

**PROGRAM PROJECTS WITH OVER \$250k SPENDING SINCE JANUARY 1, 2013**

Project #	Project Description	Project Type	Page Reference
C005461	OS Feeder Hardening	Distribution Line	Page 2 of 481
C005505	Distribution Line Transformer Upgrades	Distribution Line	Page 16 of 481
C005524	OS Cutout Replacements	Distribution Line	Page 51 of 481
C018593	Substation Damage Failure Reserve	Distribution Substation	Page 66 of 481
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C025815	OS Insulators, SensDev, Surge Arrestors	Distribution Substation	Page 133 of 481
C026281	I&M - OS D-Line OH Work From Inspection	Distribution Line	Page 161 of 481
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C032278	OS Substation Breakers & Reclosers	Distribution Substation	Page 273 of 481
C035586	Relay Replacement Strategy - RI	Distribution Substation	Page 310 of 481
C040644	Telecom Small Capital Work - RI	Facilities/IT/Telcom	Page 373 of 481
C049354	NEC Relay Replacement - SG157	Distribution Substation	Page 378 of 481
C055392	RI UG Cable Replacement Program - Secondary	Distribution Line	Page 424 of 481
C059663	Cutout Mounted Recloser Program_RI	Distribution Line	Page 469 of 481
CD01257	Distribution Secondary Network Arc	Distribution Line	Page 475 of 481
C013967	PS&I Activity - Rhode Island **	Other	N/A

\*\* - The PS&I project is a temporary holding area for Preliminary Survey & Investigation charges from area studies. Project Costs are transferred out as capital projects resulting from the study are approved. Therefore, the project costs are approved within their new project, not the PS&I Project shown here. Therefore, the approval for the PS&I project here is N/A.

C005461

OS Feeder Hardening

## 5360-Narragansett Electric and Gas Project Revision Detail Report

<b>Fund Project Number:</b> <u>C005461</u>	<b>USSC #:</b> <u>USSC-12-141 FY13 Progra</u>
<b>Revision:</b> <u>11</u>	<b>Budget Version:</b> <u>PPM Project Authorizations</u>
<b>Project Title:</b> <u>FH - OS Feeder Hardening</u>	
<b>Project Description:</b> 03250 FH - OS Feeder Hardening	

<b>Project Status:</b> <u>Closed</u>	
<b>Responsible Person:</b> <u>MOKEY, MICHAEL</u>	<b>Initiator:</b> <u>Diconza, Glen L</u>
<b>Spending Rationale:</b> <u>System Capacity &amp; Performance</u>	<b>Funding Type:</b> <u>P Electric Distribution Line RI</u>
<b>Budget Class:</b> <u>Reliability</u>	
<b>Capital by Category:</b>	
<b>Program Code:</b>	
<b>Project Risk Score:</b> <u>40</u>	<b>Project Complexity Score:</b> <u>15</u>

### Project Schedule / Expenditures

<b>Revision Status:</b> <u>Approved</u>	
<b>Est Start Date:</b> <u>4/1/2005</u>	<b>Est Complete Date:</b> <u>3/31/2014</u>
<b>Est In-Service Date:</b> <u>3/31/2010</u>	
<b>TTD Actuals:</b> <u>\$28,885,928</u>	<b>As Of:</b> <u>10/10/2017</u>
<b>Cost Breakdown</b>	
<u><b>Capital</b></u>	<u><b>Expense</b></u>
<u><b>Removal</b></u>	<u><b>Total</b></u>
<u><b>Credits</b></u>	
<u>\$1,500,000</u>	<u>\$530,000</u>
<u>\$184,000</u>	<u>\$2,214,000</u>
<u>\$0</u>	

### Justification / Risk Identification:

This strategy sets forth a Feeder Hardening program to remediate deteriorated equipment and improve lightning protection on primarily overhead distribution feeders. This is a reliability-focused strategy designed to meet both state regulatory targets and

### Project Scope:

<Enter data here>

### Project Alternatives Considered:

<Enter data here>

**Additional Notes:**

<Enter data here>

**Related Projects:**

**Project Number:**

**Project Name:**

**Approvals**

Line 1:	Date	<u>10/31/2012 00:00:00</u>	Approver	<u>pwrconv</u>	<u>SAP Default Approver</u>
Line 2:	Date		Approver		
Line 3:	Date		Approver		
Line 4:	Date		Approver		
Line 5:	Date		Approver		

**\*\*\*Project Authorization is for Approved Revision Total Estimated Cost + 10%\*\*\***



**PowerPlan** ----- **PPGPRD Database**

File Edit Subsystem Batch Admin Preferences Window Help

Projects Assets Tables CR MyPlan Help Calc Print Win

**Funding Project Estimates - Summary** C005461 Current Total Authorized Amount: \$2,21... \_ □ ×

Title **FH - OS Feeder Hardening**  
Project Number **C005461**

**Budget Version** PPM Project Authorizations [a]  
Revision   
Revision Status **Approved**  
Revision No. **11**  
Est Start Date **04/01/2005**  
Est Complete Date **03/31/2010**  
Est In Svc Date **03/31/2010**  
Capital **\$1,500,000.00**  
Expense **\$530,000.00**  
Jobbing **\$0.00**  
Retirement **\$0.00**  
Removal **\$184,000.00**  
Total (excl. Rets.) **\$2,214,000.00**  
Credits **\$0.00**  
Net **\$2,214,000.00**

**Revision Info** **Other Updates**

Revision  11 of 13      
[Find Revision](#)   
☐ Show 'Budget Only' Revisions

**Spending Estimates:**

**Property Estimates:**

**Edit:**

**Other:**

Record **1** of 16

D

## US Sanction Paper



<b>Title:</b>	RI Feeder Hardening Program	<b>Sanction Paper #:</b>	USSC-12-141
<b>Project #:</b>	C05461 (3250)	<b>Sanction Type:</b>	Sanction
<b>Operating Company:</b>	The Narragansett Electric Company	<b>Date of Request:</b>	April 11, 2012
<b>Author:</b>	Edward S. Paluch	<b>Sponsor:</b>	Cheryl A. Warren
<b>Utility Service:</b>	Electricity T&D		

### 1 Executive Summary

#### 1.1 Sanctioning Summary:

This paper requests sanction of project C05461 in the amount of \$2.214M and a tolerance of +/- 10% for the purposes of full implementation of the program in FY12/13.

This sanction amount of \$2.214M for FY12/13 is broken down into:

\$1.500M Capex  
\$0.530M Opex Related to Capex  
\$0.184M Removal

#### 1.2 Brief Description:

In support of the approved "Feeder Hardening Strategy", this paper will provide for the FY12/13 funding to complete the remaining four Rhode Island feeders in the original program (127W40, 127W41, 22F2, 69F3). This work is scheduled to be completed in FY13 Q1 with the Inspections and Maintenance (I&M) program beginning construction in FY13 Q2.

#### 1.3 Summary of Projects:

Project Number	Project Title	Estimate Amount (\$)
C05461	03250 FH - OS Feeder Hardening	\$2.214M
<b>Total</b>		<b>\$2.214M</b>

#### 1.4 Associated Projects:

Project Number	Project Title	Company	Estimate Amount (\$)
<b>Total</b>			

**US Sanction Paper**



**1.5 Prior Sanctioning History (including relevant approved Strategies):**

Date	Governance Body	Sanctioned Amount	Paper Title	Sanction Type

**1.6 Next Planned Sanction Review:**

Date (Month/Year)	Purpose of Sanction Review
6/2013	FY12/13 Annual Program Closure

**1.7 Category:**

Category	Reference to Mandate, Policy, or NPV Assumptions
<input type="checkbox"/> Mandatory	Feeder Hardening Strategy
<input checked="" type="checkbox"/> Policy-Driven	
<input type="checkbox"/> Justified NPV	

**1.8 Asset Management Risk Score**

Asset Management Risk Score: 41

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

☒ Reliability    ☐ Environment    ☐ Health & Safety

**1.9 Complexity Level: (if applicable)**

☐ High Complexity    ☒ Medium Complexity    ☐ Low Complexity

Complexity Score: 19



## US Sanction Paper

### 1.10 Business Plan:

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
RI ISR FY12/13	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Over <input type="checkbox"/> Under	0

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

N/A

### 1.12 Current Planning Horizon:

The Narragansett Electric Company	Current planning horizon							
\$M	Prior YR'S	Yr 1 11/12	Yr 2 12/13	Yr 3 13/14	Yr 4 14/15	Yr 5 15/16	Yr 6 +	Total
Proposed Capex Investment			1.500					1.500
Proposed Opex Investment			0.530					0.530
Proposed Removal Investment			0.184					0.184
CIAC / Reimbursement								0.000
Total	\$0.000	\$0.000	\$2.214	\$0.000	\$0.000	\$0.000	\$0.000	\$2.214

### 1.13 Resources:

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

**US Sanction Paper**



**1.14 Key Issues (include mitigation of Red or Amber Resources):**

1	
2	

**1.15 Key Milestones:**

Milestone	Target Date: (Month/Year)
FY12/13 Program Sanctioning	4/2012
FY12/13 Completion	3/2013
FY12/13 Annual Program Closure	6/2013

**1.16 Climate Change:**

Are financial incentives (e.g. carbon credits) available?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Contribution to National Grid's 2050 80% emissions reduction target:	<input checked="" type="checkbox"/> Neutral	<input type="checkbox"/> Positive <input type="checkbox"/> Negative
Impact on adaptability of network for future climate change:	<input checked="" type="checkbox"/> Neutral	<input type="checkbox"/> Positive <input type="checkbox"/> Negative

**1.17 List References:**

1	
2	
3	


**US Sanction Paper**



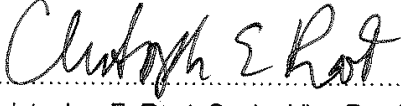
**2 Recommendations:**

The **Sanctioning Authority** USSC is invited to:

- (a) APPROVE the investment of \$2.214M and a tolerance of +/- 10 % for the individual projects listed in the paper.
- (b) NOTE that Artie Georgacopoulos is the Project Manager and has the approved financial delegation.

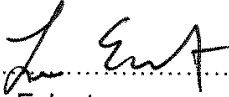
Signature.......... Date 6/5/12.....  
Cheryl A. Warren, Vice President, Asset Management

I hereby approve the recommendations made in this paper.

Signature.......... Date 6/12/12.....  
Christopher E. Root, Senior Vice President Network Strategy

**3 Decisions**

The US Sanctioning Committee (USSC) approved this paper at a USSC meeting held on April 11, 2012.

Signature.......... Date 6/19/12.....  
Lee S. Eckert  
US Chief Financial Officer  
Chairman, US Sanctioning Committee

**USSC Closure Paper**



<b>Title:</b>	RI FY13 Feeder Hardening Program Closure	<b>Sanction Paper #:</b>	USSC-12-141C
<b>Project #:</b>	C005461	<b>Sanction Type:</b>	Closure
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	8/09/2016
<b>Author:</b>	Anne Wyman	<b>Sponsor:</b>	Carol Sedewitz, VP Electric Asset Management
<b>Utility Service:</b>	Electricity T&D	<b>Project Manager:</b>	Anne Wyman

**1 Executive Summary**

This paper is presented to close C005461 for FY13. The total spend was \$1.577M. The latest sanctioned amount for this project was \$2.214M.

*The final spend amount is \$1.577M broken down into:*

*\$0.908M Capex  
\$0.498M Opex  
\$0.171M Removal*

**2 Project Summary**

This paper is provided for closure of the FY13 Rhode Island Feeder Hardening program. Funding was provided to complete the remaining four feeders in the original program (127W40, 127W41, 22F2, 69F3).

**USSC Closure Paper**



**3 Over / Under Expenditure Analysis**

**3.1 Summary Table**

Actual Spending (\$M)			
Project #	Description		Total Spend
C005461	RI FY13 Feeder Hardening Program	Capex	0.908
		Opex	0.498
		Removal	0.171
		Total	1.577
Total		Capex	0.908
		Opex	0.498
		Removal	0.171
		Total	1.577

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	1.500
		Opex	0.530
		Removal	0.184
		Total Cost	2.214
Sanction Variance (\$M)			Total Spend
		Capex	0.592
		Opex	0.032
		Removal	0.013
		Total Variance	0.637

**3.2 Analysis**

The budget for Feeder Hardening was set based the average cost per mileage of the four remaining feeders. Construction on two of the feeders began before the fiscal year started, therefore the actual spend was lower than originally budgeted. FY13 was the final year of the Feeder Hardening program. This program has been replaced by the I&M program, which is similar in nature.

**4 Improvements / Lessons Learned**

This is the final year of the program, not further improvements to be persued.





## 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 type="radio"/> Yes <input checked="" 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

### 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	Glen DiConza	Endorses relative to 5-year business plan or emergent work
Resource Planning	Anne Wyman	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Distribution Asset Management	Alan Labarre	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives



## ***USSC Closure Paper***

### **6.2 Reviewers**

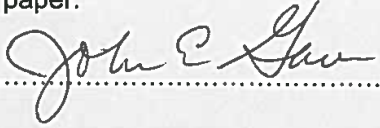
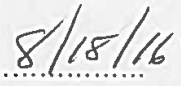
The reviewers have provided feedback on the content/language of the paper.

<b>Function</b>	<b>Individual</b>
Finance	Patricia Easterly
Regulatory	Peter Zschokke
Jurisdictional Delegates	Jim Patterson
Procurement	Art Curran

**USSC Closure Paper**



**7 Decisions**

I approve this paper.	
Signature..... 	Date..... 
Executive Sponsor – Christopher Kelly, Acting Senior Vice President – Electric Process & Engineering	

C005505

Distribution Line Transformer Upgrades

## 5360-Narragansett Electric and Gas Project Revision Detail Report

<b>Fund Project Number:</b> <u>C005505</u>	<b>USSC #:</b> <u>FY17 Program RSN</u>
<b>Revision:</b> <u>23</u>	<b>Budget Version:</b>
<b>Project Title:</b> <u>IE - OS Dist Transformer Upgrades</u>	
<b>Project Description:</b> <u>IE - OS Dist Transformer Upgrades</u>	

<b>Project Status:</b> <u>open</u>	
<b>Responsible Person:</b> <u>CURLEY, JOSEPH</u>	<b>Initiator:</b> <u>Diconza, Glen L</u>
<b>Spending Rationale:</b> <u>System Capacity &amp; Performance</u>	<b>Funding Type:</b> <u>P Electric Distribution Line RI</u>
<b>Budget Class:</b> <u>Load Relief</u>	
<b>Capital by Category:</b>	
<b>Program Code:</b>	
<b>Project Risk Score:</b> <u>40</u>	<b>Project Complexity Score:</b> <u>15</u>

### Project Schedule / Expenditures

<b>Revision Status:</b> <u>Approved</u>	
<b>Est Start Date:</b> <u>3/31/2017</u>	<b>Est Complete Date:</b> <u>3/31/2018</u>
<b>Est In-Service Date:</b> <u>3/31/2018</u>	
<b>TTD Actuals:</b> <u>\$12,798,810</u>	<b>As Of:</b> <u>10/10/2017</u>
<b>Cost Breakdown</b>	
<u><b>Capital</b></u>	<u><b>Expense</b></u>
<u>\$737,660</u>	<u>\$114,960</u>
<u><b>Removal</b></u>	<u><b>Total</b></u>
<u>\$105,380</u>	<u>\$958,000</u>
	<u><b>Credits</b></u>
	<u>\$0</u>

### Justification / Risk Identification:

1/9/07 - changed title from "EI - OS Distrib Xformer Upgrades"

### Project Scope:

Replace and or upgrade 550 overhead distribution Transformers.

### Project Alternatives Considered:

<Enter data here>

**Additional Notes:**

FY17 Re-Sanction \$585K to \$958K document attached. The burn rate for OLTs is higher this year causing the cost per unit to rise. This additional cost per unit can be attributed to the need for more pole sets than previous years. These sets are a requirement to bring the poles up to standard. The total cost for the FY17 OS Transformer Upgrade Program is 958K and is not expected to go over 1M.

**Related Projects:**

**Project Number:**

**Project Name:**

**Approvals**

Line 1:	Date	<u>12/20/2016 09:44:40</u>	Approver	<u>curljo</u>	<u>DOA - Distribution Lev</u>
Line 2:	Date	<u>12/20/2016 10:33:33</u>	Approver	<u>Diconza, Glen L</u>	<u>DOA - Distribution Lev</u>
Line 3:	Date	<u>12/22/2016 13:55:03</u>	Approver	<u>Gelineau, Gary J</u>	<u>DOA - Distribution Lev</u>
Line 4:	Date	<u>1/3/2017 11:48:08</u>	Approver	<u>Cox, Roger D</u>	<u>DOA - Distribution Lev</u>
Line 5:	Date	<u>1/3/2017 15:46:20</u>	Approver	<u>LaBarre, Alan T</u>	<u>DOA - Distribution Lev</u>

**\*\*\*Project Authorization is for Approved Revision Total Estimated Cost + 10%\*\*\***

**PowerPlan** ----- PPGPRD Database

File Edit Subsystem Batch Admin Preferences Window Help

Projects Assets Tables CR MyPlan Help Calc Print Win

**Funding Project Estimates - Summary** C005505 Current Total Authorized Amount: \$958,...

Title **IE - OS Dist Transformer Upgrades**

Project Number **C005505**

**Budget Version** No Assigned Versions

Revision **FY17 RSN**

Revision Status **Approved**

Revision No. **23**

Est Start Date **03/31/2014**

Est Complete Date **03/31/2019**

Est In Svc Date **03/31/2019**

Capital **\$737,660.00**

Expense **\$114,960.00**

Jobbing **\$0.00**

Retirement **\$0.00**

Removal **\$105,380.00**

Total (excl. Rets.) **\$958,000.00**

Credits **\$0.00**

Net **\$958,000.00**

**Spending Estimates:**

**Grid Estimates**

**Forecast**

Summarize from WD

Copy Estimate

**Property Estimates:**

Unit Estimates

Create As Build

Delete Used Estimates

**Edit:**

New Revision

Delete Revision

Update

Update With Actuals

Import Estimates

**Other:**

Revision Comments

Released Dollars

Substitution

Slide

**Version Compare**

**Close**

Revision Info **Other Updates**

Revision **23** of 24 **< >**

**Find Revision**

Send for Approval

☐ Show 'Budget Only' Revisions

Record **2** of 16 **< >**

Audits

## Change in DOA Request Form **(Less than Million)**

Version 9.4

**Note:** Fill data in the grey area and email form to **Mario Carlino** and the appropriate IP analyst.

**Electric** - Janice Flynn

**Gas** - Karen Jasinowski

*Date:	12/15/2016
*Operating Company:	The Narragansett Electric Co.
*PowerPlant Project #:	C005505
*Project Name:	OS Dist Transformer Upgrades
*Project Engineer:	Chris Montalto
*Project/Program Manager:	Joe Curley
*DoA Type:	Re-Sanction

### Latest Project Estimate

*Date of Latest Sanction:	5/27/2016
---------------------------	-----------

Total	Capex	Opex	Removal
\$585,000	\$450,450	\$70,200	\$64,350

### Revised Project Estimate

Total	Capex	Opex	Removal
\$958,000	\$737,660	\$114,960	\$105,380

### Cash Flows

Previous FY	Capex	Opex	Removal
\$0			

Current FY	Capex	Opex	Removal
\$958,000	\$737,660	\$114,960	\$105,380

FY+1	Capex	Opex	Removal
\$0			

FY+2	Capex	Opex	Removal
\$0			

### Customer Contribution

--

### Reason for Revision

<input checked="" type="checkbox"/>	Revised forecast either exceeds or is lower than the Approved Amount - Project Still In Process
	New Project Estimated Completion Date: 3/31/2017

<input type="checkbox"/>	Actual Spending either exceeds or is lower than the Approved Amount – Project is Complete
--------------------------	---

**The below information is required and must be filled in**

	<b>Reason for Change in Spend</b>
--	-----------------------------------



**Change in DOA Request Form (Less than Million)**

	The burn rate for OLTs is higher this year causing the cost per unit to rise. This additional cost per unit can be attributed to the need for more pole sets than previous years. These sets are a requirement to bring the poles up to standard. The total cost for the FY17 OS Transformer Upgrade Program is 958K and is not expected to go over 1M.
	<b>Justification/ Risk Identification</b>
	<b>New/Changed Project Scope (Material, Labor or Other)</b>
	<b>Project Alternatives Considered</b>
	<b>Additional Notes</b>

**In-service Dates**

\*Original In-service Date: 3/31/2017

\*Revised In-service Date: 3/31/2017

D



**US Sanction Paper**

<b>Title:</b>	RI FY13 Transformer Replacement Program	<b>Sanction Paper #:</b>	USSC-12-117
<b>Project #:</b>	C05505 (PPM 3393)	<b>Sanction Type:</b>	Sanction
<b>Operating Company:</b>	The Narragansett Electric Company	<b>Date of Request:</b>	04-11-2012
<b>Author:</b>	Peter A. Schiffman	<b>Sponsor:</b>	Cheryl A. Warren
<b>Utility Service:</b>	Electricity T&D		

**1 Executive Summary**

**1.1 Sanctioning Summary:**

This paper requests the full sanction of project C05505 OS in the amount of \$1.469M and a tolerance of +/- 10% for the purpose of replacing or upgrading 550 overloaded transformers in FY13 as part of the line transformer replacement program.

The sanction amount of \$1.469M for C05505 is broken down into:

\$1.300M Capex  
\$0.052M Opex  
\$0.117M Removal

**1.2 Brief Description:**

In support of the approved "Distribution Line Transformer Strategy", there are 550 proposed transformer replacements in Rhode Island for FY13. The installation of these transformers will alleviate existing overloads and to ensure the reliability impact of transformer failures due to overload continues to have a relatively minor impact on overall system reliability. The reliability impact experienced in 2011 for RI due to failed or overloaded transformers was approximately 0.464 Minutes of SAIDI and 0.0026 SAIFI. A total of 149 transformers were recorded in IDS as failed or interrupted due to overloaded in 2011.

**1.3 Summary of Projects:**

Project Number	Project Title	Estimate Amount (\$)
C05505	IE - OS Dist Transformer Upgrades	1.469M
	<b>Total</b>	<b>\$1.469M</b>

**US Sanction Paper**



**1.4 Associated Projects:**

Project Number	Project Title	Company	Estimate Amount (\$)
Total			\$

**1.5 Prior Sanctioning History (including relevant approved Strategies):**

Date	Governance Body	Sanctioned Amount	Paper Title	Sanction Type
03/09/2011	DCIG	\$1.41252M	"Program Project Spending Authorization FY 2012"	Full Sanction

**1.6 Next Planned Sanction Review:**

Date (Month/Year)	Purpose of Sanction Review
N/A	Closure Paper

**1.7 Category:**

Category	Reference to Mandate, Policy, or NPV Assumptions
<input type="checkbox"/> Mandatory	Distribution Line Transformer Strategy
<input checked="" type="checkbox"/> Policy-Driven	
<input type="checkbox"/> Justified NPV	

**1.8 Asset Management Risk Score**

Asset Management Risk Score:   30  

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

☒ Reliability    ☐ Environment    ☐ Health & Safety



**US Sanction Paper**

**1.9 Complexity Level: (if applicable)**

☐ High Complexity ☐ Medium Complexity ☒ Low Complexity

Complexity Score: 15

**1.10 Business Plan:**

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
Dist- Approved FY13-17 Business Plan	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Over <input checked="" type="checkbox"/> Under	0.00

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

N/A

**1.12 Current Planning Horizon:**

Company Name	Current planning horizon							Total
	Prior YR'S	Yr 1 11/12	Yr 2 12/13	Yr 3 13/14	Yr 4 14/15	Yr 5 15/16	Yr 6 +	
Proposed Capex Investment	\$M		1.300					1.300
Proposed Opex Investment			0.052					0.052
Proposed Removal Investment			0.117					0.117
CIAC / Reimbursement								0.000
Total	\$0.000	\$0.000	\$1.469	\$0.000	\$0.000	\$0.000	\$0.000	\$1.469

**1.13 Resources:**

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="checkbox"/> Red	<input type="checkbox"/> Amber <input checked="" type="checkbox"/> Green
Availability of external resources to deliver project:	<input type="checkbox"/> Red	<input type="checkbox"/> Amber <input checked="" type="checkbox"/> Green

**US Sanction Paper**



Operational Impact			
Outage impact on network system:	<input type="checkbox"/> Red	<input type="checkbox"/> Amber	<input checked="" type="checkbox"/> Green
Procurement impact on network system:	<input type="checkbox"/> Red	<input type="checkbox"/> Amber	<input checked="" type="checkbox"/> Green

**1.14 Key Issues (include mitigation of Red or Amber Resources):**

1	Change in pole standard is expected to result in less pole replacements for application of transformer upgrades
2	Expecting lower unit cost due to change in pole design standard
3	

**1.15 Key Milestones:**

Milestone	Target Date: (Month/Year)
Sanction	04/2012
Commissioning	Multiple Dates
Completion	03/2013
Annual Program Closure	06/2013

**1.16 Climate Change:**

Are financial incentives (e.g. carbon credits) available?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Contribution to National Grid's 2050 80% emissions reduction target:	<input checked="" type="checkbox"/> Neutral	<input type="checkbox"/> Positive <input type="checkbox"/> Negative
Impact on adaptability of network for future climate change:	<input checked="" type="checkbox"/> Neutral	<input type="checkbox"/> Positive <input type="checkbox"/> Negative

**1.17 List References:**

1	
2	
3	

**US Sanction Paper**


**nationalgrid**

**2 Recommendations:**

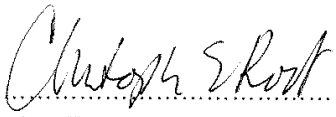
The **Sanctioning Authority** USSC is invited to:

(a) APPROVE the investment of \$1.469M and a tolerance of +/- 10 % for the individual projects listed in the paper.

(b) NOTE that Patrick Cody is the Program Manager and has the approved financial delegation.

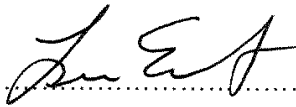
Signature.......... Date.....5/14/12.....  
Cheryl A. Warren, Vice President, Asset Management

I hereby approve the recommendations made in this paper.

Signature.......... Date.....5/15/12.....  
Christopher E. Root, Senior Vice President Network Strategy

**3 Decisions**

The US Sanctioning Committee (USSC) approved this paper at a USSC meeting held on April 11, 2012.

Signature.......... Date.....5/22/12.....  
Lee S. Eckert  
US Chief Financial Officer  
Chairman, US Sanctioning Committee

**USSC Closure Paper**



<b>Title:</b>	RI FY13 Transformer Upgrade Program Closure	<b>Sanction Paper #:</b>	USSC-12-117C
<b>Project #:</b>	C005505	<b>Sanction Type:</b>	Closure
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	08/09/2016
<b>Author:</b>	Anne Wyman	<b>Sponsor:</b>	Carol Sedewitz, VP Electric Asset Management
<b>Utility Service:</b>	Electricity T&D	<b>Project Manager:</b>	Anne Wyman

**1 Executive Summary**

This paper is presented to close C005505 for FY2013. The total spend was \$2.226M. The latest sanctioned amount for this project was \$1.469M.

*The final spend amount is \$2.226M broken down into:*

*\$1.722M Capex  
\$0.189M Opex  
\$0.315M Removal*

**2 Project Summary**

This paper is provided for closure of the FY13 Transformer Upgrade program. In support of the approved "Distribution Line Transformer Strategy", National Grid aimed to resolve overload conditions on 550 transformers in Rhode Island for FY13. Actual numbers exceed these goals with a total of 573 Overloaded Transformers replaced throughout Rhode Island during the fiscal year.

Alleviating these overloads ensures the reliability impact of transformer failures due to overload has a relatively minor effect on overall system reliability.



## USSC Closure Paper

### 3 Over / Under Expenditure Analysis

#### 3.1 Summary Table

Actual Spending (\$M)			
Project #	Description		Total Spend
C005505	RI 2013 Transformer Upgrade Program	Capex	1.722
		Opex	0.189
		Removal	0.315
		Total	2.226
Total		Capex	1.722
		Opex	0.189
		Removal	0.315
		Total	2.226

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	1.300
		Opex	0.052
		Removal	0.117
		Total Cost	1.469
Sanction Variance (\$M)			Total Spend
		Capex	(0.422)
		Opex	(0.137)
		Removal	(0.198)
		Total Variance	(0.757)

#### 3.2 Analysis

The target of 550 units for FY13 was based on the previous year's overall spending vs the total number of units replaced. Using that cost per unit, the fiscal year target was determined by dividing into the budget. Since this program has been in place for several years, the simple transformer replacements are fewer and the more complex replacements have become more regular, this drove a higher cost per unit, resulting in an overspend to the program.

#### 4 Improvements / Lessons Learned

In order to upgrade one transformer, one or more poles may need replacement or an off hour outage is required to do the work resulting in a higher cost per unit. In future years, the target was adjusted to match the new cost per unit.





## 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 type="radio"/> Yes <input checked="" 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

### 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	Glen DiConza	Endorses relative to 5-year business plan or emergent work
Resource Planning	Anne Wyman	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Distribution Asset Management	Alan Labarre	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives

**USSC Closure Paper**



**6.2 Reviewers**

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

Function	Individual
Finance	Patricia Easterly
Regulatory	Peter Zschokke
Jurisdictional Delegates	Jim Patterson
Procurement	Art Curran

**USSC Closure Paper**



**7 Decisions**

I approve this paper.

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

Executive Sponsor – Christopher Kelly,  
Acting Senior Vice President – Electric Process & Engineering

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<b>Title:</b>	RI FY14 Transformer Replacement Program	<b>Sanction Paper #:</b>	USSC-13-068
<b>Project #:</b>	C005505	<b>Sanction Type:</b>	Sanction
<b>Operating Company:</b>	The Narragansett Electric Company	<b>Date of Request:</b>	03-05-2013
<b>Author:</b>	Peter A. Schiffman	<b>Sponsor:</b>	Cheryl A. Warren
<b>Utility Service:</b>	Electricity T&D		

## **1 Executive Summary**

### **1.1 Sanctioning Summary:**

This paper requests the full sanction of project C005505 in the amount of \$2.142M and a tolerance of +/- 10% for the purpose of replacing or upgrading 550 overloaded transformers in FY14 as part of the line transformer replacement program.

The sanction amount of \$2.142M for C005505 is broken down into:

- \$1.800M Capex
- \$0.090M Opex
- \$0.252M Removal

### **1.2 Brief Description:**

In support of the approved "Distribution Line Transformer Strategy", there are 550 proposed transformer replacements in Rhode Island for FY14. The installation of these transformers will alleviate existing overloads and to ensure the reliability impact of transformer failures due to overload continues to have a relatively minor impact on overall system reliability.

The reliability impact experienced in 2011 for RI due to failed or overloaded transformers was approximately 0.464 Minutes of SAIDI and 0.0026 SAIFI. A total of 149 transformers were recorded in IDS as failed or interrupted due to overloaded in 2011.

There are approximately 64,567 distribution line transformer installations in service throughout RI. The results of the 2012 annual review of heavily loaded distribution line transformers suggest that there are approximately 8,107 transformers in RI that exceeded 160% of their nameplate rating.

**1.3 Summary of Projects:**

Project Number	Project Title	Estimate Amount (\$)
C005505	IE - OS Dist Transformer Upgrades	2.142M
Total		\$2.142M

**1.4 Associated Projects:**

Project Number	Project Title	Company	Estimate Amount (\$)
Total			\$

**1.5 Prior Sanctioning History (including relevant approved Strategies):**

Date	Governance Body	Sanctioned Amount	Paper Title	Sanction Type
12/20/2008	DCIG		"Distribution Line Transformer Strategy"	Strategy
03/09/2011	DCIG	\$1.41252M	"Program Project Spending Authorization FY 2012"	Full Sanction
April 2012	USSC	\$1.469M	RI FY13 Transformer Replacement Program	Program Annual Sanction

**1.6 Next Planned Sanction Review:**

Date (Month/Year)	Purpose of Sanction Review
03/2014	Annual Program Sanction

**1.7 Category:**

Category	Reference to Mandate, Policy, or NPV Assumptions
<input type="checkbox"/> Mandatory	Distribution Line Transformer Strategy

<input checked="" type="checkbox"/> Policy-Driven	
<input type="checkbox"/> Justified NPV	

### 1.8 Asset Management Risk Score

Asset Management Risk Score:   30  

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

☒ Reliability    ☐ Environment    ☐ Health & Safety

### 1.9 Complexity Level: (if applicable)

☐ High Complexity    ☐ Medium Complexity    ☒ Low Complexity

Complexity Score:   15  

### 1.10 Business Plan:

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
Dist- Approved FY14-18 Business Plan	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Over <input checked="" type="checkbox"/> Under	<b>0.00</b>
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Over <input type="checkbox"/> Under	

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

**1.12 Current Planning Horizon:**

Company Name	Current planning horizon							
\$M	Prior YR'S	Yr 1 13/14	Yr 2 14/15	Yr 3 15/16	Yr 4 16/17	Yr 5 17/18	Yr 6 +	Total
Proposed Capex Investment		1.800						1.800
Proposed Opex Investment		0.090						0.090
Proposed Removal Investment		0.252						0.252
CIAC / Reimbursement								0.000
Total	\$0.000	\$2.142	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$2.142

**1.13 Resources:**

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="checkbox"/> Red	<input type="checkbox"/> Amber	<input checked="" type="checkbox"/> Green
Availability of external resources to deliver project:	<input type="checkbox"/> Red	<input type="checkbox"/> Amber	<input checked="" type="checkbox"/> Green
Operational Impact			
Outage impact on network system:	<input type="checkbox"/> Red	<input type="checkbox"/> Amber	<input checked="" type="checkbox"/> Green
Procurement impact on network system:	<input type="checkbox"/> Red	<input type="checkbox"/> Amber	<input checked="" type="checkbox"/> Green

**1.14 Key Issues (include mitigation of Red or Amber Resources):**

1	
2	
3	

**1.15 Key Milestones:**

Milestone	Target Date: (Month/Year)
-----------	------------------------------

Milestone	Target Date: (Month/Year)
Sanction	03/2013
Commissioning	Multiple Dates
Completion	03/2014
Annual Program Closure	06/2014

**1.16 Climate Change:**

Are financial incentives (e.g. carbon credits) available?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Contribution to National Grid's 2050 80% emissions reduction target:	<input checked="" type="checkbox"/> Neutral	<input type="checkbox"/> Positive <input type="checkbox"/> Negative
Impact on adaptability of network for future climate change:	<input checked="" type="checkbox"/> Neutral	<input type="checkbox"/> Positive <input type="checkbox"/> Negative

**1.17 List References:**

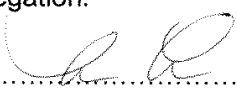
1	
2	
3	



## 2 Decisions

I:

- (a) Approve the investment of \$2.142 and a tolerance of +/- 10%
- (b) NOTE that Patrick Cody is the Program Managers and has the approved financial delegation.

Signature..........Date 3/12/2013  
Marie Jordan  
Senior Vice President  
Network Strategy

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**Short Form Sanction Paper**



<b>Title:</b>	RI FY15 Transformer Replacement Program	<b>Sanction Paper #:</b>	USSC-14-094
<b>Project #:</b>	C005505	<b>Sanction Type:</b>	Sanction
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	03-11-2014
<b>Author:</b>	Peter A. Schiffman	<b>Sponsor:</b>	Cheryl A. Warren
<b>Utility Service:</b>	Electricity T&D	<b>Project Manager:</b>	Jim Patterson

**1 Executive Summary**

**1.1 Sanctioning Summary**

This paper requests the full sanction of project C005505 (Ocean State) in the amount of \$2.299M and a tolerance of +/- 10% (on an individual project basis) for the purpose of replacing or upgrading 750 overloaded transformers in FY15 as part of the line transformer replacement program.

The sanction amount of \$2.299M for C005505 is broken down into:

- \$1.900M Capex
- \$0.133M Opex
- \$0.266M Removal

**1.2 Project Summary**

In support of the "Distribution Line Transformer Strategy", there are 750 proposed transformer replacements in Rhode Island for FY15. The installation of these transformers will alleviate existing overloads and to ensure the reliability impact of transformer failures due to overload continues to have a relatively minor impact on overall system reliability.



## **Short Form Sanction Paper**

### **2 Project Detail**

#### **2.1 Background**

The installation of these transformers will alleviate existing overloads and ensure the reliability impact of transformer failures due to overload continues to have a relatively minor impact on overall system reliability. The reliability impact experienced in 2013 for RI due to failed or overloaded transformers was approximately .76 minutes of SAIDI and 0.00402 minutes of SAIFI. A total of 168 transformers were recorded in IDS as failed or interrupted due to overloading in 2013.

