Increase due to inflation factor of 3%.
Administration	7.7	8.0	Increase due to inflation factor of 3%.
Subtotal Operational Cost	\$148.6	\$154.8	
IS Investment Plan - Including Labor & Burdens (1)	38.0	32.1	see Attachment DIV 3-28-2
Investment Plan	\$38.0	\$32.1	
Total IS Opex	\$186.6	\$186.9	
Total Incremental IS Opex Costs from HTY	N/A	\$0.3	

(1) Excludes Gas Business Enablement (GBE)

Naragansett Electric Company d/b/a National Grid

IS Investment Plan Operating Expenses

Investment Name	Programs	INVP #	Bill Pool	In Service Date	Amortization Period	FY19 OPEX	FY19 RTB	FY20 OPEX	FY20 RTB	9/01/18- 8/31/19 Rate Year	
										OpEx	RTB
INVP 3614D1 Ent Network Security	Cyber Security 1	3614D1	G020	1/31/18	84		3,841,685		3,841,685	-	3,841,685
IT/OT Discovery and Implementation Phase 1	Cyber Security 2	3683X11	G020	10/1/20	84	500,000	-	500,000	83,340	500,000.00	34,725
Identity & Access Management: Privileged Access Management	Cyber Security 2	3683X5	G020	3/1/18	84	640,000	104,699		104,699	373,333.33	104,699
Identity & Access Management: Shared Area Access Management	Cyber Security 2	3683X5	G020	3/1/21	84					-	-
US CNI Security Enhancements Phase 1	Cyber Security 2	3683X6	G020	3/1/19	84	350,000	40,000		60,000	204,166.67	48,333
Big Data Security Analytics Phase 1	Cyber Security 2	3683X7	G020	3/1/21	84			150,000		62,500.00	-
Domain Based Security Phase 1	Cyber Security 2	3683X13	G020	3/1/19	84	200,000	-		350,000	116,666.67	145,833
US CNI Intrusion Detection/Prevention Phase 1 (CNI IDS Refresh)	Cyber Security 2	3683X1	G020	12/1/18	84	180,000	-		25,096	105,000.00	10,457
US CNI Intrusion Detection/Prevention Phase 2 (CNI IDS Refresh)	Cyber Security 2	3683X1	G020	12/1/21	84					-	-
Enhanced DLP Gateway and Endpoint	Cyber Security 2	3683X8	G020	3/1/21	84					-	-
Identity & Access Management :Role Base Access Management (RBAC)	Cyber Security 2	3683X5	G020	3/1/20	84			150,000	185,896	62,500.00	77,457
Identity & Access Management: Fine Grain Access Management (Unified Platform)	Cyber Security 2	3683X5	G020	3/1/18	84	150,000	100,432		100,432	87,500.00	100,432
Threat Behavior Modeling	Cyber Security 2	3683X15	G020	3/1/20	84			100,000	17,875	41,666.67	7,448
vStig Scaling Upgrades	Cyber Security 2	3683X12	G020	3/1/19	84	100,000	-		400,000	58,333.33	166,667
Big Data Security Analytics - Phase 2	Cyber Security 2	3683X7	G020	3/1/21	84					-	-
Data Visualization	Cyber Security 2	3683X16	G020	3/1/20	84					-	-
Cloud Security (Cloud Access Security Broker)	Cyber Security 2	3683B	G020	12/1/17	60		60,500		60,500	-	60,500
Security Research Lab	Cyber Security 2	3683X14	G020	3/1/20	84			50,000		20,833.33	-
Risk Based Authentication - 2FA token alternative (Multi Factor Authentication)	Cyber Security 2	3683X2	G020	3/1/18	84		15,530		15,530	-	15,530
