

FY15

<u>Description</u>	<u>Approval</u>	<u>Closure</u>
Base Growth – Install Main	Page 1 of 249	Page 10 of 249
Base Growth – Install Services		
Base Growth - Install Meter/Regulator		
Base Growth – Fitting		
Base Growth – Sales Fullfillment		
Base Growth – Meter Purchase/Operations	Page 16 of 249	Page 23 of 249
Purchase Meters Replacement		
Gas System Reinforcement	Page 28 of 249	Page 40 of 249
BS HP Leak Prone Service	Page 45 of 249	Page 53 of 249
CI Joint Encapsulation	Page 58 of 249	Page 66 of 249
City State Construction - Non Reimbursable	Page 72 of 249	Page 80 of 249
City State Construction – Reimbursable		
I-195		
Corrosion	Page 86 of 249	Not Required
Leak Prone Pipe	Page 89 of 249	Page 102 of 249
Service Replacements – Leaks	Page 108 of 249	Page 117 of 249
Service Replacements –Non-Leaks/Other		
Allens Ave Rebuild	Page 123 of 249	Project not complete
Exeter Boil Off Compressor	Page 136 of 249	Page 143 of 249
Gas Expansion	Page 149 of 249	Page 159 of 249
Gas Planning	Page 165 of 249	Page 176 of 249
Heater Program	Page 182 of 249	Not Required
I&R Reactive Programs/CNG	Page 185 of 249	Not Required
LNG	Page 188 of 249	Not Required
Pressure Regulating Facilities	Page 191 of 249	Page 199 of 249
System Automation	Page 205 of 249	Page 213 of 249
Valve Installation/Replacement	Page 219 of 249	Not Required
Combustible Gas Indicators	Page 222 of 249	Page 231 of 249
Equipment & Tools	Page 236 of 249	Page 244 of 249



Short Form Sanction Paper

Title:	FY15 Rhode Island Growth Capital Plan	Sanction Paper #:	USSC-14-140
Project #:	CRCC102, CRCC104, CRCC110	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	3/26/2014
Author:	Peter Duggan	Sponsor:	Sean Mongan
Utility Service:	Gas	Project Manager:	Kevin Rennick

1 Executive Summary

1.1 Sanctioning Summary

This paper requests sanction of CRCC102, CRCC104, and CRCC110 in the amount of \$19.136M with a tolerance of +/- 10% for the purposes of full implementation to install new mains, services, and meters. (note: does not include Meter Purchases. They are sanctioned separately.)

This sanction amount is \$19.136M broken down into:

\$18.974M Capex

\$0.162M Removal

With a CIAC/Reimbursement of \$4.887M

1.2 Project Summary

This program involves the installation of new main, services and meters to serve projected customer growth in Rhode Island. The \$19.136M for FY15 will fund two parts of the growth program: (1) the installation of 1,997 services and (2) the installation of 64,500 feet of main associated with new customers, including 24,600 of new gas main for a single customer, Daniele Foods Inc.

2 Project Detail

2.1 Background

The Customer organization is responsible for projecting growth rates. With the Jurisdictions, Resource Planning, Engineering, Customer Fulfillment and Operations they develop the projected growth rates and the necessary capital and O&M requirements. Additional input from other departments of the Company including finance, operations and construction, gas planning, marketing and engineering is included.



Short Form Sanction Paper

This plan is intended to provide service for over 5,000 new gas customer accounts in the state of Rhode Island. The projected company annual revenue is \$4.76M for the 14/15 plan. This plan is in line with the anticipated growth we are seeing and in line with the demand we delivered in FY 13/14. This plan factors in additional resource capacity that will be sanctioned in the ISR plan as part of the Rhode Island Growth Pilot Effort.

2.2 Drivers

As a regulated utility we are required to offer delivery of service to prospective customers while obtaining a return on our investment that allows us to be profitable.

There are several factors that drive overall GPM projections and the associated capital/ O&M expenditures:

- Rate Plans
- Fuel Pricing – oil versus natural gas
- Inventory levels and turnover ratios
- Saturation levels
- Marketing Lead performance
- Designs and resourcing that supports the delivery of capital at efficient pricing.
- Economic Conditions / Building Starts
- Gas system constraints

2.3 Project Description

The proposal is intended to establish the 14/15 Customer NDR (New Delivery Revenue) goal, \$4.760M, and the accompanying capital budgets of \$19.136M. The document takes into account current, and projected, market and pricing conditions and contains provisions should conditions worsen.

2.4 Benefits

This plan has been developed to deliver new revenue to the company while earning an anticipated return of 11-12%. We will be delivering clean, safe and affordable natural gas to residents and businesses in the state of Rhode Island. There is an environmental impact in regards to the reduction of oil as a heating fuel for these customers. The revenue delivery for the 14/15 plan is \$4.760M, and the accompanying capital budgets of \$19.136M. The document takes into account current, and projected, market and pricing conditions and contains provisions should conditions worsen.



Short Form Sanction Paper

2.5 Business & Customer Issues

The primary issues with this plan are in regards to resource capacities. The plan includes about 25% more main than last year and the anticipated RI Pilot services will add another 300 services. This will impact our delivery to the customers and put our costs at risk if we have to deliver these services with more contractors and or on overtime.

2.6 Alternatives

Alternative 1: Keep plan in line with FY14. – This would deliver the same amount of services and less main, thus spending less capital and lowering our revenue goals

Alternative 2: Focus only on prospective customers on main – This would have us focusing on bringing on main customers only. This would reduce the amount of main to be installed and lower our capital costs. This would probably have implications with the PUC and our prospective customers. This would also negatively affect our revenue.

2.7 Investment Recovery

Investment recovery will be handled through regular rate recovery mechanisms.

2.7.1 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately **\$3.985M**. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.



Short Form Sanction Paper

3 Related Projects, Scoring, Budgets

3.1 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
CRCC102	Project Type	New Bus Residential	10.769
CRCC104	Project Type	New Bus Commercial	7.948
CRCC110	Project Type	Growth Reactive Main	0.419
Total			19.136

3.2 Associated Projects

Project Number	Project Title	Estimate Amount (\$M)
CRTC304	Base Growth - Meter Purchase/Operations	1.047
CRCC111	Gas System Reinforcement	3.737
Total		4.784

3.3 Prior Sanctioning History

N/A

3.4 Category

Category	Reference to Mandate, Policy, or NPV Assumptions
<input checked="" type="radio"/> Mandatory <input type="radio"/> Policy- Driven <input type="radio"/> Justified NPV	Regulatory agreements require National Grid to provide gas service and main. National Grid provides gas service using consistent up charge processes with targeted IRR returns across the portfolio.

3.5 Asset Management Risk Score

Asset Management Risk Score: 49

Primary Risk Score Driver: (Policy Driven Projects Only)

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



Short Form Sanction Paper

3.6 Complexity Level

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

Complexity Score: N/A_

4 Financial

4.1 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY15-19 Gas-Budget_File	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	\$0.000M

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

4.2 CIAC / Reimbursement

\$M	Prior Yrs	Yr. 1 2014/15	Yr. 2 2015/16	Yr. 3 2016/17	Yr. 4 2017/18	Yr. 5 2018/19	Yr. 6+ 2019/20	Total
CIAC/Reimbursement	0.000	(4.887)	0.000	0.000	0.000	0.000	0.000	(4.887)

4.3 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						Total
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6+	
CRCC102	New Bus Residential	Est Lvl (e.g. +/- 10%)	CapEx	-	10.607	-	-	-	-	-	10.607
			OpEx	-	-	-	-	-	-	-	
			Removal	-	0.162	-	-	-	-	0.162	
			Total	-	10.769	-	-	-	-	10.769	
CRCC104	New Bus Commercial	Est Lvl (e.g. +/- 10%)	CapEx	-	7.948	-	-	-	-	7.948	
			OpEx	-	-	-	-	-	-	-	
			Removal	-	-	-	-	-	-	-	
			Total	-	7.948	-	-	-	-	7.948	
CRCC110	Growth Reactive Main	Est Lvl (e.g. +/- 10%)	CapEx	-	0.419	-	-	-	-	0.419	
			OpEx	-	-	-	-	-	-	-	
			Removal	-	-	-	-	-	-	-	
			Total	-	0.419	-	-	-	-	0.419	
Total Project Sanction			CapEx	-	18.974	-	-	-	-	18.974	
			OpEx	-	-	-	-	-	-	-	
			Removal	-	0.162	-	-	-	-	0.162	
			Total	-	19.136	-	-	-	-	19.136	



Short Form Sanction Paper

4.4 Project Budget Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						Total
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
CRCC102	New Bus Residential	Est Lvl (e.g. +/- 10%)	CapEx	-	10.607	-	-	-	-	-	10.607
			OpEx	-	-	-	-	-	-	-	
			Removal	-	0.162	-	-	-	-	0.162	
			Total	-	10.769	-	-	-	-	10.769	
CRCC104	New Bus Commercial	Est Lvl (e.g. +/- 10%)	CapEx	-	7.948	-	-	-	-	-	7.948
			OpEx	-	-	-	-	-	-	-	
			Removal	-	-	-	-	-	-	-	
			Total	-	7.948	-	-	-	-	7.948	
CRCC110	Growth Reactive Main	Est Lvl (e.g. +/- 10%)	CapEx	-	0.419	-	-	-	-	-	0.419
			OpEx	-	-	-	-	-	-	-	
			Removal	-	-	-	-	-	-	-	
			Total	-	0.419	-	-	-	-	0.419	
Total Project Sanction			CapEx	-	18.974	-	-	-	-	-	18.974
			OpEx	-	-	-	-	-	-	-	-
			Removal	-	0.162	-	-	-	-	-	0.162
			Total	-	19.136	-	-	-	-	-	19.136

5 Key Milestones

Milestone	Target Date: (Month/Year)
Sanction Paper Approval	March 26, 2014
Begin Work	4/2014
Complete Work	3/2015
Close-out	6/2015

6 Statements of Support

6.1.1 Supporters

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

Role	Individual	Responsibilities
Sponsor/ Asset Manager/ Asset Owner/ Process Owner	Sean Mongan	Endorses the project aligns with jurisdictional objectives
Investment Planning	Pat Pensabene	Endorses relative to 5-year business plan or emergent work
Resource Planning	Artie Georgacopoulos	Endorses Resources, cost estimate, schedule, and Portfolio Alignment

6.1.2 Reviewers

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

Short Form Sanction Paper



Reviewer List	Individual
Finance	Keith Fowler
Regulatory	Peter Zschokke
Procurement	Art Curran,
Jurisdictional Delegates	Walter Fromm

Short Form Sanction Paper



7 Decisions

The US Sanctioning Committee (USSC) at a meeting held on March 26, 2014:

- (a) APPROVED this paper and the investment of \$19.136M and a tolerance of +/- 10%
- (b) NOTED that Kevin Rennick has the approved financial delegation.
- (c) NOTE: In the event that any Blanket/Program projects are not approved prior to the start of the FY2016 fiscal year, the FY2015 approval limits will remain in effect until such time as the FY2016 blanket/program projects are approved by USSC and/or other appropriate authority for approval.

Signature.....

A handwritten signature in black ink, appearing to read "Lee Eckert".

Date..4/7/14..

Lee S. Eckert

US Chief Financial Officer

Chairman, US Sanctioning Committee



Short Form Sanction Paper

8 *Other Appendices*

N/A

8.1 *Sanction Request Breakdown by Project*

N/A

USSC Closure Paper



Title:	FY15 Growth Capital Plan - Rhode Island	Sanction Paper #:	USSC-14-140C
Project #:	Various (See Appendix)	Sanction Type:	Closure
Operating Company:	The Narragansett Electric Co.	Date of Request:	March 30, 2017
Author:	David Mirabella	Sponsor:	James A. Cross, Jr., VP Sales & Program Operations
Utility Service:	Gas	Project Manager:	Kevin Rennick, Steve Lannon, Bill Mycroft, Stephanie Eddleston

1 Executive Summary

This paper is presented to close various projects (See Appendix). The total spend was \$22.746M. The sanction amount is \$19.136M.

The final spend amount is \$22.746M broken down into:

\$22.577M Capex

\$0.000M Opex

\$0.169M Removal

With a CIAC/Reimbursement of \$3.240M CIAC

2 Project Summary

This program involves the installation of new main, services and meters to serve projected customer growth in Rhode Island. The original sanction document requested \$19.136M for FY15 to fund two parts of the growth program: (1) the installation of 1,997 services and (2) the installation of 64,500 feet of main associated with new customers, including 24,600 of new gas main for a single customer, Daniele Foods Inc.



USSC Closure Paper

3 Over / Under Expenditure Analysis

3.1 Summary Table

Actual Spending (\$M)			
Project #	Description		Total Spend
Various	(See Appendix)	Capex	22.577
		Opex	0.000
		Removal	0.169
		Total	22.746
Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	18.974
		Opex	0.000
		Removal	0.162
		Total Cost	19.136
Sanction Variance (\$M)			Total Spend
		Capex	(3.603)
		Opex	0.000
		Removal	(0.006)
		Total Variance	(3.609)

3.2 Analysis

The total annual spend for the program was higher than the sanctioned amount of \$19.136 M. The reason for this variance is a combination of higher unit cost than budget offset by lower units completed than planned. From a unit perspective, there were 26 more actual New Services (2,023 vs 1,997) than plan while New Main was 3,200 ft. less than plan (61,300 vs. 64,500). Actual units for number of services and feet of main were within 1.3% and 5% of plan, respectively.

4 Improvements / Lessons Learned

Unit costs are being updated to improve the accuracy of project estimating. Improvements to track project costs have provided for better accuracy of year-end spending projections. A new monthly process has been established to aid in an adherence to the budget via Monthly Zero Variance and Portfolio Calibration (PCM) Meetings, which applies a holistic view of the capital portfolio, identifying forecast increases and making recommendations on how to remain on budget.

USSC Closure Paper



5 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed (1)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed (2)	<input checked="" type="radio"/> Yes <input type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database (3)	<input type="radio"/> Yes <input checked="" type="radio"/> No

- (1) All work orders and funding projects have been closed
Program/Blanket projects may contain work orders and or funding projects which have not yet been closed for reasons including but not limited to:
- the same work order(s) are used annually. They will remain open until Asset Management and/or Resource Planning have determined work orders are no longer needed.
 - construction may cross multiple fiscal years
 - the work order closing process is within the late charge waiting period
 - other accounting processes or final system closing activities have not yet completed

The Program/Blanket projects are approved annually for the current year expected spend and remain open until Asset Management and/or Resource Planning have determined the project is no longer required.

(2) N/A

(3) All lessons learned have been entered appropriately into the lesson learned database



USSC Closure Paper

Program/Blanket projects usually contain short cycle work which the Company has been performing over several fiscal years. No new Lessons Learned which have not already been identified and recorded within section 4.

6 Statements of Support

6.1 Supporters

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

Department	Individual	Responsibilities
S&PO	Jim Cross	Sponsor
Investment Planning	Pat Pensabene	Endorses relative to 5 year business plan
Resource Planning	Alfredo Vidal	Endorses resources, cost estimate, schedule and portfolio alignment
Project Management	Michael Michel	Endorses resources, cost estimate, schedule
Gas Project Estimation	Art Paul	Endorses Cost Estimate

6.2 Reviewers

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

Function	Individual
Finance	Patricia Easterly
Regulatory	Peter Zschoke
Procurement	Art Curran
Jurisdictional Delegate	John Currie
Control Center	Mark Eagan

USSC Closure Paper



7 Decisions

The US Sanctioning Committee (USSC) approved this paper on March 30, 2017.

Signature *Ross W. Turrini*

Date April 27, 2017

Executive Sponsor – Ross Turrini, Senior Vice President, Gas Process & Engineering
and Chief Gas Engineer

USSC Closure Paper



8 Appendix

Paper Number	FP Proj No	Fp Proj Description	Values			
			Sum of CAP	Sum of COR	Sum of O&M	Sum of Total
USSC-14-140	C043732	RIDOT I-195 CONT 14&15 - NEW MAIN	\$ 268,061	\$ 20,233	\$ -	\$ 288,294
	CON0009	OCEAN ST-DIST-LAND/RIGHTS BLANKETS	\$ 16,029	\$ -	\$ -	\$ 16,029
	CON0050	RI-GAS-MAIN NEW GRWTH-RI BLANKET	\$ (6,377)	\$ 896	\$ -	\$ (5,482)
	CON0054	RI-GAS-NEW SERV INST-RI BLANKET	\$ 34,830	\$ 2,224	\$ -	\$ 37,054
	CON0058	RI-GAS-NEW MTR SM-RI BLANKET	\$ 790,079	\$ 42,414	\$ -	\$ 832,493
	CRCC102	NEW BUS - RES -RI	\$11,266,979	\$ 9,857	\$ -	\$11,276,835
	CRCC104	NEW BUS - COM -RI	\$10,208,160	\$ 93,217	\$ -	\$10,301,377
Grand Total			\$22,577,760	\$ 168,841	\$ -	\$22,746,600



Short Form Sanction Paper

Title:	FY 15 Purchase Gas Meters – Rhode Island	Sanction Paper #:	USSC-14-075
Project #:	CRTC304	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	3/11/2014
Author:	Philip DiGiglio	Sponsor:	Cheryl A. Warren, VP Asset Mgmt
Utility Service:	Gas	Project Manager:	Philip DiGiglio

1 Executive Summary

1.1 Sanctioning Summary

This paper requests sanction of project CRTC304 in the amount \$3.908 M with a tolerance of +/- 10% for the purposes of full implementation for the purchase and test of new gas meters and instrumentation to support mandated and growth meter change requirements

This sanction amount is \$3.908 M broken down into:

- \$ 3.908 M Capex
- \$ 0.000 Opex
- \$ 0.000 Removal

1.2 Project Summary

This project provides funding for the purchase and test of gas meters and associated instrumentation.

2 Project Detail

2.1 Background

Each year, National Grid is required to change/replace meters in order to comply with the state regulations governing gas metering, to ensure the accuracy of the measurement of usage used to generate customer's consumption bills, and install new meters in support of the Company's growth initiatives.

2.2 Drivers

The primary driver for meter and metering instrumentation purchases is compliance with state regulations governing meter accuracy and measurement of gas usage for customer bills.



Short Form Sanction Paper

2.3 Project Description

On an annual basis, a zero based meter purchase strategy is developed to meet the metering needs of the mandated, company change initiated and growth programs. The volume of meters to be purchased is based upon meter accuracy, age and asset condition of the meters that are planned to be /and are returned from the field. An average condemn rate based on program type and age of assets is calculated utilizing historical information from each of the areas. The meter purchase plan is developed using this historical metering data, the growth forecast and the planned mandated program work volumes.

The number and mix of meter types is developed at the beginning of the year and is reviewed and adjusted as the year progresses and CMS completes its work. The on-going review is necessary in order to ensure that the correct mix of inventory is available to meet the demands of CMS while not over purchasing.

Gas meters required for the Narragansett Electric Company are purchased, tested, and delivered to the National Grid Rhode Island Meter Operations Facility in Rhode Island.

2.4 Benefits

This project supports regulatory requirements, operations, and growth programs. In addition, the replacement of aging assets results is required to maintain and improve overall asset health (metering and billing accuracy).

2.5 Business & Customer Issues

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

2.6 Alternatives

Alternative 1:

Base Case – Leave as is

This option is not viable as it would violate regulatory requirements, adversely impact customer satisfaction, and result in our inability to support fiscal year growth targets

Alternative 2:

Revise Project Size and Scope – Partial Deferral

This option is not viable as it would result in a partial violation of regulatory requirements, or result in our inability to support fiscal year growth targets



Short Form Sanction Paper

2.7 Investment Recovery

Investment recovery will be through standard rate recovery mechanisms

2.7.1 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.821M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.

3 Related Projects, Scoring, Budgets

3.1 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
CRTC304	0	Purchase Gas Meters - Gwth	1.047
CRTC304	0	Purchase Gas Meters - Mand	2.861
Total			3.908

3.2 Associated Projects

None

3.3 Prior Sanctioning History

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

Date	Governance Body	Sanctioned Amount	Paper Title	Sanction Type



Short Form Sanction Paper

3.4 Category

Category	Reference to Mandate, Policy, or NPV Assumptions
<input checked="" type="radio"/> Mandatory	Support Gas Meter requirements for Mandated Meter Change Program, and system growth targets
<input type="radio"/> Policy- Driven	
<input type="radio"/> Justified NPV	

3.5 Asset Management Risk Score

Asset Management Risk Score: 49 _____

Primary Risk Score Driver: (Policy Driven Projects Only)

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

3.6 Complexity Level

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

Complexity Score: _____

4 Financial

4.1 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY15 – FY19 Capital Plan - Gas	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	\$0.00M



Short Form Sanction Paper

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

N/A

4.2 CIAC / Reimbursement

\$M	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	Total
		2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	
CIAC/Reimbursement	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

4.3 Cost Summary Table

					Current Planning Horizon (\$M)						
Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
					2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	Total
CRTC304	Purchase Gas Meters - Gwth	+/-10%	CapEx	-	1.047	-	-	-	-	-	1.047
			OpEx	-	-	-	-	-	-	-	
			Removal	-	-	-	-	-	-	-	
			Total	-	1.047	-	-	-	-	1.047	
CRTC304	Purchase Gas Meters - Mand	+/- 10%	CapEx	-	2.861	-	-	-	-	-	2.861
			OpEx	-	-	-	-	-	-	-	
			Removal	-	-	-	-	-	-	-	
			Total	-	2.861	-	-	-	-	2.861	
Total Project Sanction			CapEx	-	3.908	-	-	-	-	-	3.908
			OpEx	-	-	-	-	-	-	-	
			Removal	-	-	-	-	-	-	-	
			Total	-	3.908	-	-	-	-	3.908	

4.4 Project Budget Summary Table

Project Costs per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
		2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	
CapEx	0.000	3.908	0.000	0.000	0.000	0.000	0.000	3.908
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	3.908	0.000	0.000	0.000	0.000	0.000	3.908

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
		2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000



Short Form Sanction Paper

5 Key Milestones

Milestone	Target Date: (Month/Year)
Provide meter vendors with annual requirements and product delivery schedule for first half of FY15	3/1/2014
Monitor Inventory levels	6/1/2014
Provide meter vendors with delivery schedule for second half of FY	7/1/2014
Project Closeout	6/30/2015

6 Statements of Support

6.1.1 Supporters

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

Role	Individual	Responsibilities
<i>Investment Planner</i>	Pensabene, Patrick	Endorses relative to 5-year business plan or emergent work
<i>Resource Planning</i>	Georgacopoulos, Arthur	Endorses Resources, cost estimate, schedule, and Portfolio Alignment

6.1.2 Reviewers

Reviewer List	Individual
Finance	Fowler, Keith
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Fromm, Walter
Procurement	Curran, Art
Control Center	Amerige, Thomas



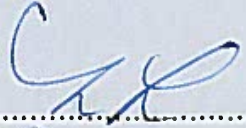
Short Form Sanction Paper

7 Decisions

I:

(a) APPROVE this paper and the investment of \$3.908M and a tolerance of +/- 10%

(b) NOTE that Philip Di Giglio is the Project Manager and has the approved financial delegation.

Signature..........Date.....3/24/14.....

Executive Sponsor - Marie Jordan, SVP Network Strategy

8 Other Appendices

8.1 Sanction Request Breakdown by Project

N/A

USSC Closure Paper



Title:	FY15 Purchase Gas Meters – Rhode Island	Sanction Paper #:	USSC-14-075C
Project #:	CON063	Sanction Type:	Closure
Operating Company:	The Narragansett Electric Co.	Date of Request:	9/27/2016
Author:	Marina Perrone	Sponsor:	Timothy Graham – VP Customer Meter Services
Utility Service:	Gas	Project Manager:	Marina Perrone

1 Executive Summary

This paper is presented to close CON063. The total spend was \$3.076M. The sanctioned amount for this project was \$3.908M.

The final spend amount is \$3.076M broken down into:

*\$3.065M Capex
\$0.000M Opex
\$0.011M Removal*

2 Project Summary

This project provides funding for the purchase and test of gas meters and associated instrumentation.



USSC Closure Paper

3 Over / Under Expenditure Analysis

3.1 Summary Table

Actual Spending (\$M)			
Project #	Description		Total Spend
CON063	FY15 Purchase Gas Meters - Rhode Island	Capex	3.065
		Opex	0.000
		Removal	0.011
		Total	3.076
Project #	Description		Total Spend
CRTC304	FY15 Purchase Gas Meters - Rhode Island	Capex	0.000
		Opex	0.000
		Removal	0.000
		Total	0.000
Total		Capex	3.065
		Opex	0.000
		Removal	0.011
		Total	3.076

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	3.908
		Opex	0.000
		Removal	0.000
		Total Cost	3.908
Sanction Variance (\$M)			Total Spend
		Capex	0.843
		Opex	0.000
		Removal	(0.011)
		Total Variance	0.832

3.2 Analysis

The actual cost for handling and shipping clearing was mistakenly overstated in the budget.



USSC Closure Paper

4 Improvements / Lessons Learned

The clearing shipping and handling cost was adjusted lower for FY17 once the mistake was uncovered.

Asset Management is now working closely with Resource Planning and other groups to track the money being spent and to improve project forecasts. Committees and meetings have also been set up to proactively manage the entire capital budget. There are monthly Zero Variance and Portfolio Calibration Meetings to review the spend forecast for the fiscal year and adjust it to align with the budget.

5 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed (1)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed (2)	<input checked="" type="radio"/> Yes <input type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database (3)	<input type="radio"/> Yes <input checked="" type="radio"/> No

- (1) All work orders and funding projects have been closed
Program/Blanket projects may contain work orders and or funding projects which have not yet been closed for reasons including but not limited to:
- the same work order(s) are used annually. They will remain open until Asset Management and/or Resource Planning have determined work orders are no longer needed.
 - construction may cross multiple fiscal years
 - the work order closing process is within the late charge waiting period
 - other accounting processes or final system closing activities have not yet completed

USSC Closure Paper



The Program/Blanket projects are approved annually for the current year expected spend and remain open until Asset Management and/or Resource Planning have determined the project is no longer required.

(2) N/A

(3) All lessons learned have been entered appropriately into the lesson learned database

Program/Blanket projects usually contain short cycle work which the Company has been performing over several fiscal years. No new Lessons Learned which have not already been identified and recorded within section 4.

6 Statements of Support

6.1 Supporters

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

Department	Individual	Responsibilities
Investment Planner	Pensabene, Patrick M.	Endorses relative to 5-year business plan or emergent work
Resource Planning	Vidal, Alfredo	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Project Management	Michel, Michael	Endorses Resources, cost estimate, schedule
Gas Project Estimation	Paul, Art	Endorses Cost Estimate

6.2 Reviewers

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

Function	Individual
Finance	Easterly, Patricia
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Currie, John
Procurement	Curran, Art
Control Center	Loiacono, Paul

USSC Closure Paper



7 Decisions

I approve this paper.

Signature *Ross W. Turrini* Date April 27, 2017
Executive Sponsor – Ross Turrini, Senior Vice President, Gas Process & Engineering
and Chief Gas Engineer



Short Form Sanction Paper

Title:	FY15 System Reinforcement – RI	Sanction Paper #:	USSC-14-043
Project #:	CRCC111	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	March 11, 2014
Author:	Adnan Malik / Eric Aprigliano – Director, Long Term Planning and Operations Engineering	Sponsor:	Timothy Small – VP Gas Systems Engineering
Utility Service:	Gas	Project Manager:	Thomas Finneral

1 Executive Summary

1.1 Sanctioning Summary

This paper requests sanction of CRCC111, the Proactive System Reinforcement Program for Rhode Island, in the amount \$3.685M with a tolerance of +/- 10% for the purposes of full implementation.

This sanction amount is \$3.685M broken down into:

*\$3.532 Capex
\$0.000 Opex
\$0.153 Removal*

1.2 Project Summary

Rhode Island system growth is forecasted to experience a peak-day customer growth of 26,269 Dth over the next five (5) years, corresponding to an average annual growth rate of 1.41%. Compounded by a first-year growth of 11.6% from the 2012 forecast, deficiencies in the current infrastructure will require system reinforcements to be constructed. For this year, new main will be used to connect areas of systems with strong pressures to those with weaker pressures as well as relaying small diameter mains with larger diameter mains in order to address a potential of over 9,000 customers impacted if design conditions (i.e., average temperature of -3° F) were experienced during the 2014/15 heating season based on current sendout forecast. Construction of the proposed projects in this program will ensure continuous and reliable service to these customers.

2 Project Detail

2.1 Background

Each year, Long Term Planning performs an analysis on the U.S. gas distribution network to determine any reinforcement projects, and associated costs, that need to be



Short Form Sanction Paper

constructed over the following five (5) years in order to support forecasted customer growth. Reinforcement projects are designed to maintain minimum pressures throughout the distribution system under peak-hour conditions and are generally constructed as they become necessary (i.e., "just in time" reinforcement philosophy). These projects ensure that continuous service is maintained to all customers on the gas distribution network throughout the year in compliance with Federal and State Codes.

Examples of distribution system reinforcement projects include, but are not limited to, the following:

- Replacing existing undersized mains with larger diameter mains. "Leak-prone" pipe is targeted whenever practical.
- Looping or connecting system endpoints by installing new main.
- System operating pressure upratings (e.g. 45 psig to 60 psig).
- Installing new district regulators as well as replacing and/or rebuilding existing undersized district regulators.
- Transferring existing customers supplied from low-pressure mains to adjacent high-pressure mains (i.e., load shedding).

The results of the analysis are memorialized in the US Gas Distribution 5-Year Reinforcement and Reliability Plan. The Plan is issued annually so that it can be adjusted for changes to the Gas Supply send-out forecast, differences between actual and estimated load growth, reinforcement project deferrals, public works activity, main replacement program activity, Sales and Program Operations supported growth reinforcements, and updates/improvements to the SynerGEE computer network analysis models. The plan described herein is year one (1) of the 5 year plan covering fiscal year 2015.

It should be noted that the SynerGEE computer models used for the hydraulic analysis of the distribution network are validated on an annual basis. Field data from one of the coldest days of the year along with the highest distribution send-out is collected from across the network. The computer model is configured to match the system load experienced on that day and then calculated pressures are compared with field charts and SCADA data. Discrepancies are investigated to determine where the model might require updating and/or where field investigation is warranted. Conditions such as broken valves and mains filled with debris identified through the investigation process are remediated. For the 2012-13 verification analysis, there was a decent correlation on the Rhode Island gas system between model predicted pressures and actual recorded pressures with 83% of the verification points within acceptable tolerance. This shows that the model is reasonably accurate in predicting future problem areas. Also, this verification process helps identify potential new pressure monitoring locations in areas indicated by the model which could see pressure problems. These are areas which currently don't have pressure monitoring equipment. This helps in the future to ensure that predicted pressure problems are field verified before reinforcements are installed.



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Further details and results of the analysis are contained in the US Enterprise Wide 2012-13 Winter Performance Report.

Additionally, Long Term Planning uses information provided by ICF International when allocating forecasted customer growth to the validated SynerGEE computer models. Specifically, ICF provided forecasted sendouts for each city/town/zone through the year 2035, from which growth factors (percentages) were calculated and used to apply growth forecasted by the Company's forecasting group. The result of this methodology is that some cities/town/zones show positive growth while others may show negative growth. By better simulating where the customer growth is expected to occur, the overall accuracy of the reinforcement projects that must be constructed in order to support each region's average annual system growth are identified. These projects are designed to maintain minimum system design pressures during periods of peak demand, (i.e. design weather conditions), thus ensuring continuous service to all customers on the network in compliance with Federal and State Codes. The peak demand for a given territory is based on the same corporate forecast that is filed annually with the state utility commission and used to develop the gas supply portfolio. The System Reinforcement program is a critical component for enabling that gas supply to be delivered to the firm customer. Design weather conditions have been established for Rhode Island as -3°F (68 HDD).