#### **2.2 Drivers**

There are approximately 64,800 distribution line transformer installations in service throughout RI. The results of the 2013 annual review of heavily loaded distribution line transformers suggest that there are approximately 4,830 transformers in RI that exceeded 160% of their summer or 200% of their winter nameplate rating. It is expected that up to 30% of the suspected overloads are potential GIS errors.

#### **2.3 Project Description**

Transformer loading will be reviewed annually through reports generated from the transformer loading information available from GIS. Any transformer with calculated demands exceeding 160% summer normal rating and 200% winter normal rating will be investigated. Distribution transformer load limit recommendations can be referenced in National Grid standards Section 10-10 as well as Page 26 of IEEE STD C57-91-2011 IEEE. Overloaded installations will be replaced with a larger unit or will be relieved via installation of a second transformer and splitting the secondary crib.

The number of transformers replaced is influenced by the level of construction associated with each transformer replacement. Existing pole plant may need to be upgraded to accommodate a higher capacity transformer. Crew hours including driving time to each location can add to the cost of each transformer replacement.

Installations that are found to have GIS errors due to incorrect customer connectivity should be corrected by Distribution Design. Correcting these issues will allow us to have more accuracy choosing which transformer installations are truly overloaded as well as improve the accuracy of both the outage management and reliability data systems.



## **Short Form Sanction Paper**

### **2.4 Benefits**

Replacing and upgrading overloaded transformers proactively will assure that the distribution line transformer asset class will be utilized effectively by maintaining units in service. Transformer life can be prolonged by removing the overload conditions since the life expectancy is affected by loading more so than age. The implementation of this strategy will also maintain the relatively low impact on overall system reliability.

### **2.5 Business & Customer Issues**

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

### **2.6 Alternatives**

N/A

### **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 \$ 0.38M. 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)
C005505	D-Line	IE - OS Dist Transformer Upgrades	\$2.299
<b>Total</b>			<b>\$2.299</b>

**3.2 Associated Projects**

N/A

**3.3 Prior Sanctioning History**

Date	Governance Body	Sanctioned Amount	Paper Title	Sanction Type

Full program sanction is pursued on an annual basis.

**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	Distribution Line Transformer Strategy



**Short Form Sanction Paper**

**3.5 Asset Management Risk Score**

Asset Management Risk Score:   30  

**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:   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 (\$)
Dist- Approved FY15-19 Business Plan	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	0.00

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

N/A

**4.2 CIAC / Reimbursement**

N/A



## Short Form Sanction Paper

### 4.3 Cost Summary Table

					Current Planning Horizon (\$M)						
Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Yr. 1 2014/15	Yr. 2 2015/16	Yr. 3 2016/17	Yr. 4 2017/18	Yr. 5 2018/19	Yr. 6+ 2019/20	Total
C005505	IE - OS Dist Transformer Upgrades	±/- 10%	CapEx	-	1.900	-	-	-	-	-	1.900
			OpEx	-	0.133	-	-	-	-	0.133	
			Removal	-	0.266	-	-	-	-	0.266	
			Total	-	2.299	-	-	-	-	2.299	
Total Project Sanction			CapEx	-	1.900	-	-	-	-	1.900	
			OpEx	-	0.133	-	-	-	-	0.133	
			Removal	-	0.266	-	-	-	-	0.266	
			Total	-	2.299	-	-	-	-	2.299	

### 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	1.900	0.000	0.000	0.000	0.000	0.000	1.900
OpEx	0.000	0.133	0.000	0.000	0.000	0.000	0.000	0.133
Removal	0.000	0.266	0.000	0.000	0.000	0.000	0.000	0.266
Total Cost in Bus. Plan	0.000	2.299	0.000	0.000	0.000	0.000	0.000	2.299

#### 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	03/2014
Commissioning	Multiple Dates
Completion	03/2015
Annual Program Closure	06/2015



## 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 Planning	Glen DiConza	Endorses relative to 5-year business plan or emergent work
Resource Planning	Jim Patterson	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Asset Management	Alan Labarre	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives

#### 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	Jennifer Grimsley



**Short Form Sanction Paper**

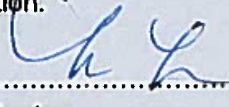



**7 Decisions**

I:

(a) APPROVE this paper and the investment of \$2.299M and a tolerance of +/-10%

(b) NOTE that Jim Patterson is the Project Manager and has the approved financial delegation.

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

Marie Jordan  
Senior Vice-President, Network Strategy



## USSC Closure Paper

<b>Title:</b>	RI FY2015 Transformer Upgrade Program Closure	<b>Sanction Paper #:</b>	USSC-14-094C
<b>Project #:</b>	C005505	<b>Sanction Type:</b>	Closure
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	9/20/2016
<b>Author:</b>	Anne Wyman	<b>Sponsor:</b>	Carol Sedewitz, VP Electric Asset Management
<b>Utility Service:</b>	Electricity T&D	<b>Project Manager:</b>	Anne Wyman

### 1 Executive Summary

This paper is presented to close the annual program of C005505 for FY2015. The total spend was \$2.327M. The latest sanctioned amount for this project was \$2.299M.

*The final spend amount is \$2.327M broken down into:*

*\$1.908M Capex  
\$0.130M Opex  
\$0.289M Removal*

### 2 Project Summary

This paper is provided for closure of the FY2015 Transformer Upgrade program. In support of the approved "Distribution Line Transformer Strategy", National Grid aimed to resolve overload conditions on 750 transformers in Rhode Island for FY2015. Actual numbers exceed these goals with a total of 902 Overloaded Transformers replaced throughout Rhode Island during the fiscal year.

Alleviating these overloads ensures the reliability impact of transformer failures due to overload has a relatively minor effect on overall system reliability.



## USSC Closure Paper

### 3 Over / Under Expenditure Analysis

#### 3.1 Summary Table

Actual Spending (\$M)			
Project #	Description		Total Spend
C005505	RI FY2015 Transformer Upgrade Program	Capex	1.908
		Opex	0.130
		Removal	0.289
		Total	2.327
Total		Capex	1.908
		Opex	0.130
		Removal	0.289
		Total	2.327

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	1.900
		Opex	0.133
		Removal	0.266
		Total Cost	2.299
Sanction Variance (\$M)			Total Spend
		Capex	(0.008)
		Opex	0.003
		Removal	(0.023)
		Total Variance	(0.028)

#### 3.2 Analysis

This program was completed within the approved tolerance.

### 4 Improvements / Lessons Learned

The weekly program tracker has been developed to provide a mechanism for tracking and management of the program. When a work request coded to the overloaded transformer program is closed out in the Storms system (status 80). The tracker only counts items once the work request is status 80 in the STORMS system, so it's imperative that jobs are closed out when the work is completed.



**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 type="radio"/> Yes <input checked="" 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 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	Responsibilities
Investment Planning	Glen DiConza	Endorses relative to 5-year business plan or emergent work
Resource Planning	Anne Wyman	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Distribution Asset Management	Alan Labarre	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives

#### 6.2 **Reviewers**

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

Function	Individual
Finance	Patricia Easterly
Regulatory	Peter Zschokke
Jurisdictional Delegates	Jim Patterson
Procurement	Art Curran

**USSC Closure Paper**



**7 Decisions**

I approve this paper.

Signature.....*Chell*.....Date.....*9/2/16*.....

Executive Sponsor – Christopher Kelly,  
Acting Senior Vice President – Electric Process & Engineering

C005524

OS Cutout Replacements

## 5360-Narragansett Electric and Gas Project Revision Detail Report

<b>Fund Project Number:</b> <u>C005524</u>	<b>USSC #:</b> <u>FY16 Program</u>
<b>Revision:</b> <u>13</u>	<b>Budget Version:</b> <u>Default</u>
<b>Project Title:</b> <u>IE - OS Cutout Replacements</u>	
<b>Project Description:</b> <u>EI - OS Cutout Replacements</u>	

<b>Project Status:</b> <u>open</u>	
<b>Responsible Person:</b> <u>WYMAN, ANNE</u>	<b>Initiator:</b> <u>Diconza, Glen L</u>
<b>Spending Rationale:</b> <u>System Capacity &amp; Performance</u>	<b>Funding Type:</b> <u>P Electric Distribution Line RI</u>
<b>Budget Class:</b> <u>Reliability</u>	
<b>Capital by Category:</b>	
<b>Program Code:</b>	
<b>Project Risk Score:</b> <u>40</u>	<b>Project Complexity Score:</b> <u>15</u>

### Project Schedule / Expenditures

<b>Revision Status:</b> <u>Approved</u>	
<b>Est Start Date:</b> <u>4/1/2014</u>	<b>Est Complete Date:</b> <u>12/1/2018</u>
<b>Est In-Service Date:</b> <u>3/31/2018</u>	
<b>TTD Actuals:</b> <u>\$9,223,477</u>	<b>As Of:</b> <u>10/10/2017</u>

<b>Cost Breakdown</b>	<b><u>Capital</u></b>	<b><u>Expense</u></b>	<b><u>Removal</u></b>	<b><u>Total</u></b>	<b><u>Credits</u></b>
	<u>\$25,000</u>	<u>\$3,000</u>	<u>\$3,000</u>	<u>\$31,000</u>	<u>\$0</u>

### Justification / Risk Identification:

5/3/11 - Updated base estimate to add 2nd year base estimate. Approx 3100 potted porcelain cutouts will be removed in the current year.

1/9/07 - changed title from "EI - OS Cutout Replacements" This project is the Ocean State portion of the FY 2006 Cutout Replacement Program. Approximately 900 potted porcelain cutouts will be replaced in OS.

### Project Scope:

5/3/11 - Approx 3100 potted porcelain cutouts will be removed in the current year.

### Project Alternatives Considered:



<Enter data here>

**Additional Notes:**

5/3/11 - Updated base estimate to add 2nd year base estimate. Approx 3100 potted porcelain cutouts will be removed in the current year.

**Related Projects:**

**Project Number:**

**Project Name:**

**Approvals**

Line 1:	Date	<u>4/21/2015 14:23:31</u>	Approver	<u>curljo</u>	<u>DOA - Distribution Lev</u>
Line 2:	Date	<u>4/23/2015 09:05:20</u>	Approver	<u>Diconza, Glen L</u>	<u>DOA - Distribution Lev</u>
Line 3:	Date	<u>4/28/2015 09:03:57</u>	Approver	<u>Constable, Ryan</u>	<u>DOA - Distribution Lev</u>
Line 4:	Date	<u>4/28/2015 09:37:25</u>	Approver	<u>Cox, Roger D</u>	<u>DOA - Distribution Lev</u>
Line 5:	Date		Approver		

**\*\*\*Project Authorization is for Approved Revision Total Estimated Cost + 10%\*\*\***

**PowerPlan** ----- PPGPRD Database

File Edit Subsystem Batch Admin Preferences Window Help

Projects Assets Tables CR MyPlan Help Calc Print Win

**Funding Project Estimates - Summary** C005524 Current Total Authorized Amount: \$31,0...

Title **IE - OS Cutout Replacements**

Project Number **C005524**

**Budget Version** Default (active)

Revision **FY16**

Revision Status **Approved**

Revision No. **13**

Est Start Date **04/01/2014**

Est Complete Date **12/01/2018**

Est In Svc Date **03/31/2018**

Capital **\$25,000.00**

Expense **\$3,000.00**

Jobbing **\$0.00**

Retirement **\$0.00**

Removal **\$3,000.00**

Total (excl. Rets.) **\$31,000.00**

Credits **\$0.00**

Net **\$31,000.00**

Revision Info **Other Updates**

Revision **13** of 13 **Find Revision** **Send for Approval**

☐ Show 'Budget Only' Revisions

**Spending Estimates:**

**Grid Estimates**

**Forecast**

**Summarize from W/O**

**Copy Estimate**

**Property Estimates:**

**Unit Estimates**

**Create As Build**

**Delete Used Estimates**

**Edit:**

**New Revision**

**Delete Revision**

**Update**

**Update With Actuals**

**Import Estimates**

**Other:**

**Revision Comments**

**Released Dollars**

**Substitution**

**Slide**

**Version Compare**

**Close**

**Record** **3** of 16 **Audits**

**PowerPlan** ----- **PPGPRD Database**

File Edit Subsystem Batch Admin Preferences Window Help

Projects Assets Tables CR MyPPlan Help Calc Print Win

**Funding Project Estimates - Summary** C005524 Current Total Authorized Amount: \$31,0...

Title **IE - OS Cutout Replacements**

Project Number **C005524**

**Budget Version** **PPM Project Authorizations (a**

Revision

Revision Status **Approved**

Revision No. **10**

Est Start Date **04/01/2005**

Est Complete Date **03/31/2011**

Est In Svc Date **03/31/2011**

Capital **\$1,765,000.00**

Expense **\$177,000.00**

Jobbing **\$0.00**

Retirement **\$0.00**

Removal **\$194,000.00**

Total (excl. Rets.) **\$2,136,000.00**

Credits **\$0.00**

Net **\$2,136,000.00**

**Revision Info** **Other Updates**

Revision **10** of 13 **< > >|**

**Find Revision** **Send for Approval**

☐ **Show 'Budget Only' Revisions**

**Spending Estimates:**

**Grid Estimates**

**Forecast**

**Summarize from W/O**

**Copy Estimate**

**Property Estimates:**

**Unit Estimates**

**Create As Built**

**Delete Used Estimates**

**Edit:**

**New Revision**

**Delete Revision**

**Update**

**Update With Actuals**

**Import Estimates**

**Version Compare**

**Other:**

**Revision Comments**

**Released Dollars**

**Substitution**

**Slide**

**Close**

**Record** **3** of 16 **< > >|**

**Audits**

0



## US Sanction Paper

<b>Title:</b>	RI Cutout Replacements	<b>Sanction Paper #:</b>	USSC-12-136
<b>Project #:</b>	C05524 (3382)	<b>Sanction Type:</b>	Sanction
<b>Operating Company:</b>	The Narragansett Electric Company	<b>Date of Request:</b>	April 11, 2012
<b>Author:</b>	Edward S. Paluch	<b>Sponsor:</b>	Cheryl A. Warren
<b>Utility Service:</b>	Electricity T&D		

### 1 Executive Summary

#### 1.1 Sanctioning Summary:

This paper requests sanction of project C05524 in the amount of \$2.136M and a tolerance of +/- 10% for the purposes of full implementation of the program in FY12/13.

This sanction amount of \$2.136M for FY12/13 is broken down into:

\$1.765M Capex  
\$0.177M Opex  
\$0.194M Removal

#### 1.2 Brief Description:

In support of the approved "Potted Porcelain Cutout Strategy", this paper will provide for the FY12/13 funding to replace approximately 4,750 potted porcelain cutouts. This is the final year of this program and any remaining cutouts will be replaced via the Inspections and Maintenance (I&M) program.

211 feeders will have been surveyed through the life of the Potted Porcelain Cutout and Feeder Hardening Programs. The remaining 161 feeders are being surveyed as part of the I&M program.

#### 1.3 Summary of Projects:

Project Number	Project Title	Estimate Amount (\$)
C05524	IE – OS Cutout Replacements	\$2.136M
	<b>Total</b>	<b>\$2.136M</b>

**US Sanction Paper**



**1.4 Associated Projects:**

Project Number	Project Title	Company	Estimate Amount (\$)
Total			\$

**1.5 Prior Sanctioning History (including relevant approved Strategies):**

Date	Governance Body	Sanctioned Amount	Paper Title	Sanction Type

**1.6 Next Planned Sanction Review:**

Date (Month/Year)	Purpose of Sanction Review
6/2013	FY12/13 Annual Program Closure

**1.7 Category:**

Category	Reference to Mandate, Policy, or NPV Assumptions
<input type="checkbox"/> Mandatory	Potted Porcelain Cutout Strategy
<input checked="" type="checkbox"/> Policy-Driven	
<input type="checkbox"/> Justified NPV	

**1.8 Asset Management Risk Score**

Asset Management Risk Score: 41

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

☒ Reliability   ☐ Environment   ☐ Health & Safety

**1.9 Complexity Level: (if applicable)**

☐ High Complexity   ☐ Medium Complexity   ☒ Low Complexity

Complexity Score: 15

**US Sanction Paper**



**1.10 Business Plan:**

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
RI ISR FY12/13	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Over <input type="checkbox"/> Under	0

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

N/A

**1.12 Current Planning Horizon:**

Company Name	Current planning horizon							
\$M	Prior YR'S	Yr 1 11/12	Yr 2 12/13	Yr 3 13/14	Yr 4 14/15	Yr 5 15/16	Yr 6 +	Total
Proposed Capex Investment			1.765					1.765
Proposed Opex Investment			0.177					0.177
Proposed Removal Investment			0.194					0.194
CIAC / Reimbursement								0.000
Total	\$0.000	\$0.000	\$2.136	\$0.000	\$0.000	\$0.000	\$0.000	\$2.136

**1.13 Resources:**

Resource Sourcing		
Engineering & Design Resources to be provided	<input 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="checkbox"/> Red	<input type="checkbox"/> Amber <input checked="" type="checkbox"/> Green
Availability of external resources to deliver project:	<input type="checkbox"/> Red	<input type="checkbox"/> Amber <input checked="" type="checkbox"/> Green
Operational Impact		

**US Sanction Paper**



<b>Outage impact on network system:</b>	<input type="checkbox"/> Red	<input type="checkbox"/> Amber	<input checked="" type="checkbox"/> Green
<b>Procurement impact on network system:</b>	<input type="checkbox"/> Red	<input type="checkbox"/> Amber	<input checked="" type="checkbox"/> Green

**1.14 Key Issues (include mitigation of Red or Amber Resources):**

1	The deferral of the I&M Program may extend the time to replace all potted porcelain cutouts in Rhode Island.
2	
3	

**1.15 Key Milestones:**

<b>Milestone</b>	<b>Target Date: (Month/Year)</b>
FY12/13 Program Sanctioning	4/2012
FY12/13 Completion	3/2013
FY12/13 Annual Program Closure	6/2013

**1.16 Climate Change:**

Are financial incentives (e.g. carbon credits) available?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Contribution to National Grid's 2050 80% emissions reduction target:	<input checked="" type="checkbox"/> Neutral	<input type="checkbox"/> Positive <input type="checkbox"/> Negative
Impact on adaptability of network for future climate change:	<input checked="" type="checkbox"/> Neutral	<input type="checkbox"/> Positive <input type="checkbox"/> Negative

**1.17 List References:**

1	
2	
3	

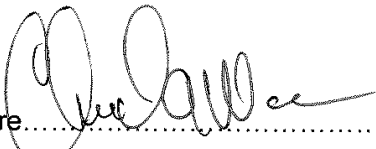
**US Sanction Paper**



**2 Recommendations:**

The **Sanctioning Authority USSC** is invited to:

- (a) APPROVE the investment of \$2.136M and a tolerance of +/- 10 % for the individual projects listed in the paper.
- (b) NOTE that Artie Georgacopoulos is the Project Manager and has the approved financial delegation.

Signature  Date 5/14/12  
Cheryl A. Warren, Vice President, Asset Management

I hereby approve the recommendations made in this paper.

Signature  Date 5/15/12  
Christopher E. Root, Senior Vice President Network Strategy

**3 Decisions**

The US Sanctioning Committee (USSC) approved this paper at a USSC meeting held on April 11, 2012.

Signature  Date 5/22/12  
Lee S. Eckert  
US Chief Financial Officer  
Chairman, US Sanctioning Committee



**USSC Closure Paper**



<b>Title:</b>	RI FY13 Cutout Replacements Program Closure	<b>Sanction Paper #:</b>	USSC-12-136C
<b>Project #:</b>	C005524	<b>Sanction Type:</b>	Closure
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	8/09/2016
<b>Author:</b>	Anne Wyman	<b>Sponsor:</b>	Carol Sedewitz, VP Electric Asset Management
<b>Utility Service:</b>	Electricity T&D	<b>Project Manager:</b>	Anne Wyman

**1 Executive Summary**

This paper is presented to close C005524 for fiscal year 2013. The total spend was \$1.543M. The latest sanctioned amount for this project was \$2.136M.

*The final spend amount is \$1.543M broken down into:*

*\$1.214M Capex  
\$0.125M Opex  
\$0.204M Removal*

**2 Project Summary**

This paper is provided for closure of the FY13 Potted Porcelain Cutout program. Funding was provided to replace approximately 4750 potted porcelain cutouts in Rhode Island. There were a total of 4067 potted porcelain cutouts replaced throughout the state during the fiscal year.

This was the final year of this program and any remaining cutouts will be identified and replaced through the Inspections and Maintenance (I&M) program.

## USSC Closure Paper



### 3 Over / Under Expenditure Analysis

#### 3.1 Summary Table

Actual Spending (\$M)			
Project #	Description		Total Spend
C055524	OS Cutout Replacements Program	Capex	1.214
		Opex	0.125
		Removal	0.204
		Total	1.543
Total		Capex	1.214
		Opex	0.125
		Removal	0.204
		Total	1.543

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	1.765
		Opex	0.177
		Removal	0.194
		Total Cost	2.136
Sanction Variance (\$M)			Total Spend
		Capex	0.551
		Opex	0.052
		Removal	(0.010)
		Total Variance	0.593

#### 3.2 Analysis

The original goal for FY13 was to replace 4750 cutouts so the budget was set based on the burn rate for that quantity. However, after the budget and goal were set, the design group identified only slightly more than 4000 cutouts remaining to be replaced. Therefore the goal was reduced to 4000 and accounted for the underspend. FY13 was the final year for targeted cutout replacement. The I&M program replaced this program, therefore the few remaining cutouts will be identified during inspection and will be replaced as a part of the new program.

### 4 Improvements / Lessons Learned

This is the final year of the program, not further improvements to be pursued.



## 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 type="radio"/> Yes <input checked="" 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

### 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	Glen DiConza	Endorses relative to 5-year business plan or emergent work
Resource Planning	Anne Wyman	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Distribution Asset Management	Alan Labarre	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives



**USSC Closure Paper**

**6.2 Reviewers**

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

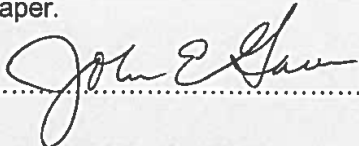
Function	Individual
Finance	Patricia Easterly
Regulatory	Peter Zschokke
Jurisdictional Delegates	Jim Patterson
Procurement	Art Curran

**USSC Closure Paper**



**7 Decisions**

I approve this paper.

Signature..........Date.....8/15/16

Executive Sponsor – Christopher Kelly,  
Acting Senior Vice President – Electric Process & Engineering

C018593

Substation Damage Failure Reserve

## 5360-Narragansett Electric and Gas Project Revision Detail Report

<b>Fund Project Number:</b> <u>C018593</u>	<b>USSC #:</b> <u>USSC-12-106</u>
<b>Revision:</b> <u>9</u>	<b>Budget Version:</b> <u>Default</u>
<b>Project Title:</b> <u>DxT Substation Dmg/Fail Reserve C49</u>	
<b>Project Description:</b> 03204 DxT Substation Dmg/Fail Reserve C49	

<b>Project Status:</b> <u>open</u>	
<b>Responsible Person:</b> <u>PARENTEAU, STEVE</u>	<b>Initiator:</b> <u>McGrath, James M</u>
<b>Spending Rationale:</b> <u>Damage/Failure</u>	<b>Funding Type:</b> <u>P Dist by Transmission Sub RI</u>
<b>Budget Class:</b> <u>Damage/Failure</u>	
<b>Capital by Category:</b>	
<b>Program Code:</b>	
<b>Project Risk Score:</b> <u>49</u>	<b>Project Complexity Score:</b> <u>15</u>

### Project Schedule / Expenditures

<b>Revision Status:</b> <u>Approved</u>											
<b>Est Start Date:</b> <u>10/16/2006</u>	<b>Est Complete Date:</b> <u>3/31/2020</u>										
<b>Est In-Service Date:</b> <u>3/31/2020</u>											
<b>TTD Actuals:</b> <u>\$2,536,115</u>	<b>As Of:</b> <u>10/10/2017</u>										
<b>Cost Breakdown</b>	<table border="0" style="width: 100%;"> <tr> <th style="text-align: left;"><u>Capital</u></th> <th style="text-align: left;"><u>Expense</u></th> <th style="text-align: left;"><u>Removal</u></th> <th style="text-align: left;"><u>Total</u></th> <th style="text-align: left;"><u>Credits</u></th> </tr> <tr> <td><u>\$491,833</u></td> <td><u>\$0</u></td> <td><u>\$0</u></td> <td><u>\$491,833</u></td> <td><u>\$0</u></td> </tr> </table>	<u>Capital</u>	<u>Expense</u>	<u>Removal</u>	<u>Total</u>	<u>Credits</u>	<u>\$491,833</u>	<u>\$0</u>	<u>\$0</u>	<u>\$491,833</u>	<u>\$0</u>
<u>Capital</u>	<u>Expense</u>	<u>Removal</u>	<u>Total</u>	<u>Credits</u>							
<u>\$491,833</u>	<u>\$0</u>	<u>\$0</u>	<u>\$491,833</u>	<u>\$0</u>							

### Justification / Risk Identification:

03204 DxT Substation Dmg/Fail Reserve C49

### Project Scope:

<Enter data here>

### Project Alternatives Considered:

<Enter data here>

**Additional Notes:**

<Enter data here>

**Related Projects:**

**Project Number:**

**Project Name:**

**Approvals**

Line 1:	Date	<u>4/25/2008 00:00:00</u>	Approver	<u>longshc</u>	<u>SAP Default Approver</u>
Line 2:	Date		Approver		
Line 3:	Date		Approver		
Line 4:	Date		Approver		
Line 5:	Date		Approver		

**\*\*\*Project Authorization is for Approved Revision Total Estimated Cost + 10%\*\*\***



**PowerPlan** ----- **PPGPRD Database**

File Edit Subsystem Batch Admin Preferences Window Help

Projects Assets Tables CR MyPlan Help Calc Print Win

**Funding Project Estimates - Summary** C018593 Current Total Authorized Amount: \$491,...

Title **DxT Substation Dmg/Fail Reserve C49**

Project Number **C018593**

**Budget Version** Default (active)

Revision **USSC-12-106**

Revision Status **Approved**

Revision No. **23**

Est Start Date **10/16/2006**

Est Complete Date **03/31/2020**

Est In Svc Date **03/31/2020**

Capital **\$550,000.00**

Expense **\$25,000.00**

Jobbing **\$0.00**

Retirement **\$0.00**

Removal **\$25,000.00**

Total (excl. Rets.) **\$600,000.00**

Credits **\$0.00**

Net **\$600,000.00**

**Spending Estimates:**

**Grid Estimates**

**Forecast**

**Summarize from W/O**

**Copy Estimate**

**Property Estimates:**

**Unit Estimates**

**Create As Built**

**Delete Used Estimates**

**Edit:**

**New Revision**

**Delete Revision**

**Update**

**Update With Actuals**

**Import Estimates**

**Version Compare**

**Other:**

**Revision Comments**

**Released Dollars**

**Substitution**

**Slide**

**Close**

**Revision Info** **Other Updates**

Revision **23** of **24** **<** **<** **>** **>**

**Find Revision** **Send for Approval**

☐ **Show 'Budget Only' Revisions**

**Audits**

**Record** **5** of **16** **<** **<** **>** **>**

This document has been reviewed for Critical Energy Infrastructure Information (CEII).



**US Sanction Paper**

<b>Title:</b>	Blanket Project Spending Authorization FY2013	<b>Sanction Paper #:</b>	USSC-12-106
<b>Project #:</b>	Multiple-See Appendix A and Appendix B	<b>Sanction Type:</b>	Project Sanction
<b>Operating Company:</b>	The Narragansett Electric Company	<b>Date of Request:</b>	April 11, 2012
<b>Author:</b>	Janice Flynn, Matt Roby	<b>Sponsor:</b>	Christopher E. Root
<b>Utility Service:</b>	Electricity T&D		

**1 Executive Summary**

**1.1 Sanctioning Summary:**

This paper requests the Sanctioning of The Narragansett Electric Company Blanket projects for fiscal year 2013 on a project line item basis, + /- 10%.

This sanction amount is \$32.189M (+/- 10%) broken down into:

\$ 26.777M Capex  
\$ 2.621M Opex  
\$ 2.791M Removal

**1.2 Brief Description:**

The capital blanket projects cover the installation and removal of distribution and transmission equipment in specifically identified categories and scopes of work for local communities in Rhode Island.

**1.3 Summary of Projects:**

Project Number	Project Title	Estimate Amount (\$)
	See Appendix A Distribution	\$ 30.379M
	See Appendix B Transmission	\$ 1.810M
	<b>Total</b>	<b>\$ 32.189M</b>

**1.4 Associated Projects:**

Project Number	Project Title	Company	Estimate Amount (\$)
None			
	<b>Total</b>		

**US Sanction Paper**



**1.5 Prior Sanctioning History (including relevant approved Strategies):**

Date	Governance Body	Sanctioned Amount	Paper Title	Sanction Type
None				

**1.6 Next Planned Sanction Review:**

Date (Month/Year)	Purpose of Sanction Review
July 2013	Closure

**1.7 Category:**

Category	Reference to Mandate, Policy, or NPV Assumptions
<input checked="" type="checkbox"/> Mandatory	All Blanket Projects are considered Mandatory Projects
<input type="checkbox"/> Policy-Driven	
<input type="checkbox"/> Justified NPV	

**1.8 Asset Management Risk Score**

Asset Management Risk Score: 49

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

☐ Reliability    ☐ Environment    ☐ Health & Safety

**1.9 Complexity Level: (if applicable)**

☐ High Complexity    ☐ Medium Complexity    ☐ Low Complexity

Complexity Score: N/A



**US Sanction Paper**

**1.10 Business Plan:**

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY2013 Approved Business Plan Dist	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Over <input type="checkbox"/> Under	\$0.000M
FY2013 Approved Business Plan Tran	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Over <input type="checkbox"/> Under	\$1.435M

**1.11 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.

**1.12 Current Planning Horizon:**

Company Name	Current planning horizon							
\$M	Prior YR'S	Yr 1 11/12	Yr 2 12/13	Yr 3 13/14	Yr 4 14/15	Yr 5 15/16	Yr 6 +	Total
Proposed Capex Investment			26.777					26.777
Proposed Opex Investment			2.621					2.621
Proposed Removal Investment			2.791					2.791
CIAC / Reimbursement			0.000					0.000
Total	\$0.000	\$0.000	\$32.189	\$0.000	\$0.000	\$0.000	\$0.000	\$32.189



**US Sanction Paper**

**1.13 Resources:**

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="checkbox"/> Red	<input type="checkbox"/> Amber <input checked="" type="checkbox"/> Green
Availability of external resources to deliver project:	<input type="checkbox"/> Red	<input type="checkbox"/> Amber <input checked="" type="checkbox"/> Green
Operational Impact		
Outage impact on network system:	<input type="checkbox"/> Red	<input type="checkbox"/> Amber <input checked="" type="checkbox"/> Green
Procurement impact on network system:	<input type="checkbox"/> Red	<input type="checkbox"/> Amber <input checked="" type="checkbox"/> Green

**1.14 Key Issues (include mitigation of Red or Amber Resources):**

1	
2	
3	

**1.15 Key Milestones:**

Milestone	Target Date: (Month/Year)
Project Sanction	March, 2012
Completion	March, 2013
Closure Paper	July, 2013

**1.16 Climate Change:**

Are financial incentives (e.g. carbon credits) available?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Contribution to National Grid's 2050 80% emissions reduction target:	<input checked="" type="checkbox"/> Neutral	<input type="checkbox"/> Positive <input type="checkbox"/> Negative
Impact on adaptability of network for future climate change:	<input checked="" type="checkbox"/> Neutral	<input type="checkbox"/> Positive <input type="checkbox"/> Negative

**1.17 List References:**

1	N/A
2	
3	

**US Sanction Paper**



**2 Recommendations:**

The **US Sanctioning Committee** is invited to:

- (a) APPROVE the FY 2013 Blanket Project Spending, of \$32.189M, with a tolerance of +/- 10% for the individual projects listed in Appendix A and Appendix B.
- (b) NOTE that Thomas Bennett is the Project Manager and has the approved financial delegation.
- (c) NOTE: In the event that any Blanket projects are not approved prior to the start of the FY2014 fiscal year, the FY2013 approval limits will remain in effect until such time as the FY2014 blanket projects are approved by USSC and/or other appropriate authority for approval.

Signature.....

A handwritten signature in black ink, appearing to read "Chris E. Root".

Date.....

11/29/12

Sponsor: Christopher E. Root, Senior Vice President Network Strategy

**3 Decisions**

The US Sanctioning Committee (USSC) approved this paper at a USSC meeting held on April 11, 2012.

Signature.....

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

Date.....

12/7/12

Lee S. Eckert

US Chief Financial Officer

Chairman, US Sanctioning Committee

## US Sanction Paper



### 4 Sanction Paper Detail

<b>Title:</b>	Blanket Project Spending Authorization FY2013	<b>Sanction Paper #:</b>	USSC-12-106
<b>Project #:</b>	Multiple-See Appendix A and Appendix B	<b>Date of Request:</b>	April 11, 2012
<b>Company Name:</b>	The Narragansett Electric Company	<b>Sponsor:</b>	Christopher E. Root
		<b>Author:</b>	Janice Flynn, Matt Roby

#### 4.1 Background

Blanket projects consist of many small value work orders that are typically standard construction and scope, of short duration, and are limited to total spending under \$100,000. Designs for distribution blanket work orders over \$10,000 require the approval of the supervisor of distribution design.

Aggregating similar, standards driven work into categories allows for efficient budgeting, tracking, and reporting of spending. Approval levels combine with blanket metrics and monthly reporting to provide oversight and control.

The blanket budget requirements are determined on a divisional (and regulatory) basis. This level of budgeting most readily provides for forecasting and budgetary control at a manageable level. This approach also provides for analysis to allow us to benchmark divisions across the service territory.

The Blanket category spending estimates are determined by a review of the historical and current year's budget, year-to-date actual, and forecasted spending. The estimates for the following year's budget are derived from a combination of forecasted inflation rates for materials, labor, and indirect cost, combined with market outlook, sector analysis, and overall economic conditions.

#### 4.2 Drivers

The use of capital blanket projects support the budgeting, forecasting and reporting requirements, internally and externally, for the management of our business and Mandatory requirements per section 1.7.



## ***US Sanction Paper***

### **4.3 Project Description**

The capital blanket projects cover the installation and removal of distribution and transmission equipment in specifically identified categories and scopes of work for local communities in Rhode Island.

### **4.4 Benefits Summary**

These blankets support mandatory requirements to perform work such as, New Residential and New Commercial connections, small value system performance improvements and damage and failure repairs.

### **4.5 Business Issues**

These projects are in the approved capital plan for the aggregate amount of \$31.759M. There is little or no impact on Commercial agreements or third party negotiations

### **4.6 Options Analysis**

#### **Recommended Option:**

The recommended approach is to authorize the projects listed in Appendix A and Appendix B as blankets.

A copy of this paper, signed by the chair of the US Sanctioning Committee will be attached to each blanket project in PPM and/or Power Plant for information, audit, and change control capture as authorized.

#### **Alternative 1:**

As these blankets support work considered mandatory, there are no viable alternatives.

### **4.7 Safety, Environmental and Project Planning Issues**

Safety issues related to the blanket are minimal. Environmental issues are related to the transformer blanket and the uncertainty related to the material costs required by environmental regulations



**US Sanction Paper**



**4.8 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	Economic or other conditions may change such that budget projections are invalid	2	5	1	10	2	Accept	None.	Entire risk remains.	Re-allocation of funds within the portfolio will be managed by Resource Planning to meet jurisdictional budgetary, statutory and regulatory requirements.
2	Individual work orders may exceed \$100k	5	1	1	5	5	Mitigate	Work orders will be monitored for charges on a monthly basis.	Work orders with legitimate charges will need to be resanctioned.	Individual work orders that exceed \$100k will be resanctioned as specific projects.



## US Sanction Paper

### 4.9 Permitting

Permitting is determined on an individual work order basis.

### 4.10 Investment Recovery

#### 4.10.1 Investment Recovery and Regulatory Implications<sup>20</sup>

Investment recovery will be through standard rate recovery mechanisms.

#### 4.10.2 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$5.355M. 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.

#### 4.10.3 CIAC / Reimbursement

Reimbursement will vary on a work order by work order basis.