Security Incident Event Management Phase 4	Cyber Security 2	3683X4	G020	3/1/21	84			12,500		5,208.33	-
Enhanced Phishing Protection	Cyber Security 2	3683X3	G020	12/1/18	84	140,000	120,000		120,000	81,666.67	120,000
Situation Intelligence & Cyber Intelligence: Phase 2	Cyber Security 2	3683	G020	10/1/20	84					-	-
Situation Intelligence & Cyber Intelligence: Phase 1	Cyber Security 2	3683	G020	10/1/18	84	120,000	2,857		5,714	70,000.00	4,048
Security Incident Event Management Phase 5	Cyber Security 2	3683X4	G020	12/1/20	84					-	-
Domain Based Security Phase 2 (Network Segregation)	Cyber Security 2	3683X13	G020	3/1/21	84					-	-
Perimeter Enhancements	Cyber Security 2	G020	10/1/18	84						-	-
Internal PKI (Public Key) Infrastructure	Cyber Security 2	G020	10/1/18	84						-	-
Enterprise Centralized Patch Management	Cyber Security 2	G020	12/1/18	84						-	-
Firewall Rule Clean up	Cyber Security 2	G020	12/1/18	84		125,000				72,916.67	-
Sustainable Red-Team Service Model	Cyber Security 2	G020	10/1/18	84		208,000				121,333.33	-
Removable Media Control Pilot	Cyber Security 2	G020	10/1/18	84		175,000				102,083.33	-
Application Security As a Service	Cyber Security 2	G020	9/1/19	84				100,000		41,666.67	-
Continuous review of Reference Security Architecture	Cyber Security 2	G020	8/1/19	84						-	-
GPS Project	Cyber Security 2	G020	3/31/21	84						-	-
INVP 4401 SAP/PowerPlan/Front Office Maintenance of Business (MOB) - FY18 Plan		4401	G020	3/31/18	84	-	-	-	-	-	-
INVP 3932 Call Center Customer Contact Center/SDC Technology Upgrade Imp	FY18 Plan	3932	C175	9/1/18	84	547,000	642,000	-	642,000	319,083.33	642,000
INVP 4481 US MDS-Energy Accounting System (EAS) migration to Wholesale	FY18 Plan	4481	G186	10/1/18	84	265,000	275,000	-	275,000	154,583.33	275,000
INVP 3737 US CNI GMS SCADA Upgrade &	FY18 Plan	3737	C210	12/31/19	84	317,000	174,000	236,000	611,000	283,250.00	356,083
INVP 4348 US SAP: Infrastructure Landscape	FY18 Plan	4348	G020	3/31/18	60	-	936,000	-	936,000	-	936,000
INVP 4408 Doc Mgmt Systems Replacement Delivery	FY18 Plan	4408	G149	6/22/18	84	19,380	440,000	-	1,351,000	11,305.00	819,583
INVP 4568 US CNI-EMS Lifecycle Hardware and Software Upgrade	FY18 Plan	4568	U186	3/31/18	84	100,000	(2,000)	-	(2,000)	58,333.33	(2,000)
INVP 4662 - Concur Licenses	FY18 Plan	4662	G020	1/31/18	84	-	-	-	-	-	-
INVP 3976 IDS Next Generation 2.0	FY18 Plan	3976	G186	3/31/18	84	-	-	-	-	-	-
INVP 4399 FSSC&HR Systems (Non-SAP) Operational	FY18 Plan	4399	G020	3/31/18	84	-	-	-	-	-	-
INVP 3718 New Medical System	FY18 Plan	3718	G020	3/31/18	84	-	105,000	-	105,000	-	105,000
INVP 4403 Annual Ariba upgrades - FY18	FY18 Plan	4403	G020	3/31/18	84	-	-	-	-	-	-
INVP 3924 Host Transition	FY18 Plan	3924	G020	3/31/18	84	-	-	-	-	-	-
INVP 3982 Substation Monitoring-DobleARMS	FY18 Plan	3982	G381	1/1/18	84	5,000	80,000	-	80,000	2,916.67	80,000