2.2 Drivers

The 5-year gas send-out forecast for Rhode Island is as follows:

GAS SENDOUT (DT/DAY)						
Current Yr 13/14	Yr 1 14/15	Yr 2 15/16	Yr 3 16/17	Yr 4 17/18	Yr 5 18/19	Total Growth
372,090	382,612	372,748	362,324	374,681	398,359	26,269

The goal of the program is to maintain continuous service to all customers on the Rhode Island gas distribution network during periods of peak demand (i.e., design weather conditions). The results of the analysis (described above) performed on the gas distribution network for the 2014/15 winter using the current gas supply send-out forecast predicts that approximately 9,180 customers could experience pressures below minimum design and could be at risk of losing service if design conditions were to be experienced and the growth prediction is accurate. The estimated restoration cost (i.e., relight, plus claims) for this number of customers is \$9.18M, based on \$1,000/customer (See Appendix 2 for a discussion of the \$1,000/customer basis). This exceeds the cost of reinforcing the gas system to prevent this loss by approximately 149%. The projects contained in this reinforcement program have been designed to address these issues. These projects are designed for aggregate growth of all new customers; they are not for any specific customer.



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2.3 Project Description

The reinforcement program includes the design, procurement, construction, testing, and completion of capital projects. The program contains various types of projects designed to cost-effectively reinforce areas of the gas distribution network that are predicted to experience pressures below minimum design levels due to forecasted growth. A full list of the Gas Planning Reinforcement Program projects for RI is in Appendix 1. The projects, totaling \$3.685M, are organized by the following work types:

- **New Main – Four (4) Projects \$1.29M**
In most cases, new main projects are designed to bring pressures on systems above minimum design levels by connecting areas of systems with strong pressure to areas with weaker pressure. This method of reinforcement often involves installing main in streets without gas, which provides opportunities to connect new customers. A total of 6,995 LF (1.3 miles) of new main will be installed under these projects.
- **Load Shed – One (1) Project \$0.35M**
Load shedding projects are designed to bring pressures on LP systems above minimum design levels by transferring customers fed from LP mains to HP mains. This project requires the installation of 2,328 LF of new plastic main, and allows for the retirement of 1,618 LF of "leak-prone" pipe. Leak prone pipe reduction will be counted towards state regulatory targets.
- **Relay Main – Six (6) Projects \$1.97M**
Relay main projects are designed to bring pressures on systems above minimum design levels by replacing small diameter mains, which often cause bottlenecks in the system, with larger diameter mains. Whenever practicable, "leak-prone" pipe is targeted for replacement. A total of 9,082 LF (1.7 miles) of new plastic main will be installed under these projects. In addition, 90% of the main being replaced is "leak-prone" pipe.
- **Engineering Costs for Fiscal Year 2016 Projects Placeholder - \$0.08M**
These costs are for engineering and design of complex projects identified for FY16 construction. The Level 1 estimate was determined by Project Engineering and based on historical data.

2.4 Benefits

Reinforcement projects that ensure continuous and reliable service to customers in a cost efficient manner are identified and proposed for construction. Prospective projects are evaluated for additional system benefits and synergies with other proposed capital projects and often have the added benefit of increasing overall system reliability and improving operability of the network. In addition, many of these projects create the opportunity to be combined with public works activities or replace/abandon aging infrastructure (e.g., "leak-prone" pipe) whenever applicable, providing a benefit to the integrity program.



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Approximately 9,180 customers may experience pressures below minimum design and be at risk of losing service if design conditions were to be experienced during the 2014/15 heating season and the growth forecast is accurate. The construction of the Rhode Island reinforcement program will eliminate this possibility.

Also, current conditions on the Rhode Island gas distribution system require contingency operations in order to manage the system during periods of peak demand. These operations involve the manual adjusting of five (5) LP district regulator set-points above the standard 10 inches water column setting and one (1) HP district regulator set-point to MAOP. The construction of the Rhode Island reinforcement program will assist in eliminating this need.

Additionally, the program will install approximately 18,405 LF of main and facilitate the abandonment of approximately 9,834 LF of existing "leak-prone" pipe on the system. This represents a replacement rate of 53% for this program.

2.5 Business & Customer Issues

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

2.6 Alternatives

Alternative 1: Do Nothing/Deferral

This option could result in potentially 9,180 customers experiencing pressures below minimum design levels and being at risk of losing service if design conditions were to be experienced during the 2014/15 heating season term under the current Gas Supply sendout forecast. The estimated restoration cost (i.e., relight, plus claims) for this number of customers is \$9.1M, based on \$1,000/customer. In addition, restrictions on sales activities would be required in constrained areas and the Company could find itself in violation of its tariff in jurisdictions with an obligation to serve.

2.7 Investment Recovery

Investment recovery will be through standard rate recovery mechanisms.

2.7.1 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.774M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.



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3 Related Projects, Scoring, Budgets

3.1 Summary of Projects

Project Number	Project Title	Estimate Amount (\$M)
CRCC111	Gas Planning Reinforcement	3.685
Total		3.685

3.2 Associated Projects

NA

3.3 Prior Sanctioning History

NA

3.4 Category

Category	Reference to Mandate, Policy, or NPV Assumptions
<input type="radio"/> Mandatory	Federal Code 49 CFR 192.623 requires minimum pressures to be maintained in the gas system. National Grid has established system minimum pressures to be maintained for all pressure levels.
<input checked="" type="radio"/> Policy- Driven	
<input type="radio"/> Justified NPV	

3.5 Asset Management Risk Score

Asset Management Risk Score: 37

Primary Risk Score Driver: (Policy Driven Projects Only)

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

3.6 Complexity Level

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

Complexity Score: _____



Short Form Sanction Paper

4 Financial

4.1 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY15-FY19 Capital Plan - Gas	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input checked="" type="radio"/> Under <input type="radio"/> NA	\$0.05M

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

4.2 CIAC / Reimbursement

NA

4.3 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						Total
					Yr.1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
					2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	
CRCC111	Gas Planning Reinforcement	+/- 10%	CapEx	-	3.532	-	-	-	-	-	3.532
			OpEx	-	-	-	-	-	-	-	
			Removal	-	0.153	-	-	-	-	0.153	
			Total	-	3.685	-	-	-	-	3.685	
Total Project Sanction			CapEx	-	3.532	-	-	-	-	-	3.532
			OpEx	-	-	-	-	-	-	-	
			Removal	-	0.153	-	-	-	-	0.153	
			Total	-	3.685	-	-	-	-	3.685	

4.4 Project Budget Summary Table

Project Costs Per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
CapEx	0.000	3.582	0.000	0.000	0.000	0.000	0.000	3.582
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.155	0.000	0.000	0.000	0.000	0.000	0.155
Total Cost in Bus. Plan	0.000	3.737	0.000	0.000	0.000	0.000	0.000	3.737

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
CapEx	0.000	0.050	0.000	0.000	0.000	0.000	0.000	0.050
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.002
Total Cost in Bus. Plan	0.000	0.052	0.000	0.000	0.000	0.000	0.000	0.052



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5 Key Milestones

Milestone	Target Date: (Month/Year)
Sanctioning Approval	03/2014
Begin Construction	04/2014
Projects in Service	11/2014
Construction Complete	03/2015
Project Closeout	07/2015

6 Statements of Support

6.1.1 Supporters

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

Role	Individual	Responsibilities
Sponsor / Process Owner	Small, Timothy	Endorses the project aligns with jurisdictional objectives.
Investment Planner	Pensabene, Patrick	Endorses relative to 5-year business plan or emergent work.
Resource Planning	Georgacopoulos, Artie	Endorses resources, cost estimate, schedule, and portfolio alignment.
Project Management	Glenning, Daniel	Endorses resources, cost estimate, and schedule.

6.1.2 Reviewers

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

Reviewer List	Individual
Finance	Fowler, Keith
Regulatory	Zschokke, Peter
Jurisdictional Delegates	Fromm, Walter
Procurement	Curran, Art
Control Center	Amerige, Thomas

Short Form Sanction Paper



7 Decisions

I:	
(a)	APPROVE this paper and the investment of \$3.685M and a tolerance of +/- 10%
(b)	NOTE that Thomas J Finneral is the Project Manager and has the approved financial delegation.
Signature.....	Date.....
Executive Sponsor – Marie Jordan, Senior Vice President Network Strategy	



Short Form Sanction Paper

8 Other Appendices

8.1 Sanction Request Breakdown by Project

Appendix 1 – FY15 Rhode Island Reinforcement Projects

Work Type	Town	Project Description	Lgth	Size	Mat'l	MAOP	Project Estimate	Estimate Level	Reason for Project
Load Shed	Cranston	Relay of: -Approx. 685 ft of 6-in PE LP with 6-in PE 35 psig main in Cranston St from Sherman Ave to Shean St. -Approx. 190 ft of 4-in CI BS LP main with 2-in PE 35 psig main in Chappy St from Cranston St to #16 Chappy St. -Approx. 455 ft of 4-in CI PE LP main with 2-in PE 35 psig main in Farm St from Cranston St to Hervey St. -Approx. 525 ft of 4-in CI BS LP main with 2-in PE 35 psig main in Hervey St from Sherman Ave to #9 Hervey St. -Approx. 448 ft of 4-in CI PE LP main with 2-in PE 35 psig main in Shean St from Cranston St to Hervey St. & -Relay 47 Services.	2,328	6, 2	PL	60	\$350,200	1	Project necessary to maintain adequate minimum system pressures during peak demand.
Relay Main	Cranston	Relay of: -Approx. 555 ft of 4-in CI LP main with 6-in PE LP main in Lexington St from Pontiac Ave to Spring St. & -19 Services.	555	6	PL	LP	\$110,600	1	Engineering for 2014 projects
Relay Main	Cranston	Relay of: -Approx. 444 ft of 4-in CI LP main with 660 ft of 8-in PE LP main in Hayward St from Auburn St to Park Ave. & -Relay 4 Services.	660	8	PL	LP	\$112,100	1	Project necessary to maintain adequate minimum system pressures during peak demand.
Relay Main	East Providence	Relay of: -Approx. 1,217 ft of 6-in CI LP main with 8-in PE LP main in Bullocks Point Ave from Lincoln Ave to North St. & -Relay 13 Services.	1,217	8	PL	LP	\$320,825	1	Project necessary to maintain adequate minimum system pressures during peak demand.
New Main	Middletown	Install 2,300ft-12" CS (99 psig) parallel main in Green End Av from existing 12" CS at Trout Dr to Corey Ln.	2,300	12	CS	99	\$759,000	3	Project necessary to maintain adequate minimum system pressures during peak demand.
New Main	Narragansett	Installation of: -Approx. 825 ft of new 2-in PE 35 psig main in Old Point Judith Rd from Kinney Ave to Polo Club Rd.	825	2	PL	35	\$88,500	3	Project necessary to maintain adequate minimum system pressures during peak demand.
Relay Main	Narragansett	Relay of: -Approx. 1,780 ft of 2-in CS 35 psig main with 6-in PE 35 psig main in Wampum Rd from Saybrooke Ave to Boston Neck Rd. -Approx. 650 ft of new 6-in PE 35 psig in Boston Neck Rd from #1001 Boston Neck Rd to Conanicus Rd. & -Relay 18 Services.	2,430	6	PL	35	\$404,925	1	Project necessary to maintain adequate minimum system pressures during peak demand.
New Main	South Kingstown	Installation of: -Approx. 3,420 ft of new 4-in PE 35 psig main in South Rd from Chestnut Hill Rd to Winter Berry Ln.	3,420	4	PL	35	\$359,100	1	Project necessary to maintain adequate minimum system pressures during peak demand.
Relay Main	South Kingstown	Relay of: -Approx. 3,110ft of 8-in CS 35 psig main with 12-in PE 35 psig main in Kingstown Rd from Moorfield to Linden St. -Reconnect/Transfer 9 Services.	3,110	12	PL	35	\$801,720	1	Project necessary to maintain adequate minimum system pressures during peak demand.
Engineering	Various	Engineering costs associated with 2015 projects					\$75,000	1	Engineering for 2015 projects
Relay Main	Woonsocket	Relay of: -Approx. 475 ft of 4-in CI LP main with 8-in PE LP main in Ballou St from Bailey St to Providence St. -Approx. 635 ft of 4-in CI LP main with 8-in PE LP main in Providence St from Ballou St to Ave C. -Transfer 25 LP services to 60 psig main on Providence St & Ballou St.	1,110	8	PL	LP	\$220,250	1	Project necessary to maintain adequate minimum system pressures during peak demand.
New Main	Woonsocket	Installation of: -Approx. 450 ft of new 6-in PE LP main in Knight St from #384 Knight St to #276 Camanon St.	450	6	PL	LP	\$82,500	1	Project necessary to maintain adequate minimum system pressures during peak demand.



Short Form Sanction Paper

Appendix 2 – Outage Restoration Costs

Estimates for relighting customers and recovering from a system outage have been prepared to quantify the impact of outages related to insufficient system capacity during periods of peak demand and severe winter cold.

Actual relight costs have been captured from recent incidents to quantify company expenses related to restoring service. These were all related to outages that occurred for reasons other than insufficient system capacity and operations were conducted under benign weather conditions. It is likely that during severe winter weather, costs would increase.

Claims related to frozen buildings, burst pipes and equipment damage due to a lack of heat during severe cold weather were captured from the only incident in recent times the company experienced – e.g. the outage in Hull, Ma during the peak day of January 16th, 2004.

Relight Costs

Tiverton (2008): 900 customer outage with relight costs of \$322,839 for an average relight cost of \$358.71 per customer.

Cutchogue (2003): 1,800 customer outage with relight costs of \$2,367,401 with an average relight cost of \$1,315.22

Glen Cove (2008): 1,016 customer outage with relight costs of \$275,000 for an average relight cost of \$270.67 per customer

Westerly, RI (2011): 1,686 customer outage with relight costs of \$2,811,455 for an average relight cost of \$1,667.53 per customer

Average cost to relight for combined instances above equals \$1069 per customer

Claims

Hull (2004): 297 customers affected with claims totaling \$206,336 for an average claim of \$694.73 per customer

Combined cost of relight and claims

The combined cost of relighting customers and resolving claims averages out to \$1,764 per customer.

Recognizing the amount of variability in different incidents such as weather conditions, different types of neighborhoods, variable labor costs, economies of scale, etc., for purposes of evaluating the benefits of reinforcement projects, an average value of service restoration costs and claims of \$1,000 per customer is used.

Short Form Sanction Paper



Appendix 3 – Complex Project Estimating Levels

Estimate Level	Definition	Performed By (as appropriate)	Cost Estimate Basis	Applicability
Level I <ul style="list-style-type: none"> • Strategy • Analysis • Decision 	<p>A strategy is developed to meet future system needs by the project sponsor. Analysis of alternatives ultimately leads to a decision to execute a project. The sponsor develops a scope document meeting their requirements and collaboratively seeks to satisfy the requirements of other stakeholders in the project. Project objectives are stated in the document and a preliminary investigation has shown that the project is feasible. The project objectives are well defined but key components of the design and construction are not clearly defined since no detailed design has been done. Stakeholders will include but are not limited to Network Strategy, Project Management (PM Projects), Construction Instrumentation & Regulation and Field Operations.</p> <p>A level II estimate meets the requirements of the stakeholders. Most permit requirements have been identified and costs associated with materials are being refined. Some but not all constructability issues have been identified. Test holes have been used, where necessary, to determine field conditions.</p>	<p>Integrity, Reliability Planning, Sales, Production, PED, PM (for PM projects)</p>	<p>Conceptual</p> <p>Based on historical information such as unit cost or a similar project.</p> <p>Estimate accuracy +/- 50%.</p>	<p>Level I estimates may typically be found in 5 year plans</p>
Level II <ul style="list-style-type: none"> • 30% Design 	<p>A level III estimate includes all materials, expected permit costs, and costs associated with field conditions. The job site specific conditions have been identified utilizing mapping, survey, and combined with the previously obtained test hole information. Permit applications for sanctioned projects are submitted for long lead permits. Requests for long lead permits for projects that do not require sanctioning will be submitted. Applications for easements/ right of ways are submitted.</p>	<p>PE&D, CDC (Growth Projects), Construction, PM for PM Projects</p>	<p>Based on 30% Design</p> <p>Estimate accuracy +/- 25%.</p>	<p>Level II estimates may typically be available for projects occurring in 2 to 3 years.</p>
Level III <ul style="list-style-type: none"> • 100% Design 	<p>At this level Engineering is 100% complete. Resources have been identified to construct the project. Estimates/bids from in-house Construction, contractors and other in-house implementing groups based on identified/observed field conditions, permit stipulations, etc. are in hand. The costs of special items such as easements, permits, etc. are known. The compilation of these estimates/bids will become the basis for the Projected Spend for the project.</p>	<p>PE&D, CDC (Growth Projects), Construction, PM for PM Projects</p>	<p>Based on 100% Design</p> <p>Estimate accuracy +/- 15%.</p>	<p>Level III estimates may typically be available for projects scheduled for construction in 1 to 2 years.</p>
Level IV <ul style="list-style-type: none"> • Projection to Build 		<p>PM (when managed by PM), Process Owner, PE&D, I&R, Production and Construction</p>	<p>100% Design plus bids, permit fees</p> <p>Estimate accuracy +/- 10%.</p>	<p>Level IV (Includes proposed start date)</p>

USSC Closure Paper



Title:	FY15 System Reinforcement - RI	Sanction Paper #:	USSC-14-043C
Project #:	CRCC111	Sanction Type:	Closure
Operating Company:	The Narragansett Electric Co.	Date of Request:	3/30/2017
Author:	A. Malik	Sponsor:	J. Stavrakas – VP Gas Asset Management
Utility Service:	Gas	Project Manager:	W. Mycroft

1 Executive Summary

This paper is presented to close CRCC111. The total spend was \$2.297M. The latest sanctioned amount for this project was \$3.685M.

The final spend amount is \$2.297M broken down into:

*\$1.718M Capex
\$0.000M Opex
\$0.579M Removal*

2 Project Summary

This is the annual sanction closure of the Gas System Reinforcement Program for Rhode Island. Under this program, projects are completed to address deficiencies in the existing infrastructure in order to address a potential of over 9,000 customers impacted if design conditions (i.e. average daily temperature of -3° F). Overall the program was successful and no distribution system pressure issues were experienced over the winter of 2014-15.

USSC Closure Paper



3 Over / Under Expenditure Analysis

3.1 Summary Table

Actual Spending (\$M)			
Project #	Description		Total Spend
CRCC111	FY15 System Reinforcement - RI	Capex	1.718
		Opex	0.000
		Removal	0.579
		Total	2.297
Total		Capex	1.718
		Opex	0.000
		Removal	0.579
		Total	2.297

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	3.532
		Opex	0.000
		Removal	0.153
		Total Cost	3.685
Sanction Variance (\$M)			Total Spend
		Capex	1.814
		Opex	0.000
		Removal	(0.426)
		Total Variance	1.388

3.2 Analysis

The total program came in approximately 38% below the sanction approval estimate. The major driver of the total cost variance is due to not all projects proposed having been constructed. A total of 7 of the 11 projects in the original program sanctioning were constructed in FY15. Delays in work scheduling caused three of the projects to not be completed. In addition, one project was canceled due to street moratorium (i.e., recently paved), and another project was deferred due to resource constraints. In addition, one smaller project in a separate area was walked in and able to be constructed in time.

4 Improvements / Lessons Learned

Weekly construction coordination meetings are scheduled to ensure proper scheduling of program projects to ensure construction prior to heating season. Coordinated efforts from Resource Planning in the and Construction have ensured construction of Growth Program projects to be scheduled and take place earlier throughout the fiscal year. Bi-Weekly meetings are now conducted by Resource Planning to ensure focus on these

USSC Closure Paper



projects, establish project schedules and milestones, identify and mitigate risks timely, and enable reporting accuracy on progress of projects and the overall program.

5 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed (1)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed (2)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database (3)	<input type="radio"/> Yes <input checked="" type="radio"/> No

- (1) All work orders and funding projects have been closed
Program/Blanket projects may contain work orders and or funding projects which have not yet been closed for reasons including but not limited to:
- the same work order(s) are used annually. They will remain open until Asset Management and/or Resource Planning have determined work orders are no longer needed.
 - construction may cross multiple fiscal years
 - the work order closing process is within the late charge waiting period
 - other accounting processes or final system closing activities have not yet completed

The Program/Blanket projects are approved annually for the current year expected spend and remain open until Asset Management and/or Resource Planning have determined the project is no longer required.

- (2) All as-builts have been completed
Program/Blanket projects may contain work orders for which no as-builts have yet been recorded for reasons including but not limited to:

USSC Closure Paper



- design and/or construction have not yet completed
- construction may cross multiple fiscal years
- work has completed recently and as-builts have not yet been processed into the system
- does not apply. Work order(s) are not linked to work management systems. (example: Meter Purchases, Meter Changes, AMR Installations, Purchase Misc Capital Tools/Equipment, etc.)
- does not apply to Information systems projects.

(3) All lessons learned have been entered appropriately into the lesson learned database

Program/Blanket projects usually contain short cycle work which the Company has been performing over several fiscal years. No new Lessons Learned which have not already been identified and recorded within section 4.

6 Statements of Support

6.1 Supporters

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

Department	Individual	Responsibilities
<i>Investment Planner</i>	Pensabene, Patrick	Endorses relative to 5-year business plan or emergent work.
<i>Resource Planning</i>	Vidal, Alfredo	Endorses resources, cost estimate, schedule, and portfolio alignment.
<i>Project Management</i>	Michel, Michael	Endorses resources, cost estimate, and schedule.
<i>Gas Project Estimation</i>	Paul, Art	Endorses cost estimate

6.2 Reviewers

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

Function	Individual
<i>Finance</i>	Easterly, Patricia
<i>Regulatory</i>	Zschokke, Peter
<i>Jurisdictional Delegates</i>	John Currie
<i>Procurement</i>	Curran, Art
<i>Control Center</i>	Loiacono, Paul J.

USSC Closure Paper



7 Decisions

I approve this paper.

Signature *Ross W. Turrini*

Date April 27, 2017

Executive Sponsor – Ross Turrini, Senior Vice President, Gas Process & Engineering
and Chief Gas Engineer



Short Form Sanction Paper

Title:	FY15 Rhode Island Proactive Service Replacement Program	Sanction Paper #:	USSC-14-099
Project #:	CRCC218	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	March 18, 2014
Author:	James Finnerty	Sponsor:	Timothy Small – VP, Gas Systems Engineering
Utility Service:	Gas	Project Manager:	James Finnerty

1 Executive Summary

1.1 Sanctioning Summary

This paper requests sanction of Projects CRCC218 in the amount of \$1.500M with a tolerance of +/-10% for the purpose of full implementation of the FY15 Rhode Island Proactive Service Replacement Program.

This sanction amount of \$1.500M is broken down into:

- \$1.319M Capex
- \$0.000M Opex
- \$0.181M Removal

1.2 Project Summary

This program funds the replacement of Rhode Island's inventory of high pressure, unprotected steel services with meters/regulators located inside the building.

2 Project Detail

2.1 Background

Following an engineering assessment of National Grid's steel gas service assets in 2007, a determination was made to replace all high pressure, unprotected steel services with meters/regulators located inside the building. The engineering assessment included both detailed asset inventory analyses (i.e. age, material, inside vs outside, etc.), as well as pressure testing on services throughout the enterprise. Although test results varied throughout the enterprise, test program results indicate the "wall piece" is of integrity concern. A total of 548 services were pressure tested in Rhode Island with a failure rate of 5.1%. The purpose of the service replacement is to mitigate the risk of failure of the "wall piece," which



Short Form Sanction Paper

is the section of service piping that penetrates through the foundation wall of the building. Since this section of pipe is embedded in the foundation wall (or in a sleeve in the foundation wall), it cannot be visually inspected and there is the potential for undetected corrosion of the steel pipe to take place. The method of replacement involves replacing the steel service with plastic tubing, typically by inserting the plastic inside the existing steel service, and relocating the meter/regulator outside the building.

2.2 Drivers

The goal of this program is to reduce the risk associated with high pressure, unprotected steel services with meters/regulators located inside the building. The replacement of these services is supported by the Company's Distribution Integrity Management Plan (DIMP), which specifies that the Company implement measures to: know its system; understand the threats to its distribution piping system; and evaluate risks and prepare replacement programs to help mitigate the risks to its leak prone mains and services inventory.

2.3 Project Description

Approval is being requested for the necessary funding to replace approximately 800 high pressure, unprotected steel services with meters/regulators inside the building via the Rhode Island Proactive Service Replacement Program.

2.4 Benefits

The benefits of performing this work include;

- Elimination of the risk associated with these services.
- Improved community and government relations

2.5 Business & Customer Issue

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

2.6 Alternatives

Alternative 1:

Reduce this program to a lower rate of replacement. This would increase the risk of an incident associated with the unprotected steel, high pressure services with inside meters/regulators. This will also result in a loss of credibility with the Rhode Island



Short Form Sanction Paper

Division of Public Utilities and Carriers, who has set an expectation for the aggressive replacement of these services.

2.7 Investment Recovery

The remuneration method for costs included in this FY15 program, and for future years, will be provided through the Gas Infrastructure, Safety and Reliability (ISR) Plan.

2.7.1 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.284M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base

3 Related Projects, Scoring, Budgets

3.1 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
CRCC218		Proact Serv Replace Prog-RI	1.500
Total			1.500

3.2 Associated Projects: N/A

3.3 Prior Sanctioning History: N/A



Short Form Sanction Paper

3.4 Category

Category	Reference to Mandate, Policy, or NPV Assumptions
<input type="radio"/> Mandatory <input checked="" type="radio"/> Policy- Driven <input type="radio"/> Justified NPV	The program is in accordance with the Company's DIM Plan (as specified by US DOT, 49 CFR Part 192, Subpart P, entitled; "Gas Distribution Pipeline Integrity Management Plan")

3.5 Asset Management Risk Score

Asset Management Risk Score: 44

Primary Risk Score Driver: (Policy Driven Projects Only)

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

3.6 Complexity Level

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

Complexity Score: N/A

4 Financial

4.1 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY15-FY19 Capital Plan – Gas	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	\$0.000M



Short Form Sanction Paper

4.1.1 If cost > approved Business Plan how will this be funded? N/A

4.2 CIAC / Reimbursement

\$M	Prior Yrs	Yr. 1 2014/15	Yr. 2 2015/16	Yr. 3 2016/17	Yr. 4 2017/18	Yr. 5 2018/19	Yr. 6 + 2019/20	Total
CIAC/Reimbursement - N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

4.3 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						Total
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
CRCC218	Proact Serv Replace Prog-RI	≈/- 10%	CapEx	-	1.319	-	-	-	-	-	1.319
			OpEx	-	-	-	-	-	-	-	
			Removal	-	0.181	-	-	-	-	0.181	
			Total	-	1.500	-	-	-	-	1.500	
Total Project Sanction			CapEx	-	1.319	-	-	-	-	1.319	
			OpEx	-	-	-	-	-	-	-	
			Removal	-	0.181	-	-	-	-	0.181	
			Total	-	1.500	-	-	-	-	1.500	

4.4 Project Budget Summary Table

Project Costs Per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2014/15	Yr. 2 2015/16	Yr. 3 2016/17	Yr. 4 2017/18	Yr. 5 2018/19	Yr. 6 + 2019/20	
CapEx	0.000	1.319	0.000	0.000	0.000	0.000	0.000	1.319
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.181	0.000	0.000	0.000	0.000	0.000	0.181
Total Cost in Bus. Plan	0.000	1.500	0.000	0.000	0.000	0.000	0.000	1.500

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2014/15	Yr. 2 2015/16	Yr. 3 2016/17	Yr. 4 2017/18	Yr. 5 2018/19	Yr. 6 + 2019/20	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Short Form Sanction Paper



5 Key Milestones

Milestone	Target Date: (Month/Year)
Identify and Prioritize FY15 Rhode Island service replacement candidates	August 2013
Contractor Bids and Material Procurement	February 2014
Project Sanction Approval	March 2014
Start Applying for Permits	February 2014
Engage Contractors and In-House Resources	February 2014
Construction Start	April 2014
Construction Complete	March 2015
Project Closure Report	June 2015

6 Statements of Support

6.1.1 Supporters

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

Role	Individual	Responsibilities
<i>Investment Planner</i>	Pensabene, Patrick	Endorses relative to 5-year business plan or emergent work
<i>Resource Planning</i>	Georgacopoulos, Artie	Endorses Resources, cost estimate, schedule, and Portfolio Alignment

6.1.2 Reviewers

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

Reviewer List	Individual
Finance	Fowler, Keith
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Fromm, Walter
Procurement	Curran, Art
Control Center	Amerige, Tom

Short Form Sanction Paper





7 Decisions

I:

(a) APPROVE this paper and the investment of \$1.500M and a tolerance of +/-10%

(b) NOTE that James Finnerty is the Project Manager and has the approved financial delegation.

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

Marie Jordan – SVP, Network Strategy



Short Form Sanction Paper

8.0 Other Appendices

N/A

8.1 Sanction Request Breakdown by Project

N/A

USSC Closure Paper



Title:	FY15 Rhode Island Proactive Service Replacement Program	Sanction Paper #:	USSC-14-099C
Project #:	C031892, CRCC218	Sanction Type:	Closure
Operating Company:	The Narragansett Electric Co.	Date of Request:	10/4/2016
Author:	Dana Wolkiewicz	Sponsor:	John Stavrakas – VP Gas Asset Management
Utility Service:	Gas	Project Manager:	Steve Lannon

1 Executive Summary

This paper is presented to close C031892, CRCC218. The total spend was \$1.128M. The sanctioned amount for this project was \$1.500M.

The final spend amount is \$1.128M broken down into:

*\$ 1.015M Capex
\$ 0.000M Opex
\$ 0.113M Removal*

2 Project Summary

This program funds the replacement of Rhode Island's inventory of high pressure, unprotected steel services with meters/regulators located inside the building.

USSC Closure Paper



3 Over / Under Expenditure Analysis

3.1 Summary Table

Actual Spending (\$M)			
Project #	Description		Total Spend
C031892	Gas Distribution CONV RI	Capex	0.242
		Opex	0.000
		Removal	0.021
		Total	0.263
Project #	Description		Total Spend
CRCC218	Gas Service Replace RI	Capex	0.773
		Opex	0.000
		Removal	0.092
		Total	0.865
Total		Capex	1.015
		Opex	0.000
		Removal	0.113
		Total	1.128

Project Sanction Summary Table			
Project Sanction Approval for (\$M)			Total Spend
		Capex	1.319
		Opex	0.000
		Removal	0.181
		Total Cost	1.500
Sanction Variance (\$M)			Total Spend
		Capex	0.304
		Opex	0.000
		Removal	0.068
		Total Variance	0.372

3.2 Analysis

In FY15, the budget was set to proactively replace 665 high pressure, bare steel services with plastic, with a planned budget of \$1.500M. Under the Service Replacement Program, the Company has replaced 322 services of the targeted 665 high-pressure inside services. Many of these last, remaining services were large commercial or repeat visit locations, resulting in a higher unit cost than anticipated.



USSC Closure Paper

4 Improvements / Lessons Learned

Unit costs are being updated to improve the accuracy of project estimating. Improvements to track project costs have provided for better accuracy of year-end spending projections. The Monthly Zero Variance and PCM meetings instituted in FY17 will ensure that sanctioned spending levels are not exceeded without executive approval.

5 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed (1)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed (2)	<input checked="" type="radio"/> Yes <input type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database (3)	<input type="radio"/> Yes <input checked="" type="radio"/> No

- (1) All work orders and funding projects have been closed
Program/Blanket projects may contain work orders and or funding projects which have not yet been closed for reasons including but not limited to:
- the same work order(s) are used annually. They will remain open until Asset Management and/or Resource Planning have determined work orders are no longer needed .
 - construction may cross multiple fiscal years
 - the work order closing process is within the late charge waiting period
 - other accounting processes or final system closing activities have not yet completed

The Program/Blanket projects are approved annually for the current year expected spend and remain open until Asset Management and/or Resource Planning have determined the project is no longer required.