### 4.11 Financial Impact to National Grid

#### 4.11.1 Cost Summary Table

Project #	Project Description	Project Estimate Level	\$M	Prior YR Spending	Current Planning Horizon							Total
					YR1 11/12	YR2 12/13	YR3 13/14	YR4 14/15	YR5 15/16	YR6+		
Multiple	FY13 Blanket	+/- 10%	Capex			26.777					26.777	
See Appendices	Spending Auth		Opex			2.621					2.621	
			Removal			2.791					2.791	
			Total	0.000	0.000	32.189	0.000	0.000	0.000	0.000	32.189	
Total Proposed Sanction												
			Capex	0.000	0.000	26.777	0.000	0.000	0.000	0.000	26.777	
			Opex	0.000	0.000	2.621	0.000	0.000	0.000	0.000	2.621	
			Removal	0.000	0.000	2.791	0.000	0.000	0.000	0.000	2.791	
			Total	0.000	0.000	32.189	0.000	0.000	0.000	0.000	32.189	
				\$0.000	\$0.000	\$32.189	\$0.000	\$0.000	\$0.000	\$0.000	\$32.189	

#### 4.11.2 Project Budget Summary Table

Project Costs per Business Plan		Prior Year Spending*	YR 1 11/12	YR 2 12/13	YR 3 13/14	YR 4 14/15	YR 5 15/16	YR 6+	Total
	Capex	0.000	0.000	25.732	0.000	0.000	0.000	0.000	25.732
	Opex	0.000	0.000	2.261	0.000	0.000	0.000	0.000	2.261
	Removal	0.000	0.000	2.761	0.000	0.000	0.000	0.000	2.761
	Total Cost in B Plan	0.000	0.000	30.754	0.000	0.000	0.000	0.000	\$30.754

\* P/Y Actuals

Variance (Business Plan-Project Estimate)		Prior Year Spending	YR 1 11/12	YR 2 12/13	YR 3 13/14	YR 4 14/15	YR 5 15/16	YR 6+	Total
	Capex	0.000	0.000	(1.045)	0.000	0.000	0.000	0.000	(1.045)
	Opex	0.000	0.000	(0.360)	0.000	0.000	0.000	0.000	(0.360)
	Removal	0.000	0.000	(0.030)	0.000	0.000	0.000	0.000	(0.030)
	Total Variance	0.000	0.000	(1.435)	0.000	0.000	0.000	0.000	(\$1.435)



## ***US Sanction Paper***

### **4.11.3 Cost Assumptions**

The Blanket projects are analyzed on a twelve month moving monthly average in order to align the forecast to the actual trend. Each division was viewed and analyzed independent of the other divisions. The blanket actual costs were broken down into three major categories: payroll, material, and other to appropriately fund to the FY13 levels. Extracting the data on this level provides a more accurate forecast as the inflation and volume levels fluctuate between the three categories.

#### Group Investment

Blanket projects are treated as mandatory investments under the common definition developed by Group Investment by lines of business. The blanket projects are aggregated with the other projects in the portfolio and incorporated into the risks and remuneration models used by Group Investment.

#### Inflation

Payroll increase was applied at 3% per annum. Assumptions for Materials were calculated using the Commodity Pricing Model. Those numbers were then conveyed to the key stakeholders to review and modify if necessary. "Other" inflationary assumption will follow CPI index. The commodity pricing model and CPI were applied in common with other lines of Business through the Group Investment process.

The Cost of Removal and Capital Related Expense were calculated based on the historical percentage associated with the corresponding budget classifications.

#### Volume

All blanket categories were forecasted individually to derive the appropriate levels. The volume adjustment assumptions were based on related trends or forecasted economic data and then discussed and reviewed with the key stakeholders to identify known volume increases anticipated within the next five fiscal years. Asset Strategies were reviewed to fund according to the identified and anticipated work levels. Policy driven blankets had no volume increases assumed.

The net outcome of the inflation and volume analysis was a Total Blanket Projects Budget of \$32.189M for Capex, Opex, and Removal combined in the Fiscal Year 2013.

### **4.11.4 Net Present Value / Cost Benefit Analysis**

Not Financially Driven

### **4.11.5 Additional Impacts**

N/A



## US Sanction Paper

### 4.12 Statements of Support

#### 4.12.1 Supporters

Role	Name	Responsibilities
<i>Sponsor/ Asset Manager/ Asset Owner/ Process Owner</i>		Endorses the project aligns with jurisdictional objectives
Investment Planning	Ray Morey	Endorses relative to 5-year business plan or emergent work
Resources Planning	Tom Bennett	Endorses Resources, cost estimate, schedule, and Portfolio Alignment

#### 4.12.2 Reviewers

Reviewer List	Name
Finance	Karen Hamel
Regulatory	Peter Zschokke
Procurement	Ross Turini
Jurisdictional Delegates	Jennifer Grimsley



**US Sanction Paper**

**5 Appendices**

**Appendix A - Distribution**

**FY 2013 Blanket Sanction – Rhode Island**

Items	Funding Project #	Project ID	Co #	Budget Class	Spending Rationale	Total Capital Project Budget (FY12/13)	Total O&M Project Budget (FY12/13)	Total Removal Project Budget (FY12/13)	Total Budget
03489 Narragansett Meter Purchases	CN4904	3489	49	Meters - Dist	Statutory/Regulatory	1,147,000	0	0	1,147,000
03491 Narragansett Transformer Purchases	CN4920	3491	49	Transformers & Related Equipment	Statutory/Regulatory	3,655,000	0	0	3,655,000
03550 Ocean St-Dist-Subs Blanket	COS002	3550	49	Damage/Failure	Damage/Failure	649,000	97,350	97,350	843,700
03544 Ocean St-Dist-Meter Blanket	COS004	3544	49	Meters - Dist	Statutory/Regulatory	668,000	46,760	100,200	814,960
03541 Ocean St-Dist-Genl Equip Blanket	COS006	3541	49	General Equipment - Dist	Non-Infrastructure	186,000	5,580	27,900	219,480
03542 Ocean St-Dist-Land/Rights Blanket	COS009	3542	49	Land and Land Rights	Statutory/Regulatory	297,000	0	0	297,000
03546 Ocean St-Dist-New Bus-Resid Blanket	COS010	3546	49	New Business - Residential	Statutory/Regulatory	3,194,000	383,280	415,220	3,992,500
03545 Ocean St-Dist-New Bus-Comm Blanket	COS011	3545	49	New Business - Commercial	Statutory/Regulatory	3,000,000	240,000	240,000	3,480,000
03549 Ocean St-Dist-St Light Blanket	COS012	3549	49	Outdoor Lighting - Capital	Statutory/Regulatory	571,000	45,680	62,810	679,490
03547 Ocean St-Dist-Public Require Blankt	COS013	3547	49	Public Requirements	Statutory/Regulatory	1,054,000	210,800	242,420	1,507,220
03540 Ocean St-Dist-Damage&Failure Blankt	COS014	3540	49	Damage/Failure	Damage/Failure	7,648,000	841,280	1,223,680	9,712,960
03548 Ocean St-Dist-Reliability Blanket	COS015	3548	49	Reliability - Dist	System Capacity & Performance	1,162,000	122,010	92,960	1,376,970
03543 Ocean St-Dist-Load Relief Blanket	COS016	3543	49	Load Relief	System Capacity & Performance	285,000	19,950	32,775	337,725
03539 Ocean St-Dist-Asset Replace Blanket	COS017	3539	49	Asset Replacement	Asset Condition	1,136,000	164,720	170,400	1,471,120
03551 Ocean St-Dist-Telecomm Blanket	COS021	3551	49	Telecommunications Capital - Dist	Non-Infrastructure	150,000	0	0	150,000
03538 Ocean St-Dist-3rd Party Attch Blnkt	COS022	3538	49	3rd Party Attachments	Statutory/Regulatory	555,000	83,250	55,500	693,750
<b>Totals</b>						<b>25,357,000</b>	<b>2,260,660</b>	<b>2,761,215</b>	<b>30,378,875</b>

**US Sanction Paper**



**Appendix B - Transmission FY 2013 Blanket Sanction – Rhode Island**

Project Description	Funding Project #	Co#	Spending Rationale	Total Capital Project Budget (FY 12/13)	Total O&M Project Budget (FY 12/13)	Total Removal Project Budget (FY 12/13)	Total Budget
TransLine Damage-Failure Budget Res	C03168	49	Damage/Failure	105,000	0	0	105,000
Trans Sub Budgetary Reserve - NECO	C03500	49	Damage/Failure	300,000	135,000	5,000	440,000
Trans Study Budgetary Reserve- NECo	C08377	49	System Capacity & Performance	50,000	100,000	0	150,000
Trans UG Budgetary Reserve - Co 49	C13624	49	Damage/Failure	100,000	0	0	100,000
DxT Substation Dmg/Fail Reserve C49	C18593	49	Damage/Failure	550,000	25,000	25,000	600,000
TxT Study Budgetary Reserve - NECO	C31547	49	Asset Condition	50,000	50,000	0	100,000
DxT Study Budgetary Reserve - NECO	C28251	49	Asset Condition	50,000	50,000	0	100,000
T Sub Storm Budgetary Reserve - NEC	C38864	49	Damage/Failure	50,000	0	0	50,000
T Line Storm Budgetary Reserve - NEC	C38866	49	Damage/Failure	115,000	0	0	115,000
T Line Study Budgetary Reserve - NEC	C42288	49	Asset Condition	50,000	0	0	50,000
Totals:				1,420,000	360,000	30,000	1,810,000

**USSC Closure Paper**



<b>Title:</b>	RI FY13 Blanket Closure Paper	<b>Sanction Paper #:</b>	USSC-12-106C
<b>Project #:</b>	See Appendix A	<b>Sanction Type:</b>	Closure
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	03/27/2017
<b>Author:</b>	Anne Wyman	<b>Sponsor:</b>	Carol Sedewitz, VP Electric Asset Management
<b>Utility Service:</b>	Electricity T&D	<b>Project Manager:</b>	Anne Wyman

**1 Executive Summary**

This paper is presented to close FY13 Blankets. The total spend was \$26.238M. The latest sanctioned amount for this project was \$30.606M.

*The final spend amount is \$26.238M broken down into:*

*\$20.481M Capex  
\$3.995M Opex  
\$1.762M Removal*

**2 Project Summary**

This paper recommends closure of the FY13 Blanket Projects for The Narragansett Electric Company. Blanket Projects are budgeted each year and are reset at the beginning of each fiscal year to reflect the new budget for that year. The approved budgets for each blanket project are entered into the Primavera Portfolio Management (PPM) application at the start of the new fiscal year. During the year the Blanket Projects approval levels are monitored against the forecast file that is used at the monthly Resource Planning Meetings sponsored by Resource Planning. In FY13, the blanket projects for The Narragansett Electric Company were approved for \$30.606M, with total spend being \$26.238M. Within the total of 16 projects there were a number of under runs and over runs. The final accounting for each blanket project is provided as Appendix A.

**USSC Closure Paper**



**3 Over / Under Expenditure Analysis**

**3.1 Summary Table**

Actual Spending (\$M)			
Project #	Description		Total Spend
Multiple	RI FY13 Blankets	Capex	20.481
		Opex	3.995
		Removal	1.762
		Total	26.238
Total		Capex	20.481
		Opex	3.995
		Removal	1.762
		Total	26.238

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	25.532
		Opex	2.287
		Removal	2.787
		Total Cost	30.606
Sanction Variance (\$M)			Total Spend
		Capex	5.051
		Opex	(1.708)
		Removal	1.025
		Total Variance	4.368

**3.2 Analysis**

In FY12, monthly analyses of blankets were introduced. This practice continued in FY13 prior to the implementation of SAP. This monthly analysis allowed for review of changes in month over month spends, identifying any positive or negative trending, and improvements to our forecasting ability. Post SAP implementation, the Company experienced some difficulty generating reliable financial data relative to actual blanket spend, which temporarily made forecasting and tracking difficult. Please refer to Appendix A for blanket-specific analyses.



## USSC Closure Paper



### 4 Improvements / Lessons Learned/ Root Cause

Improvements may need to be made to the budget file and forecast process to allow for more clarity on the drivers of the over/under spend in each blanket. In turn, this will allow for a better forecast in future months and for communication with Investment Planning when setting future budget levels. Volumes exceeded budget levels.

### 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 which have not yet been closed for reasons including but not limited to:
- design and/or construction have not yet begun
  - 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

A summary of the status for all work orders charged in the fiscal year is provided below. In addition, for any work order which remains open, a table of the

## USSC Closure Paper



disposition determined during Phase 1 of the Work Order Closure effort is provided.

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. (Refer to Work Order Summary Tables)  
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

- (3) Refer to Section 4 – Improvements/Lessons Learned/Root Cause

## 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	Glen DiConza	Endorses relative to 5-year business plan or emergent work
Resource Planning	Anne Wyman	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Distribution Asset Management	Alan Labarre	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives

### 6.2 Reviewers

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

Function	Individual
Finance	Patricia Easterly
Regulatory	Peter Zschokke
Jurisdictional Delegates	Jim Patterson
Procurement	Art Curran

**USSC Closure Paper**



**7 Decisions**

The Senior Executive Sanctioning committee (SESC) approved this paper at a SESC meeting held on 3/27/2017.

Signature.....

Date.....

Margaret Smith

US Chief Financial Officer

Chair, Senior Executive Sanctioning Committee

**USSC Closure Paper**



Below is the summary of Blanket Project Variances from budgeted to actual amounts for the fiscal years.

				Summary Variance Discussion
Project #	Description	FY2013 Approved Amount	FY2013 Actual Spending	
COS0002	Ocean St-Dist-Subs Blanket (Damage/Failure)	843,700	961,934	FY13 was within tolerance.
C018593	Ocean St-DxT Subs D/F Reserve	227,500	74,947	
	Total	1,071,200	1,036,881	
	Variance \$\$ - Over/(Under)	(34,319)		
	Variance % - Over/(Under)	(3.2%)		
Project #	Description	FY2013 Approved Amount	FY2013 Actual Spending	
COS0004	Ocean St-Dist-Meter Blanket	814,960	506,402	FY13 saw a decrease in new business due to economic factors and required less meters to be set.
	Variance \$\$ - Over/(Under)	(308,558)		
	Variance % - Over/(Under)	(37.9%)		
Project #	Description	FY2013 Approved Amount	FY2013 Actual Spending	
COS0006	Ocean St-Dist-Genl Equip Blanket	219,480	359,451	The FY13 variance was driven by equipment purchase carryovers and in-year items.
	Variance \$\$ - Over/(Under)	139,971		
	Variance % - Over/(Under)	63.8%		
Project #	Description	FY2013 Approved Amount	FY2013 Actual Spending	
COS0009	Ocean St-Dist-Land/Rights Blanket	297,000	157,441	FY13 charges are being applied to specific projects rather than the blankets when possible.
	Variance \$\$ - Over/(Under)	(139,559)		
	Variance % - Over/(Under)	(47.0%)		
Project #	Description	FY2013 Approved Amount	FY2013 Actual Spending	
COS0010	Ocean St-Dist-New Bus-Resid Blanket	3,992,500	4,527,094	In FY13, residential applications and construction showing an increase due to economic factors.
	Variance \$\$ - Over/(Under)	534,594		
	Variance % - Over/(Under)	13.4%		
Project #	Description	FY2013 Approved Amount	FY2013 Actual Spending	
COS0011	Ocean St-Dist-New Bus-Comm Blanket	3,480,000	3,140,929	FY13 was within tolerance.
	Variance \$\$ - Over/(Under)	(339,071)		
	Variance % - Over/(Under)	(9.7%)		

**USSC Closure Paper**



Project #	Description	FY2013 Approved Amount	FY2013 Actual Spending	
COS0012	Ocean St-Dist-St Light Blanket	679,490	864,495	In FY13, an increase of work was identified under this blanket than budgeted.
	Variance \$\$ - Over/(Under)	185,005		
	Variance % - Over/(Under)	27.2%		
Project #	Description	FY2013 Approved Amount	FY2013 Actual Spending	
COS0013	Ocean St-Dist-Public Require Blankt	1,507,220	(88,455)	In FY13, a large customer contribution for an undergrounding project was applied to the blanket resulting in an underspend for the year. The credit was moved to the correct funding project in FY14.
	Variance \$\$ - Over/(Under)	(1,595,675)		
	Variance % - Over/(Under)	(105.9%)		
Project #	Description	FY2013 Approved Amount	FY2013 Actual Spending	
COS0014	Ocean St-Dist-Damage/Failure Blankt	9,712,960	9,269,399	In FY13, the spend was within tolerance.
	Variance \$\$ - Over/(Under)	(443,561)		
	Variance % - Over/(Under)	(4.6%)		
Project #	Description	FY2013 Approved Amount	FY2013 Actual Spending	
COS0015	Ocean St-Dist-Reliability Blanket	1,376,970	(365,944)	In February of 2012, a \$3.2M credit for salvage from the prior year was applied to this blanket. This was an account adjustment to the reclass of salvage from deferred revenue to Removal cost. In FY13, the salvage credit applied to the reliability blanket drove the variance. The credit was associated with funds received
	Variance \$\$ - Over/(Under)	(1,742,914)		
	Variance % - Over/(Under)	(126.6%)		
Project #	Description	FY2013 Approved Amount	FY2013 Actual Spending	
COS0016	Ocean St-Dist-Load Relief Blanket	337,725	357,422	FY13 spend was within tolerance.
	Variance \$\$ - Over/(Under)	19,697		
	Variance % - Over/(Under)	5.8%		
Project #	Description	FY2013 Approved Amount	FY2013 Actual Spending	
COS0017	Ocean St-Dist-Asset Replace Blanket	1,471,120	1,818,546	FY13 saw an increase in work identified and constructed under this blanket.
	Variance \$\$ - Over/(Under)	347,426		
	Variance % - Over/(Under)	23.6%		
Project #	Description	FY2013 Approved Amount	FY2013 Actual Spending	
COS0020	Telecommunications Capital - Dist	150,000	-	New blanket for FY13 that was not utilized.
	Variance \$\$ - Over/(Under)	(150,000)		
	Variance % - Over/(Under)	(100.0%)		
Project #	Description	FY2013 Approved Amount	FY2013 Actual Spending	
COS0022	Ocean St-Dist-3rd Party Attch Blnkt	693,750	184,454	FY13 saw fewer applicants than anticipated and less work required to process the applications.
	Variance \$\$ - Over/(Under)	(509,296)		
	Variance % - Over/(Under)	(73.4%)		



**USSC Closure Paper**

Project #	Description	FY2013 Approved Amount	FY2013 Actual Spending	
CN4920	NARRAGANSETT TRANSFORMER PURCHASES	3,655,000	3,425,615	FY13 was within tolerance.
	Variance \$\$ - Over/(Under)	(229,385)		
	Variance % - Over/(Under)	(6.3%)		
Project #	Description	FY2013 Approved Amount	FY2013 Actual Spending	
CN4904	NARRAGANSETT METER PURCHASES	1,147,000	1,043,493	FY13 was within tolerance.
	Variance \$\$ - Over/(Under)	(103,507)		
	Variance % - Over/(Under)	(9.0%)		
Totals		FY2013 Approved Amount	FY2013 Actual Spending	
Capex		30,606,375	26,237,223	
Opex		25,532,000	20,480,410	
Removal		2,286,910	3,995,092	
		2,787,465	1,761,721	
		30,606,375	26,237,223	
		(4,369,152)		
		(14.3%)		

C022433

OS Storm (Weather) Capital Project

## 5360-Narragansett Electric and Gas Project Revision Detail Report

<b>Fund Project Number:</b> <u>C022433</u>	<b>USSC #:</b> <u>USSC-17-220</u>
<b>Revision:</b> <u>8</u>	<b>Budget Version:</b>
<b>Project Title:</b> <u>OSD Storm Cap Confirm Program Proj</u>	
<b>Project Description:</b> To accumulate the amount of time and material charged for the Storm Events in OSD - Company 49 -/ 5360	

<b>Project Status:</b> <u>open</u>	
<b>Responsible Person:</b> <u>WYMAN, ANNE</u>	<b>Initiator:</b> <u>Hellmuth, Kevin J</u>
<b>Spending Rationale:</b> <u>Damage/Failure</u>	<b>Funding Type:</b> <u>P Electric Distribution Line RI</u>
<b>Budget Class:</b> <u>Major Storms - Dist</u>	
<b>Capital by Category:</b>	
<b>Program Code:</b>	
<b>Project Risk Score:</b> <u>49</u>	<b>Project Complexity Score:</b> <u>15</u>

### Project Schedule / Expenditures

<b>Revision Status:</b> <u>Approved</u>	
<b>Est Start Date:</b> <u>4/1/2013</u>	<b>Est Complete Date:</b> <u>3/31/2018</u>
<b>Est In-Service Date:</b> <u>3/31/2018</u>	
<b>TTD Actuals:</b> <u>\$23,312,520</u>	<b>As Of:</b> <u>10/10/2017</u>
<b>Cost Breakdown</b>	
<u><b>Capital</b></u>	<u><b>Expense</b></u>
<u><b>Removal</b></u>	<u><b>Total</b></u>
<u><b>Credits</b></u>	
<u>\$1,550,000</u>	<u>\$310,000</u>
<u>\$310,000</u>	<u>\$2,170,000</u>
<u>\$0</u>	

### Justification / Risk Identification:

This project will capture charges associated with capital storm restoration in OS.

### Project Scope:

<Enter data here>

### Project Alternatives Considered:



<Enter data here>

**Additional Notes:**

Project C22433/PPM3608 was submitted for approval as a Program in FY12. J.Flynn

**Related Projects:**

**Project Number:**

**Project Name:**

**Approvals**

Line 1:	Date	<u>5/25/2017 12:31:41</u>	Approver	<u>monted</u>	<u>USSC Approver</u>
Line 2:	Date		Approver		
Line 3:	Date		Approver		
Line 4:	Date		Approver		
Line 5:	Date		Approver		

**\*\*\*Project Authorization is for Approved Revision Total Estimated Cost + 10%\*\*\***

**PowerPlan** ----- **PPGPRD Database**

File Edit Subsystem Batch Admin Preferences Window Help

Projects Assets Tables CR MyPPlan Help Calc Print Win

**Funding Project Estimates - Summary** C022433 Current Total Authorized Amount: \$2,17...

Title **OSD Storm Cap Confirm Program Proj**  
Project Number **C022433**

**Budget Version** No Assigned Versions  
Revision **17-220 FY18**  
Revision Status **Approved**  
Revision No. **8**  
Est Start Date **04/01/2013**  
Est Complete Date **03/31/2018**  
Est In Svc Date **03/31/2018**  
Capital **\$1,550,000.00**  
Expense **\$310,000.00**  
Jobbing **\$0.00**  
Retirement **\$0.00**  
Removal **\$310,000.00**  
Total (excl. Rets.) **\$2,170,000.00**  
Credits **\$0.00**  
Net **\$2,170,000.00**

**Revision Info** Other Updates

Revision **8 of 8** **< >**  
**Find Revision** **Send for Approval**

☐ Show 'Budget Only' Revisions

**Spending Estimates:**  
**Grid Estimates**  
**Forecast**  
**Summarize from W/O**  
**Copy Estimate**

**Property Estimates:**  
**Unit Estimates**  
**Create As Built**  
**Delete Used Estimates**

**Edit:**  
**New Revision**  
**Delete Revision**  
**Update**  
**Update With Actuals**  
**Import Estimates**

**Other:**  
**Revision Comments**  
**Released Dollars**  
**Substitution**  
**Slide**

**Version Compare** **Close**

Record **6** of 16 **< >**  
**Audits**

**PowerPlan** ----- **PPGPRD Database**

File Edit Subsystem Batch Admin Preferences Window Help

Projects Assets Tables CR MyPPlan Help Calc Print Win

**Funding Project Estimates - Summary** C022433 Current Total Authorized Amount: \$2,17... \_ □ ×

Title **OSD Storm Cap Confirm Program Proj**  
Project Number **C022433**

**Budget Version** Default [active]  
Revision **16-272 FY17 Program**  
Revision Status **Approved**  
Revision No. **7**  
Est Start Date **04/01/2013**  
Est Complete Date **03/31/2018**  
Est In Svc Date **03/31/2018**  
Capital **\$1,500,000.00**  
Expense **\$150,000.00**  
Jobbing **\$0.00**  
Retirement **\$0.00**  
Removal **\$225,000.00**  
Total (excl. Rets.) **\$1,875,000.00**  
Credits **\$0.00**  
Net **\$1,875,000.00**

**Spending Estimates:**  
Grid Estimates  
Forecast  
Summarize from W/O  
Copy Estimate

**Property Estimates:**  
Unit Estimates  
Create As Built  
Delete Used Estimates

**Edit:**  
New Revision  
Delete Revision  
Update  
Update With Actuals  
Import Estimates  
Version Compare

**Other:**  
Revision Comments  
Released Dollars  
Substitution  
Slide  
Close

Revision Info **Other Updates**  
Revision **7** of 8 **< > >I**  
**Find Revision** **Send for Approval**  
☐ Show 'Budget Only' Revisions

**Record 6 of 16** **< > >I**  
**Audits**

**PowerPlan** ----- **PPGPRD Database**

File Edit Subsystem Batch Admin Preferences Window Help

Projects Assets Tables CR MyPPlan Help Calc Print Win

**Funding Project Estimates - Summary** C022433 Current Total Authorized Amount: \$2,17...

Title **OSD Storm Cap Confirm Program Proj**

Project Number **C022433**

**Budget Version** Default (inactive)

Revision **15-107 FY16Pr**

Revision Status **Approved**

Revision No. **6**

Est Start Date **04/01/2013**

Est Complete Date **03/31/2018**

Est In Svc Date **03/31/2018**

Capital **\$1,000,000.00**

Expense **\$80,000.00**

Jobbing **\$0.00**

Retirement **\$0.00**

Removal **\$80,000.00**

Total (excl. Rets.) **\$1,160,000.00**

Credits **\$0.00**

Net **\$1,160,000.00**

**Spending Estimates:**

Grid Estimates

Forecast

Summarize from WO

Copy Estimate

**Property Estimates:**

Unit Estimates

Create As Built

Delete Used Estimates

**Edit:**

New Revision

Delete Revision

Update

Update With Actuals

Import Estimates

**Other:**

Revision Comments

Released Dollars

Substitution

Slide

Version Compare

Close

Revision Info **Other Updates**

Revision **6** of 8 **< > >|**

**Find Revision** **Send for Approval**

☐ Show 'Budget Only' Revisions

**Audits**

Record **6** of 16 **< > >|**

**PowerPlan** ----- **PPGPRD Database**

File Edit Subsystem Batch Admin Preferences Window Help

Projects Assets Tables CR MyPPlan Help Calc Print Win

**Funding Project Estimates - Summary** C022433 Current Total Authorized Amount: \$2,17... \_ □ ×

Title **OSD Storm Cap Confirm Program Proj**

Project Number **C022433**

**Budget Version** PPM Project Authorizations [a]

Revision

Revision Status **Approved**

Revision No. **3**

Est Start Date **05/01/2007**

Est Complete Date **03/31/2012**

Est In Svc Date **03/31/2012**

Capital **\$460,000.00**

Expense **\$92,000.00**

Jobbing **\$0.00**

Retirement **\$0.00**

Removal **\$52,900.00**

Total (excl. Rets.) **\$604,900.00**

Credits **\$0.00**

Net **\$604,900.00**

**Spending Estimates:**

**Grid Estimates**

**Forecast**

**Summarize from W/O**

**Copy Estimate**

**Property Estimates:**

**Unit Estimates**

**Create As Built**

**Delete Used Estimates**

**Edit:**

**New Revision**

**Delete Revision**

**Update**

**Update With Actuals**

**Import Estimates**

**Version Compare**

**Other:**

**Revision Comments**

**Released Dollars**

**Substitution**

**Slide**

**Close**

**Revision Info** **Other Updates**

Revision **3** of 8 **K < > >I**

**Find Revision** **Send for Approval**

☐ **Show 'Budget Only' Revisions**

**Audits**

**Record 6 of 16** **K < > >I**

D



## Short Form Sanction Paper- Instructions

<b>Title:</b>	Rhode Island Major Storm Program Project Sanction – FY2016	<b>Sanction Paper #:</b>	USSC-15-107
<b>Project #:</b>	C022433	<b>Sanction Type:</b>	Sanction
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	April 14, 2015
<b>Author:</b>	Glen DiConza	<b>Sponsor:</b>	John E. Gavin - Vice President Electric Asset Management
<b>Utility Service:</b>	Electricity T&D	<b>Project Manager:</b>	Anne Wyman

### 1 Executive Summary

#### 1.1 Sanctioning Summary

This paper requests the sanction of \$1.160M for the Major Storm Program Project C022433 for The Narragansett Electric Company. The sanction amount will have a tolerance of +/- 10% for the purposes of capital replacements performed during major storm events in fiscal year 2016.

The sanction amount is **\$1.160M** is broken down as follows:

- \$1.000M Capex
- \$0.080M Opex
- \$0.080M Removal

#### 1.2 Project Summary

This is the annual sanction of the Major Storm Program Project. This project is meant to estimate spending on capital replacements performed during major storm events during the fiscal year.

### 2 Project Detail

#### 2.1 Background

A Company level storm project has to track the cost of capital replacements/additions during major storm events for the given fiscal year. Capital Work orders are set up for each storm event so that the costs can be properly tracked and reported. This sanction



### **Short Form Sanction Paper- Instructions**

does not include expense only storm projects tracked and recovered separately through the proper storm fund recovery mechanisms.

#### **2.2 Drivers**

Each year the Company experiences severe weather events which cause damage to the electrical system requiring capital repair. While the storm related costs during various fiscal years vary greatly, the budget for this project has been set up as a "placeholder" so that the capital costs are more easily collected and reported as appropriate.

#### **2.3 Project Description**

This project has been created and approved so it is available for work orders to be opened immediately as an anticipated storm approaches the Company's service territory. These work orders will be used to collect the costs of capital replacements/additions repairing damage to the electrical system by the storm.

#### **2.4 Benefits**

This project is required to facilitate the proper charging and reporting of storm related capital charges. Having the accounting immediately available is an important step to proper cost charging/tracking during storm events.

#### **2.5 Business & Customer Issues**

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

#### **2.6 Alternatives**

N/A

#### **2.7 Investment Recovery**

Investment recovery will be through standard rate recovery mechanisms.

##### **2.7.1 Customer Impact**

Impact will vary based on the actual amount incurred during FY2016.



## 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)
C022433	D-Line	OSD Storm Cap Confirm Program Proj	1.160
Total			1.160

#### 3.2 Associated Projects

N/A

#### 3.3 Prior Sanctioning History

N/A - program

#### 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	Mandatory Major Storm/Damage Failure Capital

#### 3.5 Asset Management Risk Score

Asset Management Risk Score: 49



## Short Form Sanction Paper- Instructions



### 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: 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 (\$)
FY16 – FY20 Capital Investment Plan	<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

N/A



## Short Form Sanction Paper- Instructions

### 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
					2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	
C022433	OSD Storm Cap Confirm Program Proj	+/- 10%	CapEx	-	1.000	-	-	-	-	-	1.000
			OpEx	-	0.080	-	-	-	-	0.080	
			Removal	-	0.080	-	-	-	-	0.080	
			Total	-	1.160	-	-	-	-	1.160	
Total Project Sanction			CapEx	-	1.000	-	-	-	-	1.000	
			OpEx	-	0.080	-	-	-	-	0.080	
			Removal	-	0.080	-	-	-	-	0.080	
			Total	-	1.160	-	-	-	-	1.160	

### 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 +	
		2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	
CapEx	0.000	1.000	0.000	0.000	0.000	0.000	0.000	1.000
OpEx	0.000	0.080	0.000	0.000	0.000	0.000	0.000	0.080
Removal	0.000	0.080	0.000	0.000	0.000	0.000	0.000	0.080
Total Cost in Bus. Plan	0.000	1.160	0.000	0.000	0.000	0.000	0.000	1.160

#### 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 +	
		2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	
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- Instructions



### 5 Key Milestones

Milestone	Target Date: (Month/Year)
Program Sanction	April 2015
Preliminary Engineering	N/A
Procurement	N/A
Final Engineering	N/A
Delivery	N/A
Construction Start	April 1, 2015
Construction Finish	March 31, 2016
As Builts	Entered after each storm event
Annual Program Closure	April 2016

### 6 Statements of Support

#### 6.1.1 Supporters

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

Role	Name	Responsibilities
Investment Planner	Glen Diconza	Endorses relative to 5-year business plan or emergent work
Resource Planning D-Line	Anne Wyman	Endorses resources, cost, schedule
Distribution Planning	Alan T. Labarre	Endorses scope, design, design standard
Engineering and Design	Bob Brawley	Endorses scope, design, design standard

#### 6.1.2 Reviewers

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

Reviewer List	Name
Finance	Keith Fowler
Regulatory	Peter Zschokke
Jurisdictional Delegates	James Patterson
Procurement	Art Curran

**Short Form Sanction Paper- Instructions**



**6.1.3 List References**

	N/A

**Short Form Sanction Paper- Instructions**



**7 Decisions**

- I:
- (a) APPROVE this paper and the investment of \$1.160M and a tolerance of +/-10%
  - (b) NOTE that Anne Wyman is the Program Manager and has the approved financial delegation.
  - (c) NOTE: In the event that this Program project is not approved prior to the start of the FY2017 fiscal year, the FY2016 approval limits will remain in effect until such time as the FY2017 blanket/program projects are approved by USSC and/or other appropriate authority for approval.

Signature..........Date..........SB 4/16/15  
Ross Turini, Acting Senior Vice President, Network Strategy (Acting) JF

***Short Form Sanction Paper- Instructions***



**8 Other Appendices**

N/A

**USSC Closure Paper**



<b>Title:</b>	Rhode Island FY16 Major Storm Program Closure	<b>Sanction Paper #:</b>	USSC-15-107C
<b>Project #:</b>	C022433	<b>Sanction Type:</b>	Closure
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	07/12/2016
<b>Author:</b>	Anne Wyman	<b>Sponsor:</b>	Carol Sedewitz, VP Electric Asset Management
<b>Utility Service:</b>	Electricity T&D	<b>Project Manager:</b>	Anne Wyman

**1 Executive Summary**

This paper is presented to close the annual Major Storm program project C022433. The total spend for FY16 was \$5.141M. The latest sanctioned amount for this project was \$1.160M.

*The final spend amount for FY16 is \$5.141M broken down into:*

*\$3.204M Capex  
\$0.555M Opex  
\$1.382M Removal*

**2 Project Summary**

This program represents all capital costs associated with the restoration of customer service and the repair of assets during adverse weather conditions in Rhode Island for FY16. These costs can include labor, materials, transportation and contractor costs, such as mutual aid, police details, or special equipment used during these efforts.



**USSC Closure Paper**

**3 Over / Under Expenditure Analysis**

**3.1 Summary Table**

Actual Spending (\$M)			
Project #	Description		Total Spend
C022433	OSD STORM CAP CONFIRM PROGRAM PROJ	Capex	3.204
		Opex	0.555
		Removal	1.382
		Total	5.141
Total		Capex	3.204
		Opex	0.555
		Removal	1.382
		Total	5.141

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
C022433	OSD STORM CAP CONFIRM PROGRAM PROJ	Capex	1.000
		Opex	0.080
		Removal	0.080
		Total Cost	1.160
Sanction Variance (\$M)			Total Spend
		Capex	(2.204)
		Opex	(0.475)
		Removal	(1.302)
		Total Variance	(3.981)

**3.2 Analysis**

In FY16, two major events accounted for much of the overspend in RI. In August, a microburst, centered in the Kent County area, brought down many trees and structures causing widespread damage the distribution system. In February, winter storm Lexi hit the southern New England coast, causing the most damage to the RI service territory.



## USSC Closure Paper



### 4 Improvements / Lessons Learned

Due to the relatively low storm activity across the Company's system over the past two years, finance was able to improve its storm costs review process, resulting in timely corrections to the project and a more efficient closeout process.

### 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 type="radio"/> Yes <input checked="" 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**



**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	Glen DiConza	Endorses relative to 5-year business plan or emergent work
Resource Planning	Anne Wyman	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Distribution Asset Management	Alan Labarre	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives

**6.2 Reviewers**

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

Function	Individual
Finance	Patricia Easterly
Regulatory	Peter Zschokke
Jurisdictional Delegates	Jim Patterson
Procurement	Art Curran

**USSC Closure Paper**



**7 Decisions**

I approve this paper.

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

Executive Sponsor – Christopher Kelly,  
Acting Senior Vice President – Electric Process & Engineering



**Short Form Sanction Paper**

<b>Title:</b>	Rhode Island Major Storm Program Project Sanction – FY2017	<b>Sanction Paper #:</b>	USSC-16-272
<b>Project #:</b>	C022433	<b>Sanction Type:</b>	Sanction
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	September 20, 2016
<b>Author:</b>	Glen DiConza	<b>Sponsor:</b>	Carol Sedewitz Vice President Electric Asset Management
<b>Utility Service:</b>	Electricity T&D	<b>Project Manager:</b>	Anne Wyman

**1 Executive Summary**

**1.1 Sanctioning Summary**

This paper requests the sanction of \$1.875M for the Major Storm Program Project C022433 for The Narragansett Electric Company. The sanction amount will have a tolerance of +/- 10% for the purposes of capital replacements performed during major storm events in fiscal year 2017.