INVP 4466 Gas Capital Investment Planning Tool	FY18 Plan	4466	G210	1/17/18	84	5,000	112,000	-	112,000	2,916.67	112,000
INVP 4480 US Control-Gas System Operating Procedure (SOP) Upgrade	FY18 Plan	4480	G210	10/2/17	84	-	36,000	-	36,000	-	36,000
INVP 4554 Nightcrawler Asset Update	FY18 Plan	4554	G210	3/31/18	84	-	2,000	-	2,000	-	2,000
INVP 4697-HP Exstream upgr to v9.5	FY18 Plan	4697	G020		84					-	-
INVP 4402 US SAP Regulatory Requirements, Reporting & Rate Case support	FY18 Plan	4402	G020	3/31/18	84	-	-	-	-	-	-
INVP 4188 Aging System Stabilize	FY18 Plan	4188	G148	3/31/18	84					-	-
INVP 4398 Storms/ISched Upgrade	FY18 Plan	4398	G160	4/23/18	84	72,000	294,000	-	294,000	42,000.00	294,000
INVP 4487 Changes to ACIS for PMCC Civil Vendor Billing	FY18 Plan	4487	G186	7/31/18	84	-	29,000	-	29,000	-	29,000
INVP 3986 Cascade Electric Application Upgrade Project	FY18 Plan	3986	G198	10/31/17	84	-	15,000	-	15,000	-	15,000
INVP 4681 Zscaler	FY18 Plan	4681	G020	10/2/17	84					-	-
INVP 3486 US MDS-Itron Enterprise Edition (IEE)	FY18 Plan	3486	G186	3/31/18	84	-	27,000	-	27,000	-	27,000
INVP 4484 Payment Processing for CRIS	FY18 Plan	4484	C173	3/31/18	84	-	-	-	-	-	-
INVP 4390 Plastic Fusion II	FY18 Plan	4390	G207	3/31/18	84	-	264,000	-	264,000	-	264,000
INVP 4651 Operation Telecommunication Optimization	FY18 Plan	4651	G327	3/31/18	84	-	-	-	-	-	-
INVP 4669 US SAP: Max attention	FY18 Plan	4669	G020		84					-	-
INVP 4692 - Experian NetConnect Upgrade	FY18 Plan	4692	G020		84					-	-

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IS Investment Plan Operating Expenses

Investment Name	Programs	INVP #	Bill Pool	In Service Date	Amortization Period	FY19 OPEX	FY19 RTB	FY20 OPEX	FY20 RTB	9/01/18- 8/31/19 Rate Year	
										OpEx	RTB
INVP 4395 US Mobile Device Refresh	FY18 Plan	4395	G020	3/31/18	60	-	300,000	-	300,000	-	300,000
INVP 4462 Computapole Enhancements to Support Inspection Types	FY18 Plan	4462	G186	3/1/18	84	-	50,000	-	50,000	-	50,000
INVP 4394 NE Gas Leak Recheck (next Phase)	FY18 Plan	4394	G310	8/31/18	84	-	75,000	-	75,000	-	75,000
INVP 4469 Informatica Upgrade/Microstrategy Replacement Program	FY18 Plan	4469	G020	5/1/18	84	15,000	443,000	-	443,000	8,750.00	443,000
INVP 3956 WIFI for Fleet Services Diagnostic Laptops	FY18 Plan	3956	G352	11/1/17	84	-	40,000	-	40,000	-	40,000
INVP 4464 Data Visualization	FY18 Plan	4464	G020	9/30/17	84	-	506,000	-	506,000	-	506,000
INVP 4420 US CNI OMSFocalPoint Infrastructure Upgrade	FY18 Plan	4420	G198	5/23/17	84	-	90,000	-	90,000	-	90,000
INVP 4214 FERC Wholesale Customer System	FY18 Plan	4214	G220	3/31/18	84	-	142,000	-	142,000	-	142,000
INVP 4570 US CNI Tech Services-Network Equipment Lifecycle Replacements	FY18 Plan	4570	G186	3/31/19	84	-	30,000	-	30,000	-	30,000
INVP 4914 US CNI-EMS Lifecycle Hardware and Software Upgrade	FY18 Plan	4914	U186	8/1/19	84	1,302,155	-	-	-	759,590.42	-