USSC Closure Paper



(2) N/A

(3) All lessons learned have been entered appropriately into the lesson learned database

Program/Blanket projects usually contain short cycle work which the Company has been performing over several fiscal years. No new Lessons Learned which have not already been identified and recorded within section 4.

6 Statements of Support

6.1 Supporters

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

Function	Individual
Finance	Easterly, Patricia
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Currie, John
Procurement	Curran, Art
Control Center	Loiacono, Louis

6.2 Reviewers

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

Department	Individual	Responsibilities
Investment Planning	Pensabene, Patrick M.	Endorses relative to 5-year business plan or emergent work
Resource Planning	Vidal, Alfredo	Endorses resources, cost estimate, schedule, and portfolio alignment
Project Management	Michel, Michael	Endorses Resources, cost estimate, schedule
Gas Project Estimation	Paul, Art	Endorses Cost Estimate

USSC Closure Paper



7 Decisions

I approve this paper.

Signature *Ross W. Turrini*

Date April 27, 2017

Executive Sponsor – Ross W. Turrini, Senior Vice President, Gas Process & Engineering and
Chief Gas Engineer



Short Form Sanction Paper

Title:	FY15 Cast Iron Joint Encapsulation – Reactive Blanket – Rhode Island	Sanction Paper #:	USSC-14-142
Project #:	CRFN211, CRFS211	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	March 25, 2014
Author:	Fred Amaral	Sponsor:	Neil Proudman – VP Gas Operations, NE
Utility Service:	Gas	Project Manager:	Fred Amaral

1 Executive Summary

1.1 Sanctioning Summary

This paper requests the sanction of various project numbers in the amount of \$3.329M with a tolerance of +/- 10% for the purposes of full implementation of the Rhode Island RI FY15 Cast Iron Joint Encapsulation Blanket

This sanction amount is \$3.329M broken down into:

- \$3.248M Capex
- \$0.000M Opex
- \$0.081M Removal

1.2 Project Summary

This proposed blanket investment is to provide approved funding for the repair of cast iron bell joints that are discovered randomly during the proactive leakage surveys or discovered following public odor calls.

2 Project Detail

2.1 Background

The proactive main and service replacement programs upgrade existing main piping and customer services as prioritized by risk based on pressure, material, vintage, location, and select other variables. The potential for leakage on joint connections on the remaining underground piping exists and requires a reactive response to correct the deficiency which is the focus of this request.



Short Form Sanction Paper

2.2 Drivers

The goal of this program is to reduce the risk associated with cast iron joint connections. The Drivers for this category are both Safety and Reliability.

2.3 Project Description

Approval is being requested for the necessary funding to repair leaking cast iron joints.

2.4 Benefits

The benefits of performing this work include:

- Elimination of the risk associated with these joints.
- Improved community and government relations.
- Adherence to Regulatory compliance requirements.

2.5 Business & Customer Issues

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

2.6 Alternatives

These work activities are random, emergency driven and mandated, therefore, there is not an alternative to completing the activities.

2.7 Investment Recovery

Investment recovery will be through standard rate recovery mechanisms.

2.7.1 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.682M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.



Short Form Sanction Paper

3 Related Projects, Scoring, Budgets

3.1 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
CRFN211, CRFS211	N/A	CI Joint Encapsulation	3.329
Total			3.329

Power Plant Load: CRFN211 \$3.329

3.2 Associated Projects

N/A

3.3 Prior Sanctioning History

N/A

3.4 Category

Category	Reference to Mandate, Policy, or NPV Assumptions
<input checked="" type="radio"/> Mandatory <input type="radio"/> Policy- Driven <input type="radio"/> Justified NPV	<p>Mandatory work activities related to emergency response and regulatory compliance as stipulated in the National Grid Maintenance Plan, DOT192 and State Requirements.</p> <p>There is also Policy-Driven work included in this sanctioning related to customer driven requests.</p>



Short Form Sanction Paper

3.5 Asset Management Risk Score

Asset Management Risk Score: 40

Primary Risk Score Driver: (Policy Driven Projects Only)

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

3.6 Complexity Level

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

Complexity Score: N/A

4 Financial

4.1 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY15 - FY19_Gas- Budget_File	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	\$0.000M

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

N/A

4.2 CIAC / Reimbursement

\$M	Prior Yrs	Yr. 1 2014/15	Yr. 2 2015/16	Yr. 3 2016/17	Yr. 4 2017/18	Yr. 5 2018/19	Yr. 6 + 2019/20	Total
CIAC/Reimbursement-N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000



Short Form Sanction Paper

4.3 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Scand	Prior Yrs	Current Planning Horizon (\$M)						Total
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
CRFN211, CRFS211	CI Joint Encapsulation	Est Lvl (e.g. +/- 10%)	CapEx	-	3.248	-	-	-	-	-	3.248
			OpEx	-	-	-	-	-	-	-	-
			Removal	-	0.081	-	-	-	-	-	0.081
			Total	-	3.329	-	-	-	-	-	3.329

4.4 Project Budget Summary Table

Project Costs per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2014/15	Yr. 2 2015/16	Yr. 3 2016/17	Yr. 4 2017/18	Yr. 5 2018/19	Yr. 6 + 2019/20	
CapEx	0.000	3.248	0.000	0.000	0.000	0.000	0.000	3.248
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.081	0.000	0.000	0.000	0.000	0.000	0.081
Total Cost in Bus. Plan	0.000	3.329	0.000	0.000	0.000	0.000	0.000	3.329

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2014/15	Yr. 2 2015/16	Yr. 3 2016/17	Yr. 4 2017/18	Yr. 5 2018/19	Yr. 6 + 2019/20	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

5 Key Milestones

Milestone	Target Date: (Month/Year)
Sanction Paper Approval	March 2014
Begin Work	April 2014
Complete Work	March 2015
Closure Paper	June 2015



Short Form Sanction Paper

6 Statements of Support

6.1.1 Supporters

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

Role	Individual	Responsibilities
Investment Planner	Pensabene, Patrick	Endorses relative to 5-year business plan or emergent work
<i>Resource Planning</i>	Georgacopoulos, Artie	Endorses Resources, cost estimate, schedule, and Portfolio Alignment

6.1.2 Reviewers

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

Reviewer List	Individual
Finance	Fowler, Keith
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Fromm, Walter
Procurement	Curran, Art
Control Center	Amerige, Tom

Short Form Sanction Paper



7 Decisions

I:

- (a) APPROVE this paper and the investment of \$3.329M and a tolerance of +/-10%
- (b) NOTE that Fred Amaral is the Project Manager and has the approved financial delegation.

Signature..........Date.....7-4-14.....
John Donleavy - Executive Vice President, Chief Operating Officer



Short Form Sanction Paper

8 Other Appendices

N/A.

8.1 *Sanction Request Breakdown by Project*

N/A

USSC Closure Paper



Title:	FY15 CI Joint Encapsulation-Reactive Blanket-RI Closure	Sanction Paper #:	USSC-14-142C
Project #:	Various – See Appendix	Sanction Type:	Closure
Operating Company:	The Narragansett Electric Co.	Date of Request:	8/30/2016
Author:	Kevin Browne	Sponsor:	Neil Proudman, VP Maintenance & Construction NE Gas
Utility Service:	Gas	Project Manager:	Steve Lannon

1 Executive Summary

This paper is presented to close various funding projects – see Appendix. The total spend was \$0.390M. The latest sanctioned amount for this project was \$3.329M.

The final spend amount is \$0.390M broken down into:

*\$0.388M Capex
\$0.000M Opex
\$0.002M Removal*

2 Project Summary

This blanket investment is to provide funding for the repair of cast iron bell joints that are discovered randomly during the proactive leakage surveys or discovered following public odor calls.



USSC Closure Paper

3 Over / Under Expenditure Analysis

3.1 Summary Table

Actual Spending (\$M)			
Project #	Description		Total Spend
Various – See Appendix	Various – See Appendix	Capex	0.388
		Opex	0.000
		Removal	0.002
		Total	0.390
Total		Capex	0.388
		Opex	0.000
		Removal	0.002
		Total	0.390

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	3.248
		Opex	0.000
		Removal	0.081
		Total Cost	3.329
Sanction Variance (\$M)			Total Spend
		Capex	2.860
		Opex	0.000
		Removal	0.079
		Total Variance	2.939

3.2 Analysis

The amount of CI Joint Encapsulation work came in at about the volume that was planned for, but the charges for some of this work may have hit the Service Replacement – Reactive – Leaks category in the CbC. This conclusion can be supported by the variance in sanctioned amounts and actual spending amounts on the Service Replacement – Reactive – Leaks budget. These adjustments affected all open work orders at the time.



USSC Closure Paper

4 Improvements / Lessons Learned

Unit costs are being updated by the Process and Performance group within the Project Management, Complex Construction, and Resource Planning. Improvements to track project costs have provided for better accuracy of year-end spending projections. The Monthly Zero Variance and PCM meetings recently instituted will ensure that sanctioned spending levels are not exceeded without executive approval.

5 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> N/A
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> N/A
All work orders and funding projects have been closed	<input type="radio"/> Yes <input checked="" type="radio"/> N/A
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> N/A
All as-builts have been completed	<input checked="" type="radio"/> Yes <input type="radio"/> N/A
All lessons learned have been entered appropriately into the lesson learned database	<input type="radio"/> Yes <input checked="" type="radio"/> N/A

6 Statements of Support

6.1 Supporters

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

Department	Individual	Responsibility
Investment Planner	Pensabene, Patrick M.	Endorses relative to 5-year business plan or emergent work
Resource Planning	Vidal, Alfredo	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Project Management	Michel, Michael	Endorses Resources, cost estimate, schedule
Gas Project Estimation	Paul, Art	Endorses Cost Estimate



USSC Closure Paper

6.2 Reviewers

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

Function	Individual
Finance	Easterly, Patricia
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Iseler, David G.
Procurement	Curran, Art
Control Center	Loiacono, Paul



USSC Closure Paper

7 Decisions

I approve this paper.

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

Executive Sponsor – Ross Turrini, SVP Gas Process & Engineering



USSC Closure Paper

8 Appendix

Paper Number	FP Proj No	FP Proj Description	Values			
			Sum of CAP	Sum of COR	Sum of O&M	Sum of Total
USSC-14-142	C039267	CI JOINT ENCAPSULATION	\$ (37,037)	\$ 123	\$ -	\$ (36,914)
	CON0030	LEAK REPAIR SCHEDULED/UNSCHEDULED	\$ (692,032)	\$ (220)	\$ -	\$ (692,252)
	CRFN211	CI JOINT ENCAPSULATE (RI HUB RULE)	\$ 1,949	\$ -	\$ -	\$ 1,949
	CRFN219	LEAK INVEST/REPAIR SERV & MAIN-RI	\$ 25,796	\$ -	\$ -	\$ 25,796
	CRFS210	REACT MAIN & SERV WORK NONLEAK-RI	\$ 3,711	\$ -	\$ -	\$ 3,711
	CRFS211	CI JOINT ENCAPSULATE (RI HUB RULE)	\$ 20,956	\$ 1,716	\$ -	\$ 22,672
	CRFS219	LEAK INVEST/REPAIR SERV & MAIN-RI	\$ 1,064,984	\$ -	\$ -	\$ 1,064,984
Grand Total			\$ 388,327	\$ 1,619	\$ -	\$ 389,946



Short Form Sanction Paper- Instructions

Title:	FY 15 City/State Construction Program for Narragansett Electric, RI Company 49 (Public Works Process)	Sanction Paper #:	USSC-14-066
Project #:	CRCC306, CRCC307, CRCC308, CRCC312	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	March 4, 2014
Author:	Thomas Mulkeen	Sponsor:	Neil Proudman, Vice President of Gas Operations NE
Utility Service:	Gas	Project Manager:	Thomas Mulkeen

1 Executive Summary

1.1 Sanctioning Summary

This paper requests sanction of Project # CRCC306, CRCC307, CRCC308, CRCC312 in the amount of **\$5.184 M** and with a tolerance of **+/- 10%** for the purpose of full implementation.

This sanction amount of \$5.184M for the FY 2014/2015 program can be broken down into:

\$4.878M Capex
\$0.0M Opex
\$0.306M Removal
With a CIAC/Reimbursement of \$1.327M

1.2 Project Summary

The City/State Construction (CSC) Program for the Narragansett Electric Company consists of work driven by numerous municipalities that National Grid serves, as well as, various third party private entities within Narragansett Electric Company.

2 Project Detail

2.1 Background

The City/State Construction (CSC) Program for the Narragansett Electric Company consists of work driven by the Narragansett Bay Commission (NBC), Rhode Island DOT (RIDOT) and the numerous municipalities that National Grid serves, as well as, various third party private entities within Narragansett Electric Company.



Short Form Sanction Paper- Instructions

2.2 Drivers

The CSC budget is subdivided into three components: Reimbursable, Non-Reimbursable, and Reimbursements. Projects are categorized into these buckets based on the project funding source. Capital projects initiated by RIDOT are normally 100% reimbursable. Capital projects initiated by the NBC are typically reimbursable to some degree depending on criteria.

2.3 Project Description

The estimated quantity for main replacement is 28,778 liner feet (5.45 miles).

2.4 Benefits

Approximately 90% of the CSC Main Relays for the Narragansett Electric Company Territories will contribute ~25,900 linear feet (4.91 miles) of Leak Prone Pipe (LPP) retirement to National Grid's LPP Program. This program allows National Grid to replace approximately 60 miles of LPP annually.

2.5 Business & Customer Issues

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

2.6 Alternatives

Alternative 1: Approve the requested investment such that National Grid shall replace/relocate gas mains and services to accommodate State and Municipal capital infrastructure improvements and shall focus on elimination of leak prone pipe (LPP) in conjunction with public works activities. National Grid's Government Liaisons will work closely with State and Municipalities and Construction Engineers and consultants to minimize, to the maximum extent possible, any direct conflicts to the existing gas non-LPP infrastructure located in the Narragansett Electric Company Territory.

Alternative 2: Doing nothing is not an option because we must comply with company policy ((Damage Prevention Procedure No. 25) and regulatory requirements (220 CMR 113.00: M.G.L. c. 164).

2.7 Investment Recovery

Approximately \$5.184 M of the funds are eligible for recovery through the FY2015 Gas ISR program.

2.7.1 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$1.089M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.

Short Form Sanction Paper- Instructions



3 Related Projects, Scoring, Budgets

3.1 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
CRCC306, CRCC312, CRCC308, CRCC307		PWNONREIM, ENCRCHMTPL, EMCRCHMTUM, PWREIM	5.184
Total			5.184

3.2 Associated Projects

N/A

3.3 Prior Sanctioning History

N/A

3.4 Describe previous sanctions for the projects included in the scope of this paper (Newest to OlCategory

Category	Reference to Mandate, Policy, or NPV Assumptions
<input checked="" type="radio"/> Mandatory	National Grid is required to relocate its facilities within the project limits that are in direct interference of the proposed construction and installation of new infrastructure facilities. National Grid is also required to follow the Regulatory Authority (220 CMR 113.00: M.G.L. c. 164), which is mandated.
<input type="radio"/> Policy- Driven	
<input type="radio"/> Justified NPV	

3.5 Asset Management Risk Score

Asset Management Risk Score: 49

Primary Risk Score Driver: (Policy Driven Projects Only)

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



Short Form Sanction Paper- Instructions

3.6 Complexity Level

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

Complexity Score: _____

4 Financial

4.1 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY 15 -19 Gas Budget file	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	\$0

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

4.2 CIAC / Reimbursement

\$M	Prior Yrs	Yr. 1 2014/15	Yr. 2 2015/16	Yr. 3 2016/17	Yr. 4 2017/18	Yr. 5 2018/19	Yr. 6+ 2019/20	Total
CIAC/Reimbursement	0.000	1.327	0.000	0.000	0.000	0.000	0.000	1.327

The CIAC was calculated based on historical percentage of capital spend.

4.3 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						Total
					Yr. 1 2014/15	Yr. 2 2015/16	Yr. 3 2016/17	Yr. 4 2017/18	Yr. 5 2018/19	Yr. 6+ 2019/20	
CRCC306, CRCC312, CRCC308, CRCC307	PWNONREIM, ENCRCHMTPL, EMCRCHMTUM, PWREIM	Est Lvl (e.g. +/- 10%)	CapEx	-	4.878	-	-	-	-	-	4.878
			OpEx	-	-	-	-	-	-	-	-
			Removal	-	0.306	-	-	-	-	-	0.306
			Total	-	5.184	-	-	-	-	-	5.184
Total Project Sanction			CapEx	-	4.878	-	-	-	-	-	4.878
			OpEx	-	-	-	-	-	-	-	-
			Removal	-	0.306	-	-	-	-	-	0.306
			Total	-	5.184	-	-	-	-	-	5.184



Short Form Sanction Paper- Instructions

4.4 Project Budget Summary Table

Project Costs Per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6+	
		2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	
CapEx	0.000	4.878	0.000	0.000	0.000	0.000	0.000	4.878
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.306	0.000	0.000	0.000	0.000	0.000	0.306
Total Cost in Bus. Plan	0.000	5.184	0.000	0.000	0.000	0.000	0.000	5.184

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6+	
		2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

5 Key Milestones

Milestone	Target Date: (Month/Year)
Sanction Approval	March 4, 2014
Construction Start Date	April 1, 2014
Completion	March 31, 2015
Closure Report	June 2015

6 Statements of Support

6.1.1 Supporters

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

Role	Individual	Responsibilities
Construction	Albert Marsocci	Constructability & Schedule
Construction	Gerard Lundquist	Constructability & Schedule
PE&D	Laeyeng Hunt	Design, Liaison & System Reliability
Investment Planning	Patrick Pensabene	Endorses Emergent Work
Resource Planning	Artie Georgacopoulos	Endorses Resource



Short Form Sanction Paper- Instructions

6.1.2 Reviewers

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

Reviewer List	Individual
Finance	Keith Fowler
Regulatory	Peter Zschokke
Procurement	Art Curran
Jurisdictional Delegates	Walter Fromm
Control Center	Thomas Amerige

Short Form Sanction Paper- Instructions



7 Decisions

I:

(a) APPROVE this paper and the investment of \$5.184M and a tolerance of +/-10%

(b) NOTE that Thomas Mulkeen is the Project Manager and has the approved financial delegation.

Signature.....*hph*.....Date.....*3/11/2014*.....

Executive Sponsor – ~~John Donleavy~~, Senior Vice President of ~~Gas Operations~~

Marie Jordan

*Network
Strategy*



Short Form Sanction Paper- Instructions

8 Other Appendices

NA

8.1 Sanction Request Breakdown by Project

NA

USSC Closure Paper



Title:	City State Construction/Public Works for Narragansett Electric Company – FY15	Sanction Paper #:	USSC-14-066C
Project #:	Multiple – See Appendix	Sanction Type:	Closure
Operating Company:	The Narragansett Electric Co.	Date of Request:	3/30/2017
Author:	Laeyeng Hunt	Sponsor:	Tom Bennett, VP of Gas System Engineering
Utility Service:	Gas	Project Manager:	Jonathan Falls

1 Executive Summary

This paper is presented to close multiple project #s (see appendix). The total spend was \$8.633M. The sanctioned amount for this project was \$5.184M.

The final spend amount is \$8.633M broken down into:

\$7.988M Capex

\$0.000M Opex

\$0.645M Removal

With a Reimbursement of \$0.606M

2 Project Summary

The City/State Construction (CSC) Program for the Narragansett Electric Company consists of work driven by numerous municipalities that National Grid serves, as well as various third party private entities within the Narragansett Electric Company service area. This program is directed at replacing infrastructure that will be compromised by third party construction.



USSC Closure Paper

3 Over / Under Expenditure Analysis

3.1 Summary Table

Actual Spending (\$M)			
Project #	Description		Total Spend
Multiple - See Appendix	City State Construction/Public Works for Narragansett Electric Company	Capex	7.988
		Opex	0.000
		Removal	0.645
		Total	8.633
Total		Capex	7.988
		Opex	0.000
		Removal	0.645
		Total	8.633

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	4.878
		Opex	0.000
		Removal	0.306
		Total Cost	5.184
Sanction Variance (\$M)			Total Spend
		Capex	(3.110)
		Opex	0.000
		Removal	(0.339)
		Total Variance	(3.449)

3.2 Analysis

The major driver of the total cost variance for the CSC Program was the increase in spend for the various Narragansett Electric municipalities that impacted our facilities. The increased municipal spend had a corresponding affect on the CSC Program.

4 Improvements / Lessons Learned

The CSC Program is driven predominantly by the various Narragansett Electric municipalities and RIDOT work on our facilities. Although these are dynamic plans which are subject to change, increased tracking and communication of the various



USSC Closure Paper

municipal plans may provide enhanced insight on the volume and scope of upcoming municipal projects. Continuing to improve, enhance, and update estimating tools with latest data will provide greater oversight over cost.

A new monthly process has been put in place by Resource Planning and others to ensure budget adherence and a balanced capital portfolio via the Zero Variance (ZVM) and Portfolio Calibration (PCM) Meetings. During these meetings, Resource Planning applies a holistic view of the capital portfolio, and identifies and carefully evaluates any changes to forecasts, and makes recommendations to ensure the capital portfolio remains on budget.

5 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed (1)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed (2)	<input checked="" type="radio"/> Yes <input type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database (3)	<input type="radio"/> Yes <input checked="" type="radio"/> No

- (1) All work orders and funding projects have been closed
Program/Blanket projects may contain work orders and or funding projects which have not yet been closed for reasons including but not limited to:
- the same work order(s) are used annually. They will remain open until Asset Management and/or Resource Planning have determined work orders are no longer needed.
 - construction may cross multiple fiscal years
 - the work order closing process is within the late charge waiting period

USSC Closure Paper



- other accounting processes or final system closing activities have not yet completed

The Program/Blanket projects are approved annually for the current year expected spend and remain open until Asset Management and/or Resource Planning have determined the project is no longer required.

(2) N/A

(3) All lessons learned have been entered appropriately into the lesson learned database

Program/Blanket projects usually contain short cycle work which the Company has been performing over several fiscal years. No new Lessons Learned which have not already been identified and recorded within section 4.

6 Statements of Support

6.1 Supporters

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

Department	Individual	Responsibilities
Investment Planning	Pensabene, Patrick	Endorses relative 5-year Business Plan
Resource Planning	Vidal, Alfredo	Endorses Resources, Cost Estimate, Schedule and Portfolio Alignment
Project Management	Michel, Michael	Endorses Resources, Cost Estimate,
Gas Project Estimation	Paul, Art	Endorses Cost Estimates

6.2 Reviewers

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

Function	Individual
Finance	Mark Collison
Regulatory	Zschokke, Peter
Jurisdictional Delegates	John Currie
Procurement	Curran, Art
Control Center	Loiacono, Paul

USSC Closure Paper



7 Decisions

The US Sanctioning Committee (USSC) approved this paper on March 30, 2017.

Signature *Ross W. Turrini* Date April 27, 2017
Ross Turrini, Senior Vice President, Gas Process & Engineering
and Chief Gas Engineer



USSC Closure Paper

8 Appendix

Paper Number	FP Proj No	Fp Proj Description	Values			
			Sum of CAP	Sum of COR	Sum of O&M	Sum of Total
USSC-14-066	C016929	RELO RT403 BDG1009 OVER AMTRAK-BUD	\$ (670)	\$ 2,390	\$ -	\$ 1,720
	C017038	UNION AVENUE BRIDGE NO 452 PVD	\$ (315)	\$ -	\$ -	\$ (315)
	C017142	RIDOT CONANT ST RAILROAD BRIDGE915	\$ 399	\$ -	\$ -	\$ 399
	C031771	SAKONNET RIVER BRIDGE REPLACEMENT	\$ 244,432	\$ -	\$ -	\$ 244,432
	C037342	OMEGA POND DAM FISH PASSAGE MN RELY	\$ 182,437	\$ 69	\$ -	\$ 182,505
	C039265	VALVE/INSTALLATION REPLACEMENT	\$ 14,216	\$ -	\$ -	\$ 14,216
	C039553	PVD-NBC 037	\$ 4,866	\$ -	\$ -	\$ 4,866
	C041683	FAP-CENTRAL BRIDGE IN BARRINGTON	\$ 30,235	\$ -	\$ -	\$ 30,235
	C042484	NBC SEEKONK RIVER CSO CONT 303.04C	\$ 677	\$ -	\$ -	\$ 677
	C042863	RIDOT MORGAN AVE BRDG MN RELAY	\$ 4,532	\$ 17,535	\$ -	\$ 22,067
	C042904	RIDOT NATICK BRIDGE MN RELAY	\$ (56)	\$ -	\$ -	\$ (56)
	C043243	NBC WOONASQUATUCKET CSO MN RELAYS	\$ 157,721	\$ 702	\$ -	\$ 158,424
	C043465	RIDOT 195 CONT 14 - REIMBURSABLE	\$ 79,415	\$ -	\$ -	\$ 79,415
	C044752	RIDOT 195 CONT 15 - REIMBURSABLES	\$ 160,954	\$ 186	\$ -	\$ 161,140
	C048398	NBC: SERVICE RD	\$ (25,205)	\$ 17,146	\$ -	\$ (8,059)
	C050067	ATWOOD AVE AT WALNUT GROVE	\$ 74,228	\$ 10,432	\$ -	\$ 84,660
	C051525	ATWELLS AVE BRIDGE	\$ 55,913	\$ -	\$ -	\$ 55,913
	C051526	RIDOT: APPONAUG CURCULATOR	\$ 161,799	\$ 188,627	\$ -	\$ 350,426
	CON0060	RI-GAS-MAIN REPL GOVT-RI BLANKET	\$ 684	\$ -	\$ -	\$ 684
	CON0066	GAS MAIN ENCROACHMENT	\$ (5,196)	\$ 80	\$ -	\$ (5,116)
	CRCC306	MAIN REPL PUB WORK NON-REIMB-RI	\$ 5,178,720	\$ 350,135	\$ (0)	\$ 5,528,854
	CRCC307	MAIN REPL PUB WORK REIMB-RI	\$ 201,776	\$ 14,242	\$ -	\$ 216,018
	CRCC308	GAS MAIN ENCROACH PARALLEL-RI	\$ 1,300,136	\$ 32,054	\$ -	\$ 1,332,189
	CRCC312	GAS MAIN ENCROACH UNDERMINED-RI	\$ 166,008	\$ 12,082	\$ -	\$ 178,089
Grand Total			\$ 7,987,706	\$ 645,678	\$ (0)	\$ 8,633,384

Funding Project Information			
Description	RI-03891 (MWLY0021)	Funding Proj	CRRC301
Company	5360-Narragansett Electric		
Bus Segment	RIGASD	Last Approved Rev	6
Budget	CRRC301	Status	open
Department	43705360G - Corrosion Con	F. P. Type	P_Gas Distribution Construction RI
		FP ID	326095575
Long Description	Raise or replace test box		
Major Location	MASS PLANT - RI (Gas)	Asset Location	
Asset Loc Det			
Notes			
Reason		Approval Group	<none>
Est Start Date	4/1/2017	Late Charge Wait	9 Months
Est Complete	3/31/2018	In Service Date	
Est In Service	3/31/2018	Completion Date	
Est Annual Rev		First CPR Month	
Initiated By	DIACOM	Close Date	
Date Suspended		Date Initiated	11/8/2012

Details

Accounts

Contacts

Class Codes

Justification

Tax Status

Authorizations

User Comment

Review

Related FPs

Audits

Delete FP

Cancel FP

Suspend FP

Estimates

Update

Print

Close

Record 1 of 1

Funding Project Information		<input type="button" value="-"/> <input type="button" value="□"/> <input type="button" value="X"/>																									
<div> <div>Title</div> <div>RI-03891 (MWLY0021)</div> </div> <div> <div>Funding Project</div> <div>CRRC301</div> </div>		<div>Details</div> <div>Accounts</div> <div>Contacts</div> <div>Class Codes</div> <div>Justification</div> <div>Tax Status</div> <div>Authorizations</div> <div>User Comment</div> <div>Review</div> <div>Related FPs</div>																									
<div>Class Codes</div> <table border="1"> <tr> <td>Budget Plant Class</td> <td>Gas Distribution PAM</td> </tr> <tr> <td>Send to SE</td> <td></td> </tr> <tr> <td colspan="2">Miscellaneous Billing</td> </tr> <tr> <td>Misc Billing Status</td> <td></td> </tr> <tr> <td colspan="2">Required</td> </tr> <tr> <td>Force Billing Flag</td> <td></td> </tr> <tr> <td>RDV Allocation Eligible</td> <td></td> </tr> <tr> <td colspan="2">Sanctioning Data</td> </tr> <tr> <td>DOA Amount</td> <td></td> </tr> <tr> <td>Lower Tolerance</td> <td>.90</td> </tr> <tr> <td>Strategy Type Name</td> <td></td> </tr> <tr> <td>Upper Tolerance</td> <td>1.10</td> </tr> </table> <div>Indicates Display Only - (d)</div>		Budget Plant Class	Gas Distribution PAM	Send to SE		Miscellaneous Billing		Misc Billing Status		Required		Force Billing Flag		RDV Allocation Eligible		Sanctioning Data		DOA Amount		Lower Tolerance	.90	Strategy Type Name		Upper Tolerance	1.10	<div>Audits</div> <div>Delete FP</div> <div>Cancel FP</div> <div>Suspend FP</div> <div>Estimates</div> <div>Update</div> <div>Print</div> <div>Close</div>	
Budget Plant Class	Gas Distribution PAM																										
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Funding Project Information

New Approval Type

Budget Version

Default (inactive)

Funding Project

CRRC301

Revision

3

Rev

⏪

⏩

⏴

⏵

Approval Type

DOA Approval - Manual

Amount

\$500,000.00

Send for Approval

Refresh

Status

Approved

Sent By

Nguyen, Tracy T

Date Sent

5/21/2014

Date Appr

5/29/2014

+

Approver 1

Approver

Small, Timothy F

Required

☑

Date Approved

5/29/2014

Authority Limit

\$1,000,000

Audits

Delete FP

Cancel FP

Suspend FP

Estimates

Update

Print

Close

Record

1

of 1

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Short Form Sanction Paper



Title:	FY15 Rhode Island Proactive Main Replacement Program	Sanction Paper #:	USSC-14-120
Project #:	CRCC203, CRCC204, CRCC205, CRCC206, CRCC207, CRCC208	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	March 26, 2014
Author:	James Finnerty	Sponsor:	Timothy Small – VP, Gas Systems Engineering
Utility Service:	Gas	Project Manager:	James Finnerty

1 Executive Summary

1.1 Sanctioning Summary

This paper requests sanction of Projects CRCC203, CRCC204, CRCC205, CRCC206, CRCC207, and CRCC208 in the amount of \$36.500M with a tolerance of +/-10% for the purpose of full implementation of the FY15 Rhode Island Proactive Main Replacement Program.

This sanction amount of \$36.500M is broken down into:

\$35.222M Capex
\$0.000M Opex
\$1.278M Removal

1.2 Project Summary

This program funds the replacement of Rhode Island's inventory of Leak Prone Pipe (LPP), defined as pipe that is non-cathodically protected steel, whether bare or coated (collectively termed "unprotected steel"), as well as cast or wrought iron.

2 Project Detail

2.1 Background

The 2012 inventory of LPP (2013 data not yet available) is 1,393 miles [534 miles (38%) of unprotected steel and 859 miles (62%) of cast iron/wrought iron], which represents approximately 44% of the distribution system in Rhode Island. As demonstrated in Appendix 1 Rhode Island Leak Rate Graph, the 2012 leak rate for all distribution piping is 0.50 leaks per mile, reduced from 0.53 leaks per mile

Short Form Sanction Paper



in 2004. The 2012 leak rate for LPP is 1.14 leaks per mile, higher than the 0.95 leaks per mile in 2004.