The sanction amount is **\$1.875M** is broken down as follows:

\$1.500M Capex  
\$0.150M Opex  
\$0.225M Removal

**1.2 Project Summary**

This is the annual sanction of the Major Storm Program Project. This project is meant to estimate spending on capital replacements performed during major storm events during the fiscal year.

**2 Project Detail**

**2.1 Background**

A Company level storm project has been set up to track the cost of capital replacements/additions during major storm events for the given fiscal year. Capital work orders are set up for each storm event so that the costs can be properly tracked and reported. This sanction does not include expense only storm projects tracked and recovered separately through the proper storm fund recovery mechanisms.



## **Short Form Sanction Paper**

### **2.2 Drivers**

Each year the Company experiences severe weather events which cause damage to the electrical system requiring capital repair. While the storm related costs during various fiscal years vary greatly, the budget for this project has been set up as a "placeholder" so that the capital costs are more easily collected and reported as appropriate.

### **2.3 Project Description**

This project has been created and approved so it is available for work orders to be opened immediately as an anticipated storm approaches the Company's service territory. These work orders will be used to collect the costs of capital replacements/additions repairing damage to the electrical system by the storm.

The budgeted amount is estimated based on historic spending levels and recent trends experienced in the "Major Storms" budget classification. The dollars are set aside as part of the capital plan so that other planned work is not required to be delayed or moved out of the capital plan whenever capital replacement costs due to a storm are incurred.

### **2.4 Benefits**

This project is required to facilitate the proper charging and reporting of storm related capital charges. Having the accounting immediately available is an important step to proper cost charging/tracking during storm events.

### **2.5 Business & Customer Issues**

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

### **2.6 Alternatives**

N/A

### **2.7 Investment Recovery**

Investment recovery will be through standard rate recovery mechanisms.

#### **2.7.1 Customer Impact**

Impact will vary based on the actual amount incurred during FY2017.

**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)
C022433	D-Line	OSD Storm Cap Confirm Program Proj	1.875
Total			1.875

**3.2 Associated Projects**

N/A

**3.3 Prior Sanctioning History**

N/A - program

**3.4 Category**

Category	Reference to Mandate, Policy, or NPV Assumptions
<input checked="" type="radio"/> Mandatory	Mandatory Major Storm/Damage Failure Capital
<input type="radio"/> Policy- Driven	
<input type="radio"/> Justified NPV	

**3.5 Asset Management Risk Score**

Asset Management Risk Score: 49

## Short Form Sanction Paper



### 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: 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 (\$)
FY2017 – FY2021 New England Distribution Electric Capital Plan	<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

N/A



## Short Form Sanction Paper

### 4.3 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
C022433	OSD Storm Cap Confirm Program Proj	+/- 10%	CapEx	-	1.500	-	-	-	-	-	1.500
			OpEx	-	0.150	-	-	-	-	0.150	
			Removal	-	0.225	-	-	-	-	0.225	
			Total	-	1.875	-	-	-	-	1.875	
Total Project Sanction			CapEx	-	1.500	-	-	-	-	1.500	
			OpEx	-	0.150	-	-	-	-	0.150	
			Removal	-	0.225	-	-	-	-	0.225	
			Total	-	1.875	-	-	-	-	1.875	

### 4.4 Project Budget Summary Table

#### Project Costs per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2016/17	Yr. 2 2017/18	Yr. 3 2018/19	Yr. 4 2019/20	Yr. 5 2020/21	Yr. 6 + 2021/22	
CapEx	0.000	1.500	0.000	0.000	0.000	0.000	0.000	1.500
OpEx	0.000	0.150	0.000	0.000	0.000	0.000	0.000	0.150
Removal	0.000	0.225	0.000	0.000	0.000	0.000	0.000	0.225
Total Cost in Bus. Plan	0.000	1.875	0.000	0.000	0.000	0.000	0.000	1.875

#### Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2016/17	Yr. 2 2017/18	Yr. 3 2018/19	Yr. 4 2019/20	Yr. 5 2020/21	Yr. 6 + 2021/22	
CapEx	0.000	0.000	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)
Program Sanction	September 2016
Construction Start	April 1, 2016
Construction Finish	March 31, 2017
As Builts	Entered after each storm event
Annual Program Closure	June 2017

### 6 Statements of Support

#### 6.1.1 Supporters

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

Role	Name	Responsibilities
Investment Planner	Glen DiConza	Endorses relative to 5-year business plan or emergent work
Resource Planning D-Line	Anne Wyman	Endorses resources, cost, schedule
Distribution Planning	Alan T. Labarre	Endorses scope, design, design standard
Engineering and Design	Kevin Hellmuth	Endorses scope, design, design standard

#### 6.1.2 Reviewers

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

Reviewer List	Name
Finance	Patricia Easterly
Regulatory	Peter Zschokke
Jurisdictional Delegates	James Patterson
Procurement	Art Curran

#### 6.1.3 List References



	N/A

**Short Form Sanction Paper**



**7 Decisions**

- I:
- (a) APPROVE this paper and the investment of \$1.875M and a tolerance of +/-10%
  - (b) NOTE that Anne Wyman is the Program Manager and has the approved financial delegation.
  - (c) NOTE: In the event that this Program project is not approved prior to the start of the FY2018 fiscal year, the FY2017 approval limits will remain in effect until such time as the FY2018 blanket/program projects are approved by USSC and/or other appropriate authority for approval.

Signature..........Date..........  
Christopher Kelly, Acting Senior Vice President, Electric Process and Engineering

***Short Form Sanction Paper***



**8 Other Appendices**

N/A



## USSC Spending Review

<b>Title:</b>	Rhode Island Major Storm Project Sanction – FY2017 Closure	<b>Sanction Paper #:</b>	USSC-16-272C
<b>Project #:</b>	C022433	<b>Sanction Type:</b>	Spending Review
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	6/13/17
<b>Author:</b>	Anne Wyman	<b>Sponsor:</b>	Carol Sedewitz Vice President of Electric Asset Management
<b>Utility Service:</b>	Electricity T&D	<b>Project Manager:</b>	Anne Wyman

### 1 Executive Summary

This paper is presented to close the program project C022433 for FY2017. The total spend was \$3.145M. The sanctioned amount for this project was \$1.875M with a tolerance of +/- 10%.

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

*\$2.516M Capex  
\$0.157M Opex  
\$0.472M Removal*

\*\*This total does not include a \$0.106M write off from prior fiscal years due to work order close out audit remediation activities.

### 2 Project Summary

This program represents all capital costs associated with the restoration of customer service and the repair of assets during adverse weather conditions in Rhode Island for FY17. These costs can include labor, materials, transportation and contractor costs, such as mutual aid, police details, or special equipment used during these efforts.



## USSC Spending Review

### 3 Over / Under Expenditure Analysis

#### 3.1 Summary Table

Actual Spending (\$M)			
Project #	Description		Total Spend
C022433	RI Major Storm Program	Capex	2.516
		Opex	0.157
		Removal	0.472
		Total	3.145

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	1.500
		Opex	0.150
		Removal	0.225
		Total Cost	1.875
Sanction Variance (\$M)			Total Spend
		Capex	(1.016)
		Opex	(0.007)
		Removal	(0.247)
		Total Variance	(1.270)

#### 3.2 Analysis

In FY17, significant weather events increased in both number and severity resulting in an overspend variance.

### 4 Improvements / Lessons Learned/Root Cause

In FY17, the thunderstorm season was unusually busy resulting in significant events almost weekly for much of the summer. In the winter months, several strong storms with damaging winds occurred, as well as Winter Storm Niko in February and Winter Storm Stella in March that caused significant damage to the Company's infrastructure.

## USSC Spending Review



### 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 checked="" type="radio"/> Yes <input 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; or
- 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;



## USSC Spending Review

- work has completed recently and as-builts have not yet been processed into the system; or
- 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.

## 6 Statements of Support

### 6.1 **Supporters**

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

Role	Name	Responsibilities
Investment Planner	Glen DiConza	Endorses relative to 5-year business plan or emergent work
Resource Planning D-Line	Anne Wyman	Endorses resources, cost, schedule
Asset Management	Alan Labarre	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Kevin Hellmuth	Endorses scope, design, design standard

### 6.2 **Reviewers**

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

Function	Individual
Finance	Mark Collison
Regulatory	Robert Humm on behalf of Renee Gurry
Jurisdictional Delegate	Sonny Anand
Procurement	Art Curran

**USSC Spending Review**



**7 Decisions**

I approve this paper.

Signature.....

A handwritten signature in blue ink, appearing to read "Chris Kelly".

Date.....

6/19/17

Executive Sponsor – Christopher Kelly

Senior Vice President, Electric Process and Engineering





### ***Short Form Sanction Paper***

<b>Title:</b>	FY18 Rhode Island Major Storm Program Project Sanction	<b>Sanction Paper #:</b>	USSC-17-220
<b>Project #:</b>	C022433	<b>Sanction Type:</b>	Sanction
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	May 16, 2017
<b>Author:</b>	Glen DiConza	<b>Sponsor:</b>	Carol Sedewitz Vice President Electric Asset Management
<b>Utility Service:</b>	Electricity T&D	<b>Project Manager:</b>	Anne Wyman

## **1 Executive Summary**

### ***1.1 Sanctioning Summary***

This paper requests the sanction of \$2.170M for the Major Storm Program Project C022433 for The Narragansett Electric Company. The sanction amount will have a tolerance of +/- 10% for the purposes of capital replacements performed during major storm events in fiscal year 2018.

The sanction amount is **\$2.170M** is broken down as follows:

\$1.550M Capex  
\$0.310M Opex  
\$0.310M Removal

### ***1.2 Project Summary***

This is the annual sanction of the Major Storm Program Project. This project is meant to estimate spending on capital replacements performed during major storm events during the fiscal year.

## **2 Project Detail**

### ***2.1 Background***

A Company level storm project has been set up to track the cost of capital replacements/additions during major storm events for the given fiscal year. Capital work orders are set up for each storm event so that the costs can be properly tracked and reported. This sanction does not include expense only storm projects tracked and recovered separately through the proper storm fund recovery mechanisms.



## **Short Form Sanction Paper**

### **2.2 Drivers**

Each year the Company experiences severe weather events which cause damage to the electrical system requiring capital repair. While the storm related costs during various fiscal years vary greatly, the budget for this project has been set up as a "placeholder" so that the capital costs are more easily collected and reported as appropriate.

### **2.3 Project Description**

This project has been created and approved so it is available for work orders to be opened immediately as an anticipated storm approaches the Company's service territory. These work orders will be used to collect the costs of capital replacements/additions repairing damage to the electrical system by the storm.

The budgeted amount is estimated based on historic spending levels and recent trends experienced in the "Major Storms" budget classification. The dollars are set aside as part of the capital plan so that other planned work is not required to be delayed or moved out of the capital plan whenever capital replacement costs due to a storm are incurred.

### **2.4 Benefits**

This project is required to facilitate the proper charging and reporting of storm related capital charges. Having the accounting immediately available is an important step to proper cost charging/tracking during storm events.

### **2.5 Business & Customer Issues**

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

### **2.6 Alternatives**

N/A

### **2.7 Investment Recovery**

Investment recovery will be through standard rate recovery mechanisms.

#### **2.7.1 Customer Impact**

Impact will vary based on the actual amount incurred during FY2018.



**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)
C022433	D-Line	OSD Storm Cap Proj	2.170
<b>Total</b>			<b>2.170</b>

**3.2 Associated Projects**

N/A

**3.3 Prior Sanctioning History**

N/A - program

**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	Mandatory Major Storm/Damage Failure Capital

**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: 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 (\$)
FY2018 – FY2022 New England Distribution Electric Capital Plan	<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

N/A



## 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 +	
C022433	OSD Storm Cap Proj	+/- 10%	CapEx	-	1 550	-	-	-	-	-	1 550
			OpEx	-	0 310	-	-	-	-	0 310	
			Removal	-	0 310	-	-	-	-	0 310	
			Total	-	2 170	-	-	-	-	2 170	
Total Project Sanction			CapEx	-	1 550	-	-	-	-	-	1 550
			OpEx	-	0 310	-	-	-	-	-	0 310
			Removal	-	0 310	-	-	-	-	-	0 310
			Total	-	2 170	-	-	-	-	-	2 170

### 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	1.550	0.000	0.000	0.000	0.000	0.000	1.550
OpEx	0.000	0.310	0.000	0.000	0.000	0.000	0.000	0.310
Removal	0.000	0.310	0.000	0.000	0.000	0.000	0.000	0.310
Total Cost in Bus. Plan	0.000	2.170	0.000	0.000	0.000	0.000	0.000	2.170

#### 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)
Program Sanction	May, 2017
Construction Start	April 1, 2017
Construction Finish	March 31, 2018
As Builts	Entered after each storm event
Annual Program Closure	June 2018



## 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	Name	Responsibilities
Investment Planner	Glen DiConza	Endorses relative to 5-year business plan or emergent work
Resource Planning D-Line	Anne Wyman	Endorses resources, cost, schedule
Distribution Planning	Alan T. Labarre	Endorses scope, design, design standard
Engineering and Design	Kevin Hellmuth	Endorses scope, design, design standard

#### 6.1.2 Reviewers

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

Reviewer List	Name
Finance	Patricia Easterly
Regulatory	Peter Zschokke
Jurisdictional Delegates	Sonny Anand
Procurement	Art Curran

#### 6.1.3 List References

N/A
-----

**Short Form Sanction Paper**



**7 Decisions**

- I:
- (a) APPROVE this paper and the investment of \$2.170M and a tolerance of +/-10%
  - (b) NOTE that Anne Wyman is the Program Manager and has the approved financial delegation.
  - (c) NOTE: In the event that this Program project is not approved prior to the start of the FY2019 fiscal year, the FY2018 approval limits will remain in effect until such time as the FY2019 program projects are approved by USSC and/or other appropriate authority for approval.

Signature.....*CK*.....Date.....*5/24/17*.....  
Christopher Kelly, Senior Vice President, Electric Process and Engineering

***Short Form Sanction Paper***



**8 Other Appendices**

N/A



C025815

OS Insulators, SensDev, Surge Arrestors

## 5360-Narragansett Electric and Gas Project Revision Detail Report

<b>Fund Project Number:</b> <u>C025815</u>	<b>USSC #:</b> <u>FY2018 Program</u>
<b>Revision:</b> <u>11</u>	<b>Budget Version:</b>
<b>Project Title:</b> <u>OS ARP Insul, SensDev, Surge Arrest</u>	
<b>Project Description:</b> Asset Replacement program: insulators, sensing devices & surge arresters.	

<b>Project Status:</b> <u>open</u>	
<b>Responsible Person:</b> <u>PENDRAKE, ROBER</u>	<b>Initiator:</b> <u>McGrail, Anthony</u>
<b>Spending Rationale:</b> <u>Asset Condition</u>	<b>Funding Type:</b> <u>P Electric Distribution Sub RI</u>
<b>Budget Class:</b> <u>Asset Replacement</u>	
<b>Capital by Category:</b>	
<b>Program Code:</b>	
<b>Project Risk Score:</b> <u>40</u>	<b>Project Complexity Score:</b> <u>15</u>

### Project Schedule / Expenditures

<b>Revision Status:</b> <u>Approved</u>											
<b>Est Start Date:</b> <u>4/1/2017</u>	<b>Est Complete Date:</b> <u>3/31/2018</u>										
<b>Est In-Service Date:</b> <u>3/30/2018</u>											
<b>TTD Actuals:</b> <u>\$1,496,236</u>	<b>As Of:</b> <u>10/10/2017</u>										
<b>Cost Breakdown</b>	<table border="0" style="width: 100%;"> <tr> <th style="text-align: left;"><u>Capital</u></th> <th style="text-align: left;"><u>Expense</u></th> <th style="text-align: left;"><u>Removal</u></th> <th style="text-align: left;"><u>Total</u></th> <th style="text-align: left;"><u>Credits</u></th> </tr> <tr> <td><u>\$250,000</u></td> <td><u>\$5,000</u></td> <td><u>\$15,000</u></td> <td><u>\$270,000</u></td> <td><u>\$0</u></td> </tr> </table>	<u>Capital</u>	<u>Expense</u>	<u>Removal</u>	<u>Total</u>	<u>Credits</u>	<u>\$250,000</u>	<u>\$5,000</u>	<u>\$15,000</u>	<u>\$270,000</u>	<u>\$0</u>
<u>Capital</u>	<u>Expense</u>	<u>Removal</u>	<u>Total</u>	<u>Credits</u>							
<u>\$250,000</u>	<u>\$5,000</u>	<u>\$15,000</u>	<u>\$270,000</u>	<u>\$0</u>							

### Justification / Risk Identification:

This is a replacement program to remove all GE butyl rubber insulated potential transformers that are rated 23kv, 34.5kv, and 46 kv from the system due to a high rate of failure. The PT's targeted for replacement are manufactured by GE and are types JVT-150, JVT-200, JVS-150 and JVS-200. The epoxy insulation is known to crack allowing moisture ingress, which eventually causes the windings to fail. Due to a recent catastrophic failure at one of our substations, an Incident Analysis team determined that these type of PT's have a high rate of failure. This replacement program is in accordance with our approved GE Potential Transformer Asset Replacement Strategy and

### Project Scope:

Replace the GE butyl rubber insulated PTs denoted above that are not fused with an oil-filled PT of similar size. Replacements may require and outage, minor steel structural modifications, and testing and will be determined on a site by site basis.

Revision 9 of this project is for the FY16 program.

### Project Alternatives Considered:

<Enter data here>

**Additional Notes:**

This is the full annual sanction of the GE Butyl Rubber PT Replacement Program.;

**Related Projects:**

**Project Number:**

**Project Name:**

**Approvals**

Line 1:	Date	<u>4/12/2017 13:01:18</u>	Approver	<u>labara</u>	<u>Approver 1</u>
Line 2:	Date		Approver		
Line 3:	Date		Approver		
Line 4:	Date		Approver		
Line 5:	Date		Approver		

**\*\*\*Project Authorization is for Approved Revision Total Estimated Cost + 10%\*\*\***

**PowerPlan** ----- **PPGPRD Database**

File Edit Subsystem Batch Admin Preferences Window Help

Projects Assets Tables CR MyPPPlan Help Calc Print Win

**Funding Project Estimates - Summary** C025815 Current Total Authorized Amount: \$270,000.00

Title: OS ARP Insul. SensDev. Surge Arrest  
Project Number: C025815

**Budget Version** No Assigned Versions

Revision: FY18 Sanction  
Revision Status: Approved  
Revision No.: 11  
Est Start Date: 04/01/2017  
Est Complete Date: 03/31/2018  
Est In Srvc Date: 03/30/2018  
Capital: \$250,000.00  
Expense: \$5,000.00  
Jobbing: \$0.00  
Retirement: \$0.00  
Removal: \$15,000.00  
Total (excl. Rets.): \$270,000.00  
Credits: \$0.00  
Net: \$270,000.00

**Spending Estimates:**

Grid Estimates  
Forecast  
Summarize from W/D  
Copy Estimate

**Property Estimates:**

Unit Estimates  
Create As Built  
Delete Used Estimates

**Edit:**

New Revision  
Delete Revision  
Update  
Update With Actuals  
Import Estimates

**Other:**

Revision Comments  
Released Dollars  
Substitution  
Slide

**Version Compare** **Close**

Record 7 of 16  
Audits

Revision Info Other Updates  
Revision 11 of 11  
Find Revision  
Send for Approval  
Show 'Budget Only' Revisions

**PowerPlan** ----- **PPGPRD Database**

File Edit Subsystem Batch Admin Preferences Window Help

Projects Assets Tables CR MyPPlan Help Calc Print Win

**Funding Project Estimates - Summary** C025815 Current Total Authorized Amount: \$270,...

Title **OS ARP Insul, SensDev, Surge Arrest**  
Project Number **C025815**

**Budget Version** No Assigned Versions

Revision **FY17 Approvals**  
Revision Status **Approved**  
Revision No. **10**  
Est Start Date **10/30/2007**  
Est Complete Date **03/31/2017**  
Est In Svc Date **03/30/2017**  
Capital **\$250,000.00**  
Expense **\$5,000.00**  
Jobbing **\$0.00**  
Retirement **\$0.00**  
Removal **\$8,000.00**  
Total (excl. Rets.) **\$263,000.00**  
Credits **\$0.00**  
Net **\$263,000.00**

**Revision Info** Other Updates

Revision **10** of 11 **K < > >I**  
[Find Revision](#) **Send for Approval**

☐ Show 'Budget Only' Revisions

**Spending Estimates:**  
Grid Estimates  
Forecast  
Summarize from WO  
Copy Estimate

**Property Estimates:**  
Unit Estimates  
Create As Built  
Delete Used Estimates

**Edit:**  
New Revision  
Delete Revision  
Update  
Update With Actuals  
Import Estimates  
Version Compare

**Other:**  
Revision Comments  
Released Dollars  
Substitution  
Slide  
Close

Record **7** of 16 **K < > >I**  
Audits

**PowerPlan** ----- **PPGPRD Database**

File Edit Subsystem Batch Admin Preferences Window Help

Projects Assets Tables CR MyPPlan Help Calc Print Win

**Funding Project Estimates - Summary** C025815 Current Total Authorized Amount: \$270,000.00

Title: 05 ARP Insul. SensDev. Surge Arrest  
Project Number: C025815

**Budget Version** No Assigned Versions

Revision: FY16 Annual Sanction  
Revision Status: Approved  
Revision No.: 9  
Est Start Date: 10/30/2007  
Est Complete Date: 03/31/2016  
Est In Svc Date: 03/30/2016  
Capital: \$250,000.00  
Expense: \$5,000.00  
Jobbing: \$0.00  
Retirement: \$0.00  
Removal: \$5,000.00  
Total (excl. Rets.): \$260,000.00  
Credits: \$0.00  
Net: \$260,000.00

**Revision Info** Other Updates

Revision: 9 of 11  
Find Revision  
Send for Approval  
☐ Show 'Budget Only' Revisions

**Spending Estimates:**  
Grid Estimates  
Forecast  
Summarize from W/O  
Copy Estimate

**Property Estimates:**  
Unit Estimates  
Create As Built  
Delete Used Estimates

**Edit:**  
New Revision  
Delete Revision  
Update  
Update With Actuals  
Import Estimates

**Other:**  
Revision Comments  
Released Dollars  
Substitution  
Slide

**Version Compare**  
Close

Record 7 of 16  
Audits

**PowerPlan** ----- **PPGPRD Database**

File Edit Subsystem Batch Admin Preferences Window Help

Projects Assets Tables CR MyPlan Help Calc Print Win

**Funding Project Estimates - Summary** C025815 Current Total Authorized Amount: \$270,...

Title **05 ARP Insul. SensDev. Surge Arrest**

Project Number **C025815**

**Budget Version** Default (active)

Revision **FY15**

Revision Status **Approved**

Revision No. **8**

Est Start Date **10/30/2007**

Est Complete Date **03/31/2015**

Est In Svc Date **03/30/2015**

Capital **\$250,000.00**

Expense **\$7,500.00**

Jobbing **\$0.00**

Retirement **\$0.00**

Removal **\$5,000.00**

Total (excl. Rets.) **\$262,500.00**

Credits **\$0.00**

Net **\$262,500.00**

**Spending Estimates:**

**Grid Estimates**

**Forecast**

**Summarize from W/O**

**Copy Estimate**

**Property Estimates:**

**Unit Estimates**

**Create As Built**

**Delete Used Estimates**

**Edit:**

**New Revision**

**Delete Revision**

**Update**

**Update With Actuals**

**Import Estimates**

**Version Compare**

**Other:**

**Revision Comments**

**Released Dollars**

**Substitution**

**Slide**

**Close**

**Revision Info** **Other Updates**

Revision **8** of 11 **< > >|**

**Find Revision** **Send for Approval**

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**Record** **7** of 16 **< > >|**

**PowerPlan** ----- **PPGPRD Database**

File Edit Subsystem Batch Admin Preferences Window Help

Projects Assets Tables CR MyPPlan Help Calc Print Win

**Funding Project Estimates - Summary** C025815 Current Total Authorized Amount: \$270,...

Title: OS ARP Insul. SensDev. Surge Arrest  
Project Number: C025815

**Budget Version** PPM Project Authorizations (a)

Revision:   
Revision Status: Approved  
Revision No.: 4  
Est Start Date: 10/01/2007  
Est Complete Date: 10/30/2010  
Est In Svc Date: 10/30/2010  
Capital: \$145,000.00  
Expense: \$2,000.00  
Jobbing: \$0.00  
Retirement: \$0.00  
Removal: \$18,000.00  
Total (excl. Rets.): \$165,000.00  
Credits: \$0.00  
Net: \$165,000.00

**Spending Estimates:**

Grid Estimates  
Forecast  
Summarize from W/O  
Copy Estimate

**Property Estimates:**

Unit Estimates  
Create As Built  
Delete Used Estimates

**Edit:**

New Revision  
Delete Revision  
Update  
Update With Actuals  
Import Estimates

**Other:**

Revision Comments  
Released Dollars  
Substitution  
Slide

**Version Compare** **Close**

Revision Info Other Updates

Revision: 4 of 11  
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Record 7 of 16  
Audits



This document has been redacted for Critical Energy Infrastructure Information (CEII).



## US Sanction Paper

<b>Title:</b>	GE Potential Transformer Replacement	<b>Sanction Paper #:</b>	USSC-12-450
<b>Project #:</b>	Strategy	<b>Sanction Type:</b>	Strategy
<b>Operating Company:</b>	All National Grid Jurisdictions	<b>Date of Request:</b>	November 14, 2012
<b>Author:</b>	Eileen Duarte	<b>Sponsor:</b>	Cheryl A. Warren, VP Asset Management
<b>Utility Service:</b>	Electric T&D	<b>Project Manager:</b>	Mark Phillips

### 1 Executive Summary

#### 1.1 Sanctioning Summary:

This paper requests the endorsement of this strategy to replace all General Electric potential transformers with butyl rubber insulation rated 46 kV, 34.5 kV and 23 kV. The list of locations can be found in the Appendices. The proposed projects listed below will be used to account for the work required to implement Phase 1 of the strategy set forth within this document. It is expected that this program will occur over a ten-year period. An annual program of work will be sanctioned each year.

- C25813 Massachusetts Electric
- C25815 Narragansett Electric
- PPM# 19594 Niagara Mohawk

The proposed sanction amount is for Phase 1 of this strategy and pertains to the FY14 to FY18 Capital Plan. The expected sanction amount is broken down as follows:

- \$4.64M Capex
- \$0.09M Opex
- \$0.46M Removal

A conceptual estimate has been developed using historical cost data, data from similar projects, other identified assumptions, and was created using Success Enterprise (SE). The accuracy of this study grade estimate is -25% to +50%.

#### 1.2 Brief Description:

Potential transformers (PTs) or voltage transformers (VTs) are used for metering and protection in high-voltage circuits. They are designed to present negligible load to the



## US Sanction Paper

supply being measured and to have a precise voltage ratio to accurately step down high voltages so that metering and protective relay equipment can be operated at a lower potential. This strategy recommends the replacement of the General Electric potential transformers (PT) with butyl rubber insulation rated 46 kV, 34.5 kV and 23 kV, Model Types JVT-150, JVT-200, JVS-150 and JVS-200 at 122 substations within all jurisdictions over a ten-year period. Six hundred and nineteen have been identified through Cascade.

These particular instrument transformers are less reliable due to moisture ingress. The butyl rubber insulation is known to crack exposing the winding to moisture, which eventually leads to failure of the device.

This potential device failed catastrophically at the Wood River Substation causing multiple customer outages [REDACTED] As a result of analysis conducted during the Incident Analysis and similar failures at other substations, these instrument transformers exhibit an unacceptably high rate of failure in applications greater than 15 kV. These devices are recommended to be removed from service to prevent future failures leading to service interruptions.

### 1.3 Summary of Projects:

Project Number	Project Title	Estimate Amount (M)
C25813	Massachusetts Electric	\$1.75
C25815	Narragansett Electric	\$0.67
PPM# 19594	Niagara Mohawk	\$2.78
<b>Total:</b>		<b>\$5.20</b>

### 1.4 Associated Projects:

N/A

### 1.5 Prior Sanctioning History (including relevant approved Strategies):

Date	Governance Body	Sanctioned Amount	Paper Title	Sanction Type
10/13/2010	DCIG	N/A	Sensing Devices (Instrument Transformers)	Strategy

## US Sanction Paper



### 1.6 Next Planned Sanction Review:

Date (Month/Year)	Purpose of Sanction Review
March 1, 2013	Annual Program Sanction

### 1.7 Category:

Category	Reference to Mandate, Policy, or NPV Assumptions
<input type="checkbox"/> Mandatory <input checked="" type="checkbox"/> Policy- Driven <input type="checkbox"/> Justified NPV	Asset Condition - Reliability

### 1.8 Asset Management Risk Score

Asset Management Risk Score: 41

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

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

### 1.9 Complexity Level: (if applicable)

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

Complexity Score: 13



## US Sanction Paper

### 1.10 Process Hazard Assessment

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

☐ Yes ☒ No

### 1.11 Business Plan:

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$M)
Capital Investment Plan FY13-FY17	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Over <input type="checkbox"/> Under	\$ 5.20

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

The program will begin in FY14 and the cost of the program will be incorporated in the FY14-FY18 Capital Investment Plan.

### 1.13 Current Planning Horizon:

Current Planning Horizon								
\$M	Prior YR Spending	YR1 13/14	YR2 14/15	YR3 15/16	YR4 16/17	YR5 17/18	YR6+	Total
Proposed Capex	\$0.00	\$0.47	\$0.47	\$0.47	\$0.47	\$0.47	\$2.31	\$4.64
Proposed Opex	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.09	\$0.09
Proposed Removal	\$0.00	\$0.05	\$0.05	\$0.05	\$0.05	\$0.05	\$0.21	\$0.46
CIAC/Reimbursement	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Total	\$0.00	\$0.52	\$0.52	\$0.52	\$0.52	\$0.52	\$2.61	\$5.19



## US Sanction Paper

### 1.14 Resources:

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

### 1.15 Key Issues (include mitigation of Red or Amber Resources):

1	A bus outage will be required for replacement. Replacements will be coordinated with other construction projects, and outage planning will be coordinated early between the Program Manager and Outage Coordinator.
---	---

### 1.16 Key Milestones:

Milestone	Target Date: (Month/Year)
Annual Sanction	03/13
Preliminary Engineering	06/13
Procurement	07/13
Construction Begin	11/13
Construction Complete	03/14
Closeout	06/14



## US Sanction Paper

### 1.17 Climate Change:

Are financial incentives (e.g. carbon credits) available?		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Contribution to National Grid's 2050 80% emissions reduction target:	<input checked="" type="checkbox"/> Neutral	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
Impact on adaptability of network for future climate change:	<input checked="" type="checkbox"/> Neutral	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative

### 1.18 List References:

1	Substation Maintenance Standard SMS 403.01.1 – Instrument Transformer
2	Doble Engineering Technical Report 82,326 Rev. 2, Partial Discharge Survey
3	Sensing Devices (Instrument Transformer) Strategy
4	Wood River IA #299179
5	Report of the Doble Client Committee on Bushings, Insulators and Instrument Transformers Fall 2005, September 27, 2005

## 2 Decisions

The US Sanctioning Committee (USSC) at a meeting held on November 14, 2012:

(a) APPROVED this paper and endorse the potential investment of \$5.20M over a ten-year period.

(b) NOTED that Mark Phillips is the Project Manager and has the approved financial delegation.

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

Lee S. Eckert

US Chief Financial Officer

Chairman, US Sanctioning Committee



## US Sanction Paper

### 3 Sanction Paper Detail

<b>Title:</b>	GE Potential Transformer Replacement	<b>Sanction Paper #:</b>	USSC-12-450
<b>Project #:</b>	Strategy	<b>Sanction Type:</b>	Strategy
<b>Operating Company:</b>	National Grid New England	<b>Date of Request:</b>	November 14, 2012
<b>Author:</b>	Eileen Duarte	<b>Sponsor:</b>	Cheryl A. Warren, VP Asset Management
<b>Utility Service:</b>	Electricity T&D	<b>Project Manager:</b>	Mark Phillips

#### 3.1 Background

The General Electric (GE) potential transformer with butyl rubber insulation is known industry-wide to be less reliable. At the 2005 Doble Engineering Client Committee Meeting on Bushings, Insulators, and Instrument Transformers, Colorado Springs Utilities reported on catastrophic failures which occurred on the GE Type JVS and JVT 200, 34.5 kV potential transformers due to moisture ingress from the cracked butyl rubber insulation. New York State Electric and Gas has also experienced several failures. Both companies developed a program to replace these potential transformers.

The butyl rubber insulation cracks and exposes the winding to moisture ultimately causing a failure. The previous strategy recommends the replacement of all instrument transformers which appear to be weeping or showing signs of cracked insulation, and to replace General Electric instrument transformers greater than 30 years of age. However, recent failures indicate the average age of failure to be 13.8 years for the 34.5 kV rated PTs and 19.25 years for the 23 kV rated PTs.

In February 2012, a failure of a 34.5 kV GE Model Type JVS-200 with butyl rubber insulation failed at the Wood River Substation in Rhode Island causing the loss of the 115 kV system that impacted various substations and resulted in the loss of 65,000 customers. An Incident Analysis team was created and several action items pertaining to the GE butyl rubber PTs resulted in this strategy.

A failure analysis was performed on all GE PTs with butyl rubber insulation in New England. The result indicated that the 34.5 kV PTs have an unacceptable failure rate of 2% and the 23 kV PTs have a failure rate of 0.7%. There were 6 failures of the 34.5 kV PTs and 12 of the 23 kV PTs within the past seven years. According to industry practice, these



## **US Sanction Paper**

failure rates are high. The IEEE 493 “Design of Reliable Industrial and Commercial Power Systems” published failure rate for all liquid-filled transformers is 0.6%. As a result, a maintenance bulletin has been issued by Substation Work Methods indicating that 34.5 kV and 23 kV GE butyl rubber insulated PTs will no longer be installed for substation applications. New substations designs will install oil-filled voltage transformers as the substation standard.

Presently there are 331 GE type butyl rubber insulated PTs in 86 substations throughout New York, 208 in 28 substations in MA and 80 in 8 substations in RI. Due to the high failure rate, a partial discharge survey was performed on the 34.5 kV PTs. Two stations - Wakefield 17 and East Beverly - indicated high levels of partial discharge and projects have already been initiated to replace these PTs. Further replacements will be prioritized using partial discharge results and voltage level. The higher voltage PTs with elevated partial discharge results will be targeted first. Replacement of these PTs will be incorporated into other construction projects.

A partial discharge survey will be performed in two years or sooner if required on the potential transformers identified below. Sensing Devices are inspected during Visual and Operational (V&O) checks and through annual InfraRed (IR) inspections.

The potential transformers targeted for replacement are GE Model Type JVS-200, JVS-150, JVT-200 and JVT-150 rated 46 kV (NY), 34.5 kV and 23 kV bus and line PTs inside the substation fence.

There are over 700, 15 kV GE butyl rubber insulated PTs in our system and they will not be targeted at this time for replacement due to their reliable performance at this voltage level. However, we will continue to monitor and evaluate their performance.

### **3.2 Drivers**

Asset condition is the primary driver for the replacement of the GE butyl rubber type insulated potential transformers. The potential transformers have a high failure rate and are considered unreliable. The butyl rubber insulation can crack exposing the windings to moisture eventually resulting in failure.

The secondary driver for replacement is safety. These potential transformers have been known to fail catastrophically posing a safety hazard to personnel in the substation.

### **3.3 Project Description**

All GE PTs rated 46 kV, 34.5 kV and 23 kV Model Type JVS-200, JVS-150, JVT-200 and JVT-150 will be replaced with an oil-filled PT. Presently, the devices are being





## **US Sanction Paper**

replaced with an ABB SPOF PT. However, we will continue to explore other manufacturers and designs for the best retrofit. In most instances, replacement will be a one-for-one replacement and upfront engineering and design will not be necessary. However, because the dimensions of the replacement PT are not exact, some stations may require engineering and design. The scope may be expanded to include structure or mounting base changes, and possibly a relocation of the PTs.

### **3.4 Benefits Summary**

The recommended program will resolve asset condition issues associated with the GE type butyl rubber insulated PT at 122 substations throughout our system and will assist in maintaining reliable service to our customers.