INVP 4704Q Customer Bill Redesign	FY18 Plan	4704Q	H173	3/31/19	84	27,000	-	190,000	-	94,916.67	-
INVP 4144 HRIS Simplification Programme	FY18 Plan	4144	G020	5/2/19	84	-	2,400,000	-	2,400,000	-	2,400,000
INVP 4144 HRIS Simplification Programme (Customer Benefits)	FY18 Plan	4144	G020	5/2/19	84	-	(1,164,360)	-	(1,164,360)	-	(1,164,360)
INVP 4397 Ariba TLS and CI Update	FY18 Plan	4397	G020	8/28/17	120	-	-	-	-	-	-
INVP 4750 Customer Experience Transformation Tech Program	Growth Play Book-Finance	4750	C175	8/31/19	84	-	477,000	-	477,000	-	477,000
INVP 4217 US SAP: Business Planning	Growth Play Book-Finance	4217	G020	3/31/19	84	-	-	-	-	-	-
INVP 4222 Governance Risk & Compliance (GRC) Optimization/Upgrade	Growth Play Book-Finance	4222	G020	3/1/19	84	-	-	-	-	-	-
INVP 4563 US SAP: FERC on Hana (FOH)	Growth Play Book-Finance	4563	G020	3/31/19	84	724,000	-	-	-	422,333.33	-
Regulatory Mandates - FY19	Mandate		G020	3/31/19	84	5,864,000	-	-	-	3,420,666.67	-
Regulatory Mandates - FY20	Mandate		G020	3/31/20	84	-	6,000,000	-	-	2,500,000.00	-
Regulatory Mandates - FY21	Mandate		G020	3/31/21	84	-	-	-	-	-	-
Regulatory Mandates - FY22	Mandate		G020	3/31/22	84	-	-	-	-	-	-
INVP 4479 US Control-Gas Electronic Bulletin Board (EBB) Upgrade	Mandate	4479	G210	5/1/18	84	193,000	779,000	-	779,000	112,583.33	779,000
Regulatory Mandates - FY18	Mandate		G020	3/31/18	84	-	-	-	-	-	-
INVP 4124 Auto Remote Net Meter	Mandate	4124	C198	11/30/17	84	-	-	-	-	-	-
INVP 4411AB Distributed Generation Portal	Mandate	4411A+B	C198	11/30/17	84	-	-	-	-	-	-
INVP 4400 Annual HR & Payroll Mandatory Service Pack Upgrade (HRSP) - FY18	Mandate	4400	G020	8/14/17	84	-	-	-	-	-	-
INVP 4411D New Gas Connections	Mandate	4411D	C210	10/31/18	84	136,000	-	-	-	79,333.33	-
INVP 4421 - New Arrearage Forgiveness Plan	Mandate	4421	G316	10/31/17	84	-	-	-	-	-	-
INVP 4555 RI Renewable Energy Program changes	Mandate	4555	5360E	2/28/18	84	-	-	-	-	-	-
INVP 4391 - Operations MW	Minor Works	4391	G148		84	-	-	-	-	-	-
INVP 4477-Customer FY18 Minor Works (former Customer & Digital)	Minor Works	4477	C175		84	-	-	-	-	-	-
INVP 4741-US Control Center Operations Minor Works-FY18	Minor Works	4741	G148		84	-	-	-	-	-	-
INVP 4742-Network Strategy FY18 Minor Works	Minor Works	4742	G186		84	-	-	-	-	-	-
INVP 4354-US FSSC Minor Works	Minor Works	4354	G020		84	-	-	-	-	-	-
INVP 4740-Customer Systems Regulatory and Operational Requirements and Updates	Other - Mandate	4740	C175		84	-	-	-	-	-	-
RI Electric Only Physical Security Replacements - FY18	Physical Security	N/A	5360E	3/31/18	84	-	-	-	-	-	-
RI Gas Only Physical Security Replacements - FY18	Physical Security	N/A	5360G	3/31/18	84	-	-	-	-	-	-
All Companies Physical Security Replacements - FY18	Physical Security	N/A	G020	3/31/18	84	-	-	-	-	-	-