2.2 Drivers

The goal of this program is to reduce the risk associated with leak prone pipe in Rhode Island's distribution system. The replacement of LPP and associated services is also supported by the Company's Distribution Integrity Management Plan (DIMP), which specifies that the Company implement measures to: know its system; understand the threats to its distribution piping system; and evaluate risks and prepare replacement programs to help mitigate the risks to its leak prone mains and services inventory.

2.3 Project Description

Approval is being requested for the necessary funding to replace approximately 53 miles of LPP via the Rhode Island Proactive Main Replacement Program. Gas Engineering has identified individual main segments for replacement based upon an analysis that considers pipe material and diameter, leak repair history, surrounding structures, and field conditions. Opportunities to take advantage of coordination with municipal projects and other National Grid programs and projects are also considered.

2.4 Benefits

The benefits of performing this work include;

- Elimination of approximately 164 open gas leaks
- Eliminating high risk services associated with the main replacement
- Reducing the risk and potential for incidents associated with leak prone pipe
- Improved community and government relations

2.5 Business & Customer Issue

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

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2.6 Alternatives

Alternative 1:

Reduce this program to a lower rate of replacement. This option would replace only the quantity of main required to hold leak rates to present levels. This will also result in a loss of credibility with the Rhode Island Division of Public Utilities and Carriers, who has set an expectation for the aggressive replacement of leak prone pipe.

2.7 Investment Recovery

The remuneration method for costs included in this FY15 program, and for future years, will be provided through the Gas Infrastructure, Safety and Reliability (ISR) Plan.

2.7.1 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$7.397M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base

3 Related Projects, Scoring, Budgets

3.1 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
CRCC203, CRCC204, CRCC205, CRCC206, CRCC207, CRCC208		Various	36.500
Total			36.500

Note: For Power Plant apply \$68.900M to Funding Project CRCC203

3.2 Associated Projects: N/A

3.3 Prior Sanctioning History: N/A

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3.4 Category

Category	Reference to Mandate, Policy, or NPV Assumptions
<input type="radio"/> Mandatory <input checked="" type="radio"/> Policy- Driven <input type="radio"/> Justified NPV	The program is in accordance with the Company's DIM Plan (as specified by US DOT, 49 CFR Part 192, Subpart P, entitled; "Gas Distribution Pipeline Integrity Management Plan")

3.5 Asset Management Risk Score

Asset Management Risk Score: 44

Primary Risk Score Driver: (Policy Driven Projects Only)

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

3.6 Complexity Level

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

Complexity Score: N/A

4 Financial

4.1 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY15-FY19 Capital Plan- Gas	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	\$0.000M

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4.1.1 If cost > approved Business Plan how will this be funded? N/A

4.2 CIAC / Reimbursement

\$M	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	Total
		2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	
CIAC/Reimbursement - N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

4.3 Cost Summary Table

					Current Planning Horizon (\$M)						
Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	Total
					2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	
CRCC203, CRCC204, CRCC205, CRCC206.	Various	±/- 10%	CapEx	-	35.222	-	-	-	-	-	35.222
			OpEx	-	-	-	-	-	-	-	
			Removal	-	1.278	-	-	-	-	1.278	
			Total	-	36.500	-	-	-	-	36.500	
Total Project Sanction			CapEx	-	35.222	-	-	-	-	-	35.222
			OpEx	-	-	-	-	-	-	-	
			Removal	-	1.278	-	-	-	-	1.278	
			Total	-	36.500	-	-	-	-	36.500	

4.4 Project Budget Summary Table

Project Costs Per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
CapEx	0.000	35.222	0.000	0.000	0.000	0.000	0.000	35.222
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	1.278	0.000	0.000	0.000	0.000	0.000	1.278
Total Cost in Bus. Plan	0.000	36.500	0.000	0.000	0.000	0.000	0.000	36.500

Variance (Business Plan-Project Estimate)

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

Short Form Sanction Paper



5 Key Milestones

Milestone	Target Date: (Month/Year)
Identify and Prioritize FY15 Rhode Island LPP replacement candidates	August 2013
Complete detailed design and cost estimates	January 2014
Contractor Bids and Material Procurement	February 2014
Project Sanction Approval	March 2014
Start Applying for Permits	February 2014
Engage Contractors and In-House Resources	February 2014
Construction Start	April 2014
Construction Complete	March 2015
Project Closure Report	June 2015

6 Statements of Support

6.1.1 Supporters

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

Role	Individual	Responsibilities
<i>Investment Planner</i>	Pensabene, Patrick	Endorses relative to 5-year business plan or emergent work
<i>Resource Planning</i>	Georgacopoulos, Artie	Endorses Resources, cost estimate, schedule, and Portfolio Alignment

6.1.2 Reviewers

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

Reviewer List	Individual
Finance	Fowler, Keith
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Fromm, Walter
Procurement	Curran, Art
Control Center	Amerige, Tom

Short Form Sanction Paper



7 Decisions

The US Sanctioning Committee (USSC) at a meeting held on March 26, 2014:

- (a) APPROVED this paper and the investment of \$36.500M and a tolerance of +/- 10%
- (b) NOTED that James Finnerty has the approved financial delegation.
- (c) NOTE: In the event that any Blanket/Program projects are not approved prior to the start of the FY2016 fiscal year, the FY2015 approval limits will remain in effect until such time as the FY2016 blanket/program projects are approved by USSC and/or other appropriate authority for approval.

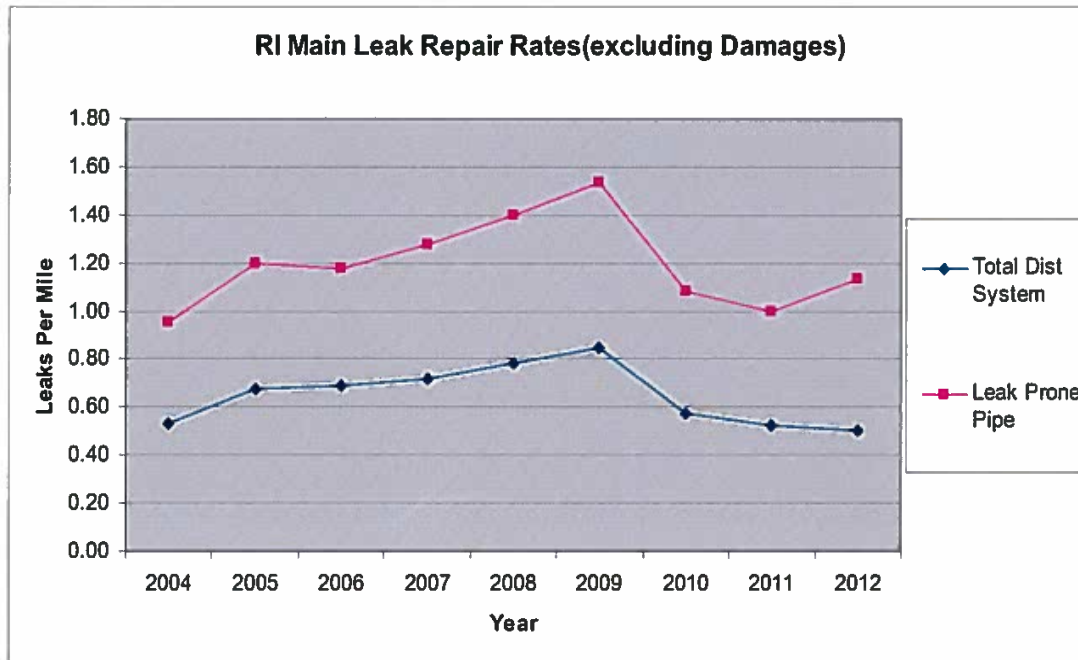
Signature..........Date.....4/7/14.....
Lee S. Eckert
US Chief Financial Officer
Chairman, US Sanctioning Committee

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8.0 Other Appendices

Appendix 1: Rhode Island Leak Repair Graph



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Appendix 2: FY15 Worklist

Work Order/Project ID or Project Name	Town	Retired Material (CI, Steel, other, various)	Retired Diameter (in, various)	Retired Footage (ft)	Retired Operating Pressure (HP or LP)	Prioritization Factor*
Project #1030	Barrington	BS	2,4	2359	25#	70
Project #1033	Barrington	BS	6,2	1754	25#	46
Project #1042	Barrington	BS	2	868	25#	70
Project #1043	Barrington	BS, WS	2	2262	25#	57
Project #1152	Barrington	BS	4,3,1,5	4111	25#	57
Project #1153	Barrington	BS, WS	2	1175	25#	56
Project #1154	Barrington	BS, WS	2	842	25#	30
Project #1155	Barrington	BS	2	1315	25#	46
Project #956	Bristol	CI	4	500	8#	24
Project #1044	Bristol	BS, CI	4,3	709	Low	36
Project #1147	Bristol	BS	3,2	1920	Low to 8#	28
Project #1148	Bristol	BS	4,3	448	Low	43
Project #1149	Bristol	BS, CI	4,3	735	Low to 60#	42
Project #1150	Bristol	BS, CI	4,3,2	2938	Low to 60#	29
Project #957	Bristol	CI	6	543	8#	20
Project #958	Bristol	CI	6	330	8#	10
Project #1339	Bristol	BS	3	850	LP	Field Request
Project #746	Central Falls	BS, CI	2,4,6	2634	Low to 99#	Field Request, PF=16
Project #987	Central Falls	CI	4	996	Low to 60#	Field Request, PF=20
Project #1289	Central Falls	BS	6,4	1983	LP to 60#	Paving, PF=40
Project #988	Cranston	CI, BS	4,6	6326	Low to 99#	33
Project #989	Cranston	CI	4	180	Low	48
Project #990	Cranston	CI, BS	3,4	987	Low	70
Project #991	Cranston	CI	4	361	Low to 10#	48
Project #992	Cranston	CI	4,6	4415	Low	35
Project #1097	Cranston	BS	2	855	35#	41
Project #1099	Cranston	BS, CI	6,8	2660	LP to 35#	8
Project #1101	Cranston	BS	2	185	35#	135
Project #1102	Cranston	BS	2	1446	35#	21
Project #1103	Cranston	BS	4,2	918	35#	54
Project #1104	Cranston	BS	2	276	35#	145
Project #1123	Cranston	CI	4	1496	LP	Field Request, PF=33
Project #1107	East Greenwich	BS	2	371	35#	54
Project #1108	East Greenwich	BS	2	192	35#	52
Project #1109	East Greenwich	BS	2	406	35#	55
Project #1110	East Greenwich	BS	2	286	35#	65
Project #968	East Providence	CI, BS	8,6,2	4041	5#	49
Project #969	East Providence	CI, BS	8,4	1018	5#	13

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Project #973	East Providence	CI	6,1,5	2739	5#	26
Project #993	East Providence	CI, BS	4,6	4774	Low	27
Project #994	East Providence	CI	4	3764	Low to 5#	36
Project #995	East Providence	CI	4,6	505	Low to 5#	30
Project #1192	East Providence	BS	2,3,4	2925	5#	Field Request, PF=27
Project #963	East Providence	CI	6	1554	5#	10
Project #972	East Providence	CI, BS	6	5988	5#	14
Project #1343	East Providence	CI	6, 8	2430	LP	Paving
Project #1345	East Providence	CI	6	3410	LP	Paving
Project #1058	Johnston	BS	6,2	1747	35#	17
Project #1059	Johnston	BS, WS	4,2	2121	35#	32
Project #1060	Johnston	BS	6,4,3	3673	LP	5
Project #1061	Johnston	BS	8,2	3031	35#	40
Project #1062	Johnston	BS	6	402	LP	15
Project #1063	Johnston	BS	2	1063	35#	24
Project #1064	Johnston	BS	2	1406	35#	53
Project #1065	Johnston	BS	2	2437	35#	21
Project #946	Middletown	CI, BS	4,2	1979	10#	43
Project #947	Middletown	CI, WS	4,2	2458	10#	42
Project #951	Middletown	CI	4	2336	10#	29
Project #948	Middletown	CI, BS	4	1942	10#	13
Project #950	Middletown	CI, BS	4	325	10#	35
Project #1068	Newport	CI, BS	4,2	2263	Low	Paving
Project #1069	Newport	BS	4,3,2	1488	Low	39
Project #1070	Newport	CI, BS	4,2,5	767	Low	46
Project #1322	Newport	BS, WS	2,4 6, 8	1840	LP	Field Request
Project #1072	North Kingstown	BS	6,2	5822	35#	9
Project #1073	North Kingstown	BS	2	5225	35#	16
Project #1074	North Kingstown	BS	2	637	35#	63
Project #1075	North Kingstown	BS, WS	2	533	35#	38
Project #1076	North Kingstown	BS	2	2152	35#	23
Project #1121	North Kingstown	BS	8,4,3	1961	35#	Field Request, PF=10
Project #1078	North	BS	4,2,1	3705	60#	42
Project #1080	North	BS	2	639	35#	39
Project #1081	North	BS, WS	1,5,2	600	60#	20
Project #1287	North	BS	2	409	LP	Field Request
Project #999	Pawtucket	CI	4	1064	Low to 60#	39
Project #1000	Pawtucket	CI, BS	4,6	1338	Low to 18#	27
Project #1001	Pawtucket	CI, BS	4,6	2509	Low	32
Project #1120	Pawtucket	BS, CI	4	1003	LP	25
Project #1211	Pawtucket	BS, CI	4,6	698	LP	15
Project #1326	Pawtucket	CI	4, 6	1700	Lp to 18#	Paving
Project #1327	Pawtucket	CI	4	445	Lp to 18#	Paving
Project #1328	Pawtucket	CI	3	125	LP to 99#	Paving
Project #1332	Pawtucket	DI, CI	4,3	1279	55#	Corrosion Request, PF=24
Project #975	Providence	CI	6	1227	Low	26
Project #976	Providence	CI, BS	4	503	Low	20
Project #977	Providence	CI	4,12	2469	Low	26
Project #979	Providence	CI	6,4	1544	Low	26
Project #980	Providence	CI	4,6	932	Low	20

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Project #981	Providence	CI	4,6	1518	Low	30
Project #985	Providence	CI, BS	6	907	Low	27
Project #986	Providence	CI	3,4	1848	Low to 10#	36
Project #1115	Providence	CI	6,4	660	LP	Field Request, PF=10
Project #1122	Providence	CI	4	3358	LP to 10#	30
Project #1254	Providence	CI, PL	4, 6	736	LP to 99#	Paving
Project #1255	Providence	CI	3, 4, 6	222	LP	Paving
Project #1256	Providence	CI	3, 4, 6	924	LP	Paving
Project #1258	Providence	CI	4,6,1,25	4007	LP	Paving
Project #1259	Providence	CI	4	563	LP	Paving
Project #1260	Providence	CI	4	557	LP	Paving
Project #1261	Providence	CI	4,6	4912	LP	Paving
Project #1262	Providence	CI	4	912	LP	Paving
Project #1263	Providence	CI	4,6	2545	LP	Paving
Project #1264	Providence	CI	6	1109	LP	Paving
Project #1265	Providence	CI	4,6	1113	LP to 10#	Paving
Project #1266	Providence	CI	4,3,6	2158	LP	Paving
Project #1267	Providence	CI	4,6	1099	LP	Paving
Project #1268	Providence	CI	6,3	3093	LP	Paving
Project #1285	Providence	BS	6	1203	Lp to 35#	
Project #1291	Providence	CI	6,4	1792	LP	Paving
Project #1292	Providence	CI	4,6	1107	LP	Paving
Project #1293	Providence	CI	4,6,1,5	1208	LP to 99#	Paving
Project #1294	Providence	CI	4	2271	LP to 99#	Paving
Project #1299	Providence	CI	6	517	LP	Paving
Project #1300	Providence	CI	6	561	LP	Paving
Project #1301	Providence	CI	4,6,3	3260	LP	Paving
Project #1302	Providence	CI	4	519	LP	Paving
Project #1303	Providence	CI	4	361	LP	Paving
Project #1304	Providence	CI	4	446	LP	Paving
Project #1305	Providence	CI	4,6	1176	LP	Paving
Project #1306	Providence	CI	3,4,6	1162	LP to 99#	Paving
Project #1307	Providence	CI	4,6	1562	LP to 99#	Paving
Project #1308	Providence	CI	4	345	LP	Paving
Project #1309	Providence	CI	6,4	951	LP	Paving
Project #1310	Providence	CI	6,6,3	3184	LP to 99#	Paving
Project #1312	Providence	CI	3,4,6	1601	LP to 35#	Paving
Project #1313	Providence	CI	3,4,7	3382	LP to 35#	Paving
Project #1314	Providence	CI	4	1250	LP	Paving
Project #1315	Providence	CI	4	241	LP	Paving
Project #1316	Providence	CI	3,4,6	1787	LP	Paving
Project #1317	Providence	CI	3,4,6	826	LP to 99#	Paving
Project #1318	Providence	CI	6	460	LP to 35#	Paving
Project #1319	Providence	CI	6	380	LP	Paving
Project #1341	Providence	CI	6	1435	LP to 99#	Paving
Project #705	Smithfield	BS	2	540	35#	Paving
Project #1119	Smithfield	BS	2	345	35#	Field Request, PF =188
Project #959	Warren	BS, CI	3,4	997	8#	81
Project #1022	Warwick	BS, WS	2	3006	35#	80
Project #1028	Warwick	BS	4	7988	35#	33

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Project #1002	Warwick	CI	4	760	Low	40
Project #1008	Warwick	BS	2	1460	35#	37
Project #1010	Warwick	BS	2	717	35#	37
Project #1011	Warwick	BS	2	763	35#	43
Project #1012	Warwick	BS	2	2439	35#	8
Project #1021	Warwick	BS	2	741	35#	64
Project #1024	Warwick	BS	3	1404	35#	58
Project #1027	Warwick	BS	2,3	1393	35#	102
Project #1226	Warwick	BS	6,2	1700	35#	59
Project #1227	Warwick	BS, WS	2	3355	35#	58
Project #1228	Warwick	BS	2	4006	35#	34
Project #1229	Warwick	BS	2,3	4466	35#	39
Project #1230	Warwick	BS, WS	6,2	4356	35#	86
Project #1231	Warwick	BS, WS	2	1881	35#	73
Project #1232	Warwick	BS	8,12,2	4510	35#	78
Project #1233	Warwick	BS, WS	2	1771	35#	95
Project #1234	Warwick	BS	2	1849	35#	87
Project #1235	Warwick	BS	3,2	2357	35#	62
90000133749	Warwick	BS	3,6	1010	35#	PW
Project #1083	Westerly	BS	4,2	5929	LP to 60#	22
Project #1087	Westerly	BS	4,3,2	3365	LP and 60#	24
Project #1084	Westerly	BS, CI	6,3,2	1138	LP	56
Project #1086	Westerly	BS	2	479	60#	114
Project #1222	Westerly	BS	3,4	3056	LP to 60#	22
Project #1223	Westerly	BS	4,2	3414	LP	30
Project #1224	Westerly	BS	4	750	LP to 60#	45
Project #1331	Westerly	BS	4	2250	LP	Paving
Project #1005	Woonsocket	CI	8,6,4	1420	Low	17
Project #1006	Woonsocket	CI, DI	6,4	3141	Low to 60#	15
Project #1007	Woonsocket	CI	6,8	677	Low	25
Project #1321	Woonsocket	WI	2	185	LP	Field Request

Short Form Sanction Paper



8.1 Sanction Request Breakdown by Project

N/A



USSC Closure Paper

Title:	FY15 Rhode Island Proactive Main Replacement Program	Sanction Paper #:	USSC-14-120C
Project #:	CRCC208, CRCC207, CRCC203, CON0040, CON0034	Sanction Type:	Closure
Operating Company:	The Narragansett Electric Co.	Date of Request:	3/30/2017
Author:	Dana Wolkiewicz	Sponsor:	John Stavrakas – VP Gas Asset Management
Utility Service:	Gas	Project Manager:	Bill Mycroft

1 Executive Summary

This paper is presented to close CRCC208, CRCC207, CRCC203, CON0040, and CON0034. The total spend was \$40.326M. The sanctioned amount for this project was \$36.500M.

The final spend amount is \$40.326M broken down into:
\$ 39.723M Capex
\$ 0.000M Opex
\$ 0.603M Removal

2 Project Summary

This program funds the replacement of Rhode Island's inventory of Leak Prone Pipe (LPP), defined as pipe that is non-cathodically protected steel, whether bare or coated (collectively termed "unprotected steel"), as well as cast or wrought iron.



USSC Closure Paper

3 Over / Under Expenditure Analysis

3.1 Summary Table

Actual Spending (\$M)			
Project #	Description		Total Spend
CRCC208	FY15 Rhode Island Proactive Main Replacement Program	Capex	0.156
		Opex	0.000
		Removal	0.000
		Total	0.156
CRCC207	FY15 Rhode Island Proactive Main Replacement Program	Capex	12.692
		Opex	0.000
		Removal	0.305
		Total	12.997
CRCC203	FY15 Rhode Island Proactive Main Replacement Program	Capex	6.773
		Opex	0.000
		Removal	0.028
		Total	6.801
CON0040	FY15 Rhode Island Proactive Main Replacement Program	Capex	(0.032)
		Opex	0.000
		Removal	0.000
		Total	(0.032)
CON0034	FY15 Rhode Island Proactive Main Replacement Program	Capex	20.134
		Opex	0.000
		Removal	0.270
		Total	20.404
Total		Capex	39.723
		Opex	0.000
		Removal	0.603
		Total	40.326

USSC Closure Paper



Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	35,222
		Opex	0,000
		Removal	1,278
		Total Cost	36,500
Sanction Variance (\$M)			Total Spend
		Capex	(4,501)
		Opex	0,000
		Removal	0,675
		Total Variance	(3,826)

3.2 Analysis

Under the Rhode Island Main Replacement Program, the Company has replaced 45 miles of the targeted 53 miles of LPP. The variance of \$3.826M for the program was due to the need for the replacement of more cast-iron main, as well as the installation of additional services in higher cost urban areas. In general, the replacement of more cast-iron main segments in urban areas, such as in the City of Providence, requires the replacement of more difficult main and a greater number of services than in more sparsely populated areas. Traffic management, protection of other utilities, sidewalk as well as street restoration all combined to make the unit cost of work higher in this urban area than was budgeted. Additionally, the estimating tool was not updated to incorporate more current construction costs into the budget value developed at the time.

4 Improvements / Lessons Learned

Unit costs are being updated to improve the accuracy of project estimating. Improvements to track project costs have provided for better accuracy of year-end spending projections. The Monthly Zero Variance and PCM meetings instituted in FY17 will ensure that sanctioned spending levels are not exceeded without executive approval.



USSC Closure Paper

5 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed (1)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed (2)	<input checked="" type="radio"/> Yes <input type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database (3)	<input type="radio"/> Yes <input checked="" type="radio"/> No

(1) All work orders and funding projects have been closed
Program/Blanket projects may contain work orders and or funding projects which have not yet been closed for reasons including but not limited to:

- the same work order(s) are used annually. They will remain open until Asset Management and/or Resource Planning have determined work orders are no longer needed .
- construction may cross multiple fiscal years
- the work order closing process is within the late charge waiting period
- other accounting processes or final system closing activities have not yet completed

The Program/Blanket projects are approved annually for the current year expected spend and remain open until Asset Management and/or Resource Planning have determined the project is no longer required.

(2) N/A

(3) All lessons learned have been entered appropriately into the lesson learned database

Program/Blanket projects usually contain short cycle work which the Company has been performing over several fiscal years. No new Lessons Learned which have not already been identified and recorded within section 4.

USSC Closure Paper



6 Statements of Support

6.1 **Supporters**

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

	Responsibilities
Pensabene, Patrick M.	Endorses relative to 5-year business plan or emergent work
Falls, Jonathon	Endorses resources, cost estimate, schedule, and portfolio alignment
Fortier, JT	Endorses Resources, cost estimate, schedule
Paul, Art	Endorses Cost Estimate

6.2 **Reviewers**

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

Function	Individual
Finance	Easterly, Patricia
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Currie, John
Procurement	Curran, Art
Control Center	Loiacono, Louis

USSC Closure Paper



7 Decisions

The Senior Executive Sanctioning committee (SESC) approved this paper on 3/30/2017.

Signature..........Date.....
Margaret Smyth
US Chief Financial Officer
Chair, US Sanctioning Committee

Short Form Sanction Paper



Title:	FY15 Service Replacement – Reactive Blanket – Rhode Island	Sanction Paper #:	USSC-14-144
Project #:	CRFN219, CRFS219 (Capital leaks) CRFS210, CRFN210, CRFN309, CRFS309, CCRFN310, CRFS310 (Capital Non-Leaks)	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	March 25, 2014
Author:	Fred Amaral	Sponsor:	Neil Proudman – VP Gas Operations, NE
Utility Service:	Gas	Project Manager:	Fred Amaral

1 Executive Summary

1.1 Sanctioning Summary

This paper requests the sanction of various project numbers in the amount of \$7.450M with a tolerance of +/- 10% for the purposes of full implementation of the Rhode Island FY15 Service Replacement Blanket– Reactive Program

This sanction amount is \$7.450M broken down into:

\$6.324M Capex
\$0.000M Opex
\$1.126M Removal

1.2 Project Summary

This program funds the Service Replacement – Reactive Program for Narragansett Electric Company. The work in this category is non-discretionary, and is randomly generated through public leak reports, programmed leak survey, mandated activities, and customer generated requests.



Short Form Sanction Paper

2 Project Detail

2.1 Background

This proposed blanket investment is to provide approved funding for the reactive replacement of gas services to address leaks and non-leak work activities that fall outside the normal scope of the integrity, reliability, public works and growth programs.

The proactive main and service replacement programs upgrade existing customer services prioritized by risk based on pressure, material, vintage, location, and select other variables. The potential for leakage and other maintenance activities on the remaining services exists and requires a reactive response to correct the deficiency which is the focus of this request.

2.2 Drivers

The goal of this program is to reduce the risk associated with service leaks, damages, service abandonments due to inactivity or demolition requests, customer driven relocations of existing services, and other substandard conditions. The Drivers for this category are both Safety and Reliability.

2.3 Project Description

Approval is being requested for the necessary funding to replace as identified service leaks, damages, service abandonments due to inactivity or demolition requests, customer driven relocations of existing services, and other substandard conditions.

2.4 Benefits

The benefits of performing this work include:

- Elimination of the risk associated with these services.
- Improved community and government relations.
- Adherence to Regulatory compliance requirements.

2.5 Business & Customer Issues

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



Short Form Sanction Paper

2.6 Alternatives

These work activities are random, emergency driven, mandated and customer driven in nature, therefore, there is not an alternative to completing the activities.

2.7 Investment Recovery

Investment recovery will be through standard rate recovery mechanisms.

2.7.1 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$1.328M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.

3 Related Projects, Scoring, Budgets

3.1 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
CRFN219, CRFS219	NA	Capital Service Leak Repair	6.050
CRFN210, CRFS210, CRFN310, CRFS310, CRFN309, CRFS309	NA	Capital Service Non-Leak Repair	1.400
Total			7.450

For Power Plant Load: CRFN219 – \$6.050; CRFN \$1.400

3.2 Associated Projects

N/A



Short Form Sanction Paper

3.3 Prior Sanctioning History

N/A

3.4 Category

Category	Reference to Mandate, Policy, or NPV Assumptions
<input checked="" type="radio"/> Mandatory	Mandatory work activities related to emergency response and regulatory compliance as stipulated in the National Grid Maintenance Plan, DOT192 and State Requirements. There is also Policy-Driven work included in this sanctioning related to customer driven requests.
<input type="radio"/> Policy- Driven	
<input type="radio"/> Justified NPV	

3.5 Asset Management Risk Score

Asset Management Risk Score: 40 (leaks)/21 (non-leak – Other)

Primary Risk Score Driver: (Policy Driven Projects Only)

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

3.6 Complexity Level

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

Complexity Score: N/A



Short Form Sanction Paper

4 Financial

4.1 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY15 - FY19 Gas- Budget File	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	\$0.000M

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

N/A

4.2 CIAC / Reimbursement

\$M	Prior Yrs	Yr. 1 2014/15	Yr. 2 2015/16	Yr. 3 2016/17	Yr. 4 2017/18	Yr. 5 2018/19	Yr. 6 + 2019/20	Total
CIAC/Reimbursement-N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

4.3 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (3M)						Total
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
CRFN219, CRFS219	Capital Service Leak Repair	Est Lvl (e.g. +/- 10%)	CapEx	-	5.665	-	-	-	-	-	5.665
			OpEx	-	-	-	-	-	-	-	
			Removal	-	0.385	-	-	-	-	0.385	
			Total	-	6.050	-	-	-	-	6.050	
CRFN210, CRFS210, CRFN310, CRFS310, CRFN309, CRFS309	Capital Service Non-Leak Repair	Est Lvl (e.g. +/- 10%)	CapEx	-	0.659	-	-	-	-	0.659	
			OpEx	-	-	-	-	-	-	-	
			Removal	-	0.741	-	-	-	-	0.741	
			Total	-	1.400	-	-	-	-	1.400	
Total Project Sanction			CapEx	-	6.324	-	-	-	-	6.324	
			OpEx	-	-	-	-	-	-	-	
			Removal	-	1.126	-	-	-	-	1.126	
			Total	-	7.450	-	-	-	-	7.450	



Short Form Sanction Paper

4.4 Project Budget Summary Table

Project Costs per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2014/15	Yr. 2 2015/16	Yr. 3 2016/17	Yr. 4 2017/18	Yr. 5 2018/19	Yr. 6 + 2019/20	
CapEx	0.000	6.324	0.000	0.000	0.000	0.000	0.000	6.324
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	1.126	0.000	0.000	0.000	0.000	0.000	1.126
Total Cost in Bus. Plan	0.000	7.450	0.000	0.000	0.000	0.000	0.000	7.450

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2014/15	Yr. 2 2015/16	Yr. 3 2016/17	Yr. 4 2017/18	Yr. 5 2018/19	Yr. 6 + 2019/20	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

5 Key Milestones

Milestone	Target Date: (Month/Year)
Sanction Paper Approval	March 2014
Begin Work	April 2014
Complete Work	March 2015
Closure Paper	June 2015

6 Statements of Support

6.1.1 Supporters

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

Role	Individual	Responsibilities
Investment Planner	Pensabene, Patrick	Endorses relative to 5-year business plan or emergent work
Resource Planning	Georgacopoulos, Artie	Endorses Resources, cost estimate, schedule, and Portfolio Alignment

Short Form Sanction Paper



6.1.2 Reviewers

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

Reviewer List	Individual
Finance	Fowler, Keith
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Fromm, Walter
Procurement	Curran, Art
Control Center	Amerige, Tom



Short Form Sanction Paper

7 Decisions

I:

- (a) APPROVE this paper and the investment of \$7.450M and a tolerance of +/-10%
- (b) NOTE that Fred Amaral is the Project Manager and has the approved financial delegation.

Signature..........Date 4-4-14
John Donleavy, Executive Vice President, Chief Operating Officer



Short Form Sanction Paper

8 Other Appendices

N/A.

8.1 *Sanction Request Breakdown by Project*

N/A



USSC Closure Paper

Title:	FY15 Service Replacement – Reactive Blanket – Rhode Island	Sanction Paper #:	USSC-14- 144C
Project #:	Various – See Appendix	Sanction Type:	Closure
Operating Company:	The Narragansett Electric Co.	Date of Request:	8/30/2016
Author:	Kevin Browne	Sponsor:	Neil Proudman, VP Maintenance & Construction NE Gas
Utility Service:	Gas	Project Manager:	Steve Lanmon

1 Executive Summary

This paper is presented to close various funding projects – see Appendix. The total spend was \$18.058M. The latest sanctioned amount for this project was \$7.450M.

The final spend amount is \$18.058M broken down into:

*\$16.504M Capex
\$0.000M Opex
\$1.554M Removal*

2 Project Summary

This program funds the Service Replacement — Reactive Program for Narragansett Electric Company. The work in this category is non-discretionary, and is randomly generated through public leak reports, programmed leak survey, mandated activities, and customer generated requests.