By removing these devices from our substations in a proactive manner, we will reduce the likelihood of catastrophic failure and improve safety in these substations.

### **3.5 Business Issues**

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

### **3.6 Alternatives**

#### **Alternative 1: (Recommended)**

This alternative proposes a program to replace the existing GE butyl rubber insulated PTs rated 46 kV, 34.5 kV, and 23 kV with oil-filled PTs throughout our system. This is the recommended alternative.

#### **Alternative 2:**

This alternative proposes that the existing GE butyl rubber insulated PTs rated 46 kV, 34.5 kV, and 23 kV be removed upon failure or only during other construction projects. This alternative is not recommended due to the prolonged risk of unreliable service and a potential safety hazard.



## **US Sanction Paper**

### **3.7 Safety, Environmental and Project Planning Issues**

#### **Safety Issues:**

- All NG employees/contractors/vendors working on this project are to follow all company and OSHA safety rules and regulations, including daily tailboard safety briefs for all work tasks to be performed.
- A safety plan shall be submitted for all the work by each NG employee, contractor and/or subcontractor.
- Grounding and tagging all isolation points will be performed to ensure equipment is de-energized before work can begin.

#### **Environmental Issues:**

There are no environmental issues associated with this strategy.

#### **Planning Issues:**

- This work is recommended to be performed as a program and sanctioned annually,
- Distribution Asset Management will provide locations and input into the capital business plan,
- Substation O&M will perform the field work,
- Substation Work Methods will procure the equipment, and provide all required field support,
- Substation Engineering and Design will update the station drawings,
- A bus or line outage is necessary to perform this work,
- Work will be combined with other program work or projects,
- Coordination will occur between the departments performing the work and the departments retrieving the data.



## 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	Active	2	1	2	2	4	Mitigate	Resources	Delay of schedule	Coordinate early with Construction Manager
2	Active	2	1	2	2	4	Mitigate	Cannot get and outage	Delay of schedule	Coordinate with other projects/Coordinate early with Construction Manager
3	Active	2	2	2	4	4	Accept	Requires Engineering and Design	Delay of schedule and increase in cost	Move to next location

### 3.9 Permitting

Permit Name	Probability Required (Certain/ Likely/ Unlikely)	Duration	Status (Complete/ In Progress Not Applied For)	Estimated Completion Date
Army Corps of Engineers	Unlikely			
State Environmental	Unlikely			
Local Conservation Commissions	Unlikely			
Local Planning Commissions	Unlikely			

### 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

### 3.10.3 CIAC / Reimbursement

N/A

## 3.11 Financial Impact to National Grid

### 3.11.1 Cost Summary Table

Current Planning Horizon											
Project #	Strategy Description	Estimate Level	\$M	Prior YR Spending	YR1 13/14	YR2 14/15	YR3 15/16	YR4 16/17	YR5 17/18	YR6+	Total
C25813	Massachusetts Electric	-25%+50%	Capex	0.000	0.157	0.157	0.157	0.157	0.157	0.750	1.535
			Opex	0.000	0.003	0.003	0.003	0.003	0.003	0.015	0.030
			Removal	0.000	0.016	0.016	0.016	0.016	0.016	0.075	0.154
			Total	0.000	0.176	0.176	0.176	0.176	0.176	0.840	1.719
C25815	Narragansett Electric	-25%+50%	Capex	0.000	0.150	0.150	0.150	0.150	0.000	0.000	0.600
			Opex	0.000	0.003	0.003	0.003	0.003	0.000	0.000	0.012
			Removal	0.000	0.015	0.015	0.015	0.015	0.000	0.000	0.060
			Total	0.000	0.168	0.168	0.168	0.168	0.000	0.000	0.672
PPM# 19594	Niagara Mohawk	-25%+50%	Capex	0.000	0.248	0.248	0.248	0.248	0.248	1.240	2.478
			Opex	0.000	0.005	0.005	0.005	0.005	0.005	0.025	0.050
			Removal	0.000	0.025	0.025	0.025	0.025	0.025	0.125	0.249
			Total	0.000	0.277	0.277	0.277	0.277	0.277	1.390	2.776
Total Proposed Sanction				0.000	0.621	0.621	0.621	0.621	0.453	2.230	5.166

### 3.11.2 Project Budget Summary Table

This project will be incorporated into the next business plan.

### 3.11.3 Cost Assumptions

Material acquisition for all substations will be done on a yearly program plan.

The overall substation program estimate (\$5.20M) is a conceptual grade estimate with a targeted accuracy of -25% to +50% and was obtained from Substation Engineering NE using Success Enterprise.



## **US Sanction Paper**

### **3.11.4 Net Present Value / Cost Benefit Analysis**

This project is not financially driven.

### **3.11.5 Additional Impacts**

There are none at this time.

## **3.12 Statements of Support**

### **3.12.1 Supporters**

<b>Role</b>	<b>Name</b>	<b>Responsibilities</b>
Sponsor/ Asset Manager/ Asset Owner/ Process Owner	Robert Sheridan	Endorses the project aligns with jurisdictional objectives
Investment Planning	Glen DiConza	Endorses relative to 5-year business plan or emergent work
Investment Planning	Gregory Lundahl	Endorses relative to 5-year business plan or emergent work
Investment Planning	Antoinette Stores	Endorses relative to 5-year business plan or emergent work
Resource Planning	Mark Phillips	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Engineering/Design	Peter Altenburger	Endorses scope, design, conformance with design standards
Engineering/Design	John Gavin	Endorses scope, design, conformance with design standards
Project Management	Sonny Anand	Endorses constructability and schedule



## US Sanction Paper

### 3.12.2 Reviewers

Reviewer List	Name
Finance	Karen Hamel
Regulatory	Gideon Katsh
Jurisdictional Delegates	Jennifer Grimsley, Al Chieco

## 4 Appendices

### 4.1 List of Locations by Jurisdiction

#### Massachusetts - Owing Company 5 – Distribution

Substation Location	Quantity	Model
<b>BSS</b>		
Chartley Pond	6	JVS-150
Crocker Pond	6	JVS-150
East Weymouth	6	JVS-150
Mink	3	JVS-150
Plainville	3	JVS-150
Read Street	3	JVS-150
South Wrentham	9	JVS-150
<b>BSW</b>		
Risingdale	6	JVS-150
Williamstown	6	JVS-150
Brown Street	9	JVS-150
Adams	12	JVS-150
Wakefield	9	JVS-200
East Beverly	6	JVS-200
<b>NENG</b>		
Billerica 70	6	JVS-150
East Beverly	10	JVS-150
Everett	6	JVS-150
Gloucester 24	6	JVS-150
Golden Rock	15	JVS-150
Lynn 21	6	JVS-150
Melrose 2	6	JVS-150
North Chelmsford	6	JVS-150
Railyard	6	JVS-150



**US Sanction Paper**

Revere 7	6	JVS-150
Salem Harbor ---ABB units		
South Broadway	6	JVS-150
Swampscott	6	JVS-150
Ward Hill	18	JVS-150
Water Street	6	JVS-150
West Methuen	12	JVS-150
West Salem	3	JVS-150

**Rhode Island - Owning Company 49 – Distribution**

Substation Location	Quantity	Model
<b>NEOS</b>		
Admiral Street	9	JVS-150
Chompist	6	JVS-150
Drumrock	6	JVS-150
Hope 15	11	JVS-150
Johnston 18	6	JVS-150
Sockonosett 24	6	JVS-150
Warren 5	6	JVS-150
Wolf Hill	3	JVS-150
Kent County	9	JVS-200
West Kingston	6	JVS-200
Davisville	6	JVS-200
Wood River	6	JVS-200

**US Sanction Paper**



**Niagara Mohawk - Owning Company 36 – Sub T**

Location	Quantity	Model	Division
Black River Station 70	1	JVT-150	NYCD
Black River Station 70	13	JVS-150	NYCD
Bristol Hill Station 109	1	JVT-200	NYCD
Carthage Station 717	3	JVT-150	NYCD
Cortland Station 502	1	JVS-200	NYCD
Curtis Street Station 224	2	JVT-200	NYCD
Deferiet Station 724	3	JVS-150	NYCD
Fay Street Station 103	1	JVT-200	NYCD
Indian River Station 323	1	JVS-150	NYCD
Mill Street Station 748	3	JVS-150	NYCD
S/C - Campion Road	1	JVS-200	NYCD
Springfield Station 167	1	JVS-200	NYCD
Tilden Station 73	3	JVS-200	NYCD
Trenton Station 627	1	JVS-200	NYCD
Varick Station 207	1	JVT-200	NYCD
Whitesboro Station 632	3	JVT-200	NYCD
Bolton Station 284	1	JVS-200	NYED
Brook Road Station 369	5	JVS-200	NYED
Cambridge Station 29	1	JVS-200	NYED
Cement Mountain Station 455	1	JVS-200	NYED
Colvin Avenue Station 313	5	JVS-200	NYED
Glens Falls Station 75	2	JVT-200	NYED



**US Sanction Paper**



**Niagara Mohawk - Owning Company 36 – Sub T**

Location	Quantity	Model	Division
Indian River Station 323	1	JVT-150	NYED
Lynn Street Station 320	4	JVS-200	NYED
Mohican Station 247	4	JVS-200	NYED
Newark Station 300	1	JVS-200	NYED
North Creek Station 122	2	JVT-200	NYED
North Troy Station 123	4	JVS-200	NYED
Partridge Street Station 128	1	JVS-200	NYED
Patroon Station 323	3	JVS-200	NYED
Rensselaer Station 132	3	JVS-200	NYED
Riverside Station 288	11	JVS-200	NYED
Rosa Road Station 137	10	JVT-200	NYED
Rotterdam Station 138	2	JVT-200	NYED
Saratoga Station 142	1	JVS-200	NYED
Schuylerville Station 39	1	JVT-200	NYED
Spier Falls Station 34	3	JVS-200	NYED
Warrensburg Station 321	2	JVS-200	NYED
Weaver Street Station	1	JVT-200	NYED
Woodlawn Station 188	3	JVT-200	NYED
Woodlawn Station 188	3	JVS-200	NYED
Albion Station 80	1	JVS-200	NYWD
Andover Station 09	3	JVS-200	NYWD
Ashville Station	3	JVS-200	NYWD
Brockport Station 74	1	JVS-200	NYWD
Dake Hill Switch Structure	3	JVS-200	NYWD
Dewey Ave Storage Yard	11	JVS-150	NYWD
Dewey Ave Storage Yard	2	JVS-200	NYWD



**US Sanction Paper**

**Niagara Mohawk - Owning Company 36 – Sub T**

Location	Quantity	Model	Division
Golah Station	1	JVT-200	NYWD
Medina Station	1	JVT-200	NYWD
New Walden Station	9	JVT-200	NYWD
North Angola Station	6	JVS-200	NYWD
North Ashford Station 36	3	JVS-200	NYWD
North LeRoy Station	1	JVS-200	NYWD
Oakfield Station 03	3	JVS-200	NYWD
Phillips Road Switch Structure	3	JVS-200	NYWD
Ridge Station 142	3	JVS-200	NYWD
Shaleton Station 81	3	JVS-200	NYWD
South Dow Station	10	JVT-200	NYWD
South Wellsville Station 23	2	JVS-200	NYWD
Station 022	12	JVS-150	NYWD
Station 023	12	JVS-150	NYWD
Station 024	27	JVS-150	NYWD
Station 028	9	JVS-150	NYWD
Station 033	12	JVS-150	NYWD
Station 039	6	JVS-150	NYWD
Station 043	9	JVS-150	NYWD
Station 044	4	JVS-150	NYWD
Station 046	4	JVS-150	NYWD
Station 052	3	JVS-150	NYWD
Station 056	3	JVS-150	NYWD
Station 057	9	JVS-150	NYWD
Station 063	6	JVS-150	NYWD
Station 074	6	JVS-150	NYWD
Station 077	2	JVS-150	NYWD
Station 160 - Summer St	9	JVS-150	NYWD
Station 161 - Short St	9	JVS-150	NYWD
Telegraph Road Station	3	JVS-200	NYWD
West Salamanca Station 16	3	JVS-200	NYWD

## US Sanction Paper

### 4.2 Photographs

**Figure 1 – Failed GE 34.5 kV Butyl Rubber Insulated PT**



### 4.3



***US Sanction Paper***



**Figure 2 - GE Model JVS 200, 34.5 kV butyl rubber insulated potential transformer**



Breakdown and cracking at the seam of the base and bushing housing allowing moisture ingress.

C026281

I&M - OS D-Line OH Work From Inspection

## 5360-Narragansett Electric and Gas Project Revision Detail Report

<b>Fund Project Number:</b> <u>C026281</u>	<b>USSC #:</b> <u>USSC-17-047FY18Pr</u>
<b>Revision:</b> <u>12</u>	<b>Budget Version:</b>
<b>Project Title:</b> <u>I&amp;M - OS D-Line OH Work From Insp.</u>	
<b>Project Description:</b> Capital and expense work associated with annual inspections of overhead distribution line facilities.	

<b>Project Status:</b> <u>open</u>	
<b>Responsible Person:</b> <u>WYMAN, ANNE</u>	<b>Initiator:</b> <u>Suarez, Jacqueline</u>
<b>Spending Rationale:</b> <u>Asset Condition</u>	<b>Funding Type:</b> <u>P Electric Distribution Line RI</u>
<b>Budget Class:</b> <u>Asset Replacement - I&amp;M (NE)</u>	
<b>Capital by Category:</b>	
<b>Program Code:</b>	
<b>Project Risk Score:</b> <u>49</u>	<b>Project Complexity Score:</b> <u>15</u>

### Project Schedule / Expenditures

<b>Revision Status:</b> <u>Approved</u>											
<b>Est Start Date:</b> <u>4/1/2017</u>	<b>Est Complete Date:</b> <u>3/31/2018</u>										
<b>Est In-Service Date:</b> <u>3/31/2018</u>											
<b>TTD Actuals:</b> <u>\$31,864,366</u>	<b>As Of:</b> <u>10/10/2017</u>										
<b>Cost Breakdown</b>	<table border="0" style="width: 100%;"> <tr> <td style="text-align: center;"><u><b>Capital</b></u></td> <td style="text-align: center;"><u><b>Expense</b></u></td> <td style="text-align: center;"><u><b>Removal</b></u></td> <td style="text-align: center;"><u><b>Total</b></u></td> <td style="text-align: center;"><u><b>Credits</b></u></td> </tr> <tr> <td style="text-align: center;"><u>\$1,600,000</u></td> <td style="text-align: center;"><u>\$400,000</u></td> <td style="text-align: center;"><u>\$160,000</u></td> <td style="text-align: center;"><u>\$2,160,000</u></td> <td style="text-align: center;"><u>\$0</u></td> </tr> </table>	<u><b>Capital</b></u>	<u><b>Expense</b></u>	<u><b>Removal</b></u>	<u><b>Total</b></u>	<u><b>Credits</b></u>	<u>\$1,600,000</u>	<u>\$400,000</u>	<u>\$160,000</u>	<u>\$2,160,000</u>	<u>\$0</u>
<u><b>Capital</b></u>	<u><b>Expense</b></u>	<u><b>Removal</b></u>	<u><b>Total</b></u>	<u><b>Credits</b></u>							
<u>\$1,600,000</u>	<u>\$400,000</u>	<u>\$160,000</u>	<u>\$2,160,000</u>	<u>\$0</u>							

### Justification / Risk Identification:

To replace assets that are found to be defective during the annual inspection. This work is in accordance with EOP D004.

### Project Scope:

Capital and expense work associated with annual inspections of overhead distribution line facilities.

### Project Alternatives Considered:

<Enter data here>

**Additional Notes:**

<Enter data here>

**Related Projects:**

**Project Number:**

**Project Name:**

**Approvals**

Line 1:	Date	<u>4/13/2017 08:25:23</u>	Approver	<u>monted</u>	<u>USSC Approver</u>
Line 2:	Date		Approver		
Line 3:	Date		Approver		
Line 4:	Date		Approver		
Line 5:	Date		Approver		

**\*\*\*Project Authorization is for Approved Revision Total Estimated Cost + 10%\*\*\***

**PowerPlan** ----- **PPGPRD Database**

File Edit Subsystem Batch Admin Preferences Window Help

Projects Assets Tables CR MyPPlan Help Calc Print Win

**Funding Project Estimates - Summary** C026281 Current Total Authorized Amount: \$2,16...

Title **I&M - OS D-Line OH Work From Insp.**

Project Number **C026281**

**Budget Version** No Assigned Versions

Revision **FY18**

Revision Status **Approved**

Revision No. **12**

Est Start Date **04/01/2015**

Est Complete Date **03/31/2018**

Est In Svc Date **03/31/2018**

Capital **\$1,600,000.00**

Expense **\$400,000.00**

Jobbing **\$0.00**

Retirement **\$0.00**

Removal **\$160,000.00**

Total (excl. Rets.) **\$2,160,000.00**

Credits **\$0.00**

Net **\$2,160,000.00**

**Spending Estimates:**

**Grid Estimates**

**Forecast**

Summarize from W/O

Copy Estimate

**Property Estimates:**

Unit Estimates

Create As Built

Delete Used Estimates

**Edit:**

New Revision

Delete Revision

Update

Update With Actuals

Import Estimates

**Other:**

Revision Comments

Released Dollars

Substitution

Slide

Version Compare

Close

Revision Info **Other Updates**

Revision **12** of 12 **< >**

**Find Revision** **Send for Approval**

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Record **8** of 16 **< >**

Audits



**PowerPlan** ----- PPGPRD Database

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Projects Assets Tables CR MyPlan Help Calc Print Win

**Funding Project Estimates - Summary** C026281 Current Total Authorized Amount: \$2,16...

Title **I&M - OS D-Line OH Work From Insp.**

Project Number **C026281**

**Budget Version** Default (active)

Revision **FY17**

Revision Status **Approved**

Revision No. **10**

Est Start Date **04/01/2015**

Est Complete Date **03/31/2018**

Est In Svc Date **03/31/2018**

Capital **\$2,405,000.00**

Expense **\$470,000.00**

Jobbing **\$0.00**

Retirement **\$0.00**

Removal **\$304,000.00**

Total (excl. Rets.) **\$3,179,000.00**

Credits **\$0.00**

Net **\$3,179,000.00**

**Spending Estimates:**

**Grid Estimates**

**Forecast**

Summarize from W/O

Copy Estimate

**Property Estimates:**

Unit Estimates

Create As Built

Delete Used Estimates

**Edit:**

New Revision

Delete Revision

Update

Update With Actuals

Import Estimates

**Other:**

Revision Comments

Released Dollars

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Revision Info **Other Updates**

Revision **10** of 12 **< >**

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Record **8** of 16 **< >**

**PowerPlan** ----- **PPGPRD Database**

File Edit Subsystem Batch Admin Preferences Window Help

Projects Assets Tables CR MyPlan Help Calc Print Win

**Funding Project Estimates - Summary** C026281 Current Total Authorized Amount: \$2,16...

Title **I&M - OS D-Line OH Work From Insp.**

Project Number **C026281**

**Budget Version** Default (inactive)

Revision **15-094 FY16 PR**

Revision Status **Approved**

Revision No. **9**

Est Start Date **04/01/2013**

Est Complete Date **03/31/2018**

Est In Svc Date **03/31/2018**

Capital **\$6,600,000.00**

Expense **\$1,584,000.00**

Jobbing **\$0.00**

Retirement **\$0.00**

Removal **\$923,000.00**

Total (excl. Rets.) **\$9,107,000.00**

Credits **\$0.00**

Net **\$9,107,000.00**

**Spending Estimates:**

**Grid Estimates**

**Forecast**

Summarize from W/O

Copy Estimate

**Property Estimates:**

Unit Estimates

Create As Built

Delete Used Estimates

**Edit:**

New Revision

Delete Revision

Update

Update With Actuals

Import Estimates

**Version Compare**

**Other:**

Revision Comments

Released Dollars

Substitution

Slide

**Close**

Revision Info **Other Updates**

Revision **9** of 12

**Find Revision**

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☐ Show 'Budget Only' Revisions

Audits

Record **8** of 16

**PowerPlan** ----- PPGPRD Database

File Edit Subsystem Batch Admin Preferences Window Help

Projects Assets Tables CR MyPlan Help Calc Print Win

**Funding Project Estimates - Summary** C026281 Current Total Authorized Amount: \$2,16...

Title **I&M - OS D-Line OH Work From Insp.**

Project Number **C026281**

**Budget Version** Default (inactive)

Revision **14-081 FY15 Program**

Revision Status **Approved**

Revision No. **8**

Est Start Date **03/31/2012**

Est Complete Date **03/31/2018**

Est In Svc Date **03/31/2018**

Capital **\$6,936,000.00**

Expense **\$1,803,000.00**

Jobbing **\$0.00**

Retirement **\$0.00**

Removal **\$2,709,000.00**

Total (excl. Rets.) **\$11,448,000.00**

Credits **\$0.00**

Net **\$11,448,000.00**

**Spending Estimates:**

**Grid Estimates**

**Forecast**

**Summarize from W/O**

**Copy Estimate**

**Property Estimates:**

**Unit Estimates**

**Create As Built**

**Delete Used Estimates**

**Edit:**

**New Revision**

**Delete Revision**

**Update**

**Update With Actuals**

**Import Estimates**

**Version Compare**

**Other:**

**Revision Comments**

**Released Dollars**

**Substitution**

**Slide**

**Close**

**Revision Info** **Other Updates**

Revision **8** of **12** **< > >|**

**Find Revision** **Send for Approval**

☐ **Show 'Budget Only' Revisions**

**Audits**

**Record** **8** of **16** **< > >|**

**PowerPlan** ----- PPGPRD Database

File Edit Subsystem Batch Admin Preferences Window Help

Projects Assets Tables CR MyPPlan Help Calc Print Win

**Funding Project Estimates - Summary** C026281 Current Total Authorized Amount: \$2,16...

Title **I&M - OS D-Line OH Work From Insp.**

Project Number **C026281**

**Budget Version** Default (inactive)

Revision **FY14**

Revision Status **Approved**

Revision No. **5**

Est Start Date **03/31/2012**

Est Complete Date **03/31/2018**

Est In Svc Date **03/31/2018**

Capital **\$8,463,000.00**

Expense **\$1,916,000.00**

Jobbing **\$0.00**

Retirement **\$0.00**

Removal **\$3,588,000.00**

Total (excl. Rets.) **\$13,967,000.00**

Credits **\$0.00**

Net **\$13,967,000.00**

**Spending Estimates:**

**Grid Estimates**

**Forecast**

**Summarize from W/O**

**Copy Estimate**

**Property Estimates:**

**Unit Estimates**

**Create As Built**

**Delete Used Estimates**

**Edit:**

**New Revision**

**Delete Revision**

**Update**

**Update With Actuals**

**Import Estimates**

**Version Compare**

**Other:**

**Revision Comments**

**Released Dollars**

**Substitution**

**Slide**

**Close**

**Revision Info** **Other Updates**

Revision **5** of 12 **< > >|**

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☐ **Show 'Budget Only' Revisions**

**Audits**

**Record** **8** of 16 **< > >|**

**PowerPlan** ----- PPGPRD Database

File Edit Subsystem Batch Admin Preferences Window Help

Projects Assets Tables CR MyPPan Help Calc Print Win

**Funding Project Estimates - Summary** C026281 Current Total Authorized Amount: \$2,16...

Title **I&M - OS D-Line OH Work From Insp.**

Project Number **C026281**

**Budget Version** PPM Project Authorizations [a]

Revision

Revision Status **Approved**

Revision No. **3**

Est Start Date **11/01/2007**

Est Complete Date **12/31/2020**

Est In Srvc Date **12/31/2020**

Capital **\$600,000.00**

Expense **\$1,000.00**

Jobbing **\$0.00**

Retirement **\$0.00**

Removal **\$1,000.00**

Total (excl. Rets.) **\$602,000.00**

Credits **\$0.00**

Net **\$602,000.00**

Revision Info **Other Updates**

Revision  3 of 12

[Find Revision](#)

☐ Show 'Budget Only' Revisions

**Spending Estimates:**

**Property Estimates:**

**Edit:**

**Other:**

Record **8** of 16

10



## US Sanction Paper

<b>Title:</b>	RI Distribution Inspection and Maintenance Program	<b>Sanction Paper #:</b>	USSC-12-230
<b>Project #:</b>	C26281, C14326, E07252, E04730	<b>Sanction Type:</b>	Sanction
<b>Operating Company:</b>	The Narragansett Electric Company	<b>Date of Request:</b>	April 11, 2012
<b>Author:</b>	Edward S. Paluch	<b>Sponsor:</b>	Cheryl A. Warren
<b>Utility Service:</b>	Electricity T&D		

### 1 Executive Summary

#### 1.1 Sanctioning Summary:

This paper requests sanction of projects C26281, C14326, E07252 and E04730 in the amount of \$4.127M and a tolerance of +/- 10% for the purposes of full implementation of the program in FY12/13.

This sanction amount of \$4.127M for FY12/13 is broken down into:

\$1.500M Capex  
\$0.825M Opex Related to Capex  
\$ 1.049M Direct Expense  
\$0.753M Removal

#### 1.2 Brief Description:

The Inspection and Maintenance (I&M) Strategy is a comprehensive inspection and maintenance program for overhead and underground distribution assets.

Key aspects of this program include:

- Each asset in the overhead distribution system will be visually inspected every 6 years. This includes an elevated voltage test for any conductive equipment on the pole, i.e. metallic risers, down grounds and guy wires.
- Assets in the sub-transmission or underground distribution systems are not currently in a formal inspection program. Elevated voltage testing is performed on padmount transformers, switchgear, and metallic handhole and manhole covers on a 5 year cycle. The first cycle was completed in 2010.
- All metallic street light standards were tested for elevated voltage in 2006. A 5 year cycle (testing approximately 20% of metallic street light standards per year) will start in FY12/13.



## US Sanction Paper

The program will drive a consistent inspection approach to benefit customers by evaluating asset health and allowing for a safe, sustainable system. This program is intended to meet NESC section 214 which outlines inspection of equipment guidelines. Additionally, this project will allow for the avoidance of potential environmental issues related to some assets, such as transformers.

This paper will provide for the FY12/13 overhead and underground distribution I&M Program in Rhode Island, including stray voltage testing stated above.

Work identified as a result of the I&M Program will be prioritized based on the severity of the issues found. Priority Codes are as follows:

- Level 1<sup>1</sup> – Must be repaired / replaced within one week
- Level 2<sup>2</sup> – Must be repaired / replaced within one year
- Level 4<sup>3</sup> – Information only, replace based on engineering judgment and budget availability

Overhead distribution Inspections have been occurring since FY11/12 and the design on those feeders is on-going. We have developed a work package that allows for the efficient use of resources, including single workers.

The following table provides the estimated count of remaining Level 2 and Level 3 items at the end of FY13, not including what will be found during the FY13 inspections.

Area	# L2 "Due" By End of FY13	# L2 Done By End of FY13	L2 Backlog at end of FY13
NE53	20140	2839	17301
NE56	11504	2223	9281
AIIRI	31644	5062	26582
	16.00%	Of L2's will be done	
	78.74% of Level 2's to be done in Expense Projects		
	66% of all Level 2's found are in Expense Projects		

<sup>1</sup> An immediate issue that requires the inspector to stand-by until a qualified crew/supervisor arrives to resolve the issues as soon as practical, but no longer than 1 week.

<sup>2</sup> An issue that, if left unresolved, has a high probability of failure within 1 year of the feeder inspection. Either the identified work will be completed within 1 year or a project will be initiated to complete with work in a timely fashion (e.g., pole replacement or addition may require permits or DOT involvement that may require longer than 1 year to complete).

<sup>3</sup> This information will be used for asset decision making and to aid inspectors during the subsequent inspections.



**US Sanction Paper**

**1.3 Summary of Projects:**

Project Number	Project Title	Estimate Amount (\$)
C26281	I&M – OS D-Line OH Work From Insp	2.748M
C14326	I&M – OS D-Line UG Work From Insp	0.330M
E07252	I&M – OS D-Line OH Work From Insp	0.609M
E04730	Inspect & Maint Project	0.440M
Total		\$4.127M

**1.4 Associated Projects:**

Project Number	Project Title	Company	Estimate Amount (\$)
Total			

**1.5 Prior Sanctioning History (including relevant approved Strategies):**

Date	Governance Body	Sanctioned Amount	Paper Title	Sanction Type

**1.6 Next Planned Sanction Review:**

Date (Month/Year)	Purpose of Sanction Review
6/2013	FY12/13 Annual Program Closure

**1.7 Category:**

Category	Reference to Mandate, Policy, or NPV Assumptions
<input type="checkbox"/> Mandatory	NG-EOP D004 Distribution Line Patrol And Maintenance NG-EOP UG006 Underground Inspection and Maintenance NG-EOP G016 Equipment Elevated Voltage Testing NG-EOP G017 Street Light Standard Inspection Program
<input checked="" type="checkbox"/> Policy-Driven	
<input type="checkbox"/> Justified NPV	





## US Sanction Paper

### 1.8 Asset Management Risk Score

Asset Management Risk Score: 40

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

☐ Reliability ☐ Environment ☒ Health & Safety

### 1.9 Complexity Level: (if applicable)

☐ High Complexity ☒ Medium Complexity ☐ Low Complexity

Complexity Score: 19

### 1.10 Business Plan:

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
RI ISR FY12/13	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Over <input type="checkbox"/> Under	0

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

N/A

### 1.12 Current Planning Horizon:

The Narragansett Electric Company	Current planning horizon						
	Prior YR'S	Yr 1 11/12	Yr 2 12/13	Yr 3 13/14	Yr 4 14/15	Yr 5 15/16	Yr 6 +
\$M							Total
Proposed Capex Investment			1.500				1.500
Proposed Opex Investment			0.825				0.825
Proposed Removal Investment			0.753				0.753
Direct Expense			1.049				1.049
Total	\$0.000	\$0.000	\$4.127	\$0.000	\$0.000	\$0.000	\$4.127



**US Sanction Paper**

**1.13 Resources:**

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="checkbox"/> Red	<input type="checkbox"/> Amber	<input checked="" type="checkbox"/> Green
Availability of external resources to deliver project:	<input type="checkbox"/> Red	<input type="checkbox"/> Amber	<input checked="" type="checkbox"/> Green
Operational Impact			
Outage impact on network system:	<input type="checkbox"/> Red	<input type="checkbox"/> Amber	<input checked="" type="checkbox"/> Green
Procurement impact on network system:	<input type="checkbox"/> Red	<input type="checkbox"/> Amber	<input checked="" type="checkbox"/> Green

**1.14 Key Issues (include mitigation of Red or Amber Resources):**

1	Estimates of Direct Expense have been provided to Finance. However, the Operations budget has not been finalized for FY12/13.
2	The Company has agreed with the RI DPUC to complete the Feeder Hardening program prior to starting I&M construction. The remaining Feeder Hardening work in Rhode Island is scheduled to be completed by Q1 of FY12/13.
3	The deferral of the I&M Program may extend the time to replace all potted porcelain cutouts in Rhode Island. The replacement scheduled which was targeted a FY12/13 completion, depended on the feeders scheduled in the I&M Program FY10/11, FY11/12 and FY12/13 to replace the cutouts on 161 distribution feeders.
4	Computapole IT issues: There are currently limited IT resources to make modifications to Computapole or the interface between Storms and Computapole.
5	This program will provide a tracking mechanism for retired in place / out of service transformers by programming codes into the handheld devices used by the inspectors. This is a key issue of the Environmental Department and the Risk and Responsibility Committee.



## US Sanction Paper

### 1.15 Key Milestones:

Milestone	Target Date: (Month/Year)
FY12/13 Program Sanctioning	4/2012
FY12/13 Completion	3/2013
FY12/13 Annual Program Closure	6/2013

### 1.16 Climate Change:

Are financial incentives (e.g. carbon credits) available?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Contribution to National Grid's 2050 80% emissions reduction target:	<input checked="" type="checkbox"/> Neutral	<input type="checkbox"/> Positive <input type="checkbox"/> Negative
Impact on adaptability of network for future climate change:	<input checked="" type="checkbox"/> Neutral	<input type="checkbox"/> Positive <input type="checkbox"/> Negative

### 1.17 List References:

1	
2	
3	

RI Distribution Inspection and Maintenance Program

USSC-12-142

BU#	Project #	PPM ID	Project Name	FY13 Capital Budget	FY13 Opex Budget	FY13 COR Budget	FY13 Total
49	C26281	3357	03357 I&M - OS D-Line OH Work From Insp	1,250,000	770,000	728,000	2,748,000
49	C14326	3358	03358 I&M - OS D-Line UG Work From Insp	250,000	55,000	25,000	330,000
	Total			1,500,000	825,000	753,000	3,078,000

**US Sanction Paper**

**nationalgrid**

**Recommendations:**

The **Sanctioning Authority** USSC is invited to:

- (a) APPROVE the investment of \$4.127M and a tolerance of +/- 10 % for the individual projects listed in the paper.
- (b) NOTE that Artie Georgacopoulos is the Project Manager and has the approved financial delegation.

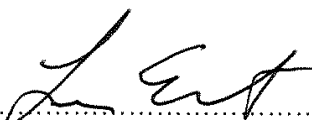
Signature.......... Date 5/14/12  
Cheryl A. Warren, Vice President, Asset Management

I hereby approve the recommendations made in this paper.

Signature.......... Date 5/15/12  
Christopher E. Root, Senior Vice President Network Strategy

**2 Decisions**

The US Sanctioning Committee (USSC) approved this paper at a USSC meeting held on April 11, 2012.

Signature.......... Date 5/23/12  
Lee S. Eckert  
US Chief Financial Officer  
Chairman, US Sanctioning Committee

**USSC Closure Paper**



<b>Title:</b>	RI FY13 I&M Program	<b>Sanction Paper #:</b>	USSC-12-230C
<b>Project #:</b>	C026281 & C014326	<b>Sanction Type:</b>	Closure
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	08/09/2016
<b>Author:</b>	Anne Wyman	<b>Sponsor:</b>	Carol Sedewitz, VP Asset Management
<b>Utility Service:</b>	Electricity T&D	<b>Project Manager:</b>	Anne Wyman

**1 Executive Summary**

This paper is presented to close projects C026281 and C014326 for FY13. The total spend was \$1.511M. The latest sanctioned amount for this project was \$3.078M.

*The final spend amount is \$1.511M broken down into:*

*\$1.104M Capex  
\$0.276M Opex  
\$0.131M Removal*

**2 Project Summary**

The Inspection and Maintenance strategy is a comprehensive inspection and maintenance program for overhead and underground assets. The program drives a consistent inspection approach to benefit customers by evaluating asset health and allowing for a safe, sustainable system.



**USSC Closure Paper**

**3 Over / Under Expenditure Analysis**

**3.1 Summary Table**

Actual Spending (\$M)			
Project #	Description		Total Spend
C026281	I&M - OS D-Line OH Work From Insp	Capex	1.124
		Opex	0.258
		Removal	0.131
		Total	1.513
Project #	Description		Total Spend
C014326	I&M - OS D-Line UG Work From Insp	Capex	(0.020)
		Opex	0.018
		Removal	0.000
		Total	(0.002)
Total		Capex	1.104
		Opex	0.276
		Removal	0.131
		Total	1.511

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
C026281	I&M - OS D-Line OH Work From Insp	Capex	1.250
		Opex	0.770
		Removal	0.728
		Total Cost	2.748
Project Sanction Approval (\$M)			Total Spend
C014326	I&M - OS D-Line UG Work From Insp	Capex	0.250
		Opex	0.055
		Removal	0.025
		Total Cost	0.330
Sanction Variance (\$M)			Total Spend
		Capex	0.396
		Opex	0.549
		Removal	0.622
		Total Variance	1.567



## USSC Closure Paper

### 3.2 Analysis

The I&M program was kicked off in FY13. Construction on the targeted I&M feeders did not begin until after all of the feeder hardening projects were complete. The Capex/Opex/Removal splits were based on design estimates, however the actual work turned out to be more capital intensive than anticipated, therefore there was underspend in the overall project while the Capex numbers were in line with expectations.

### 4 Improvements / Lessons Learned

Design packages were adjusted to separate out locations requiring permitting in order to allow for the larger portion of the work to be released to construction while permits were acquired. Reporting was created to track pole sets needed by the telephone company and easement dependencies ensuring all feeder work is completed 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"/> 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 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

**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 Planning	Glen DiConza	Endorses relative to 5-year business plan or emergent work
Resource Planning	Anne Wyman	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Distribution Asset Management	Alan Labarre	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives

**6.2 Reviewers**

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

Function	Individual
Finance	Patricia Easterly
Regulatory	Peter Zschokke
Jurisdictional Delegates	Jim Patterson
Procurement	Art Curran



**USSC Closure Paper**



**7 Decisions**

I approve this paper.