New England Companies Physical Security Replacements - FY18	Physical Security	N/A	G285	3/31/18	84	-	-	-	-	-	-
RI Electric Only Physical Security Replacements - FY19	Physical Security	N/A	5360E	3/31/19	84	-	-	-	-	-	-
RI Gas Only Physical Security Replacements - FY19	Physical Security	N/A	5360G	3/31/19	84	-	-	-	-	-	-
All Companies Physical Security Replacements - FY19	Physical Security	N/A	G020	3/31/19	84	-	-	-	-	-	-
New England Companies Physical Security Replacements - FY19	Physical Security	N/A	G285	3/31/19	84	-	-	-	-	-	-
RI Electric Only Physical Security Replacements - FY20	Physical Security	N/A	5360E	3/31/20	84	-	-	-	-	-	-
RI Gas Only Physical Security Replacements - FY20	Physical Security	N/A	5360G	3/31/20	84	-	-	-	-	-	-
All Companies Physical Security Replacements - FY20	Physical Security	N/A	G020	3/31/20	84	-	-	-	-	-	-
New England Companies Physical Security Replacements - FY20	Physical Security	N/A	G285	3/31/20	84	-	-	-	-	-	-
RI Electric Only Physical Security Replacements - FY21	Physical Security	N/A	5360E	3/31/21	84	-	-	-	-	-	-
RI Gas Only Physical Security Replacements - FY21	Physical Security	N/A	5360G	3/31/21	84	-	-	-	-	-	-
All Companies Physical Security Replacements - FY21	Physical Security	N/A	G020	3/31/21	84	-	-	-	-	-	-
New England Companies Physical Security Replacements - FY21	Physical Security	N/A	G285	3/31/21	84	-	-	-	-	-	-
INVP 4761 US Foundation Hosting Renewal	Tech. Modernization	4761	G020	3/31/18	84	-	(2,261,000)	-	(2,559,000)	-	(2,385,167)
INVP 4564 US SAP: Enhancement Pack 9 Upgrade	Tech. Modernization	4564	G020	3/31/20	84	2,427,000	-	592,000	-	1,662,416.67	-
INVP 4377 Data Center Decommission Melville	Tech. Modernization	4377	G020	3/31/19	84	-	-	-	-	-	-
INVP 4489 Active Directory Improvements	Tech. Modernization	4489	G020	12/31/18	84	500,000	-	-	-	291,666.67	-
INVP 4362 Legacy DMZ migration to vSTIG	Tech. Modernization	4362	G020	12/31/18	84	300,000	-	-	-	175,000.00	-
INVP 4529 Service Now Deployment - Release 2	Tech. Modernization	4529	G020	3/31/18	84	-	-	-	-	-	-
INVP 4491 ICE Replacement	Tech. Modernization	4491	G020	12/31/18	60	400,000	(1,297,000)	-	(1,516,000)	233,333.33	(1,388,250)
INVP 4490 Application Performance Management (APM)	Tech. Modernization	4490	G020	12/31/18	84	350,000	100,000	320,000	100,000	337,500.00	100,000
INVP 4706 1327 Interfaces - 523 FTS, 340 RDX, 245 MQSI, 253 JCAPS, 44 PM4D, 7 VB	Tech. Modernization	4706	G020	6/30/19	84	400,000	125,000	150,000	125,000	295,833.33	125,000
INVP 4710 Data Security	Tech. Modernization	4710	G020	3/31/20	84	300,000	-	300,000	-	300,000.00	-
INVP 4562 US SAP: Business Warehouse (BW) Consolidation to HANA Enterprise	Tech. Modernization	4562	G020	3/31/19	84	810,000	11,000	-	43,000	472,500.00	24,333
INVP 4493 Monitoring and Alerting	Tech. Modernization	4493	G020	3/31/20	84	300,000	120,000	260,000	120,000	283,333.33	120,000