USSC Closure Paper



3 Over / Under Expenditure Analysis

3.1 Summary Table

Actual Spending (\$M)			
Project #	Description		Total Spend
Various – See Appendix	Various – See Appendix	Capex	16.504
		Opex	0.000
		Removal	1.554
		Total	18.058
Total		Capex	16.505
		Opex	0.000
		Removal	1.554
		Total	18.058

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	6.324
		Opex	0.000
		Removal	1.126
		Total Cost	7.450
Sanction Variance (\$M)			Total Spend
		Capex	(10.180)
		Opex	0.000
		Removal	(0.428)
		Total Variance	(10.608)



USSC Closure Paper

3.2 Analysis

More work completed than plan along with additional work contributed to the overrun. The excess in leak receipts against plan may have been a contributing factor to the budget overrun. The Leak Receipts plan for January thru March of 2015 (last three months of the fiscal year) estimated for 370 Leak Receipts versus 627 actual Leak Receipts (both O&M and Capital). The total spend for CI Joint Encapsulation was \$0.423M vs a budget of \$3.329M.

4 Improvements / Lessons Learned

Unit costs are being updated to improve the accuracy of project estimating. These are being updated by the Process and Performance group (Gary Bennett, Director) under the Project Management, Complex Construction, and Resource Planning (PMCCRP) organization under Cedric Williams, VP. Should be at the program level, and it is to improve budgeting. Improvements to track project costs have provided for better accuracy of year-end spending projections. The Monthly Zero Variance and PCM meetings instituted in FY17 will ensure that sanctioned spending levels are not exceeded without executive approval.

5 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> N/A
All relevant costs have been charged project to	<input checked="" type="radio"/> Yes <input type="radio"/> N/A
All work orders and funding projects have been closed	<input type="radio"/> Yes <input checked="" type="radio"/> N/A
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> N/A
All as-builts have been completed	<input checked="" type="radio"/> Yes <input type="radio"/> N/A
All lessons learned have been entered appropriately into the lesson learned database	<input type="radio"/> Yes <input checked="" type="radio"/> N/A

USSC Closure Paper



6 Statements of Support

6.1 **Supporters**

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

Department	Individual	Responsibility
Investment Planner	Pensabene, Patrick M.	Endorses relative to 5-year business plan or emergent work
Resource Planning	Vidal, Alfredo	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Project Management	Michel, Michael	Endorses Resources, cost estimate, schedule
Gas Project Estimation	Paul, Art	Endorses Cost Estimate

6.2 **Reviewers**

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

Function	Individual
Finance	Easterly, Patricia
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Iseler, David G.
Procurement	Curran, Art
Control Center	Eagan, Mark J.



USSC Closure Paper

7 Decisions

The US Sanctioning Committee (USSC) Noted this paper at a USSC meeting held on 9/14/16.

Signature Ross Turrini Date 9/24/2016
Ross Turrini
Senior Vice President US Sanctioning Committee Co - Chair Person

USSC Closure Paper



8 Appendix

Paper Number	FP Proj No	Fp Proj Description	Values			
			Sum of CAP	Sum of COR	Sum of O&M	Sum of Total
CRCC210	CRCC210	REACT MAIN & SERV WORK NONLEAK-RI	\$ 169,662	\$ -	\$ -	\$ 169,662
	CRFN210	REACT MAIN & SERV WORK NONLEAK-RI	\$ -	\$ -	\$ -	\$ -
	CRFN219	LEAK INVEST/REPAIR SERV & MAIN-RI	\$ -	\$ -	\$ -	\$ -
	CRFS210	REACT MAIN & SERV WORK NONLEAK-RI	\$ -	\$ -	\$ -	\$ -
	CRFS219	LEAK INVEST/REPAIR SERV & MAIN-RI	\$ 21,627	\$ 13,387	\$ -	\$ 35,014
USSC-14-144	CON0029	MANDATED SERVICE & SERVICE CUTOFF	\$ (1,194)	\$ 471	\$ -	\$ (723)
	CRFN210	REACT MAIN & SERV WORK NONLEAK-RI	\$ 26,119	\$ 577	\$ -	\$ 26,696
	CRFN219	LEAK INVEST/REPAIR SERV & MAIN-RI	\$ 978,556	\$ 57,535	\$ -	\$ 1,036,091
	CRFN309	SERVICE DEMOLITIONS-RI	\$ 11,349	\$ 249,295	\$ -	\$ 260,644
	CRFN310	CAPPD ALVE-IRA/IRMA- RI	\$ 27,367	\$ 28,605	\$ -	\$ 55,972
	CRFS210	REACT MAIN & SERV WORK NONLEAK-RI	\$ 6,190,742	\$ 27,289	\$ -	\$ 6,218,031
	CRFS211	CI JOINT ENCAPSULATE (RI HUB RULE)	\$ 6,458	\$ -	\$ -	\$ 6,458
	CRFS219	LEAK INVEST/REPAIR SERV & MAIN-RI	\$ 8,995,088	\$ 636,812	\$ -	\$ 9,631,900
	CRFS309	SERVICE DEMOLITIONS-RI	\$ 4,176	\$ 429,824	\$ -	\$ 434,000
	CRFS310	CAPPD ALVE-IRA/IRMA- RI	\$ 74,650	\$ 110,079	\$ -	\$ 184,729
Grand Total			\$18,504,599	\$ 1,553,875	\$ -	\$18,058,473



US Sanction Paper

Title:	Allens Av Regulator Station Rebuild	Sanction Paper #:	USSC-15-112v2
Project #:	C056104 & C070527	Sanction Type:	Partial Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	8/10/2016
Author:	Kenneth Harber	Sponsor:	John Stavrakas Vice President, Gas Asset Management
Utility Service:	Gas	Project Manager:	Kenneth Harber

1 Executive Summary

1.1 **Sanctioning Summary**

This paper requests partial sanction of C056104 and C070527 in the amount \$4.940M with a tolerance of +/-10% for the purposes of partial installation of phase one of the Allens Av Regulator Station Rebuild project and installation of the Allens Av filter/separator.

This sanction amount is \$4.940M broken down into:

\$ 4.940M Capex

\$ 0.000M Opex

\$ 0.000M Removal

NOTE the potential investment of \$10.575M with a tolerance of +/-25%, contingent upon submittal and approval of a Project Sanction paper following completion of final engineering/design for the last two phases of the project.

1.2 **Project Summary**

As a part of the effort by the RI jurisdiction to remove deteriorating buildings as well as clean the contaminated soil within the Allens Av property, the gas mains and regulator stations throughout the property will be consolidated and made safer and more reliable. For the first phase of the project, there are four (4) regulator stations that feed the 99 psig system currently, which will be consolidated and relocated on the property to 3 regulator runs with common inlet and outlet headers in one building. This will also eliminate interconnects between pressure systems that can not be cut out given the current configuration and the separate station feed to NG-LNG. A new filter/separator will be installed on the 200psig pipeline to protect the regulator stations and downstream distribution system from pipeline contaminants and liquids. The second phase of the project will replace the three (3) lower pressure regulator stations on the property and move them into the distribution system, along with associated main



US Sanction Paper

reinforcements, to provide better pressure support to the gas system in Providence and eliminate leak-prone pipe. The final phase of the project will abandon the remaining gas mains and regulator stations once the new system configuration has been tested, and will include final clean-up of the surrounding property.

1.3 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
C056104	N/A	Allens Av Regulator Station Rebuild	9.445
C070527	N/A	Allen Av Filter/Separator	1.130
Total			10.575

1.4 Associated Projects

Project Number	Project Title	Estimate Amount (\$M)
C049332	Liquefaction Project at Providence, RI LNG Plant	186.327
Total		186.327

1.5 Prior Sanctioning History

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Paper Title	Sanction Type	Tolerance
8/1/2014	DOA	\$0.800M (for engineering and materials purchase)	\$5.200M	N/A	DOA	+/- 10%
4/21/2015	USSC	\$3.600M	\$5.500M	Allens Av Regulator Station Rebuild	Partial	+/- 10%

1.6 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review
February 2017	Partial Sanction (Phase 1 Remainder)



US Sanction Paper

1.7 Category

Category	Reference to Mandate, Policy, NPV, or Other
<input type="radio"/> Mandatory	National Grid Document ENG01001 – "Design of Gas Regulator Stations – Part 1"
<input checked="" type="radio"/> Policy- Driven	National Grid Document ENG01002 – "Design of Gas Regulator Stations – Part 2"
<input type="radio"/> Justified NPV	
<input type="radio"/> Other	

1.8 Asset Management Risk Score

Asset Management Risk Score: 35

Primary Risk Score Driver: (Policy Driven Projects Only)

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

1.9 Complexity Level

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

Complexity Score: 22

1.10 Process Hazard Assessment

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

☒ Yes ☐ No



US Sanction Paper

1.11 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY17-FY21 Capital Plan – Gas	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Over <input type="radio"/> Under <input type="radio"/> NA	\$5.425M

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

Re-allocation of funds within the portfolio will be managed by Resource Planning to meet jurisdictional budgetary, statutory and regulatory requirements.

1.13 Current Planning Horizon

		Current Planning Horizon						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
\$M	Prior Yrs	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	
CapEx	1.200	3.740	2.970	2.365	0.050	0.000	0.000	10.325
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250
CIAC/Reimbursement	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	1.200	3.740	2.970	2.365	0.300	0.000	0.000	10.575

1.14 Key Milestones

Milestone	Target Date: (Month/Year)
Initial Sanction (PowerPlan for Engineering)	October 2014
Partial Sanction (Phase 1 Original Scope)	April 2015
Partial Sanction (Phase 1 Initial Portion)	August 2016
Installation of Foundations & Pre-fab Buildings	August 2016
Installation of Filter/Separator	October 2016
Installation of Piping inside of Adjacent Laydown Area	November 2016
Partial Sanction (Phase 1 Remainder)	February 2017
Full Sanction (Phases 2 and 3)	February 2018
Project Closure	April 2020



US Sanction Paper

1.15 Resources, Operations and Procurement

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

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

1	Coordination of work with ongoing LNG Liquefier project / Kiewit controlled area
2	Environmental concerns working in former MGP site

1.17 Climate Change

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

1.18 List References

N/A

US Sanction Paper



2 Decisions

The US Sanctioning Committee (USSC) at a meeting held on 8/10/2016:

(a) APPROVED the investment of \$4.940M and a tolerance of +/-10% for partial installation of phase one of the Allens Av Regulator Station Rebuild project and installation of the Allens Av filter/seperator.

(b) NOTED the potential investment of \$10.575M and a tolerance of +/-25%, contingent upon submittal and approval of a Project Sanction paper following completion of final engineering and design.

(c) NOTED that Kenneth Harber has the approved financial delegation to undertake the activities stated in (a).

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

Ross Turrini

Senior Vice President, US Sanctioning Committee Co-Chair Person

US Sanction Paper



3 Sanction Paper Detail

Title:	Allens Av Regulator Station Rebuild	Sanction Paper #:	USSC-15-112v2
Project #:	C056104 & C070527	Sanction Type:	Partial Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	8/10/2016
Author:	Kenneth Harber	Sponsor:	John Stavrakas Vice President, Gas Asset Management
Utility Service:	Gas	Project Manager:	Kenneth Harber

3.1 **Background**

The primary location of this project will be at the company-owned facility at 642 Allens Avenue, Providence RI. Phase one will be entirely located on the property. Phase two of the project will be in three (3) areas of the city of Providence. Phase three will also take place at the Allens Avenue property for final clean-up.

There are historically concerns with the configuration of these regulator stations and how the systems are connected and fed in this part of the Rhode Island distribution system. This project will simplify how the regulator stations work, making it safer for the technicians who will maintain these facilities in the future. These regulator stations are significant feeds into the Providence, Johnston, Cranston, Warwick, East Greenwich, and North Kingstown areas. Therefore, for the company's to be able to maintain continued reliability for customers in the region, these regulator stations need to be upgraded to function in a safe and reliable manner.

This project is important for the safety of the public in the nearby distribution area through the reduction of the potential for overpressurization of the system by the inclusion of additional overpressure protection devices. Also, by relocating the three (3) lower pressure regulator stations, National Grid can abandon some large sections of leak-prone pipe and eliminate the related potential for gas leaks. The project also provides greater reliability to the CNG station on the company property. Lastly, this project is one part of the larger effort to improve the appearance of the company property for the neighbors.



US Sanction Paper

3.2 Drivers

The key driver for the regulator station rebuild project is to remove old regulator station buildings and above-grade piping in the central portion of the 642 Allens Avenue, Providence, RI property. This supports the effort across the entire property to demolish several old buildings no longer in use, and their associated piping.

In addition, the Company has also agreed to replace sections of 200 psig main and other transmission-grade facilities throughout the RI distribution system, which do not have sufficient records. Some sections connected to the existing regulator stations meet this replacement criterion.

3.3 Project Description

To improve the safety and reliability of the Allens Av gas regulator stations, the Company has proposed to:

- Consolidate the existing four (4) regulator stations fed from the 200 psig main into one new building. The replacement of these stations offers an opportunity to add a third layer of overpressure protection to reduce the risk of overpressurization. The new building will also be storm-hardened by establishing it on higher ground. The existing grade of the property is within the 100yr flood zone.
- Install a new filter/separator to protect the downstream distribution system from pipeline contaminants and liquids.
- Move the three (3) regulator stations fed from the 99psig mains further into the distribution system, which provides better pressure support and allows elimination of several thousand feet of leak-prone cast iron main.
- Cut off the piping interconnects and coordinate with Environmental to safely and properly address the contaminated portions of the yard around the existing regulator stations.
- Tie the tail-gas line from the Liquefaction project into the distribution system so that tail gas can mix properly with street gas and feed the required quality of gas to the CNG station at the edge of the property and the distribution system beyond.

3.4 Benefits Summary

Moving the four (4) 200psig to 99psig regulator stations from the current location to a more southern location near the NG-LNG property allows better support for the liquefaction project to tie into the mains in such a way to create a better mix of liquefaction tail gas and street gas for the sake of the neighboring CNG station. In addition this will also allow for the elimination of the separate station that feeds NG-LNG.

US Sanction Paper



To support both Long Term Planning and Main and Service Replacement, the three (3) lower pressure regulator stations fed from the 99psig system will be moved off of the Allens Av property further into the distribution system. This will provide better pressure support to Providence as well as facilitate the replacement of several thousand feet of leak-prone cast iron pipe.

Lastly, the company has a practice to remove interconnects between different pressure systems for public and employee safety. Some of these valved interconnects exist in the current piping configuration and cannot be removed because there is not enough space to do the work while maintaining a feed to the distribution system. These interconnects will be removed when the gas mains feeding the old regulator stations are cut and capped.

3.5 Business and Customer Issues

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

3.6 Alternatives

Alternative 1: 200psig Fed Stations Only

This alternative is less expensive than the proposed project, as the three (3) newer lower pressure regulator stations would remain in place. However, on the property, approximately the same amount of piping work would be required regardless of whether we replace all seven (7) regulator stations or only four (4). Also, the cut and caps would not eliminate the older transmission pressure pipelines as cleanly. Additionally, if the stations feeding the 35psig, 10psig, and 7psig systems are not relocated further into the distribution system, several thousand feet of leak-prone pipe could not be abandoned.

Alternative 2: Leave As Is

This option is not recommended as the company continues to assume the risk associated with system interconnects, and it does not address the insufficient records identified in the inquiry by the PUC, nor does it address the waning condition of existing equipment.

3.7 Safety, Environmental and Project Planning Issues

A Health and Safety Plan will be developed and all National Grid Safety and Environmental Rules will be followed.



US Sanction Paper

3.8 Execution Risk Appraisal

Number	Detailed Description of Risk / Opportunity	Probability	Impact		Score		Strategy	Pre-Trigger Mitigation Plan	Residual Risk	Post Trigger Mitigation Plan
			Cost	Schedule	Cost	Schedule				
1	Unknown subsurface conditions may impact ultimate location of gas main piping	3	3	2	9	6	Mitigate	Conduct survey investigation of proposed area of work	Unknown subsurface conditions remain	Utilize survey information to reroute gas main as needed
2	Coordination with liquefaction project schedule	2	2	5	4	10	Mitigate	Biweekly project coordination meetings	Residual Conflicts Exist	Prioritize work between projects
3	Presence of contaminated soil in excavation	4	2	2	8	8	Mitigate	Detailed environmental contingency plan in place	Environmental contaminants found in excavation	Enact contingency plan and take corrective environmental actions

3.9 Permitting

Permit Name	Probability Required (Certain/ Likely/ Unlikely)	Duration To Acquire Permit	Status (Complete/ In Progress Not Applied For)	Estimated Completion Date
Conditional Building Permit	Certain	2-3 months	Complete	Jan 2016
Full Building Permit	Certain	2-3 months	Not Applied For	Dec 2016

3.10 Investment Recovery

3.10.1 Investment Recovery and Regulatory Implications

Investment recovery will be through standard rate recovery mechanisms approved by appropriate regulatory agencies.



US Sanction Paper

3.10.2 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$2.163M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.

3.10.3 CIAC / Reimbursement

N/A

3.11 Financial Impact to National Grid

3.11.1 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend (\$M)	Prior Yrs	Current Planning Horizon						Total
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
C056104	Allens Av Regulator Station Rebuild	+/-10%	CapEx	1 200	2.610	2.970	2.365	0.050	0.000	0.000	9.195
			OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
			Removal	0.000	0.000	0.000	0.000	0.250	0.000	0.250	
			Total	1 200	2 610	2.970	2.365	0.300	0.000	0.000	9.445
C070527	Allens Av Filter/Separator	+/-10%	CapEx	0.000	1.130	0.000	0.000	0.000	0.000	0.000	1.130
			OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
			Total	0.000	1.130	0.000	0.000	0.000	0.000	0.000	1.130
Total Project Sanction			CapEx	1.200	3.740	2.970	2.365	0.050	0.000	0.000	10.325
			OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Removal	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250
			Total	1.200	3.740	2.970	2.365	0.300	0.000	0.000	10.575

3.11.2 Project Budget Summary Table

Project Costs per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
CapEx	1.200	1.750	1.350	0.850	0.000	0.000	0.000	5.150
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	1.200	1.750	1.350	0.850	0.000	0.000	0.000	5.150

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
CapEx	0.000	(1.990)	(1.620)	(1.515)	(0.050)	0.000	0.000	(5.175)
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	(0.250)	0.000	0.000	(0.250)
Total Cost in Bus. Plan	0.000	(1.990)	(1.620)	(1.515)	(0.300)	0.000	0.000	(5.425)



US Sanction Paper

3.11.3 Cost Assumptions

The estimates were developed using internal estimating tools by Gas Systems Engineering in 2016 and through the solicitation of contractor bids by Procurement. The accuracy level of the estimate for each project is identified in table 3.11.1.

3.11.4 Net Present Value / Cost Benefit Analysis

3.11.4.1 NPV Summary Table

This is not an NPV Project.

3.11.4.2 NPV Assumptions and Calculations

N/A

3.11.5 Additional Impacts

N/A

3.12 Statements of Support

3.12.1 Supporters

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

Department	Individual	Responsibilities
Investment Planner	Pensabene, Patrick M.	Endorses relative to 5-Year Business Plan or Emergent work
Resource Planning	Vidal, Alfredo	Endorses Resources, cost, estimate, schedule, and Portfolio Alignment
Project Management	Michel, Michael	Endorses Resources, cost estimate, schedule
Gas Project Estimation	Paul, Art	Project Estimate



US Sanction Paper

3.12.2 Reviewers

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

Function	Individual
Finance	Easterly, Patricia
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Iseler, David G.
Procurement	Curran, Art
Control Center	Eagan, Mark J.

4 Appendices

4.1 Sanction Request Breakdown by Project

\$M	C056104	C070527	Total
CapEx	3.810	1.130	4.940
OpEx			0.000
Removal			0.000
Total	3.810	1.130	4.940

4.2 Other Appendices

N/A



Resanction Request

Title:	Exeter Boiloff Compressor	Sanction Paper #:	USSC-12-440 v2
Project #:	C-041203	Sanction Type:	Resanction
Operating Company:	Narragansett Electric Co	Date of Request:	09-17-13
Author:	Ed Wencis, Kathleen Sullivan	Sponsor:	Fikret Su – Director LNG
Utility Service:	Gas	Project Manager:	Ed Wencis

1 Sanctioning Summary

This paper requests the resanction of project # C-041203 in the amount of \$2.4M for the purpose of turnkey implementation (engineering design, materials procurement, construction, testing, commissioning and training) for a new boil off compressor at the Exeter LNG plant.

This sanction amount is \$2,400,000 broken down into:

\$2,400,000 Capex

\$0 Opex

\$0 Removal

Original Sanction Amount \$1,250,000

2 Re-sanction Details

2.1 Brief Summary:

This project proposes to design, procure material and install one new boil off compressor and associated apparatus (piping, valves, fittings, controls, electrical, instrumentation and building) that can handle the total load at the Exeter LNG plant. The LNG plant, 53 South County Trail, Exeter, R.I., has two existing boil off compressors that are obsolete. Replacement parts for these compressors are not available from the manufacturer and must be obtained through machine shops. As a result, access to parts is becoming more difficult. To date, there has not been a compressor failure; however, the risk of failure going forward is a major concern. One of the machines operates continuously (to facilitate tank boiloff) and the second compressor is needed under the following two conditions: (1) when LNG trucks are being unloaded into the tank and (2) when there is a change in barometric pressure. If one of the boil off compressors were to fail during condition (1), the facility will not have the ability to fill the LNG tank. If condition (2) is experienced during a single compressor failure, cold gas vapor will be released to the atmosphere in order to relieve pressure in the LNG tank.



Resanction Request

The installation of the new compressor will ensure the availability of the LNG plant to vaporize, unload trucks and eliminate venting at all times.

The Project Team seeks to resanction the project due to a total variance of \$1,150,000, driven primarily by changes in Engineering/Design, Material, Construction/Integration, Overhead, Contingency and other cost (see Key Variances listed below) as compared to the original project sanction.

2.2 Summary of Projects:

Project Number	Project Type (Elect only)	Project Title	Estimate Amount (\$M)
C-041203	Project type	Exeter Boiloff Compressor	\$ 2.400
Total			\$ 2.400

2.3 Prior Sanctioning History

Previously approved sanctions are attached.

Date	Governance Body	Sanctioned Amount	Paper Title	Sanction Type	Paper Reference Number
10-24-12	USSC	\$1,250,000	Exeter Boiloff Compressor	Sanction	USSC-12-440

Over / Under Expenditure Analysis

Summary Analysis (M's)	Capex	Opex	Removal	Total
Latest approval	\$1.25	\$	\$	\$1.25
Resanction Amount	\$2.4	\$	\$	\$2.4
Change*	\$1.15	\$	\$	\$1.15

*Change = (Latest Approval – Resanction Amount)



Resanction Request

Revised Planning Horizon

(\$M)	Prior Yrs	Revised Planning Horizon						Total
		Yr. 1 2013/14	Yr. 2 2014/15	Yr. 3 2015/16	Yr. 4 2016/17	Yr. 5 2017/18	Yr. 6 + 2018/19	
CapEx	\$ -	\$ 0.900	\$ 1.500	\$ -	\$ -	\$ -	\$ -	\$ 2.400
OpEx	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Removal	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
CIAC/Reimbursement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total	\$ -	\$ 0.900	\$ 1.500	\$ -	\$ -	\$ -	\$ -	\$ 2.400

2.4 Drivers

2.4.1 Detailed Analysis Table

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

Detail Analysis (M's)	Over/Under Expenditure?	Amount
Engineering/Design	<input checked="" type="checkbox"/> Over <input type="checkbox"/> Under	\$0.089
Material	<input checked="" type="checkbox"/> Over <input type="checkbox"/> Under	\$0.196
Construction/Integration	<input checked="" type="checkbox"/> Over <input type="checkbox"/> Under	\$0.215
Startup/Training/Manuals	<input checked="" type="checkbox"/> Over <input type="checkbox"/> Under	\$0.039
Labor/Cap/Trans Overhead	<input checked="" type="checkbox"/> Over <input type="checkbox"/> Under	\$0.263
Labor/Material Contingency	<input checked="" type="checkbox"/> Over <input type="checkbox"/> Under	\$0.183
AFUDC	<input checked="" type="checkbox"/> Over <input type="checkbox"/> Under	\$0.068

2.4.2 Explanation of Key Variations

The original project sanction was based on the following assumptions for the items listed above:

1. Engineering/Design would be done in part by a third party and National Grid.
2. National Grid would perform Design oversight and review.
3. Higher value materials such as compressor, building and MCC, requiring longer lead times, would be procured by National Grid.
4. The engaged installation contractor would procure balance of material and install all mechanical equipment, valves and fittings.
5. Another contractor would be responsible for installation of electrical, controls and instrumentation.
6. All project management including construction oversight and process/controls integration would be performed by National Grid.



Resanction Request

7. Pre/post commission training and project data books were not included in original estimate since the original scope assumed National Grid would perform this work.
8. The project scope assumed running two boiloff lines from the tank (one for existing compressors, one for new compressor) without a preheat process. New scope requires the removal of existing run and installation of one run with preheat.
9. The total project cost was based on a somewhat similar but less complex project at the Haverhill, MA, LNG facility. Approximately 70% of actual cost was available for the Haverhill project at the time of original project sanctioning. The Haverhill project utilized multiple contractors (design, electrical, controls, and construction) which became more difficult for National Grid to manage.

The Resanction is based on the following:

The project will be administered as EPC (Engineer, Procure, and Construct) where one contractor will be responsible for all engineering, material procurement, construction, testing, commissioning and training. This contractor will essentially manage all of these project aspects. In addition, by having one party responsible for all project aspects, a performance warrantee for one year will be provided. National Grid resources are dedicated to other projects during this period and are unavailable for this project. The Project Team recommends the EPC contract format since the low incremental cost justifies the provision of a warranty on work and materials for this project.

Key Variances:

Engineering/Design – Safety related analysis (SIS, PHA) and related installation cost, internal engineering design and design oversight were not included in the original cost estimate.

Material – Original material pricing was estimated with 2011 values. Inflation in material since then contributed to a portion of the increase. Procurement related administrative cost (order placement, delivery scheduling, shipping cost), EPC contractor markup, and change in assumed compressor type resulted in material cost increase as compared to original estimate.

Construction/Integration – Contractor labor and markup as compared to National Grid labor. Original estimate assumed National Grid would have been the integrator for the installation process.

Training/Manuals – Not included in the original cost estimate

Startup – Originally assumed all National Grid labor and the amount of hours was estimated too low for the effort. The revised effort includes contractor labor and a new scope for startup which increase the amount of labor hours above the original estimate for a shorter duration



Resanction Request

Labor/Capital/Transportation Overhead – Not included in the original cost estimate

Labor/Material Contingency Component – Not included in the original cost estimate

AFUDC – Not included in the original cost estimate

2.5 Business Plan:

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY2014 – FY2018 Gas Capital Plan	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over	\$1,400,000

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

Re-allocation of funds within the portfolio will be managed by Resource Planning to meet jurisdictional budgetary, statutory and regulatory requirements.

2.7 Key Milestones:

Milestone	Target Date: (Month/Year)
Re-Sanction Approval	09/13
Engage EPC Contractor	09/13
Begin Design	10/13
Procure long lead materials	11/13
Begin Construction	04/14
Commission Boiloff Compressor	08/14
Project Closeout	10/14

2.8 Next Planned Sanction Review:

Date (Month/Year)	Purpose of Sanction Review
10/14	Closure Paper



Resanction Request

3 Statements of Support

3.1 Supporters

Role	Name	Responsibilities
<i>Investment Planner</i>	Pensabene, Patrick M.	Endorses relative to 5-year business plan or emergent work
<i>Resource Planning</i>	Georgacopoulos, Artie	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
<i>Project Management</i>	King, Kevin	Endorses Resources, cost estimate and schedule
<i>LNG</i>	SU, Fikret	Endorses scope, design, conformance with design standards

3.2 Reviewers

Reads paper for content / language. Recommends edits if necessary

Reviewer List	Name
Finance	Fowler, Keith
Regulatory	Katsh, Gideon N
Jurisdictional Delegates	Fromm, Walter
Control Center	Amerige, Thomas
Procurement	Curran, Art



Resanction Request

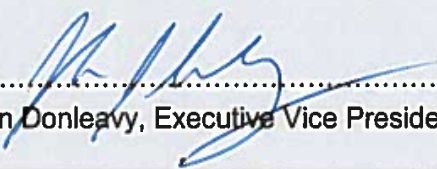
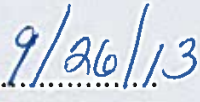
4 Decisions:

Short Form Re-sanction (\$1M<X<\$8M):

I:

(a) APPROVE this paper and the investment of \$2.4M

(b) NOTE that Ed Wencis is the Project Manager and has the approved financial delegation.

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

John Donleavy, Executive Vice President & Chief Operating Officer



USSC Closure Paper

Title:	Exeter Boil-off Compressor	Sanction Paper #:	USSC-12-440-v2c
Project #:	C041203	Sanction Type:	Closure
Operating Company:	The Narragansett Electric Co.	Date of Request:	June 7, 2016
Author:	Agnieszka Przybysz	Sponsor:	Fikret Su – Director LNG
Utility Service:	Gas	Project Manager:	Agnieszka Przybysz

1 Executive Summary

This paper is presented to close project # C041203. The latest sanctioned amount for this project was \$2.400M.

The final spend amount is \$3.145M broken down into:

\$3.129 Capex
\$0.016 Opex
\$0.000 Removal

2 Project Summary

The purpose of this project was to design, procure materials and install a new boil off compressor and associated apparatus (piping, valves, fittings, controls, electrical, instrumentation and building) that could handle the total load at the Exeter LNG plant.

Two compressors were successfully replaced with a new one that began operating December 2014. In 2015 the final records review and as-built information were finalized and completed.



USSC Closure Paper

3 Over / Under Expenditure Analysis

3.1 Summary Table

Actual Spending (\$M)			
Project #	Description		Total Spend
		Capex	3.129
		Opex	0.016
		Removal	0.000
		Total	3.145
Total		Capex	3.129
		Opex	0.016
		Removal	0.000
		Total	3.145

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	2.400
		Opex	0.000
		Removal	0.000
		Total Cost	2.400
Sanction Variance (\$M)			Total Spend
		Capex	(0.729)
		Opex	(0.016)
		Removal	0.000
		Total Variance	(0.745)



USSC Closure Paper

3.2 Analysis

The sanction amount for the Exeter Boil-off Compressor project was \$2.400M and the project was closed out at \$3.145M, which resulted in an overrun of \$0.745. The table below summarizes the major cost differences.

Exeter Boil-off Compressor Cost Comparison (\$M)		
Classification	Project Cost Estimate	Actual Cost
National Grid Labor	\$0.05	\$0.04
Contractor Labor	\$0.92	-
• Contractor - CHI ENGINEERING SERVICES INC.	-	\$1.86
• Other Contractors and Consultants	-	\$0.09
Materials	\$1.07	-
Capital Overheads	\$0.33	\$0.96
Other Expenses (Not assigned)	\$0.00	\$0.18
Asbestos removal and replacement	-	\$0.01
Total	\$2.37	\$3.14

The major difference between the project estimate and the actual costs is due to Capital Overhead. Capital overhead account for \$0.63M (85%) of the \$0.745M overrun.

- The estimate did not account for capital overhead to be accrued on contractor labor; the accounting system applied capital overhead to both contractor labor and materials.

The remaining \$100K of the \$0.745M overrun is within the 10% (\$0.24M) tolerance of the project sanction amount.

Overall, all major objectives for the project were met and all close out activities have been completed.

4 Improvements / Lessons Learned

- Project Management was not involved in the project;
- Revised version of the project estimating tool now accounts for capital overhead on contractor labor;
- Labor and material charges are identified as separate line items on contractors' invoices; this allows for appropriate application of capital overhead costs.