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

Executive Sponsor – Christopher Kelly,  
Acting Senior Vice President – Electric Process & Engineering

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## US Sanction Paper

<b>Title:</b>	Distribution Inspection And Maintenance (I&M) Program	<b>Sanction Paper #:</b>	USSC-13-090
<b>Project #:</b>	C26281, C14326, E07252, E04730	<b>Sanction Type:</b>	Sanction
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	3/13/2013
<b>Author:</b>	Edward S. Paluch	<b>Sponsor:</b>	Cheryl A. Warren, VP Asset Management
<b>Utility Service:</b>	Electricity T&D	<b>Project Manager:</b>	James Patterson

### 1 Executive Summary

#### 1.1 **Sanctioning Summary:**

This paper requests the sanction of projects C26281, C14326, E07252 and E04730 in the amount of \$16.347M and a tolerance of +/- 10% for the purposes of full implementation of the program in FY13/14.

This sanction amount of \$16.347M for FY13/14 is broken down into:

- \$8.573M Capex
- \$1.925M Opex Related To Capex
- \$2.259M Direct Expense
- \$3.590M Removal

The cost estimates proposed in this program include both costs to perform the inspections as well as all costs associated with completing the work generated from inspections. The cost estimates for the work generated from inspections STORMS estimates for work identified from inspections performed to date.

#### 1.2 **Brief Description:**

The Inspection and Maintenance (I&M) Program is a comprehensive inspection and maintenance program for overhead and underground distribution assets. Key aspects of this program include:

- Each asset in the overhead distribution system will be visually inspected every five years. This includes an elevated voltage test for any conductive equipment on the pole, i.e. metallic risers, down grounds and guy wires.
- Introduce documenting underground distribution system working inspections into a fifteen year formal inspection program.



## US Sanction Paper

- All metallic street light standards were tested for elevated voltage in 2006. A five year cycle (testing approximately 20% of metallic street light standards per year) began in FY12/13. This has been adjusted to a three year cycle per the RI Division recommendation in Docket No. 4237.
- A mobile contact voltage testing program for "Designated Contact Voltage Risk Areas" has been mandated in Rhode Island in Docket No. 4237. The RI Commission has approved the Company recommendation that 100 percent of the Contact Voltage Risk Areas be surveyed during the first program year followed by 20 percent in successive years.

The program will drive a consistent inspection approach to benefit customers by evaluating asset health and allowing for a safe, adequate system. This program is intended to meet National Electric Safety Code (NESC) section 214 which outlines inspection of equipment guidelines. Additionally, this project will allow for the avoidance of potential environmental issues related to some assets, such as transformers.

This sanction will provide for the FY13/14 overhead and underground distribution I&M Program in Rhode Island, including stray voltage testing.

### 1.3 Summary of Projects:

Project Number	Project Title	Estimate Amount (\$M)
C26281	Narragansett Electric – OH	\$13.967
C14326	Narragansett Electric – UG	\$0.121
E07252	Narragansett Electric – OH	\$1.716
E04730	Narragansett Electric – Inspections and Elevated Voltage Testing	\$0.543
<b>Total:</b>		<b>\$16.347</b>

### 1.4 Associated Projects:

Project Number	Project Title	Estimate Amount
<b>Total</b>		<b>\$ -</b>

### 1.5 Prior Sanctioning History (including relevant approved Strategies):

Date	Governance Body	Sanctioned Amount	Paper Title	Sanction Type
April 11, 2012	USSC	\$4.127M	RI Distribution Inspection and Maintenance	Sanction

**US Sanction Paper**

**nationalgrid**

			Program	
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**1.6 Next Planned Sanction Review:**

Date (Month/Year)	Purpose of Sanction Review
June 2014	FY 13/14 Annual Program Closure

**1.7 Category:**

Category	Reference to Mandate, Policy, or NPV Assumptions
<input checked="" type="radio"/> Mandatory	EOP D004 Distribution Line Patrol And Maintenance EOP D011 – Inspection and Maintenance of Distribution Line Reclosers
<input type="radio"/> Policy- Driven	EOP D014 - Inspection and Maintenance of Sectionalizers EOP UG006 Underground Inspection and Maintenance EOP G016 Equipment Elevated Voltage Testing
<input type="radio"/> Justified NPV	EOP G017 Street Light Standard Inspection Program Massachusetts DTE Directive 12/9/05 Letter to Massachusetts Department of Public Utilities 6/3/2011 NESC Handbook 2012 edition section 214

**1.8 Asset Management Risk Score**

Asset Management Risk Score: 40

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

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

**1.9 Complexity Level: (if applicable)**

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

Complexity Score: 20

**1.10 Process Hazard Assessment**

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

**US Sanction Paper**



☐ Yes ☒ No

**1.11 Business Plan:**

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY14-FY18 Business Plan	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Over <input type="radio"/> Under	454,000
	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input checked="" type="radio"/> Under	
	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input checked="" type="radio"/> Under	

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

Portfolio Management

**1.13 Current Planning Horizon:**

\$M	Prior YR Spending	Current Planning Horizon						Total
		YR1 13/14	YR2 14/15	YR3 15/16	YR4 16/17	YR5 17/18	YR6+*	
Proposed Capex		\$8.573						\$8.573
Proposed Opex		\$1.925						\$1.925
Proposed Removal		\$3.590						\$3.590
Direct Expense		\$2.259						\$2.259
Total		\$16.347						\$16.347

**1.14 Resources:**

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		

**US Sanction Paper**



<b>Availability of internal resources to deliver project:</b>	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green
<b>Availability of external resources to deliver project:</b>	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green
<b>Operational Impact</b>			
<b>Outage impact on network system:</b>	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green
<b>Procurement impact on network system:</b>	<input type="radio"/> Red	<input type="radio"/> Amber	<input checked="" type="radio"/> Green

**1.15 Key Issues (include mitigation of Red or Amber Resources):**

1	Estimates of Direct Expense have been provided to Finance. However, the Operations budget has not been finalized for FY13/14.
2	
3	

**1.16 Key Milestones:**

<b>Milestone</b>	<b>Target Date: (Month/Year)</b>
FY12/13 Completion	3/2013
FY12/13 Annual Program Closure	6/2013
FY13/14 Program Sanctioning	3/2013
FY13/14 Completion	3/2014
FY13/14 Annual Program Closure	6/2014

**1.17 Climate Change:**

Are financial incentives (e.g. carbon credits) available?	<input type="radio"/> Yes	<input checked="" type="radio"/> No
Contribution to National Grid's 2050 80% emissions reduction target:	<input checked="" type="radio"/> Neutral	<input type="radio"/> Positive <input type="radio"/> Negative
Impact on adaptability of network for future climate change:	<input checked="" type="radio"/> Neutral	<input type="radio"/> Positive <input type="radio"/> Negative

**1.18 List References:**

1	
2	
3	

**US Sanction Paper**



**2 Decisions**

The US Sanctioning Committee (USSC) at a meeting held on 3/13/2013

- (a) APPROVE this paper and the investment of \$16.347M and a tolerance of +/- 10%
- (b) NOTE that James Patterson is the Project Manager and has the approved financial delegation.

Signature..........Date..........  
Lee S. Eckert  
US Chief Financial Officer  
Chairman, US Sanctioning Committee

**USSC Closure Paper**



<b>Title:</b>	RI FY14 I&M Program	<b>Sanction Paper #:</b>	USSC-13-090C
<b>Project #:</b>	C026281 & C014326	<b>Sanction Type:</b>	Closure
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	10/12/2016
<b>Author:</b>	Anne Wyman	<b>Sponsor:</b>	Carol Sedewitz, VP Asset Management
<b>Utility Service:</b>	Electricity T&D	<b>Project Manager:</b>	Anne Wyman

**1 Executive Summary**

This paper is presented to close projects C026281 and C014326 for FY14. The total spend was \$9.427M. The latest sanctioned amount for this project was \$13.400M.

*The final spend amount is \$9.427M broken down into:*

*\$6.642M Capex  
\$1.815M Opex  
\$0.970M Removal*

**2 Project Summary**

The Inspection and Maintenance strategy is a comprehensive inspection and maintenance program for overhead and underground assets. The program drives a consistent inspection approach to benefit customers by evaluating asset health and allowing for a safe, sustainable system.



**USSC Closure Paper**



**3 Over / Under Expenditure Analysis**

**3.1 Summary Table**

Actual Spending (\$M)			
Project #	Description		Total Spend
C026281	I&M - OS D-Line OH Work From Insp	Capex	6.653
		Opex	1.798
		Removal	0.978
		Total	9.429
Project #	Description		Total Spend
C014326	I&M - OS D-Line UG Work From Insp	Capex	(0.011)
		Opex	0.017
		Removal	(0.008)
		Total	(0.002)
Total		Capex	6.642
		Opex	1.815
		Removal	0.970
		Total	9.427

**3.2 Analysis**

Work was not identified for the UG program. The OH program was delayed due to system changes required to implement the full program. All work was put on hold while newly designed packages were put together to allow for the crews to work each feeder more efficiently, resulting in the underspend.

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
C026281	I&M - OS D-Line OH Work From Insp	Capex	8.465
		Opex	1.275
		Removal	3.600
		Total Cost	13.340
Project Sanction Approval (\$M)			Total Spend
C014326	I&M - OS D-Line UG Work From Insp	Capex	0.050
		Opex	0.005
		Removal	0.005
		Total Cost	0.060
Sanction Variance (\$M)			Total Spend
		Capex	1.873
		Opex	(0.535)
		Removal	2.635
		Total Variance	3.973

## USSC Closure Paper



### 4 Improvements / Lessons Learned/ Root Cause

Improvements – Reporting was created to ensure TELCO and easement dependencies are closely monitored, ensuring all feeder work is completed in a timely fashion.

Lessons learned – Identified more efficient process to close out work completed in the field. This allows better visibility of month over month spending as well as percent of work completed.

Volumes were under budget levels set.

### 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 which have not yet been closed for reasons including but not limited to:

- design and/or construction have not yet begun
- 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
- A summary of the status for all work orders charged in the fiscal year is provided below. In addition, for any work order which remains open, a

## USSC Closure Paper



table of the disposition determined during Phase 1 of the Work Order Closure effort is provided.

- 
- 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.

All as-builts have been completed. (Refer to Work Order Summary Tables)  
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

(2) Refer to Section 4 – Improvements/Lessons Learned/Root Cause

## 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	Glen DiConza	Endorses relative to 5-year business plan or emergent work
Resource Planning	Anne Wyman	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Distribution Asset Management	Alan Labarre	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives

### 6.2 Reviewers

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

Function	Individual
Finance	Patricia Easterly
Regulatory	Peter Zschokke
Jurisdictional Delegates	Jim Patterson
Procurement	Art Curran

**USSC Closure Paper**



**7 Decisions**

I approve this paper.

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

Executive Sponsor – Christopher Kelly,  
Senior Vice President – Electric Process & Engineering



## Short Form Sanction Paper

<b>Title:</b>	RI FY15 Distribution Inspection And Maintenance (I&M) Program	<b>Sanction Paper #:</b>	USSC-14-081
<b>Project #:</b>	C026281, C014326, E007252, E004730	<b>Sanction Type:</b>	Sanction
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	03-12-2014
<b>Author:</b>	Peter A. Schiffman	<b>Sponsor:</b>	Cheryl A. Warren
<b>Utility Service:</b>	Electricity T&D	<b>Project Manager:</b>	Jim Patterson

### 1 Executive Summary

#### 1.1 Sanctioning Summary

This paper requests the sanction of projects C026281, C014326, E007252 and E004730, in the amount of \$12.495M and a tolerance of +/- 10% (on an individual project basis) for the purposes of full implementation of the program in FY15.

This sanction amount of \$12.495M for FY15 is broken down into:

- \$7.040M Capex
- \$1.811M Opex Related To Capex
- \$0.934M Direct Expense
- \$2.710M Removal

The cost estimates proposed in this program include both costs to perform the inspections as well as all costs associated with completing the work generated from inspections. The cost estimates for the work generated from inspections were derived based on experience from the first inspection cycle and Resource Planning forecasts.

#### 1.2 Project Summary

The Inspection and Maintenance (I&M) Program is funded annually to inspect and address overhead and underground distribution assets in need of repair or replacement. This program is partially mandated by the Rhode Island Public Utilities Commission.



## **Short Form Sanction Paper**

### **2 Project Detail**

#### **2.1 Background**

R.I.G.L. §39-2-25 requires the following:

- Perform contact voltage testing in designated contact voltage risk areas for contact voltage hazards on all conductive surfaces in public rights-of-way using equipment and technology as determined by the commission. By June 30, 2013, conduct an initial survey of no less than 40% of designated contact voltage risk areas. Beginning July 1, 2013, annually survey no less than 20% of designated contact voltage risk areas.

In addition to meeting the mandated requirements above, the program will drive a consistent inspection approach to benefit customers by evaluating asset health and allowing for a safe, adequate system. This program is intended to meet National Electric Safety Code (NESC) section 214 which outlines inspection of equipment guidelines. Additionally, this project will allow for the avoidance of potential environmental issues related to some assets, such as transformers.

This sanction will provide for the FY15 overhead and underground distribution I&M Program in Rhode Island, including manual elevated voltage testing.

#### **2.2 Drivers**

The primary driver of the program is safety and environmental. Asset replacement prior to failure provides incremental employee and public safety benefits and avoidance of potential environmental problems related to some assets, i.e. transformers and capacitor banks. This program will satisfy section 214 of the NESC, which outlines inspection of equipment guidelines for electric utilities. In addition, implementation of this strategy addresses safety concerns relating to contact voltage on all publicly accessible Company distribution overhead and underground line facilities.

Asset condition is a secondary driver. The combination of cyclical inspection and replacement of deteriorated equipment provides for a sustainable system while retaining assets in service until condition warrants their replacement.



## **Short Form Sanction Paper**

### **2.3 Project Description**

The I&M Strategy is a comprehensive inspection and maintenance program for overhead and underground Distribution line assets. In this program, each asset in the overhead system will be inspected on a cycle while each asset in the underground system will be inspected as part of normal working inspections and the results will be documented and tracked in a common database. Improvements in the quality of data collection have enhanced our knowledge of assets within the system so we can make decisions to better serve customers.

The I&M strategy recommends a cyclical inspection and maintenance program. The inspection priority system will identify and provide for the timely condition-based replacement of any visibly damaged or deteriorated assets. The following is a brief description of the inspection program:

Work identified as a result of the Inspection and Maintenance program in New England will be prioritized based on the severity of the issues found. Priority Codes are as follows:

Level 1- Must be repaired/replaced within one week

Level 2- Bundled with level 3 work to be completed on a feeder basis, recommended repair/replacement complete prior to next inspection cycle.

Level 3- Bundled with level 2 work to be completed on a feeder basis, recommended repair/replacement prior to next inspection cycle.

Level 4- Information only, replace based on engineering judgment and budget availability

In New England, work is being packaged by feeder with Level 2 and Level 3 work bundled together for completion at the same time. In New England, single worker packages are also being created. The inspection database (Computapole) is linked to the work management system (STORMS) for streamlined work order creation, execution, field completion, closeout and tracking.

Line assets across the system shall be inspected in accordance with the National Grid Electric Operating Procedures (EOP) listed below:

Overhead Distribution Inspection EOP-D004

Underground Distribution Inspection EOP-UG006

Elevated Voltage Testing EOP-G016

Street Light Standards EOP-G017

Regulators / Capacitors EOP-G012

Reclosers / Sectionalizers EOP-D011 (Reclosers) & EOP-DO14  
(Sectionalizers)



## **Short Form Sanction Paper**

### **2.4 Benefits**

#### **2.4.1 Safety & Environmental**

Asset replacement prior to failure provides incremental employee and public safety benefits and avoidance of potential environmental problems related to some assets, i.e. transformers and poles. This program will satisfy section 214 of the NESC, which outlines inspection of equipment guidelines for electric utilities. In addition, implementation of this strategy addresses safety concerns relating to contact voltage on all publicly accessible Company distribution line facilities.

#### **2.4.2 Customer/Regulatory/Reputation**

The I&M program is partially mandated in Rhode Island as discussed in section 2.1. The main customer benefits from this strategy are elimination of elevated voltage hazards, improved reliability, and maintaining a sustainable system. The program retains assets in service until condition warrants their replacement, as opposed to time based replacement.

#### **2.4.3 Reliability**

Condition based repair / replacement will maintain reliability and support the creation of a sustainable system. Collectively deteriorated equipment related interruptions are one of the main drivers of poor reliability.

### **2.5 Business & Customer Issues**

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

### **2.6 Alternatives**

**Alternative 1:** Replace/repair all deficiencies identified in the inspection cycle, within the specified time frame. This is the recommended alternative.

This action is recommended to ensure that safety and reliability of assets are maintained and National Grid will achieve the regulatory requirements associated with this program.

**Alternative 2:** Do nothing and repair or replace assets upon failure.

This alternative will create increased risk to the failure of assets resulting in a potentially negative impact to public safety and reliability. In addition, the Company would not be meeting its regulatory obligations.





## 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 \$ 2.754M. 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)
C026281	D-Line	Narragansett Electric – Distribution OH	11.448
C014326	D-Line	Narragansett Electric – UG	0.113
E007252	D-Line	Narragansett Electric – OH	0.375
E004730	D-Line	Narragansett Electric – Inspections and Elevated Voltage Testing	0.559
Total			12.495

### 3.2 Associated Projects

### 3.3 Prior Sanctioning History

Date	Governance Body	Sanctioned Amount	Paper Title	Sanction Type

Full program sanction is pursued on an annual basis.



## Short Form Sanction Paper

### 3.4 Category

Category	Reference to Mandate, Policy, or NPV Assumptions
<input type="radio"/> Mandatory	EOP D004 Distribution Line Patrol And Maintenance EOP D011 – Inspection and Maintenance of Distribution Line Reclosers
<input checked="" type="radio"/> Policy- Driven	EOP-G012 – Capacitor Inspections EOP D014 - Inspection and Maintenance of Sectionalizers EOP UG006 Underground Inspection and Maintenance
<input type="radio"/> Justified NPV	EOP G016 Equipment Elevated Voltage Testing EOP G017 Street Light Standard Inspection Program R.I.G.L. §39-2-25 NESC Handbook 2012 edition section 214

### 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:   20  

## 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 (\$)
Dist- Approved FY15-19 Business Plan	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	0.00



## Short Form Sanction Paper

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

N/A

### 4.2 CIAC / Reimbursement

N/A

### 4.3 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (PM)						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	
C026281	Narragansett Electric – Distribution OH	+/- 10%	CapEx	-	6.936	-	-	-	-	-	6.936
			OpEx	-	1.803	-	-	-	-	-	1.803
			Removal	-	2.709	-	-	-	-	-	2.709
			Direct Expense	-	-	-	-	-	-	-	-
			Total	-	11.448	-	-	-	-	-	11.448
C014326	Narragansett Electric – UG	+/- 10%	CapEx	-	0.104	-	-	-	-	-	0.104
			OpEx	-	0.008	-	-	-	-	-	0.008
			Removal	-	0.001	-	-	-	-	-	0.001
			Direct Expense	-	-	-	-	-	-	-	-
			Total	-	0.113	-	-	-	-	-	0.113
E007252	Narragansett Electric – OH	+/- 10%	CapEx	-	-	-	-	-	-	-	-
			OpEx	-	-	-	-	-	-	-	-
			Removal	-	-	-	-	-	-	-	-
			Direct Expense	-	0.375	-	-	-	-	-	0.375
			Total	-	0.375	-	-	-	-	-	0.375
E004730	Narragansett Electric – Inspections and Elevated Voltage Testing	Est Lvl (e.g. +/- 10%)	CapEx	-	-	-	-	-	-	-	-
			OpEx	-	-	-	-	-	-	-	-
			Removal	-	-	-	-	-	-	-	-
			Direct Expense	-	0.559	-	-	-	-	-	0.559
			Total	-	0.559	-	-	-	-	-	0.559
Total Project Sanction			CapEx	-	7.040	-	-	-	-	-	7.040
			OpEx	-	1.811	-	-	-	-	-	1.811
			Removal	-	2.710	-	-	-	-	-	2.710
			Direct Expense	-	0.934	-	-	-	-	-	0.934
			Total	-	12.495	-	-	-	-	-	12.495



## 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	7.040	0.000	0.000	0.000	0.000	0.000	7.040
OpEx	0.000	1.811	0.000	0.000	0.000	0.000	0.000	1.811
Removal	0.000	2.710	0.000	0.000	0.000	0.000	0.000	2.710
Direct Expense	0.000	0.934	0.000	0.000	0.000	0.000	0.000	0.934
Total Cost in Bus. Plan	0.000	12.495	0.000	0.000	0.000	0.000	0.000	12.495

#### 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
Direct Expense	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	03/2014
Commissioning	Multiple Dates
Completion	03/2015
Annual Program Closure	06/2015



## 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 Planning	Glen DiConza	Endorses relative to 5-year business plan or emergent work
Resource Planning	Jim Patterson	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Asset Management	Alan Labarre	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives

#### 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	Jennifer Grimsley

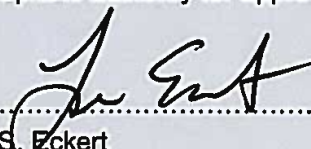
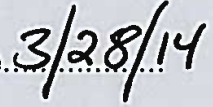


**Short Form Sanction Paper**

**7 Decisions**

The US Sanctioning Committee (USSC) at a meeting held on March 12, 2014:

- (a) APPROVED this paper and the investment of \$12.495M and a tolerance of +/- 10%
- (b) NOTED that Jim Patterson has the approved financial delegation.
- (c) NOTE: In the event that any Program projects are not approved prior to the start of the FY15 fiscal year, the FY15 approval limits will remain in effect until such time as the FY15 blanket projects are approved by USSC and/or other appropriate authority for approval.

Signature..........Date.....  
Lee S. Eckert  
US Chief Financial Officer  
Chairman, US Sanctioning Committee



**USSC Closure Paper**

<b>Title:</b>	RI FY15 Inspection & Maintenance Program	<b>Sanction Paper #:</b>	USSC-14-081C
<b>Project #:</b>	C014326, C026281	<b>Sanction Type:</b>	Closure
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	October 14, 2015
<b>Author:</b>	Anne Wyman	<b>Sponsor:</b>	John Gavin, VP Asset Management
<b>Utility Service:</b>	Electricity T&D	<b>Project Manager:</b>	Anne Wyman

**1 Executive Summary**

This paper is presented to close C014325, C026281. The total spend was \$9.782M. The latest sanctioned amount for this project was \$11.561M.

*The final spend amount is \$9.782M broken down into:*  
*\$7.593M Capex*  
*\$1.311M Opex*  
*\$0.877M Removal*

**2 Project Summary**

The Inspection and Maintenance strategy is a comprehensive inspection and maintenance program for overhead and underground assets. The program drives a consistent inspection approach to benefit customers by evaluating asset health and allowing for a safe, sustainable system.



**USSC Closure Paper**

**3 Over / Under Expenditure Analysis**

**3.1 Summary Table**

Actual Spending (\$M)			
Project #	Description		Total Spend
C014326	I&M - OS D-LINE UG WORK FROM INSP	Capex	0.000
		Opex	0.000
		Removal	0.000
		Total	0.000
Project #	Description		Total Spend
C026281	I&M - OS D-LINE OH WORK FROM INSP	Capex	7.593
		Opex	1.311
		Removal	0.877
		Total	9.781
Total		Capex	7.593
		Opex	1.311
		Removal	0.877
		Total	9.781

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	7.040
		Opex	3.311
		Removal	2.710
		Total Cost	13.061
Sanction Variance (\$M)			Total Spend
		Capex	(0.553)
		Opex	2.000
		Removal	1.833
		Total Variance	3.280



## USSC Closure Paper



### 3.2 Analysis

#### 4 Improvements / Lessons Learned

Improvements – Feeder packages were created singling out locations with permitting issues so that the majority of the work could be completed without waiting for a permit in one location. Separate work orders with locations where permitting is required are worked when the permit clears.

Lessons Learned – The program strategy recommends a 5 year cycle. Construction commenced through the fiscal year with a goal to complete construction on 1/5<sup>th</sup> of the feeders in RI. The cost per feeder was much greater than expected therefore causing the program to go over the budget. Also, due to an update to the capitalization policy, the opex spend was much lower than originally sanctioned and in turn resulted in an overrun in the capital spend.

#### 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



## **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 Planning	Glen DiConza	Endorses relative to 5-year business plan or emergent work
Resource Planning	Anne Wyman	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Asset Management	Alan Labarre	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives

#### **6.2 Reviewers**

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



Function	Individual
Finance	Keith Fowler, Philip Horowitz
Regulatory	Peter Zschokke
Jurisdictional Delegate	Jim Patterson

**USSC Closure Paper**



**7 Decisions**

The US Sanctioning Committee (USSC) approved this paper at a USSC meeting held on October 14, 2015.

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

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**Short Form Sanction Paper**



<b>Title:</b>	RI FY16 Distribution Inspection And Maintenance (I&M) Program	<b>Sanction Paper #:</b>	USSC-15-094
<b>Project #:</b>	C026281, C014326, E007252, EOS0003, E013729	<b>Sanction Type:</b>	Sanction
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	03/25/2015
<b>Author:</b>	Emilio Agustin	<b>Sponsor:</b>	John E. Gavin
<b>Utility Service:</b>	Electricity T&D	<b>Project Manager:</b>	Anne Wyman

**1 Executive Summary**

**1.1 Sanctioning Summary**

This paper requests the sanction of projects C026281, C014326, E007252, EOS0003 and E013729, in the amount of \$10.681M and a tolerance of +/- 10% (on an individual project basis) for the purposes of full implementation of the program in FY16.

This sanction amount of \$10.681M for FY16 is broken down into:

- \$6.705M Capex
- \$1.614M Opex Related To Capex
- \$1.423M Direct Expense
- \$0.939M Removal

The cost estimates proposed in this program include both costs to perform the inspections as well as all costs associated with subsequent repairs. The cost estimates for repairs were derived based on experience from the first inspection cycle.

**1.2 Project Summary**

The Inspection and Maintenance (I&M) Program is funded annually to inspect and address overhead and underground distribution assets in need of repair or replacement. This program is partially mandated by the Rhode Island Public Utilities Commission.

## **Short Form Sanction Paper**



## **2 Project Detail**

### **2.1 Background**

R.I.G.L. §39-2-25 requires the following:

- Perform contact voltage testing in designated contact voltage risk areas for contact voltage hazards on all conductive surfaces in public rights-of-way using equipment and technology as determined by the commission. By June 30, 2013, conduct an initial survey of no less than 40% of designated contact voltage risk areas. Beginning July 1, 2013, annually survey no less than 20% of designated contact voltage risk areas.

In addition to meeting the mandated requirements above, the program will drive a consistent inspection approach to benefit customers by evaluating asset health and allowing for a safe, adequate system. This program is intended to meet National Electric Safety Code (NESC) section 214 which outlines inspection of equipment guidelines. Additionally, this project will allow for the avoidance of potential environmental issues related to some assets, such as transformers.

This sanction will provide for the FY16 overhead distribution, underground distribution and Sub-Transmission I&M Program in Rhode Island, including stray voltage testing.

### **2.2 Drivers**

The primary driver of the program is safety and environmental. Asset replacement prior to failure provides incremental employee and public safety benefits and avoidance of potential environmental problems related to some assets, i.e. transformers and capacitor banks. This program will satisfy section 214 of the NESC, which outlines inspection of equipment guidelines for electric utilities. In addition, implementation of this strategy addresses safety concerns relating to contact voltage on all publicly accessible Company distribution and sub-transmission overhead and underground line facilities.

The secondary driver of this program is Asset condition. The combination of cyclical inspection and replacement of deteriorated equipment provides for a sustainable system while retaining assets in service until condition warrants their replacement.

## **Short Form Sanction Paper**



### **2.3 Project Description**

The I&M Strategy is a comprehensive inspection and maintenance program for overhead and underground Distribution line assets. In this program, each asset in the system will be inspected on a cycle and inspection results will be documented and tracked in a common database. The strategy drives a consistent inspection approach in all states that National Grid serves and benefits customers by ensuring the distribution system is safe, sustainable and reliable. Improvements in the quality of data collection have enhanced our knowledge of assets within the system so we can make decisions to better serve customers.

The I&M strategy recommends a cyclical inspection and maintenance program. The inspection priority system will identify and provide for the timely condition-based replacement of any visibly damaged or deteriorated assets. The following is a brief description of the inspection program:

Work identified as a result of the Inspection and Maintenance program in New England will be prioritized based on the severity of the issues found. Priority Codes are as follows:

- Level 1- Must be repaired/replaced within one week

- Level 2- Bundled with level 3 work to be completed on a feeder basis, recommended repair/replacement complete prior to next inspection cycle.

- Level 3- Bundled with level 2 work to be completed on a feeder basis, recommended repair/replacement prior to next inspection cycle.

- Level 4- Information only, replace based on engineering judgment and budget availability

In New England, work is being packaged by feeder with Level 2 and Level 3 work bundled together for completion at the same time. In New England, single worker packages are also being created. The inspection database (Computapole) is linked to the work management system (STORMS) for streamlined work order creation, execution, field completion, closeout and tracking.

Line assets across the system shall be inspected in accordance with the National Grid Electric Operating Procedures (EOP) listed below:

- Overhead Distribution Inspection EOP-D004

- Underground Distribution Inspection EOP-UG006

- Elevated Voltage Testing EOP-G016

- Street Light Standards EOP-G017

## **Short Form Sanction Paper**



Under this plan, we will continue to perform inspections and EV testing within the 5 year cycle and replace/repair all deficiencies identified on a 10 year cycle, based on current cost estimates.

Current I&M Strategy expects funding for inspections, EV testing and repairs on a 5 year cycle. This plan will continue inspections and EV testing on a 5 year cycle, but will extend repairs identified during inspection to a 10 year cycle, assuming the actual repair costs are in line with the current estimates. This 10 year repair cycle funding is consistent with program scope/budget agreed upon with the Rhode Island Public Utilities Division Staff during the annual proceedings that produce the Electric Infrastructure, Safety, and Reliability Plan (ISR). The program scope and funding will be a topic of annual discussion within the ISR proceeding based on execution and effectiveness.

This plan;

- Ensures that safety and reliability of assets are maintained by keeping pace with the 5 year inspection cycle and addressing any Level 1 repairs.
- Ensures that National Grid will achieve the regulatory requirements associated with this program.
- Is consistent with the budget agreed upon with the RI Division/Regulators

## **2.4 Benefits**

### **2.4.1 Safety & Environmental**

Asset replacement prior to failure provides incremental employee and public safety benefits and avoidance of potential environmental problems related to some assets, i.e. transformers and poles. This program will satisfy section 214 of the NESC, which outlines inspection of equipment guidelines for electric utilities. In addition, implementation of this strategy addresses safety concerns relating to contact voltage on all publicly accessible Company distribution line facilities.

### **2.4.2 Customer/Regulatory/Reputation**

The I&M program is partially mandated in Rhode Island. The main customer benefits from this strategy are elimination of elevated voltage hazards, improved reliability, and maintaining a sustainable system. The program retains assets in service until condition warrants their replacement, as opposed to time based replacement.

### **2.4.3 Reliability**

Condition based repair / replacement will maintain reliability and support the creation of a sustainable system. Collectively deteriorated equipment related interruptions are one of the main drivers of poor reliability.

## Short Form Sanction Paper



### 2.5 Business & Customer Issues

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

### 2.6 Alternatives

**Alternative 1:** Do nothing and repair or replace assets upon failure.

This alternative will create increased risk to the failure of assets resulting in a potentially negative impact to public safety and reliability. In addition, the Company would not be meeting its regulatory obligations. Therefore this alternative is not recommended.

### 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 \$1.442M. 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)
C026281	D-Line	I&M - OS D-Line OH Work From Insp	9.107
C014326	D-Line	I&M - OS D-Line UG Work From Insp	0.151
E007252	D-Line	I&M - OS D-Line OH Work From Insp	1.102
EOS0003	D-Line	Ocean St - Dist - Insp & Pat	0.281
EO13729	D-Line	Mobile Voltage Testing Repairs-RI	0.040
Total			10.681





## Short Form Sanction Paper

### 3.2 Associated Projects

NA

### 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	Potential Project Investment	Paper Title	Sanction Type	Tolerance
3/28/14	USSC	\$12.495M	\$12.495M	RI FY15 Distribution Inspection And Maintenance (I&M) Program	Sanction	+/- 10%
4/29/13	USSC	\$16.347M	\$16.347M	Distribution Inspection And Maintenance (I&M) Program	Sanction	+/- 10%

Full program sanction is pursued on an annual basis.

### 3.4 Category

Category	Reference to Mandate, Policy, NPV, or Other
<input checked="" type="radio"/> Mandatory <input type="radio"/> Policy- Driven <input type="radio"/> Justified NPV <input type="radio"/> Other	EOP D004 Distribution Line Patrol And Maintenance EOP UG006 Underground Inspection and Maintenance EOP G016 Equipment Elevated Voltage Testing EOP G017 Street Light Standard Inspection Program R.I.G.L. §39-2-25 NESC Handbook 2012 edition section 214



### Short Form Sanction Paper

#### 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: 15

#### 3.7 Next Planned Sanction Review

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 (\$)
Dist FY16-20 Business Plan	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	0.00

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

N/A

#### 4.2 CIAC / Reimbursement

N/A



## 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 +	
C026281	I&M - OS D-Line OH Work From Insp	+/- 10%	CapEx	-	6.600	-	-	-	-	-	6.600
			OpEx	-	1.584	-	-	-	-	1.584	
			Removal	-	0.923	-	-	-	-	0.923	
			Direct Expense	-	-	-	-	-	-	-	
			Total	-	9.107	-	-	-	-	9.107	
C014326	I&M - OS D-Line UG Work From Insp	+/- 10%	CapEx	-	0.105	-	-	-	-	0.105	
			OpEx	-	0.030	-	-	-	-	0.030	
			Removal	-	0.016	-	-	-	-	0.016	
			Direct Expense	-	-	-	-	-	-	-	
			Total	-	0.151	-	-	-	-	0.151	
E007252	I&M - OS D-Line OH Work From Insp	+/- 10%	CapEx	-	-	-	-	-	-	-	
			OpEx	-	-	-	-	-	-	-	
			Removal	-	-	-	-	-	-	-	
			Direct Expense	-	1.102	-	-	-	-	1.102	
			Total	-	1.102	-	-	-	-	1.102	
EQS0003	Ocean St - Dist - Insp & Pat	+/- 10%	CapEx	-	-	-	-	-	-	-	
			OpEx	-	-	-	-	-	-	-	
			Removal	-	-	-	-	-	-	-	
			Direct Expense	-	0.281	-	-	-	-	0.281	
			Total	-	0.281	-	-	-	-	0.281	
EO13729	Mobile Voltage Testing Repairs-RI	+/- 10%	CapEx	-	-	-	-	-	-	-	
			OpEx	-	-	-	-	-	-	-	
			Removal	-	-	-	-	-	-	-	
			Direct Expense	-	0.040	-	-	-	-	0.040	
			Total	-	0.040	-	-	-	-	0.040	
Total Project Sanction			CapEx	-	6.705	-	-	-	-	6.705	
			OpEx	-	1.614	-	-	-	-	1.614	
			Removal	-	0.939	-	-	-	-	0.939	
			Direct Expense	-	1.423	-	-	-	-	1.423	
			Total	-	10.681	-	-	-	-	10.681	

### 4.4 Project Budget Summary Table

#### Project Costs Per Business Plan

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2015/16	Yr. 2 2016/17	Yr. 3 2017/18	Yr. 4 2018/19	Yr. 5 2019/20	Yr. 6 + 2020/21	
CapEx	0.000	6.705	0.000	0.000	0.000	0.000	0.000	6.705
OpEx	0.000	1.614	0.000	0.000	0.000	0.000	0.000	1.614
Removal	0.000	0.939	0.000	0.000	0.000	0.000	0.000	0.939
Direct Expense	0.000	1.423	0.000	0.000	0.000	0.000	0.000	1.423
Total Cost in Bus. Plan	0.000	10.681	0.000	0.000	0.000	0.000	0.000	10.681

#### Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2015/16	Yr. 2 2016/17	Yr. 3 2017/18	Yr. 4 2018/19	Yr. 5 2019/20	Yr. 6 + 2020/21	
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
Direct Expense	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)
Sanction	03/2015
Commissioning	Multiple Dates
Completion	03/2016
Annual Program Closure	06/2016

### 6 Statements of Support

#### 6.1.1 Supporters

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

Role	Individual	Responsibilities
Investment Planning	Glen DiConza	Endorses relative to 5-year business plan or emergent work
Resource Planning	Anne Wyman	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Asset Management	Alan Labarre	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives

## **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, Philip Horowitz
Regulatory	Peter Zschokke
Jurisdictional Delegate	Jim Patterson

### **6.1.3 List References**

N/A


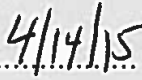
**Short Form Sanction Paper**



**7 Decisions**

The US Sanctioning Committee (USSC) at a meeting held on 03/25/2015:

- (a) APPROVED this paper and the investment of \$10.681M and a tolerance of +/- 10%
- (b) NOTED that Anne Wyman has the approved financial delegation.
- (c) NOTE: In the event that the Program projects are not approved prior to the start of the FY17 fiscal year, the FY16 approval limits will remain in effect until such time as the FY17 Program projects are approved by USSC and/or other appropriate authority for approval.