INVP 4758 Critical App Resiliency Remediation	Tech. Modernization	4758	G020	3/31/18	84	-	-	-	-	-	-

Naragansett Electric Company d/b/a National Grid

IS Investment Plan Operating Expenses

Investment Name	Programs	INVP #	Bill Pool	In Service Date	Amortization Period	FY19 OPEX	FY19 RTB	FY20 OPEX	FY20 RTB	9/01/18- 8/31/19 Rate Year	
										OpEx	RTB
Move to public and private managed cloud	Tech. Modernization	4831	G020	3/31/20	84	150,000	-	300,000	-	212,500.00	-
INVP 4727 Virtual Desktop - DaaS	Tech. Modernization	4727	G020	12/31/19	60	300,000	100,000	300,000	100,000	300,000.00	100,000
Contract Re-bid Enterprise Services	Tech. Modernization	3427	G020	3/31/19	84	600,000	-	-	-	350,000.00	-
Contract Re-bid Networks	Tech. Modernization	3426	G020	3/31/19	84	600,000	-	-	-	350,000.00	-
Policy Based/Trust based Network Access	Tech. Modernization	TBD	G020	3/31/20	84	200,000	40,000	200,000	40,000	200,000.00	40,000
INVP4756-IS Sourcing Renewal	Tech. Modernization	4756	G020	3/31/18	84	-	-	-	-	-	-
Legacy Email Infrastructure	Tech. Modernization	4268	G020	12/31/19	84	250,000	-	250,000	-	250,000.00	-
Migration of Oracle to Linux	Tech. Modernization	4830	G020	12/31/20	84	100,000	-	150,000	-	120,833.33	-
DR Remediation F&A	Tech. Modernization	4712	G020	3/31/18	84	-	-	-	-	-	-
INVP 4778 - Dev Test to Cloud	Tech. Modernization	4778	G020	9/30/18	84	250,000	-	-	-	145,833.33	-
INVP 4560 US SAP: Dynamic Storage Tiering	Tech. Modernization	4560	G020	7/5/18	84	464,000	177,000	-	236,000	270,666.67	201,583
Network Management Capability - Next Generation	Tech. Modernization	4833	G020	12/31/20	84	150,000	15,000	150,000	45,000	150,000.00	27,500
Unified Communications (From Accenture Study)	Tech. Modernization	4576	G020	12/31/19	84	200,000	-	200,000	-	200,000.00	-
INVP 4497US Video Conference Programme	Tech. Modernization	4497	G020	6/1/19	84	150,000	(300,000)	-	(300,000)	87,500.00	(300,000)
DR Priority 2 Apps Remediation	Tech. Modernization	4824	G020	12/31/19	84	100,000	-	100,000	-	100,000.00	-
DR Priority 3 Apps Remediation	Tech. Modernization	4825	G020	12/31/20	84	-	-	100,000	-	41,666.67	-
Network Automation - DNA Center	Tech. Modernization	TBD	G020	3/31/20	84	-	-	200,000	40,000	83,333.33	16,667
SharePoint 2007 Decommission	Tech. Modernization	3667	G020	12/31/19	84	100,000	-	100,000	60,000	100,000.00	25,000
Cloud Based Secure Internet Access - Zscaler	Tech. Modernization	4822	G020	3/31/19	84	200,000	600,000	-	800,000	116,666.67	683,333
Cloud Orchestration, Self service and Broker	Tech. Modernization	TBD	G020	3/31/19	84	100,000	-	100,000	-	100,000.00	-
INVP 4279 Citrix Infrastructure Upgrade (Xenapp and NetScaler)	Tech. Modernization	4279	G020	3/31/18	60	-	-	-	-	-	-
INVP 3899 Cloud Broker - Hybrid Enablement	Tech. Modernization	3899	G020	12/31/17	84	-	-	-	-	-	-