USSC Closure Paper

5 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> N/A
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> N/A
All work orders and funding projects have been closed	<input checked="" type="radio"/> Yes <input type="radio"/> N/A
All unused materials have been returned	<input type="radio"/> Yes <input checked="" type="radio"/> N/A
All as-builts have been completed	<input checked="" type="radio"/> Yes <input type="radio"/> N/A
All lessons learned have been entered appropriately into the lesson learned database	<input checked="" type="radio"/> Yes <input type="radio"/> N/A

The funding project is in closed status.



USSC Closure Paper

6 Statements of Support

6.1 **Supporters**

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

Department	Individual	Responsibilities
<i>Investment Planner</i>	Pensabene, Patrick	Endorses relative to 5-year business plan or emergent work
<i>Resource Planning</i>	Vidal, Alfredo	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
<i>Project Management</i>	Michel, Michael	Endorses Resources, cost estimate and schedule
<i>LNG</i>	Su, Fikret	Endorses scope, design, conformance with design standards
<i>Gas Project Estimation</i>	Paul, Art	Endorses Cost Estimates

6.2 **Reviewers**

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

Function	Individual
Finance	Dennis Urban
Regulatory	Zschokke Peter
Jurisdictional Delegates	Iseler David G.
Procurement	Curran, Art
Control Center	Eagan, Mark J.

USSC Closure Paper



7 Decisions

I approve this paper.

Signature Ross W. Turrini Date 7/16/2016
Executive Sponsor – Ross Turrini, Senior Vice President
Gas Process & Engineering

Short Form Sanction Paper



Title:	FY2015 Rhode Island Gas Expansion Pilot Program	Sanction Paper #:	USSC-14-160
Project #:	C054484, C054487	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	4/8/2014
Author:	Walter Fromm & Jackson Lehr	Sponsor:	Sean Mongan
Utility Service:	Gas	Project Manager:	Jackson Lehr

1 Executive Summary

1.1 Sanctioning Summary

This paper requests sanction of C054484, C054487 in the amount of \$3.015M with a tolerance of +/- 10% for the purposes of full implementation to install new mains associated with the Gas Expansion Pilot Program in Rhode Island under the FY 2015 ISR Plan.

*This sanction amount is **\$3.015M** broken down into:*

\$3.015M Capex

\$0.000M Opex

\$0.000M Removal

With a CIAC /Reimbursement of \$.015M

1.2 Project Summary

This program involves the installation of new main to serve new customers as part of the FY2015 Gas Expansion Pilot Program. It is anticipated that the proposed \$3.000M will fund the installation of roughly 20,000 feet of new gas main to provide access to gas for approximately 400 potential customers, of which approximately 100 will initially take service. It is important to note that this is a pilot program testing a new approach to gas expansion, aligned with the strategic build-out approach. Results could vary significantly depending on a number of factors including customer participation and the actual combination of projects pursued.

2 Project Detail

2.1 Background

The recent abundance of natural gas supply has led to historically low commodity prices and a long-term forecast showing a substantial, sustained price differential between



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natural gas and heating oil. A number of states have recognized this market shift and are now pursuing or examining programs that would expand the availability of natural gas as an energy source within their jurisdictions. Currently, in Rhode Island, customers may be required to pay a Contribution In Aid of Construction ("CIAC") to help cover the costs associated with main extensions required to provide them gas service. This upfront capital cost can present a significant barrier for potential customers. The Gas Expansion Pilot Program, first introduced in FY2014, seeks to dramatically reduce this impediment by supporting projects that have the opportunity to bring gas service to more customers where the costs described above would otherwise have acted as a barrier.

As part of the FY2014 Gas Infrastructure, Safety & Reliability ("ISR") Program in Rhode Island, the Commission approved (for the first time) a \$3.000M Gas Expansion Pilot which was focused on expanding the gas distribution system to remove or reduce financial barriers that may prevent residential and commercial customers from taking advantage of historically low gas commodity prices. In spite of intensive marketing and outreach efforts for the FY2014 ISR Gas Expansion Pilot Program, only two small, partial projects were able to move forward, serving six and seven new customers, respectively. A review of these efforts and feedback from customers identified several major lessons which form the basis of the proposed changes and modifications to the FY2015 pilot program designed to simplify the process and program for customers.

Lesson #1 Offers to customers that vary based on the number of participating customers are too complicated and the uncertainty forms a major barrier to participation

Issue: Need to provide a simple, fixed offer to customers

Lesson #2: Customer economics remain strained by the customer conversion costs alone and there is very little room, if any, for additional costs such as CIACs

Issue: Need to provide a special, significantly reduced offer for the pilot program

Lesson #3: Customer interest can vary significantly project to project and within projects, as well as beyond projects

Issue: Need to provide criteria that enable flexibility to respond to customer interest

2.2 Drivers

The primary driver is the approved FY2015 Gas ISR Plan, which includes the Gas Expansion Pilot Program.



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2.3 Project Description

The FY2015 Gas Expansion Pilot Program seeks to implement the following modifications based on the key learnings from the FY2014 Pilot, specifically:

Simplified project eligibility criteria

- Introduce a Density Test - Maximum of 70 feet of main per prospective customer*
- Modify the Commitment Requirement - A minimum of 10% of prospective customers must commit, and minimum of three customers must commit (relevant for very small projects)
- Modify the CIAC requirements by introducing a modest fixed charge for participation in the Gas Pilot Program (e.g. \$950 vs. \$800 standard service fee) in lieu of the variable CIAC based on number of committed customers
- Provide the complete cost of the main expansions from the ISR Gas Expansion Pilot Program funds with service fee premiums credited to customers in the next ISR reconciliation filing.
- The previously identified FY2014 projects will remain eligible for the revised FY2015 program with the projects to be pursued in the order of density.
- Add a market-based approach to the program by reserving a portion of the Gas Expansion pilot funds, \$.750M, of the \$3.000M, for those customer-initiated projects that meet the eligibility criteria. This will provide the Company with the necessary flexibility to address both proactive and reactive identified projects.
- Plan includes \$3.000M in FY2015 to support the revised Gas Expansion Pilot Program with any unspent FY2014 funds to be returned to customers in the FY2014 reconciliation filing.

**Cross referencing with the prior project list for the FY2014 pilot, the pool of potential projects meeting this density threshold is over 33 projects, with over 5,000 prospective customers, which can be served with over 60 miles of main. Such a project pool would provide sufficient opportunity for FY2015 and beyond.*

2.4 Benefits

This gas expansion pilot has been developed to deliver new revenue to the company while earning an anticipated return on the pilot main investments in line with the expected returns for the ISR plan as a whole. The pilot main will enable growth services this year and beyond, with returns in line or potentially above our typical on-main growth services. We will be delivering clean, safe and affordable natural gas to residents and



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businesses in the state of Rhode Island. There is an environmental benefit in regards to the reduction of oil as a heating fuel for these customers. There is also an economic development benefit associated with the fuel cost savings as well as the construction work itself. The environmental and economic development benefits have not been quantified at this time.

2.5 Business & Customer Issues

The primary issues with this plan are in regards to resource capacities. The pilot program is included in the resource plan, however, it is relatively new and incremental to a still growing amount of traditional growth work. The volume of work could impact our delivery to customers and put our costs at risk if we have to deliver the mains and associated services with more contractors and or on overtime.

2.6 Alternatives

Alternative 1: Do nothing, which was not a viable alternative because the pilot program is included in the approved ISR Plan.

2.7 Investment Recovery

The FY2015 Gas Expansion Pilot Program was approved by the Rhode Island Public Utilities Commission as part of the FY2015 Gas ISR at the Open Hearing on March 27, 2014.

2.7.1 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$.630M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.



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3 Related Projects, Scoring, Budgets

3.1 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
C054484		RI ISR Pilot Residential	2.412
C054487		RI ISR Pilot Commercial	0.603
Total			3.015

3.2 Associated Projects

Project Number	Project Title	Estimate Amount (\$M)
CRTC304	Base Growth - Meter Purchase/Operations	1.047
CRCC111	Gas System Reinforcement	3.737
Total		4.784

3.3 Prior Sanctioning History

N/A

3.4 Category

Category	Reference to Mandate, Policy, or NPV Assumptions
<input type="radio"/> Mandatory <input checked="" type="radio"/> Policy- Driven <input type="radio"/> Justified NPV	The FY2015 Gas Expansion Pilot was reviewed and approved by the RI DPUC and the RI PUC.



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3.5 Asset Management Risk Score

Asset Management Risk Score: 49

Primary Risk Score Driver: (Policy Driven Projects Only)

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

3.6 Complexity Level

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

Complexity Score: N/A

4 Financial

4.1 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY2015 Gas Budget	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	\$0.000M

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

The over run will be covered by the anticipated CIAC that was not included in the FY15 budget.

4.2 CIAC / Reimbursement

		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
\$M	Prior Yrs	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	Total
CIAC/Reimbursement	0.000	0.015	0.000	0.000	0.000	0.000	0.000	0.015



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4.3 Cost Summary Table

					Current Planning Horizon (\$M)								
Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6+			
C054484	RI ISR Pilot Residential	Est Lvl (e.g. +/- 10%)	CapEx	-	2,412	-	-	-	-	-	-	2,412	
			OpEx	-	-	-	-	-	-	-	-		
			Removal	-	-	-	-	-	-	-	-		
			Total	-	2,412	-	-	-	-	-	-	2,412	
C054487	RI ISR Pilot Commercial	Est Lvl (e.g. +/- 10%)	CapEx	-	0,603	-	-	-	-	-	-	0,603	
			OpEx	-	-	-	-	-	-	-	-	-	
			Removal	-	-	-	-	-	-	-	-	-	
			Total	-	0,603	-	-	-	-	-	-	-	0,603
Total Project Sanction			CapEx	-	3,015	-	-	-	-	-	-	3,015	
			OpEx	-	-	-	-	-	-	-	-	-	-
			Removal	-	-	-	-	-	-	-	-	-	-
			Total	-	3,015	-	-	-	-	-	-	-	3,015

4.4 Project Budget Summary Table

Project Costs per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6+	
		2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	
CapEx	0.000	3.015	0.000	0.000	0.000	0.000	0.000	3.015
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	3.015	0.000	0.000	0.000	0.000	0.000	3.015

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6+	
		2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

5 Key Milestones

Milestone	Target Date: (Month/Year)
Sanction Paper Approval	4/2014
Begin Work	4/2014
Complete Work	3/2015
Close-out	6/2015



Short Form Sanction Paper

6 Statements of Support

6.1.1 Supporters

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

Role	Individual	Responsibilities
<i>Sponsor/ Asset Manager/ Asset Owner/ Process Owner</i>	Sean Mongan	Endorses implementation of sales and marketing
<i>Investment Planning</i>	Pat Pensabene	Endorses relative to 5-year business plan or emergent work
Resource Planning	Artie Georgacopoulos	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Customer	Jackson Lehr	Endorses the project aligns with gas growth strategy
Network Strategy, Gas	Walter Fromm	Endorses Program as it is included in FY2015 RI Gas ISR
Customer & Community Affairs	John Isberg	Endorses the project aligns with jurisdictional objectives

6.1.2 Reviewers

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

Function	Individual	Area
Finance	Fowler, Keith	All
Regulatory	Zschokke, Peter	All
Jurisdictional Delegate	Fromm, Walter	Gas - NE
Procurement	Curran, Art	All
Control Center	Amerige, Thomas	All

Short Form Sanction Paper



7 Decisions

I:

- (a) APPROVE this paper and the investment of \$3.015M and a tolerance of +/-10%
- (b) NOTE that Jackson Lehr is the Project Manager and has the approved financial delegation.

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

James Madej – SVP Chief Customer Officer



Short Form Sanction Paper

8 Other Appendices

N/A

8.1 *Sanction Request Breakdown by Project*

N/A

USSC Closure Paper



Title:	FY2015 Gas Expansion Pilot Program- Rhode Island	Sanction Paper #:	USSC-14-160C
Project #:	C054484, C054487	Sanction Type:	Closure
Operating Company:	The Narragansett Electric Co.	Date of Request:	3/30/17
Author:	Walter Fromm & Jackson Lehr	Sponsor:	Sean Mongan –VP Process & Performance
Utility Service:	Gas	Project Manager:	Jackson Lehr

1 Executive Summary

This paper is presented to close C054484, C054487. The total spend was \$2.864M. The sanctioned amount for this project was \$3.015M.

The final spend amount is \$2.864M broken down into:

\$2.852M Capex

\$0.000M Opex

\$0.012M Removal

With a CIAC/Reimbursement of \$.018M

2 Project Summary

This program involved the installation of new main to serve new customers as part of the FY2015 Gas Expansion Pilot Program. It was anticipated that the proposed \$3.000M will fund the installation of roughly 20,000 feet of new gas main to provide access to gas for approximately 400 potential customers, of which approximately 100 will initially take service. It is important to note that this was a pilot program testing a new approach to gas expansion, aligned with the strategic build-out approach. Results could vary significantly depending on a number of factors including customer participation and the actual combination of projects pursued.



USSC Closure Paper

3 Over / Under Expenditure Analysis

3.1 Summary Table

Actual Spending (\$M)			
Project #	Description		Total Spend
C054484	FY2015 Rhode Island Gas Expansion Pilot Program	Capex	2.852
		Opex	0.000
		Removal	0.012
		Total	2.864
Project #	Description		Total Spend
C054487	FY2015 Rhode Island Gas Expansion Pilot Program	Capex	0.000
		Opex	0.000
		Removal	0.000
		Total	0.000
Total		Capex	2.852
		Opex	0.000
		Removal	0.012
		Total	2.864

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	3.015
		Opex	0.000
		Removal	0.000
		Total Cost	3.015
Sanction Variance (\$M)			Total Spend
		Capex	0.163
		Opex	0.000
		Removal	(0.012)
		Total Variance	0.151

3.2 Analysis

The FY2015 Rhode Island Gas Expansion Pilot Program Specific is 5% under plan which is within the tolerance level.



USSC Closure Paper

4 Improvements / Lessons Learned/Root Cause

- Work with Finance and Resource Planning to create better financial metrics.

5 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed (1)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed (2)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database (3)	<input type="radio"/> Yes <input checked="" type="radio"/> No

(1) All work orders and funding projects have been closed

Program/Blanket projects may contain work orders and or funding projects which have not yet been closed for reasons including but not limited to:

- the same work order(s) are used annually. They will remain open until Asset Management and/or Resource Planning have determined work orders are no longer needed .
- construction may cross multiple fiscal years
- the work order closing process is within the late charge waiting period
- other accounting processes or final system closing activities have not yet completed

The Program/Blanket projects are approved annually for the current year expected spend and remain open until Asset Management and/or Resource Planning have determined the project is no longer required.



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(2) All as-builts have been completed
Program/Blanket projects may contain work orders for which no as-builts have yet been recorded for reasons including but not limited to:

- design and/or construction have not yet completed
- construction may cross multiple fiscal years
- work has completed recently and as-builts have not yet been processed into the system
- does not apply. Work order(s) are not linked to work management systems. (example: Meter Purchases, Meter Changes, AMR Installations Purchase Misc Capital Tools/Equipment, etc.)
- does not apply to Information systems projects.

(3) All lessons learned have been entered appropriately into the lesson learned database

Program/Blanket projects usually contain short cycle work which the Company has been performing over several fiscal years. No new Lessons Learned which have not already been identified and recorded within section 4.

6 Statements of Support

6.1 Supporters

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

Department	Individual	Responsibilities
Investment Planner	Pensabene, Patrick M.	Endorses relative to 5-year business plan or emergent work
Resource Planning	Falls, Jonathon	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Project Management	Fortier, Joseph Jr.	Endorses Resources, cost estimate, schedule
Gas Project Estimation	Paul, Art	Endorses Cost Estimate



USSC Closure Paper

6.2 Reviewers

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

Function	Individual
Finance	Easterly, Patricia
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Currie, John
Procurement	Curran, Art
Control Center	Loiacono, Paul

USSC Closure Paper



7 Decisions

I approve this paper.

Signature *Ross W. Turrini*

Date April 27, 2017

Executive Sponsor – Ross Turrini, Senior Vice President, Gas Process & Engineering
and Chief Gas Engineer



Short Form Sanction Paper

Title:	FY15 Gas Planning - RI	Sanction Paper #:	USSC-14-064
Project #:	CRCC401	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	March 11, 2014
Author:	Adnan Malik / Eric Aprigliano – Director, Long Term Planning and Operations Engineering	Sponsor:	Timothy Small – VP Gas Systems Engineering
Utility Service:	Gas	Project Manager:	Thomas Finneral

1 Executive Summary

1.1 Sanctioning Summary

This paper requests sanction of CRCC401, the System Reliability Program for Rhode Island, in the amount \$1.000M with a tolerance of +/- 10% for the purposes of full implementation.

This sanction amount is \$1.000M broken down into:

\$0.984 Capex

\$0.000 Opex

\$0.016 Removal

1.2 Project Summary

The gas system reliability program is comprised of projects that provide operational benefits to customers beyond those of traditional gas system reinforcement projects, focusing on improving overall system reliability. The overall reliability of a gas distribution system relates its ability to maintain continuous service to existing customers during abnormal operating conditions (e.g., unexpected shutdown of a pipeline facility). Construction of the projects proposed in this program will improve reliability for over 4,000 Rhode Island gas distribution system customers.

2 Project Detail

2.1 Background

The Long Term Planning reliability projects are identified and developed to improve the overall reliability of the company transmission and distribution systems. The Rhode Island distribution network consists of over fifty (50) independent distribution and feeder systems. Pressure and flow on the system is controlled through a network of cascading feeder and distribution systems fed by eighteen (18) take stations and production facilities and consisting of one hundred ninety eight (198) regulator stations.



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Reliability is defined in this context as the likelihood or probability of experiencing customer service outages on all or portions of these systems. The distribution network layout and operation of these systems vary significantly by area. Differences in design practices of legacy companies over many decades have resulted in significant variation in levels of reliability throughout Rhode Island, and the entire US gas distribution service territory. In some cases, expansion of both the customer base and distribution mains has resulted in changes on the system that impact reliability over time (i.e., probability and number of customers at risk increases). Reliability is assessed by reviewing the ability of various operating systems to respond to abnormal operating conditions (e.g., shutdown of pipeline or facility). Gas system reliability concerns include transmission and distribution systems with limited number of feeds (i.e., take stations or regulator stations), systems that are either weakly integrated or consist of long single-feed laterals, networks that contain a wide variety of operating pressures, pressure regulating equipment in areas prone to flooding, and varying design philosophies associated with system and equipment redundancy (e.g., production plants, take stations, regulator stations).

Reliability projects which improve reliability and operation of the distribution system in a cost-efficient manner are identified and proposed for construction. Prospective projects are evaluated for additional system benefits and synergy with other proposed capital projects and often have the added benefit of increasing system capacity and improving operability of the network. In addition, many of these projects also create the opportunity to replace or abandon leak-prone pipe, providing a benefit to the integrity program or be combined with public works activities.

2.2 Drivers

The goal and primary driver of the program is to improve overall system reliability. This year's program improves reliability for approximately 4,800 existing customers. The program includes a variety of types of projects that create flexibility in how the system is operated and adaptability for abnormal system operation scenarios.

A major driver in the FY 2014/15 Program looks to improve reliability in operability and maintenance of system regulators under adverse conditions while removing risks of customer outages. One project hopes to integrate a single-feed system into other nearby larger system. There is a significant reliability benefit achieved in reducing the number of isolated systems that exist by connecting them to larger systems. The three (3) major benefits are: first, it creates new connections into distribution systems for better supply into the system; second, it reduces the possibility of customer outages in the event of a regulator abnormal operation issue or third-party damage; and third, in some cases a regulator can be abandoned once the isolated system is connected to the larger distribution system, reducing O&M costs. Another project in the FY2014/15 reliability program looks to increase reliability by other means as it cannot be integrated with other systems due to locations. This project relocates pressure-regulating equipment out of flood zones that are known to be adversely affected during periods of



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extreme flooding. While not only increasing operability, this project looks to decrease deterioration of pipeline and facility assets.

2.3 Project Description

The gas planning program includes the design, procurement, construction, testing, and completion of capital projects. A full list of the Gas Planning Reliability Program projects for RI is in Appendix 1. The projects, totaling \$1.000M, are organized by the following work types:

- **Flood Zone Remediation– One (1) Project \$0.61M**
This is a carry-over project addressing pipeline facilities (district regulators) that have experienced severe flooding and that would impact a substantial number of customers if out of service. This year's regulator relocation/reconfiguration projects address reliability concerns that arose at the Canal Street take station in Westerly, Rhode Island, during the severe flood that occurred in the spring of 2010. This involves the installation of three (3) prefabricated vaults, purchased in FY13/14, for the relocation of regulator stations RIS-OOBH, RIS-OOBL, & RIS-OOG along with 2,855ft of new pipe, and the abandonment of 1,282ft of "leak-prone" pipe.
- **Take Station – One (1) Project \$0.20M**
As part of a LNG pressure In activating the Manchester St Take Station as a supply point into the Rhode Island 99 psig distribution system, Spectra will be completing a majority of the work under the AIM Project. However, supplementary work and support would be required by National Grid personnel and engineering that would facilitate the operability of the take station coincidentally with Spectra.
- **Single Feed System Elimination – One (1) Project - \$0.11M**
There are currently over 150 distribution systems fed by a single district regulator across the U.S. distribution system, with 27 in the legacy Rhode Island Company. This project improves overall reliability by working towards reducing that number. Projects typically involve eliminating the district regulator and uprating the downstream distribution system or providing an additional feed for the system (e.g., making new main connection from an adjacent system with similar MAOP). When the project involves an uprating, system capacity is also improved, which enables the addition of new customers without reinforcement. This year's Rhode Island project is the second phase towards eliminating the Warren low-pressure single feed system by relaying and integrating into the Bristol-Warren 60 psig system.
- **Engineering Costs for Fiscal Year 2016 Projects Placeholder - \$0.08M**
These costs are for engineering and design of complex projects identified for FY16 construction. The Level 1 estimate was determined by Project Engineering and based on historical data.



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2.4 Benefits

In summary, the above mentioned work will improve reliability to approximately 4,800 customers. The relocation/reconfiguration of three (3) district regulators also benefits System Integrity's risk assessment program and the replacement of over 1,200ft of leak-prone pipe.

2.5 Business & Customer Issues

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

2.6 Alternatives

Alternative 1: Do Nothing/Deferral

The consequences of not completing the proposed work would result in a failure to take advantage of cost-effective ways to improve distribution system reliability in a proactive manner as discussed above. It could also potentially result in disruption of service for up to approximately 4,440 customers with adverse operation conditions.

2.7 Investment Recovery

Investment recovery will be through standard rate recovery mechanisms.

2.7.1 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.210M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.

3 Related Projects, Scoring, Budgets

3.1 Summary of Projects

Project Number	Project Title	Estimate Amount (\$M)
CRCC401	Gas Planning Reliability	1.000
Total		1.000

3.2 Associated Projects

NA

3.3 Prior Sanctioning History

NA



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3.4 Category

Category	Reference to Mandate, Policy, or NPV Assumptions
<input type="radio"/> Mandatory	National Grid's goal is to operate a reliable gas distribution system and thus maintain continuous, uninterrupted service to all customers throughout the year.
<input checked="" type="radio"/> Policy- Driven	
<input type="radio"/> Justified NPV	

3.5 Asset Management Risk Score

Asset Management Risk Score: 34

Primary Risk Score Driver: (Policy Driven Projects Only)

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

3.6 Complexity Level

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

Complexity Score: _____

4 Financial

4.1 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY15-FY19 Capital Plan - Gas	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	\$0.00M

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

4.2 CIAC / Reimbursement

NA



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4.3 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						Total
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
CRCC401	Gas Planning Reliability	+/- 10%	CapEx	-	0.984	-	-	-	-	-	0.984
			OpEx	-	-	-	-	-	-	-	
			Removal	-	0.016	-	-	-	-	0.016	
			Total	-	1.000	-	-	-	-	1.000	
Total Project Sanction			CapEx	-	0.984	-	-	-	-	-	0.984
			OpEx	-	-	-	-	-	-	-	-
			Removal	-	0.016	-	-	-	-	-	0.016
			Total	-	1.000	-	-	-	-	1.000	

4.4 Project Budget Summary Table

Project Costs Per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
CapEx	0.000	0.984	0.000	0.000	0.000	0.000	0.000	0.984
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.016	0.000	0.000	0.000	0.000	0.000	0.016
Total Cost in Bus. Plan	0.000	1.000	0.000	0.000	0.000	0.000	0.000	1.000

Variance (Business Plan-Project Estimate)

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

5 Key Milestones

Milestone	Target Date: (Month/Year)
Sanctioning Approval	03/2014
Begin Construction	04/2014
Projects in Service	11/2014
Construction Complete	03/2015
Project Closeout	07/2015

6 Statements of Support

6.1.1 Supporters

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



Short Form Sanction Paper

Role	Individual	Responsibilities
Sponsor / Process Owner	Small, Timothy	Endorses the project aligns with jurisdictional objectives.
Investment Planner	Pensabene, Patrick	Endorses relative to 5-year business plan or emergent work.
Resource Planner	Georgacopoulos, Artie	Endorses resources, cost estimate, schedule, and portfolio alignment.
Project Management	Glenning, Daniel	Endorses resources, cost estimate, and schedule.

6.1.2 Reviewers

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

Reviewer List	Individual
Finance	Fowler, Keith
Regulatory	Zschokke, Peter
Jurisdictional Delegates	Fromm, Walter
Procurement	Curran, Art
Control Center	Amerige, Thomas



Short Form Sanction Paper

7 Decisions

I:

- (a) APPROVE this paper and the investment of \$1.000M and a tolerance of +/- 10%
- (b) NOTE that Thomas J Finneral is the Project Manager and has the approved financial delegation.

Signature.....

Date.....

Executive Sponsor – Marie Jordan, Senior Vice President Network Strategy



Short Form Sanction Paper

8 Other Appendices

8.1 Sanction Request Breakdown by Project

Appendix 1 – FY15 Rhode Island Reliability Projects

Work Type	Town	Project Description	Length	Size	Mat1	MAOP	Project Estimate	Estimate Level	Reason for Project
Take Station	Providence	Manchester St Gate Station 99# distribution system outlet activation. Associated engineering and labor work not covered by Spectra.				99	\$200,000	0	Project improves reliability by reducing dependency on Providence LNG facility pressure support.
Single Feed Elimination	Warren	Relay of Phase 2 of 4 for Market @ Kick LP single-feed regulator(RBWD14) abandonment. Relay: • Approx. 595ft of 4-in PE LP main with 2-in PE 60# main in Kickemuit Rd from Metacom Ave to EOM (7 svc). • Repressure test 355ft of 4-in PE LP to 60# main in Cornell Ave from Kickemuit to EOM (8 svc). • Repressure test 260ft of 6-in PE LP to 60# main in St Theresa Dr from Kickemuit to EOM (5 svc).	595	2	PL	60	\$114,650	0	2nd phase of project to eliminate Warren LP system
Reg - Modify	Westerly	Relocate the two 60 psig regulators and one LP regulator on Canal St to higher ground 500' up Friendship St, which involves installing 2,000' of inlet/outlet main.	2,855	4, 8, 12	PL, CS	99, 60, LP	\$610,341	1	Flood zone remediation. Carryover costs from incomplete project in 2013/14.
Engineering	Various	Engineering costs associated with 2015 projects					\$75,000	1	Engineering for 2015 projects



Short Form Sanction Paper

Appendix 2 – Outage Restoration Costs

Estimates for relighting customers and recovering from a system outage have been prepared to quantify the impact of outages related to insufficient system capacity during periods of peak demand and severe winter cold.

Actual relight costs have been captured from recent incidents to quantify company expenses related to restoring service. These were all related to outages that occurred for reasons other than insufficient system capacity and operations were conducted under benign weather conditions. It is likely that during severe winter weather, costs would increase.

Claims related to frozen buildings, burst pipes and equipment damage due to a lack of heat during severe cold weather were captured from the only incident in recent times the company experienced – e.g. the outage in Hull, Ma during the peak day of January 16th, 2004.

Relight Costs

Tiverton (2008): 900 customer outage with relight costs of \$322,839 for an average relight cost of \$358.71 per customer.

Cutchoque (2003): 1,800 customer outage with relight costs of \$2,367,401 with an average relight cost of \$1,315.22

Glen Cove (2008): 1,016 customer outage with relight costs of \$275,000 for an average relight cost of \$270.67 per customer

Westerly, RI (2011): 1,686 customer outage with relight costs of \$2,811,455 for an average relight cost of \$1,667.53 per customer

Average cost to relight for combined instances above equals \$1069 per customer

Claims

Hull (2004): 297 customers affected with claims totaling \$206,336 for an average claim of \$694.73 per customer

Combined cost of relight and claims

The combined cost of relighting customers and resolving claims averages out to \$1,764 per customer.

Recognizing the amount of variability in different incidents such as weather conditions, different types of neighborhoods, variable labor costs, economies of scale, etc., for purposes of evaluating the benefits of reinforcement projects, an average value of service restoration costs and claims of \$1,000 per customer is used.

Appendix 3 – Complex Project Estimating Levels

Estimate Level	Definition	Performed By (as appropriate)	Cost Estimate Basis	Applicability
Level I <ul style="list-style-type: none"> • Strategy • Analysis • Decision 	A strategy is developed to meet future system needs by the project sponsor. Analysis of alternatives ultimately leads to a decision to execute a project. The sponsor develops a scope document meeting their requirements and collaboratively seeks to satisfy the requirements of other stakeholders in the project. Project objectives are stated in the document and a preliminary investigation has shown that the project is feasible. The project objectives are well defined but key components of the design and construction are not clearly defined since no detailed design has been done. Stakeholders will include but are not be limited to Network Strategy, Project Management (PM Projects), Construction Instrumentation & Regulation and Field Operations.	Integrity, Reliability Planning, Sales, Production, PED, PM (for PM projects)	Conceptual Based on historical information such as unit cost or a similar project. Estimate accuracy +/- 50%.	Level I estimates may typically be found in 5 year plans
Level II <ul style="list-style-type: none"> • 30% Design 	A level II estimate meets the requirements of the stakeholders. Most permit requirements have been identified and costs associated with materials are being refined. Some but not all constructability issues have been identified. Test holes have been used, where necessary, to determine field conditions.	PE&D, CDC (Growth Projects), Construction, PM for PM Projects	Based on 30% Design Estimate accuracy +/- 25%.	Level II estimates may typically be available for projects occurring in 2 to 3 years.
Level III <ul style="list-style-type: none"> • 100% Design 	A level III estimate includes all materials, expected permit costs, and costs associated with field conditions. The job site specific conditions have been identified utilizing mapping, survey, and combined with the previously obtained test hole information. Permit applications for sanctioned projects are submitted for long lead permits. Requests for long lead permits for projects that do not require sanctioning will be submitted. Applications for easements/ right of ways are submitted.	PE&D, CDC (Growth Projects), Construction, PM for PM Projects	Based on 100% Design Estimate accuracy +/- 15%.	Level III estimates may typically be available for projects scheduled for construction in 1 to 2 years.
Level IV <ul style="list-style-type: none"> • Projection to Build 	At this level Engineering is 100% complete. Resources have been identified to construct the project. Estimates/bids from in-house Construction, contractors and other in-house implementing groups based on identified/observed field conditions, permit stipulations, etc. are in hand. The costs of special items such as easements, permits, etc. are known. The compilation of these estimates/bids will become the basis for the Projected Spend for the project.	PM (when managed by PM), Process Owner, PE&D, I&R, Production and Construction	100% Design plus bids, permit fees Estimate accuracy +/- 10%.	Level IV (includes proposed start date)

USSC Closure Paper



Title:	FY15 Gas Planning - RI	Sanction Paper #:	USSC-14-064C
Project #:	C029210, C033090, C048063, CON0036, CRCC401	Sanction Type:	Closure
Operating Company:	The Narragansett Electric Co.	Date of Request:	March 30, 2017
Author:	A. Malik	Sponsor:	J. Stavrakas – VP Gas Asset Management
Utility Service:	Gas	Project Manager:	W. Mycroft

1 Executive Summary

This paper is presented to close C029210, C033090, C048063, CON0036, CRCC401. The total spend was \$1.126M. The latest sanctioned amount for this project was \$1.000M.