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



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**Short Form Sanction Paper**



**8 Other Appendices**

**8.1 Sanction Request Breakdown by Project**

N/A



**USSC Closure Paper**



<b>Title:</b>	RI FY16 Inspection & Maintenance Program Closure	<b>Sanction Paper #:</b>	USSC-15-094C
<b>Project #:</b>	C014326, C026281	<b>Sanction Type:</b>	Closure
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	08/10/2016
<b>Author:</b>	Anne Wyman	<b>Sponsor:</b>	Carol Sedewitz, VP Electric Asset Management
<b>Utility Service:</b>	Electricity T&D	<b>Project Manager:</b>	Anne Wyman

**1 Executive Summary**

This paper is presented to close C014325, C026281. The total spend was \$5.962M. The latest sanctioned amount for this project was \$9.258M.

*The final spend amount is \$5.962M broken down into:*

*\$4.811M Capex  
\$0.775M Opex  
\$0.376M Removal*

**2 Project Summary**

The Inspection and Maintenance strategy is a comprehensive inspection and maintenance program for overhead and underground assets. The program drives a consistent inspection approach to benefit customers by evaluating asset health and allowing for a safe, sustainable system.





**USSC Closure Paper**

**3 Over / Under Expenditure Analysis**

**3.1 Summary Table**

Actual Spending (\$M)			
Project #	Description		Total Spend
C014326	I&M - OS D-Line UG Work From Insp	Capex	0.000
		Opex	0.000
		Removal	0.000
		Total	0.000
Project #	Description		Total Spend
C026281	I&M - OS D-Line OH Work From Insp	Capex	4.811
		Opex	0.775
		Removal	0.376
		Total	5.962
Total		Capex	4.811
		Opex	0.775
		Removal	0.376
		Total	5.962

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	6.705
		Opex	1.614
		Removal	0.939
		Total Cost	9.258
Sanction Variance (\$M)			Total Spend
		Capex	1.894
		Opex	0.839
		Removal	0.563
		Total Variance	3.296



## USSC Closure Paper

### 3.2 Analysis

The Company decided to reduce spending on this program during FY16 due to budgetary considerations.

### 4 Improvements / Lessons Learned

This program is fully implemented with a continuous inspect, design and construct cycle.

### 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



## 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 Planning	Glen DiConza	Endorses relative to 5-year business plan or emergent work
Resource Planning	Anne Wyman	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Asset Management	Alan Labarre	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives

#### 6.2 **Reviewers**

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

Function	Individual
Finance	Patricia Easterly
Regulatory	Peter Zschokke
Jurisdictional Delegate	Jim Patterson

**USSC Closure Paper**



**7 Decisions**

I approve this paper.

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

Executive Sponsor – Christopher Kelly,  
Acting Senior Vice President – Electric Process & Engineering

**USSC Closure Paper**



<b>Title:</b>	RI FY16 Inspection & Maintenance Program Closure	<b>Sanction Paper #:</b>	USSC-15-094C
<b>Project #:</b>	C014326, C026281	<b>Sanction Type:</b>	Closure
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	08/10/2016
<b>Author:</b>	Anne Wyman	<b>Sponsor:</b>	Carol Sedewitz, VP Electric Asset Management
<b>Utility Service:</b>	Electricity T&D	<b>Project Manager:</b>	Anne Wyman

**1 Executive Summary**

This paper is presented to close C014325, C026281. The total spend was \$5.962M. The sanctioned amount for this project was \$9.258M.

*The final spend amount is \$5.962M broken down into:*

*\$4.811M Capex  
\$0.775M Opex  
\$0.376M Removal*

**2 Project Summary**

The Inspection and Maintenance strategy is a comprehensive inspection and maintenance program for overhead and underground assets. The program drives a consistent inspection approach to benefit customers by evaluating asset health and allowing for a safe, sustainable system.



**USSC Closure Paper**

**3 Over / Under Expenditure Analysis**

**3.1 Summary Table**

Actual Spending (\$M)			
Project #	Description		Total Spend
C014326	I&M - OS D-Line UG Work From Insp	Capex	0.000
		Opex	0.000
		Removal	0.000
		Total	0.000
Project #	Description		Total Spend
C026281	I&M - OS D-Line OH Work From Insp	Capex	4.811
		Opex	0.775
		Removal	0.376
		Total	5.962
Total		Capex	4.811
		Opex	0.775
		Removal	0.376
		Total	5.962

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	6.705
		Opex	1.614
		Removal	0.939
		Total Cost	9.258
Sanction Variance (\$M)			Total Spend
		Capex	1.894
		Opex	0.839
		Removal	0.563
		Total Variance	3.296



## USSC Closure Paper

### 3.2 Analysis

The Company decided to reduce spending on this program during FY16 due to budgetary considerations.

### 4 Improvements / Lessons Learned / Root Cause

Volumes were below budget levels set.

### 5 Closeout Activities

The following closeout activities have been completed.  
(Please explain any line items where the answer is "No")

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 which have not yet been closed for reasons including but not limited to:
- design and/or construction have not yet begun
  - 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

A summary of the status for all work orders charged in the fiscal year is provided below. In addition, for any work order which remains open, a table of the



## USSC Closure Paper

disposition determined during Phase 1 of the Work Order Closure effort is provided.

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. (Refer to Work Order Summary Tables)  
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

(3) Refer to Section 4 – Improvements/Lessons Learned/Root Cause

## 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	Glen DiConza	Endorses relative to 5-year business plan or emergent work
Resource Planning	Anne Wyman	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Asset Management	Alan Labarre	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives

### 6.2 Reviewers

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

Function	Individual
Finance	Patricia Easterly
Regulatory	Peter Zschokke
Jurisdictional Delegate	Jim Patterson



**USSC Closure Paper**



**7 Decisions**

I approve this paper.

Signature..........Date.....3/22/17.....

Executive Sponsor – Christopher Kelly,  
Acting Senior Vice President – Electric Process & Engineering



## Resanction Request

<b>Title:</b>	RI FY17 Distribution Inspection And Maintenance (I&M) Program	<b>Sanction Paper #:</b>	USSC-16-239 v2
<b>Project #:</b>	C026281, C014326	<b>Sanction Type:</b>	Resanction
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	May 2, 2017
<b>Author:</b>	Anne Wyman	<b>Sponsor:</b>	Carol Sedewitz Vice President of Electric Asset Management
<b>Utility Service:</b>	Electricity T&D	<b>Project Manager:</b>	Anne Wyman

### 1 Executive Summary

This paper requests the resanction of projects C026281 and C014326 in the amount \$3.710M with a tolerance of +/- 10% for the purposes of full implementation.

*This sanction amount is \$3.710M broken down into:*

*\$3.034M Capex  
\$0.378M Opex  
\$0.298M Removal*

**Note the originally requested sanction amount of \$3.330M**

### 2 Resanction Details

#### 2.1 Project Summary

The Inspection and Maintenance (I&M) Program is funded annually to inspect and address overhead and underground distribution assets in need of repair or replacement. This program is partially mandated by the Rhode Island Public Utilities Commission. The cost estimates in this program include all costs associated with completing the repairs generated from inspections.



## Resanction Request

### 2.2 Summary of Projects

Project Number	Project Type (Elect only)	Project Title	Estimate Amount (\$M)
C026281	D-Line	I&M OS D-Line OH Work From Insp	3.710
C014326	D-Line	I&M OS D-Line UG Work From Insp	0.000
<b>Total</b>			<b>3.710</b>

### 2.3 Prior Sanctioning History

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

Date	Governanc e Body	Sanctioned Amount	Potential Project Investment	Paper Title	Sancti on Type	Paper Referenc e Number	Tolerance
7/26/16	USSC <\$8M	\$3.330M	\$3.330M	RI FY17 Distribution Inspection And Maintenance (I&M) Program	Sanction	USSC-16- 239	+/-10%

### Over / Under Expenditure Analysis

Summary Analysis (\$M)	Capex	Opex	Removal	Total
Resanction Amount	3.034	0.378	0.298	3.710
Latest Approval	2.510	0.500	0.320	3.330
Change*	0.524	-0.122	-0.022	0.380

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



## Resanction Request

### 2.4 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend (\$M)	Prior Yrs	Current Planning Horizon						Total
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
					2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	
C026281	I&M OS D-Line OH Work From Insp	+/- 10%	CapEx	0.000	3.034	0.000	0.000	0.000	0.000	0.000	3.034
			OpEx	0.000	0.378	0.000	0.000	0.000	0.000	0.378	
			Removal	0.000	0.298	0.000	0.000	0.000	0.000	0.298	
			Total	0.000	3.710	0.000	0.000	0.000	0.000	3.710	
C014326	I&M OS D-Line UG Work From Insp	+/- 10%	CapEx	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	
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
			Total	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Total Project Sanction			CapEx	0.000	3.034	0.000	0.000	0.000	0.000	3.034	
			OpEx	0.000	0.378	0.000	0.000	0.000	0.000	0.378	
			Removal	0.000	0.298	0.000	0.000	0.000	0.000	0.298	
			Total	0.000	3.710	0.000	0.000	0.000	0.000	3.710	

### 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 (\$)
New England Distribution Electric FY2017-21 Business Plan	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Over <input type="radio"/> Under <input type="radio"/> N/A	\$0.380M

### 2.6 Drivers

The primary driver of the program is safety and environmental. Asset replacement prior to failure provides incremental employee and public safety benefits and avoidance of potential environmental problems related to some assets, i.e. transformers and capacitor banks. This program will satisfy section 214 of the NESC, which outlines inspection of equipment guidelines for electric utilities. In addition, implementation of this strategy addresses safety concerns relating to contact voltage on all publicly accessible Company distribution and sub-transmission overhead and underground line facilities.

The secondary driver of this program is Asset condition. The combination of cyclical inspection and replacement of deteriorated equipment provides for a sustainable system while retaining assets in service until condition warrants their replacement.



## Resanction Request

### 2.6.1 Detailed Analysis Table

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

Detail Analysis (M's)	Over/Under Expenditure?	Amount
Work Load/Resourcing	<input checked="" type="checkbox"/> Over <input type="checkbox"/> Under	\$0.380M

### 2.6.2 Explanation of Key Variations

In areas that experienced less than expected customer work in FY17, some local barns were able to exceed the originally planned amount of I&M work in their respective areas rather than relocating from their local crew headquarters. This also allowed for adequate response to operational emergencies in those areas.

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

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

### 2.8 Key Milestones

Milestone	Target Date: (Month/Year)
Sanction	07/2016
Annual Program Completion	03/2017
Resanction	05/2017
Annual Program Closure	06/2017

### 2.9 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review
June 2017	Annual Program Closure

## **Resanction Request**



### **3 Statements of Support**

#### **3.1 Supporters**

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

<b>Role</b>	<b>Individual</b>	<b>Responsibilities</b>
Investment Planning	Glen DiConza	Endorses relative to 5-year business plan or emergent work
Resource Planning	Anne Wyman	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Asset Management	Alan Labarre	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives

#### **3.2 Reviewers**



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

<b>Reviewer List</b>	<b>Individual</b>
Finance	Patricia Easterly
Regulatory	Peter Zschokke
Jurisdictional Delegate	Sonny Anand

**Resanction Request**



**4 Decisions**

I:
(a) APPROVE this paper and the investment of \$3.710M and a tolerance of +/-10%.
(b) NOTE that Anne Wyman is the Project Manager and has the approved financial delegation.
(c) NOTE: In the event that any Blanket projects are not approved prior to the start of the FY2018 fiscal year, the FY2017 approval limits will remain in effect until such time as the FY2018 blanket projects are approved by USSC and/or other appropriate authority for approval.
Signature.....  .....Date.....  .....
Executive Sponsor – Christopher Kelly
Senior Vice President
Electric Process and Engineering





## USSC Spending Review

<b>Title:</b>	RI FY2017 Distribution Inspection And Maintenance (I&M) Program	<b>Sanction Paper #:</b>	USSC-16-239V2C
<b>Project #:</b>	C026281, C014326	<b>Sanction Type:</b>	Spending Review
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	June 20, 2017
<b>Author:</b>	Anne Wyman	<b>Sponsor:</b>	Carol Sedewitz Vice President of Electric Asset Management
<b>Utility Service:</b>	Electricity T&D	<b>Project Manager:</b>	Anne Wyman

### 1 Executive Summary

This paper is presented to close C026281 and C014326 for FY2017. The total spend was \$3.707M. The sanctioned amount for this project was \$3.330M at +/- 10%.  
Note: The latest sanction amount was \$3.710M.

*This final spend amount is \$3.707M broken down into:*

*\$3.031M Capex  
\$0.378M Opex  
\$0.298M Removal*

Note the latest sanction amount of 3.710M.

### 2 Project Summary

The Inspection and Maintenance (I&M) Program is funded annually to inspect and address overhead and underground distribution assets in need of repair or replacement. This program is partially mandated by the Rhode Island Public Utilities Commission. The cost estimates in this program include all costs associated with completing the repairs generated from inspections.





## USSC Spending Review

### 3 Over / Under Expenditure Analysis

#### 3.1 Summary Table

Actual Spending (\$M)			
Project #	Description		Total Spend
C026281	OS I &M FY17 Program	Capex	3.031
		Opex	0.378
		Removal	0.298
		Total	3.707
C014326	OS I &M FY17 Program	Capex	0.000
		Opex	0.000
		Removal	0.000
		Total	0.000
Total		Capex	3.031
		Opex	0.378
		Removal	0.298
		Total	3.707

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	2.510
		Opex	0.500
		Removal	0.320
		Total Cost	3.330
Sanction Variance (\$M)			Total Spend
		Capex	(0.521)
		Opex	0.122
		Removal	0.022
		Total Variance	(0.377)

#### 3.2 Analysis

In areas that experienced less than expected customer work in FY2017, some local barns were able to exceed the originally planned amount of I&M work in their respective areas rather than relocating from their local crew headquarters. This also allowed for adequate response to operational emergencies in those areas.



## USSC Spending Review

### 4 Improvements / Lessons Learned/Root Cause

This program is fully implemented with a continuous inspect, design, and construct cycle.

### 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 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	<input type="radio"/> Yes <input checked="" type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database	<input checked="" type="radio"/> Yes <input type="radio"/> No

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;  
or
- 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 Spending Review

### 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	Glen DiConza	Endorses relative to 5-year business plan or emergent work
Resource Planning	Daniel Marceau	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Asset Management	Alan Labarre	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives

#### 6.2 **Reviewers**

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

Function	Individual
Finance	Patricia Easterly
Regulatory	Renee Gurry
Jurisdictional Delegate	Sonny Anand

**USSC Spending Review**



**7 Decisions**

I approve this paper.

Signature..........Date..........  
Executive Sponsor – Christopher Kelly, SVP Electric Process and Engineering



**Short Form Sanction Paper**

<b>Need to Title:</b>	RI FY17 Distribution Inspection And Maintenance (I&M) Program	<b>Sanction Paper #:</b>	USSC-16-239
<b>Project #:</b>	C026281, C014326	<b>Sanction Type:</b>	Sanction
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	7/26/16
<b>Author:</b>	Emilio Agustin/Bob Pendrake	<b>Sponsor:</b>	Carol Sedewitz Vice President of Electric Asset Management
<b>Utility Service:</b>	Electricity T&D	<b>Project Manager:</b>	Anne Wyman

**1 Executive Summary**

**1.1 Sanctioning Summary**

This paper requests the sanction of projects C026281 and C014326, in the amount of \$3.330M and a tolerance of +/- 10% (on an individual project basis) for the purposes of full implementation of the program in FY17.

This sanction amount of \$3.330M for FY17 is broken down into:

\$2.510M Capex  
\$0.500M Opex  
\$0.320M Removal

The cost estimates proposed in this program include all costs associated with completing the repairs generated from inspections.

**1.2 Project Summary**

The Inspection and Maintenance (I&M) Program is funded annually to inspect and address overhead and underground distribution assets in need of repair or replacement. This program is partially mandated by the Rhode Island Public Utilities Commission.



## **Short Form Sanction Paper**

### **2 Project Detail**

#### **2.1 Background**

R.I.G.L. §39-2-25 requires the following:

- Perform contact voltage testing in designated contact voltage risk areas for contact voltage hazards on all conductive surfaces in public rights-of-way using equipment and technology as determined by the commission. By June 30, 2013, conduct an initial survey of no less than 40% of designated contact voltage risk areas. Beginning July 1, 2013, annually survey no less than 20% of designated contact voltage risk areas.

In addition to meeting the mandated requirements above, the program will drive a consistent inspection approach to benefit customers by evaluating asset health and allowing for a safe, adequate system. This program is intended to meet National Electric Safety Code (NESC) section 214 which outlines inspection of equipment guidelines. Additionally, this project will allow for the avoidance of potential environmental issues related to some assets, such as transformers.

This sanction will provide for the FY17 overhead distribution, underground distribution and Sub-Transmission I&M Program in Rhode Island, including stray voltage testing.

#### **2.2 Drivers**

The primary driver of the program is safety and environmental. Asset replacement prior to failure provides incremental employee and public safety benefits and avoidance of potential environmental problems related to some assets, i.e. transformers and capacitor banks. This program will satisfy section 214 of the NESC, which outlines inspection of equipment guidelines for electric utilities. In addition, implementation of this strategy addresses safety concerns relating to contact voltage on all publicly accessible Company distribution and sub-transmission overhead and underground line facilities.

The secondary driver of this program is Asset condition. The combination of cyclical inspection and replacement of deteriorated equipment provides for a sustainable system while retaining assets in service until condition warrants their replacement.



## **Short Form Sanction Paper**

### **2.3 Project Description**

The I&M Strategy is a comprehensive inspection and maintenance program for overhead and underground Distribution line assets. In this program, each asset in the system will be inspected on a cycle and inspection results will be documented and tracked in a common database. The strategy drives a consistent inspection approach in all states that National Grid serves and benefits customers by ensuring the distribution system is safe, sustainable and reliable. Improvements in the quality of data collection have enhanced our knowledge of assets within the system so we can make decisions to better serve customers.

The I&M strategy recommends a cyclical inspection and maintenance program. The inspection priority system will identify and provide for the timely condition-based replacement of any visibly damaged or deteriorated assets. The following is a brief description of the inspection program:

Starting in FY17 work identified as a result of the Inspection and Maintenance program in New England will be prioritized based on the severity of the issues found. Priority Codes are as follows:

- Level 1- Must be repaired/replaced within one week
- Level 9 – Temporary Repairs and abnormal conditions.

Line assets across the system shall be inspected in accordance with the National Grid Electric Operating Procedures (EOP) listed below:

- Overhead Distribution Inspection EOP-D004
- Underground Distribution Inspection EOP-UG006
- Elevated Voltage Testing EOP-G016
- Street Light Standards EOP-G017

Under this plan, we will continue to perform inspections and EV testing within the 5 year cycle and replace/repair all deficiencies identified.

Current I&M Strategy expects funding for inspections, EV testing and repairs on a 5 year cycle. This plan will continue inspections and EV testing on a 5 year cycle, and will execute inspected repairs identified during the initial cycle of inspections. Equipment identified was based on a previous inspection scope and construction will be executed on a not to exceed funding basis. This cycle funding is consistent with program scope/budget agreed upon with the Rhode Island Public Utilities Division Staff during the annual proceedings that produce the Electric Infrastructure, Safety, and Reliability Plan (ISR). The program scope and funding will be a topic of annual discussion within the ISR proceeding based on execution and effectiveness.



### **Short Form Sanction Paper**

This plan;

- Ensures that safety and reliability of assets are maintained by keeping pace with the forecasted FY17 funds and addresses any Level 1 repairs.
- Ensures that National Grid will achieve the regulatory requirements associated with this program.
- Is consistent with the budget agreed upon with the RI Division/Regulators

## **2.4 Benefits**

### **2.4.1 Safety & Environmental**

Asset replacement prior to failure provides incremental employee and public safety benefits and avoidance of potential environmental problems related to some assets, i.e. transformers and poles. This program will satisfy section 214 of the NESC, which outlines inspection of equipment guidelines for electric utilities. In addition, implementation of this strategy addresses safety concerns relating to contact voltage on all publicly accessible Company distribution line facilities.

### **2.4.2 Customer/Regulatory/Reputation**

The I&M program is partially mandated in Rhode Island. The main customer benefits from this strategy are elimination of elevated voltage hazards, improved reliability, and maintaining a sustainable system. The program retains assets in service until condition warrants their replacement, as opposed to time based replacement.

### **2.4.3 Reliability**

Condition based repair / replacement will maintain reliability and support the creation of a sustainable system. Collectively deteriorated equipment related interruptions are one of the main drivers of poor reliability.





## **Short Form Sanction Paper**

### **2.5 Business & Customer Issues**

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

### **2.6 Alternatives**

**Alternative 1:** Do nothing and repair or replace assets upon failure.

This alternative will create increased risk to the failure of assets resulting in a potentially negative impact to public safety and reliability. In addition, the Company would not be meeting its regulatory obligations. Therefore this alternative is not recommended.

### **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 \$0.436M. 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)
C026281	D-Line	I&M - OS D-Line OH Work From Insp	3.179
C014326	D-Line	I&M - OS D-Line UG Work From Insp	0.151
Total			3.330



## Short Form Sanction Paper

### 3.2 Associated Projects

Project Number	Project Title	Estimate Amount (\$M)
E007252	I&M - OS D-Line UOHWork From Insp	0.664
EOS0003	Ocean St Dist- Insp & Pat	0.285
EO13729	Mobil Votage Testing Repairs - RI	0.045
Total		0.994

### 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	Potential Project Investment	Paper Title	Sanction Type	Tolerance
3/25/15	USSC	\$10.681M	\$10.681M	RI FY16 Distribution Inspection And Maintenance (I&M) Program	Sanction	+/- 10%
3/28/14	USSC	\$12.495M	\$12.495M	RI FY15 Distribution Inspection And Maintenance (I&M) Program	Sanction	+/- 10%
4/29/13	USSC	\$16.347M	\$16.347M	Distribution Inspection And Maintenance (I&M) Program	Sanction	+/- 10%

Full program sanction is pursued on an annual basis.



### Short Form Sanction Paper

#### 3.4 Category

Category	Reference to Mandate, Policy, NPV, or Other
<input checked="" type="radio"/> Mandatory	EOP D004 Distribution Line Patrol And Maintenance EOP UG006 Underground Inspection and Maintenance EOP G016 Equipment Elevated Voltage Testing EOP G017 Street Light Standard Inspection Program
<input type="radio"/> Policy- Driven	R.I.G.L. §39-2-25 NESC Handbook 2012 edition section 214
<input type="radio"/> Justified NPV	
<input type="radio"/> Other	

#### 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: 15

#### 3.7 Next Planned Sanction Review

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 (\$)
Rhode Island Distribution Electric FY2017-21 Business Plan	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	0.00

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

N/A

**4.2 CIAC / Reimbursement**

N/A

**4.3 Cost Summary Table**

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
C026281	I&M - OS D-Line OH Work From Insp	Est Lvl (e.g. +/- 10%)	CapEx	-	2.405	-	-	-	-	-	2.405
			OpEx	-	0.470	-	-	-	-	0.470	
			Removal	-	0.304	-	-	-	-	0.304	
			Total	-	3.179	-	-	-	-	3.179	
C014326	I&M - OS D-Line UG Work From Insp	Est Lvl (e.g. +/- 10%)	CapEx	-	0.105	-	-	-	-	-	0.105
			OpEx	-	0.030	-	-	-	-	0.030	
			Removal	-	0.016	-	-	-	-	0.016	
			Total	-	0.151	-	-	-	-	0.151	
Total Project Sanction			CapEx	-	2.510	-	-	-	-	-	2.510
			OpEx	-	0.500	-	-	-	-	-	0.500
			Removal	-	0.320	-	-	-	-	-	0.320
			Total	-	3.330	-	-	-	-	-	3.330



## 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 2016/17	Yr. 2 2017/18	Yr. 3 2018/19	Yr. 4 2019/20	Yr. 5 2020/21	Yr. 6 + 2021/22	
CapEx	0.000	2.510	0.000	0.000	0.000	0.000	0.000	2.510
OpEx	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.500
Removal	0.000	0.320	0.000	0.000	0.000	0.000	0.000	0.320
Total Cost in Bus. Plan	0.000	3.330	0.000	0.000	0.000	0.000	0.000	3.330

#### Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2016/17	Yr. 2 2017/18	Yr. 3 2018/19	Yr. 4 2019/20	Yr. 5 2020/21	Yr. 6 + 2021/22	
CapEx	0.000	0.000	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	07/2016
Commissioning	Multiple Dates
Completion	03/2017
Annual Program Closure	06/2017



## 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 Planning	Glen DiConza	Endorses relative to 5-year business plan or emergent work
Resource Planning	Anne Wyman	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Asset Management	Alan Labarre	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives

#### 6.1.2 Reviewers

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

Reviewer List	Individual
Finance	Patricia Easterly
Regulatory	Peter Zschokke
Jurisdictional Delegate	Jim Patterson



#### 6.1.3 List References

N/A



**Short Form Sanction Paper**

**7 Decisions**

I:	
(a)	APPROVED this paper and the investment of \$3.330M and a tolerance of +/- 10%
(b)	NOTED that Anne Wyman has the approved financial delegation.
(c)	NOTE: In the event that the Program projects are not approved prior to the start of the FY18 fiscal year, the FY17 approval limits will remain in effect until such time as the FY18 Program projects are approved by USSC and/or other appropriate authority for approval.
Signature.....	 .....Date..... 
Christopher Kelly, Acting SVP Electric Process and Engineering	



***Short Form Sanction Paper***

**8 Other Appendices**

**8.1 *Sanction Request Breakdown by Project***

N/A





**Short Form Sanction Paper**

<b>Need to Title:</b>	RI FY18 Distribution Inspection And Maintenance (I&M) Program	<b>Sanction Paper #:</b>	USSC-17-047
<b>Project #:</b>	C026281	<b>Sanction Type:</b>	Sanction
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	3/7/2017
<b>Author:</b>	Robert Pendrake	<b>Sponsor:</b>	Carol Sedewitz Vice President of Electric Asset Management
<b>Utility Service:</b>	Electricity T&D	<b>Project Manager:</b>	Anne Wyman

**1 Executive Summary**

**1.1 Sanctioning Summary**

This paper requests the sanction of project C026281 in the amount of \$2.160M and a tolerance of +/- 10% for the purposes of full implementation of the program in FY18.

This sanction amount of \$2.160M for FY18 is broken down into:

\$1.600M Capex  
\$0.400M Opex  
\$0.160M Removal

**1.2 Project Summary**

The Inspection and Maintenance (I&M) Program is funded annually to inspect and address overhead and underground distribution assets in need of repair or replacement. This program is partially mandated by the Rhode Island Public Utilities Commission.

**2 Project Detail**

**2.1 Background**

R.I.G.L. §39-2-25 requires the following:

- Perform contact voltage testing in designated contact voltage risk areas for contact voltage hazards on all conductive surfaces in public rights-of-way using equipment and technology as determined by the commission. By June 30, 2013, conduct an initial survey of no less than 40% of designated contact voltage risk areas. Beginning July 1, 2013, annually survey no less than 20% of designated contact voltage risk areas.



### **Short Form Sanction Paper**

In addition to meeting the mandated requirements above, the program will drive a consistent inspection approach to benefit customers by evaluating asset health and allowing for a safe, adequate system. This program is intended to meet National Electric Safety Code (NESC) section 214 which outlines inspection of equipment guidelines. Additionally, this project will allow for the avoidance of potential environmental issues related to some assets, such as transformers.

This sanction will provide for the FY18 overhead distribution, underground distribution and Sub-Transmission I&M Program in Rhode Island, including stray voltage testing.

### **2.2 Drivers**

The primary driver of the program is safety and environmental. Asset replacement prior to failure provides incremental employee and public safety benefits and avoidance of potential environmental problems related to some assets, i.e. transformers and capacitor banks. This program will satisfy section 214 of the NESC, which outlines inspection of equipment guidelines for electric utilities. In addition, implementation of this strategy addresses safety concerns relating to contact voltage on all publicly accessible Company distribution and sub-transmission overhead and underground line facilities.

The secondary driver of this program is Asset condition. The combination of cyclical inspection and replacement of deteriorated equipment provides for a sustainable system while retaining assets in service until condition warrants their replacement.

### **2.3 Project Description**

The I&M Strategy is a comprehensive inspection and maintenance program for overhead and underground Distribution line assets. In this program, each asset in the system will be inspected on a cycle and inspection results will be documented and tracked in a common database. The strategy drives a consistent inspection approach in all states that National Grid serves and benefits customers by ensuring the distribution system is safe, sustainable and reliable. Improvements in the quality of data collection have enhanced our knowledge of assets within the system so we can make decisions to better serve customers.

The I&M strategy recommends a cyclical inspection and maintenance program. The inspection priority system will identify and provide for the timely condition-based replacement of any visibly damaged or deteriorated assets. The following is a brief description of the inspection program:



### **Short Form Sanction Paper**

FY18 work identified as a result of the Inspection and Maintenance program in New England will be prioritized based on the severity of the issues found. Priority Codes are as follows:

- Level 1 - Must be repaired/replaced within one week
- Level 9 - Temporary Repairs and abnormal conditions.

Line assets across the system shall be inspected in accordance with the National Grid Electric Operating Procedures (EOP) listed below:

- Overhead Distribution Inspection EOP-D004
- Underground Distribution Inspection EOP-UG006
- Elevated Voltage Testing EOP-G016
- Street Light Standards EOP-G017

Under this plan, we will continue to perform inspections and EV testing within the 5 year cycle and replace/repair all deficiencies identified.

Current I&M Strategy expects funding for inspections, EV testing and repairs on a 5 year cycle. This plan will continue inspections and EV testing on a 5 year cycle, and will execute inspected repairs identified during the initial cycle of inspections. Equipment identified was based on a previous inspection scope and construction will be executed on a not to exceed funding basis. This cycle funding is consistent with program scope/budget agreed upon with the Rhode Island Public Utilities Division Staff during the annual proceedings that produce the Electric Infrastructure, Safety, and Reliability Plan (ISR). The program scope and funding will be a topic of annual discussion within the ISR proceeding based on execution and effectiveness.

This plan;

- Ensures that safety and reliability of assets are maintained by keeping pace with the forecasted FY18 funds and addresses any Level 1 repairs.
- Ensures that National Grid will achieve the regulatory requirements associated with this program.
- Is consistent with the budget agreed upon with the RI Division/Regulators

## **2.4 Benefits**

### **2.4.1 Safety & Environmental**

Asset replacement prior to failure provides incremental employee and public safety benefits and avoidance of potential environmental problems related to some assets, i.e. transformers and poles. This program will satisfy section 214 of the NESC, which outlines inspection of equipment guidelines for electric utilities. In addition, implementation of this strategy addresses safety concerns relating to contact voltage on all publicly accessible Company distribution line facilities.

**Short Form Sanction Paper**



**2.4.2 Customer/Regulatory/Reputation**

The I&M program is partially mandated in Rhode Island. The main customer benefits from this strategy are elimination of elevated voltage hazards, improved reliability, and maintaining a sustainable system. The program retains assets in service until condition warrants their replacement, as opposed to time based replacement.

**2.4.3 Reliability**

Condition based repair / replacement will maintain reliability and support the creation of a sustainable system. Collectively deteriorated equipment related interruptions are one of the main drivers of poor reliability.



## **Short Form Sanction Paper**

### **2.5 Business & Customer Issues**

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

### **2.6 Alternatives**

**Alternative 1:** Do nothing and repair or replace assets upon failure.

This alternative will create increased risk to the failure of assets resulting in a potentially negative impact to public safety and reliability. In addition, the Company would not be meeting its regulatory obligations. Therefore this alternative is not recommended.

### **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 \$0.278M. 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)
C026281	D-Line	I&M-OS D_Line OH Work from Insp	2.160
Total			2.160



## Short Form Sanction Paper

### 3.2 Associated Projects

Project Number	Project Title	Estimate Amount (\$M)
E007252	I&M - OS D-Line OH Work from Insp	0.623
E0S0003	Ocean St Dist - Insp & Patrol	0.293
E013729	Mobil Voltage Testing Repairs - RI	0.046
<b>Total</b>		<b>0.962</b>

### 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	Potential Project Investment	Paper Title	Sanction Type	Tolerance
7/26/16	USSC	\$3.330M	\$3.330M	RI FY16 Distribution Inspection And Maintenance (I&M) Program	Sanction	+/- 10%
3/25/15	USSC	\$10.681M	\$10.681M	RI FY16 Distribution Inspection And Maintenance (I&M) Program	Sanction	+/- 10%
3/28/14	USSC	\$12.495M	\$12.495M	RI FY15 Distribution Inspection And Maintenance (I&M) Program	Sanction	+/- 10%
4/29/13	USSC	\$16.347M	\$16.347M	Distribution Inspection And Maintenance (I&M) Program	Sanction	+/- 10%

Full program sanction is pursued on an annual basis.



### Short Form Sanction Paper

#### 3.4 Category

Category	Reference to Mandate, Policy, NPV, or Other
<input checked="" type="radio"/> Mandatory	EOP D004 Distribution Line Patrol And Maintenance EOP UG006 Underground Inspection and Maintenance EOP G016 Equipment Elevated Voltage Testing EOP G017 Street Light Standard Inspection Program R.I.G.L. §39-2-25 NESC Handbook 2012 edition section 214
<input type="radio"/> Policy- Driven	
<input type="radio"/> Justified NPV	
<input type="radio"/> Other	

#### 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: 15

#### 3.7 Next Planned Sanction Review

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 (\$)
Rhode Island Distribution Electric FY2018-22 Business Plan	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	0.00

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

N/A

#### 4.2 CIAC / Reimbursement

N/A

#### 4.3 Cost Summary Table

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						Total
					Yr. 1 2017/18	Yr. 2 2018/19	Yr. 3 2019/20	Yr. 4 2020/21	Yr. 5 2021/22	Yr. 6+ 2022/23	
C026281	I&M-OS D_Line OH Work from Insp	Est Lvl (e.g. +/- 10%)	CapEx	-	1.600	-	-	-	-	-	1.600
			OpEx	-	0.400	-	-	-	-	0.400	
			Removal	-	0.160	-	-	-	-	0.160	
			Total	-	2.160	-	-	-	-	2.160	
Total Project Sanction			CapEx	-	1.600	-	-	-	-	1.600	
			OpEx	-	0.400	-	-	-	-	0.400	
			Removal	-	0.160	-	-	-	-	0.160	
			Total	-	2.160	-	-	-	-	2.160	





## 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 2017/18	Yr. 2 2018/19	Yr. 3 2019/20	Yr. 4 2020/21	Yr. 5 2021/22	Yr. 6+ 2022/23	
CapEx	0.000	1.600	0.000	0.000	0.000	0.000	0.000	1.600
OpEx	0.000	0.400	0.000	0.000	0.000	0.000	0.000	0.400
Removal	0.000	0.160	0.000	0.000	0.000	0.000	0.000	0.160
Total Cost in Bus. Plan	0.000	2.160	0.000	0.000	0.000	0.000	0.000	2.160

#### Variance (Business Plan-Project Estimate)

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2017/18	Yr. 2 2018/19	Yr. 3 2019/20	Yr. 4 2020/21	Yr. 5 2021/22	Yr. 6+ 2022/23	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	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	03/2017
Commissioning	Multiple Dates
Completion	03/2018
Annual Program Closure	06/2018

## 6 Statements of Support

### 6.1.1 Supporters

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

Role	Individual	Responsibilities
Investment Planning	Glen DiConza	Endorses relative to 5-year business plan or emergent work
Resource Planning	Anne Wyman	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Asset Management	Alan Labarre	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives



**Short Form Sanction Paper**

**6.1.2 Reviewers**

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

Reviewer List	Individual
Finance	Patricia Easterly
Regulatory	Peter Zschokke
Jurisdictional Delegate	Sonny Anand

**6.1.3 List References**

N/A

**Short Form Sanction Paper**



**7 Decisions**

- I:
- (a) APPROVED this paper and the investment of \$2.160M and a tolerance of +/- 10%
  - (b) NOTED that Anne Wyman has the approved financial delegation.
  - (c) NOTE: In the event that the Program projects are not approved prior to the start of the FY19 fiscal year, the FY18 approval limits will remain in effect until such time as the FY19 Program projects are approved by USSC and/or other appropriate authority for approval.