INVP 4606 Data Visualisation Expansion	Tech. Modernization	4606	G020	6/30/19	84	-	253,000	-	337,000	-	288,000
INVP 4709 Data Center Consolidation efforts	Tech. Modernization	4709	G020	3/31/19	84	100,000	-	-	-	58,333.33	-
Hicksville Fiber	Tech. Modernization	4828	G020	3/31/19	84	100,000	-	-	-	58,333.33	-
SD-WAN Core, automation, orchestration tools and pilot sites	Tech. Modernization	4837	G020	3/31/19	84	100,000	100,000	-	100,000	58,333.33	100,000
Virtualized Branches	Tech. Modernization	4843	G020	3/31/20	84	100,000	(250,000)	-	(750,000)	58,333.33	(458,333)
INVP 4261 Service Now - Release 3	Tech. Modernization	4261	G020	3/31/18	84	-	-	-	-	-	-
INVP 4759 MTC and Syracuse Boardrooms & Auditoriums	Tech. Modernization	4759	G020	3/31/18	60	-	50,000	-	50,000	-	50,000
Network Transformation Continuation-Substations	Tech. Modernization	4835	G020	12/31/20	84	20,000	10,000	20,000	20,000	20,000.00	14,167
INVP 4676 Hix D/C Improvement Server Refresh	Tech. Modernization	4676	G020	3/31/18	60	-	-	-	-	-	-
INVP 4461 Unix51 Interface Migration	Tech. Modernization	4461	G020	9/30/18	84	50,000	-	-	-	29,166.67	-
Wireless LAN Management Tools	Tech. Modernization	4284	G020	3/31/19	84	50,000	60,000	-	50,000	29,166.67	55,833
INVP 4392 PPMI	Tech. Modernization	4392	G020	12/31/17	84	-	-	-	-	-	-
INVP 4386 Verizon Audio to Webex	Tech. Modernization	4386	G020	3/31/18	84	-	-	-	-	-	-
Network Transformation Continuation-Risk Avoidance	Tech. Modernization	4834	G020	3/31/20	84	20,000	15,000	20,000	45,000	20,000.00	27,500
INVP 3901-Virtual Desktop Offshore	Tech. Modernization	3901	G020	3/31/18	84	-	-	-	-	-	-
INVP 4687 Network Tx-NB/MTC	Tech. Modernization	4687	G020	12/31/17	60	-	-	-	-	-	-
INVP 4274 VSTIG Hardware Refresh	Tech. Modernization	4274	G020	3/31/18	60	-	-	-	-	-	-
INVP 4725 MWORK and Netmotion Risk Avoidance	Tech. Modernization	4725	G020	12/31/18	84	20,000	-	-	-	11,666.67	-
INVP 4714-EMM Phase2	Tech. Modernization	4714	G020	3/31/18	60	-	225,000	-	225,000	-	225,000
INVP 4760 Mainframe DR Machine	Tech. Modernization	4760	G020	3/31/18	60	-	-	-	-	-	-
Network Transformation Continuation-Substations and Security Sites	Tech. Modernization	4836	G020	12/31/20	84	20,000	30,000	-	60,000	11,666.67	42,500
VC - MetroTech Auditorium VC	Tech. Modernization	4840	G020	9/30/18	84	20,000	10,000	-	10,000	11,666.67	10,000
VC - Syracuse A39/40	Tech. Modernization	4841	G020	6/30/19	84	10,000	10,000	10,000	20,000	10,000.00	14,167
INVP 4269 RAS/VPN Re-Platform/Mobile	Tech. Modernization	4269	G020	3/31/18	60	-	-	-	-	-	-
INVP 4575 Software Defined Networking	Tech. Modernization	4575	G020	6/30/17	60	-	-	-	-	-	-
INVP 4270 RSA Re-platform	Tech. Modernization	4270	G020	3/31/18	84	-	-	-	-	-	-
INVP 4288 AD Data Cleanse	Tech. Modernization	4288	G020	12/31/17	84	-	-	-	-	-	-