The final spend amount is \$1.126M broken down into:

*\$1.087M Capex
\$0.000M Opex
\$0.039M Removal*

2 Project Summary

This is the annual sanction closure of the Gas System Reliability Program for Rhode Island. Under this program, projects are completed which focus on improving overall system reliability for a potential of over 4,000 customers impacted if abnormal operating conditions (e.g., unexpected shutdown of a pipeline facility) were to occur. Overall the program was successful and no abnormal system issues arose over 2014-15.

USSC Closure Paper



3 Over / Under Expenditure Analysis

3.1 Summary Table

Actual Spending (\$M)			
Project #	Description		Total Spend
Various (See Appendix)	FY15 Gas Planning - RI	Capex	1.087
		Opex	0.000
		Removal	0.039
		Total	1.126
Total		Capex	1.087
		Opex	0.000
		Removal	0.039
		Total	1.126

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	0.984
		Opex	0.000
		Removal	0.016
		Total Cost	1.000
Sanction Variance (\$M)			Total Spend
		Capex	(0.103)
		Opex	0.000
		Removal	(0.023)
		Total Variance	(0.126)

3.2 Analysis

The total program came in approximately 13% above the sanction approval estimate. The major driver of the total cost variance is due to the largest project, the station relocation in Westerly, having a scope change during construction coordination with the local municipality. This was an unforeseen circumstance that was not captured and lead to a design change. This issue increased project costs by extending the project schedule and lead to an increase in materials and resources. The other projects in the original program sanctioning were deferred in order to minimize overall program costs.

4 Improvements / Lessons Learned

A more stringent review of design with coordination with the municipalities and Construction in order to ensure best information provided for construction. These coordinated efforts would serve to identify possible conflicts ahead of design completion and submittal to construction. Program projects to be scheduled and take place earlier throughout the fiscal year. Bi-Weekly meetings are now conducted by Resource Planning to ensure focus on these projects, establish project schedules and milestones,

USSC Closure Paper



identify and mitigate risks timely, and enable reporting accuracy on progress of projects and the overall program.

5 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed (1)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed (2)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database (3)	<input type="radio"/> Yes <input checked="" type="radio"/> No

- (1) All work orders and funding projects have been closed
Program/Blanket projects may contain work orders and or funding projects which have not yet been closed for reasons including but not limited to:
- the same work order(s) are used annually. They will remain open until Asset Management and/or Resource Planning have determined work orders are no longer needed.
 - construction may cross multiple fiscal years
 - the work order closing process is within the late charge waiting period
 - other accounting processes or final system closing activities have not yet completed

The Program/Blanket projects are approved annually for the current year expected spend and remain open until Asset Management and/or Resource Planning have determined the project is no longer required.

- (2) All as-builts have been completed
Program/Blanket projects may contain work orders for which no as-builts have yet been recorded for reasons including but not limited to:
- design and/or construction have not yet completed

USSC Closure Paper



- construction may cross multiple fiscal years
- work has completed recently and as-builts have not yet been processed into the system
- does not apply. Work order(s) are not linked to work management systems. (example: Meter Purchases, Meter Changes, AMR Installations, Purchase Misc Capital Tools/Equipment, etc.)
- does not apply to Information systems projects.

(3) All lessons learned have been entered appropriately into the lesson learned database

Program/Blanket projects usually contain short cycle work which the Company has been performing over several fiscal years. No new Lessons Learned which have not already been identified and recorded within section 4.

6 Statements of Support

6.1 Supporters

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

Department	Individual	Responsibilities
<i>Investment Planner</i>	Pensabene, Patrick	Endorses relative to 5-year business plan or emergent work.
<i>Resource Planning</i>	Vidal, Alfredo	Endorses resources, cost estimate, schedule, and portfolio alignment.
<i>Project Management</i>	Michel, Michael	Endorses resources, cost estimate, and schedule.
<i>Gas Project Estimation</i>	Paul, Art	Endorses cost estimate

6.2 Reviewers

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

Function	Individual
<i>Finance</i>	Easterly, Patricia
<i>Regulatory</i>	Zschokke, Peter
<i>Jurisdictional Delegates</i>	John Currie
<i>Procurement</i>	Curran, Art
<i>Control Center</i>	Loiacono, Paul J.

USSC Closure Paper



7 Decisions

I approve this paper.

Signature *Ross W. Turrini*

Date April 27, 2017

Executive Sponsor – Ross Turrini, Senior Vice President, Gas Process & Engineering
and Chief Gas Engineer

USSC Closure Paper



8 Appendix

Paper Number	FP Proj No	Fp Proj Description	Values			
			Sum of CAP	Sum of COR	Sum of O&M	Sum of Total
USSC-14-064	C029210	CROSS COMPANY PROJECT MANAGEMENT RI	\$ (15)	\$ -	\$ -	\$ (15)
	C033090	RI UPRATINGS/DERATINGS FY09/10	\$ (2,510)	\$ -	\$ -	\$ (2,510)
	C048063	CANAL STREET - REGULATOR RELOC	\$ 42,390	\$ 1,476	\$ -	\$ 43,866
	CON0036	RI-GAS-MAIN REPL-SYSENHAN-RI BLNKT	\$ 112,566	\$ -	\$ -	\$ 112,566
	CRCC401	GAS PLANNING - RELIABILITY-RI	\$ 934,085	\$ 37,959	\$ 0	\$ 972,045
Grand Total			\$ 1,086,516	\$ 39,435	\$ 0	\$ 1,125,952

Funding Project Information				
Description	GRS Heater Program-RI		Funding Proj	CRIC214
Company	5360-Narragansett Electric			
Bus Segment	RIGASD	Last Approved Rev	8	
Budget	CRIC214	Status	open	FP ID 326095568
Department	78155360G - NE I&R	F. P. Type	P_Gas Distribution Construction RI	
Long Description	GRS Heater Program			
Major Location	MASS PLANT - RI (Gas)	Asset Location	RIG1000 - Burriville - 0641	
Asset Loc Det	RIG1000 - Burriville - 0641 - Gas Distribution Mass Accounts			
Notes				
Reason		Approval Group	<none>	
Est Start Date	4/1/2017	Late Charge Wait	0 Months	
Est Complete	3/31/2018	In Service Date		
Est In Service	3/31/2018	Completion Date		
Est Annual Rev		First CPR Month		
Initiated By	DIACOM	Close Date		
Date Suspended		Date Initiated	11/8/2012	

Details

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Class Codes

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<div>Class Codes</div> <table><tr><td>Budget Plant Class</td><td>Gas Distribution PAM</td></tr><tr><td>Send to SE</td><td></td></tr></table> <div>Miscellaneous Billing</div> <table><tr><td>Misc Billing Status</td><td></td></tr></table> <div>Required</div> <table><tr><td>Force Billing Flag</td><td></td></tr><tr><td>RDV Allocation Eligible</td><td></td></tr></table> <div>Sanctioning Data</div> <table><tr><td>DOA Amount</td><td></td></tr><tr><td>Lower Tolerance</td><td></td></tr><tr><td>Strategy Type Name</td><td></td></tr><tr><td>Upper Tolerance</td><td></td></tr></table>		Budget Plant Class	Gas Distribution PAM	Send to SE		Misc Billing Status		Force Billing Flag		RDV Allocation Eligible		DOA Amount		Lower Tolerance		Strategy Type Name		Upper Tolerance	
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Funding Project	Revision	Rev			
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Approval Type	Amount		Send for Approval		
DOA Approval - Manual	\$700,000.00		Refresh		
Status	Sent By	Date Sent	Date Appr		
Approved	Day, Alexander	2/24/2015	3/5/2015		
+ Approver 1 - - - - -		Approver	Required	Date Approver	Authority Limit
		Small, Timothy F	<input checked="" type="checkbox"/>	3/5/2015	\$1,000,000
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Funding Project Information				
Description	Pres Reg Facil - Reactive-RI		Funding Proj	CRIC213
Company	5360-Narragansett Electric			
Bus Segment	RIGASD	Last Approved Rev	5	
Budget	CRIC213	Status	open	FP ID 326095567
Department	78155360G - NE I&R	F. P. Type	P_Gas Distribution Construction RI	
Long Description	Pressure Reg Facilites -reactive			
Major Location	MASS PLANT - RI (Gas)	Asset Location		
Asset Loc Det				
Notes				
Reason		Approval Group	<none>	
Est Start Date	4/1/2017	Late Charge Wait	0 Months	
Est Complete	3/31/2018	In Service Date		
Est In Service	3/31/2018	Completion Date		
Est Annual Rev		First CPR Month		
Initiated By	DIACOM	Close Date		
Date Suspended		Date Initiated	11/8/2012	

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New Approval Type

Funding Project

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Status

Sent By

Date Sent

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Approver 1

Approver

Required

Date Approved

Authority Limit

CRIC213

2

DOA Approval - Manual

\$952,000.00

Approved

Nguyen, Tracy T

5/21/2014

6/17/2014

Barrett, John F

✓

6/17/2014

\$1,000,000

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Funding Project Information				
Description	LNG - Cumberland LNG		Funding Proj	CRLC406
Company	5360-Narragansett Electric			
Bus Segment	RIGASD	Last Approved Rev	7	
Budget	CRLC406	Status	open	FP ID 326095572
Department	61505360G - LNG Operatio	F. P. Type	P_Gas Distribution Construction RI	
Long Description	LNG - Cumberland LNG			
Major Location	MASS PLANT - RI (Gas)	Asset Location		
Asset Loc Det				
Notes				
Reason		Approval Group	<none>	
Est Start Date	4/1/2017	Late Charge Wait	0 Months	
Est Complete	3/31/2018	In Service Date		
Est In Service	3/31/2018	Completion Date		
Est Annual Rev		First CPR Month		
Initiated By	DIACOM	Close Date		
Date Suspended		Date Initiated	11/8/2012	

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DOA Approval - Manual	\$595,000.00		<input type="button" value="Refresh"/>	
Status	Sent By	Date Sent	Date Appr	
Approved	Nguyen, Tracy T	5/21/2014	5/27/2014	
+ Approver 1 -----		Approver	Required	Date Approved Authority Limit
		Su, Fikret	<input checked="" type="checkbox"/>	5/27/2014 \$1,000,000
<div> <input type="button" value="Details"/> <input type="button" value="Accounts"/> <input type="button" value="Contacts"/> <input type="button" value="Class Codes"/> <input type="button" value="Justification"/> <input type="button" value="Tax Status"/> <input type="button" value="Authorizations"/> <input type="button" value="User Comment"/> <input type="button" value="Review"/> <input type="button" value="Related FPs"/> </div> <div> <input type="button" value="Audits"/> <input type="button" value="Delete FP"/> <input type="button" value="Cancel FP"/> <input type="button" value="Suspend FP"/> </div> <div> <input type="button" value="Estimates"/> <input type="button" value="Update"/> <input type="button" value="Print"/> <input type="button" value="Close"/> </div>				
<div> Record <input type="text" value="1"/> of 1 <input type="button" value="K"/> <input type="button" value="K"/> <input type="button" value="K"/> <input type="button" value="K"/> </div>				



Title:	Proactive Pressure Regulator Station Management Program	Sanction Paper #:	USSC-14-053
Project #:	CRIC402	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	February 25, 2014
Author:	Alexander Day – Engineer, Pressure Regulation Engineering	Sponsor:	Timothy F. Small – Vice President, Gas System Engineering
Utility Service:	Gas	Project Manager:	Stephen Greco – Manager, Pressure Regulation Engineering

1 Executive Summary

1.1 Sanctioning Summary

This paper requests sanction of Project # CRIC402 in the amount of \$2.710M with a tolerance of +/- 10% for the purposes of full implementation of the Narragansett Electric Company Proactive Regulator Station Management program.

This sanction amount is \$ 2.710M broken down into:

*\$2.672M Capex
\$0.000M Opex
\$0.038M Removal*

2 Project Detail

2.1 Project Description, Justification, Customer Issues, Drivers and Benefits

Pressure regulating facilities have been designed to safely and reliably control system pressures and maintain continuity of supply during normal and peak gas demand periods. There are 191 facilities in the Rhode Island service territory. All 191 stations have been inspected and risk ranked. Using data from the annual Performance Testing (PT), Cathodic Protection (CP) testing, risk assessments and on-site inspections; technical assessments were made for each pressure regulating station taking into account: pipe and equipment condition, operating pressure, regulator performance, and corrosion data. This information combined with the potential customer impact resulting from a station outage was used to prioritize and schedule projects within the Capital



Improvement Plan in accordance with the National Grid Distribution Integrity Management Plan (DIMP). Key Drivers are asset condition and reliability.

2.2 Alternatives

Recommended Option:

Install work:

This option provides the greatest benefit because it reduces the risk of over-pressurizing the system, improves the operation and performance of these stations, improves the maintainability of these stations and reduces the potential for customer outages.

Alternative (Not Recommended):

Do Nothing/Defer Project:

Doing nothing or deferring this program does not meet our obligation to provide safe and reliable gas service, nor the longer term objective of improving the operation and performance of the pressure regulating stations. The consequences of not completing the work scheduled will result in increased risks associated with the failure of station equipment, and/or the stations associated piping. Specifically, failure to complete identified work would reduce the integrity of the system and potentially result in significant customer outages.

2.3 Investment Recovery

Investment recovery will be through standard rate recovery mechanisms approved by appropriate regulatory agencies. The FY2015 Gas ISR is pending before the Commission, with a scheduled hearing date of March 20, 2014.

2.3.1 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.569M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.



3 Related Projects, Scoring, Budgets

3.1 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
CRIC402	Project Type	Proactive Regulation Stations	2.710
Total			2.710

3.2 Associated Projects

N/A

3.3 Prior Sanctioning History

N/A

3.4 Category

Category	Reference to Mandate, Policy, or NPV Assumptions
<input type="radio"/> Mandatory	National Grid Policy PL-020020 "Design of Gas Regulator Stations"
<input checked="" type="radio"/> Policy- Driven	National Grid Technical Instruction TI-020021 "Design of Gas Regulator Stations"
<input type="radio"/> Justified NPV	



3.5 Asset Management Risk Score

Asset Management Risk Score: 32

Primary Risk Score Driver: (Policy Driven Projects Only)

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

3.6 Complexity Level

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

Complexity Score: _____

4 Financial

4.1 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY15 – FY19_Gas- Budget_File	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	\$0

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

N/A

4.2 CIAC / Reimbursement

\$M	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	Total
		2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	
CIAC/Reimbursement	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000



4.3 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (3M)						Total
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
					2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	
CRIC402	Proactive Regulation Stations	Est Lvl (e.g. +/- 10%)	CapEx	-	2.672	-	-	-	-	-	2.672
			OpEx	-	-	-	-	-	-	-	
			Removal	-	0.038	-	-	-	-	0.038	
			Total	-	2.710	-	-	-	-	2.710	
Total Project Sanction			CapEx	-	2.672	-	-	-	-	-	2.672
			OpEx	-	-	-	-	-	-	-	
			Removal	-	0.038	-	-	-	-	0.038	
			Total	-	2.710	-	-	-	-	2.710	

4.4 Project Budget Summary Table

Project Costs per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
		2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	
CapEx	0.000	2.672	0.000	0.000	0.000	0.000	0.000	2.672
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.038	0.000	0.000	0.000	0.000	0.000	0.038
Total Cost in Bus. Plan	0.000	2.710	0.000	0.000	0.000	0.000	0.000	2.710

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
		2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

5 Key Milestones

Milestone	Target Date: (Month/Year)
Approval	February 2014
Delivery of Materials	April 2014
Start Construction	April 2014
Complete Construction	December 2014
Project Closure	June 2015



6 Statements of Support

6.1.1 Supporters

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

Role	Individual	Responsibilities
<i>Investment Planning</i>	Patrick M. Pensabene	Endorses relative to 5-year business plan or emergent work
<i>Resource Planning</i>	Artie Georgacopoulos	Endorses Resources, cost estimate, schedule, and portfolio alignment

6.1.2 Reviewers

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

Reviewer List	Individual
Finance	Keith Fowler
Regulatory	Peter Zschokke
Jurisdictional Delegate	Walter Fromm
Control Center	Thomas Amerige
Procurement	Art Curran



7 Decisions

I:

- (a) APPROVE this paper and the investment of \$2.710M and a tolerance of +/-10%
- (b) NOTE that Stephen Greco is the Project Manager and has the approved financial delegation.

Signature..........Date 3/28/14
Executive Sponsor – Marie Jordan, Senior VP Network Strategy



8 Other Appendices

Station	Scope of Work	Estimate
RIS-008 Brook @ George (LP), Providence	Prefab Installation	\$350,000
RIS-105 Brook @ George (35 PSIG), Providence	Prefab Installation	\$400,000
RIS-037 Pettaconsett, Warwick	Prefab Installation	\$390,000
RIS-001 Bentley St, East Providence	Prefab Installation	\$360,000
RIS-N204 Old Mill Ln, Middletown	Prefab Installation. Need for reliability	\$300,000
RIN-C041 Lawn @ Lonsdale, Pawtucket	Abandon due to upgrades at Tidewater	\$60,000
RIS-066 Cushing @ Prospect, North Providence	Carryover from FY13/14. Regulator abandonment.	\$60,000
RIS-311 Dey St, East Providence	Carryover from FY13/14. Install relief valve.	\$150,000
Various locations.	Design services & materials purchase for FY15/16	\$640,000
Total		\$2,710,000

8.1 Sanction Request Breakdown by Project

N/A

USSC Closure Paper



Title:	FY15 Proactive Pressure Regulator Station Management Program	Sanction Paper #:	USSC-14-053C
Project #:	CRIC402, C039268, CON0038	Sanction Type:	Closure
Operating Company:	The Narragansett Electric Co.	Date of Request:	11/22/2016
Author:	Anthony DellaCamera	Sponsor:	John S. Stavrakas – Vice President, Gas Asset Management
Utility Service:	Gas	Project Manager:	Bill Mycroft

1 Executive Summary

This paper is presented to close Project # CRIC402,C039268, CON0038. The total spend was \$3.115M. The sanctioned amount for this project was \$2.710M.

The final spend amount is \$3.115M broken down into:

*\$2.978M Capex
\$0.000M Opex
\$0.137M Removal*

2 Project Summary

Pressure regulating facilities have been designed to safely and reliably control system pressures and maintain continuity of supply during normal and peak gas demand periods. There are 191 facilities in the Rhode Island service territory. All 191 stations have been inspected and risk ranked. Using data from the annual Performance Testing (PT), Cathodic Protection (CP) testing, risk assessments and on-site inspections; technical assessments were made for each pressure regulating station taking into account: pipe and equipment condition, operating pressure, regulator performance, and corrosion data. This information combined with the potential customer impact resulting from a station outage was used to prioritize and schedule projects within the Capital Improvement Plan in accordance with the National Grid Distribution Integrity Management Plan (DIMP). Key Drivers are asset condition and reliability.



USSC Closure Paper

3 Over / Under Expenditure Analysis

3.1 Summary Table

Actual Spending (\$M)			
Project #	Description		Total Spend
CRIC402	PRES REG FACIL - PROACTIVE-RI	Capex	3.010
		Opex	0.000
		Removal	0.127
		Total	3.137
Project #	Description		Total Spend
C039268	PRESSURE REGULATING FACILITIES	Capex	(0.032)
		Opex	0.000
		Removal	0.000
		Total	(0.032)
Project #	Description		Total Spend
CON0038	RI-GAS-REGLTR STAT REPL-RI BLANKET	Capex	0.000
		Opex	0.000
		Removal	0.010
		Total	0.010
Total		Capex	2.978
		Opex	0.000
		Removal	0.137
		Total	3.115

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	2.672
		Opex	0.000
		Removal	0.038
		Total Cost	2.710
Sanction Variance (\$M)			Total Spend
		Capex	(0.306)
		Opex	0.000
		Removal	(0.099)
		Total Variance	(0.405)



USSC Closure Paper

3.2 Analysis

In FY15, the budget was set to replace old and high risk stations with prefabricated regulator stations. Some obsolete stations were also abandoned. These stations were replaced or abandoned according to National Grid's Capital Improvement Plan. The overspend was due in large part to carryover costs and project cost overruns. Projects which carried over from previous years added a significant amount of spend to the budget. A process to recognize and offset these costs did not exist. Additionally, several projects overran their allotted budget due to increased contractor costs and field scope changes.

4 Improvements / Lessons Learned

In prior years, as carryover costs approached a level that could push the budget over the allowed variance, nothing was done to offset these costs. Now, the effects of carryover costs on the budget are included in the determination of whether to defer certain planned projects to a future year to mitigate increased spend.

5 Pressure Regulation Engineering is now working closely with Resource Planning and Project Management among other groups to track the money being spent and to improve project forecasts. Committees and meetings have also been set up to proactively manage the entire capital budget. There are monthly Zero Variance and Portfolio Calibration Meetings to review the spend forecast for the fiscal year and adjust it to align with the budget. Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> N/A
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> N/A
All work orders and funding projects have been closed	<input type="radio"/> Yes <input checked="" type="radio"/> N/A
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> N/A
All as-builts have been completed	<input type="radio"/> Yes <input checked="" type="radio"/> N/A
All lessons learned have been entered appropriately into the lesson learned database	<input type="radio"/> Yes <input checked="" type="radio"/> N/A

USSC Closure Paper



- (1) All work orders and funding projects have been closed
Program/Blanket projects may contain work orders and or funding projects which have not yet been closed for reasons including but not limited to:
- the same work order(s) are used annually. They will remain open until Asset Management and/or Resource Planning have determined work orders are no longer needed .
 - construction may cross multiple fiscal years
 - the work order closing process is within the late charge waiting period
 - other accounting processes or final system closing activities have not yet completed

The Program/Blanket projects are approved annually for the current year expected spend and remain open until Asset Management and/or Resource Planning have determined the project is no longer required.

- (2) All as-builts have been completed
Program/Blanket projects may contain work orders for which no as-builts have yet been recorded for reasons including but not limited to:
- design and/or construction have not yet completed
 - construction may cross multiple fiscal years
 - work has completed recently and as-builts have not yet been processed into the system
 - does not apply. Work order(s) are not linked to work management systems. (example: Meter Purchases, Meter Changes, AMR Installations Purchase Misc Capital Tools/Equipment, etc.) does not apply to Information systems projects.

- (3) All lessons learned have been entered appropriately into the lesson learned database

Program/Blanket projects usually contain short cycle work which the Company has been performing over several fiscal years. No new Lessons Learned which have not already been identified and recorded within section 4.

USSC Closure Paper



6 Statements of Support

6.1 Supporters

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

Department	Individual	Responsibilities
Investment Planner	Pensabene, Patrick M.	Endorses relative to the 5-year business plan or emergent work
Resource Planning	Vidal, Alfredo	Endorses resources, cost estimate, schedule and Portfolio Alignment
Project Management	Michel, Michael	Endorses resources, cost estimate, schedule
Gas Project Estimation	Paul, Art	Endorses Cost Estimate

6.2 Reviewers

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

Function	Individual
Finance	Easterly, Patricia
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Currie, John
Procurement	Curran, Art
Control Center	Loiacono, Paul

USSC Closure Paper



7 Decisions

I approve this paper.

Signature *Ross W. Turrini*

Date April 27, 2017

Executive Sponsor – Ross Turrini Senior Vice President, Gas Process & Engineering
and Chief Gas Engineer



Title:	FY 15 System Automation and Control - RI	Sanction Paper #:	USSC-14-057
Project #:	CRGC403	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	March 11, 2014
Author:	Melina Diaconis	Sponsor:	Timothy Small – Vice President, Gas System Engineering
Utility Service:	Gas	Project Manager:	Stephen Greco – Manager, Pressure Regulation Engineering

1 Executive Summary

1.1 Sanctioning Summary

This paper requests the sanction of Project CRGC403 in the amount of \$1.000M with a tolerance of +/- 10% for the purpose of full implementation of the FY 15 Narragansett Electric Company System Automation program.

This sanction amount is \$ **1.000M** broken down into:

- \$1.000M Capex
- \$0.000M Opex
- \$0.000M Removal

1.2 Project Summary

Gas pressure regulating stations without system automation equipment do not provide real time data to Gas Control. This program will increase the level of monitoring and control of gas pressures, temperature, and flow rate at stations.

2 Project Detail

2.1 Background

The company objective is to standardize operations, maintain custody check metering and increase control and monitoring at city gate stations and regulator stations. This program is policy driven and will increase the overall reliability and integrity of the gas



system. Delivering the program supports the Narragansett Electric Company rate case. Program delivery also serves to increase operational understanding of the system to identify abnormal operating conditions and to facilitate a proactive approach to alarm management.

2.2 Drivers

The system automation program supports the Pipeline and Hazardous Materials Safety Administration (PHMSA) requirement that "each operator must provide its controllers with the information, tools, processes and procedures necessary for the controllers to carry out the roles and responsibilities the operator has defined."

2.3 Project Description

This project will install Remote Terminal Units (RTU's) at multiple pressure regulator stations located throughout the Narragansett Electric Company service territory. RTU's are installed locally at the pressure regulating facilities and transmit temperature, pressure, and flow data via cellular or lease-line technology back to the Gas Control Room. In some cases the RTU's can also monitor other sensors such as gas detectors, and intrusion alarms.

2.4 Benefits

Data provided by the RTU's will allow Gas Control to respond to current system operating conditions and remotely adjust the pressure set point at the regulator stations when necessary.

2.5 Customer Issues

Installing automation equipment allows gas control to monitor system performance proactively and address issues before they impact customers.

2.6 Alternatives

Alternative 1: Defer Project

Deferring the project does not meet the long term company objective to actively manage system pressures and leak activity. Also this alternative will leave approximately 50% of this region without remote monitoring and control. Not having



the capability to monitor system pressure in real time increases risk to the gas system and our customers.

2.7 Investment Recovery

Investment recovery will be through standard rate recovery mechanisms.

2.7.1 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.210 million. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.

3 Related Projects, Scoring, Budgets

3.1 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
CRGC403	N/A	System Auto RI	1.000
Total			1.000

3.2 Associated Projects

N/A

3.3 Prior Sanctioning History

N/A

3.4 Category

Category	Reference to Mandate, Policy, or NPV Assumptions
----------	--



<input type="radio"/> Mandatory <input checked="" type="radio"/> Policy- Driven <input type="radio"/> Justified NPV	National Grid Policy PL 030002 – SCADA Instrument & Control requires that new telemetry points are approved by Gas Control in accordance with the U.S. Department of Transportation - Pipeline and Hazardous Materials Safety Administration (PHMSA) Control Room Management standards (49CFR 192.631).
---	---

3.5 Asset Management Risk Score

Asset Management Risk Score: 40

Primary Risk Score Driver: (Policy Driven Projects Only)

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

3.6 Complexity Level

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

Complexity Score:

4 Financial

4.1 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY15 – FY19 Capital Plan - Gas	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	\$0.000M

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

N/A – Consistent with planned amount.



4.2 CIAC / Reimbursement

		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6+	
\$M	Prior Yrs	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	Total
CIAC/Reimbursement	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

4.3 Cost Summary Table

					Current Planning Horizon (\$M)							
Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	Total	
					2014/15	2015/16	2016/17	2017/18	2018/19	2019/20		
CRGC403	System Auto RI	+/- 10%	CapEx	-	1.000	-	-	-	-	-	-	1.000
			OpEx	-	-	-	-	-	-	-	-	
			Removal	-	-	-	-	-	-	-	-	
			Total	-	1.000	-	-	-	-	-	1.000	
Total Project Sanction			CapEx	-	1.000	-	-	-	-	-	1.000	
			OpEx	-	-	-	-	-	-	-	-	
			Removal	-	-	-	-	-	-	-	-	
			Total	-	1.000	-	-	-	-	-	1.000	

4.4 Project Budget Summary Table

Project Costs Per Business Plan

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

Variance (Business Plan-Project Estimate)

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

5 Key Milestones

Milestone	Target Date: (Month/Year)
Develop detailed project list	Completed
Identify I&R resources	March/April 2014
Issue Bid Specification for standard telemetry cabinets	March 2014
Order Equipment	April 2014
Execute Work Plan	April 2014 – March 2015



Milestone	Target Date: (Month/Year)
Closeout	May 2015

6 Statements of Support

6.1.1 Supporters

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

Role	Individual	Responsibilities
<i>Investment Planner</i>	Patrick Pensabene	Endorses relative to 5-year business plan or emergent work
<i>Resource Planning</i>	Artie Georgacopoulos	Endorses Resources, cost estimate, schedule, and Portfolio Alignment

6.1.2 Reviewers

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

Reviewer List	Individual
Finance	Keith Fowler
Regulatory	Peter Zschokke
Jurisdictional Delegate	Walter Fromm
Procurement	Art Curran
Control Center	Thomas Amerige

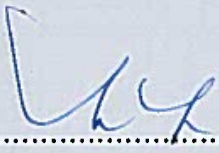



7 Decisions

I:

(a) APPROVE this paper and the investment of \$1.000M and a tolerance of +/-10%

(b) NOTE that Stephen Greco is the Project Manager and has the approved financial delegation.

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

Executive Sponsor – Marie Jordan, Senior Vice President, Network Strategy



8 Other Appendices

8.1 Sanction Request Breakdown by Project

Station	Scope of Work	Cost
RIS-032 Park @ Old Park Cranston	Install Telemetry and Remote Operated Actuating Valve	\$37,000
RIN-C019 Liberty St Central Falls	Install Telemetry and Remote Operated Actuating Valve	\$37,000
RIN-C049 Nate Whipple Highway Cumberland	Install Remote Operated Actuating Valve	\$25,000
RIN-C016 Ann & Hope Way Cumberland	Install Telemetry and Remote Operated Actuating Valve	\$37,000
RIS-069 Middle Rd @ Rte 4 East Greenwich	Install Telemetry and Remote Operated Actuating Valve	\$37,000
RIS-106 Ten Rod @ S. County East Greenwich	Install Remote Operated Actuating Valve	\$25,000
RIS-015 Waterman @ Pawtucket LP East Providence	Install Telemetry and Remote Operated Actuating Valve	\$37,000
RIS-089 Willet @ Forbes 25 psi East Providence	Install Remote Operated Actuating Valve	\$25,000
RIS-071 Willet @ Forbes 5 psi East Providence	Install Telemetry and Remote Operated Actuating Valve	\$37,000
RIS-047 Bullocks Point @ Crescent View East Providence	Install Telemetry and Remote Operated Actuating Valve	\$37,000
RIS-005 Dodge @ Martin East Providence	Install Telemetry and Remote Operated Actuating Valve	\$37,000
RIS-123 South Broadway @ Fort East Providence	Install Telemetry and Remote Operated Actuating Valve	\$37,000
RIS-102 Spring Hill dr Johnston	Install Telemetry and Remote Operated Actuating Valve	\$37,000
RIN-C043 Cobble Hill Rd Lincoln	Install Telemetry and Remote Operated Actuating Valve	\$37,000
RIN-C037 Smithfield Ave Lincoln	Install Telemetry and Remote Operated Actuating Valve	\$37,000
RIS-N221 Maple @ Yarnell Middletown	Install Telemetry and Remote Operated Actuating Valve	\$37,000
RIS-N220 Memorial Blvd @ Annandale Newport	Install Telemetry and Remote Operated Actuating Valve	\$37,000
RIN-C032 Bacon St Pawtucket	Install Telemetry and Remote Operated Actuating Valve	\$37,000
RIN-C025 Daggar Ave Pawtucket	Install Telemetry and Remote Operated Actuating Valve	\$37,000
RIS-N204 Old Mill @ Wapping Portsmouth	Install Telemetry and Remote Operated Actuating Valve	\$37,000
RIS-111 Canal @ Steeple Providence	Install Telemetry and Remote Operated Actuating Valve	\$37,000
RIS-010 Pitman @ Cold Spring Providence	Install Telemetry and Remote Operated Actuating Valve	\$37,000
RIS-109 Dexter @ Dabot Providence	Install Telemetry and Remote Operated Actuating Valve	\$37,000
RIS-091 Sackett @ Niagara Providence	Install Telemetry and Remote Operated Actuating Valve	\$37,000
RIS-TIV2 Evans Ave Tiverton	Install Telemetry and Remote Operated Actuating Valve	\$37,000
RIN-C010 East School St Woonsocket	Install Telemetry and Remote Operated Actuating Valve	\$37,000
RIN-C002 Rockland Ave Woonsocket	Install Telemetry and Remote Operated Actuating Valve	\$37,000
RIN-C001 St James Way Woonsocket	Install Telemetry and Remote Operated Actuating Valve	\$37,000
Total		\$1,000,000

USSC Closure Paper



Title:	FY15 System Automation and Control RI	Sanction Paper #:	USSC-14-057C
Project #:	CRGC403, C039264, CON0064	Sanction Type:	Closure
Operating Company:	The Narragansett Electric Co.	Date of Request:	09/27/16
Author:	Anthony DellaCamera	Sponsor:	John S. Stavrakas – Vice President, Gas Asset Management
Utility Service:	Gas	Project Manager:	Stephen Greco

1 Executive Summary

This paper is presented to close *CRGC403, C039264, and CON0064*. The total spend was \$0.880M. The sanctioned amount for this project was \$1.000M.