Signature..........Date 3/13/17.....  
Christopher Kelly, SVP Electric Process and Engineering



***Short Form Sanction Paper***

**8 Other Appendices**

**8.1 *Sanction Request Breakdown by Project***

N/A

C032019

Batteries/Chargers OS - RI

## 5360-Narragansett Electric and Gas Project Revision Detail Report

<b>Fund Project Number:</b> <u>C032019</u>	<b>USSC #:</b> <u>FY18 Program</u>
<b>Revision:</b> <u>10</u>	<b>Budget Version:</b>
<b>Project Title:</b> <u>Batts/Chargers NE South OS RI</u>	
<b>Project Description:</b> 03062 Batts/Chargers NE South OS RI. Battery System asset replacement program.	

<b>Project Status:</b> <u>open</u>	
<b>Responsible Person:</b> <u>PENDRAKE, ROBERT</u>	<b>Initiator:</b> <u>Pericola, Steven J</u>
<b>Spending Rationale:</b> <u>Asset Condition</u>	<b>Funding Type:</b> <u>P Electric Distribution Sub RI</u>
<b>Budget Class:</b> <u>Asset Replacement</u>	
<b>Capital by Category:</b>	
<b>Program Code:</b>	
<b>Project Risk Score:</b> <u>40</u>	<b>Project Complexity Score:</b> <u>18</u>

### Project Schedule / Expenditures

<b>Revision Status:</b> <u>Approved</u>	
<b>Est Start Date:</b> <u>4/1/2017</u>	<b>Est Complete Date:</b> <u>3/31/2018</u>
<b>Est In-Service Date:</b> <u>3/30/2018</u>	
<b>TTD Actuals:</b> <u>\$1,763,641</u>	<b>As Of:</b> <u>10/10/2017</u>
<b>Cost Breakdown</b>	
<u><b>Capital</b></u>	<u><b>Expense</b></u>
<u>\$199,000</u>	<u>\$4,000</u>
<u><b>Removal</b></u>	<u><b>Total</b></u>
<u>\$14,000</u>	<u>\$217,000</u>
	<u><b>Credits</b></u>
	<u>\$0</u>

### Justification / Risk Identification:

Battery systems provide the DC source for most substation and in inadequate DC power source will impact the substation protection, monitoring, and control capabilities. In accordance with our approved Substation Battery and Related Equipment Strategy, batteries are replaced when they reach 20 years of age or if they warrant replacement due to condition issues.

### Project Scope:

This program will replace battery systems prior to a manufacture age of 20 years or sooner if the battery system is showing signs of deterioration. The charger will be replaced with the battery only if it is greater than 10 years of age or showing signs of deterioration. Chargers that have a manufacture age of 20 years will be replaced when the battery is considered new. A battery and charger system comprises of the battery, charger, battery rack, spill containment, fused safety switch, and mobile battery receptacle. When a battery and charger system has been identified for replacement, the battery, charger and rack will be replaced. A spill containment and mobile battery

### Project Alternatives Considered:

<Enter data here>

**Additional Notes:**

This is the Fiscal Year 2016 annual program sanction.

DCIG0311p376

**Related Projects:**

**Project Number:**

**Project Name:**

**Approvals**

Line 1:	Date	<u>4/12/2017 13:01:20</u>	Approver	<u>labara</u>	<u>Approver 1</u>
Line 2:	Date		Approver		
Line 3:	Date		Approver		
Line 4:	Date		Approver		
Line 5:	Date		Approver		

**\*\*\*Project Authorization is for Approved Revision Total Estimated Cost + 10%\*\*\***

**PowerPlan** ----- PPGPRD Database

File Edit Subsystem Batch Admin Preferences Window Help

Projects Assets Tables CR MyPPlan Help Calc Print Win

**Funding Project Estimates - Summary** C032019 Current Total Authorized Amount: \$217,...

Title **Batts/Chargers NE South OS RI**

Project Number **C032019**

**Budget Version** No Assigned Versions

Revision **FY18 Sanction**

Revision Status **Approved**

Revision No. **10**

Est Start Date **04/01/2017**

Est Complete Date **03/31/2018**

Est In Svc Date **03/30/2018**

Capital **\$199,000.00**

Expense **\$4,000.00**

Jobbing **\$0.00**

Retirement **\$0.00**

Removal **\$14,000.00**

Total (excl. Rets.) **\$217,000.00**

Credits **\$0.00**

Net **\$217,000.00**

**Spending Estimates:**

**Grid Estimates**

**Forecast**

Summarize from WO

Copy Estimate

**Property Estimates:**

**Unit Estimates**

**Create As Built**

Delete Used Estimates

**Edit:**

**New Revision**

**Delete Revision**

**Update**

**Update With Actuals**

**Import Estimates**

**Version Compare**

**Other:**

**Revision Comments**

**Released Dollars**

**Substitution**

**Slide**

**Close**

Revision Info **Other Updates**

Revision **10 of 10** |< < > >|

**Find Revision** Send for Approval

☐ Show 'Budget Only' Revisions

Record **9** of 16 |< < > >|

Audits



**PowerPlan** ----- **PPGPRD Database**

File Edit Subsystem Batch Admin Preferences Window Help

Projects Assets Tables CR MyPPlan Help Calc Print Win

**Funding Project Estimates - Summary** C032019 Current Total Authorized Amount: \$217,...

Title **Batts/Chargers NE South OS RI**

Project Number **C032019**

**Budget Version** No Assigned Versions

Revision **FY17 Approvals**

Revision Status **Approved**

Revision No. **9**

Est Start Date **04/01/2009**

Est Complete Date **03/31/2017**

Est In Svc Date **03/30/2017**

Capital **\$245,000.00**

Expense **\$5,000.00**

Jobbing **\$0.00**

Retirement **\$0.00**

Removal **\$7,000.00**

Total (excl. Rets.) **\$257,000.00**

Credits **\$0.00**

Net **\$257,000.00**

Revision Info **Other Updates**

Revision **9** of 10 **< > >|**

**Find Revision** **Send for Approval**

☐ Show 'Budget Only' Revisions

**Spending Estimates:**

**Grid Estimates**

**Forecast**

**Summarize from W/D**

**Copy Estimate**

**Edit:**

**New Revision**

**Delete Revision**

**Update**

**Update With Actuals**

**Import Estimates**

**Version Compare**

**Audits**

**Property Estimates:**

**Unit Estimates**

**Create As Built**

**Delete Used Estimates**

**Other:**

**Revision Comments**

**Released Dollars**

**Substitution**

**Slide**

**Close**

Record **9** of 16 **< > >|**

**PowerPlan** ----- **PPGPRD Database**

File Edit Subsystem Batch Admin Preferences Window Help

Projects Assets Tables CR MyPPlan Help Calc Print Win

**Funding Project Estimates - Summary** C032019 Current Total Authorized Amount: \$217,...

Title: **Batts/Chargers NE South OS RI**

Project Number: **C032019**

**Budget Version** No Assigned Versions

Revision: **FY16 Annual Sanction**

Revision Status: **Approved**

Revision No.: **8**

Est Start Date: **04/01/2009**

Est Complete Date: **03/31/2016**

Est In Svc Date: **03/30/2016**

Capital: **\$250,000.00**

Expense: **\$4,000.00**

Jobbing: **\$0.00**

Retirement: **\$0.00**

Removal: **\$4,000.00**

Total (excl. Rets.): **\$258,000.00**

Credits: **\$0.00**

Net: **\$258,000.00**

**Spending Estimates:**

**Grid Estimates**

**Forecast**

Summarize from W/O

Copy Estimate

**Property Estimates:**

Unit Estimates

Create As Built

Delete Used Estimates

**Edit:**

New Revision

Delete Revision

Update

Update With Actuals

Import Estimates

**Other:**

Revision Comments

Released Dollars

Substitution

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Revision Info Other Updates

Revision: **8 of 10** < > >|

**Find Revision** Send for Approval

☐ Show 'Budget Only' Revisions

Audits

Record **9** of 16 < > >|

**PowerPlan** ----- **PPGPRD Database**

File Edit Subsystem Batch Admin Preferences Window Help

Projects Assets Tables CR MyPPlan Help Calc Print Win

**Funding Project Estimates - Summary** C032019 Current Total Authorized Amount: \$217,...

Title **Batts/Chargers NE South OS RI**

Project Number **C032019**

**Budget Version** **Default (active)**

Revision **FY15 Annual Program Sanction**

Revision Status **Approved**

Revision No. **7**

Est Start Date **04/01/2009**

Est Complete Date **03/31/2015**

Est In Svc Date **03/30/2015**

Capital **\$250,000.00**

Expense **\$7,500.00**

Jobbing **\$0.00**

Retirement **\$0.00**

Removal **\$5,000.00**

Total (excl. Rets.) **\$262,500.00**

Credits **\$0.00**

Net **\$262,500.00**

**Spending Estimates:**

**Grid Estimates**

**Forecast**

**Summarize from W/O**

**Copy Estimate**

**Property Estimates:**

**Unit Estimates**

**Create As Built**

**Delete Used Estimates**

**Edit:**

**New Revision**

**Delete Revision**

**Update**

**Update With Actuals**

**Import Estimates**

**Version Compare**

**Other:**

**Revision Comments**

**Released Dollars**

**Substitution**

**Slide**

**Close**

**Revision Info** **Other Updates**

Revision **7** of 10 **< > >|**

**Find Revision** **Send for Approval**

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**Audits**

**Record 9 of 16** **< > >|**

**PowerPlan** ----- **PPGPRD Database**

File Edit Subsystem Batch Admin Preferences Window Help

Projects Assets Tables CR MyPlan Help Calc Print Win

**Funding Project Estimates - Summary** C032019 Current Total Authorized Amount: \$217,...

Title: Batts/Chargers NE South OS RI  
Project Number: C032019

**Budget Version** PPM Project Authorizations (a)

Revision:   
Revision Status: Approved  
Revision No.: 3  
Est Start Date: 04/01/2009  
Est Complete Date: 03/31/2010  
Est In Svc Date: 03/31/2010  
Capital: \$254,808.00  
Expense: \$7,644.00  
Jobbing: \$0.00  
Retirement: \$0.00  
Removal: \$20,385.00  
Total (excl. Rets.): \$282,837.00  
Credits: \$0.00  
Net: \$282,837.00

**Spending Estimates:**

Grid Estimates  
Forecast  
Summarize from W/O  
Copy Estimate

**Property Estimates:**

Unit Estimates  
Create As Built  
Delete Used Estimates

**Edit:**

New Revision  
Delete Revision  
Update  
Update With Actuals  
Import Estimates

**Other:**

Revision Comments  
Released Dollars  
Substitution  
Slide

**Version Compare** **Close**

Revision Info Other Updates

Revision: 7 3 of 10  
Find Revision  
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☐ Show 'Budget Only' Revisions

Record: 9 of 16  
Audits

C032278

OS Substation Breakers & Reclosers

## 5360-Narragansett Electric and Gas Project Revision Detail Report

<b>Fund Project Number:</b> <u>C032278</u>	<b>USSC #:</b> <u>USSC-15-070 FY16Prograr</u>
<b>Revision:</b> <u>8</u>	<b>Budget Version:</b> <u>Default</u>
<b>Project Title:</b> <u>OS ARP Breakers &amp; Reclosers</u>	
<b>Project Description:</b> 03567 OS ARP Breakers & Reclosers	

<b>Project Status:</b> <u>open</u>	
<b>Responsible Person:</b> <u>NEARY, ALEXANDER</u>	<b>Initiator:</b> <u>Karzenski, Wayne</u>
<b>Spending Rationale:</b> <u>Asset Condition</u>	<b>Funding Type:</b> <u>P Electric Distribution Sub RI</u>
<b>Budget Class:</b> <u>Asset Replacement</u>	
<b>Capital by Category:</b>	
<b>Program Code:</b>	
<b>Project Risk Score:</b> <u>40</u>	<b>Project Complexity Score:</b> <u>15</u>

### Project Schedule / Expenditures

<b>Revision Status:</b> <u>Approved</u>	
<b>Est Start Date:</b> <u>4/1/2013</u>	<b>Est Complete Date:</b> <u>3/31/2018</u>
<b>Est In-Service Date:</b> <u>3/31/2018</u>	
<b>TTD Actuals:</b> <u>\$9,326,080</u>	<b>As Of:</b> <u>10/10/2017</u>
<b>Cost Breakdown</b>	
<u>Capital</u>	<u>Expense</u>
<u>\$1,000,000</u>	<u>\$20,000</u>
<u>Removal</u>	<u>Total</u>
<u>\$20,000</u>	<u>\$1,040,000</u>
	<u>Credits</u>
	<u>\$0</u>

### Justification / Risk Identification:

### Project Scope:

### Project Alternatives Considered:

**Additional Notes:**

**Related Projects:**

**Project Number:**

**Project Name:**

**Approvals**

Line 1:	Date	<u>4/21/2015 09:50:49</u>	Approver	<u>carlim</u>	<u>USSC Approver</u>
Line 2:	Date		Approver		
Line 3:	Date		Approver		
Line 4:	Date		Approver		
Line 5:	Date		Approver		

**\*\*\*Project Authorization is for Approved Revision Total Estimated Cost + 10%\*\*\***

**PowerPlan** ----- PPGPRD Database

File Edit Subsystem Batch Admin Preferences Window Help

Projects Assets Tables CR MyPlan Help Calc Print Win

**Funding Project Estimates - Summary** C032278 Current Total Authorized Amount: \$1,04...

Title **OS ARP Breakers & Reclosers**

Project Number **C032278**

**Budget Version** No Assigned Versions

Revision **FY18 Approval**

Revision Status **Initiated**

Revision No. **9**

Est Start Date **04/01/2013**

Est Complete Date **03/31/2018**

Est In Svc Date **03/31/2018**

Capital **\$150,000.00**

Expense **\$3,000.00**

Jobbing **\$0.00**

Retirement **\$0.00**

Removal **\$9,000.00**

Total (excl. Rets.) **\$162,000.00**

Credits **\$0.00**

Net **\$162,000.00**

Revision Info **Other Updates**

Revision **7** 9 of 9 **< > >|**

**Find Revision** **Send for Approval**

☐ Show 'Budget Only' Revisions

**Spending Estimates:**

**Grid Estimates**

**Forecast**

**Summarize from W/O**

**Copy Estimate**

**Edit:**

**New Revision**

**Delete Revision**

**Update**

**Update With Actuals**

**Import Estimates**

**Version Compare**

**Property Estimates:**

**Unit Estimates**

**Create As Built**

**Delete Used Estimates**

**Other:**

**Revision Comments**

**Released Dollars**

**Substitution**

**Slide**

**Close**

Record **10** of 16 **< > >|**

**Audits**



**PowerPlan** ----- PPGPRD Database

File Edit Subsystem Batch Admin Preferences Window Help

Projects Assets Tables CR MyPPlan Help Calc Print Win

**Funding Project Estimates - Summary** C032278 Current Total Authorized Amount: \$1,04...

Title **OS ARP Breakers & Reclosers**

Project Number **C032278**

**Budget Version** Default [active]

Revision **15-070 FY16 Pr**

Revision Status **Approved**

Revision No. **8**

Est Start Date **04/01/2013**

Est Complete Date **03/31/2018**

Est In Svc Date **03/31/2018**

Capital **\$1,000,000.00**

Expense **\$20,000.00**

Jobbing **\$0.00**

Retirement **\$0.00**

Removal **\$20,000.00**

Total (excl. Rets.) **\$1,040,000.00**

Credits **\$0.00**

Net **\$1,040,000.00**

**Spending Estimates:**

Grid Estimates

Forecast

Summarize from W/O

Copy Estimate

**Property Estimates:**

Unit Estimates

Create As Built

Delete Used Estimates

**Edit:**

New Revision

Delete Revision

Update

Update With Actuals

Import Estimates

**Other:**

Revision Comments

Released Dollars

Substitution

Slide

Version Compare

Close

Revision Info **Other Updates**

Revision **7** 8 of 9

Find Revision

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☐ Show 'Budget Only' Revisions

Audits

Record **10** of 16

**PowerPlan** ----- PPGPRD Database

File Edit Subsystem Batch Admin Preferences Window Help

Projects Assets Tables CR MyPPlan Help Calc Print Win

**Funding Project Estimates - Summary** C032278 Current Total Authorized Amount: \$1,04...

Title **OS ARP Breakers & Reclosers**

Project Number **C032278**

**Budget Version** Default (inactive)

Revision **USSC-13-093 FY14 Program**

Revision Status **Approved**

Revision No. **6**

Est Start Date **04/01/2009**

Est Complete Date **03/31/2018**

Est In Svc Date **03/31/2018**

Capital **\$1,050,000.00**

Expense **\$10,000.00**

Jobbing **\$0.00**

Retirement **\$0.00**

Removal **\$20,000.00**

Total (excl. Rets.) **\$1,080,000.00**

Credits **\$0.00**

Net **\$1,080,000.00**

**Spending Estimates:**

**Grid Estimates**

**Forecast**

**Summarize from W/O**

**Copy Estimate**

**Property Estimates:**

**Unit Estimates**

**Create As Built**

**Delete Used Estimates**

**Edit:**

**New Revision**

**Delete Revision**

**Update**

**Update With Actuals**

**Import Estimates**

**Version Compare**

**Other:**

**Revision Comments**

**Released Dollars**

**Substitution**

**Slide**

**Close**

**Revision Info** **Other Updates**

Revision **7** 6 of 9 **K < > >I**

**Find Revision** **Send for Approval**

☐ **Show 'Budget Only' Revisions**

**Audits**

**Record 10 of 16** **K < > >I**

**PowerPlan** ----- **PPGPRD Database**

File Edit Subsystem Batch Admin Preferences Window Help

Projects Assets Tables CR MyPPlan Help Calc Print Win

**Funding Project Estimates - Summary** C032278 Current Total Authorized Amount: \$1,04...

Title **OS ARP Breakers & Reclosers**

Project Number **C032278**

**Budget Version** PPM Project Authorizations [a]

Revision **7**

Revision Status **Approved**

Revision No. **4**

Est Start Date **04/01/2009**

Est Complete Date **03/31/2010**

Est In Svc Date **04/02/2009**

Capital **\$1,000,000.00**

Expense **\$30,000.00**

Jobbing **\$0.00**

Retirement **\$0.00**

Removal **\$80,000.00**

Total (excl. Rets.) **\$1,110,000.00**

Credits **\$0.00**

Net **\$1,110,000.00**

Revision Info **Other Updates**

Revision **7** 4 of 9 **< > >|**

[Find Revision](#) **Send for Approval**

☐ Show 'Budget Only' Revisions

**Spending Estimates:**

**Grid Estimates**

**Forecast**

**Summarize from W/O**

**Copy Estimate**

**Property Estimates:**

**Unit Estimates**

**Create As Built**

**Delete Used Estimates**

**Edit:**

**New Revision**

**Delete Revision**

**Update**

**Update With Actuals**

**Import Estimates**

**Version Compare**

**Other:**

**Revision Comments**

**Released Dollars**

**Substitution**

**Slide**

**Close**

**Record** 10 of 16 **< > >|**

**Audits**

**USSC Closure Paper**



<b>Title:</b>	Distribution Substation Breaker and Recloser Asset Replacement Program – Rhode Island FY13 Closure	<b>Sanction Paper #:</b>	USSC-12-174C
<b>Project #:</b>	C032278	<b>Sanction Type:</b>	Closure
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	August 30, 2016
<b>Author:</b>	Alexander Neary	<b>Sponsor:</b>	Carol Sedewitz, VP Electric Asset Management
<b>Utility Service:</b>	Electricity T&D	<b>Project Manager:</b>	Al Padilla

**1 Executive Summary**

This paper is presented to close project number C032278 for FY2013. The total spend was \$1.051M. The latest sanctioned amount for this project was \$1.110M

*The final spend amount is \$1.051M broken down into:*

*\$1.018M Capex  
\$0.020M Opex  
\$0.013M Removal*

**2 Project Summary**

This is the closure of the annual sanction of the Substation Breaker and Recloser Asset Replacement Program (ARP). Under this program, certain circuit breaker and recloser families have been targeted for replacement, as well as other breakers and reclosers due to poor condition. This program is in line with the approved Substation Breaker and Recloser Strategy.



## USSC Closure Paper

### 4 Improvements / Lessons Learned

1. Coordination between Asset Management and Resource Planning allowed for the target budget to be met within 10%. Due to the low complexity nature of these projects, minimal changes to project processes were required.

### 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 checked="" type="radio"/> Yes <input type="radio"/> N/A

**USSC Closure Paper**



**7 Decisions**

I approve this paper.

Signature.....*Chell*.....Date.....*9/12/16*.....  
Executive Sponsor – Christopher Kelly, Acting Senior Vice President, Electric  
Process & Engineering

0

## US Sanction Paper



<b>Title:</b>	Substation Breaker and Recloser Asset Replacement Program – Rhode Island	<b>Sanction Paper #:</b>	USSC-13-093
<b>Project #:</b>	C032278	<b>Sanction Type:</b>	Sanction
<b>Operating Company:</b>	Narragansett Electric Company	<b>Date of Request:</b>	March 05, 2013
<b>Author:</b>	Eileen Duarte	<b>Sponsor:</b>	Cheryl A. Warren
<b>Utility Service:</b>	Electric T&D	<b>Project Manager:</b>	Stephen Parenteau

### 1 Executive Summary

#### 1.1 **Sanctioning Summary:**

This paper requests the sanction of \$1.08M for the Substation Circuit Breaker and Recloser Asset Replacement Program for Narragansett Electric Company. The sanction amount will have a tolerance of +/- 10% for the purposes of full implementation of the purchase and replacement of substation circuit breakers and reclosers.

The sanction amounts are broken down as follows:

- \$1.050M Capex
- \$0.011M Opex
- \$0.021M Removal

#### 1.2 **Brief Description:**

The method for managing substation breakers and reclosers consists of periodic maintenance and 'replace on condition'. This approach is being augmented by a replacement program targeting obsolete and unreliable breaker families, units in poor condition, an analysis on the necessary spares, and identification of metal-clad replacements due to asset condition issues. Obsolete units have been specifically identified for replacement because they are difficult to repair due to the lack of available spare parts. Likewise, unreliable units have been identified for replacement because their replacement would reduce the number of customer interruptions.

The total breaker population is in excess of 800 breakers with 97% being distribution assets and 3% transmission assets (sub-transmission). Identified families of breakers presently targeted for replacement consist of approximately 200 units. It is



## US Sanction Paper

recommended that 100 units be replaced in the next five years and an additional 138 units be replaced in the next ten years based on a recently completed condition review.

The condition-based replacement program outlined in the strategy will be implemented over the next ten years. This will permit the process of identifying and prioritizing the work to take place and will allow for a smoother budgeting transition from the current to the proposed state. However, the program is expected to go beyond this timeframe.

The strategy is in-line with National Grid's goal to maintain reliability and a sustainable network by establishing a list of replacement substation circuit breakers<sup>1</sup> by jurisdiction, and by performing a spare analysis to eliminate any gaps in our coverage.

### 1.3 Summary of Projects:

Project Number	Project Title	Estimate Amount (\$M)
C032278	Rhode Island Circuit Breaker and Recloser Asset Replacement Program	\$1.082
<b>Total</b>		<b>\$1.082</b>

### 1.4 Associated Projects:

Project Number	Project Title	Company	Estimate Amount (\$)
<b>Total</b>			<b>\$</b>

### 1.5 Prior Sanctioning History (including relevant approved Strategies):

Date	Governance Body	Sanctioned Amount	Paper Title	Sanction Type
10/14/2009	DCIG	N/A	Distribution Substation Circuit Breaker and	Strategy

<sup>1</sup> The term circuit breaker pertains to circuit breakers and substation reclosers.



**US Sanction Paper**



			Replacement Strategy	
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**1.6 Next Planned Sanction Review:**

Date (Month/Year)	Purpose of Sanction Review
September 2014	Closure

**1.7 Category:**

Category	Reference to Mandate, Policy, or NPV Assumptions
<input type="checkbox"/> Mandatory	Distribution Substation Circuit Breaker and Replacement Strategy, Approved Oct. 2009
<input checked="" type="checkbox"/> Policy-Driven	
<input type="checkbox"/> Justified NPV	

**1.8 Asset Management Risk Score**

Asset Management Risk Score:   40  

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

☒ Reliability    ☐ Environment    ☐ Health & Safety

**1.9 Complexity Level: (if applicable)**

☐ High Complexity    ☐ Medium Complexity    ☒ Low Complexity

Complexity Score:   15



**US Sanction Paper**

**1.10 Business Plan:**

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
Capital Investment Plan FY14 – FY18	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Over <input type="checkbox"/> Under	0

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

**1.12 Current Planning Horizon:**

Current Planning Horizon								
\$M	Prior YR Spending	YR1 13/14	YR2 14/15	YR3 15/16	YR4 16/17	YR5 17/18	YR6+	Total
Proposed Capex		\$1.05						\$1.05
Proposed Opex		\$0.01						\$0.01
Proposed Removal		\$0.02						\$0.02
CIAC/Reimbursement		\$0.00						\$0.00
Total	\$0.00	\$1.08	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1.08

**1.13 Resources:**

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



## US Sanction Paper

### 1.14 Key Issues (include mitigation of Red or Amber Resources):

1	
---	--

### 1.15 Key Milestones:

Milestone	Target Date: (Month/Year)
Program Sanction	April 2013
Preliminary Engineering	June 2013
Procurement	July 2013
Final Engineering	September 2013
Delivery	October 2013
Construction Start	November 2013
Construction Finish	March 2014
As Builts	May 2014
Annual Program Closure	September 2014

Milestone dates may vary due to higher priority work taking precedence or outage constraints.

### 1.16 Climate Change:

Are financial incentives (e.g. carbon credits) available?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Contribution to National Grid's 2050 80% emissions reduction target:	<input checked="" type="checkbox"/> Neutral	<input type="checkbox"/> Positive <input type="checkbox"/> Negative
Impact on adaptability of network for future climate change:	<input checked="" type="checkbox"/> Neutral	<input type="checkbox"/> Positive <input type="checkbox"/> Negative

### 1.17 List References:

1	Distribution Substation Breaker and Recloser Strategy – October 2009
2	560 Amp VSA Recloser Replacement, SMS 401.40.1
3	GE VIR Recloser Replacement, SMS 401.41.1

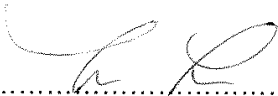
**US Sanction Paper**



**2 Recommendations:**

I hereby approve the sanction amount of \$1.08M with a tolerance of +/- 10% for the purposes of full implementation of the purchase and replacement of substation circuit breakers and reclosers

NOTE that Stephen Parenteau is the Project Manager and has the approved financial delegation.

Signature..........Date.....3/12/2013.....

***Marie Jordan, Senior Vice President Network Strategy***

**US Sanction Paper**



**3 Appendix**

Below are the locations identified for circuit breaker and recloser replacements in FY14.

Funding No.	Substation Location	Div.	Qty.
C032278	Waterman Ave 78	NEOS	4
C032278	Anthony 64	NEOS	2
C032278	East George St. 77	NEOS	6
C032278	Lippitt Hill	NEOS	5
C032278	Merton	NEOS	1

**USSC Closure Paper**



<b>Title:</b>	Substation Breaker and Recloser Asset Replacement Program – Rhode Island – FY14 Closure	<b>Sanction Paper #:</b>	USSC-13-093C
<b>Project #:</b>	C032278	<b>Sanction Type:</b>	Closure
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	August 30th, 2016
<b>Author:</b>	Alexander Neary	<b>Sponsor:</b>	Carol Sedewitz, VP Electric Asset Management
<b>Utility Service:</b>	Electricity T&D	<b>Project Manager:</b>	Albert Padilla

**1 Executive Summary**

This paper is presented to close project number C032278 for FY2014. The total spend was \$2.104M. The latest sanctioned amount for this project was \$1.080M

*The final spend amount is \$2.104M broken down into:*

*\$1.845M Capex*

*\$0.121M Opex*

*\$0.138M Removal*

**2 Project Summary**

This is the closure of the annual sanction of the Substation Breaker and Recloser Asset Replacement Program (ARP). Under this program, certain circuit breaker and recloser families have been targeted for replacement, as well as other breakers and reclosers due to poor condition. This program is in line with the approved Substation Breaker and Recloser Strategy.



## USSC Closure Paper

### 3 Over / Under Expenditure Analysis

#### 3.1 Summary Table

Actual Spending (\$M)			
Project #	Description		Total Spend
C032270	OS ARP Breakers & Reclosers	Capex	1.845
		Opex	0.121
		Removal	0.138
		Total	2.104
Total		Capex	1.845
		Opex	0.121
		Removal	0.138
		Total	2.104

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	1.050
		Opex	0.011
		Removal	0.021
		Total Cost	1.082
Sanction Variance (\$M)			Total Spend
		Capex	(0.795)
		Opex	(0.110)
		Removal	(0.117)
		Total Variance	(1.022)

#### 3.2 Analysis

The total annual spend for the program was \$2.104M, which is \$1.022M more than the sanctioned amount of \$1.082. The reason for the variance is due to the continuation of Natick and Elmwood breakers from FY13. Natick was a \$175K carryover and Elmwood was an \$825K carryover.

### 4 Improvements / Lessons Learned

To address these challenges, the following steps have been taken:



### ***USSC Closure Paper***

1. Better coordination between estimations during the discovery portions of the projects and the requested sanction amounts from USSC was established. This allowed us to request the most current expected forecast from the USSC committee during project sanction.
2. Prior to this fiscal year, carryover dollars were not typically requested from the USSC committee to be included in the current year sanction request. After this fiscal year coordination between resource planning and asset management was established so that any projects carrying over from prior fiscal years would be included in current year fiscal sanction request.

### **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 checked="" type="radio"/> Yes <input 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	Responsibilities
Investment Planning	Glen DiConza	Endorses relative to distribution 5-year business plan or emergent work
Resource Planning	Mark Phillips	Endorses D-Sub Resources, cost estimate, schedule, and Portfolio Alignment
Engineering/Design	Suzan Martuscello	Endorses Substation scope, design, conformance with design standards
Engineering/Design	Alan LaBarre	Endorses D-Sub scope, design, conformance with design standards
Engineering/Design	Len Swanson	Protection and Telecommunications

#### 6.2 Reviewers

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



Function	Individual
Finance	Patricia Easterly
Regulatory	Peter Zschokke
Jurisdictional Delegates	James Patterson
Control Center	Michael Gallagher

**USSC Closure Paper**



**7 Decisions**

I approve this paper.

Signature..........Date..........  
Executive Sponsor – Christopher Kelly, Acting Senior Vice President, Electric  
Process & Engineering

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## Short Form Sanction Paper- Instructions



<b>Title:</b>	Substation Breaker and Recloser Asset Replacement Program – Rhode Island	<b>Sanction Paper #:</b>	USSC -15 - 070
<b>Project #:</b>	C032278	<b>Sanction Type:</b>	Sanction
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	March 17, 2015
<b>Author:</b>	Eileen Duarte	<b>Sponsor:</b>	John E. Gavin
<b>Utility Service:</b>	Electricity T&D	<b>Project Manager:</b>	Alex Neary

### 1 Executive Summary

#### 1.1 Sanctioning Summary

This paper requests the full sanction of \$1.040M for the Substation Circuit Breaker and Recloser Asset Replacement Program funding No.s C032278 for The Narragansett Electric Co. The sanction amount will have a tolerance of +/- 10% for the purposes of achieving the targets for the substation circuit breakers and reclosers as listed in Appendix 8.1.

The sanction amount is **\$1.040M** broken down as follows:

- \$1.000M Capex
- \$0.020M Opex
- \$0.020M Removal

#### 1.2 Project Summary

This is the annual sanction of the Substation Circuit Breaker and Recloser Asset Replacement Program. Under this program, certain circuit breaker and recloser families have been targeted for replacement, as well as other breakers and reclosers due to poor condition. This program is in line with the approved Substation Circuit Breaker and Recloser Strategy.



## **Short Form Sanction Paper- Instructions**

### **2 Project Detail**

#### **2.1 Background**

The method for managing substation breakers and reclosers consists of periodic maintenance and 'replace on condition'. This approach is being augmented by a replacement program targeting obsolete and unreliable breaker families and units in poor condition. Obsolete units have been specifically identified for replacement because they are difficult to repair due to the lack of available spare parts. Likewise, unreliable units have been identified for replacement because their replacement would reduce the number of customer interruptions.

#### **2.2 Drivers**

Asset condition is the primary driver for the Substation Circuit Breaker and Recloser Asset Replacement Program. The breaker families targeted for replacement are obsolete and unreliable. There are no available spare parts or manufacture support and therefore, they are difficult and costly to maintain.

Some of the breakers have a high rate of failure and are slow to operate; not adequately designed for our system. The air-magnetic breaker interruption technology is obsolete, and these breakers contain asbestos in the arc chutes. The live tank oil circuit breakers in our indoor substations pose a potential safety hazard, and old obsolete metal-clad circuit breakers pose a higher risk of a possible arc flash hazard.

#### **2.3 Project Description**

The total breaker population is in excess of 800 breakers with 97% being distribution assets and 3% transmission assets (sub-transmission). Identified families of breakers presently targeted for replacement consist of approximately 200 units. It is recommended that 100 units be replaced in the next five years and an additional 138 units be replaced in the next ten years based on a recently completed condition review.

The fiscal year 2016 circuit breakers and reclosers that are targeted for replacement per the approved Circuit Breaker and Recloser Strategy can be found in the Appendix. The program also includes other types of circuit breakers identified as having poor condition via reviews with subject matter experts.



## **Short Form Sanction Paper- Instructions**

### **2.4 Benefits**

The program will help maintain reliability or mitigate the risk of future unreliability by proactively replacing, or refurbishing, those circuit breakers identified as being in poor condition. Circuit breaker maintenance costs will improve due to the extended maintenance intervals resulting from the modern design of the newer breakers. These breakers do not require frequent maintenance. Several of the targeted breaker families present opportunities to reduce potential hazards associated with safety and the environment (oil, asbestos, arc flash, grounding and isolation issues). Lastly, by replacing obsolete and unreliable breakers with newer technologically sound breakers, this will assist in minimizing large-scale interruptions and help maintain favorable relationships with all external stakeholders.

### **2.5 Business & Customer Issues**

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

### **2.6 Alternatives**

N/A

### **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 \$0.200M. 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	Project Title	Estimate Amount (M)
C032278	D-Sub	RI Substation Circuit Breaker and Recloser Asset Replacement Program	\$1.040
Total:			\$1.040

#### 3.2 Associated Projects

N/A

#### 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
03/05/14	USSC	\$1.080	Substation Breaker and Recloser Asset Replacement Program – RI	Annual Sanction
10/14/2009	DCIG	N/A	Distribution Substation Circuit Breaker and Replacement Strategy	Strategy



## Short Form Sanction Paper- Instructions

### 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	Distribution Substation Circuit Breaker and Replacement Strategy

### 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: 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 (\$)
FY16 – FY20 Capital Investment Plan	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	\$0



## Short Form Sanction Paper- Instructions

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

### 4.2 CIAC / Reimbursement

N/A

### 4.3 Cost Summary Table

		Current Planning Horizon									
Project#	Project Description	Estimate Level	\$M	Prior YR Spending	YR1 15/16	YR2 16/17	YR3 17/18	YR4 18/19	YR5 19/20	YR6+	Total
C032278	Rd Circuit Breaker Program	+/-10%	Capex	\$0.000	\$1.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$1.000
			Opex	\$0.000	\$0.020	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.020
			Removal	\$0.000	\$0.020	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.020
			Total	\$0.000	\$1.040	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$1.040

### 4.4 Project Budget Summary Table

#### Project Costs Per Business Plan

Current Planning Horizon (\$M)								
	Prior Yrs (Actual)	YR1 15/16	YR2 16/17	YR3 17/18	YR4 18/19	YR5 19/20	YR6+	Total
Capex	\$0.000	\$1.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$1.000
Opex	\$0.000	\$0.020	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.020
Removal	\$0.000	\$0.020	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.020
Total	\$0.000	\$1.040	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$1.040

#### Variance (Business Plan-Project Estimate)

Current Planning Horizon (\$M)								
	Prior Yrs (Actual)	YR1 15/16	YR2 16/17	YR3 17/18	YR4 18/19	YR5 19/20	YR6+	Total
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	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000