INVP 4267 - WAN Bandwidth Upgrades	Tech. Modernization	4267	G020	3/31/18	84	-	180,000	-	180,000	-	180,000
INVP 4680 WAP Density deployment	Tech. Modernization	4680	G020	3/31/18	60	-	180,000	-	180,000	-	180,000
INVP 4631 Box Enablement	Tech. Modernization	4631	G020	12/31/17	84	-	-	-	-	-	-
INVP 4677 Application monitoring, Network/IDS, Operations monitoring	Tech. Modernization	4677	G020	6/30/17	84	-	-	-	-	-	-
INVP 4693 Enterprise Labs	Tech. Modernization	4693	G020	12/31/17	84	-	-	-	-	-	-
INVP 4679 Cisco Prime	Tech. Modernization	4679	G020	9/30/18	84	-	100,000	-	100,000	-	100,000
INVP 4726 Orchestration and Self Service	Tech. Modernization	4726	G020	3/31/18	84	-	-	-	-	-	-
Legacy Migration of Web Access Portal User to VZ RSA Service	Tech. Modernization	4724	G020	3/31/18	84	-	-	-	-	-	-
INVP 4707 Business Innovation Projects 1	Tech. Modernization	4707	G020	3/31/19	84	794,647	-	-	-	463,544.20	-
INVP 4715 EUC, network, and data center strategy	Tech. Modernization	4715	G020	12/31/17	84	771,429	-	-	-	450,000.00	-
INVP 4716 FY19 Data Center Projects	Tech. Modernization	4716	G020	3/31/19	84	250,000	100,000	-	-	145,833.33	58,333
INVP 4720 FY20 Edge Projects	Tech. Modernization	4720	G020	3/31/20	84	-	-	1,000,000	-	416,666.67	-
INVP 4713 EMM Licenses	Tech. Modernization	4713	G020	12/31/18	84	-	-	-	132,000	-	55,000
INVP 4719 FY20 Data Center Projects	Tech. Modernization	4719	G020	3/31/20	84	-	-	500,000	200,000	208,333.33	83,333
INVP 4582 Enterprise Data Management Platform	Tech. Modernization	4582	G020	6/1/20	84	450,000	-	450,000	-	450,000.00	-
INVP 4708 Business Innovation Projects 2	Tech. Modernization	4708	G020	3/31/21	84	673,723	-	794,647	-	724,107.87	-
INVP 4728 Business Innovation Projects 3	Tech. Modernization	4728	G020	3/31/21	84	673,723	-	794,647	-	724,107.87	-
INVP 4577 Call Manager Upgrade	Tech. Modernization	4577	G020	12/31/17	60	-	(1,100,000)	-	(1,100,000)	-	(1,100,000)

**Naragansett Electric Company d/b/a National
Grid**

IS Investment Plan Operating Expenses

										9/01/18- 8/31/19	
										Rate Year	
Investment Name	Programs	INVP #	Bill Pool	In Service Date	Amortization Period	FY19 OPEX	FY19 RTB	FY20 OPEX	FY20 RTB	OpEx	RTB
INVP 4749 VSTIG Hardware Refresh - IDS Card Replacement	Tech. Modernization	4749	G020	3/31/18	60	-	240,000	-	240,000	-	240,000
Network Data Center Cleanup	Tech. Modernization	4832	G020	3/31/20	84	-	50,000	-	50,000	-	50,000
Log Logic (from VSTIG Programme) (INVP 4664)	Tech. Modernization	4674	G020	3/31/18	84	-	(100,000)	-	(100,000)	-	(100,000)
Legacy DMZ Firewalls (from VSTIG Programme) (INVP 4665)	Tech. Modernization	4688	G020	3/31/18	84	-	40,000	-	-	-	23,333
EMM Single Sign on	Tech. Modernization	4826	G020	12/31/18	84	-	100,000	-	100,000	-	100,000
Total						26,404,056	9,615,342	14,849,794	11,798,407	21,589,780	10,524,953

Total OPEX & RTB

32,114,733