The final spend amount is \$0.880M broken down into:

*\$0.880M Capex
\$0.000M Opex
\$0.000M Removal*

2 Project Summary

This project will install Remote Terminal Units (RTU's) at multiple pressure regulator stations located throughout the Narragansett Electric Company service territory. RTU's are installed locally at the pressure regulating facilities and transmit temperature, pressure, and flow data via cellular or lease-line technology back to the Gas Control Room. In some cases the RTU's can also monitor other sensors such as gas detectors, and intrusion alarms.

USSC Closure Paper



3 Over / Under Expenditure Analysis

3.1 Summary Table

Actual Spending (\$M)			
Project #	Description		Total Spend
CRGC403	SYSTEM AUTOMATION-RI	Capex	0.822
		Opex	0.000
		Removal	0.000
		Total	0.822
Project #	Description		Total Spend
C039264	SYSTEM AUTOMATION	Capex	0.060
		Opex	0.000
		Removal	0.000
		Total	0.060
Project #	Description		Total Spend
CON0064	SCADA-OCEAN STATE	Capex	(0.002)
		Opex	0.000
		Removal	0.000
		Total	(0.002)
Total		Capex	0.880
		Opex	0.000
		Removal	0.000
		Total	0.880

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	1.000
		Opex	0.000
		Removal	0.000
		Total Cost	1.000
Sanction Variance (\$M)			Total Spend
		Capex	0.120
		Opex	0.000
		Removal	0.000
		Total Variance	0.120



USSC Closure Paper

3.2 Analysis

The System Automation and Control program for The Narragansett Electric Co. underspent its budget by 12%. The underspend was driven by resource limitations and project estimating. With a limited number of resources available to perform this work, only a portion of the work plan could be completed. Several project estimates were also higher than the actual spend due to overestimating the amount of labor required by National Grid employees.

4 Improvements / Lessons Learned

Increasing the number of available resources and starting work earlier in the year would allow more of the work plan to be completed. Additionally, improved estimating tools would provide a more accurate forecast to mitigate underspending on individual projects.

5 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed (1)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed (2)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database (3)	<input type="radio"/> Yes <input checked="" type="radio"/> No

- (1) All work orders and funding projects have been closed
Program/Blanket projects may contain work orders and or funding projects which have not yet been closed for reasons including but not limited to:

USSC Closure Paper



- the same work order(s) are used annually. They will remain open until Asset Management and/or Resource Planning have determined work orders are no longer needed .
- construction may cross multiple fiscal years
- the work order closing process is within the late charge waiting period
- other accounting processes or final system closing activities have not yet completed

The Program/Blanket projects are approved annually for the current year expected spend and remain open until Asset Management and/or Resource Planning have determined the project is no longer required.

(2) All as-builts have been completed

Program/Blanket projects may contain work orders for which no as-builts have yet been recorded for reasons including but not limited to:

- design and/or construction have not yet completed
- construction may cross multiple fiscal years
- work has completed recently and as-builts have not yet been processed into the system
- does not apply. Work order(s) are not linked to work management systems. (example: Meter Purchases, Meter Changes, AMR Installations Purchase Misc Capital Tools/Equipment, etc.)
- does not apply to Information systems projects.

(3) All lessons learned have been entered appropriately into the lesson learned database

Program/Blanket projects usually contain short cycle work which the Company has been performing over several fiscal years. No new Lessons Learned which have not already been identified and recorded within section 4.

USSC Closure Paper



6 Statements of Support

6.1 Supporters

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

Department	Individual	Responsibilities
Investment Planner	Pensabene, Patrick M.	Endorses relative to the 5-year business plan or emergent work
Resource Planning	Vidal, Alfredo	Endorses resources, cost estimate, schedule and Portfolio Alignment
Project Management	Michel, Michael	Endorses resources, cost estimate, schedule
Gas Project Estimation	Paul, Art	Endorses Cost Estimate

6.2 Reviewers

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

Function	Individual
Finance	Easterly, Patricia
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Currie, John
Procurement	Curran, Art
Control Center	Loiacono, Paul

USSC Closure Paper



7 Decisions

I approve this paper.

Signature *Ross W. Turrini*

Date April 27, 2017

Executive Sponsor – Ross Turrini Senior Vice President, Gas Process & Engineering
and Chief Gas Engineer

Funding Project Information			
Description	Valve installation/Replacement-RI		
Company	5360-Narragansett Electric		
Bus Segment	RIGASD	Last Approved Rev	6
Budget	CRIC215	Status	open
Department	78155360G - NE I&R	F. P. Type	P_Gas Distribution Construction RI
		FP ID	326095569
Long Description	Valve installation/Replacement		
Major Location	MASS PLANT - RI (Gas)	Asset Location	
Asset Loc Det			
Notes			
Reason		Approval Group	<none>
Est Start Date	4/1/2017	Late Charge Wait	0 Months
Est Complete	3/31/2018	In Service Date	
Est In Service	3/31/2018	Completion Date	
Est Annual Rev		First CPR Month	
Initiated By	DIACOM	Close Date	
Date Suspended		Date Initiated	11/8/2012

Details

Accounts

Contacts

Class Codes

Justification

Tax Status

Authorizations

User Comment

Review

Related FPs

Audits

Delete FP

Cancel FP

Suspend FP

Estimates

Update

Print

Close

Record 1 of 1

Funding Project Information	
<div><div>TitleValve installation/Replacement-RI</div><div>Funding ProjectCRIC215</div></div>	
Class Codes	
Budget Plant Class	Gas Distribution PAM
Send to SE	
Miscellaneous Billing	
Misc Billing Status	
Required	
Force Billing Flag	
RDV Allocation Eligible	
Sanctioning Data	
DOA Amount	
Lower Tolerance	.90
Strategy Type Name	
Upper Tolerance	1.10
Indicates Display Only - (d)	
Record 1 of 1	

Details

Accounts

Contacts

Class Codes

Justification

Tax Status

Authorizations

User Comment

Review

Related FPs

Audits

Delete FP

Cancel FP

Suspend FP

Estimates

Update

Print

Close

Funding Project Information

New Approval Type

Budget Version

Default [inactive]

Funding Project

CRIC215

Revision

3

Rev

<

>

Approval Type

DOA Approval - Manual

Amount

\$800,000.00

Send for Approval

Status

Approved

Sent By

Nguyen, Tracy T

Date Sent

5/21/2014

Date Appr

5/29/2014

Refresh

+

Approver 1

Approver

Small, Timothy F

Required

✓

Date Approver

5/29/2014

Authority Limit

\$1,000,000

Details

Accounts

Contacts

Class Codes

Justification

Tax Status

Authorizations

User Comment

Review

Related FPs

Audits

Delete FP

Cancel FP

Suspend FP

Estimates

Update

Print

Close

Record

1

of 1

<

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Short Form Sanction Paper

Title:	Combustible Gas Indicator (CGI) Replacement Project - RI	Sanction Paper #:	USSC-14-025
Project #:	C053373	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	February 4, 2014
Author:	Robert Wilson	Sponsor:	Neil Proudman, Acting VP M&C NY
Utility Service:	Gas	Project Manager:	Michael Gallinaro

1 Executive Summary

1.1 Sanctioning Summary

This paper requests sanction of Project C053373 in the amount \$0.519M with a tolerance of +/- 10% for the purpose of purchasing Combustible Gas Indicators (CGI's).

The sanction amount is \$0.519M broken down into:

*\$0.519M Capex
\$0.000 Opex
\$0.000 Removal
With a CIAC/Reimbursement of \$0.000
With a Salvage Value of \$0.000*

2 Project Detail

2.1 Project Description, Justification, Customer Issues, Drivers and Benefits

Project Description

The purpose of this project is to upgrade and standardize the aging and disparate fleet of combustible gas indicators and instrument management systems to a fail-safe "compliant smart" technology platform that ensures 100% compliance with instrument maintenance and calibration mandates. Combustible gas indicators are one of the most important tools utilized in the gas business. These instruments are the primary tool used to determine and classify gas leaks and ensure employee safety while working on gas systems, entering confined spaces and investigating odor complaints within customer homes and businesses. Proper use of these instruments requires strict calibration and maintenance as prescribed by manufacturer instructions and as mandated in both Federal and jurisdictional code. Combustible Gas Indicator compliance violations (equipment calibration, labeling, process management) is one of the largest non-

Short Form Sanction Paper



compliance issues National Grid faces with up to 30-40% of violation “occurrences” associated with “Instrument Calibration & Verification” in some regions. Recent Internal Audits in all jurisdictions have confirmed the need for immediate improvements in instrument technology and management to ensure public safety and minimize risk of non-compliance.

Justification

Recent industry incidents including the tragic consequences of the San Bruno incident have resulted in a paradigm shift in how the industry views pipeline safety regulatory compliance. Increasing pressure from both policy makers in Washington and regulatory oversight authorities including NTSB and DOT to “hold Operators more accountable for their actions” has resulted in a trickle down effect which is impacting State Regulatory programs and associated penalty structures. Policy makers have committed to “change behavior” of Operators (both gas and liquid pipeline operations) by introducing stiff financial penalties for pipeline safety regulatory compliance violations. Generally, financial penalties were reserved for the most egregious violations that resulted in significant injury or loss of life, loss of property (typically exceeding \$50,000) and/or substantial impacts to the environment. Penalty structures and historical financial penalty action resulting from pipeline safety related audits (both “paper” (record audits) as well as field audits) has historically varied across jurisdictions for National Grid ranging from no fines in New York up through use of Federal guidelines in both MA and RI (typically \$10,000 per violation / \$100,000 for a series of related violations. Recent pipeline safety performance metrics introduced in New York have resulted in some of the most stringent penalty structures in the country with 100 basis points “at risk” (approximately \$18 Million) for BUG. More importantly, in addition to the financial risk, the Company faces substantial reputation risk associated with these potential violations (additional details are provided in Appendix 1).

Benefits

This project will significantly reduce non-compliance events associated with instrument calibration and management by deploying an enhanced “smart” technology that ensures the instrument is properly calibrated prior to use in accordance with all regulatory mandates. The instruments include automatically shutdown if not calibrated within 30 days per the mandate and includes a clock type reminder mechanism to alert the Operator of the calibration requirement. This project has a potential cost avoidance benefit based on new Federal penalty structures for a series of related violations (repeat violations) of up to \$2,000,000 per year.

Short Form Sanction Paper



2.1.1 Alternatives:

Considering the current regulatory environment coupled with recommendations identified in the Compliance Improvement Plan and confirmed by recent Internal Audits, the only recommended option is instrumentation upgrade and replacement to the advanced compliance technology platform.

Note: This recommendation is consistent with a recent UK program (see attached UK Assessment & Sanction Document in Appendix 2).

Alternative 1: Do Nothing – potential to incur financial penalties in excess of \$500,000 annually and risk significant potential reputation damage. Use of an improperly calibrated instrument could lead to public safety risk.

2.2 Investment Recovery

Investment recovery will be through standard rate recovery mechanisms.

2.2.1 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.104M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.

3 Related Projects, Scoring, Budgets

3.1 Summary of Projects:

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
C053373		CGI Replacement Program - RI	0.519
Total			0.519



Short Form Sanction Paper

3.2 Associated Projects:

Project Number	Project Title	Estimate Amount
Total		\$ -

3.3 Prior Sanctioning History (including relevant approved Strategies):

Date	Governance Body	Sanctioned Amount	Paper Title	Sanction Type

3.4 Category:

Category	Reference to Mandate, Policy, or NPV Assumptions
<input checked="" type="radio"/> Mandatory <input type="radio"/> Policy- Driven <input type="radio"/> Justified NPV	This project is necessary for compliance with mandated federal and jurisdictional code requirements associated with ensuring calibration of combustible gas analysis instrumentation. There is potentially hundreds of thousands of dollars in violation fine avoidance annually by migrating to a "fail safe" compliance technology platform. The UK recently standardized on the same technology and this program is part of the US Gas Business Compliance Improvement Plan; required to resolve several internal audit findings/commitments.

3.5 Asset Management Risk Score

Asset Management Risk Score: 49

Primary Risk Score Driver: (Policy Driven Projects Only)

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



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3.6 Complexity Level:

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

Complexity Score: 15

4 Financial

4.1 Business Plan:

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY14 - FY18 Budget File - Gas	<input type="radio"/> Yes <input checked="" type="radio"/> No	<input checked="" type="radio"/> Over <input type="radio"/> Under <input type="radio"/> NA	\$0.519M

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

Reallocation of funds within the portfolio will be managed by Resource Planning to meet jurisdictional budgetary, statutory and regulatory requirements.

4.2 CIAC / Reimbursement

\$M	Prior Yrs	Yr. 1 2013/14	Yr. 2 2014/15	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	Total
CIAC/Reimbursement	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000



Short Form Sanction Paper

4.3 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						Total
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
C053373	CGI Replacement Program - RI	+/- 10%			2013/14	2014/15	0	0	0	0	
			CapEx	-	-	0.519	-	-	-	-	0.519
			OpEx	-	-	-	-	-	-	-	-
			Removal	-	-	-	-	-	-	-	-
			Total	-	-	0.519	-	-	-	-	0.519
Total Project Sanction			CapEx	-	-	0.519	-	-	-	-	0.519
			OpEx	-	-	-	-	-	-	-	-
			Removal	-	-	-	-	-	-	-	-
			Total	-	-	0.519	-	-	-	-	0.519

4.4 Project Budget Summary Table

Project Costs per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
		2013/14	2014/15	0	0	0	0	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
		2013/14	2014/15	0	0	0	0	
CapEx	0.000	0.000	(0.519)	0.000	0.000	0.000	0.000	(0.519)
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	(0.519)	0.000	0.000	0.000	0.000	(0.519)

5 Key Milestones:

Milestone	Target Date: (Month/Year)
Sanction Project	February 2014
Secure Purchase Order	February 2014
Deliver Instruments & Deploy	June 2014
Closure Paper	August 2014



Short Form Sanction Paper

6 Statements of Support

6.1.1 Supporters

Role	Name	Responsibilities
<i>Investment Planning</i>	Patrick Pensabene	Endorses relative to 5-year business plan or emergent work
<i>Resource Planning</i>	Artie Georgacopoulos	Endorses Resources, cost estimate, schedule and Portfolio Alignment

6.1.2 Reviewers


Reviewers read the paper for content / language and recommends edits if necessary.

Reviewer List	Name
Finance	Keith Fowler
Regulatory	Benjamin Ryan
Jurisdictional Delegates	Walter Fromm
Control Center	Thomas Amerige
Procurement	Art Curran

Short Form Sanction Paper



7. Decisions:

I:
(a) APPROVE this paper and the investment of \$0.519M and a tolerance of +/- 10%.
(b) NOTE that Michael Gallinaro is the Project Manager and has the approved financial delegation.
Signature..... Date <u>2-5-14</u>
Executive Sponsor – John Donleavy, Chief Operating Officer

Short Form Sanction Paper



8. Other Appendices:

Appendix 1 – Executive Summary & Instrument Evaluation Study

Appendix 2 – UK Sanction Paper Reference

8.1 Sanction Request Breakdown by Project (Partial Sanction only)

N/A

Closure Paper



Title:	Combustible Gas Indicator (CGI) Replacement Project - RI	Sanction Paper #:	USSC-14-025C
Project #:	C053373	Sanction Type:	Closure
Operating Company:	The Narragansett Electric Co.	Date of Request:	10/10/2017
Author:	Michael Gallinaro	Sponsor:	Neil Proudman, NE Gas Ops & Construction VP
Utility Service:	Gas	Project Manager:	Michael Gallinaro

1 Executive Summary

This paper is presented to close C053373. The total spend was \$0.570M. The sanctioned amount for this project was \$0.519M.

The final spend amount is \$0.570M broken down into:

*\$0.570M Capex
\$0.000M Opex
\$0.000M Removal*

2 Project Summary

The purpose of this project is to upgrade and standardize the aging and disparate fleet of combustible gas indicators and instrument management systems to a fail-safe "compliant smart" technology platform to enable compliance with instrument maintenance and calibration mandates. Combustible gas indicators are one of the most important tools utilized in the gas business. These instruments are the primary tool to determine and classify gas leaks and ensure employee safety while working on gas systems, entering confined spaces and investigating odor complaints within customer homes and businesses. Proper use of these instruments requires strict calibration and maintenance as prescribed by manufacturer instructions and as mandated in both Federal and jurisdictional code. Combustible gas indicator compliance violations (equipment calibration, labeling, process management) are among the largest non-compliance issues National Grid faces, with up to 30-40% of violation "occurrences" associated with "Instrument Calibration & Verification" in some regions. Recent Internal Audits in all jurisdictions have confirmed the need for immediate improvements in instrument technology and management to improve safety and minimize risk of non-compliance.

Closure Paper



3 Over / Under Expenditure Analysis

3.1 Summary Table

Actual Spending (\$M)			
Project #	Description		Total Spend
C053373	CGI Deployment	Capex	0.570
		Opex	0.000
		Removal	0.000
		Total	0.570
Total		Capex	0.570
		Opex	0.000
		Removal	0.000
		Total	0.570

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	0.519
		Opex	0.000
		Removal	0.000
		Total Cost	0.519
Sanction Variance (\$M)			Total Spend
		Capex	(0.051)
		Opex	0.000
		Removal	0.000
		Total Variance	(0.051)

3.2 Analysis

The variance is (9.8%) which is within the tolerance of +/- 10%.



Closure Paper

3.3 Schedule Variance

Schedule Variance	
Project Grade - Ready for Use Date	6/1/2014
Actual Ready for Use Date	11/20/2015
Schedule Variance	1 years, 5 months, 19 days

4 Improvements / Lessons Learned/Root Cause

- Improve development of estimating practices.
- Work with Finance and Resource Planning to create better financial metrics.
- Create Long Term resource requirements for future Capital planning.
- Identify carryover or deferred projects in a timely fashion.

5 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed	<input checked="" type="radio"/> Yes <input type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed	<input checked="" type="radio"/> Yes <input type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database	<input checked="" type="radio"/> Yes <input type="radio"/> No

Closure Paper



6 Statements of Support

6.1 **Supporters**

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

Department	Individual	Responsibilities
<i>Investment Planning</i>	Patrick Pensabene, Philip Quan	Endorses relative to 5-year business plan or emergent work
<i>Resource Planning</i>	Jonathan Falls	Endorses resources, cost estimate, schedule and portfolio alignment
Project Management	Joseph Fortier	Endorses resources, cost estimate, schedule
Gas Project Estimation	Art Paul	Endorses cost estimate

6.2 **Reviewers**

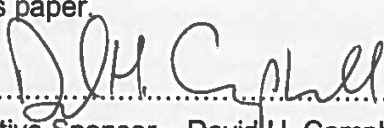
The reviewers have provided feedback on the content/language of the paper.

Function	Individual
Finance	Felicia Midkiff
Regulatory	Renee Gurry
Jurisdictional Delegate	John Currie
Procurement	Art Curran
Control Center	Paul Loiacano

Closure Paper



7 Decisions

I approve this paper.	
Signature..... 	Date... 10/13/17...
Executive Sponsor – David H. Campbell, Vice President ServCo Business Partnering, USSC Chair	



Short Form Sanction Paper

Title:	FY 15 Purchase Misc Capital Tools & Equipment – RI	Sanction Paper #:	USSC-14-151
Project #:	CRNC501, CRCC501, CRSC501, CRFC501	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Co	Date of Request:	March 25, 2014
Author:	S.T. Catapano	Sponsor:	N. Proudman – VP Maintenance & Construction NE
Utility Service:	Gas	Project Manager:	S.T. Catapano

1 Executive Summary

1.1 Sanctioning Summary

This paper requests sanction of Projects CRNC501, CRCC501, CRSC501, CRFC501 in the amount \$1.082M and a tolerance of +/- 10% for the purposes of Purchasing Miscellaneous Capital Tools & Equipment

This sanction amount of \$1.082M is broken down as follows:

- \$1.082M Capex
- \$0.000M Opex
- \$0.000M Removal

1.2 Project Summary

Purchase Miscellaneous Capital Tools and Equipment that are not used for specific projects. These items support the safe, efficient and on-going day-to-day operations of the gas business unit.

2 Project Detail

2.1 Background

Current Company policy capitalizes general tool and/or equipment purchases subject to predetermined minimal dollar thresholds (\$200 for The Narragansett Electric Company). Such general equipment includes tooling (hand, power, pneumatic, hydraulic, etc.), specialty equipment, PPE, office machines, electronic data processing equipment and software applications, shop and garage equipment and communications. The Purchase Miscellaneous Capital Tools and Equipment line item captures the above mentioned items that are not used for specific projects but rather support the safe, efficient and on-going day-to-day operations of the gas business unit. Purchase of miscellaneous Capital Tools and Equipment are blanket project numbers that are budgeted based on



Short Form Sanction Paper

historical funding due to the inability to associate this equipment with any one specific project.

2.2 Drivers

Generally speaking maintenance of on-going operations to assure safety, compliance and commitments to Customer needs and expectations are the primary generic drivers. This budget item is typically used to assure that process related initiatives and subsequent goals are achieved. Funds from this budget line item support significant tasks that support the entire Gas organization. These items relate to safety (e.g. mechanized maintenance of traffic devices, worker safety enhancements etc.), climate change (e.g. apparatus to minimize emissions through natural gas drawdown operations), support of new, emerging and on-going technologies (e.g. capital spares and parts for trenchless and keyhole technologies) and initiation of innovative applications of core technologies that will expectedly lead to improved operations.

2.3 Project Description

Purchase Miscellaneous Capital Tools and Equipment that are not used for specific projects but rather support the safe, efficient and on-going day-to-day operations of the gas business unit.

2.4 Benefits

This budget line items supports our on-going ability to provide timely service to Customers and Regulators.

2.5 Business Issues

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

2.6 Alternatives

Alternative 1: Reduce Request – not recommended

Reducing the budget line item is not recommended because funds allocated here drive process changes that support new initiatives and productivity improvements throughout Gas distribution organization.

2.7 Investment Recovery

The general capital tool and equipment costs are recovered as part of the rate recovery for non-growth capital expenditures. There are no capital trackers associated with this budget line item.



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2.7.1 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.227M. This is indicative only. The actual revenue requirement will differ depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in the rate base.

3 Related Projects, Scoring, Budgets

3.1 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
CRFC501,CRCC501, CRSC501,CRNC501		Purchase Misc Tools and Equipment	1.082
Total			1.082

3.2 Associated Projects

None

3.3 Prior Sanctioning History

None

3.4 Category

Category	Reference to Mandate, Policy, or NPV Assumptions
<input type="radio"/> Mandatory	
<input checked="" type="radio"/> Policy- Driven	
<input type="radio"/> Justified NPV	

3.5 Asset Management Risk Score

Asset Management Risk Score: 36

Primary Risk Score Driver: (Policy Driven Projects Only)

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



Short Form Sanction Paper

3.6 Complexity Level

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

Complexity Score: _____

4 Financial

4.1 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY15 – FY19 Gas Budget File	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input checked="" type="radio"/> Under <input type="radio"/> NA	\$0.000M

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

N/A

4.2 CIAC / Reimbursement

\$M	Prior Yrs	Yr. 1 2014/15	Yr. 2 2015/16	Yr. 3 2016/17	Yr. 4 2017/18	Yr. 5 2018/19	Yr. 6 + 2019/20	Total
CIAC/Reimbursement	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

4.3 Cost Summary Table

					Current Planning Horizon (\$M)						
Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	Total
CRFC501,CRCC501,CRSC501,CRNC501	Purchase Misc Tools and Equipment	+/- 10%)	CapEx	-	1.082	-	-	-	-	-	1.082
			OpEx	-	-	-	-	-	-	-	
			Removal	-	-	-	-	-	-	-	
			Total	-	1.082	-	-	-	-	-	1.082
Total Project Sanction			CapEx	-	1.082	-	-	-	-	-	1.082
			OpEx	-	-	-	-	-	-	-	
			Removal	-	-	-	-	-	-	-	
			Total	-	1.082	-	-	-	-	-	1.082



Short Form Sanction Paper

4.4 Project Budget Summary Table

Project Costs Per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2014/15	Yr. 2 2015/16	Yr. 3 2016/17	Yr. 4 2017/18	Yr. 5 2018/19	Yr. 6 + 2019/20	
CapEx	0.000	1.082						1.082
OpEx								
Removal								
Total Cost in Bus. Plan	0.000	1.082						1.082

Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2014/15	Yr. 2 2015/16	Yr. 3 2016/17	Yr. 4 2017/18	Yr. 5 2018/19	Yr. 6 + 2019/20	
CapEx	0.000	0.000						0.000
OpEx								
Removal								
Total Cost in Bus. Plan	0.000	0.000						0.000

5 Key Milestones

Milestone	Target Date: (Month/Year)
Project Sanction	5/2014
Project Closure	6/2015

6 Statements of Support

6.1.1 Supporters

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

Role	Individual	Responsibilities
Investment Planner	Patrick Pensabene	Endorses relative to 5 yr business Plan or emergent work
Resource Planning	Artie Georgacopoulos	Endorses resource, cost estimate, schedule and portfolio alignment
Project Management	Daniel Glenning	Endorses resource, cost estimate and schedule



Short Form Sanction Paper

6.1.2 Reviewers

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

Reviewer List	Individual
Finance	Keith Fowler
Regulatory	Peter Zschokke
Jurisdictional Delegate Gas - NE	Walter Fromm
Procurement	Arthur Curran
Control Center	Thomas Amerige



Short Form Sanction Paper

7 Decisions

- (a) **APPROVE** this paper and the investment of \$1.082M and a tolerance of +/-Y 10%
- (b) **NOTE** that S.T. Catapano is the Project Manager and has the approved financial delegation.

Signature..........Date.....4-4-14.....
John Donleavy
EVP & Chief Operating Officer
US Operations



Short Form Sanction Paper

8 Other Appendices

None

8.1 *Sanction Request Breakdown by Project*

N/A

USSC Closure Paper



Title:	FY15 Purchase Misc Capital Tools & Equipment – RI	Sanction Paper #:	USSC-14-151C
Project #:	CRNC501, CRCC501, CRSC501, CRFC501, C031693, CON0062	Sanction Type:	Closure
Operating Company:	The Narragansett Electric Co.	Date of Request:	March 30, 2017
Author:	James Thompson	Sponsor:	Neil Proudman – VP Maintenance & Construction NE
Utility Service:	Gas	Project Manager:	James Thompson

1 Executive Summary

This paper is presented to close CRNC501, CRCC501, CRSC501, CRFC501, C031693 and CON0062. The total spend was \$1.078M. The sanctioned amount for this project was \$1.082M.

The final spend amount is \$1.078M broken down into:

\$1.070M Capex

\$0.000M Opex

\$0.008M Removal

2 Project Summary

Purchase Miscellaneous Capital Tools and Equipment that are not used for specific projects. These items support the safe, efficient and on-going day-to-day operations of the gas business unit.

USSC Closure Paper



3 Over / Under Expenditure Analysis

3.1 Summary Table

Actual Spending (\$M)			
Project #	Description		Total Spend
C031693	RI Gas Scrap	Capex	0.000
		Opex	0.000
		Removal	0.009
		Total	0.009
CRCC501	Discretionary - Construction RI	Capex	0.316
		Opex	0.000
		Removal	0.000
		Total	0.316
CRFC501	Discretionary - Maintain RI	Capex	0.754
		Opex	0.000
		Removal	0.000
		Total	0.754
CRSC501	Discretionary - Service RI	Capex	0.000
		Opex	0.000
		Removal	0.000
		Total	0.000
CRNC501	Discretionary - Misc RI	Capex	0.000
		Opex	0.000
		Removal	0.000
		Total	0.000
CON0062	Tools- RI	Capex	(0.001)
		Opex	0.000
		Removal	0.000
		Total	(0.001)
Total		Capex	1.070
		Opex	0.000
		Removal	0.009
		Total	1.078

USSC Closure Paper



Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	1.082
		Opex	0.000
		Removal	0.000
		Total Cost	1.082
Sanction Variance (\$M)			Total Spend
		Capex	0.012
		Opex	0.000
		Removal	(0.009)
		Total Variance	0.004

3.2 Analysis

The actual costs for FY 2015 were within sanctioned amount.

4 Improvements / Lessons Learned

The project manager must should remain aware of work volumes, budgets and personnel adjustments in mandated programs, which may impact the Capital Plan/Sanctioning for this annual blanket program.

5 Closeout Activities

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> N/A
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> N/A
All work orders and funding projects have been closed	<input type="radio"/> Yes <input checked="" type="radio"/> N/A
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> N/A
All as-builts have been completed	<input type="radio"/> Yes <input checked="" type="radio"/> N/A
All lessons learned have been entered appropriately into the lesson learned database	<input type="radio"/> Yes <input checked="" type="radio"/> N/A

- (1) All work orders and funding projects have been closed

USSC Closure Paper



Program/Blanket projects may contain work orders and or funding projects which have not yet been closed for reasons including but not limited to:

- the same work order(s) are used annually. They will remain open until Asset Management and/or Resource Planning have determined work orders are no longer needed .
- construction may cross multiple fiscal years
- the work order closing process is within the late charge waiting period
- other accounting processes or final system closing activities have not yet completed

The Program/Blanket projects are approved annually for the current year expected spend and remain open until Asset Management and/or Resource Planning have determined the project is no longer required.

(2) All as-builts have been completed

Program/Blanket projects may contain work orders for which no as-builts have yet been recorded for reasons including but not limited to:

- design and/or construction have not yet completed
- construction may cross multiple fiscal years
- work has completed recently and as-builts have not yet been processed into the system
- does not apply. Work order(s) are not linked to work management systems. (example: Meter Purchases, Meter Changes, AMR Installations Purchase Misc Capital Tools/Equipment, etc.) does not apply to Information systems projects.

(3) All lessons learned have been entered appropriately into the lesson learned database

Program/Blanket projects usually contain short cycle work which the Company has been performing over several fiscal years. No new Lessons Learned which have not already been identified and recorded within section 4.

USSC Closure Paper



6 Statements of Support

6.1 Supporters

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

Department	Individual	Responsibilities
Investment Planner	Pensabene, Patrick M.	Endorse relative to 5 yr business plan or emergent work
Resource Planning	Vidal, Alfredo	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Gas Project Estimation	Paul, Art	Endorses cost estimate
Project Management	Michel, Michael	Endorses Resources, cost estimate, schedule

6.2 Reviewers

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

Reviewer List	Individual
Finance	Easterly, Patricia
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Currie, John
Procurement	Arthur Curran
Control Center	Loiacono, Paul

USSC Closure Paper



7 Decisions

I approve this paper.

Signature *Ross W. Turrini* Date April 27, 2017
Executive Sponsor – Ross Turrini, Senior Vice President, Gas Process & Engineering
and Chief Gas Engineer